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Traditional Neighborhood Shopping Districts: *Patterns of Use and Modes of Access*

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Abstract

Traditional Neighborhood Shopping Districts: Patterns of Use and Modes of Access

by

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Doctor of Philosophy in City and Regional Planning

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This dissertation examines patterns of usage and modes of access to traditional shopping districts. Environmentalists and designers have advocated a return to "traditional neighborhood development," with higher densities, mixed uses, pedestrian amenities and transit service, to reduce auto dependence for shopping and other trips. Critics have countered that proximity only partly explains shopping destination and mode choice, but draw their evidence mostly from auto-dominated shopping centers, not traditional ones. Whether shopping districts predominantly serve local residents and support trip reduction has remained to be examined.

This dissertation examines customer characteristics, patterns of use, and modes of access in six traditional shopping areas in the Oakland-Berkeley, California, area. The six districts are surrounded by middle class, moderately dense residential neighborhoods with transit service and pedestrian access consonant with neo-traditional design. They vary in scale and mix of uses across the range proposed by neo-traditional designers.

Surveys, counts, and observations reveal that all six shopping areas draw a mix of residents and non-residents. The non-residents' share increases with the scale of the

shopping area and the share of comparison shopping. Distance is the most important factor in the mode choice to these shopping areas; most non-residents drive, whereas only half the residents do. Younger customers and those with few or no autos walk more than average. Those shopping for groceries or making multiple stops for specialty food typically drive. Non-resident shoppers are more likely to purchase comparison goods than residents. Both groups are attracted by specialty foods.

Trip generation rates in the six shopping areas are higher than conventional methods predict, but auto shares are much lower. The result is parking demand close to conventional estimates.

The dissertation reveals conflicts among the needs of residents, the needs of shopping districts, and traffic mitigation objectives. Many uses that serve residents and add interest and vitality to traditional shopping areas also attract a high share of non-residents, mostly by car. Trip generation can be very high, even though the auto share is relatively low. If other neo-traditional shopping districts follow suit, their benefits will stem more from convenience and choice than from trip reduction per se.

Elizabeth Deakin

I dedicate this dissertation to my mother,

Jeanette Geiser Steiner, who instilled in me a love of learning,

and

my aunt, Agnes Steiner, who, by her example, has shown me how to be a good teacher.

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CHAPTER 1: INTRODUCTION

Background and Motivation for this Research

In metropolitan areas throughout the United States, concern about the environmental and social effects of automobile use is motivating a search for transportation and land use policies that will provide accessibility without necessitating vehicle trips. Air quality problems are a major reason for this concern. In 1990, over 100 metropolitan areas were unable to meet national ambient air quality standards for criteria pollutants, mostly due to a heavy share of emissions from transportation sources. Another common problem is traffic congestion resulting from more people driving automobiles over increasing distances for multiple purposes -- work, shopping, personal services and other social and recreational activities -- and using limited highway capacity (Hanks and Lomax 1991). The costs of congestion are felt in many ways, including lost time, higher shipping costs and stress for drivers.

Through the 1970s, a typical response to transportation congestion, growth in vehicular travel, and even air pollution and energy problems was freeway expansion. Expanded freeway capacity, it was argued would increase and smooth out highway speeds, with the additional benefit of reducing emissions and energy consumption. By the 1980s, however, environmentalists had begun to challenge these claims, arguing that new investment in freeways encourages more low-density development and, ultimately, increases automobile usage, congestion and air pollution (*Citizens for a Better Environment vs. George Deukmejian* and *Sierra Club v. Metropolitan Transportation Commission*, 731 F. Supp. 1448 N. D. Cal., 746 F. Supp. 976 N. D. Cal. (1990); Cambridge Systematics *et al.* 1992). While promotion of alternatives to the automobile has been a widespread response to challenges such as these, the results have been modest. These modest results, in turn, have been diagnosed as largely the result of the difficulty of using travel alternatives in an auto dominated urban environment. In reaction, some environmentalists argue that changes in urban form, including higher-density, mixed-use development and increased use of public transit, must be part of the solution to the environment and energy problems of automobiles (see, for example, Holtzclaw 1990, Holtzclaw 1994).

In related, parallel arguments, a group of architects, real estate developers and policy makers are arguing for a new form of urban development, called the "New Urbanism" or neo-traditional development. Building upon earlier work by Jane Jacobs (1961) and others, New Urbanists have developed a comprehensive set of proposals for land use and transportation that are intended to promote a more active public life and an enhanced sense of community. They advocate an urban form that typically includes mixed-use development, a grid street pattern, and increased density, especially around transit stations (Calthorpe and Mack 1988; Bernick and Carroll 1991; Calthorpe 1993; Katz 1994). New Urbanists acknowledge that their design paradigm is an attempt to recreate elements of traditional neighborhoods that were built prior to World War II. They claim that such an urban form literally creates better communities, with a variety of

housing suitable a diversity of ages and family types; well-defined neighborhoods and public spaces, which promote interaction; and grid street patterns and transit orientation, which facilitate walking, bicycling, and transit use and reduce the need for parking.

The social claims of the New Urbanists have been disputed (See Audirac and Shermyen 1994) and will not be specifically addressed here. However, the claims about urban form and transportation advantages of the New Urbanism continue to be debated (Handy 1991; Handy 1992; Crane 1996) and researchers agree that more work is needed to clarify the issues and determine the New Urbanism's impacts.

It is useful to step back for a moment and consider the premises underlying the New Urbanism. In arguing for changes in urban form as a solution to urban transportation problems, namely transit-oriented, mixed-use and high-density residential development, the New Urbanists make several assumptions about the relationship between the urban environment and its use. First, they assume the public will accept the high-density and mixed-use development. Second, they assume people with a choice will move into high-density mixed-use areas. Third, they assume the neighborhood within walking distance of retail areas will be dense enough to support a mix of retail and office uses and that neighborhood retail and "town center" commercial districts will meet many, if not all of the shopping and services needs of the surrounding neighborhoods. Finally, they assume that people who live and work in such urban environments make fewer and shorter automobile trips and will choose to walk, bicycle or use transit more frequently than has been the case in lower density, single use residential areas.

If all of these assumptions are borne out the result should be reduced vehicle miles traveled (VMT), automobile emissions and lower energy usage. New Urbanists, convinced that these results will, in fact, be achieved, argue for reduced parking requirements, and lower traffic impact fees for their developments. Other planners and engineers are skeptical, however. In their view, if a substantial share of residents of these high-density, mixed-use areas remain auto drivers, if these retail centers do not serve a substantial share of neighborhood needs, or if the retail centers draw many of their customers from outside of the neighborhood, the emissions and energy benefits will not be realized and reductions in parking or traffic impact mitigations will only lead to additional problems in the neighborhood.

While we may be skeptical of the ability of changes in urban form to reduce automobile use, previous research supports some of these claims. For example, empirical studies, using grossly aggregate data, suggest that people living in high-density residential developments are less dependent upon the automobile, and walk or use public transportation for commuting at higher rates than people who live in lower density developments (Pushkarev and Zupan 1977; Newman and Kenworthy 1989a, 1989b). However, these studies are not definitive because they overlook many important differences -- such as income levels -- in the cities they compare and so raise as many questions as they answer. Moreover, these aggregate studies offer little guidance to planners and urban designers because they do not consider neighborhood characteristics,

such as the mix of uses, non-work trips and accessibility to transit and highways in their analyses.

At the same time, research in urban geography and in transportation engineering casts doubts on the simplified behavioral assumptions of the New Urbanists. For example, while New Urbanists argue for mixed-use town centers for communities of a variety of scales, research by central place theorists in the 1960s shows that places of different sizes serve different functions. For example, neighborhood centers provide only conveniences for residents, some of whom will walk to the center, while larger centers, which offer a variety of goods and services, will necessarily need to attract customers from a wider market area. The central place theorists' work forms the basis for transportation engineers' "gravity" models of transportation distribution, which suggest that the ability to attract customers depends upon the size of the retail area and the friction of distance. Thus, larger areas attract from greater distances (Reilly 1931; Huff 1962; Lakshmanan and Hansen 1965).

Empirical studies of travel behavior for shopping also cast doubt on the simplified New Urbanist assumptions that residents will shop locally. The studies show that people do not always go to the nearest center; instead customers select the shopping areas that best provide for their needs taking into account both attractions and time and cost impedances (Hanson 1980; Garrison *et al.* 1959).

Recently several studies have focused on the relationship between the mix of uses, scale of development, and the travel of residents within the neighborhood, with many of them comparing traditional neighborhoods to newer suburban neighborhoods. The studies suggest that traditional neighborhoods generate fewer trips, but limitations of the studies muddy the picture somewhat.

In a study using the 1981 Bay Area Travel Survey, Friedman, Gordon and Peers (1992) show that residents of traditional neighborhoods have higher rates of walking, bicycling and transit use than other suburbanites; the residents of traditional neighborhoods also make fewer trips because they combine trips. Unfortunately the study does not adequately control for other possible explanatory variables including income, ethnicity and household size. Handy (1992) compares matched pairs of traditional neighborhoods and suburban neighborhoods and shows that residents of the traditional neighborhoods walk or bicycle in their local shopping area more frequently than residents of suburban neighborhoods. However, her work does not show that the local trips in traditional neighborhoods substitute for auto trips; in fact, it suggests that these are additional trips. Handy also does not consider whether certain uses attract people who live or work outside of the neighborhood nor does she consider the types of activities that are more successful at attracting residents of the neighborhood. Similarly Ewing (Ewing *et al.* 1994; Ewing 1995) considers different types of neighborhoods, with and without a mix of uses. However, all six of his neighborhoods are very low density -- the highest density of any neighborhood in Ewing's study is less than 4 units per acre -- and all show very low levels of walking and bicycling. Hence the Ewing study does not

speak to the kinds of neighborhoods that the New Urbanists espouse. Cervero and Gorham (1995) compare transit and automobile neighborhoods and find that residents of transit neighborhoods are less likely than residents of automobile neighborhoods to drive alone to work. While Cervero and Gorham control for income, transit service levels, topographic features and net residential densities, they do not consider non-work trips within the neighborhood nor do they examine trips in the neighborhoods by non-residents. In other research focused on workplaces, Cervero (1989) finds that workers in suburban workplaces with a greater mix of uses are less likely to drive to work alone.

None of these studies, identifies who uses the shopping areas of the types espoused by the New Urbanists. Consequently, the studies do not indicate the efficacy of such shopping areas in reducing auto use, lower parking ratios, or managing without major highway access — all issues of some importance to the planners, urban designers and engineers who help create or oversee urban development.

Studies of neo-traditional development are difficult to design because much of the neo-traditional development is occurring as new growth at the urban fringe rather than as infill, and is only slowly being built out and occupied. Current neo-traditional developments do not yet reflect the densities, mixes of uses, transportation access, or other characteristics of neighborhoods the New Urbanists are attempting to create and, in particular, the new developments lack well-established retail businesses. Hence it is not currently possible to conduct an evaluation of the role of neighborhood shopping in town centers in New Urbanists designs.

On the other hand, there are a number of existing mixed-use, medium-density neighborhoods that have established retail centers with the characteristics that the New Urbanists mimic. Research on these neighborhood shopping centers can help resolve how important the retail element is to overall New Urbanist objectives, and can help define the types of retail that are likely to support the environmental and social objectives, such as reduced VMT, reduced congestion, and lower parking needs.

This dissertation is the first study in recent years to consider the patterns of use of and access to shopping in prototypical, "traditional" neighborhoods. Six shopping areas are considered; each is surrounded by residential areas of moderately high density (between 13-21 persons/acre) and each is in a middle class neighborhood (at or slightly above the regional median income) within the Oakland-Berkeley area of the San Francisco Bay Area. These six shopping areas vary in scale (based upon number of stores and square footage) and in mix of businesses in the shopping area (convenience services, convenience shopping (including grocery stores and specialty food) and comparison shopping), covering the range of sizes and "types" espoused by the New Urbanists.

Research Question

This dissertation examines the New Urbanists' contention that retail centers within easy walking of residential neighborhoods will attract a much higher walk and bike mode share and many fewer and shorter trips than planners and traffic engineers have typically assumed. This contention of the New Urbanists is compared to that of the travel behaviorists, who argue that travelers' choice of destinations for shopping is a function of modal availability, travel time and cost, and the number, amount and variety of land uses available at each destination, such that many residents will bypass shopping in their neighborhood and go to other destinations, while non-residents may choose to shop in the neighborhood based upon its attractiveness and accessibility.

This paper answers the following general questions: Who uses neighborhood shopping districts? Under what conditions do the presence of retail activities within walking distance of housing support walking as a mode of transportation for non-work trips? This broad question is answered by considering the following related questions in traditional neighborhoods: (1) To what extent do these shopping areas attract residents and to what extent do they attract non-residents? (2) How do the complexity of travel, frequency of shopping and types of goods and services used by residents differ from those of non-residents? (3) What mode of transportation do the residents and non-residents use to get to the shopping areas? (4) What characteristics of travel (complexity of travel, frequency of travel) and shopping (types of stops) influence mode choice? (5) How do the travel and shopping characteristics and the mode of travel vary among the shopping areas? (6) What level of shopping activity is supported in these shopping areas and can they include lower levels of parking as suggested by the New Urbanists? (7) What factors do customers consider in determining where to shop and how do these attitudes differ between walkers and non-walkers? and (8) What factors lead merchants to locate in various shopping areas and how well do merchants understand their customer base?

These questions are addressed through survey research and analysis. Detailed inventories of the businesses in the area were prepared in each of the shopping areas. Four surveys of users of the shopping areas were administered. Customers responded to a brief intercept survey to gather information on their travel and shopping activity in the neighborhood on the day of the interview; some also responded to a mailback survey in which they provided detailed information on household characteristics and usual shopping and travel activity in the shopping area. Users of the Bay Area Rapid Transit (BART) system, in two of the shopping areas, were surveyed on the stops they made as a part of their use of BART. Finally, merchants were surveyed to on the characteristics of their businesses and to assess the importance of and their satisfaction with locational factors, their customer base and transportation to their business. These survey data were then used to determine the patterns of shopping and travel, the choice of modes, and the associated level of activity and parking requirements of each shopping area.

A series of related hypotheses are tested:

- Larger shopping areas that provide a wide range of comparison and convenience shopping and services require more customers than can walk to the shopping areas, at least at the moderate housing densities considered here. The larger centers consequently must serve not only the needs of the residents for convenience goods and services but also the needs of non-residents for other services and comparison shopping. Neighborhood residents are likely to have a different pattern of usage than non-residents, and the latter are more likely to drive to the shopping area and less likely to make use of convenience-oriented goods and services.

- Small shopping areas with only a few stores will draw a high percentage of customers from within the neighborhood.

- Centers with good transit accessibility will attract some users whose primary purpose is travel on the transit system. Shopping by these users will be incidental, however, and focused on small items and food that can be carried easily or consumed immediately.

- Even among residents, many will drive to the neighborhood shopping area when the primary purpose is to purchase groceries, or, when the trip to the shopping area is combined with other trips.

- For residents, the choice of walking rather than driving is related to the frequency with which they go to the shopping area; the more frequently they go shopping, the more likely they are to walk because they will pick up fewer items with each trip.

- Walkers are more likely to be from households that have fewer responsibilities, such as retired persons or young singles.

Summary of Findings

The following findings are reached in this research:

- The percentage of respondents who are from the adjacent neighborhood varies from 76% in the smallest shopping area to less than 40% in the two large shopping areas.

- Overall, residents are equally likely to drive as walk. Residents also tend to shop more often than non-residents, make simple, home to shop to home, trip

chains, and stop for groceries, miscellaneous convenience shopping and convenience services.

- Almost all of the non-residents drive to the shopping area. Non-residents are, however, less frequent shoppers and make more complex trip chains on their trips. Comparison shopping is a major attractor for non-residents.

- The presence of transit stops is not a big generator of additional trips. In fact, transit users are less likely to stop on their trips than are walkers or auto users. Among users of BART, interviewed on the platforms of two stations with adjacent shopping, about one-sixth made a stop in the shopping area as a part of their trip.

- Walkers are younger, less likely to own or live in a single-family house, lower income, and own fewer vehicles than auto or transit users.

- Residents who use automobiles are more likely to shop for groceries and make more complex trips. While walkers, who are residents, are more likely to shop for cafés and coffee shops and make simple, home to shop to home, trips and shop frequently.

- The most important variable in the decision to walk is the distance from home to the shopping area. Walk shares range from 10% to about 40% of respondents in various shopping areas.

- The trip generation, adjusted for non-auto modes, in some of these shopping areas exceeds the ITE average trip rates. Thus, the claims of the New Urbanists that the parking requirement can be reduced cannot be supported if the peak loads are to be met.

- Merchants, especially those providing convenience goods and services, and customers, especially those who walk, express greater dissatisfaction with the availability of parking than their counterparts.

Organization of the Dissertation

This dissertation is organized into ten chapters including this introduction. The first three chapters present the background for the study and review previous work on the topic. Chapter 2 reviews the literature on how people choose where to live, especially with respect to high-density and mixed-use residential areas, and discusses implications for travel of those choices of residence. Chapter 3 considers how retail uses choose

where to locate, how people choose where to shop and the travel patterns that are likely to result from those choices.

In Chapters 4 and 5, the framework for this research is outlined. Chapter 4 defines the research methodology and Chapter 5 describes the case study areas.

The results of the research are presented in Chapters 6 through 9. Chapter 6 examines who makes use of each of these shopping areas based upon the distance respondents live from the shopping area and their socio-economic and demographic characteristics. Then it discusses the nature of the activity of the respondents by considering where they stopped, their pattern of trip chaining, and their frequency of travel. Chapter 7 considers factors that affect the choice of mode of respondents. It explores differences based upon the distance respondents live from the shopping area, the pattern of stops by type of business, the pattern of trips and the frequency of travel and user characteristics all. The differences between residents who walk and those who drive are considered. Finally, a logit model of the choice to walk versus use of other modes to shopping in areas surrounded by traditional residential neighborhoods is presented. In Chapter 8, an analysis of the trip generation rate in each of these shopping areas is developed, and the implications for parking requirements are explored. In Chapter 9, the attitudes of customers and merchants towards various factors in the shopping areas are considered, and the assumptions and attitudes of the merchants in shopping areas are compared and contrasted with the attitudes and actual behavior of customers in the shopping area.

Chapter 10 discusses the implications of the research. Included in this chapter is a summary of the results of the research and a discussion of their policy implications.

CHAPTER 2. HOW DO PEOPLE CHOOSE WHERE TO LIVE? HOW DO RESIDENTIAL LOCATIONS AFFECT TRAVEL?

The importance of spatial structure in determining the patterns of activity and travel of residents is at the heart of the New Urbanists' assumptions. The New Urbanists contend that many people are attracted to live in an urban form that includes a balanced mix of activities, preferably including shopping, employment, recreation, and schools as well as housing. They advocate designs containing a neighborhood center, served by transit and that includes transit and is surrounded by higher density housing. They argue that such a design will encourage walking to the activities and transit in the center (Calthorpe 1993; Katz 1994; Duany 1995). Their claims lead to the questions, What evidence is there to support the idea that people will choose to live in higher density, mixed-use neighborhoods? Furthermore, what evidence is there that they will walk, rather than drive, to activities in these neighborhoods?

In this chapter, theories and empirical research on how households choose where they live and the implications for travel are considered. Three bodies of work provide insight into how people make decisions about where to live: (1) location theory; (2) hedonic pricing models of housing; and (3) studies of residential location choice. Location theory considers how the various activities sort out within the urban area. Residential location theory, in particular, considers the relationship between residential density, household income and transportation access and indicates that, all else being equal, higher levels of accessibility make it possible for households to locate farther from their work sites. Hedonic pricing studies provide insight into factors that give housing value; by implication, these factors -- housing price and size, lot size; accessibility, and characteristics of the neighborhood -- must be important factors to the people buying the housing. Studies of residential location choice further suggest that for each housing type, accessibility, school quality, neighborhood amenity, and safety/lack of crime are important factors in a resident's choices of where to live. In the sections that follow, both the literature on the spatial distribution of activities and the resulting travel behavior are reviewed.

Spatial Distribution of Activities and Land Uses within Regions

The literature on the spatial distribution of land uses within regions is divided into studies that identify (1) how different land uses are located within the region; (2) the value that households attribute to location and housing characteristics; and (3) how households make decisions about where to locate their residences.

Location Theory

Location theory has generally been concerned with how various land uses compete for space within a region. Based largely on early work by von Thunën in market towns surrounded by agricultural uses, these models are extended to urban cases to consider the relationship between land rents and transport costs (Alonso 1964; Muth 1969; Mills 1972). According to the basic location theory, investors bid for land for

various uses (e.g., office, manufacturing, and residential) based on the tradeoff between the cost of land and the cost of travel. Locations that require or greatly benefit from central locations bid up the rent for those locations; because of the high rents they also build at higher densities. For example, headquarters office uses locate at the center because of the need for face-to-face contact with other businesspersons. Owners and managers of such companies outbid other uses for central locations because they make such contact easier. Residential rent gradients are the least steep of urban land uses because most residents have the least to gain from proximity to the center.

Location theory is elaborated in a residential location theory that attempts to explain where household of various incomes live considering in particular the density of housing and the distance from the CBD. Simple models of location and land use are based on the idea that all households trade off the time and cost of commuting with the cost of land and housing. Under this assumption, reductions in transportation costs lead to decentralization as households consume more housing at lower densities and greater distances from the center.

Researchers have reached different conclusions about where within the region households of various income levels are likely to live. Theoretical work by Wingo (1961) and Alonso (1964) suggests that, all else being equal, low-income households are more likely to live in high-density neighborhoods because they will trade off commute costs and accessibility to transit and other activities for less housing. Higher income households would be the highest bidders for suburban land because their preferences for housing, lot size, and suburban public services increase faster than the household's dislike of commuting. However, empirical evidence makes it clear that the relationships are more complex than the simple "all else being equal" models of location. For example, Muth (1969) concludes, based on empirical research in Chicago, that there is a "negligible partial relationship between income and distance" from the CBD that is mediated by the age of buildings. In other words, he finds that higher income households are more likely to live in newer housing. The impact of being located farther from the CBD is negligible once the age of the building is considered.[1] Similarly, Wheaton using data from the San Francisco Bay Area, shows that when distaste for commuting is considered "income in fact may not be a strong determinant of long-run location patterns," rather each income strata will have variability in preference for location of housing (Wheaton 1977: 627).

Anas (1982) clarifies this relationship by suggesting the conditions under which higher income households will locate farther away from the center: "the bid rent function of higher income households may be less steep than that of the poor, but only if the increase in the preference for land consumption (lot size) by income is sufficiently stronger than the increase in the disutility for commuting time by income" (Anas 1982, 32). Anas finds that the average income of households is higher in the first 2 miles from

[1] Muth's study has been criticized because, among other things, he ignores strongly negative elements in the urban environment (e.g., the Gary steel works) that are located outward from the Chicago CBD and undoubtedly depress housing attractiveness in their vicinity.

the CBD of Chicago than it is in any of the distance ranges, 2-4, 4-6, 6-8 and 8-10 miles from the CBD. Income increases with each distance category (after the first 2 miles) before reaching its highest level at 22-24 miles then gradually declines with greater distances (Anas 1982: 131).

The differing conclusions of these studies is explained largely by the assumptions about the preferences for housing and commuting of households with higher incomes. Alonso, Wingo and Muth assume that all households with higher incomes have a preference for more housing (i.e., they assume that housing is a superior good). Wheaton and Anas assume that households with higher incomes have a variety of preferences (or tastes) in housing and the neighborhood in which they choose to live. Thus, households with higher incomes may choose to live in a high-, medium- or low-density neighborhood.

Hedonic Pricing Models

Hedonic pricing models of residential location consider what factors determine housing prices and thus provide an indication of the value that households attribute to various characteristics of housing. Economists use hedonic pricing models to understand the relative importance of various attributes to market price of the commodity (in this case, housing). The models generally use a linear or log-linear model to explain the change in property value or the price of housing based upon locational and other attributes. These studies identify a variety of important attributes that can be categorized into three groups of variables: (1) accessibility; (2) neighborhood; and (3) housing. The accessibility variables are often crude; for example, models may include straight-line distance to the central business district, or the distance to the nearest freeway. The neighborhood variables include the characteristics of the neighborhood (e.g., tax rates, school quality, park availability, reputation) and the people who live there. The housing variables include the characteristics of the housing itself (type, size, number of bedrooms), the yard, and other improvements made to it.

Early hedonic pricing studies of housing value attempted to calculate the costs associated with air pollution. Ridker and Hennings (1967), in the earliest study of the cost of air pollution in St. Louis, find the following categories of characteristics significant in determining median property values in an area: housing characteristics (number, age and density of housing), accessibility (i.e., accessibility to shopping, industrial areas, highways, the CBD), neighborhood characteristics (quality of schools, crime rates, socioeconomic and demographic characteristics), and household income.

Kain and Quigley (1970) focus on individual dwellings and the measurement of the quality of residential services. They find a negative relationship between housing value and the presence of other non-residential uses, and a negative relationship with higher density (Kain and Quigley 1970). They also find a positive relationship between quality of schools and housing value, and a negative relationship between crime and housing value (Kain and Quigley 1970).

In most other hedonic pricing studies, however, accessibility is defined more narrowly to include only accessibility to the CBD or to a major highway (Harrison and MacDonald 1974) and to special areas in the region (e.g., the Charles River in Boston (Harrison and Rubinfeld 1978)). Li and Brown (1980), in their study of Boston, used a broader definition of accessibility that includes distance to the CBD, the ocean, river, expressway interchange, conservation and recreation areas and schools.

Other studies find similar neighborhood characteristics to Ridker and Henning (1967) and Kain and Quigley (1970) to be significant determinants of housing value. Li and Brown (1980) find public services and costs, defined as school quality and property taxes, to be significant in determining property values. Consistent with Kain and Quigley (1970), Weiand (1973), and Nelson (1975, 1978) find a negative relationship between housing value and the presence of other non-residential uses.

Residential Choice Models

Residential choice models identify the factors that households consider in deciding where they live. This literature suggests the constraints and opportunities that households face in making their location decision and the multiplicity of factors that are balanced in these decisions.

Lerman (1975, 1976) develops a model that connects long-term mobility choices, such as employment location, residential location, housing type, automobile ownership, and mode to work, with short-term travel choices for non-work trips. Lerman argues, after Ben-Akiva (1973), that the mobility choice, which includes all of the long-term choices except employment location, are made based on the employment location. His model, which is developed on prototypical cases, confirms the significance of the relationship between work place and residential location. However, his model assumes (without investigation) that proximity to shopping and other services is are not a factor in residential locations decisions.

Weisbrod *et al.* (1980) explicitly considers the tradeoffs between transportation and other factors in residential location decisions. Using a sample of 6,000 households from a 1970 survey in the Minneapolis/St. Paul metropolitan area, they develop a discrete choice logit model to estimate the contribution of various locational attributes and household characteristics in determining each household's decision whether or not to move within an 18-month period. Each household is assumed to select the residential mobility option and (for movers) the alternative location/housing bundle that maximizes its utility. The utility is expressed as a function of attributes of the alternative (e.g., distance to work, prices, transportation services, neighborhood quality, and housing type) and the attributes of the household itself (e.g., age, income, and household size); access to shopping, schools, and other non-work locations is not explicitly considered. Weisbrod's results show that a 5% reduction in automobile commute time is equivalent to a 1.5% decrease in monthly rent, a 3.8% decrease in home value and a 28% reduction in crime rate. A similar reduction in bus commute time is worth a smaller amount. Moreover,

household composition considerations overwhelm all other factors in housing choice, including housing cost, taxes, transportation access, and crime level and no reduction in auto travel time or bus travel time (at least of the magnitude considered in the modeling) can compete with the preference of households with children for single-family detached housing. Negative attributes of the current location (e.g., crime, school quality) are at least as important as positive attributes of locational alternatives in encouraging the decision to move. The decision to move and rent is less sensitive to the attributes of other locational alternatives than is the decision to move and buy a home. Finally, age and household composition factors are strong determinants of the propensity to move; regardless of travel time to work, crime rates, school quality, or housing costs, older persons and families with several children have a lower probability of moving than younger or smaller households.

Stegman's (1969) study reaches several conclusions based upon a national study comparing 393 household moving to the central city and 448 households moving to the suburbs between 1960 and 1966. First, the majority of families who move to the suburbs are more concerned about neighborhood quality than with accessibility to other parts of the region. Second, similar proportions of movers, irrespective of whether they live in the city or suburbs, use the automobile to get to work. Third, "large numbers of suburban families do not have to trade off accessibility for savings in location rent; they have both." Finally, suburban families in large urban areas (greater than 100,000 in population) have shorter mean-time distances than city households to the following activities: groceries, home of best friend, elementary school, shopping center, park or playground, doctor's office, hospital, work, and church (Stegman 1969: 22).

Relationships between Travel Patterns And Density of Residential Areas

Empirical Studies

Empirical studies analyzing the relationship between travel and the residential density conclude that residents of high-density areas use public transportation or walk more frequently than residents of lower-density areas, and travel shorter distances overall (Pushkarev and Zupan 1977; Newman and Kenworthy 1989a, 1989b; Goodwin 1975; Holtzclaw 1990, 1994). However, limitations in the analyses cast serious doubt on the robustness and generalizability of the findings.

Pushkarev and Zupan (1977) analyze data on the New York region along with selected aggregate data from 105 large urbanized regions in the United States and they conclude that as density increases so does the number of transit trips, especially among middle-income households.[2] They find that, on average, lower income households travel less than other households at all densities. Further, they find that households with higher incomes are more likely to own an automobile and, once they own one, are more likely to

[2] While Pushkarev and Zupan suggest that they considered 105 of the largest urbanized areas, they do not use all of these metropolitan areas for each of their statistical analyses and exhibits. This leads one to question whether the relationship holds for all metropolitan areas or just New York City.

use it irrespective of the density of their neighborhood. However, Pushkarev and Zupan do not identify the relative importance of income and density as determinants of travel and auto use. For example, they never ask whether high-income households in high-density areas use their automobiles less than their counterparts in less-dense areas.

Newman and Kenworthy (1989a, 1989b) compare metropolitan regions in Europe, the United States, Canada, Europe, and Asia. They find that automobile dependence, based upon total gasoline usage, is lower in higher-density cities than in lower-density cities. While they consider a wide range of transport, land use, economic and technological factors in determining gasoline usage (i.e., road supply and parking, public transportation speeds, central city density, inner and outer area density, distribution of employment, income), they are criticized for not considering all variables simultaneously and, in particular, for underestimating the role of income and gasoline prices (Gomez-Ibañez 1991) and for using data of questionable reliability and consistency on gasoline usage, trip lengths and vehicle occupancy (Banister 1992). For example, they assume that the income elasticity of the United States can be used for all countries and they do not account for the differences in automobile fleet in different countries and its relationship to gasoline consumption. Hence, the findings they attribute to density might be better explained by relative prices and incomes and differences in the characteristics of the automobile fleet.

Goodwin (1975) uses the 1972-74 British National Travel Survey to identify relationships between density and each of several other variables: (1) number of trips; (2) distance per trip; (3) distance per person; (4) travel speed; (5) time spent traveling; and (6) time per trip. He concludes that households in high-density areas take the same number of trips overall but take fewer trips by automobile, and travel shorter distances at lower speeds. However, the analysis does not separate out other factors that may lead to the observed relationships, which Goodwin derives from simple correlations. In particular he does not consider income, automobile ownership and other household characteristics that affect the decision to travel.

Holtzclaw (1990) is one of few studies to use neighborhood-level data to analyze the relationship between density and travel patterns. Holtzclaw identifies several "neighborhoods" in the San Francisco Bay area (Nob Hill to Fisherman's Wharf, all of San Francisco, Rockridge, Walnut Creek, and Danville/San Ramon), defined by zip code and census tract, and compares the automobile miles traveled per year taken from reported sequential odometer readings. He concludes that the level of travel is inversely related to the density of the neighborhood. Unfortunately, the odometer data are suspect. Because it is based on readings from biennial emissions tests, the data omit vehicles whose owners move into a different zip code during the two-year period, readings that are illogical (e.g., second readings that are lower than the first), and household that own vehicles that are not subject to emissions testing or vehicles for which one reading is missing. These omissions represent a substantial portion of the total number of vehicles and are likely to underrepresent populations, like renters, who are more likely to move. In addition, Holtzclaw does not measure the effect of the level of income of residents in

these neighborhoods, the mix of land uses in the neighborhood, and how the household traveled during the year (e.g., the number, frequency, and type of trips).

Holtzclaw (1994) updates this work by expanding the number of neighborhoods to 27 in four urban areas in California (eleven neighborhoods in the San Francisco Bay Area, eight in Los Angeles, five in San Diego, and three in Sacramento) as a part of a proposal for an energy-efficient mortgage program.[3] In addition to the density calculation, he calculates measures of urban form including transit accessibility (reflecting hourly access to transit), a neighborhood shopping index (fractions of households within a quarter mile of five key local commercial establishments) and a pedestrian accessibility index (reflecting continuous grids, street slopes, sidewalks, building entrances, and traffic control). He estimates nonlinear equations with autos per household and vehicle-miles-traveled (VMT) as the dependent variables, and finds that his density variable and transit accessibility index are statistically significant. The other urban form variables and average incomes for the neighborhood are found not to have a significant relationship to either automobile ownership or total VMT.

The findings of Newman and Kenworthy (1989a, 1989b) and Holtzclaw (1990, 1994), are in contrast to Gordon and Richardson's series of studies that show that the increasing decentralization of businesses and suburbanization of households has reduced the distances that household travel to work (Gordon, Richardson and Jun 1991; Gordon, Kumar and Richardson 1989; Gordon, Kumar and Richardson 1988). Using variously the National Personal Transportation Survey (NPTS) from 1977 and 1983 (Gordon, Kumar and Richardson 1989; Gordon, Kumar and Richardson 1988) and the 1980 and 1985 American Housing Survey (Gordon, Richardson and Jun 1991), they conclude that lower density results in less travel for work. These results are not necessarily comparable to the Holtzclaw or Newman and Kenworthy studies, however, because only work travel is considered; (and, it is possible that the difference in total travel observed in the Newman and Kenworthy and Holtzclaw studies are largely due to differences in non-work travel.)

Simulations for Policy Purposes

A final series of studies has investigated proposals for higher-density areas within a regionally integrated land use and transportation system, using models to simulate alternative development patterns and their impact. In particular, studies complete in Seattle and Portland and the debate about compact development in Europe are examples of these simulations.

In Portland, a national demonstration project, "Making the Land Use, Transportation, Air Quality Connection" (LUTRAQ), develops methodologies for creating and evaluating alternative land use patterns and design standards intended to reduce automobile dependence; increase mobility for all segments of the population;

[3] This second study also uses reported odometer readings to determine the total VMT; thus, the estimate of VMT entails the same measurement errors and biases as Holtzclaw's 1990 study.

minimize negative environmental impacts, especially air quality; reduce energy consumption; and foster a strong sense of community. Using a proposed bypass freeway around the Portland, Oregon metropolitan region as a case study, LUTRAQ identifies alternative land use patterns that have the potential to reduce travel demand and increase the use of alternative travel modes. They then use existing transportation models to forecast the travel behavior associated with these land use patterns. Three types of transit-oriented developments (TODs): mixed use TOD centers, served by existing or planned light rail transit; urban TODs, at light rail stops and containing a mix of moderate to high density uses, shopping and civic facilities, and parks, with low intensity employment sites adjacent to the TOD; and the smaller "neighborhood" TODs containing moderate density housing, local-serving shopping, and parks, and connected to the rest of the region by feeder buses to light rail or express bus stops (Calthorpe 1993). With these land uses, the average automobile ownership rates would be 1.62 automobiles per household in the TOD areas compared to 1.90 per household for the no-action and bypass options (Cambridge Systematics *et al.* 1992: 81); the 2010 mode shares for all TOD trips would be 12.1% walk, 79.3% auto and 8.6% transit compared to 3.8% walk, 89.1% auto and 7.0% transit for the 2010 no action alternative (Cambridge Systematics *et al.* 1992: p.83). Finally, total vehicle trips per household per day would be 6.05 for the TOD alternative compared to 7.71 for the no action alternative.

Similarly, Seattle uses scenario tests of alternative transportation investments and urban development patterns as a part of its regional transportation planning effort. Several transportation systems management (TSM) alternatives with various amounts of transitway and rail and mixed-use and high-density development around transit stations are analyzed in detail. The transit share for work trips to selected centers is projected to increase from 11.3% under the no-build (down from the 1990 transit share of 11.8%) to 13.0% under the TSM alternative, 13.1% under the transitway/TSM alternative and 16.4% under the Rail/TSM alternative (Metro *et al.* 1993: 3-101).

European metropolitan regions have investigated alternative development patterns, including compact development. Several studies (Elkins *et al.* 1991, McLaren 1993, Sherlock 1991) and official documents of the European Commission (CEC 1990), and the Dutch (see van der Valk and Faludi 1993) and British (CEC 1990) government advocate compact development as a more environmentally sound approach. Some studies question the efficacy of this policy position, however. For example, Breheny (1993) compares Inner London, Outer London, Metropolitan districts, New Towns, and rural areas and finds that if all of the new development located in the compact urban areas instead of in lower density areas, the total energy consumption would have been only 3% less. He questions whether the policy of containment in compact cities would have been worth all of the costs associated with the implementation of the policies. However, his data suggest that the distance traveled per week per person is lower in the higher density areas of in inner London and other metropolitan areas than in smaller cities, outer London and rural areas (Breheny 1993), a result consistent with those results of Newman and Kenworthy (1989a, 1989b). Breheny's studies do not control for the differences in the socio-economic and demographic characteristics of households.

Conclusions

Findings from the literature about how people decide where they will live, and the consequences of those decisions, challenge the normative assumptions about the desirability of the neighborhood designs proposed by the New Urbanists. In particular, both location theory and empirical studies of how people decide where to live find that people will locate where they can get affordable housing that is accessible to jobs, although the empirical relationships are seldom simple ones. People choose neighborhoods with low crime rates, high-quality education and good public services (Kain and Quigley 1970), which are all things the New Urbanists intend. However, people also show a preference for low density, single family housing in areas that contain only residential land uses, and a dislike for high density and mixed uses. Whether accessibility to shopping and other services is positive or negative has not been determined, largely because most studies have omitted this factor from the analysis.

Simulation studies of alternative urban forms suggest that people will walk and use transit more in higher density areas especially for the journey to work; and that such development patterns could indeed reduce congestion emission and energy use (Cambridge Systematics *et al.* 1992; Metro *et al.* 1993) -- if people choose to live in them. Empirical studies suggest that at least some moderate and high income households, with greater choices about where they live, will choose to live in higher density areas (Anas 1982, Wheaton 1977). Empirical studies also suggest that people who live in higher-density neighborhoods are less dependent upon the automobile and have higher rates of commuting by walking or by public transportation (Pushkarev and Zupan 1977; Newman and Kenworthy 1989a, 1989b), though many of these studies suffer from methodological limitations that cast doubt on their findings. While some studies (Gordon, Richardson and Jun 1991; Gordon, Kumar and Richardson 1989; Gordon, Kumar and Richardson 1988) suggest that work travel is little different, or even shorter, in lower density areas, this may simply mean that VMT reductions are due largely to lower levels of auto use for non-work travel such as shopping. Hence, it is important to investigate attitudes about and behavior in neighborhood shopping areas, rather than simply assuming that such matters are secondary.

CHAPTER 3. HOW DO PEOPLE CHOOSE WHERE TO SHOP?

The New Urbanists have proposed an urban design strategy that includes a mix of land uses with a commercial center surrounded by higher density housing. They assume that residents and employees will avail themselves of the shopping and services in these centers, and reach the centers on foot or on bike much of the time. Hence they argue that their commercial areas should be granted lower parking requirements and transportation impact fees than "standard" developments.

Researchers concerned with retail geography -- the location of businesses and the choice of shopping destinations -- have, in contrast, observed a much more complex set of interrelationships, dependent on the nature of the goods sold, profitability and competition, markets and demand patterns, and transportation access. Empirical studies tend to support the idea that the relationships and decision process are indeed complex and by no means deterministic.

In this chapter, our current understanding of how people choose where to shop and the resultant travel is examined. First, literature about neighborhood design and the types of services people want in their neighborhood is discussed. Next, key concepts on the location and functions of retail places, especially as laid out by central place theorists and the empiricists who extend and criticize their work are presented, as the basis for classifying land uses and relating land uses to market size. Finally, the factors influencing where people shop and the travel implications of those choices are discussed.

Neighborhood Studies - Normative Designs and Empirical Investigations

Many of the New Urbanists' proposals draw upon the designs of such popular planned towns as Savannah, Georgia, or borrow from unplanned, but aesthetically pleasing communities, such as Martha's Vineyard, New England villages surrounding a common, or, Spanish villages surrounding a town square. In addition, the work of turn-of-the century visionaries has had a major influence on the thinking of the New Urbanists (Katz 1994). In particular, the concept of a "neighborhood unit" was introduced into the American planning lexicon the 1920s by Clarence Perry, who proposed it as a part of the New York Regional Plan. In Perry's conception, the neighborhood unit would be bounded on each side by a main highway or major arterial, and would contain 7,500 to 10,000 people in an area of about one-half mile radius with overlaps into the shopping area (Perry [1929] 1974). Residences would surround a center that contains neighborhood institutions, such as schools and churches. At the edge there would be shops, including a grocery store, that provide for the convenience needs of residents of the neighborhood. The shops would be surrounded by apartments. While New Urbanist designs have modified some of the specifics,[1] Perry's legacy is certainly apparent.

[1] Ironically, Perry's neighborhood unit also includes the cul de sac pattern of residential streets that the New Urbanists are attempting to redesign.

Perry's proposals are implemented in Radburn, New Jersey and to some degree in many other communities, but little empirical evidence backs up his claims that such neighborhood planning produces more desirable communities. It was not until some decades later, following an intense debate between the design and social science branches of planning over the meaning and nature of community that an in-depth studies of neighborhood design and performance were undertaken.

Banerjee and Baer's (1984) comprehensive study of the neighborhood unit is such a study.[2] In this study, 475 households in twenty-two locations in Los Angeles are interviewed. These houscholds include seven household types based upon income and ethnicity, and three types based upon stages in the family cycle (households with children, households without children, and households with elderly persons). Households are asked a series of questions to define the boundaries of the residential area, evaluate the environment, and describe and evaluate the residentially-related activities. Among Banerjee and Baer's conclusions is that the shopping area is an important source of ncighborhood identity for most ethnic and income groups.

Schools arc citcd as the most source of residential area identity for all surveyed populations. The shopping area ranked second in importance in middle-income Hispanic and middle-income white residential areas, third in middle-income black residential areas, fourth in low-income white areas and fifth in upper-income white areas. The percentage of respondents identifying the shopping area as a source of residential area identity varies from 91.5% in middle-income Hispanic residential areas, to 89.5% for middle-income blacks, to 83.3% for upper-income whites, to 82.5% for middle-income whites, and 62.5% for lower-income whites.

Banerjee and Baer (1984) also identify land uses that people value in close proximity to their home (see Table 3-1). Among the most desirable uses are: a drug store, food market, gas station, post office, specialty food, banks or savings and loan, doctor's or dentist office, dry cleaners, and beauty or barber shop. With a few minor exceptions, these uses are desired across various income and ethnicity groups.

The Banerjee and Baer work indicates that many people both identify their neighborhood on the basis of their shopping area, and desire a range of convenience goods and services to be located there. However, the relatively low rating of the element "shopping street" suggests that many respondents may be uneasy about the form in which these conveniences are presented. Unfortunately, Banerjee and Baer's work does not provide any indication of what respondents had in mind when thinking of a shopping street, which could be an auto-oriented, commercial strip or a pedestrian-friendly shopping area. Moreover, as the next section discusses, what people would like and what the market delivers may not always match.

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[2] Banerjee and Baer use the term "residential area" rather than the term "neighborhood" because of disagreements over what constituted a neighborhood. For a discussion of this debate, see Banerjee and Baer, Chapter 2 (1984).

Table 3-1. Index of Desirability of Selected Environmental Elements	
Drugstore	.91
Food Market	.89
Library	.88
Bus Stop	.86
Walkways and Pedestrian Crossing	.86
Gas Station	.85
Neighborhood Park	.85
Post Office	.85
Fire Station	.81
Specialty Food	.79
A Court to Play Games	.78
Bank or Savings and Loan	.77
Doctor's or Dentist's Office	.77
Dry Cleaners	.76
Beauty and Barber Shop	.75
Elementary School	.75
Specialty Store	.72
Church or Synagogue	.72
Children's Playground and tot lot	.72
Junior High School	.72
Friend's Place	.72
Restaurant or café	.70
Senior High School	.69
Private or Public Swimming Pool	.68
Clothing or shoe store	.66
Hardware Store	.66
Hospital or Clinic	.65
Undisturbed natural/wooded area	.65
Shoe Repair Shop	.63
Movie Theater	.58
Laundromat	.57
Appliance Repair Shop	.57
"Quick stop" food store	.55
Shopping Street	.51
Place of Work	.44
Source: Banerjee and Baer, 1984, page 139, Table 5.3). Notes: Index is on a scale from -1.00 to 1.00 with a high positive score indicating the most commonly desired by all groups; high negative scores mean most commonly unwanted by all population groups.	

Central Place Theory and Its Extensions: Retail Centers' Scale, Function, and Markets

Central place theory, as developed by Christaller (1964) and Lösch (1954) and extended through empirical work by Berry and Garrison (1958a, 1958b, 1958c; Garrison *et al.* 1959; Berry 1963) and others describes, among other things, the location of establishments as a function of the type and number of goods sold and the population served by a "central place"[3]. Embedded in central place theory and its extensions is the relationship between producers and consumers in the choice of locations for businesses. While customers make decisions about where to shop, businesses locate based on a complex set of factors that allow them to optimize their proximity to their customers. In this section, I focus on the following specific aspects of the assumptions of central place theory and other related research: (1) the concept of a range and threshold of goods, and the definition of market areas; (2) the classification of goods and the functions of retail locations; (3) the retail structure in intra-urban areas; and (4) the classification of shopping areas.

Range and Threshold of Goods and Definition of Market Area

Berry (1958) suggests several factors affecting business location: (1) the patterns of accessibility and friction of distance that are related to the complex structure of intra-urban movement and connections; (2) the location and characteristics of the supplying firm such as the extent of advertising, price mark-ups, type and range of goods offered; (3) the characteristics of the urban market, including the distribution of population within the urban area, income characteristics, peculiarities of demands and purchasing power derived from income, and racial, ethnic, and social variations (4) the frequency, convenience, and postponability characteristics of the shopping trip; (5) competition between stores, location of competitive outlets, and range and type of goods and services provided by these outlets; and (6) other activities in the immediate area, whether complementary or antipathetic, and whether they attract or repulse prospective customers and/or facilitate the cutting of costs (Berry 1958: 22-23).

The concept that goods and services have a "range" is based on the premise that demand at any particular location is based upon the size of the population, its income distribution, the quality of the transportation facilities linking the place in which the good is sold to other competing places, and other market conditions that work interdependently (Christaller 1964). The range of a good delineates the market area of a central place for

[3] Berry and Garrison (1958a, 1958b and 1958c) attempt to generalize the central place theory into a theory of tertiary activity. This theory has been disputed by some (see Beavon, 1977) because of the inability to verify the existence of a nested intra-urban hierarchy. The validity of the theory of tertiary activity is beyond the scope of this paper. Here, I limit the discussion to a set of questions more directly related to this research (e.g., the relationship between the function of retail centers and the resultant shopping and travel behavior of residents and non-residents of the neighborhood) rather than to the other questions (e.g., whether a k=3 or a k=4 is a better model of the hierarchical relationship within a central place system) that have been discussed in this literature.

that good. Thus, the range brings together the market area of the seller with the travel and shopping patterns of the consumer.[4]

According to Berry and Garrison (1958c) the range "has a lower limit which incorporate[s] the *threshold* purchasing power for the supply of the good, and an upper limit beyond which the central place is no longer able to sell the good . . . because of the competition between the central places supplying the good. . . . (italics in original; Berry and Garrison 1958c: 111)". The concept of the threshold relates to the fact that "there is some minimum size of market below which a place will be unable to supply a . . . good [that is defined] by the minimum amount of purchasing power necessary to support the supply of a central good from a central place (Berry and Garrison, 1958c: 111)."

These concepts suggest that every good has its own special range that is based upon the profitability of providing the good, the purchasing power of the area, and the consumer behavior of the customer including travel behavior. The range can be seen as the maximum distance a population would be willing to travel to find a good, although a good can have a different range in each direction. (Christaller (1964) suggests that the range can be either a star or a ring, depending upon accessibility characteristics.) The threshold for providing the good, together with the range, determine the frequency with which a good is provided in the retail landscape. The market area for a good or a service then is defined by the maximum distance customers are willing to travel to find such a good or service subject to the constraint that the supplier must be able to profitably supply the good or service to the maximum-distance traveler.

Classification of Goods and Functions of Retail Locations

The classification of goods as convenience and comparison goods has been extensively discussed in the literature. Convenience goods are defined by the American Market Association's Committee on Definitions (1948) as "those consumers' goods which the customer purchases frequently, immediately, and with a minimum of effort" (Definitions Committee 1948: 206). In contrast, comparison, or shopping, goods are defined as "[t]hose consumers' goods which the customer in the process of selection and purchase characteristically compares on such bases as suitability, quality, price and style."(Definitions Committee 1948: 206). A third type of good, specialty goods, is defined as "[t]hose consumers' goods on which a significant group of buyers are habitually willing to make a special purchasing effort (Definitions Committee 1948: 215)."

While the distinctions between the three types of goods appear to be relatively straightforward, there has been less agreement on: (1) the relationship of these types of goods to their location in retail centers; (2) the definition of frequency; and (3) the meaning of "entailment of as little effort as possible" for convenience goods and services.

[4] Retail technology is critical to the range of goods. Changes in retail technology, such as computer inventories and just in time deliveries, have expanded the range of most goods by decreasing the cost of and accessibility to goods.

Berry, Garrison and other central place theorists (Berry and Garrison 1958a, 1958b, 1958c; Garrison *et al.* 1959) conclude that convenience goods and services are found at the lowest level in the retail hierarchy (i.e., in the smallest centers), while higher order (i.e., larger) centers included both convenience, and comparison shopping, or higher order goods. Based upon this observation, Berry (1963) and Garner (1966) attempt to define the types of stores that could be found at each level of the retail hierarchy. Although Berry's claims about the order or "hierarchy" of shopping areas has been disputed by some researchers (e.g., Beavon 1977), many researcher agree that "convenience goods and services" can be found in the smallest retail centers and with the greatest frequency on the retail landscape.

However, other researchers note the difficulty of defining where specific kinds of goods and services can be found, in part because of the changing nature of retail in which the same goods can be provided by different types of stores and, in part because improved accessibility (resulting from ubiquitious automobile ownership and road improvements) have made many travel time differences trivial. For example, Cohen and Lewis (1967) argue:

> [s]hopping centers in Boston and most other American metropolitan areas do not follow a nested hierarchical pattern, in which higher-order centers contain, but have significantly broader functions than, lower-order centers. Instead, cross-shopping has brought higher order goods into association with lower-order goods in the same shopping centers, and even the same stores. . . . Also, complementarity of stores is allowing some stores to extend their ranges so as to overlap competitors that have sought locational differentiation as a basis for cutting off the range of effective competition (the trading areas of supermarkets in regional shopping centers overlapping the trading areas of supermarkets in neighborhood locations is an example). Finally, accessibility has improved to the point where time-distance distinctions in metropolitan areas lose their significance, save with respect to the most widely spaced and largest centers of the highest order. (Cohen and Lewis 1967: 17-18)

Bucklin relates consumer goods the location at which they are purchased to the amount of effort the consumer would be willing to make for their purchase. He defines convenience goods as "[t]hose goods for which the consumer, before his needs arises, possesses a preference map that indicates a willingness to purchase any of a number of known substitutes rather than to make the additional effort required to buy a particular item" (Bucklin 1962: 53).

Bucklin's definition of convenience highlights a problematic element in the concept of convenience; what is convenient for one shopper may be convenient for another. For example, coffee brands are interchangeable to many people, but some households only consume gourmet coffees. For most households the placement of stores

selling coffee would be of little importance, while, other households might drive great distances to find their preferred brand.

Several other researchers have been even more explicit than Bucklin in introducing a transportation element into the definition of convenience. Convenience goods include that can be purchased with easy transportation accessibility. This is certainly consistent with the central place theorist conclusion that the items consumers demand the most frequently are found in store that occur with the greatest frequency in the retail landscape (Berry 1963) and even earlier work by Proudfoot (1937a, 1937b) who describes the neighborhood shopping street as the place to which people could walk to get for their convenience needs. In more recent publications, the Urban Land Institute defines "convenience" retail to include goods and services that a shopper finds it most convenient to buy "near home, near work, or near a temporary residence when traveling (Casazza and Spinks 1985: 3)."

Other researchers have defined "convenience goods" simply by the frequency of usage. Perhaps following Nelson, who summarized the characteristics of retail areas and defined convenience goods as "items of daily consumption and very frequent purchase" (Nelson 1958: 175), or reflecting Cohen and Lewis' (1967) skepticism about the importance of minor difference in travel time, Potter (1982), in a comprehensive study of retail in Stockport, England, simply categorizes goods based upon whether they are purchased on a weekly, monthly and yearly basis. He treats items purchased on a weekly basis or more frequently as convenience goods.

Retail Structure in Intra-Urban Areas

From the 1930s through the early 1950s, descriptive research was completed in urban areas in the United States that classifies and describes the function and form of intra-urban centers. These studies and the parallel work of Christaller (1964) and Lösch (1954) in Germany became the basis of Berry and Garrison's work in the late 1950s that extended the central place theory to the intra-urban context. Among the most influential early studies of the hierarchy, form and function of shopping in the interurban context are those of Rolph (1933), Proudfoot (1937a, 1937b, 1938), Canoyer (1946), Ratcliff (1949), Garrison (1950), Hoyt (1958) and Kelly (1956). Table 3-2 presents a summary of each author's classification of retail places. Only Garrison (1950), in his study of Fountain Street provides detailed information of the type of business characterizing each center and the size and spacing of centers (see Table 3-3).

Table 3-2. Early Research on Retail Structure		
Author, Date and Location	Shopping Nucleations (Centers)	Shopping Streets
Rolph (1933) Baltimore	Central Business District Retail Sub-areas Neighborhood Facility Group Non-Concentrated Business	String Streets
Proudfoot (1937a, 1937b and 1938 in 3 studies) Chicago and Philadelphia	Central Business District Outlying Business Center Isolated Store Cluster	Principal Business Thoroughfare Neighborhood Business Street
Ratcliff (1939) Detroit	Central Business District 2 Levels of Business Nucleations Isolated Stores	String Street Development
Canoyer (1946) Summary of previous studies	Central Business District Community Shopping Center Neighborhood Centers Isolated Stores	Ribbons or Strings
Garrison (1950) Chicago (Fountain Street Area)	Community Center Major Neighborhood Center Minor Neighborhood Center Isolated Store	Principal Business Thoroughfare
Kelly (1956) Study of Controlled Regional Shopping Centers Nationwide	Central Business District • Inner Core • Inner Belt • Outer Belt Controlled Regional Shopping Centers Secondary Commercial Sub-district (unplanned) • Suburban or other • Community or District • Neighborhood Controlled Secondary Commercial Subcenters • Suburbs or other • Community or District • Neighborhood Small Clusters and Scattered Individual Stores	Main Business Thoroughfares Neighborhood Business Streets
Hoyt (1958) Review of Previous Literature	Central Business District Large Regional Shopping Center Community Centers Large Neighborhood Centers Small Neighborhood Centers	
Note: Centers are listed from largest to smallest, except Kelly's nucleations which are in order from largest to smallest for each type of center and by proximity for the Central Business District.		

Table 3-3. Characteristics of Business Centers Based upon Garrison's Study of the Fountain Street Area of Chicago

Type of Shopping Area	Distance Between Centers In Miles (Average And Range)	Number Of Businesses (Average And Range)	Number of Types of Businesses (Average and Range)	Transportation Characteristics	Other Characteristics
Community	1.2 (.5-3.1)	144 (82-421)	53 (19-84)	connection to major commute arterials	supply comparison shopping goods and convenience items
Major Neighborhood	.6 (.4-1.4)	31 (11-52)	19 (8-34)	some at access to transit; others less connected to commute traffic	supply simpler of convenience needs and some more general comparison shopping goods
Minor Neighborhood	.6 (.1-2.3)	8.9 (3-17)	7.5 (3-12)	limited access to transit	provides services for convenience shopping; little comparison; pedestrian traffic more important than auto

Source: Garrison 1950, *passim*
Note: Garrison also identified principal business thoroughfares and isolated centers, which have not been included in this table.

Empirical Studies of Hierarchy of Central Places; Classification of Shopping Centers

Garrison *et al.* (1959) categorizes the intra-urban retail structure of Spokane, Washington using a correlation matrix (using Pearson's product-moment coefficient) to estimate the spatial association of each pair of forty-nine businesses in 285 business centers. This method also is used in a study of the associations of inter-city business centers in the Snohomish County area of Washington State in a study by Berry and Garrison (1958a). The retail landscape is separated into two types of conformations: nucleations and arterial-type centers, and a linkage analysis technique is used to derive matrices of measures of association to establish a group of spatially associated businesses. Classes of centers are then identified based upon the average occurrence of business types. Similar analyses of types of businesses in Cedar Rapids, Phoenix, and Cincinnati confirm the general framework of the groupings of business types with a few minor exception: (1) the use of data from eight years earlier (1949) and the lower population of Cedar Rapids compared to Spokane resulted in greater differences in higher levels of the retail hierarchy; and (2) businesses in Phoenix differ, especially at the higher levels of the hierarchy because planned centers are more common (Garrison *et al.* 1959). The results point to some of the difficulty in categorizing businesses by their location in

the retail landscape; while some groupings occur more frequently at specific levels in the retail hierarchy, almost all business type groups occur at all levels in the hierarchy.

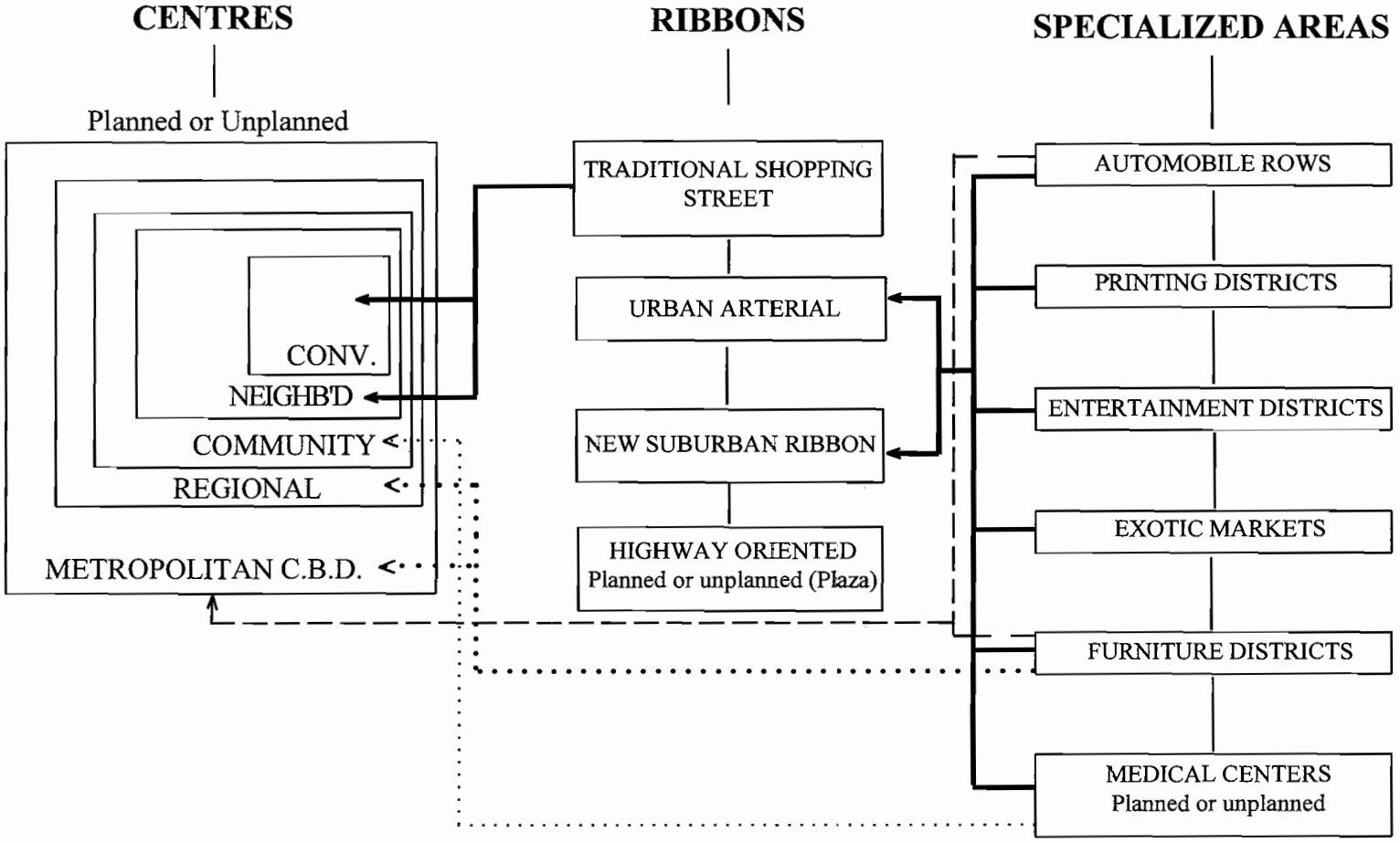
Based upon a study of commercial blight in Chicago, Berry builds on his work with Garrison in Spokane and other cities to develop a full description of the hierarchy of central places (Berry 1963). He classifies commercial areas as centers, ribbons, or specialized areas. Centers, whether planned or unplanned, can vary in scale from convenience, neighborhood, community, regional to metropolitan CBD. Ribbons include traditional shopping streets, which can be convenience and neighborhoods centers, urban arterials, new suburban ribbons, and highway oriented, which can include planned or unplanned centers. Specialized centers include automobile rows, printing districts, entertainment districts, exotic markets, furniture markets, and medical centers and can be found in centers or in ribbons. The relationships among the these three types of commercial areas are shown in Figure 3-1. Overall, Berry (1963b) concludes a higher share of a larger center's stores offer more comparison goods and services and that lower income areas support less retail or have larger trade areas.

In a related study of the commercial centers of Chicago, Garner (1966) finds a separate hierarchy of places in workingman's neighborhoods. Thus, in higher income areas the neighborhood, community and regional centers are located. In workingman's neighborhoods he finds minor centers, which are between neighborhood and community level, and major centers, which are similar to regional centers. Using rank correlations to consider the locations of various types of activities based upon the land values, he finds that specific goods and services are located at different levels in the retail hierarchy, but their location relative to the location with the highest land value varies in each level in the hierarchy.

More recent publications by the Urban Land Institute (ULI) (Casazza and Spinks 1985; ULI 1995) classify shopping areas using definitions similar to Berry's (1963). Four levels of planned shopping centers, based upon number of stores, square footage, and tenant characteristics, mix, and functions served, are defined: neighborhood, community, regional and super regional (see Table 3-4).

FIGURE 3-1

Berry's Structure of the Intra-Urban Retail Hierarchy



Source: Berry, 1963

Table 3-4. Urban Land Institute's Definition of Planned Shopping Centers				
Center Type	Leading Tenant	Typical Square Footage	Range of Square Footage	Market Area Population
Neighborhood	Supermarket	50,000	30,000-100,000	3,000-40,000
Community	Junior Department Store, Large Variety, Discount or Department	150,000	100,000-300,000	40,000-150,000
Regional	One or More Full-Line Department Stores	400,000	300,000-900,000	150,000 or More
Super Regional	Three or More Full-Line Department Stores	800,000	500,000-1,500,000 or more	300,000 or More
Source: Casazza, J. A. and F. H. Spinks (1985); Table 1-5.				

The ULI also defines several other kinds of retail centers: (1) convenience centers; (2) strip commercial; (3) specialty centers; (4) festival/specialty centers; (5) fashion centers; (6) off-price/outlet centers; and (7) discount centers. Convenience centers typically contain the convenience store of a national or region chain. They can be seen as substitutes for mom-and-pop grocery stores and they can be found in an isolated location, as an adjunct to a neighborhood center, or combined with a few other convenience uses (Casazza and Spinks 1985). Strip commercial is defined by ULI as a "string of commercially zoned lots developed independently or a string of retail commercial stores on a single site where there is no anchor tenant and no central management, and where tenant mix results from available tenants with good credit, not from planning and executing a leasing program (Casazza and Spinks 1985: 7)." Thus, strip commercial includes the string street developments and principal business thoroughfares defined by earlier researchers. The other retail centers, as their names imply, offer one type or another of specialized goods and/or services.

Conclusions of Studies about Retail Structure in the Intra-urban Context

Work on retail structure in the inter-urban context has not found any hard-and-fast "rules" to guide the classification of retail shopping areas or to predict what uses will be found. Instead, this research has suggested a number of descriptors, including: (1) type of goods and services provided (convenience, comparison); (2) form (centers and ribbons); (3) scale based upon number of businesses and market area (e.g., neighborhood, community, regional); (4) the nature of ownership and control (planned vs. unplanned); and (5) the agglomeration of special types of stores (e.g., furniture, autos). Size alone is inadequate in categorizing centers or the uses found there, nor does the presence or absence of a particular kind of good necessarily dictate a center's function (since similar goods are offered in centers that greatly differ on other grounds and some goods are substitutable). Further complicating matters, the retail landscape has been changing. For

example, super-discount centers and big box retail on stand alone sites have become increasingly important to the overall retail activity in many regions. Nevertheless, the old unplanned shopping areas remain an important element of the retail landscape, especially in older neighborhoods, and in many areas these unplanned centers are an important source of jobs and retail sales. Despite these complexities, the concept of convenience and comparison goods continues to be of considerable utility in predicting the frequency with which goods and services will occur in the urban landscape, and hence is useful in conceptualizing travel choice for shopping.

Studies of Travel Choice for Shopping Trips

The New Urbanists assume that their urban designs will induce a high percentage of residents to walk to the neighborhood shopping area, or "town center" for their shopping needs, reducing VMT and related emissions and energy use. Such mode choice and destination choice issues have been considered in a number of studies by geographers, engineers and planners; the studies range from simple correlations to logit models of destination and mode choice. The findings of key studies are outlined below.

Studies of Destination Choice for Shopping

That people would shop at the nearest center was a common assumption about shopping behavior until the 1950s, when research showed less than half of all shoppers went to the nearest center (Garrison *et al.* 1959; Clark and Rushton 1970). Most modern models of destination choice, however, have their basis in the theory of retail gravity as proposed by Reilly (1931): "Two cities attract retail trade from any intermediate city or town in the vicinity of the breaking point, approximately in direct proportion to the populations of the two cities and in inverse proportion to the square of the distances (via the most direct improved highway) from these two cities to the intermediate town (Reilly 1931: 9)." Reilly's conclusion is based upon two observations about the flow of retail trade from smaller cities and towns to larger cities: (1) the larger the city, the more outside trade it draws; and (2) a city draws more trade from nearby towns than it does from more distant ones. As it has been used since, the gravity model postulates that the major factors in the choice of shopping area are the level of activity, as measured in size, amount of sales, or number of employees, and proximity, in distance and time. The behavioral interpretations is that customers make a tradeoff between the time it takes to get to a larger center and the availability of a larger number of goods.

Early models of shopping behavior using gravity formulations perform better than the assumption that the customers went to the nearest center, and thus are used to challenge that assumption (see, for example, Huff (1962), and Lakshmanan and Hansen (1965)). Huff (1962), in one of the first studies of intra-urban market areas, surveys the shopping habits of 766 households from three neighborhoods in Los Angeles with similar population densities and household income characteristics. Respondents are surveyed on their shopping patterns for clothing and furniture at 14 shopping areas. Two variables --

the size of the shopping center, and the travel time involved in getting from a consumer's travel base -- are sufficient to estimate a shopping center's probability of being chosen.

In another classic study of shopping behavior, Lakshmanan and Hansen (1965) develop a model of competition among shopping centers. Using data from Baltimore, they estimate the amount of spending from each zone of origin, which is assumed to be directly related to its size, to the shopping center. They reach conclusions similar to Huff's -- that the nearest center is not necessarily the one chosen.

In the first study to look at convenience goods and services, Clark and Rushton (1970) randomly sample 521 households in Christchurch, New Zealand and ask them to identify their major supply center for six goods and services. They find that 39.2% of grocery shoppers, 22.4% of shoppers for meat, 35.8% of shoppers for vegetables, 32.9% of shoppers for dry cleaning, 25.3% of customers for hairdressers and 25.0% of bank customers, go to the nearest center supplying the good.

Ambrose (1968) in a study of South Down, England finds different percentages but reaches the same conclusion -- customers do not necessarily go to the nearest center. He interviews 225 persons about their shopping trips for one week and finds that 63.9% of his sample go to the closest location for food, 51.0% for clothes, 57.1% for household goods, 67.3% for other goods, and 80.6% for services.

In their study of retail shopping and travel in Spokane, Garrison *et al.* (1959) find that the average distance traveled to "low order", or convenience, stores is shorter to small centers than to large and medium sized centers (1.2 miles compared to 1.5 miles). Comparing distances traveled for single purpose trips distances for multi-purpose trips (which they define to include multiple purpose shopping trips, trips combined with work, and trips with shopping purpose combined with social-recreation purposes), they find that the average distance to larger centers is greater for all business types, except variety stores, and that distance increases with multi-purpose stops. For example, the distance of single-purpose trips to the grocery store is .5 miles, compared to 4.1 miles when grocery shopping is a part of a multi-purpose trip.

Bucklin (1967) models the choice of destination for shopping trips for major purchases in the Oakland, CA, area. He challenged the prevailing assumption of the time that distance (or time) and activity level are sufficient determinants of destination choice by including "missing variables:" socio-economic factors, particularly income, the types of product being purchased, and the transit effectiveness to various centers. Regression equations are used to estimate the probability of each consumer shopping at a particular shopping center. Three equations are estimated for three different types of centers: primary, which is defined as downtown Oakland; secondary, which is defined as downtown Berkeley, and major shopping plazas; and tertiary, which includes all remaining shopping areas. Demographic characteristics, "shopping plan"; and

"motivation" variables are included along with the distance to the center.[5] He concludes that although distance is the dominant force in the selection of shopping location, these other factors also play significant roles.

Ben-Akiva (1973) uses data from a 1968 home interview survey in Washington, D. C. to estimate mode and destination choice models of shopping trips. A subset of 114 shopping trips in a single sector of the city is used as the data base along with data on transportation level-of-service characteristics by mode and destination; measured by in- and out-of vehicle travel time and out-of-pocket costs; shopping opportunities by destination, measured by employment; and household income. Models are proposed for mode choice followed by destination choice, destination choice followed by mode choice, and the simultaneous destination-mode choice from the set of alternative combinations of mode and destination. The simultaneous model performs the best; although, the statistical significance of the estimated coefficients are low; the expected relationships are found, with travel time decreasing and employment increasing the probability of a particular choice. Income is also found to be significant.

In a follow-up study, Adler and Ben-Akiva (1976) use the same 1968 Washington DC data set to model mode, frequency of travel, and destination choices for simple, home to shop to home trips. Variables in the model include: travel cost (measured in time, money and convenience); socioeconomic characteristics (including household size, life cycle, occupational status, income, and automobile ownership); attractiveness of destination for a given trip purpose (measured in retail employment and floor area); and modal-specific variables (such as the availability of automobile and transit convenience). The data set includes 403 households that make a simple, home to shop to home, trips with an automobile or by transit and 910 households that make no shopping trips by auto or transit. The estimated model shows that out-of-vehicle travel time has a strong disutility, about twice that of in-vehicle travel time. The attraction factor, the reciprocal of the one way distance, is positive, suggesting that closer destinations are preferable to distant locations. The parameter for automobiles available for non-work trips is positive suggesting that the greater the number of automobiles available, the more likely a household is to travel by auto. Retail employment density is positively related with the decision not to make a trip by vehicle (which in this case may merely reflect the feasibility of making a walk trip). Households with more members are more likely to make more frequent trips, and higher income households are less likely to make trips because they maintain a stock of goods at home.

Using data from 300 residents in six neighborhoods in Buffalo, NY, Recker and Kostyniuk (1978) test the influence of three factors on the individual's choice of grocery store: the individual's attitude toward each store and its operation; accessibility to potential destinations - both actual and perceived; and the number of opportunities available to the individual to exercise the selection of a particular type of store. Five

[5] Shopping plan factors that are tested include: evening shopping and daytime shopping, use of car, bus or other, shopping with children (by whites), and the number of shopping stops (one, three, six or nine). Motivation factors include: price, convenience, advertising, familiarity and apparel.

types of stores are considered: supermarket in shopping plaza, free-standing supermarket, free-standing self-service market, neighborhood market, and discount department store or supermarket. Factor analysis is used to define three factors on which attitudes about stores can be described: quality, convenience and service. A multi-nomial logit model is then estimated for choice of a type of store. Of the factors identified as descriptors of stores, only service is not found to be significant in the choice of store. Quality factors are found to be even more important than the accessibility characteristics, but there is a general trend of increasing value of accessibility relative to quality as the shopping areas become larger.

Later research by Hanson (1980) uses a 35 day travel diary survey of 278 households in Uppsala, Sweden to explore the patterns of spatial diversification associated with single purpose and multi-purpose trips. She finds that 61% of all trips are associated with multi-purpose travel. Furthermore, the choice of destinations for multi-purpose trips is more diverse than for single-purpose trips even if persons making single-purpose trips does not go to the nearest center.

Studies of Travel Patterns and Urban Form

In the last ten years a number of researchers have explored the relationships among travel patterns and urban form. Many of these studies investigate aggregate (regional or zonal) correlations between overall travel and urban form (Friedman *et al.* 1994; Frank and Pivo 1994; Handy 1992; Ewing *et al.* 1994; Ewing 1995). Much recent work has also attempted to compare travel patterns in pre-World War II "traditional," gridded suburbs to post-World War II suburbs (Handy 1992; Friedman *et al.* 1994).

Friedman *et al.* (1994) analyze 1981 data on travel patterns in the San Francisco Bay Area, focusing on trip frequency and mode split for four different types of trip (home-based work, home-based other, work-based, and non-home based other). They first classify the Metropolitan Transportation Commission's 550 traffic analysis zones as "standard suburban" or "traditional". Standard suburban communities include areas that developed since the 1950s with segregated land uses, a well-defined hierarchy of roads, concentrated site/area access at a few points, and relatively little transit service. Traditional communities, which were mostly developed before World War II, have a mixed-use downtown commercial district with significant on-street curbside parking; an interconnecting street grid pattern, and residential neighborhoods in close proximity to nonresidential land uses. Households with very high and very low incomes and households in all neighborhoods that did not meet the definition of either of these two types of communities are eliminated leaving 709 households in standard suburban neighborhoods and 396 households in traditional neighborhoods (out of some 7,000 households in the original sample). Simple aggregate comparisons of the number of daily trips and the mode splits are then calculated. These comparisons show that 14% of home-based non-work trips are made on foot by residents in traditional neighborhoods, compared to 10% in standard suburban neighborhoods. For nonhome-based trips, 17%

are made on foot in traditional neighborhoods compared to 8% in standard suburban neighborhoods.

Frank and Pivo (1994) use the Puget Sound Transportation Panel and other sources of data to explore mode choice (as defined by percentage of single occupant vehicles (SOVs), transit and walking), as a function of urban form and other factors. The urban form factors include: gross population density, gross employment density, and land use mix, with the latter measured by an "entropy index" of the distribution of built square footage among seven land-use categories at the home and destination ends of the trip. Corrclations between the urban form variables and the percent of trips by the three modes are calculated for both work trips and shop trips. Multivariate regression equations are estimated at the census tract level, with percent of trips as the dependent variable and the urban form and average socioeconomic variables, as measured by age of householder, as the independent variables. Land use mix is not found to be significantly correlated with the mode choice variables; although the lack of correlation could be related to the definition of the land use "entropy index" to include types of uses, like entertainment and industrial/manufacturing, that are not usually found in residential neighborhoods. Nonetheless the researchers find walking and transit use to be highly correlated with employment density and population density for shopping trips.

Handy (1992) tests the link between urban form and non-work travel behavior in four neighborhoods in the San Francisco Bay Area, selected with respect to (1) the timing of development (pre-World War II and post-World War II), (2) location with respect to the rest of the region (low accessibility vs. high accessibility both at the regional and local scale) and (3) socio-economic characteristics (held relatively consistent across neighborhoods). She conducts travel surveys in each neighborhood to collect data on grocery shopping trips, other local non-work trips, trips to regional shopping malls, and other regional non-work trips. Urban form in the neighborhood is characterized both qualitatively and quantitatively, and measures of accessibility to supermarkets and other commercial activity are calculated for each households in the survey sample. Analysis of variance techniques are used to test the significance of the variance between neighborhoods versus the variation within neighborhoods for a variety of travel characteristics including frequency, average trip distance, and mode split for supermarket trips and regional mall trips. For most travel characteristics, variation between neighborhoods (by type) is found to be significantly greater than the variation within neighborhoods.

Handy (1992) also compares urban form characteristics and socioeconomic characteristics for four household types using multivariate analysis of variance. For most travel characteristics the between-group variation is greater for neighborhoods than for household types. Linear regression equations are estimated using travel characteristics as the dependent variable and accessibility and socio-economic characteristics as explanatory variables. The explanatory power of most of the equations is low (with an R-square values generally under 0.20), suggesting that many other factors influence travel choice.

Ewing *et al.* (1994) uses measures of residential density, employment density, jobs-housing ratio, percent multifamily dwellings, and accessibility indices for work trips and non-work trips to characterize six communities in Palm Beach County, Florida. The travel data for the six communities is taken from a travel survey for the county and trips for households with very low or very high incomes are eliminated to obtain a sample that is fairly homogeneous with respect to income and household size. Analysis of variance techniques then are used to test the significance of the variation between communities versus the variation within the communities for travel characteristics including mode splits, number of trips, average travel time, and total hours of travel. Only travel times and total hours of travel showed significantly greater variation between than within communities -- a finding that is not surprising since the major variation among the communities is regional accessibility.

Ewing (1995) again uses data from six Palm Beach, Florida communities to forecast daily trip rates, trip times, mode shares and vehicle hours of travel as a function of household variables (persons per household, number of workers, household income, housing type, and number of vehicles per household member), land use variables (gross residential density, gross employment density, jobs-housing balance, and accessibility indices for four trip purposes -- home-based work, home-based shopping, home-based recreation and home-based other trips) and land use variable for places of work (gross employment density in jobs per acre and accessibility index for nonhome-based trips). He finds that trip rates depend primarily upon socioeconomic variables (persons and workers per household and income) and secondarily on land use variables (accessibility for non-home based trips and, for work trips, employment density). Average trip times depends upon land use characteristics. The mode share results have limited explanatory power because of the small number of trips by modes other that the automobile. Ewing concludes from this study that the accessibility to a mix of land uses is the "key to vehicular travel reduction;" accessibility to shopping by itself is relatively unimportant, as is accessibility to workplaces, but "households with good accessibility to shopping, services, schools and other households can efficiently link trips for different purposes into tours (Ewing, 1995: 13)." However, because his data are from low density (all are less than 4 units per acre) communities, his findings appear to measure the effect of regional accessibility rather than the role of neighborhood land use characteristics.

Hanson and Schwab (1987) use 35-day travel diaries of 287 households in Uppsala, Sweden to test the relationship between socio-economic and spatial factors, and travel characteristics. They complete an inventory of the location of establishments to measure the accessibility of each household. They hypothesize that higher accessibility (as measured by the number of retail and service establishments in each 0.5 km ring around the home, up to 5 km from home) would be associated with less automobile use, shorter discretionary travel, less trip complexity (i.e., fewer multi-stop trips), and spatially more restricted travel spaces. Further, they hypothesize that these relationships would be affected by other variables, particularly socio-demographic and role factors, such as gender, work status, and car ownership. Subgroups of individuals are defined based upon work status and gender and auto ownership and separate analysis is

completed for each subgroup. The strongest correlation is for mode use, especially the percent of non-motorized travel, which increases with accessibility for all groups (correlations range from 0.24 to 0.64). The length of shopping and personal business trips is also significantly, negatively correlated to accessibility for all groups (with correlations from -0.40 to -0.65). The relationships between accessibility and trip complexity are found to be insignificant except for women without access to automobiles, who make more short trips.

Conclusions

The literature on how people choose where to shop provides a number of useful insights. Neighborhood studies suggest that the nearest shopping area is a source of neighborhood identity among most ethnic and income groups, and that residents find it desirable to have a variety of goods and services nearby (Banerjee and Baer 1984). The studies that attempt to identify and classify different types of shopping areas illustrate the need to consider the kinds of uses that can be supported by a given population/market base, or alternatively remind us that different uses are likely to serve different population areas. While the specific grouping of uses or hierarchical relationships reported in this work may be contested, the general concept that shopping areas can be described in terms of their relative offerings of convenience and comparison goods will be used here.[6] The concept of different hierarchy of shopping places is consistent with the hierarchy of TODs proposed by the New Urbanists, which suggests the importance of considering a range of shopping areas (by size and type of goods offered) in evaluating associated travel behavior.

Despite the claims of the New Urbanists, a broad range of empirical studies show that people do not necessarily go to the nearest shopping area -- either because they are making complex trip chains or because attractive characteristics of alternative shopping areas overshadow distance or travel time penalties. Similarly, prior research suggests that there are several factors that affect the choice of mode to shopping. These factors include time, cost, and convenience by the various modes. Hence, it is important to consider the extent to which a shopping area attracts residents compared to non-residents of the neighborhood and the extent to which their travel behavior differs.

[6] For purposes of this research, and based upon prior research and observations of the retail landscape in the San Francisco Bay Area, I have defined the types of stores that provide various types of goods and services in Appendix B.

CHAPTER 4. RESEARCH METHODOLOGY

In this chapter the key research questions are reviewed and the methodology used to conduct this research is described. Applying concepts outlined in earlier work on shopping districts and shopping behavior and drawing upon interviews of key informants about neo-traditional design, key research questions were defined. Both the findings of the literature on shopping travel behavior and small focus group discussions about shopping and travel were used to refine the list of issues to be explored. Retail locations in the East Bay of the San Francisco Bay were then observed and five locations were selected for study. Survey instrumcnts and sampling frames were developed and four types of surveys were administered in the selected case study areas: a survey of merchants, an intercept survey of customers, a mailback survey of participants in the intercept surveys, and intercept surveys of customers on the BART platforms at El Cerrito Plaza and Rockridge. The final phase of the research included analysis of response rates, data preparation, and data analysis.

Key Research Questions and Overview of Research Approach

This research considers the pattern of use in retail centers representing the range of types of areas advocated by the New Urbanists. User characteristics, characteristics of travel (trip chaining and frequency of travel), characteristics of shopping (number and types of stops) and the mode choice for travel are specifically considered. In contrast to other recent research that examines the travel patterns of residents of specific neighborhoods (Handy 1992, Ewing *et al.* 1994, Ewing 1995), this research focuses on the nature of activity within the shopping area. Specific questions include: (1) To what extent do these shopping areas attract residents and to what extent are customers drawn from other neighborhoods? (2) How does the complexity of travel, the frequency of stops and types of goods and services used by residents of the neighborhood surrounding the shopping area differ from those of non-residents? (3) What mode of transportation do the residents and non-residents use to get to the shopping areas? (4) What characteristics of shoppers and travel (complexity of travel, frequency of travel) influence mode choice? (5) How do the travel and shopping characteristics and the mode of travel vary among the shopping areas? (6) What level of shopping activity is supported in these shopping areas and can they support lower levels of parking as suggested by the New Urbanists? (7) What factors do customers consider in determining where to shop and how do these attitudes differ between walkers and non-walkers? and (8) What factors lead merchants to locate in various shopping areas and how well do merchants understand their customers?

These questions are addressed through case studies of six shopping areas in the Oakland-Berkeley area of the San Francisco Bay region, each surrounded by medium-high density residential areas (13 to 21 persons/acre) and with households with incomes near the regional median. In each of the shopping areas, users of the center were surveyed about their use patterns, travel choices, and personal and household characteristics. Customers received two types of surveys: (a) a brief intercept survey to

gather information on their travel and shopping activity in the neighborhood on that day; and (b) a mailback survey in which they provide detailed information on household characteristics, attitudes about the shopping area and usual shopping and travel activity in the neighborhood shopping area. Merchants were surveyed to gather information on the characteristics of their businesses, the importance of various locational factors, their satisfaction with their current location, and their customer base and customer transportation to their businesses. In addition, in two of the shopping areas, users of the BART system, were surveyed on the stops they made in the commercial center.

This research was conducted in a series of related steps. Key informant interviews were carried out to identify characteristics of retail believed to be most important in neo-traditional and traditional neighborhoods. Next, field observations of retail in the East Bay were made to identify potential locations for the research. Based upon these observations, five case study areas were selected, all having basic design characteristics deemed important (continuous street walk for most of the shops, a variety of uses, walking distance from neighborhoods) but representing the range of sizes and mix of uses considered to be of interest to the New Urbanists.[1] Small focused discussion groups were used to explore how individuals and households make decisions about where to shop. These discussion groups and findings from other previous studies reviewed in earlier chapters formed the basis for the development and implementation of the customer and merchant surveys. Finally, the data was collected, and analyzed. The main purpose of each of the research elements is outlined in Table 4-1.[2]

[1] One shopping area, the El Cerrito Plaza, lacks the desired characteristics and direct pedestrian access of traditional shopping areas, though it is located within a short walk of medium-high density housing, including apartments, and has nearby bus and rail transit (BART) access. El Cerrito Plaza is included because, it is the type of older inner-suburban shopping center that many urban designers would like to "retrofit" and because it offers a comparison to the Rockridge BART area (Market Hall).

[2] A copy of each of the surveys is contained in Appendix A and a description of the data gathered with the surveys is described in Appendix B.

Table 4-1. Research Elements, Their Scope, and Main Purposes		
Research Element	Scope	Main Purpose
Key Informant Interviews	People Interested in Transportation, Real Estate and Urban Design	• Determine Key Issues of New Urbanism • Clarify Research Questions • Identify Key Characteristics of Walkable Neighborhoods • Identify Candidate Shopping Areas
Field Observations	East Bay, Marin County, Parts of San Francisco	• Identify Characteristics of Retail Landscape • Identify Exemplar Shopping Areas with Key Characteristics
Small Focused Discussion Groups	5 Groups with 2-5 Participants	• Explore How People Determine Where to Shop • Identify Major Issues in Shopping Areas • Identify Issues for Design of Shopper Survey
Field Observations	Case Study Areas	• Identify Patterns of Activity • Identify Node(s) of Activity for Customer Surveys
Merchant Surveys/Interviews	Merchants in Case Study Areas	• Determine Characteristics of Businesses • Identify Factors in and Satisfaction with Location Decision • Determine Characteristics of Shoppers • Review Importance of Transportation Characteristics
Shopper Surveys		
- Intercept Surveys	Customers in Case Study Areas	• Define Who Used Shopping Area (Residents vs. Non-Residents, Age, Ethnicity) • Define How Used (Access Mode, Trip Characteristics, Frequency) • Define Why Used (Number and Type Of Stops)
- Mailback Surveys	Willing Participants in Shopper Intercept Survey	• Gather More Detail on Who Used Shopping Area (Socioeconomic and Demographic Data) • Identify More Detail on Usual Pattern of Activity • Identify Attitudes about Characteristics of Shopping Area
- BART Platform Survey	Two Case Study Areas near BART Stations	• Define Role of Transit in Shopping Area • Define Role of Shopping for Transit Users

Key Informant Interviews

This research began with a series of interview with architects, real estate consultants and developers, urban designers and planners who were interested in or critical of proposals for mixed use, higher density development. The purpose of these interviews was to determine their key design concepts and underlying assumptions and beliefs, and, in particular, to explore ideas about walkable neighborhoods and the relationships between residential and retail uses, to identify and clarify possible research questions, and to identify neighborhoods appropriate for a study of the interactions between retail and residential uses.

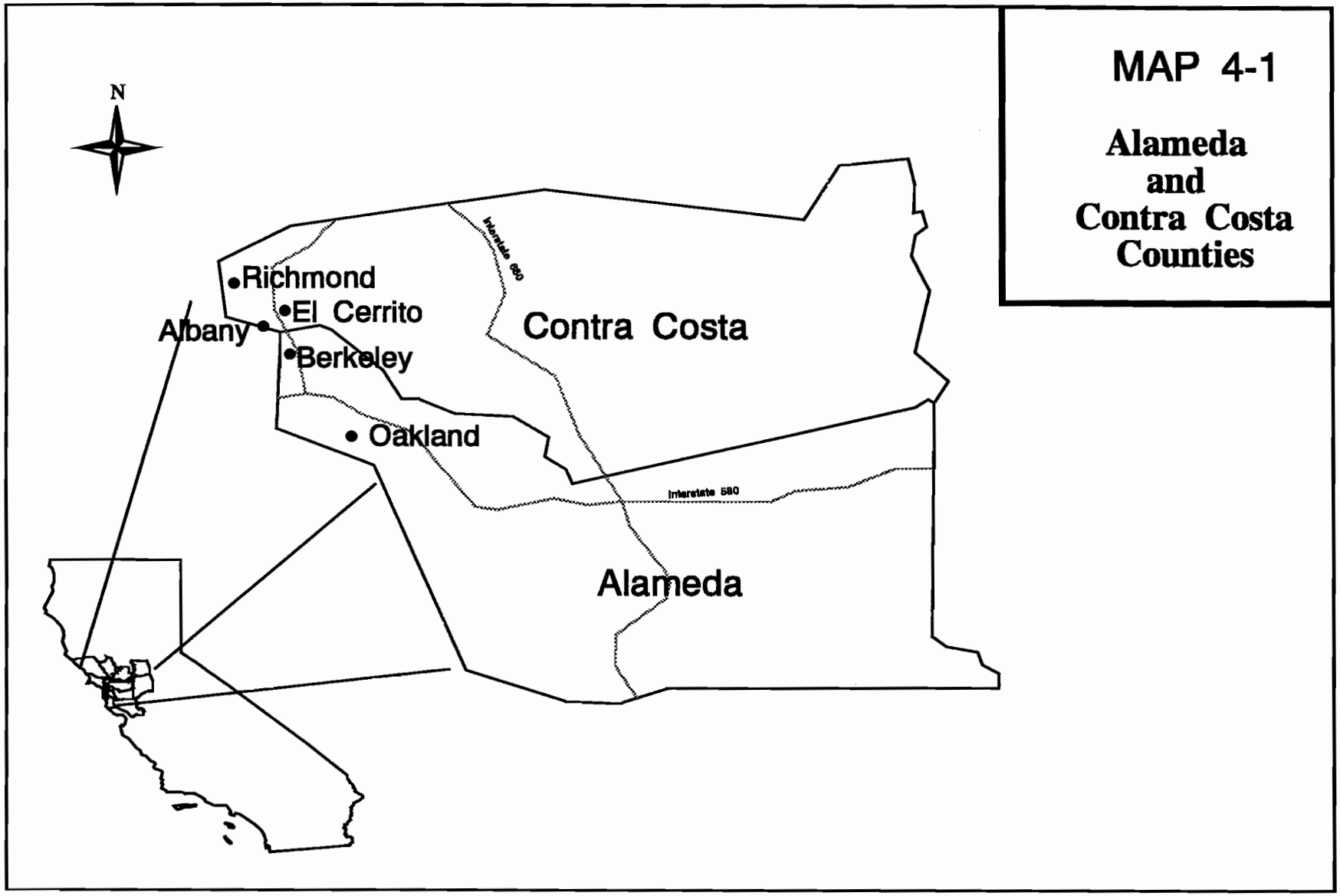
As expected, since both proponents and critics of the New Urbanism were interviewed, there was no consensus on the specific need for retail nor was there agreement on what specific retail would be desirable in a mixed-use development. The major sources of guidance cited by designers planning for retail needs are the publications of the Urban Land Institute. However, those publications assume a different form of retail development than is advocated by the New Urbanists, the planned center. Thus, there is little guidance available to designers on square footage, numbers of establishments, or types of establishments that would meet the convenience needs of customers. Furthermore, there was no consensus about which neighborhoods in the San Francisco Bay Area would be good case study area; this was largely because the key informants were familiar with different areas of the region. However, there was general agreement about the types of neighborhoods that were similar to those advocated by the New Urbanists, or the "neo-traditionalists". These include neighborhoods that were built prior to World War II, contain a mix of retail and residential, are of medium density or higher, and are served by a grid or modified grid street pattern. Since the point of much New Urbanist design is to offer choices that will lure residents away from their autos, I selected neighborhoods with medium-high density rather than those with high or very high density where automobile ownership and use is constrained by the scarcity and/or high cost of parking. The case study neighborhoods have a high enough density that residents have options about their travel but not too high that it would be difficult to own and use an automobile. In addition, I chose residents of at least moderate income primarily to minimize this potential source of neighborhood-to-neighborhood variability.

Field Observations

Because of resource and time constraints, the scope of this research was limited to the East Bay subregion of the San Francisco Bay Area. This is a two-county area, Alameda and Contra Costa Counties, with a 1990 population of 2,082,914 and an area of about 1,500 square miles (see Map 4-1). A series of field observations were made of retail areas in the East Bay Area to consider the relationship between the shopping areas and the surrounding residential areas and to identify potential case study areas.

The older traditional neighborhoods and their retail districts exhibit a pattern similar to that identified by the key informants and similar to the hierarchy described in

central place theory. The pattern of newer suburban areas illustrate the changes in retail in the Bay Area and other major urban areas as described in *Edge Cities* (Garreau 1991) and Urban Land Institute's *The Shopping Center Development Manual* (Casazza and Spinks 1985) . In these more recently developed areas, the retail is segregated from the residential areas and located near the Interstate, especially at the interchanges, the size of grocery stores is larger than in older neighborhoods, and the shopping centers are configured into planned shopping areas with lots of parking in front. About 20 shopping areas were considered in detail. They range from downtown Walnut Creek because of its proximity to a BART station, to several small shopping areas like Colusa Circle in Kensington, Glenview in Oakland, and areas like Solano Avenue and Shattuck Avenue in Berkeley.


MAP 4-1
Alameda
and
Contra Costa
Counties
N
Richmond
El Cerrito
Albany
Berkeley
Oakland
Contra Costa
Alameda
Interstate 680
Interstate 580

Identification of Case Study Areas

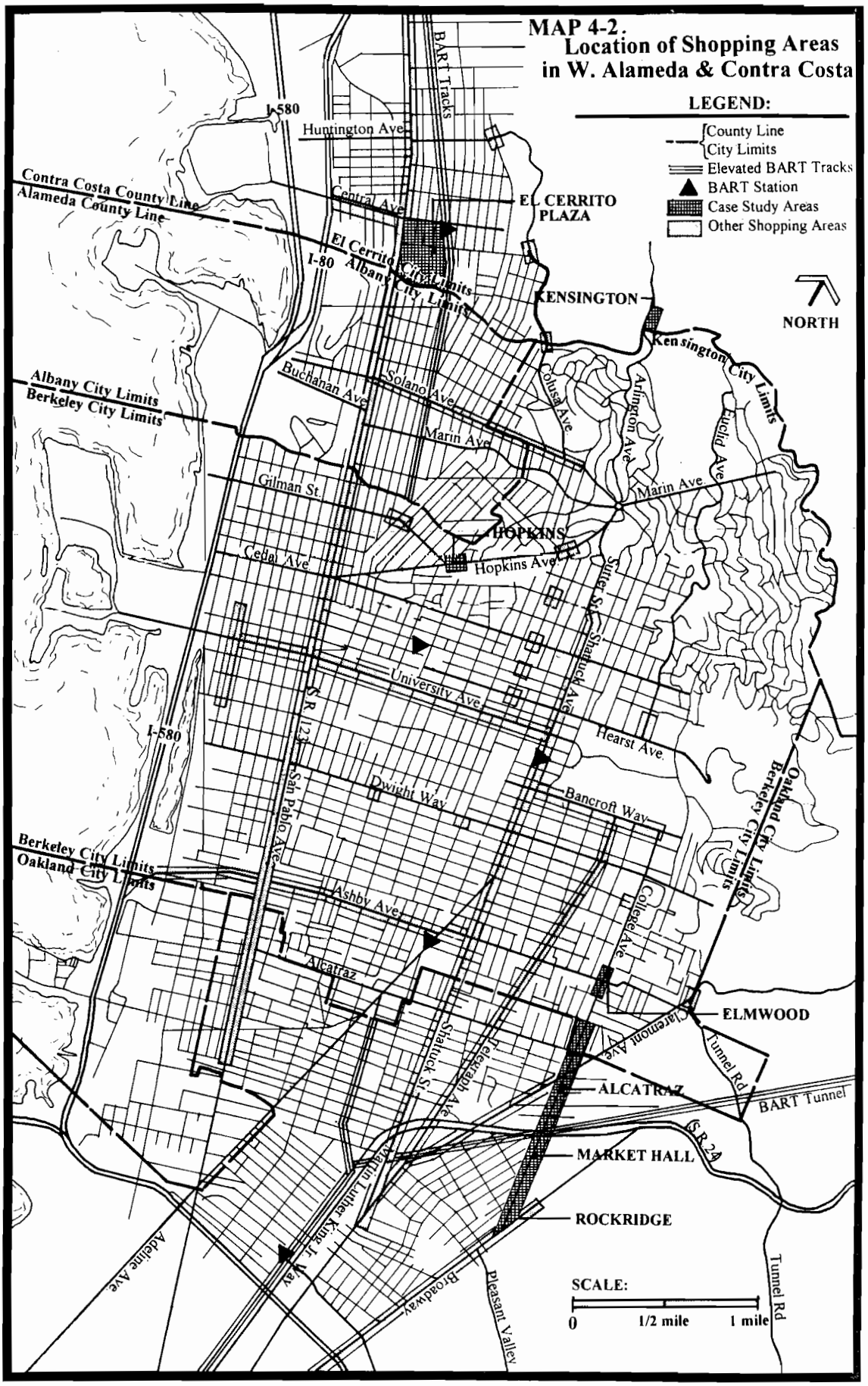
Based upon the interviews with key informants and observations of shopping areas, I selected five shopping areas for case studies. These range from a small convenience node to a larger mall including both convenience and comparison shopping (see Map 4-2). Rockridge was chosen as the first case study, because, despite the lack of consensus on which traditional neighborhoods were most appropriate, it was mentioned the most frequently. Rockridge has a mix of housing types, from mid-rise apartments to moderate density bungalows; good transportation accessibility with an adjacent freeway, the major bus line of the AC Transit system, and a BART station in the middle of the commercial center; and households with medium income. Finally, it has a large number of stores with a variety of convenience and comparison shopping and service opportunities. Two locations were chosen for interviews in Rockridge because of the scale of the shopping area and the different patters of activity in these different subareas.

In choosing other neighborhoods, my goal was to identify shopping areas that have similar density and similar socio-economic and demographic characteristics in the surrounding residential areas. Cases were also chosen to vary in two important characteristics: (1) the scale of the shopping area and associated transportation characteristics; and (2) the type and mix of goods and services. These characteristics were identified as being important in previous work on shopping (see Chapter 3) and are key to the assumptions of the advocates of neo-traditional design. Thus, the additional shopping areas were chosen to include convenience uses other than specialty food, another shopping area adjacent to a BART station, and smaller shopping areas that are less accessible and more neighborhood oriented. Detailed characteristics of the shopping areas are described in Chapter 5. A summary of the characteristics of the shopping area is shown in Table 4-2.

Table 4-2. Selected Characteristics of Case Study Areas

Shopping Area	Number of Stores*	Retail Square Footage*	Types of Uses	Transportation Characteristics (Direct Access to Following Facilities)			
				BART	bus	Freeway	Arterial
Rockridge	198	336,500	Diverse Specialty food Comparison shopping	X	X	X	X#
Elmwood	71	103,650	Convenience Services; Clothing Stores		X		X#
El Cerrito Plaza	44	433,750	Grocery, Drug Store Department Store Convenience Services	X	X	X	X
Hopkins	15	30,000	Specialty Food		moderate		
Kensington	12	19,750	Convenience Services		moderate		X#

Sources: Observations; Merchant Survey: Interview with Dan McNeer (Manager of El Cerrito Plaza)
* - Number of businesses and retail square footage excludes businesses providing services other than convenience services. All businesses supplying convenience and comparison shopping and convenience services are included. Where merchants did not provide it, total square footage is estimated using the average square footage and the footprint of the building. In Rockridge, the calculation of average square footage excludes Safeway and Lucky's, which are significantly larger than other stores. Square footage for El Cerrito Plaza represents the actual retail square footage.
# - These streets are commute arterials with only two lanes of traffic. In contrast, the arterial adjacent to El Cerrito Plaza is a four-lane state highway.


MAP 4-2.
Location of Shopping Areas
in W. Alameda & Contra Costa
LEGEND:
County Line
City Limits
Elevated BART Tracks
BART Station
Case Study Areas
Other Shopping Areas
NORTH
BART Tracks
I-580
Huntington Ave
Contra Costa County Line
Alameda County Line
Central Ave
EL CERRITO PLAZA
El Cerrito City Limits
I-80
Albany City Limits
KENSINGTON
Kensington City Limits
Albany City Limits
Berkeley City Limits
Buchanan Ave
Solano Ave
Marin Ave
Colusa Ave
Arlington Ave
Euclid Ave
Gilman St.
HOPKINS
Hopkins Ave
Cedar Ave
Shattuck Ave
University Ave
I-580
SR 123
San Pablo Ave
Hearst Ave
Dwight Way
Bancroft Way
Oakland City Limits
Berkeley City Limits
Oakland City Limits
Ashby Ave
College Ave
Alcatraz
ELMWOOD
Claremont Ave
Tunnel Rd
ALCATRAZ
BART Tunnel
Shattuck Ave
Telegraph Ave
SR 24
MARKET HALL
Caldecott Tunnel
Kaiser Hwy
ROCKRIDGE
Adeline Ave
Broadway
Pleasant Valley
Tunnel Rd
SCALE:
0
1/2 mile
1 mile

Elmwood was chosen because it is located on a commute arterial with good bus accessibility, but is neither located near a BART station nor adjacent to a freeway. It has a mix of convenience services and comparison shopping but it has no major grocery store and only a few specialty food stores. Also, it is zoned to control the mix of uses in the commercial area to maintain convenience uses.[3]

Because of Rockridge's location adjacent to a BART station, another shopping area located near a BART station, but with different land use characteristics, was chosen. El Cerrito Plaza, an early regional shopping mall with a department store, a grocery store, a drug store and a mixture of convenience services and comparison shopping was chosen as the second BART-served area. It is also located near a freeway and a major arterial and is surrounded by residential areas on each side of the parking lot.

The last two centers were chosen because they have a smaller scale of commercial development with fewer uses and less transportation accessibility. These shopping areas are expected to serve the residents of the surrounding neighborhood with convenience goods and services. The Hopkins Avenue shopping area was chosen because it has the same types of specialty food shops as the two centers in Rockridge. Kensington was chosen because it has predominantly convenience services and a market and has even less transportation access than Hopkins.[4]

Observations of Case Study Areas

Several observations were made of each case study area. These provided two sets of information for use in the surveys and in the interpretation of the results: (1) mapping of business, transportation and other neighborhood locations; and (2) identification of the general level and pattern of activity. The location of businesses, the types of buildings, the location of parking, bus stops and other amenities were mapped and node(s) of activity and characteristics of shoppers (age, gender, presence of children, type of use (active shopping vs. strolling)) were noted. Additional information about each shopping area was gathered through unstructured interviews with the merchants after I had completed the structured survey.

Based upon these observations, I decided to complete the intercept surveys on weekday afternoons and Saturdays. The location for customer intercept surveys was

[3] Elmwood was also chosen based upon the results of interviews with key informants and surveys with merchants and consumers in Rockridge; merchants and customers suggested that Elmwood has a better mix of uses than Rockridge.

[4] However, neither of these shopping areas can be seen as merely serving the needs of the local residents. Hopkins is located on a street with mixed automobile access (it has an important local bus route and a major auto route from North Berkeley to the freeway, but barriers bar direct auto access from residential streets to the south and the BART station), but Monterey Market is a well-established business that attracts customers to Hopkins Avenue from throughout the Berkeley area. Kensington is located in the hills in a clearly defined neighborhood, but it is also located on a major commute arterial for people going north from Berkeley to the El Cerrito, El Sobrante and Richmond Hills.

determined based upon the node(s) of activity in each shopping area. The observations and interviews with merchants led me to the conclusion that the Rockridge shopping area has two distinct centers of activity: one centered around the stores in the two blocks south of the Rockridge BART station, and the other located along the set of small specialty food shops across from the Safeway at 63rd and College. The treatment of these two locations in Rockridge as separate shopping areas also provides the opportunity to assess the role of the Rockridge BART station. The number of customers who use BART at each location, three-eighths mile apart, is compared to determine the localized the impact of the BART station.[5]

Small Focused Group Discussions

To further refine my hypothesis about factors important to shoppers, I brought together five groups of people to talk about their shopping patterns in their neighborhood. These groups varied in size from three to five people and each group discussion lasted between one and two hours. The purpose of these discussion groups was to understand how people make decisions about where and when to shop, especially for items that are needed on a regular basis. In addition, these discussion groups were used to identify what data were most needed.

Based upon these discussion groups and literature on interviewing, a two step process of interviews of customers of the shopping areas was developed: (1) an intercept survey that gathered a limited amount of information, which could be completed relatively quickly, on actual behavior on the day of the interview; and (2) a mailback survey gather information on the "usual" patterns of shopping, attitudes about the shopping area and socio-economic and demographic information about customers. In addition, an intercept survey of users of the Bay Area Rapid Transit (BART), developed by Gourley (1994) was used to assess whether BART users stopped in the shopping area.

Overview of Survey Instruments

Three surveys were completed in each case study area: (1) a survey of merchants which explores how they view their market area and the extent to which they conceive of their business as oriented to the surrounding neighborhood; (2) an intercept survey of customers in the shopping area; and (3) a mailback survey subsample of people completing the intercept surveys. In addition, in two shopping areas, Rockridge and El Cerrito Plaza, users of the adjacent BART station were interviewed about their use of the shopping area. A copy of each of these surveys is included in Appendix A.

[5] Surveys were not administered at a similar distance from BART to the south of the BART station because the overall level of activity along the street drops significantly about two blocks south of the BART station and the retail land uses become more intermittent.

Survey of Merchants

The survey of merchants gathered information on each business, its customers, the owner/manager's assessment of the importance of locational factors, their satisfaction with the location of the business, and their assessment of the customer base and their travel patterns. Based upon pretests,[6] decisions were made about which businesses to include in the survey. I decided to survey all businesses providing services to customers on a walk-in basis (e.g., retail stores, convenience services) but not to include offices that only accept customers through previously scheduled appointments (e.g., chiropractors, doctors). Businesses that took customers on with appointments or on a walk-in basis, such as, hairdressers, were included. Thus, providers of certain services, most of which are commonly defined as "other" services, are excluded.

The survey was usually administered in person to one of three people in the following order of priority: (1) the owner; (2) the manager, or (3) a store employee who usually works with customers. The initial contact was made in person and follow-up telephone calls were made if the owner or manager was not available when the interviewer was in the neighborhood. Three attempts were made to make contact the owner or manager before a business was excluded from the sample. Table 4-3 summarizes the response rates to this survey. The level of participation among merchants was generally high, with 80% or more participating in each shopping area.

Table 4-3. Response Rates for Survey of Merchants

Shopping Area	Number of Businesses	Businesses Not Surveyed*	Businesses Contacted (a)	Surveys Completed (b)	Response Rate (%)# (b/a)
Rockridge - Market Hall	34	2	33	27	81.8
Rockridge - Alcatraz	33	1	32	29	90.6
Rest of Rockridge	175	43	131	104	79.4
Elmwood	87	10	77	68	88.3
El Cerrito	56	4	52	46	88.5
Hopkins	23	4	19	15	78.9
Kensington	23	8	15	12	80.0
Overall	431	72	359	301	83.8

Sources: Merchant Survey; Observations

* - Businesses that provided service through previously scheduled appointments are excluded from the survey. Most of these businesses are categorized as providers of other services.

\# Response rate reflected the surveys completed as compared to the number of businesses contacted (b/a).

[6] The survey was pretested on 20 merchants on Telegraph Avenue in Berkeley that were chosen to include a diversity of types of businesses. Revisions to the survey were made based upon these pretests.

Customer Surveys

Survey information on customers was gathered in a two-stage process: intercept survey and mailback surveys. The **intercept survey of customers** identifies the pattern of activity of customers in each of the shopping areas. Customers were asked where they were before coming to the shopping area, where they were planning to go after, the frequency of trips to the shopping area, and where they lived. Thus, the survey is a sample of customers who used the shopping area rather than a sample of the residents of the neighborhood. Customers who participated in the intercept surveys were asked if they were willing to fill out and return a **mailback survey**. The mailback survey includes more detailed questions about their usual pattern of shopping activity, attitudes about the shopping area, and socio-economic and demographic information.[7]

The intercept surveys were conducted as a simple random sample of customers at the major nodes of activity in each of the shopping areas on weekday afternoons, excluding Mondays, and Saturdays from mid-April through mid-June 1994.[8] Most surveys were completed within two minutes. Surveys were only conducted on days on which it was not raining. On weekdays, surveys were conducted between 2:00 p.m. and 6:00 p.m. and on Saturdays, surveys were conducted from 9:30 a.m. to 3:30 p.m. Pedestrians were approached on the sidewalk, the survey was described, and the person approached was asked if he or she was willing to participate.[9] If so, he or she was asked up to 15 questions. Personal characteristics (age, gender, ethnicity, whether they were accompanied by children and other outstanding characteristics) were recorded separately by the interviewer. Usually one adult was interviewed, but if the person approached was accompanied by another person and both people wished to answer the survey, two surveys were recorded. A total of 10 such pairs are included in the sample of 997 respondents. At the end of the intercept survey, the respondent was asked if he or she

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[7] Each of these surveys was pretested separately first on classmates at the University of California at Berkeley, then with customers on Telegraph Avenue.

[8] The surveys were conducted by one interviewer at a time and hence limited to one location on each date and time. Because the single interviewer could be at only one location at a given time, there was some risk that the sample is not fully representative of all shoppers in the area. To minimize this potential bias, I followed the recommended procedure for intercept surveys: I selected the central location(s) or node(s) of activity as the place to interview. In three neighborhoods, Rockridge-Alcatraz, Rockridge-Market Hall, and Hopkins the node of activity is clearly identifiable. In Kensington, the node of activity is different on Saturdays than on weekdays with it being located in front of Young's Market on weekdays and in front of the Arlington Pharmacy on Saturday until 1 p.m. when the pharmacy closed. In Elmwood, the pattern of activity varies, with no single node of activity but a generally high level of activity; hence a central location was selected. In El Cerrito Plaza, there is no single center of activity; instead. three locations receiving the most activity: Lucky's, Long's and Emporium Capwell. Interviews were conducted to capture all three nodes, with a higher share conducted in front of the Lucky's store and a smaller percentage in front of Long's and between Long's and the Emporium. The sample is suggestive of the overall level and type of activity in each shopping area.

[9] While intercept surveys are effective at capturing who can be found at a specific place at a specific time, it is more difficult to control sample characteristics than in a telephone or mailback survey. It is also more difficult to characterize who refuses to participate in the survey.

was willing to take home and fill out a mailback survey.[10] When an interview was completed, the next person(s) to walk past the interviewer was approached. Since several people could have walked past during the interview, the sample amounts to a random opportunity sample of the population of shoppers walking past a specific point in the shopping area. However, based on counts done during the same time periods and weather conditions at each location, it is estimated that the sample rates vary from 2% to 13% of customers in a shopping area.

If someone refused to participate in the survey, their gender, approximate age, ethnicity, whether they were accompanied by children and other notable characteristics (including the fact that they had previously been interviewed) were recorded on a separate sheet and the next person to walk past was approached. The characteristics of non-participants are described in Appendix C. The only difference between participants and non-participants is that people who did not speak English well were less likely to participate.

Four interviewers including the author conducted these surveys.[11] In each shopping area, enough customers were interviewed to distribute approximately 65 mailback surveys each during each scheduled interview period (weekday afternoons and Saturdays). In order to distribute about 65 surveys in each of these areas on each of the scheduled interview periods (weekday afternoons and Saturdays) between 75 and 100 people were interviewed. A total of 75 mailback surveys were distributed for weekday afternoons and Saturdays at the El Cerrito Plaza because we expected a lower rate of return of the mailback surveys.[12]

Table 4-4 shows the response rates at the various levels of the customer survey process. The willingness of pedestrians to participate in the survey was generally high. Between 55% and 75% of pedestrians in each shopping areas, or about 63% overall, who were approached agreed to answer the survey. The highest rates of participation occurred in the two small centers, Kensington and Hopkins.

All shopping areas have similar rates of intercept survey respondents agreeing to take the mailback surveys, about 80%. The rate at which the mailback surveys were returned varied from about 50% in Rockridge - Market Hall and El Cerrito Plaza to about 68% in Hopkins Avenue and Rockridge - Alcatraz. The overall response rates for the mailback survey, as a percentage of persons approached, was about 30%; this varied from between 23% and 26% in Rockridge - Market Hall, El Cerrito Plaza, and Elmwood to between 35% and 39% in Rockridge - Alcatraz, Hopkins, and Kensington. The only significant bias in the response rates appears to be that people who lived closer and went to a shopping area more frequently were more likely to agree to take, and eventually

[10] As the identity of the respondent was not recorded, there was no follow-up on the mailback surveys.
[11] All interviewers were women. Two interviewers were Caucasian, and two were Asian-Americans.
[12] In El Cerrito Plaza, a marketing research firm, Field Management, has been doing marketing research for over a decade. Thus, we expected, and achieved a lower rate of response from customers there than in most other shopping areas.

return, a mailback survey. A detailed comparison of customers who responded to the intercept survey and the mailback survey is presented in Appendix C.

Table 4-4. Response Rate at Various Levels in the Customer Survey Process*

	Approached (a)	Completed Intercept Survey		Took Mailback Survey		Returned Mailback		Overall Response Rate	Sampling Rate£
		Number (b)	% (b/a)	Number (c)	% (c/b)	Number (d)	% (d/c)	% (d/a)	%
Rockridge - Market Hall									
Weekdays	119*	81	68.1	64	79.0	30	46.8	25.2	2.8
Saturdays	176	96	54.5	69	72.8	38#	55.1	21.6	2.3
Total	295	177	60.0	133	75.1	68	51.1	23.1	
Rockridge - Alcatraz									
Weekdays	143	81	56.6	62	76.5	44	71.0	30.8	3.0
Saturdays	104	75	72.1	60	80.0	39	65.0	37.5	1.9
Total	247	156	63.2	122	78.2	83	68.0	33.6	
Elmwood									
Weekdays	127	79	62.2	66	83.5	36	54.5	28.3	3.8
Saturdays	142	84	59.2	65	77.4	34	52.3	23.9	2.6
Total	269	163	60.6	131	80.3	70	53.4	26.0	
El Cerrito Plaza									
Weekdays	172§	87	50.6	75	86.2	36#	48.0	21.0	2.8
Saturdays	149*	93	62.4	74	79.6	39	52.7	26.2	2.8
Total	321	180	56.1	149	82.2	75	50.5	23.4	
Hopkins Avenue									
Weekdays	115	79	68.7	65	82.2	45	69.2	39.1	8.6
Saturdays	125	85	68.0	66	77.6	44	66.7	35.2	5.2
Total	240	164	68.3	131	79.8	89	67.9	37.1	
Kensington									
Weekdays	114*	79	69.3	65	82.2	42	64.6	36.8	13.3
Saturdays	99	77	77.8	66	86.8	41	62.1	41.4	9.2
Total	213	157	73.7	131	83.4	83	63.3	39.0	
Totals - All Shopping Areas									
Weekdays	790*	487	61.6	399	81.9	233	58.4	29.5	
Saturdays	795*	510	64.2	400	78.4	235	58.8	29.6	
Totals	1585	997	62.9	799	80.1	468	58.6	29.5	

Source: Customer Intercept Survey; Customer Mailback Survey

Note: The percentages, except the overall response rate, indicate the response rate compared to the previous step. The overall response rate compares the number of customers returning the mailback survey to the number approached to do the survey.

* Rate of refusal is estimated based on rate of refusal for other times in same shopping area when interviewer did not record who refused to participate.

- Three mailback surveys are excluded from the dataset. Two surveys were deleted because information on residence was inconsistent with what was gathered during the intercept survey (one in Rockridge - Market Hall and the other in El Cerrito Plaza). An additional one was deleted in El Cerrito Plaza because only the address portion of the survey was returned.

§ - Includes one day in which 45 people refused to participate (and 24 agreed to participate).

£ - Sampling rate is calculated by dividing the number of customers interviewed per hour into the observed number of pedestrians during an average hour of operation.

Survey of BART Customers

A survey of BART customers similar to the intercept survey of customers was administered on the BART platform of the Rockridge and El Cerrito Plaza stations. The purpose of this survey was to identify how BART customers use the area around the station. BART users were asked how they got to the station, stops they make around the station, whether they live in the neighborhood, and socio-economic and demographic information.[13] The survey was administered during the morning and evening rush hours at each station on three mornings and afternoons at the El Cerrito BART station and on three mornings and two afternoons at the Rockridge station.

The sampling method was slightly different for each station because of the configuration of the station. At the Rockridge station, a single platform serves passengers going in either direction. Thus, the interviewer did not know when she approached a customer which direction the customer was going. At the El Cerrito Plaza Station, the northbound passengers were on one platform while all other passengers were on another platform. Due to the small volume of northbound passengers at El Cerrito Plaza, they are not included in the survey. The refusal rate for this survey was relatively low (about 3%) and generally limited to people who could not understand English and people who are not from the San Francisco Bay Area.

Survey Coding and Analysis Approach

Survey data from each of the four surveys were entered into an Excel spreadsheet that was used in SPSS for statistical analysis. For interval data (e.g., the number of stops at a type of land use), one of two statistical tests was used: the paired sample t-test and the Scheffé method of multiple comparisons. The paired t-test is used to compare the means of two independent samples to determine if the sample means are different (see Agresti and Agresti, 1979). When the means of several groups are compared, the Scheffé method of multiple comparisons is used. This statistical technique is a post hoc comparison that is used with the one-way analysis of variance (See Agresti and Agresti, 1979: 429-32). Finally, for categorical data, the chi-squared test was used to determine if there are differences between groups. There is no clear alternative to the chi-square test, for categorical data (Siegel and Castellan 1988).[14] The chi-square goodness of fit test should be used with caution on small samples, however; proper use of the chi-square test requires that the expected frequencies in each cell are not too small. Some statisticians recommend that in the cross-tabulation table no more than 25% of the cells have an expected frequency of less than 5 and no cell should have an expected frequency of less than one (Agresti and Agresti 1979: 210); when this test can not be met, one or more

[13] Three interviewers, including the author, conducted the interviews at El Cerrito Plaza and one interviewer conducted all interviews at Rockridge.

[14] Data analyzed using chi-squared can not easily be weighted. Thus, analysis using categorical data will be presented as analysis of respondents rather than as the sample of customers. Interval data will be weighted using the sampling rates indicated in Table 4-4.

categories were collapsed to complete the comparison. Appendix B outlines the variables from each survey and the processing of the data from the surveys.

In addition to the data analyses and comparison described above, a FORTRAN-based logit program was used for the development of a simple binomial choice model of walking versus not walking (Harvey 1987). Appendix D describes the variables used in the logit model.

CHAPTER 5. DESCRIPTION OF CASE STUDY AREAS

Six shopping areas surrounded by medium-density, medium-income residential areas were chosen as case studies in this research. These cases provide examples of the range of shopping districts types advocated by the New Urbanists; they vary along two major dimensions: scale of the center, and mix of businesses. The shopping areas are similar with regard to other characteristics, such as residential density, income levels, and ethnic makeup to minimize the variance due to other causes.[1] In this chapter, the six shopping areas are described based upon the following characteristics: (1) land use characteristics (residential density of surrounding neighborhoods, zoning); (2) transportation characteristics (transportation corridors, traffic volumes, availability of parking, transit service); and (3) characteristics of businesses (number and type of stores, square footage, number of employees, type of ownership, years in business). At the conclusion of the chapter, the six shopping areas are compared to each other based upon these characteristics and the characteristics of housing and residents of the surrounding neighborhood (household structure and size, automobile ownership rates, income, ethnicity, education, and housing ownership and type).

Rockridge

Rockridge is the largest of the shopping areas. It contains about 242 businesses in first floor locations and extends for about 15 blocks along College Avenue from the border of Berkeley into Oakland (see Map 5-1). Map 5-2 shows the location of various land use in all of Rockridge. Rockridge is among the more easily recognized neighborhoods in the City of Oakland. It has historically been a regional center for furniture and antiques. The mix of uses in Rockridge is diverse, with a range of convenience, comparison and specialty shops, and offices.

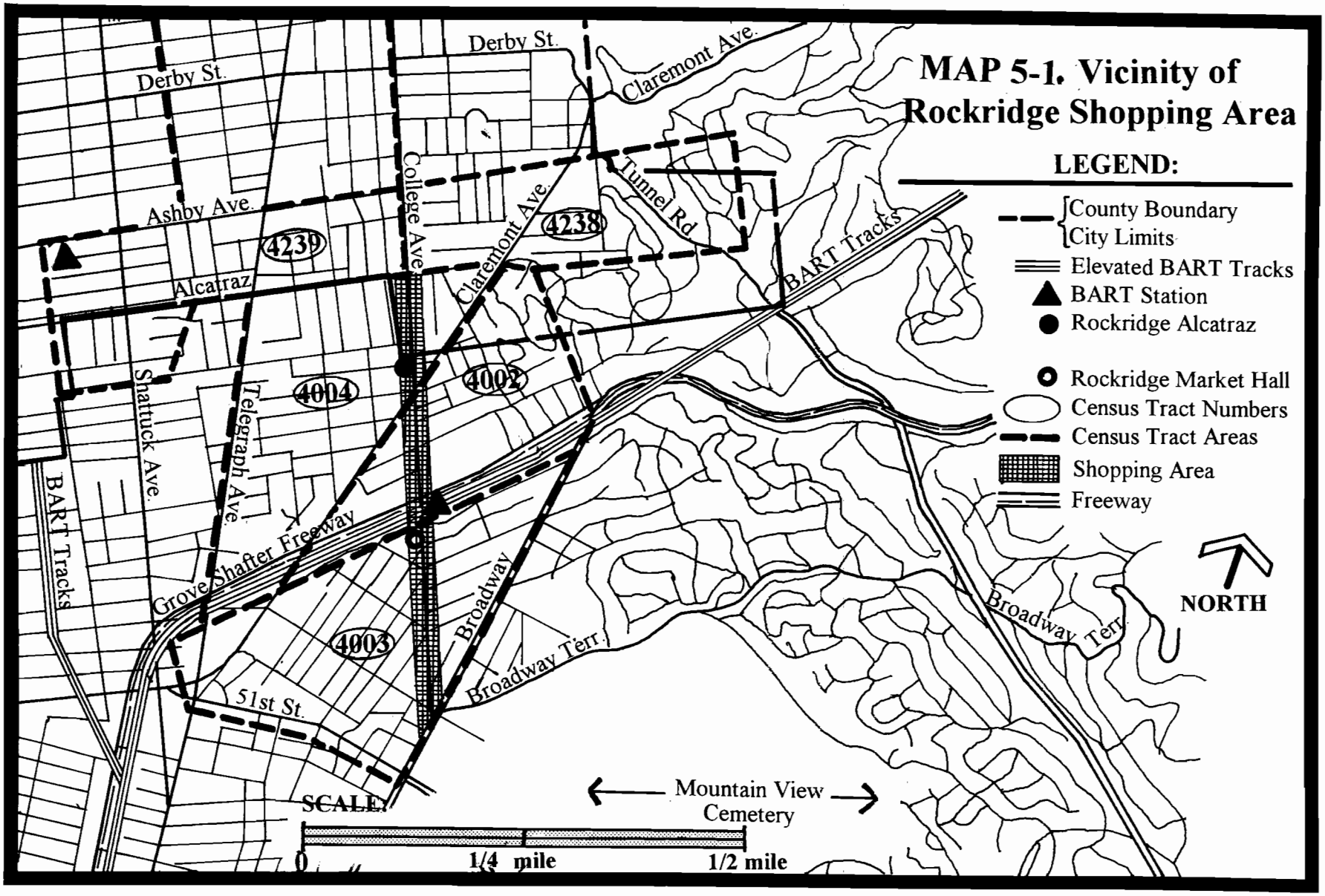
Two subareas of Rockridge are studied in detail: (1) the area around Market Hall, a European-style food market located across from the Rockridge BART station, and (2) the area near Alcatraz Avenue, across from a Safeway grocery store and in front of a mix of small stores, which is located about 4-5 blocks north of the BART station. These two locations are about one-half mile apart.

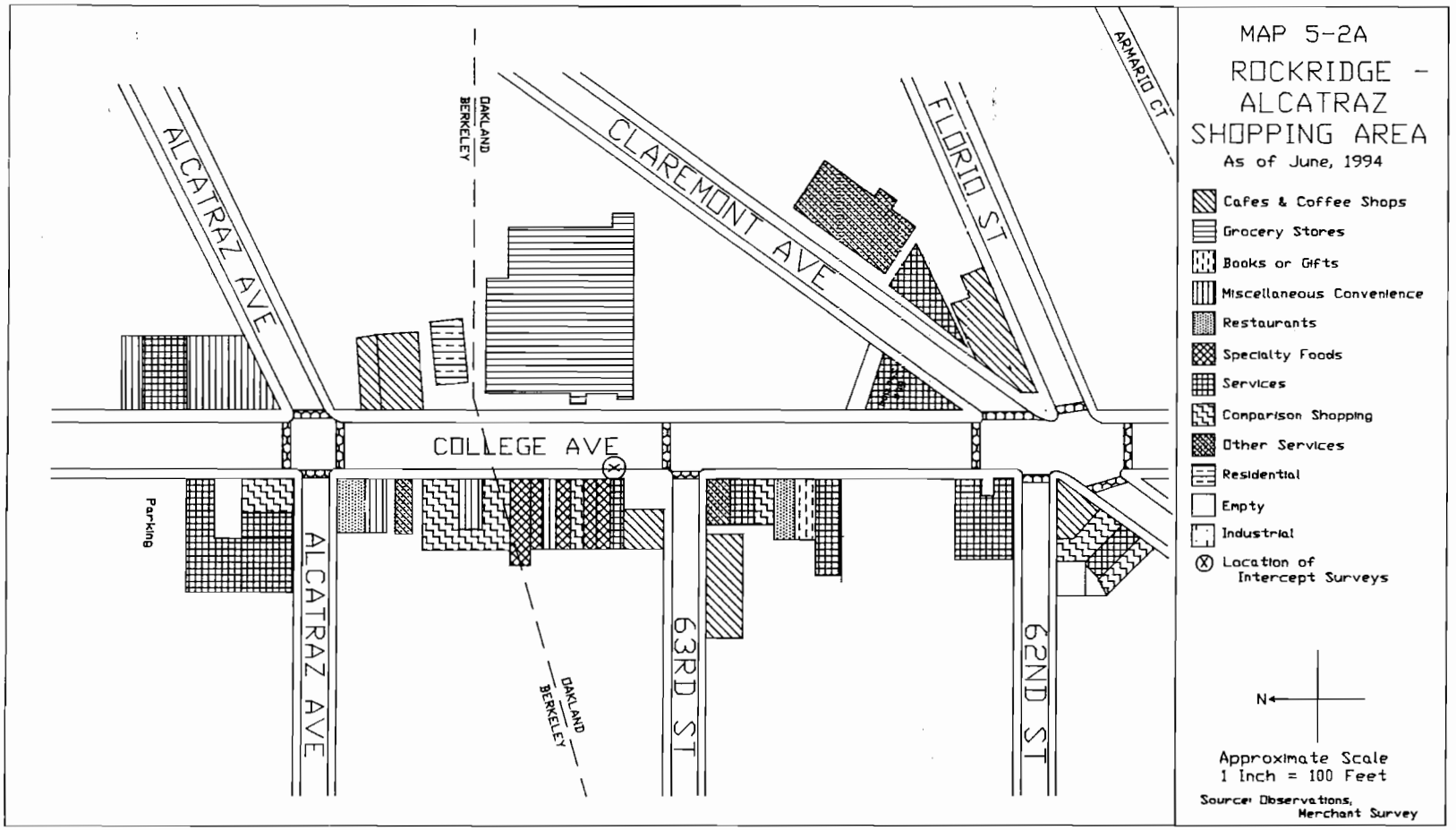
Land Use Characteristics

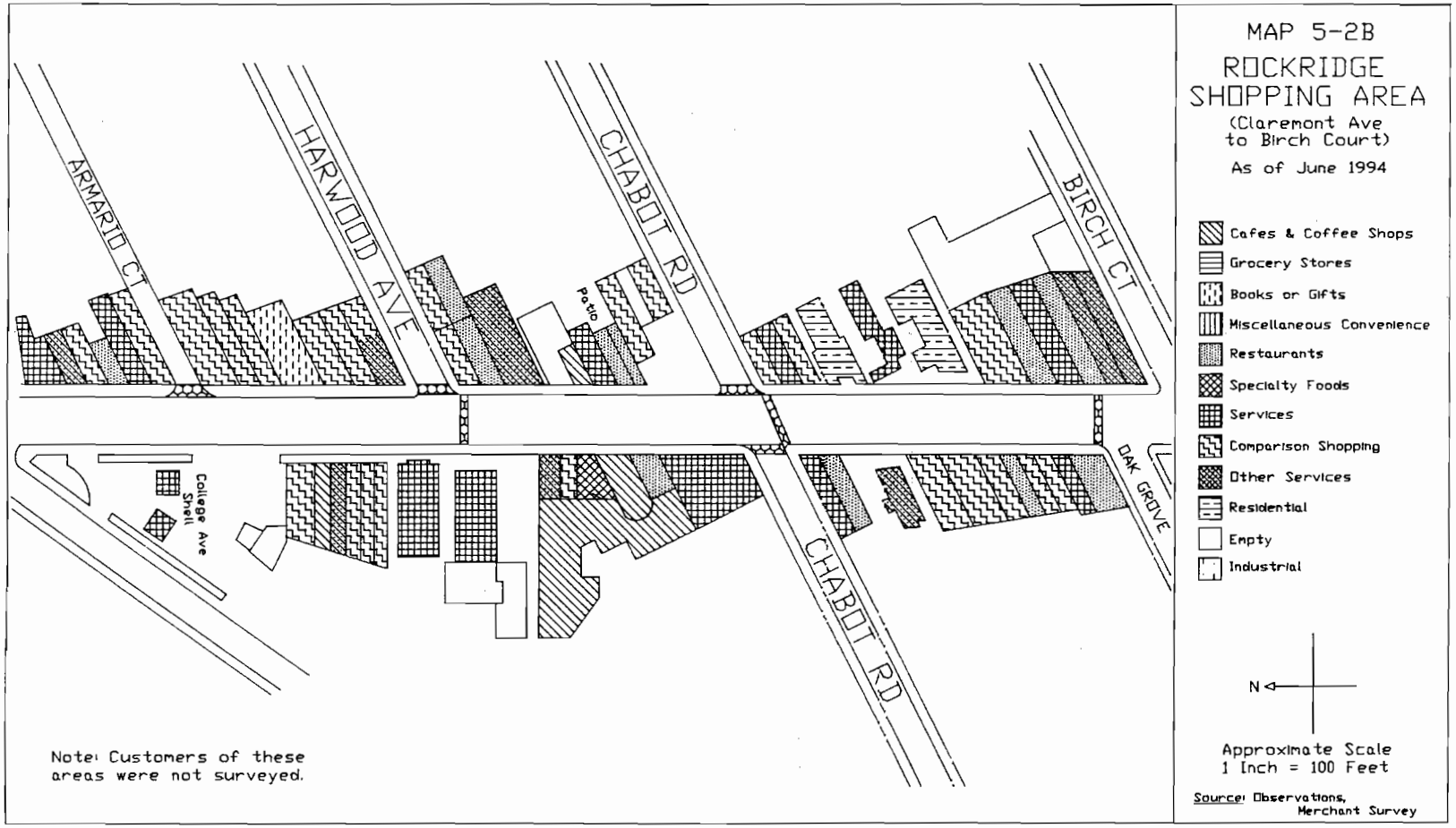
The Rockridge area includes a diverse mix of residential and commercial types. The zoning in the neighborhood reflects that diversity with the commercial area designated as C-30 district thoroughfare commercial, which allows both commercial and residential uses and applies to retail establishments along major thoroughfares like College Avenue. The residential zoning, R-35 - Special One-Family Residential Zone, allows a mixture of single- and two-family dwellings at allowable densities of about 9

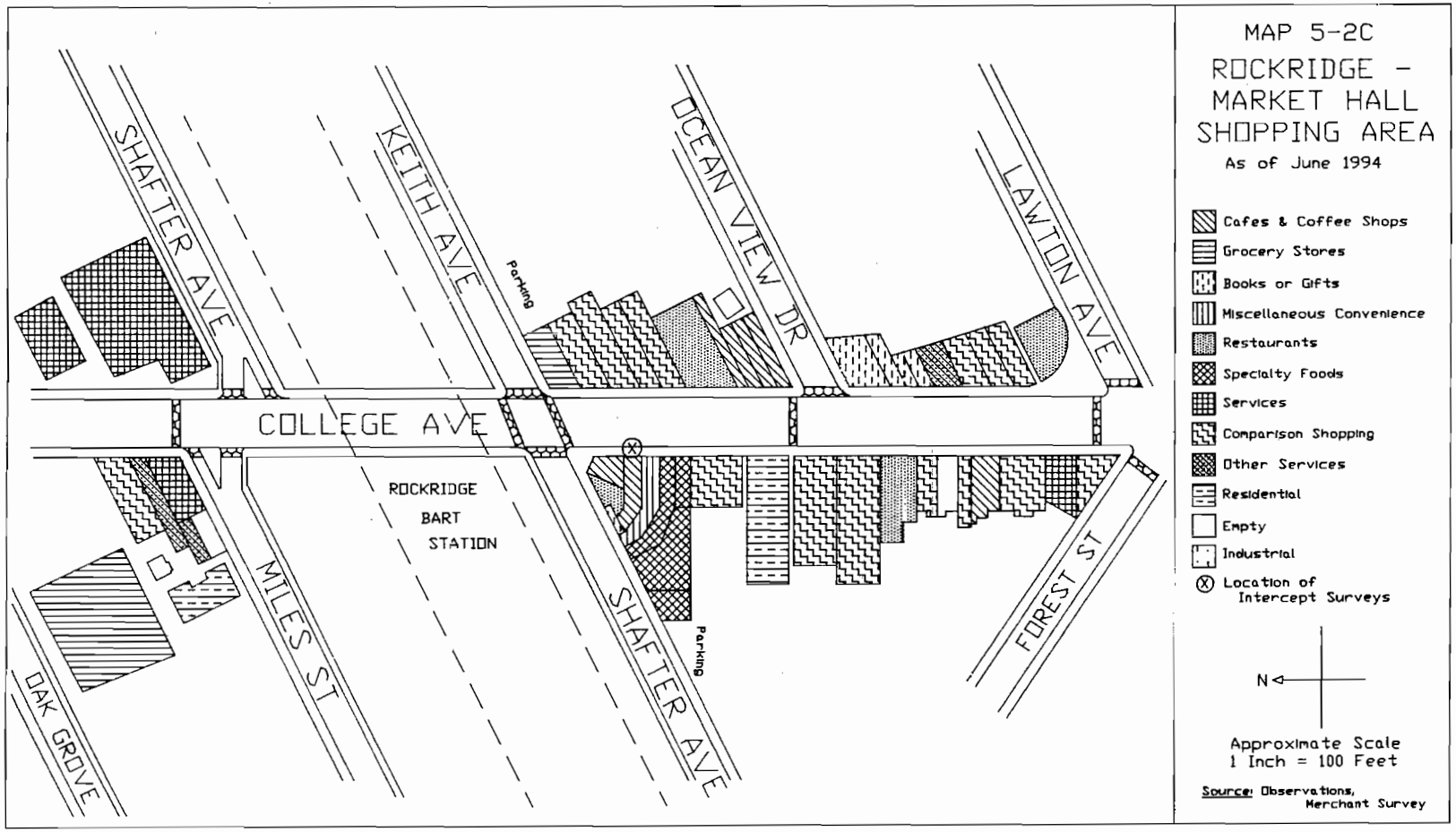
[1] It was not practical nor was it necessary to provide an exact detailed match along these lines, as the focus of this research is on the customers of these shopping areas and not specifically on the residents of the areas surrounding the shopping area.

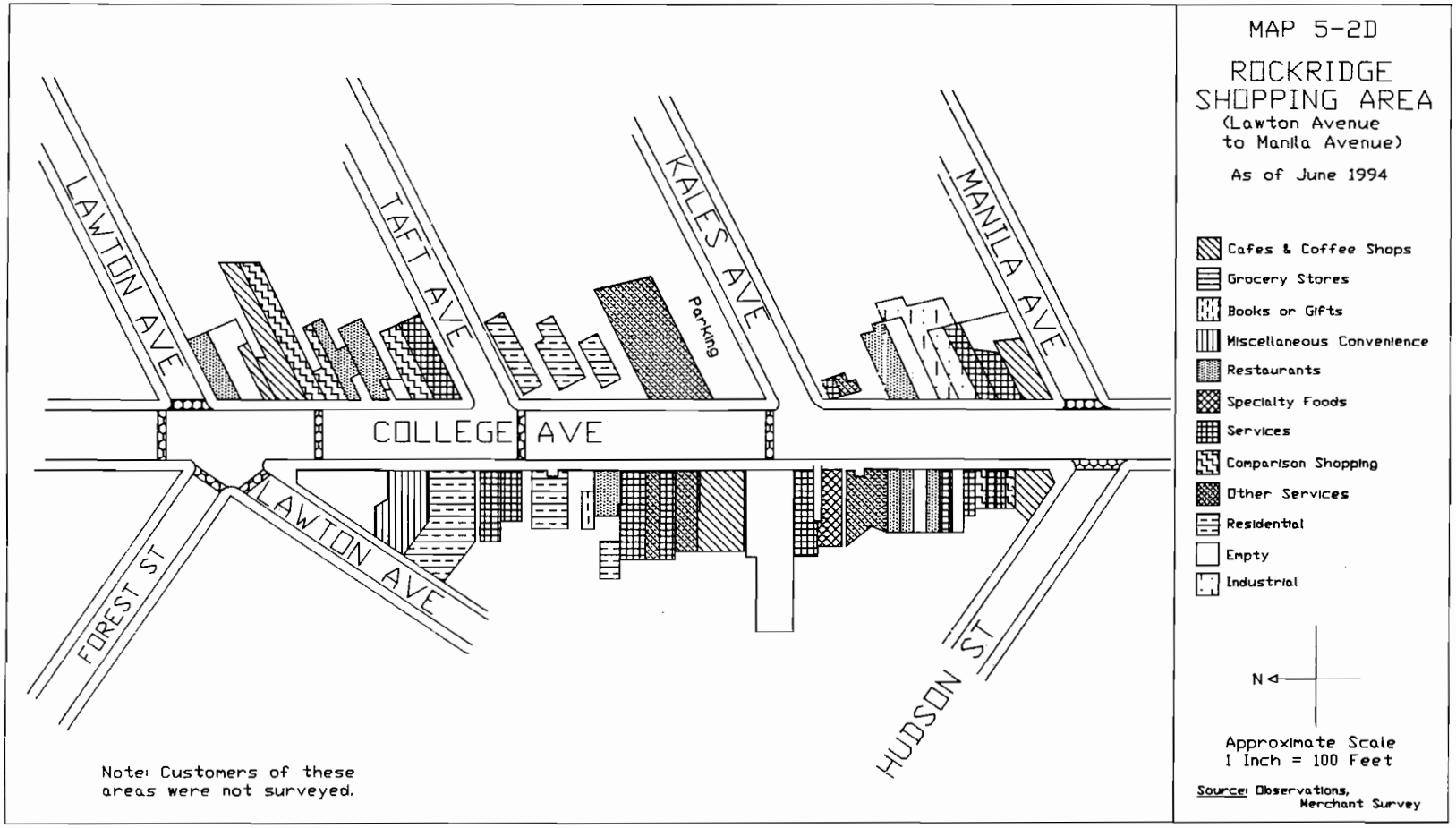
units per acre (Brady and Associates 1992; City of Oakland 1965[1994]). The residential density in 1990 was about 8.7 units per acre and 18 persons per acre.

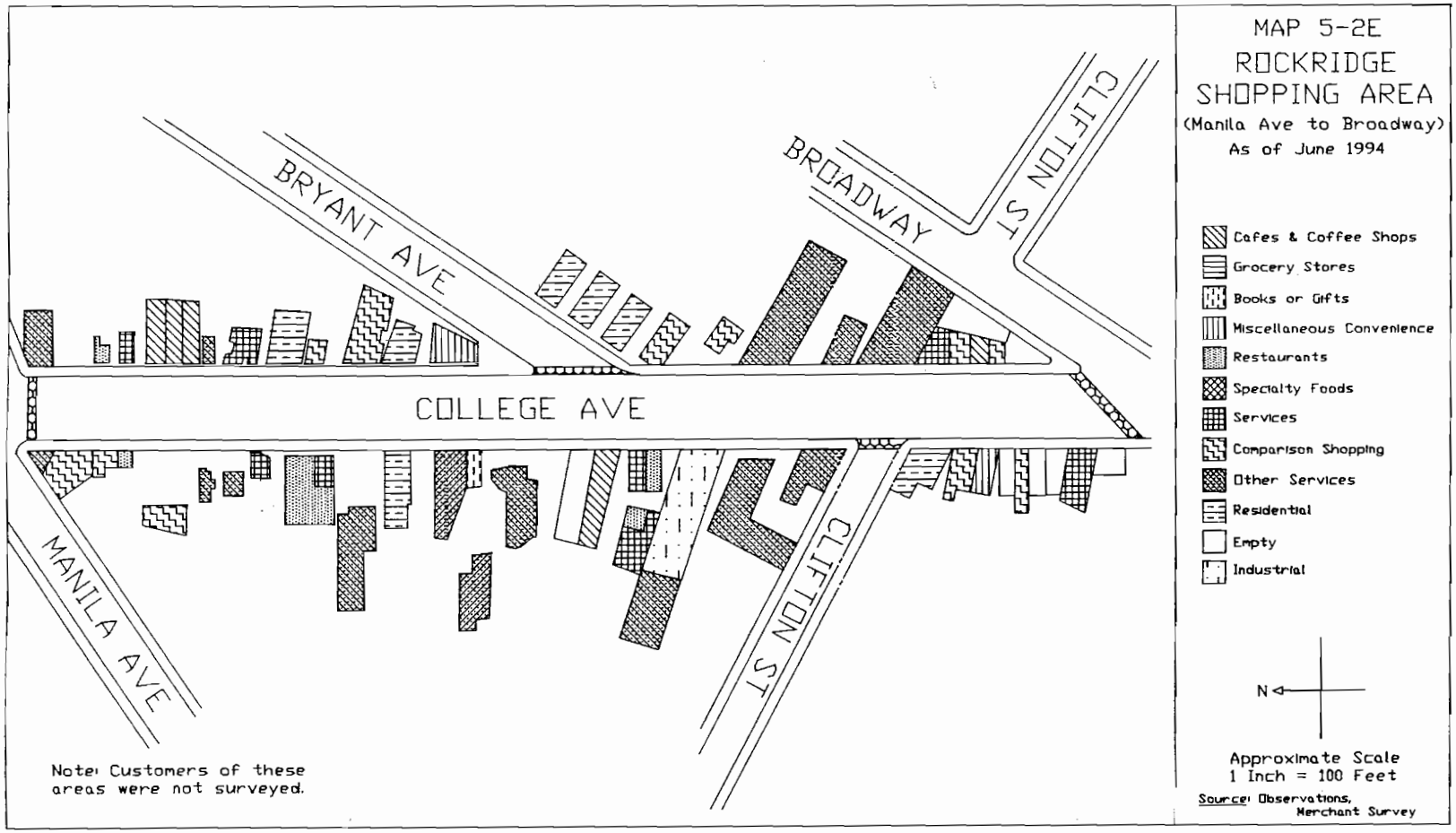

MAP 5-1. Vicinity of Rockridge Shopping Area
LEGEND:
County Boundary
City Limits
Elevated BART Tracks
BART Station
Rockridge Alcatraz
Rockridge Market Hall
Census Tract Numbers
Census Tract Areas
Shopping Area
Freeway
NORTH
Derby St.
Derby St.
Claremont Ave.
College Ave.
Claremont Ave.
Tunnel Rd
Ashby Ave.
4239
4238
Alcatraz
BART Tracks
4004
4002
Shattuck Ave.
Telegraph Ave.
BART Tracks
Grove Shafter Freeway
Broadway
Broadway Terr.
Broadway Terr.
4003
51st St.
SCALE:
Mountain View Cemetery
0
1/4 mile
1/2 mile


ALCATRAZ AVE
DAKLAND
BERKELEY
CLAREMONT AVE
FLORIO ST
ARMARIO CT
COLLEGE AVE
Parking
ALCATRAZ AVE
DAKLAND
BERKELEY
63RD ST
62ND ST
MAP 5-2A
ROCKRIDGE - ALCATRAZ SHOPPING AREA
As of June, 1994
Cafes & Coffee Shops
Grocery Stores
Books or Gifts
Miscellaneous Convenience
Restaurants
Specialty Foods
Services
Comparison Shopping
Other Services
Residential
Empty
Industrial
Location of Intercept Surveys
N
Approximate Scale
1 Inch = 100 Feet
Source: Observations, Merchant Survey


ARMARID CT
HARWOOD AVE
CHABOT RD
BIRCH CT
Patio
College Ave
Shell
OAK GROVE
CHABOT RD
Note: Customers of these areas were not surveyed.
MAP 5-2B
ROCKRIDGE SHOPPING AREA
(Claremont Ave to Birch Court)
As of June 1994
Cafes & Coffee Shops
Grocery Stores
Books or Gifts
Miscellaneous Convenience
Restaurants
Specialty Foods
Services
Comparison Shopping
Other Services
Residential
Empty
Industrial
N
Approximate Scale
1 Inch = 100 Feet
Source: Observations, Merchant Survey


SHAFTER AVE
KEITH AVE
OCEAN VIEW DR
LAWTON AVE
COLLEGE AVE
Parking
ROCKRIDGE
BART
STATION
MILES ST
SHAFTER AVE
Parking
FOREST ST
OAK GROVE
MAP 5-2C
ROCKRIDGE - MARKET HALL SHOPPING AREA
As of June 1994
Cafes & Coffee Shops
Grocery Stores
Books or Gifts
Miscellaneous Convenience
Restaurants
Specialty Foods
Services
Comparison Shopping
Other Services
Residential
Empty
Industrial
Location of Intercept Surveys
N
Approximate Scale
1 Inch = 100 Feet
Source: Observations, Merchant Survey


LAWTON AVE
TAFT AVE
KALES AVE
MANILA AVE
Parking
COLLEGE AVE
FOREST ST
LAWTON AVE
HUDSON ST
Note: Customers of these areas were not surveyed.
MAP 5-2D
ROCKRIDGE SHOPPING AREA
(Lawton Avenue to Manila Avenue)
As of June 1994
Cafes & Coffee Shops
Grocery Stores
Books or Gifts
Miscellaneous Convenience
Restaurants
Specialty Foods
Services
Comparison Shopping
Other Services
Residential
Empty
Industrial
N
Approximate Scale
1 Inch = 100 Feet
Source: Observations, Merchant Survey



MAP 5-2E

ROCKRIDGE SHOPPING AREA

(Manila Ave to Broadway)

As of June 1994

- Cafes & Coffee Shops
- Grocery Stores
- Books or Gifts
- Miscellaneous Convenience
- Restaurants
- Specialty Foods
- Services
- Comparison Shopping
- Other Services
- Residential
- Empty
- Industrial

N

Approximate Scale
1 Inch = 100 Feet

Source: Observations, Merchant Survey

Transportation Characteristics

The Rockridge shopping area has good transportation accessibility. The Rockridge station of the Bay Area Rapid Transit (BART) system is located near the middle of the shopping area. The station itself is located in the middle of State Highway 24, an elevated freeway with three lanes in each direction. The nearest freeway exits are adjacent to the BART station and about 0.5 miles from Rockridge - Alcatraz. Two minor arterials, College Avenue (one narrow lane in each direction with on-street parking) and Claremont Avenue (two wide lanes each direction with on-street parking), provide good highway accessibility into the shopping area. Approximately 20,000 cars per day travel along this segment of College Avenue (City of Berkeley 1987; Brady and Associates 1992; City of Oakland Office of Public Works 1993). Maps 5-3A and 5-3B show the transit and parking characteristics in the two subareas used in this study.

The most heavily-used route in the AC Transit bus system (#51) runs along College Ave. between Downtown Berkeley, the University of California, and Downtown Oakland on a ten to twenty minute headway. Another bus (#7) runs every half hour from the BART station along Claremont Avenue through the center of Berkeley and on to the Del Norte BART station in El Cerrito. The #16 bus runs every half hour from the Rockridge BART station to Piedmont Avenue and the City of Piedmont. The #17 bus runs every half hour along College to Alcatraz Avenue where it goes to the west. Finally, the # 64 runs from just north of the Rockridge BART station to Ashby Avenue before it heads west.

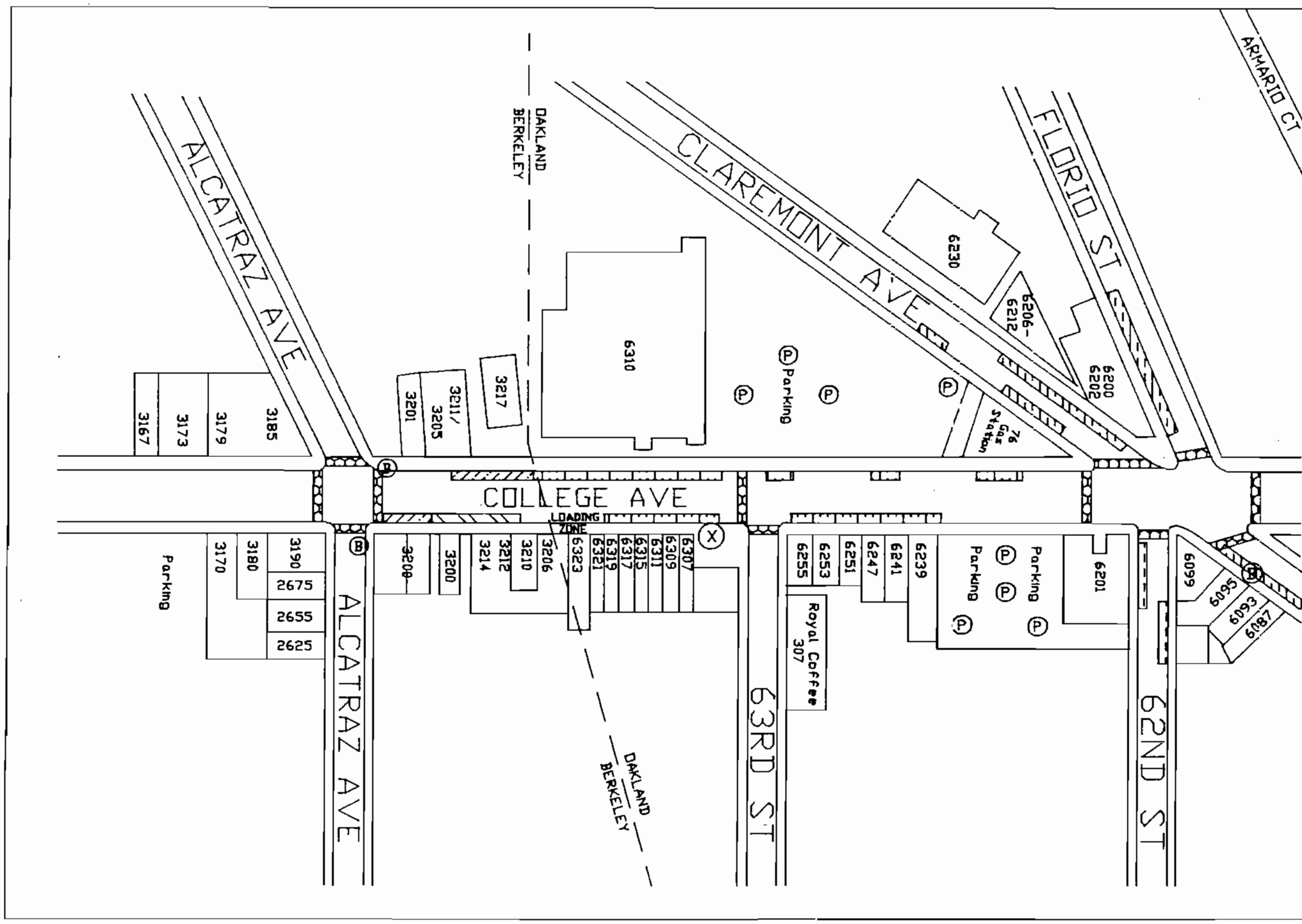
MAP 5-3A

ROCKRIDGE - ALCATRAZ SHOPPING AREA

As of June, 1994

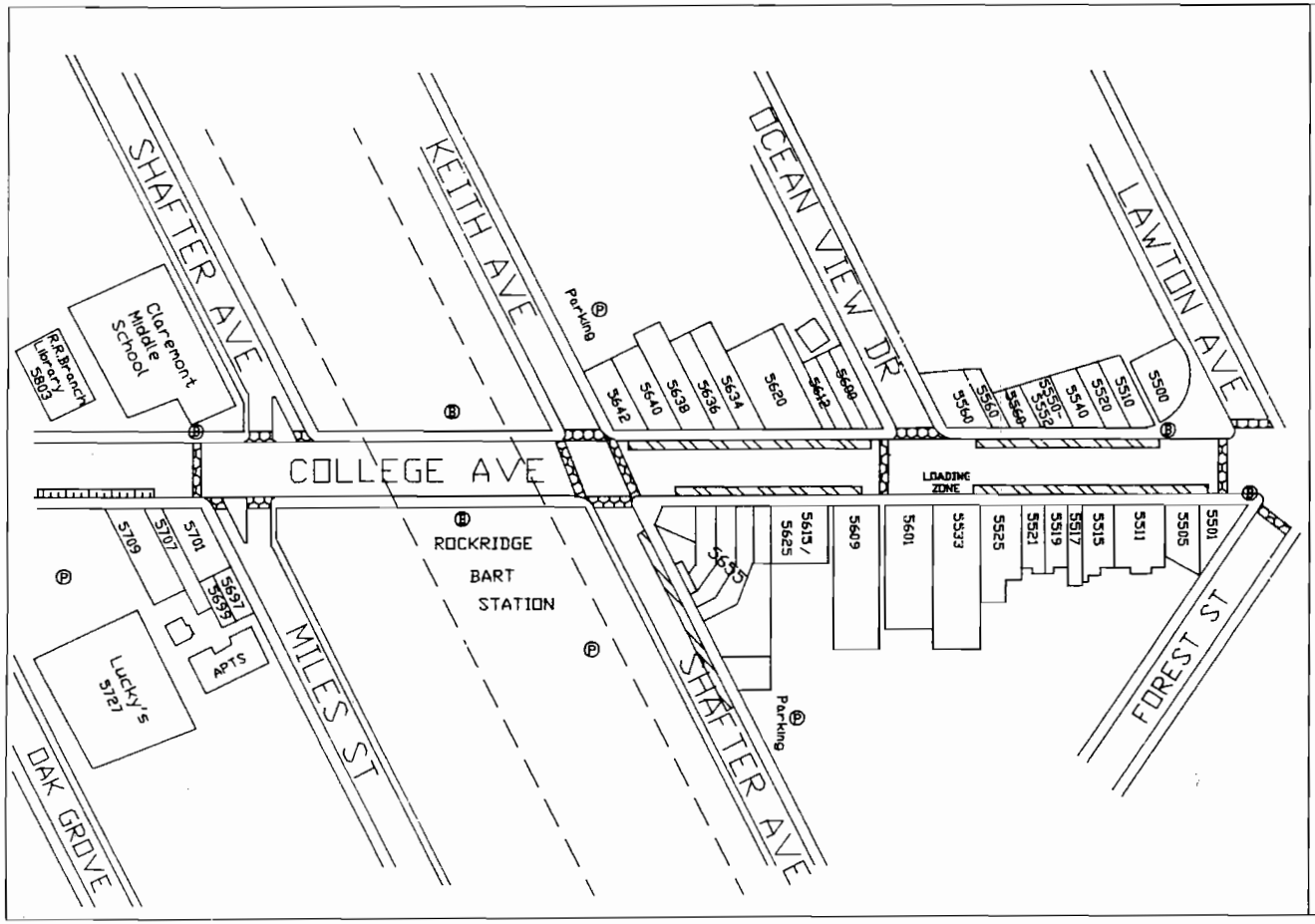
Parking & Transit Characteristics

- Metered One Hour
- Metered Two hour
- Unmetered One Hour
- Unmetered Two hour
- Short Term
- Crosswalk
- (P) Off-Street Parking
- (B) Bus Stop
- (X) Location of Intercept Surveys



Approximate Scale
1 Inch = 100 Feet

Source: Observations, Merchant Survey



MAP 5-3B

ROCKRIDGE - MARKET HALL SHOPPING AREA

As of June 1994

Parking & Transit Characteristics

- Metered One Hour
- Metered Two hour
- Unmetered One Hour
- Unmetered Two hour
- Short Term
- Crosswalk
- (P) Off-Street Parking
- (B) Bus Stop
- (X) Location of Intercept Surveys

N

Approximate Scale
1 Inch = 100 Feet

Source: Observations, Merchant Survey

Characteristics of Businesses

Table 5-1 shows the mix of uses in the first floor locations in the Market Hall and Alcatraz subareas and all of the Rockridge shopping area. The shopping area is dominated by comparison shopping, convenience services, and a large number of restaurants and eating and drinking establishments. The mix of uses in each subarea differs, as shown in Tables 5-1 and 5-2. The Alcatraz subarea is dominated by specialty food, grocery stores, and convenience services, while the Market Hall subarea is dominated by comparison shopping, eating and drinking establishments, and specialty food stores.

Table 5-1. Types of Uses in Rockridge and in the Market Hall and Alcatraz Subareas

Type of Uses in First Floor Locations#	Rockridge - Market Hall Subarea		Rockridge - Alcatraz Subarea		Rockridge (Overall)	
	Number	%	Number	%	Number	%
Cafés and Coffee Shops	5	15	2	6	20	8
Grocery Store	1	3	1	3	3	1
Flowers, Cards, and Books	2	6	1	6	6	3
Miscellaneous Convenience	1	3	4	12	8	3
Restaurants	4	12	1	3	28	12
Specialty Food	4	12	8	24	14	6
Convenience Services	1	3	9	27	50	21
Comparison Shopping	14	41	5	15	63	26
Other Services	1	3	1	3	35	15
Residential Buildings	1	3	0	0	9	4
Empty Store Fronts	0	0	1	3	4	2
Industrial Uses	0	0	0	0	2	1
TOTAL	34	101	33	102	242	102

Source: Observations; Merchant Survey

Notes: Includes all first floor businesses based upon observations. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-2. Total Square Footage by Type of Use in Rockridge and in the Market Hall and Alcatraz Subareas (Square Footage and Percentage)

Type of Uses in First Floor Locations	Rockridge - Market Hall Subarea		Rockridge - Alcatraz Subarea		Rockridge (Overall)	
	Square Footage	%	Square Footage	%	Square Footage	%
Cafés and Coffee Shops	10,250	16	3,300	5	24,700	7
Grocery Store	1,200	2	24,000	33	53,200	16
Flowers, Cards, and Books	2,600	4	1,000	1	5,700	2
Miscellaneous Convenience	1,000	2	7,100	10	12,900	4
Restaurants	11,800	18	2,300	3	59,750	18
Specialty Food	5,450	9	12,600	17	19,550	6
Convenience Services	1,200	2	16,900	23	58,650	17
Comparison Shopping	30,650	48	6,500	9	102,050	30
TOTAL	64,150	101	73,700	101	336,500	100

Source: Merchant Survey; Observations

Note: Square footages are estimated when the merchants did not provide them. Businesses providing services other than convenience services were not included in the merchant survey; these businesses have been excluded from this table and from further analysis. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

The businesses in the Rockridge area are generally small in scale (see Table 5-3) with the exception of the two grocery stores, Lucky's and Safeway, which are 28,000 and 24,000 square feet, respectively. The shops in the Alcatraz and Market Hall subareas are slightly larger, on average than other businesses in Rockridge. A predominance of the businesses are small, with about 66% of the businesses operating as a single location, and another 29% as a part of Bay Area chains that have on average 3.1 locations (see Table 5-4). Businesses in Rockridge have been in operation for an average of 10.2 years overall, however, the businesses in the Alcatraz subarea are more well-established than those in the Market Hall subarea and Rockridge generally. Over 70% of the businesses in Rockridge lease their property.

Table 5-3. Selected Characteristics of Businesses in Rockridge and in the Market Hall and Alcatraz Subareas

	Rockridge - Market Hall Subarea	Rockridge - Alcatraz Subarea	Rockridge (Overall)
Square Footage*			
Mean Square Footage	2,004	2,393	2,043
Median Square Footage	1,525	1,750	1,250
Number of Employees			
Full-time Employees	244	174	796
Part-time Employees	201	204	1,081
Total Employees	445	378	1,877
Mean Number of Employees	14.3	11.8	12.6
Years in Business#			
At this Location	9.3	15.5	10.2
Total Years in Business	14.6	16.6	13.7
Ownership of Property			
Own (%)	12.5	19.4	7.7
Lease (%)	62.5	71.0	72.9
Not Reporting (%)	25.0	9.6	19.4

Source: Merchant Survey
Notes: Square footage and number of employees are estimated for merchants that did not respond to the applicable questions or did not participate in the survey. Years in business is reported only for respondents to applicable questions in survey.

Table 5-4. Stores in Rockridge and Market Hall and Alcatraz Subareas by Type of Ownership

	Rockridge - Market Hall Subarea		Rockridge - Alcatraz Subarea		Rockridge (Overall)	
	Number of Stores	%	Number of Stores	%	Number of Stores	%
National Chain	0	0	2	7	5	3
Multistate Regional Chain	0	0	1	3	3	2
Local Chains (SF Bay Area)	8	31	7	24	46	29
Single Store	18	69	19	66	107	66
Merchants Responding	26	100	29	100	161	100
Average Number of Stores in Bay Area Chains	3.1 (n=8)		4.1 (n=7)		3.1 (n=45)	

Source: Merchant Survey
Note: Form of ownership is reported only for respondents to applicable questions in survey.

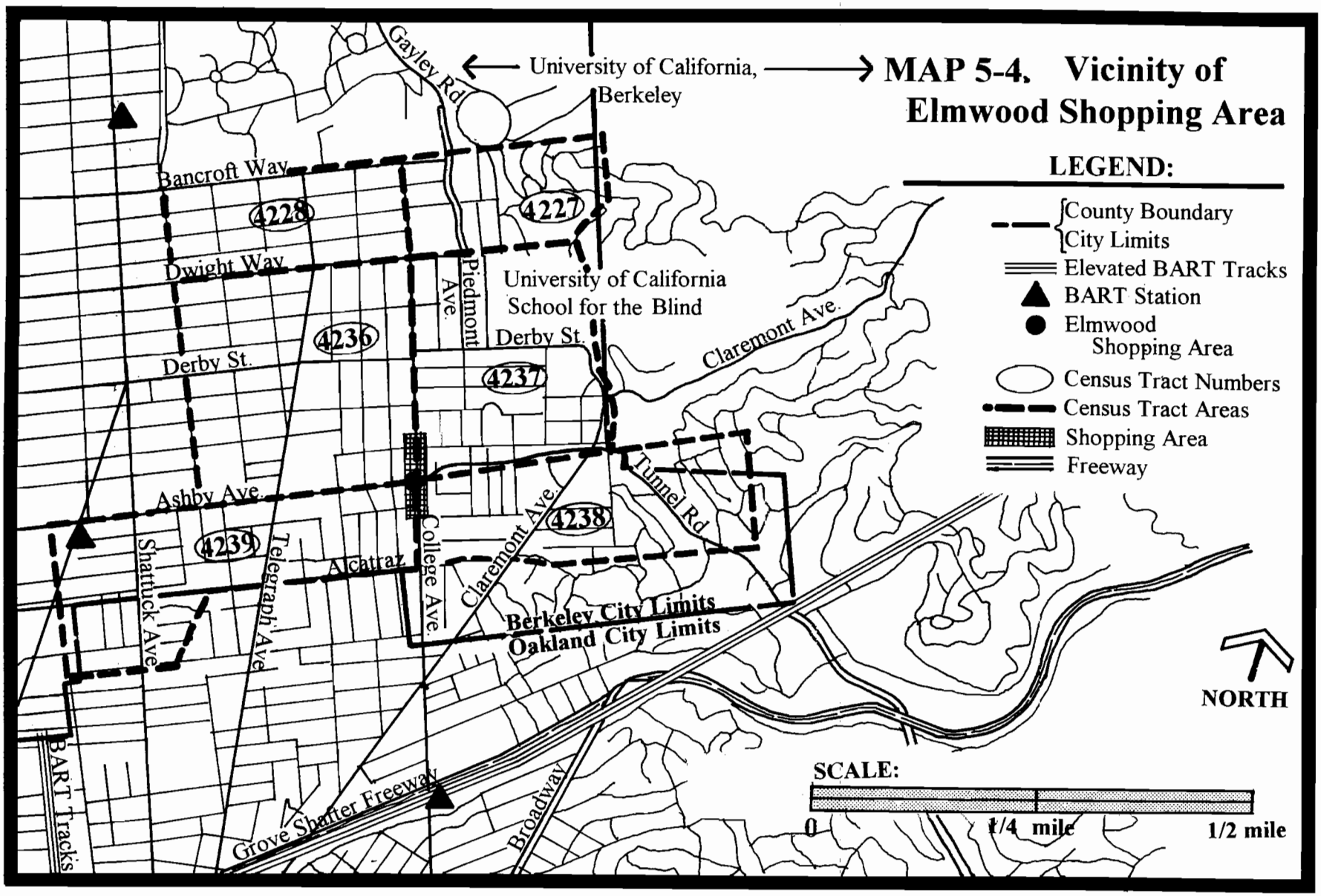
Elmwood

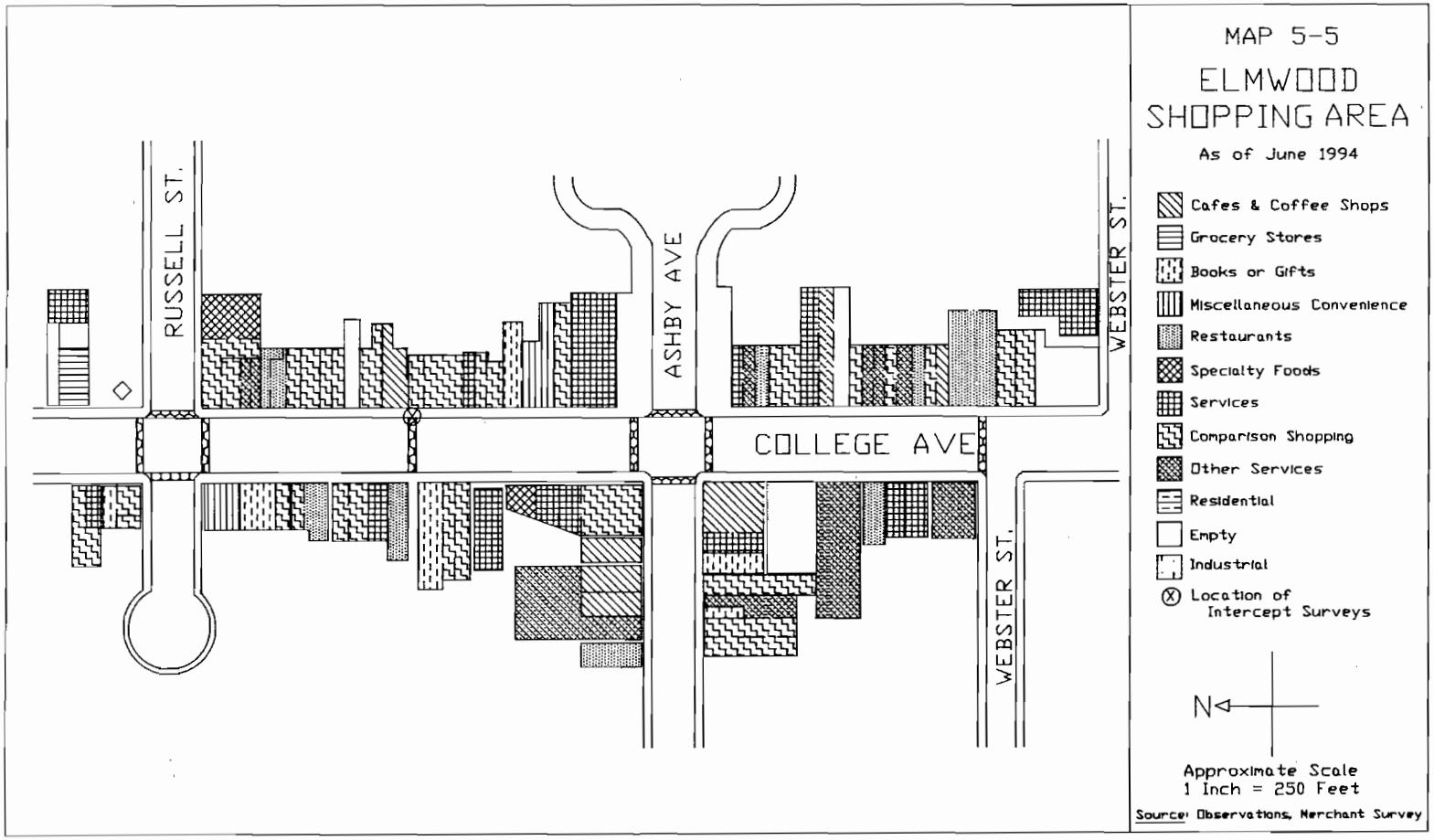
The Elmwood shopping area is located along College and Ashby (State Highway 13) Avenues and contains about 90 stores (see Maps 5-4 and 5-5). The Elmwood shopping area is located about 3/4 mile south of the University of California at Berkeley and about 3/8 mile north of Rockridge - Alcatraz. The nearest freeway exits are about a mile away.

Land Use Characteristics

The Elmwood shopping district includes a diverse mix of residential and commercial uses. The residential area is zoned for single family dwellings in the hills and for multi-family to the north toward the University of California campus (City of Berkeley 1991; City of Berkeley 1949[1991]). The overall density is about 9.8 units per acre and 20.6 persons per acre, according to the 1990 Census.

The commercial zoning in Elmwood is designed to provide goods and services for the everyday needs of the residents of the surrounding neighborhoods. A quota system has been implemented that limits the number of any specific type of businesses that can locate in Elmwood. For example, no more than four jewelry stores, four bookstores, ten clothing stores and two copy shops can be located in Elmwood without a special use permit. Additionally, no new business can exceed 2,500 square feet.


MAP 5-4. Vicinity of Elmwood Shopping Area
University of California, Berkeley
Gayley Rd.
Bancroft Way
Dwight Way
Derby St.
Ashby Ave.
Piedmont Ave.
University of California School for the Blind
Derby St.
Claremont Ave.
Tunnel Rd.
College Ave.
Claremont Ave.
Alcatraz
Shattuck Ave.
Telegraph Ave.
Berkeley City Limits
Oakland City Limits
BART Tracks
Grove Shafter Freeway
Broadway
4228
4227
4236
4237
4238
4239
LEGEND:
County Boundary
City Limits
Elevated BART Tracks
BART Station
Elmwood Shopping Area
Census Tract Numbers
Census Tract Areas
Shopping Area
Freeway
NORTH
SCALE:
0
1/4 mile
1/2 mile



MAP 5-5

ELMWOOD SHOPPING AREA

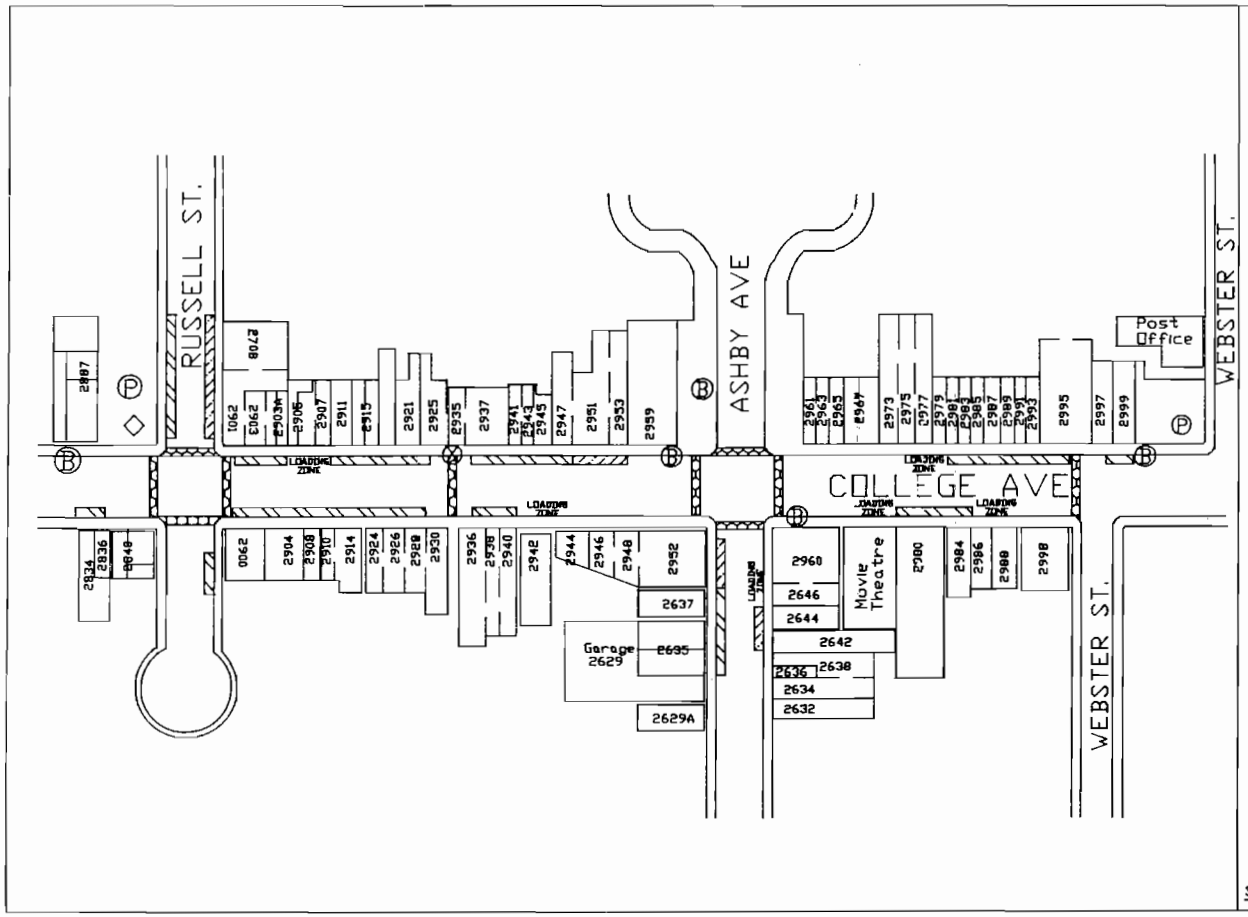
As of June 1994

- Cafes & Coffee Shops
- Grocery Stores
- Books or Gifts
- Miscellaneous Convenience
- Restaurants
- Specialty Foods
- Services
- Comparison Shopping
- Other Services
- Residential
- Empty
- Industrial
- ⊗ Location of Intercept Surveys

N

Approximate Scale
1 Inch = 250 Feet

Source: Observations, Merchant Survey



MAP 5-6

ELMWOOD SHOPPING AREA

As of June 1994

Parking & Transit Characteristics

- Metered One Hour
- Metered Two hour
- Unmetered One Hour
- Unmetered Two hour
- Short Term
- Crosswalk
- (P) Off-Street Parking
- (B) Bus Stop
- (X) Location of Intercept Surveys

N

Approximate Scale
1 Inch = 250 Feet

Source: Observations, Merchant Survey

Transportation Characteristics

Elmwood has a medium level of transportation accessibility. Both College Avenue and Ashby Avenue are minor arterials with two travel lanes and on-street parking. Approximately 17,500 vehicles travel along College Avenue and about 30,000 travel along Ashby Avenue every day. Like Rockridge, Elmwood is served by the most heavily used route of the AC Transit system, Route #51. Elmwood is also served by AC Transit's Route #6, which runs along Ashby Avenue at about once every half hour (see Map 5-6).

Characteristics of Businesses

Elmwood is dominated by businesses that provide convenience services and comparison shopping (see Tables 5-5 and 5-6). The businesses in Elmwood are generally small in scale with a mean size of about 1450 square feet (see Table 5-7). A preponderance of the businesses are small, with 56% operating at a single location and another 38% as a part of small San Francisco Bay Area chains (the chains have an average of 3.8 locations) (see Table 5-8). Elmwood businesses have about 6.5 employees, on average, with approximately equal numbers of part-time and full-time employees. The stores have been relatively stable, averaging 16.1 years in Elmwood. About 76% of the businesses lease their property.

Table 5-5. Land Uses in Elmwood by Type of Use

Type of Use	Total in First Floor Locations	
	Number	Percentage
Cafés and Coffee Shops	7	8
Grocery Store	0	0
Flowers, Cards, and Books	6	7
Miscellaneous Convenience	3	3
Restaurants	8	9
Specialty Food	4	4
Convenience Services	17	19
Comparison Shopping	29	32
Other Services	13	14
Residential Buildings	0	0
Empty Store Fronts	4	4
Industrial Uses	0	0
TOTAL	91	100

Source: Observations; Merchant Survey

Note: Includes all first floor businesses based upon observations. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-6. Businesses in Elmwood by Type of Use		
Type of Uses	Total in First Floor Locations	
	Square Footage	Percentage
Cafés and Coffee Shops	9,350	9
Grocery Store	0	0
Flowers, Cards, and Books	6,900	7
Miscellaneous Convenience	6,100	6
Restaurants	12,250	12
Specialty Food	7,500	7
Convenience Services	25,250	24
Comparison Shopping	36,300	35
TOTAL	103,650	100

Sources: Observations; Merchant Survey

Note: Square footages are estimated when the merchants did not provide them. Merchants providing services other than convenience services are not included in the merchant survey; these businesses have been excluded from this table and from further analysis. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-7. Selected Characteristics of Business in Elmwood	
Square Footage	
Mean Square Footage	1,450
Median Square Footage	1,200
Number of Employees	
Full-time Employees	231
Part-time Employees	230
Total Employees	461
Mean Number of Employees	6.5
Years in Business	
At this Location	16.1
Total Years in Business	17.5
Ownership of Property	
Own (%)	11.3
Lease (%)	76.1
Not Reporting (%)	12.6

Source: Merchant Survey

Notes: Square footage and number of employees are estimated for merchants that did not respond to applicable question or did not participate in survey. Years in business is reported for respondents to applicable question in survey.

Table 5-8. Businesses in Elmwood by Type of Ownership		
	Number	Percentage
National Chain	2	3
Multistate Regional Chain	2	3
Local Chains (SF Bay Area)	24	38
Single Store	36	56
Total Respondents	64	100
Number of Stores in Bay Area Chains	3.8 (n=20)	

Source: Merchant Survey
Note: Form of ownership only reported for respondents to applicable questions in survey.

El Cerrito Plaza

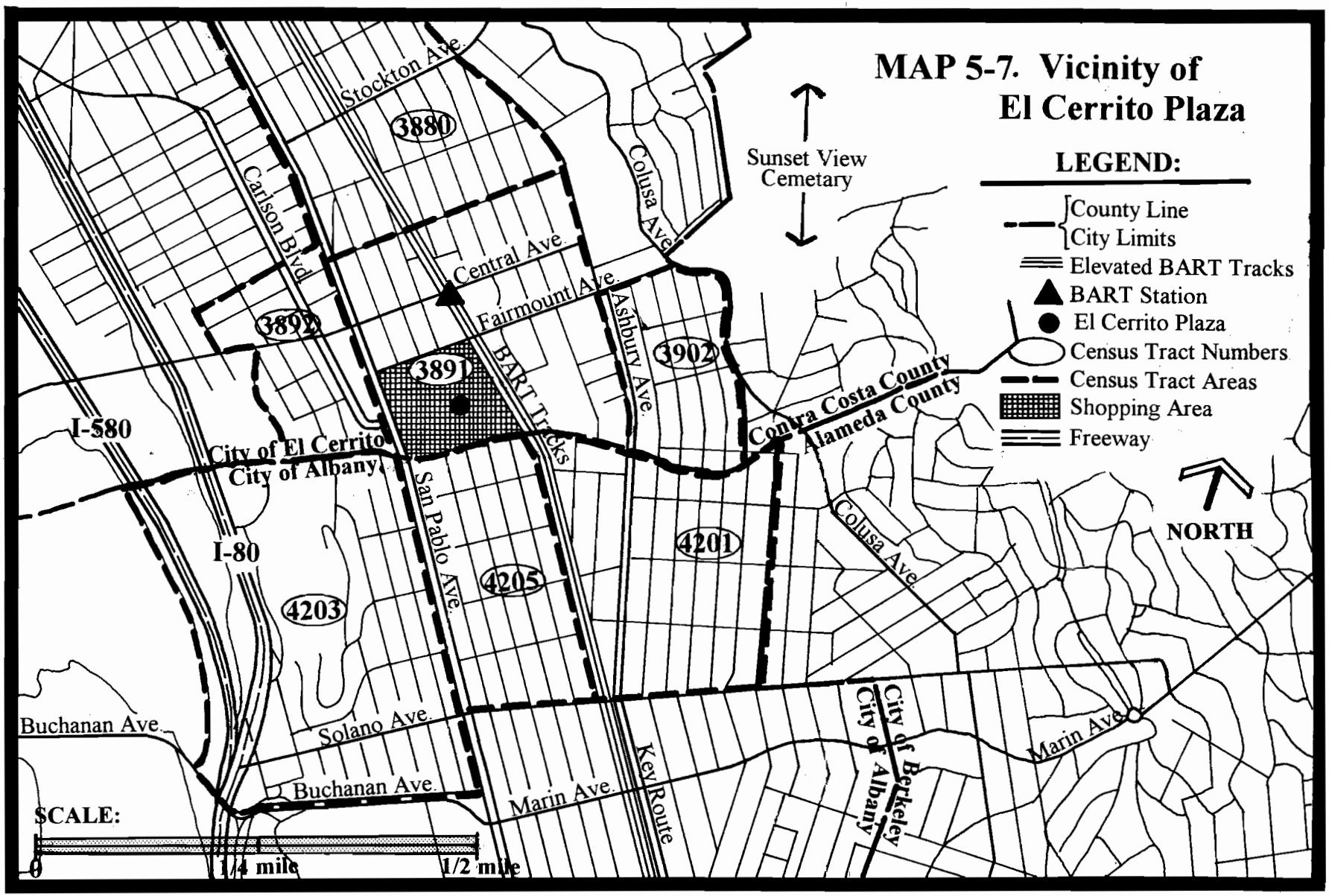
The El Cerrito Plaza contains a large amount of retail square footage compared to other shopping areas in this study -- over 400,000 square feet, containing 56 different businesses. El Cerrito Plaza was built in the early 1960s as one of the first suburban regional shopping malls in the San Francisco Bay Area. It is located just inside the southern border of the City of El Cerrito near the northern border the City of Albany, which is also at the boundary between Alameda and Contra Costa Counties (see Maps 5-7 through 5-9).

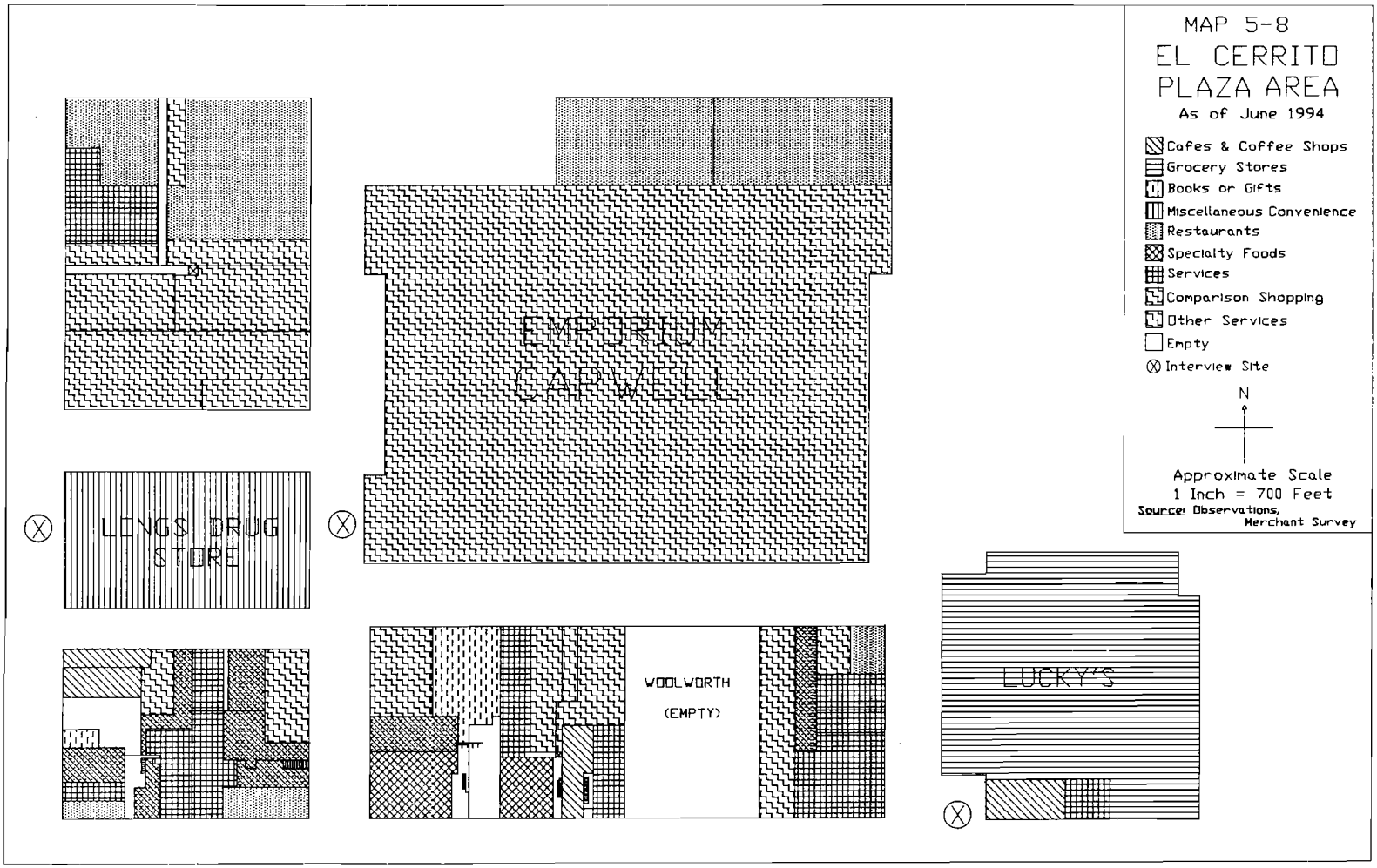
Land Use Characteristics

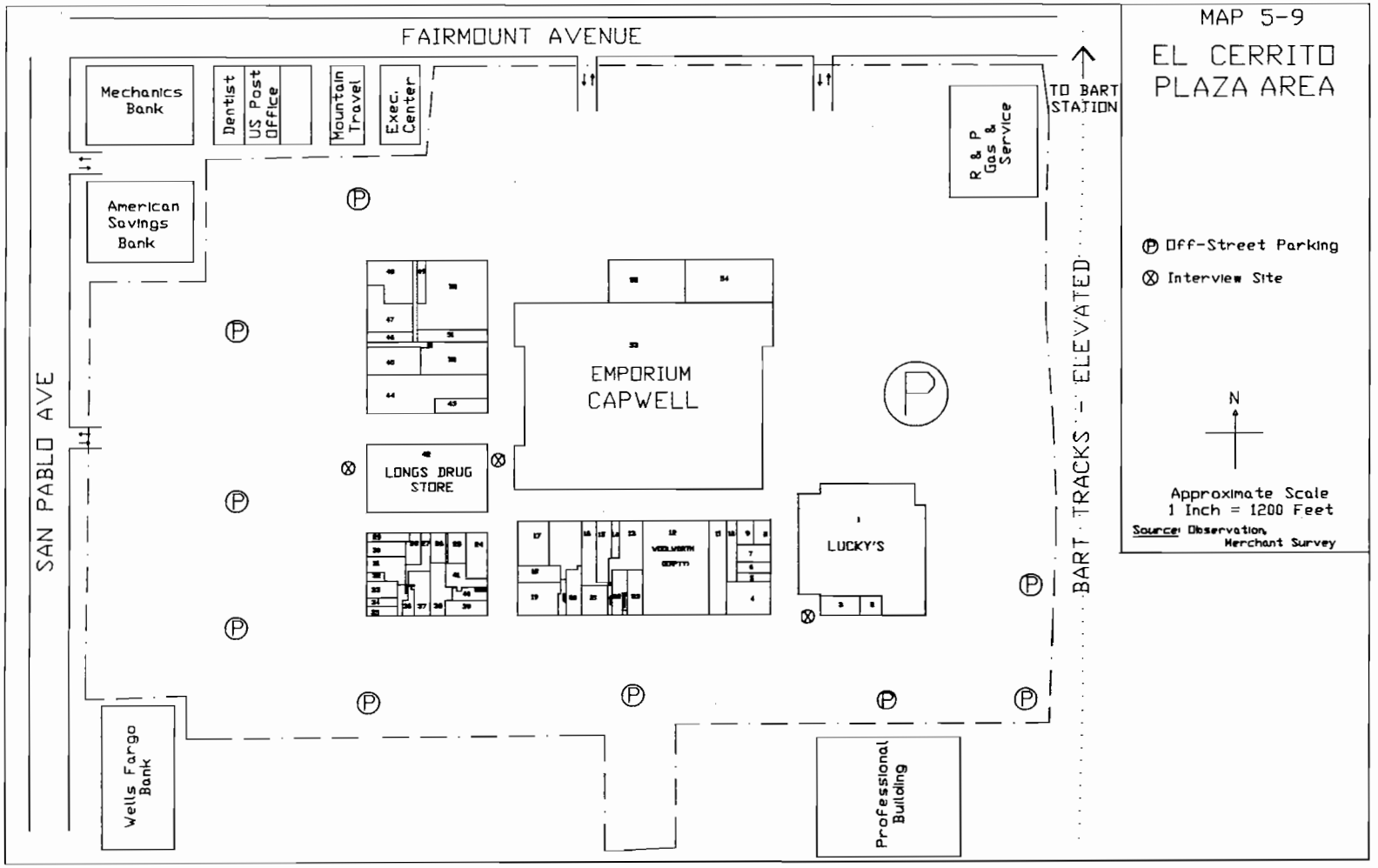
The El Cerrito Plaza is surrounded by a mixture of residential development of various densities as well as by commercial zoning. The areas to the north and west in the City of El Cerrito and the areas to the south in the City of Albany are zoned for a mixture of single- and multi-family (City of Albany 1978[1988]; City of El Cerrito 1975; City of El Cerrito 1980). The area to the east of the BART tracks is zoned for predominantly single-family dwellings with a few pockets of multi-family units near the elevated BART tracks (El Cerrito 1980). The area to the west along both sides of San Pablo Avenue and along Fairmont Avenue is zoned for commercial development. The overall density of the residential area surrounding the El Cerrito Plaza is about 6.4 housing units per acre and 16 persons per acre, according to the 1990 Census.

Transportation Characteristics

El Cerrito Plaza is well-served by the transportation system. It is located about 0.3 miles from Interstates 80 and 580. San Pablo Avenue, or State Highway 123, a 4-lane


MAP 5-7. Vicinity of
El Cerrito Plaza
LEGEND:
County Line
City Limits
Elevated BART Tracks
BART Station
El Cerrito Plaza
Census Tract Numbers
Census Tract Areas
Shopping Area
Freeway
NORTH
Sunset View
Cemetary
Stockton Ave.
Carlson Blvd.
Colusa Ave.
Central Ave.
Fairmount Ave.
Ashbury Ave.
BART Tracks
3880
3892
3891
3902
4201
4205
4203
I-580
I-80
City of El Cerrito
City of Albany
Contra Costa County
Alameda County
San Pablo Ave.
Colusa Ave.
Buchanan Ave.
Solano Ave.
Buchanan Ave.
Marin Ave.
Key Route
City of Albany
City of Berkeley
Marin Ave.
SCALE:
0
1/4 mile
1/2 mile


LONGS DRUG STORE
WOOLWORTH
(EMPTY)
LUCKY'S
N
MAP 5-8
EL CERRITO PLAZA AREA
As of June 1994
Cafes & Coffee Shops
Grocery Stores
Books or Gifts
Miscellaneous Convenience
Restaurants
Specialty Foods
Services
Comparison Shopping
Other Services
Empty
Interview Site
Approximate Scale
1 Inch = 700 Feet
Source: Observations,
Merchant Survey


FAIRMOUNT AVENUE
SAN PABLO AVE
BART TRACKS - ELEVATED
TO BART STATION
Mechanics Bank
Dentist
US Post Office
Mountain Travel
Exec. Center
R & P Gas & Service
American Savings Bank
EMPORIUM CAPWELL
LONGS DRUG STORE
LUCKY'S
Wells Fargo Bank
Professional Building
MAP 5-9
EL CERRITO PLAZA AREA
Ⓟ Off-Street Parking
⊗ Interview Site
N
Approximate Scale
1 Inch = 1200 Feet
Source: Observation, Merchant Survey

arterial with parking on each side that runs adjacent to the Plaza on the west. Approximately 40,000 vehicles per day travel along San Pablo Avenue (Patterson Associates 1993). Although there is no bus service directly to the shopping area, several bus lines run along San Pablo Avenue and/or serve the El Cerrito BART station from all directions.

Instead of integrating the BART station with the shopping area, the El Cerrito Plaza was separated from the BART station by a four lane street, Fairmont Avenue, and a large parking lot. There is a landscaped park with a jogging and biking trail under the BART tracks along the eastern edge of El Cerrito Plaza, but the trail is disconnected from the parking lot by a steep embankment. El Cerrito Plaza is surrounded by residences in all directions but it is physically separated from the neighborhood on the east side by the BART tracks, and on the west side by San Pablo Avenue and by its own large parking lot.

Characteristics of Businesses

El Cerrito Plaza contains a high percentage of comparison shops and convenience services (see Tables 5-9 and 5-10). Businesses in El Cerrito Plaza are larger than the retail establishments in other case study areas (see Table 5-11). The shopping area's largest tenant, Emporium Capwell comprises 266,000 square feet of retail area,[2] and two other large tenants, Long's Drug store and Lucky food store, account for 33,000 and 18,500 square feet, respectively. The mall also includes a large, empty storefront where Woolworth's had been located for many years.

[2] Since the survey, the Emporium Capwell has closed.

Table 5-9. Businesses in El Cerrito Plaza by Type of Use		
Type of Uses	Total in First Floor Locations	
	Number	Percentage
Cafés and Coffee Shops	4	7
Grocery Store	1	2
Flowers, Cards, and Books	2	4
Miscellaneous Convenience	1	2
Restaurants	7	13
Specialty Food	2	4
Convenience Services	12	21
Comparison Shopping	16	29
Other Services	8	14
Residential Buildings	0	0
Empty Store Fronts	3	5
Industrial Uses	0	0
TOTAL	56	101

Source: Observations; Merchant Survey; Interview with Dan McNeer (manager of El Cerrito Plaza)

Notes: Includes all first floor businesses based upon observations and interview with manager. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-10. Businesses in El Cerrito Plaza by Square Footage by Type of Use		
Type of Uses	Total in First Floor Locations	
	Square Footage	Percentage
Cafés and Coffee Shops	5,250	1
Grocery Store	33,000	8
Flowers, Cards, and Books	3,700	1
Miscellaneous Convenience	18,500	4
Restaurants	24,500	6
Specialty Food	20,650	5
Convenience Services	21,700	5
Comparison Shopping	306,450	71
TOTAL	433,750	101

Sources: Observations; Merchant Survey; Interview with Dan McNeer (manager of El Cerrito Plaza)

Note: Merchants providing services other than convenience services are not included in the merchant survey; these businesses have been excluded from this table and from further analysis. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding

Even after excluding these three large businesses, the other businesses are relatively large compared to other shopping areas, with an average of about 2,200 square feet and 8.5 employees. Businesses have been at El Cerrito Plaza about 13 years on average (see Table 5-11). This tenure is shorter than most shopping areas because the longest any business could have been at the Plaza is about 35 years, which is significantly less than the tenure of some businesses in other case study areas. As is common in malls, most of the businesses rent their retail space. The only businesses that own their buildings are Emporium Capwell and Long's Drug Store. Among all of the case study areas, El Cerrito Plaza has the highest rate of businesses that are owned by chains, at the national, multi-state and Bay Area level, and the lowest rate of ownership by single proprietorships with about 40% (see Table 5-12). Even the Bay Area chains, with an average with 9.5 locations, are larger (i.e., have a larger number of locations) than the chains in other case study areas.

Table 5-11. Selected Characteristics of Businesses in El Cerrito Plaza

Square Footage	
Mean Square Footage	9,391
Median Square Footage	1,890
Number of Employees	
Full-time Employees	454
Part-time Employees	346
Total Employees	800
Mean Number of Employees	19.0
Years in Business	
At this Location	13.2
Total Years in Business	28.9
Ownership of Property	
Own (%)	4.5
Lease (%)	84.1
Not Reporting (%)	12.4

Source: Merchant Survey; Interview with Dan McNeer (manager of El Cerrito Plaza)
Notes: Number of employees is estimated for merchants that did not respond to applicable questions or did not participate in survey. Years in business is reported only for respondents to applicable question in survey.

Table 5-12. Businesses in El Cerrito Plaza by Type of Ownership		
	Number	Percentage
National Chain	8	20
Multistate Regional Chain	6	15
Local Chains (SF Bay Area)	10	25
Single Store	16	40
Total Rcspondcnts	40	100
Number of Stores in Bay Area Chains	9.5 (n=13)	

Source: Merchant Survey
Note: Form of ownership is only reported for respondents to applicable questions.

Hopkins

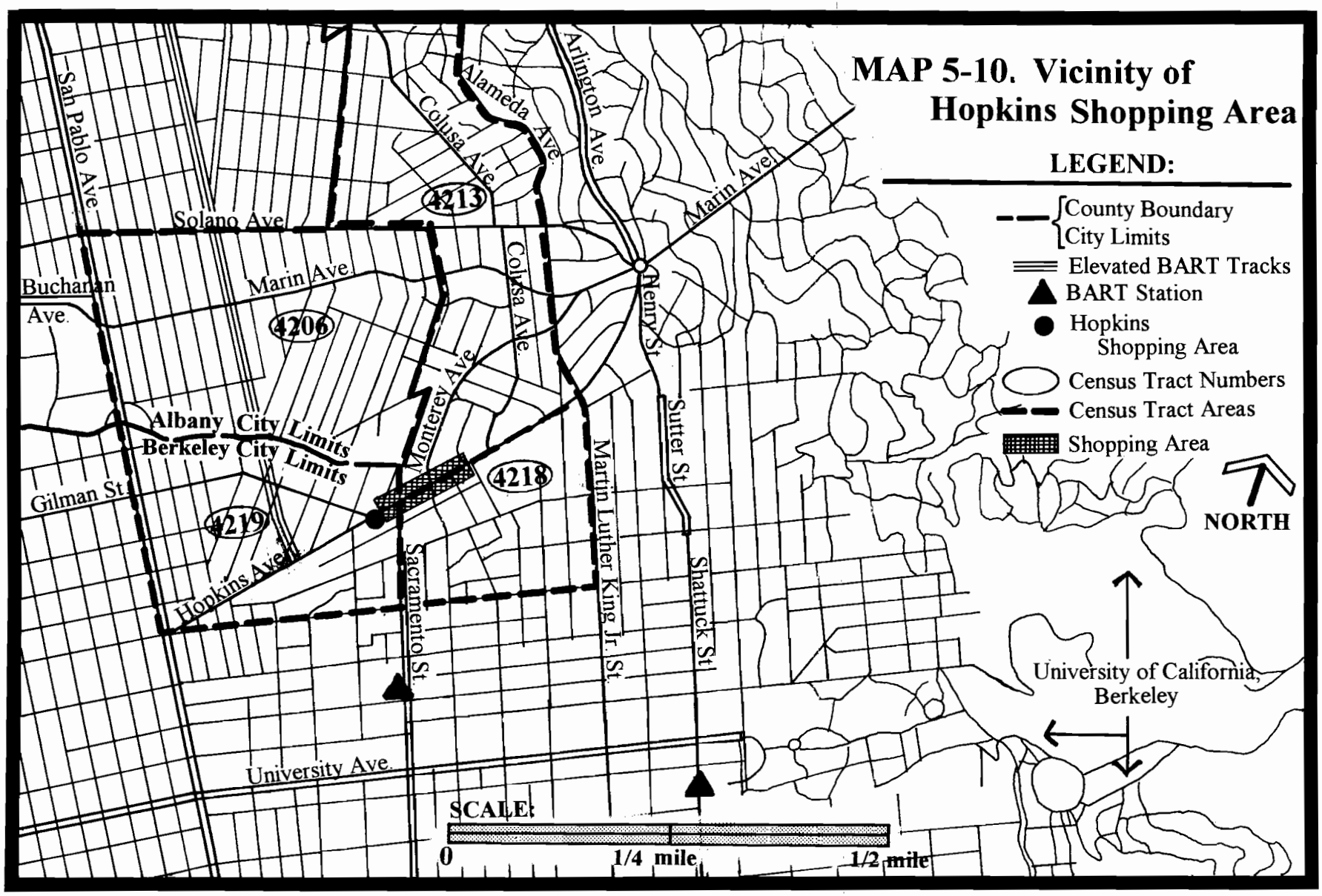
The Hopkins shopping area is located in a predominantly residential area about one-half mile north of the North Berkeley BART station and one mile east of the Interstate 80 freeway near Berkeley's border with the City of Albany (see Maps 5-10 and 5-11). It is located about a half mile to the east of the Westbrae neighborhood shopping area and a similar distance from the larger community shopping areas along Shattuck Avenue and Solano Avenue.

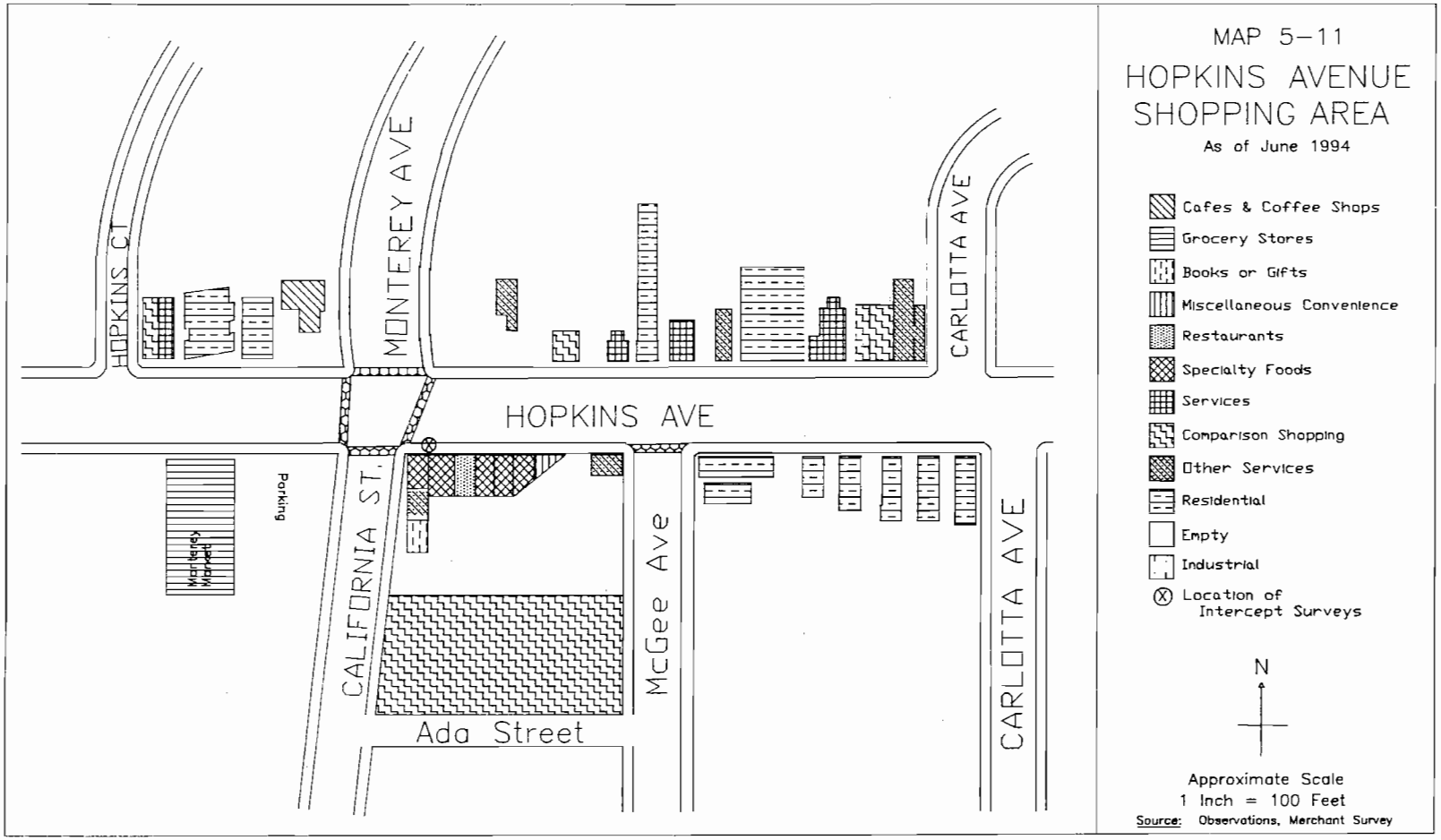
Land Use Characteristics

The residential area around Hopkins Street is zoned for predominantly single-family dwellings, with pockets of duplexes and multi-family units especially along Hopkins Avenue itself (City of Berkeley 1949[1991]). The density of the residential development is about 7.0 units per acre and 15.5 persons per acre, based on the 1990 Census.

Transportation Characteristics

About 19,200 vehicles per day travel along Hopkins Avenue through the shopping area, with some of them heading for the I-80 freeway (Berkeley 1987). The shopping area is most easily reached from the north, east and west; street diverters to the south make automobile access to this part of the neighborhood and the BART station somewhat circuitous. One AC Transit line, Route #9 runs along Hopkins Avenue about every half hour (see Map 5-12). No direct bus service is provided to the North Berkeley BART station, however.


MAP 5-10. Vicinity of Hopkins Shopping Area
LEGEND:
County Boundary
City Limits
Elevated BART Tracks
BART Station
Hopkins Shopping Area
Census Tract Numbers
Census Tract Areas
Shopping Area
NORTH
San Pablo Ave.
Alameda Ave.
Colusa Ave.
Arlington Ave.
Marin Ave.
Solano Ave.
4213
Buchanan Ave.
Marin Ave.
4206
Colusa Ave.
Henry St.
Monterey Ave.
Albany City Limits
Berkeley City Limits
Gilman St.
4218
Martin Luther King Jr. St.
Sutter St.
4219
Hopkins Ave.
Sacramento St.
Shattuck St.
University of California, Berkeley
University Ave.
SCALE:
0
1/4 mile
1/2 mile



MAP 5–11

HOPKINS AVENUE SHOPPING AREA

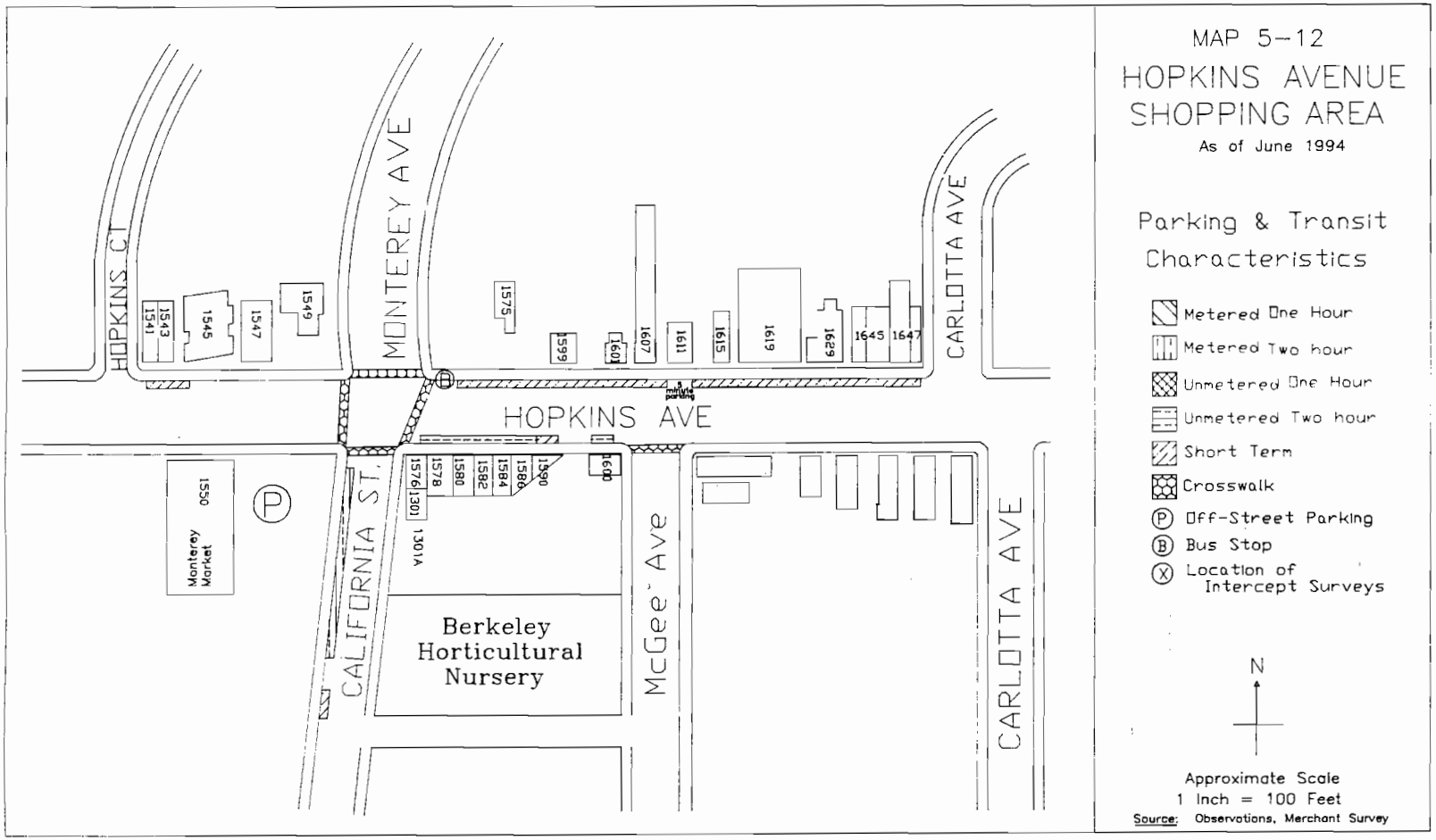
As of June 1994

- Cafes & Coffee Shops
- Grocery Stores
- Books or Gifts
- Miscellaneous Convenience
- Restaurants
- Specialty Foods
- Services
- Comparison Shopping
- Other Services
- Residential
- Empty
- Industrial
- ⊗ Location of Intercept Surveys

N

Approximate Scale
1 Inch = 100 Feet

Source: Observations, Merchant Survey


HOPKINS CT
MONTEREY AVE
CARLOTTA AVE
HOPKINS AVE
CALIFORNIA ST.
McGee Ave
CARLOTTA AVE
1543
1541
1545
1547
1549
1575
1599
1601
1607
1611
1615
1619
1629
1645
1647
1550
Monterey Market
1578
1576
1580
1582
1584
1586
1590
1600
1301
1301A
Berkeley Horticultural Nursery
MAP 5-12
HOPKINS AVENUE SHOPPING AREA
As of June 1994
Parking & Transit Characteristics
Metered One Hour
Metered Two hour
Unmetered One Hour
Unmetered Two hour
Short Term
Crosswalk
Off-Street Parking
Bus Stop
Location of Intercept Surveys
N
Approximate Scale
1 Inch = 100 Feet
Source: Observations, Merchant Survey

Characteristics of Businesses

The Hopkins shopping area contains about 23 stores and about 30,000 square feet of retail, most of which sell specialty foods or provide convenience services (see Table 5-13 and 5-14). A high-quality produce market, the Monterey Market, and the Berkeley Horticultural Center, a large, high quality, garden store, are major attractors to the area.

Table 5-13. Businesses in Hopkins Shopping Area by Type of Use

Type of Uses	Total in First Floor Locations	
	Number	Percentage
Cafés and Coffee Shops	1	4
Grocery Store	0	0
Flowers, Cards, and Books	1	4
Miscellaneous Convenience	1	4
Restaurants	1	4
Specialty Food	6	22
Convenience Services	4	15
Comparison Shopping	4	15
Other Services	5	19
Residential Buildings	4	15
Empty Store Fronts	0	0
Industrial Uses	0	0
TOTAL	27	102

Sources: Observations, Merchant Survey

Notes: Includes all first floor businesses based upon observations. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-14. Square Footage in Hopkins by Type of Use

Type of Uses		
	Square Footage	Percentage
Cafés and Coffee Shops	2,000	7
Grocery Store	0	0
Flowers, Cards, and Books	200	1
Miscellaneous Convenience	400	1
Restaurants	1,000	3
Specialty Food	13,200	44
Convenience Services	3,800	13
Comparison Shopping	9,400	31
TOTAL	30,000	100

Sources: Observations, Merchant Survey

Note: Square footages are estimated when the merchants did not provide them. Businesses providing services other than convenience services were not included in the merchant survey; these businesses have been excluded from this table and from further analysis. The types of businesses in each category are described in Appendix B.1, Table B-2 through B-5. Percentages may not total to 100% due to rounding.

The businesses in Hopkins are mostly small stores owned by a single proprietor or as a part of a San Francisco Bay Area chain. Businesses are small, averaging about 1710 square feet and 9.7 employees (see Table 5-15). Even the regionally-owned chains are relatively small, with an average of six stores in each chain (see Table 5-16). About 43.8% of the businesses own their own property, a higher percentage than in other shopping areas ; several cooperatively own one of the buildings. The businesses in Hopkins have been located in the area for an average of 19.6 years.

Table 5-15. Selected Characteristics of Business in Hopkins Shopping Area

Square Footage	
Mean Square Footage	1,710
Median Square Footage	1,250
Number of Employees	
Full-time Employees	96
Part-time Employees	52
Total Employees	148
Mean Number of Employees	9.7
Years in Business	
At this Location	19.6
Total Years in Business	27.1
Ownership of Property	
Own (%)	43.8
Lease (%)	31.3
Not Reporting (%)	25.0

Source: Merchant Survey
Notes: Square footage and number of employees are estimated for merchants that did not respond to the applicable questions or did not participate in the survey. Years in business is reported only for respondents to applicable questions in survey.

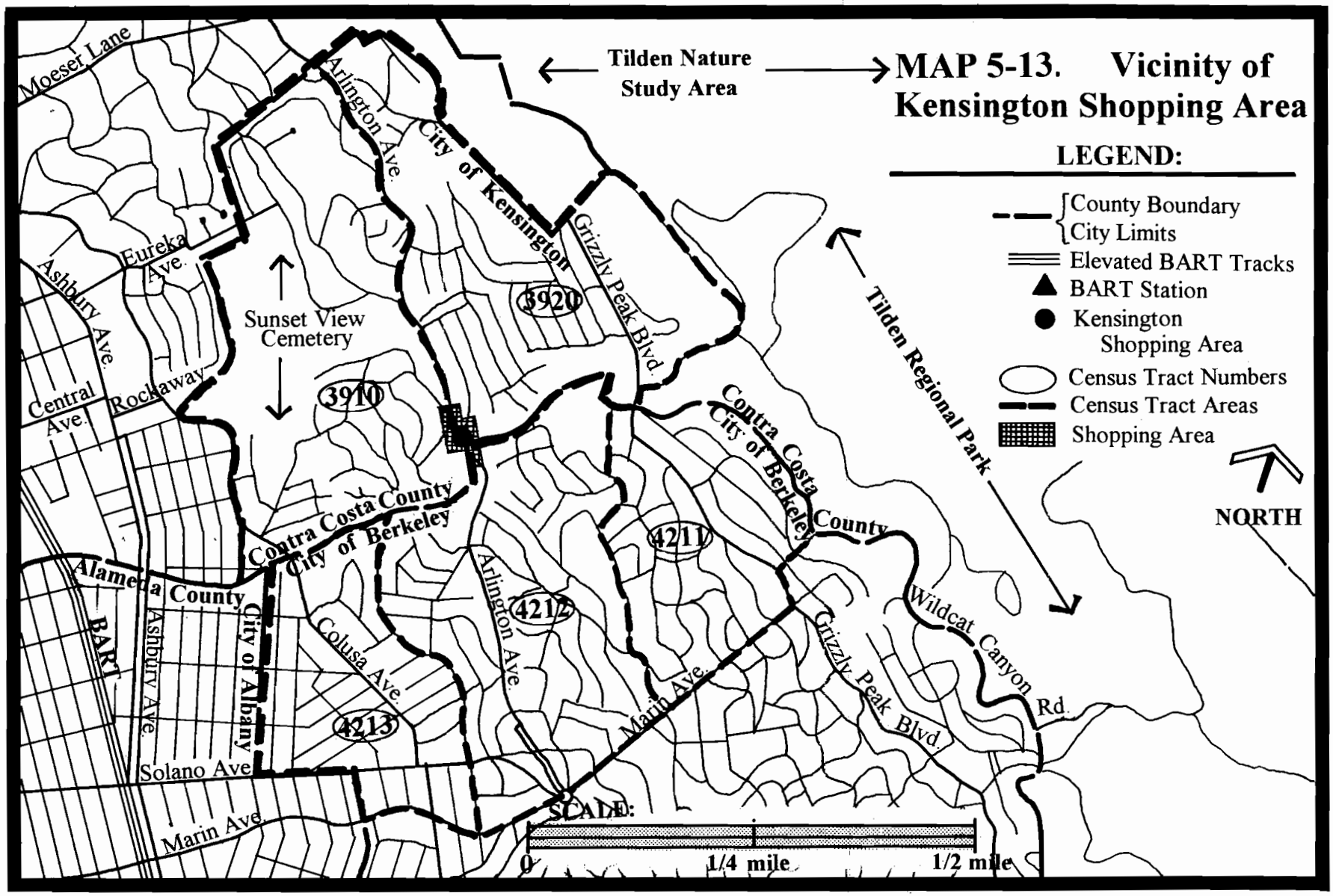
Table 5-16. Businesses in Hopkins by Type of Ownership		
	Number	Percentage
National Chain	0	0
Multistate Regional Chain	0	0
Local Chains (SF Bay Area)	3	23
Single Store	10	77
Total Respondents	13	100
Number of Stores in Bay Area Chains	2.33 (n=3)	
Source: Merchant Survey Note: Form of ownership is only reported for respondents to applicable questions.		

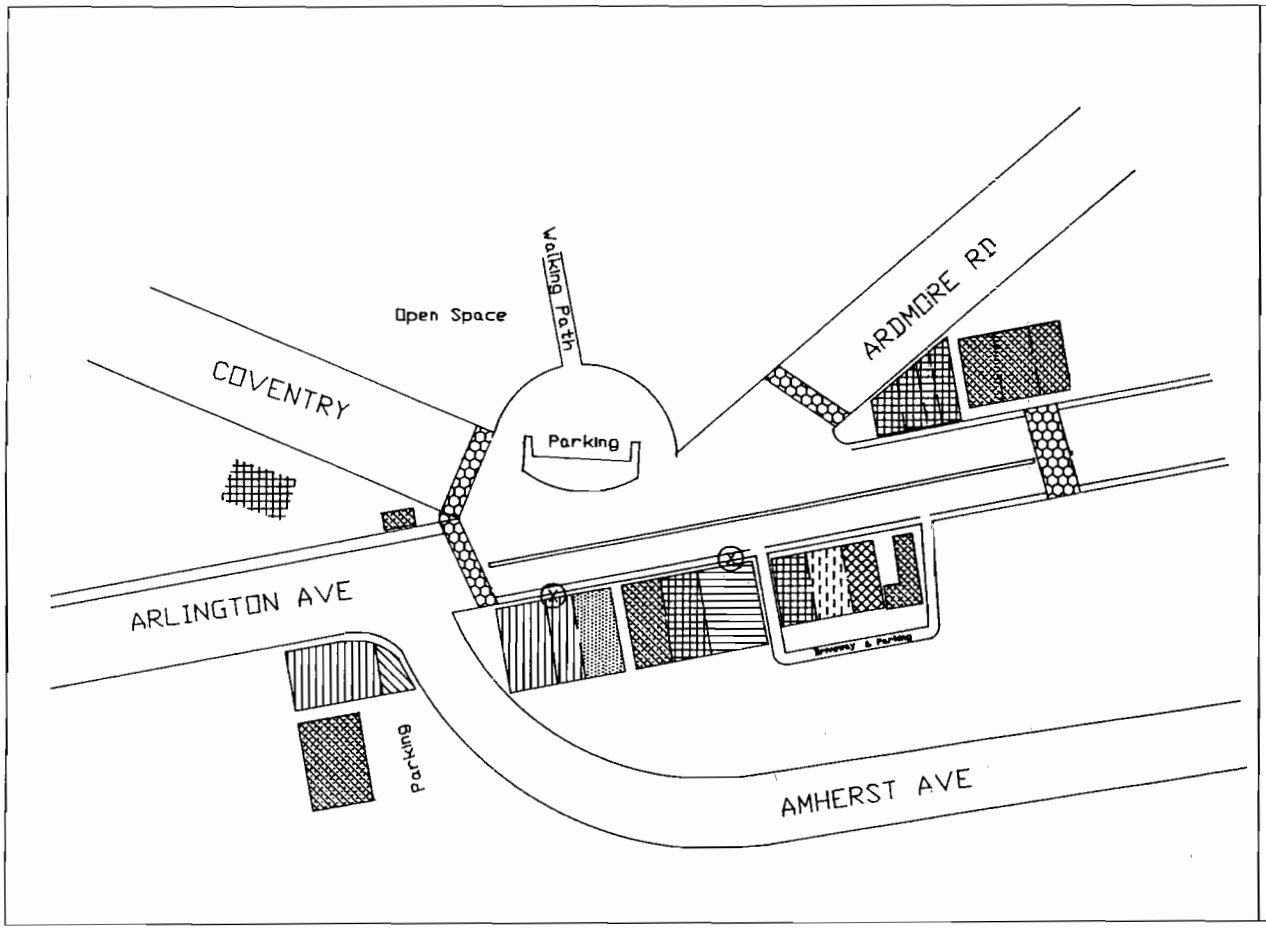
Kensington

The Kensington shopping area is located along Arlington Avenue just north of the Berkeley border in an unincorporated area of Contra Costa County. This shopping area includes a good mix of convenience services and is surrounded by a well-defined neighborhood (see Maps 5-13 and 5-14). It is surrounded by residential areas in all directions, with the small shopping area of Colusa Circle located about a half-mile down the hill to the west. The area to the east of the Arlington is characterized by steep hills that make walking difficult; to the west are somewhat less steep hills. The terrain north and south along the Arlington is generally flat.

Land Use Characteristics

The Kensington area is predominantly residential with some institutional and recreational uses located near the shopping area. The zoning in Kensington is single-family, R-6, with a minimum lot size of 6,000 square feet per unit or an allowable density of about 7 units per acre (Contra Costa County 1947 [1994]). The residential density according to the 1990 Census was about 5.6 units per acre or 13 persons per acre.


Tilden Nature Study Area
MAP 5-13. Vicinity of Kensington Shopping Area
LEGEND:
County Boundary
City Limits
Elevated BART Tracks
BART Station
Kensington Shopping Area
Census Tract Numbers
Census Tract Areas
Shopping Area
NORTH
Moeser Lane
Arlington Ave.
City of Kensington
Grizzly Peak Blvd.
Eureka Ave.
Ashbury Ave.
Sunset View Cemetery
3920
Tilden Regional Park
Central Ave.
Rockaway
3910
Contra Costa County
City of Berkeley
4211
Alameda County
BART
Ashbury Ave.
City of Albany
Colusa Ave.
4212
Arlington Ave.
Marin Ave.
Wildcat Canyon Rd.
4213
Solano Ave
Marin Ave
SCALE:
0
1/4 mile
1/2 mile



MAP 5-14

KENSINGTON SHOPPING AREA

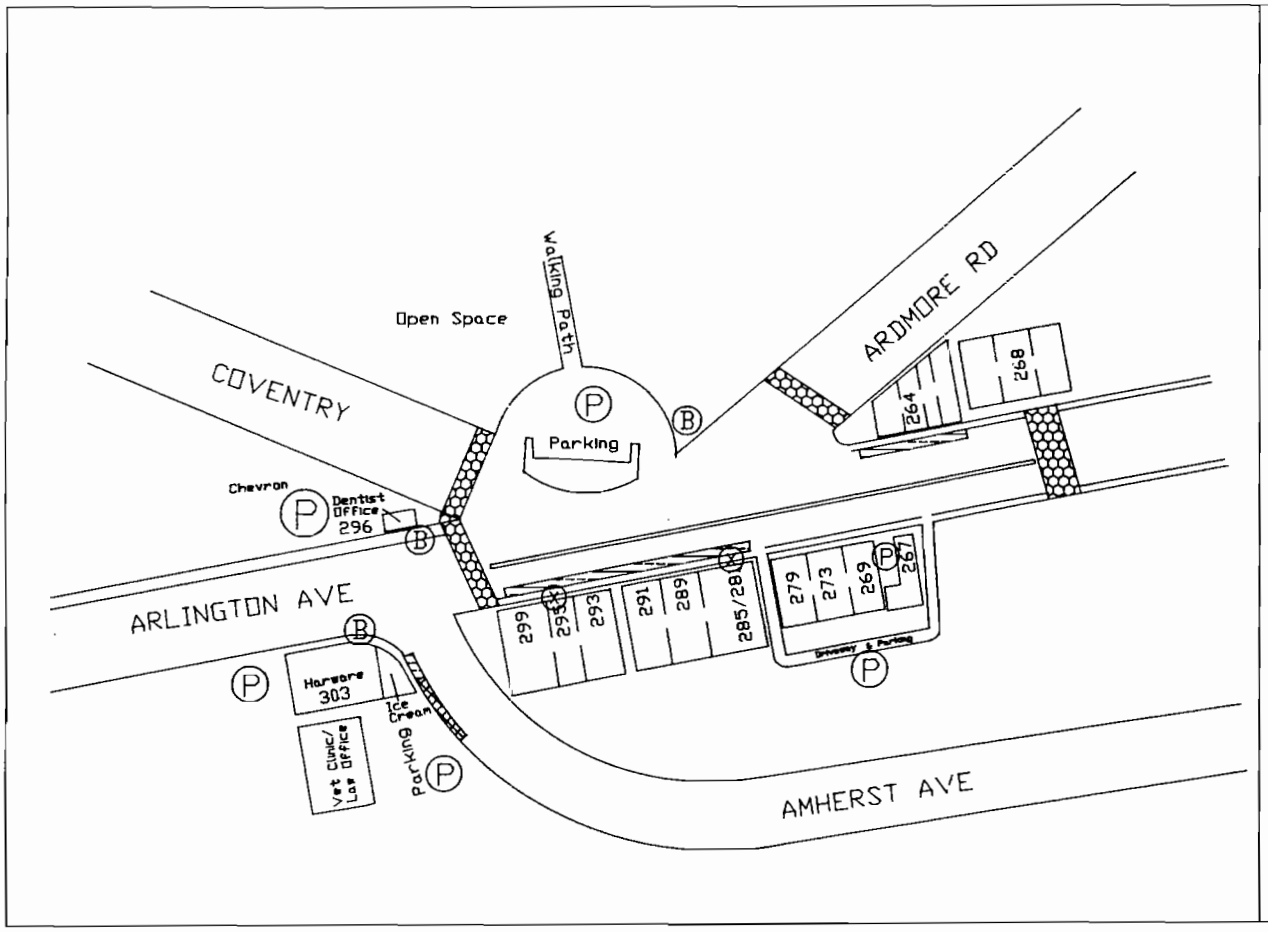
As of June 1994

- Cafes & Coffee Shops
- Grocery Stores
- Books or Gifts
- Miscellaneous Convenience
- Restaurants
- Specialty Foods
- Services
- Comparison Shopping
- Other Services
- Residential
- Empty
- Industrial
- Location of Intercept Surveys

N

Approximate Scale
1 Inch = 100 Feet

Source: Observations, Merchant Survey



MAP 5-15

KENSINGTON SHOPPING AREA

As of June 1994

Parking & Transit Characteristics

- Metered One Hour
- Metered Two hour
- Unmetered One Hour
- Unmetered Two hour
- Short Term
- Crosswalk
- (P) Off-Street Parking
- (B) Bus Stop
- (X) Location of Intercept Surveys

N

Approximate Scale
1/8 Inch = 100 Feet

Source: Observations, Merchant Survey

Transportation Characteristics

Kensington has limited highway and transit accessibility; one AC Transit bus, the #7, runs along the Arlington every half hour and the nearest freeway is about two miles away (see Map 5-16). However, Arlington Avenue (also called the Arlington), a two-lane winding road, is a major commute arterial for workers at the University of California at Berkeley and downtown Berkeley who live in the hills of Richmond and El Cerrito to the north. About 15,200 vehicles per day travel along the Arlington through the shopping area (City of Berkeley 1987).

Characteristics of Businesses

Businesses that provide both convenience services, such as video stores, banks and hairdressers, and other services, including medical, massage and chiropractic, dominate in Kensington (see Tables 5-17 and 5-18). The stores are small with an average of about 1,645 square feet (see Table 5-19). The average number of employees is similarly small, with only about 6.8 per business. The businesses have been quite stable, averaging 15.3 years in this location. Single proprietorships dominate accounting for 80% of all businesses (see Table 5-20).

Table 5-17. Businesses in Kensington by Type of Use

Type of Uses	Total in First Floor Locations	
	Number	Percentage
Cafés and Coffee Shops	1	4
Grocery Store	1	4
Flowers, Cards, and Books	1	4
Miscellaneous Convenience	3	13
Restaurants	1	4
Specialty Food	1	4
Convenience Services	4	17
Comparison Shopping	0	0
Other Services	11	48
Residential Buildings	0	0
Empty Store Fronts	0	0
Industrial Uses	0	0
TOTAL	23	98

Source: Observations, Merchant Survey

Notes: Includes all first floor businesses based upon observations. The types of businesses in each category are described in Appendix B.1, Table B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-18. Square Footage in Kensington by Type of Use		
Type of Uses		
	Square Footage	Percentage
Cafés and Coffee Shops	500	3
Grocery Store	3,000	15
Flowers, Cards, and Books	300	2
Miscellaneous Convenience	7,100	36
Restaurants	1,250	6
Specialty Food	1,700	9
Convenience Services	5,900	30
Comparison Shopping	0	0
TOTAL	19,750	101

Source: Observations, Merchant Survey

Note: Square footages are estimated when the merchants did not provide them. Businesses providing services other than convenience services were not included in the merchant survey; these businesses have been excluded from this table and from further analysis. The types of businesses in each category are described in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.

Table 5-19. Characteristics of Businesses in Kensington	
Square Footage	
Mean Square Footage	1,645
Median Square Footage	1,450
Number of Employees	
Full-time Employees	48
Part-time Employees	36
Total Employees	84
Mean Number of Employees	6.8
Years in Business	
At this Location	15.3
Total Years in Business	29.8
Ownership of Property	
Own (%)	8.3
Lease (%)	75.0
Not Reporting	16.7

Source: Merchant Survey

Notes: Square footage and number of employees are estimated for merchants that did not respond to the applicable questions or did not participate in the survey. Years in business is reported only for respondents to applicable questions in survey.

Table 5-20. Businesses in Kensington by Type of Ownership		
	Number	Percentage
National Chain	0	0
Multistate Regional Chain	1	10
Local Chains (SF Bay Area)	1	10
Single Store	8	80
Total Responding	10	100
Number of Stores in Bay Area Chains	14 (n=1)	

Source: Merchant Survey
Note: Form of ownership is only reported for respondents to applicable questions.

Comparison of the Case Study Areas

These shopping areas were chosen for the case studies because they represent the full range of shopping area types being proposed by the New Urbanists. Also, they are in areas of moderate residential densities, and the surrounding neighborhoods have populations with incomes near the regional median income. Hence, they are not only quite comparable along these dimensions, but also represent densities and socioeconomic characteristics that realistically could be achieved in new suburban developments. The latter point is important because, had "extreme" densities or demographics been present, the transferability of findings could be in doubt.

In this section, the differences and similarities in land use characteristics, transportation characteristics and types of businesses are summarized. In addition, the characteristics of households and residents are compared based on household structure and size, automobile ownership rates, income, ethnicity, education, and housing ownership and type.

Land Use Characteristics

The six shopping areas are similar in most land use characteristics (scc Table 5-21). The main differences are the single family zoning and steep topography to the east in Kensington and the planned shopping center at El Cerrito Plaza.

Table 5-21. Comparison of Land Use Characteristics of Shopping Areas

	Residential Density (Units/acre)	Residential Density (Persons/acre)	Residential Zoning	Topography	Form of Shopping Area
Rockridge - Market Hall	8.8	18.1	Single-Family; Multi-Family	Flat	Shopping Street
Rockridge - Alcatraz	7.5	16.0	Single-Family; Multi-Family	Flat	Shopping Street
Elmwood	9.8	20.6	Single Family; Multi-Family	Flat	Shopping Street
El Cerrito Plaza	6.5	15.9	Single Family; Multi-Family	Flat	Planned Center*
Hopkins	7.0	15.5	Single Family; Multi-Family	Flat	Shopping Street
Kensington	5.6	13.0	Single Family	Steep Slopes to the east	Shopping Street

Sources: 1990 Census of Population and Housing; Tape STF3A; Zoning Ordinances for Cities of Berkeley, Oakland, El Cerrito, and Albany and County of Contra Costa County; Observations

* - Even though El Cerrito Plaza would usually be categorized as a planned center, it is owned and managed by three separate owners: Emporium Capwell, Payless, and El Cerrito Plaza Management.

Transportation Characteristics

All of the case study areas are located on commute arterials, although they vary somewhat in transportation accessibility characteristics (see Table 5-22), with El Cerrito having the most automobile-accessible location and Kensington the least accessible location. Rockridge and El Cerrito both have high levels of accessibility; they differ in that the shopping area in Rockridge is located more favorably to bus transit and the BART station, especially at Market Hall, while El Cerrito Plaza is adjacent to a street with a much higher level of traffic and has an environment that is more difficult for pedestrians. Elmwood has a medium level of transportation accessibility because of the greater distances to the freeways and BART stations, but it is located along two major commute arterials. Hopkins is somewhat less accessible because automobile traffic is cut off to the south by street diverters; nonetheless the volume of traffic is high along Hopkins Avenue because of traffic going to the freeway along Gilman Avenue. Although Kensington is located along a major commute arterial, it is relatively less accessible than other shopping areas because of its location in the hills away from BART stations and freeways.

Table 5-22. Comparison of Transportation Characteristics of Shopping Areas

	Average Daily Vehicle Traffic	Frequency of Bus Service	Location of Nearest Bus Stop	Distance to Nearest BART Station	Distance to Nearest Freeway	Parking Location
Rockridge - Market Hall	20,169 (College Ave.)	Frequent	In shopping area	across street (Rockridge)	adjacent	meters along street; Market Hall; BART
Rockridge - Alcatraz	20,169 (College Ave.)	Frequent	In shopping area	.4 mile (Rockridge)	.5 mile	meters along street; B of A & Safeway lots
Elmwood	17,464 (College Ave.) 30,000 (Ashby Ave.)	Frequent	In shopping area	.9 mile (Rockridge and Ashby)	1 mile	meters along street; city lot
El Cerrito Plaza	39,700 (San Pablo Ave.)	Frequent	Across parking lot	.25 mile (El Cerrito Plaza)	.3 mile	parking lot surrounding Plaza
Hopkins	19,200 (Hopkins)	Moderate	In shopping area	.5 mile (North Berkeley)	1 mile	2-hour parking along street; Monterey Market
Kensington	15,200 (The Arlington)	Moderate	In shopping area	1.2 miles (El Cerrito Plaza)	2 miles	2 hour parking along street; public lot across street

Sources: Traffic Counts of Cities of Berkeley, Albany, El Cerrito, Oakland, and County of Contra Costa County; AC Transit Bus Schedules; Observations

The ability of customers to find parking in close proximity to these shopping areas varies significantly. In El Cerrito Plaza, parking is abundant. Customers in Kensington and Hopkins can find unmetered parking along the street in front of the stores and in lots

near the shopping area, although parking is sometimes crowded especially in Hopkins. In Rockridge and Elmwood customers can park at meters in front of stores, in parking lots nearby or in the surrounding residential neighborhoods (though residential permit parking applies in both areas and imposes time limits on non-residential parking).

Characteristics of Businesses

Each of the case study areas, with the possible exception of El Cerrito Plaza, is of a type envisioned by the New Urbanists.[3] They exhibit a range of scales and the composition of businesses varies significantly (see Table 5-23).

The Kensington shopping area is a classic convenience neighborhood center. Its goods and services include a grocery store, video store, pharmacy, hardware store, flower shop and a small restaurant. It is designed to serve the local residents of a medium-density neighborhood.

At the other extreme is Rockridge, which is of the scale of a large community center. The shopping center as a whole extends for 15 blocks and includes a diverse set of comparison shopping, convenience services and two full-scale supermarkets. However, the two nodes of activity considered in this research are smaller scale. In the Alcatraz subarea, a grocery store, convenience services and specialty foods are the dominant uses, while in the Market Hall subarea, comparison shopping, eating places and specialty foods dominate.

The Elmwood shopping area is in between these two extremes. It has purposefully kept small businesses in operation and contains mostly comparison shopping, convenience services and restaurants. While its businesses are of the small scale advocated by the New Urbanists, it has no major draw like the Rockridge area because it does not have any specialty food shops or grocery stores.

The Hopkins area has the scale of a neighborhood shopping area and the small scale shops advocated by the New Urbanists. It is largely comprised of specialty foods shops, comparison shops (a nursery/garden store and framing shop) and convenience services. However, it includes two major draws, the Monterey Market and the Berkeley Horticultural that likely bring people from a larger area than the scale of the shopping area might suggest.

The El Cerrito Plaza is the antithesis of what the New Urbanists would advocate. As an old regional shopping mall, it contains a major department store, the Emporium Capwell, and other comparison shopping that is not consistent with the idea of a neighborhood shopping area. However, it also includes services, such as a grocery store, pharmacy, hairdressers, dry cleaners and other services that would serve residents of the adjacent neighborhoods. It is also located in close proximity to a BART station and

[3] As noted earlier, El Cerrito Plaza is the type of older mid-sized shopping center that at least some New Urbanists have proposed to retrofit to pedestrian-friendly designs.

represents an opportunity for infill development or a retrofit to make better connections to the BART station and the surrounding neighborhoods.

Table 5-23. Comparison of Characteristics of Businesses in Shopping Areas

	Retail Square Footage*/ Average Square Footage	Number of Stores*	Number of Employees*	Major Types of Businesses and Percentage of Square Footage	Form of Ownership# (in Percentages)
Rockridge - Market Hall§	64,150 2,004	32	Part-time: 244 Full-time: 201 Total: 445 Mean: 14.3	Comparison Shopping: 48% Restaurants: 18% Cafés and Coffee Shops: 16% Specialty Food: 9%	Single: 69% Local Chain: 31%
Rockridge - Alcatraz§	73,700 2,393	32	Part-time: 694 Full-time: 934 Total: 1,654 Mean: 10.0	Grocery Store: 33% Convenience Services: 23% Specialty Food: 17%	Single: 66% Local Chain: 24%
Elmwood	103,650 1,450	71	Part-time: 231 Full-time: 230 Total: 461 Mean: 6.5	Comparison Shopping: 35% Convenience Services: 24% Restaurants: 12%	Single: 56% Local Chain: 38%
El Cerrito Plaza	433,750 9,391	44	Part-time: 454 Full-time: 346 Total: 800 Mean: 19.0	Comparison Shopping: 71% Grocery Store: 8% Restaurants: 6%	Single: 40 Local Chain: 25%
Hopkins	30,000 1,710	18	Part-time: 96 Full-time: 52 Total: 148 Mean: 9.7	Specialty Food: 44% Comparison Shopping: 31% Convenience Services: 13%	Single: 77% Local Chain: 23%
Kensington	19,750	12	Part-time: 48 Full-time: 36 Total: 84 Mean: 6.8	Miscellaneous Convenience: 36% Convenience Services: 30% Grocery Store: 15%	Single: 80% Local Chain: 10%

Source: Merchant Survey; Observations; Interview with Dan McNeer (manager of El Cerrito Plaza)
* - Square footage, number of stores and number of employees excludes other services, which were not included in the merchant survey. Square footage and number of employees are estimated using reported figures and averages based upon observations and responds to applicable questions in survey. In Rockridge, the average square footage excludes Safeway and Lucky's, which are significantly larger than other stores. In El Cerrito Plaza, total and average square footage is reported by manager.
# - Reported only for respondents to applicable question in survey.
§ - The Rockridge subareas are defined as the three blocks from Claremont Avenue north into Berkeley for the Alcatraz subarea and the two block area from the BART station south to Lawton Avenue for Market Hall subarea.

Characteristics of Housing and Residents

The six shopping areas all are surrounded of moderate density, moderate income areas. The characteristics of the residential areas surrounding these shopping areas do vary in some minor ways, however. In this section, the characteristics of households and

residents are compared to each other and Alameda and Contra Costa County using the 1990 Census of Housing and Population.[4]

Residents of the case study areas lived in smaller families than residents of other areas of Alameda and Contra Costa Counties (see Figure 5-1), and a higher percentage live alone (see Figure 5-2). Except in Kensington, households in the surrounding areas also are less likely to be married couples or married couples with children than households in the two counties generally. Furthermore, Elmwood and the two subareas of Rockridge contain a higher percentage of households including persons who are unrelated to each other, probably reflecting their closeness to the University of California at Berkeley. The heads of households are older in El Cerrito, Hopkins, and Kensington and younger in the two subareas of Rockridge and in Elmwood (see Figure 5-3). Consistent with the smaller households sizes, residents of these areas own fewer vehicles per household (see Figure 5-4).

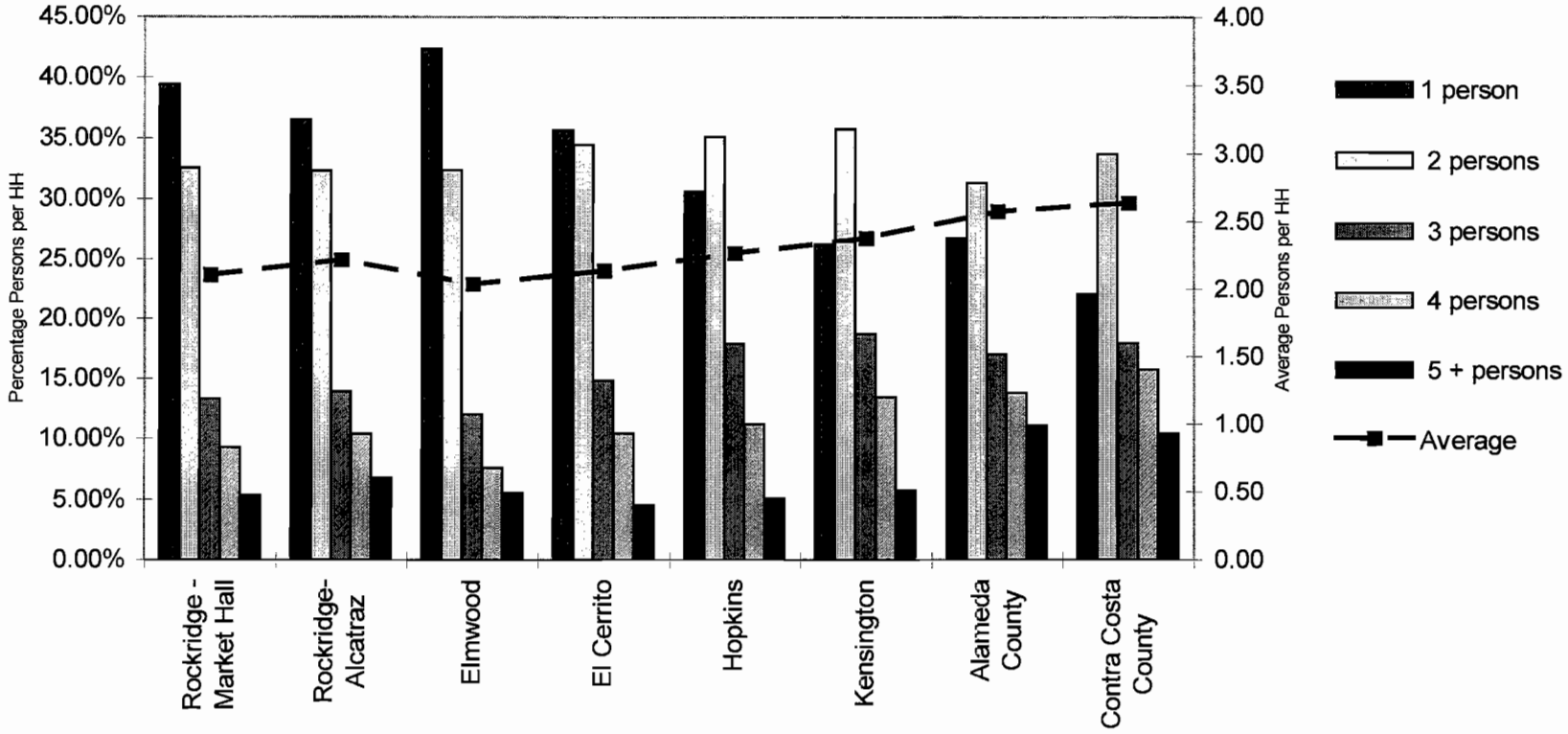
The residents of the case study areas are less ethnically diverse than Alameda County as a whole, with over 70% of the population in each neighborhood being white, which is similar to the population of Contra Costa County (see Figure 5-5). The residents of these shopping areas are more also more highly educated than the rest of the region, with 45% or more of the residents in each shopping area having a college education or more (see Figure 5-6).

The per capita income of residents of each case study area is slightly higher than that in Alameda County. Only the neighborhoods surrounding El Cerrito Plaza and Rockridge - Market Hall had a lower per capita income than Contra Costa County residents (see Figure 5-7). However, the percentage of households with incomes in 1990 below $20,000 was higher in the two subareas of Rockridge and Elmwood than in Alameda or Contra Costa County overall (see Figure 5-8).

Residents of Hopkins and Kensington are more likely to own and live in a single family dwelling unit than the residents of other case study neighborhoods or residents of Alameda and Contra Costa County generally (see Figures 5-9 and 5-10). Residents of the two areas of Rockridge and El Cerrito Plaza are as likely to live in housing with multiple units as residents of Alameda County. In the other shopping areas, residents are more likely than residents of Alameda and Contra Costa County as a whole to be renters and to live in housing with more than one unit.

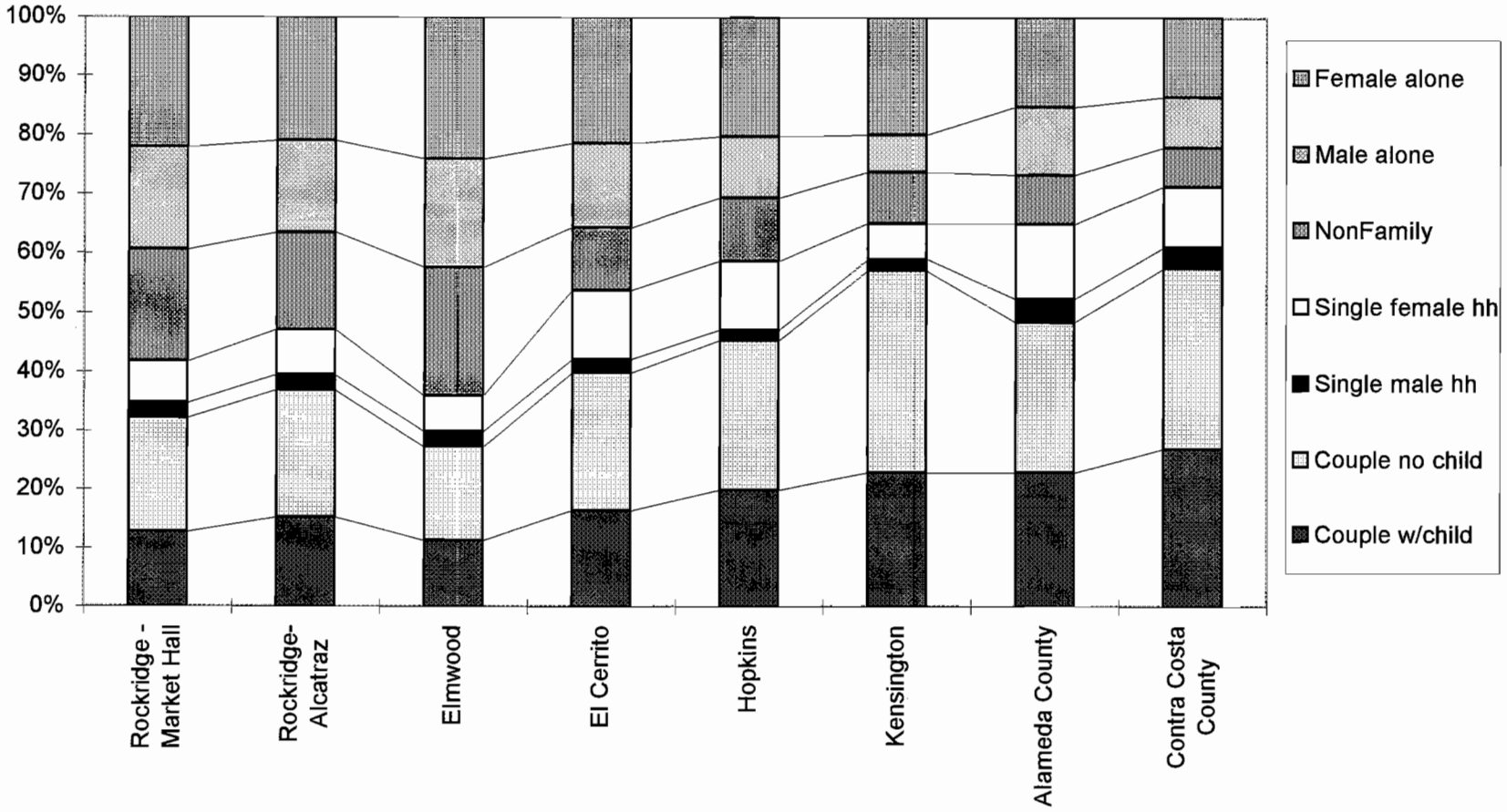
[4] For each shopping area the census tracts include most of the area within the first half mile of the shopping area. The census tract used in each shopping area are shown on the maps of the vicinity of the shopping area that are displayed earlier in this chapter.

Figure 5-1. Persons per Household in Case Study Neighborhoods and Related Counties



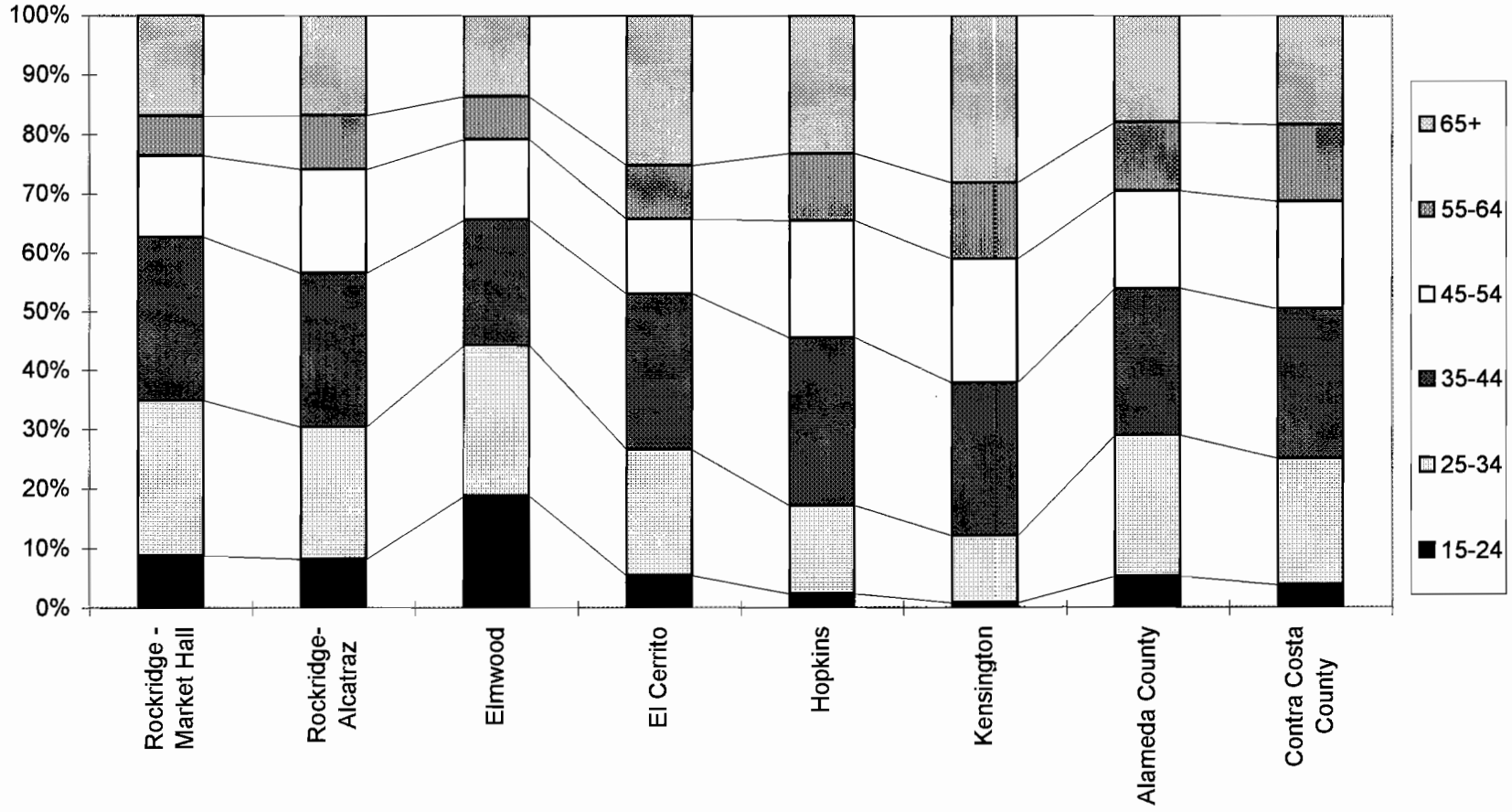
Source: 1990 Census of Population and Housing

Figure 5-2. Household Type in Case Study Neighborhoods and Related Counties



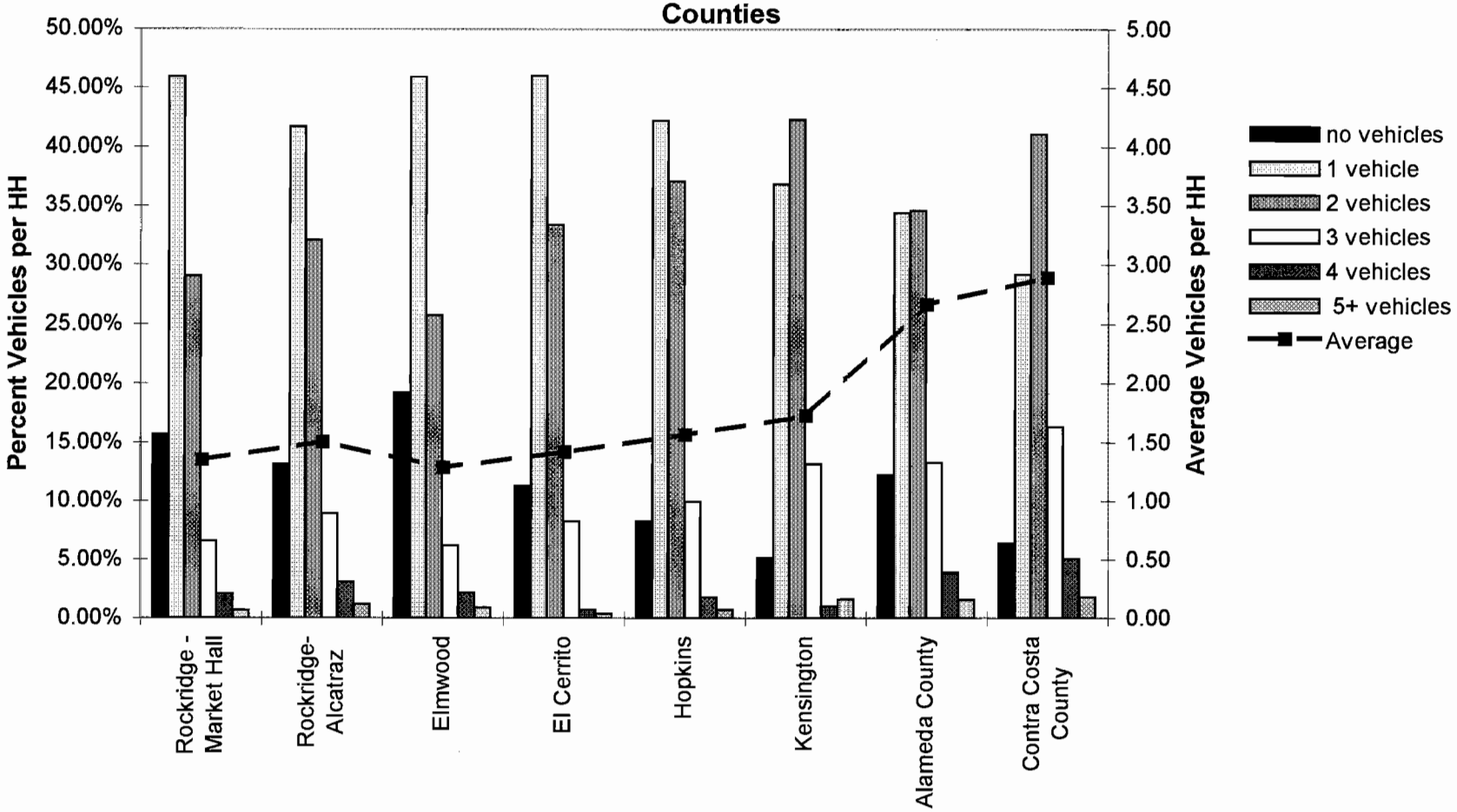
Source: 1990 Census of Population and Housing

Figure 5-3. Age of Head of Household in Case Study Neighborhoods and Related Counties



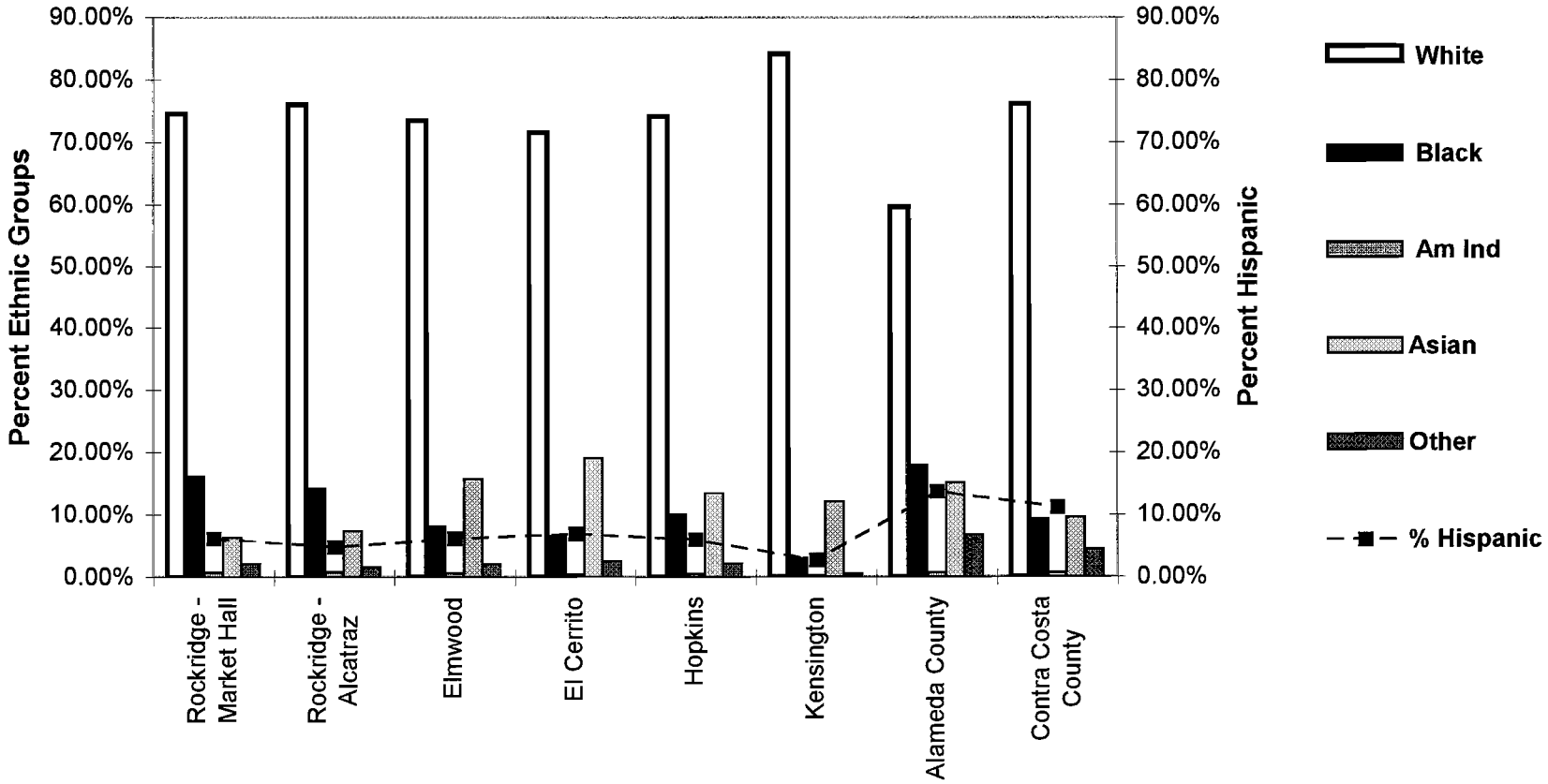
Source: 1990 Census of Population and Housing

Figure 5-4. Vehicles per Household in Case Study Neighborhoods and Related Counties



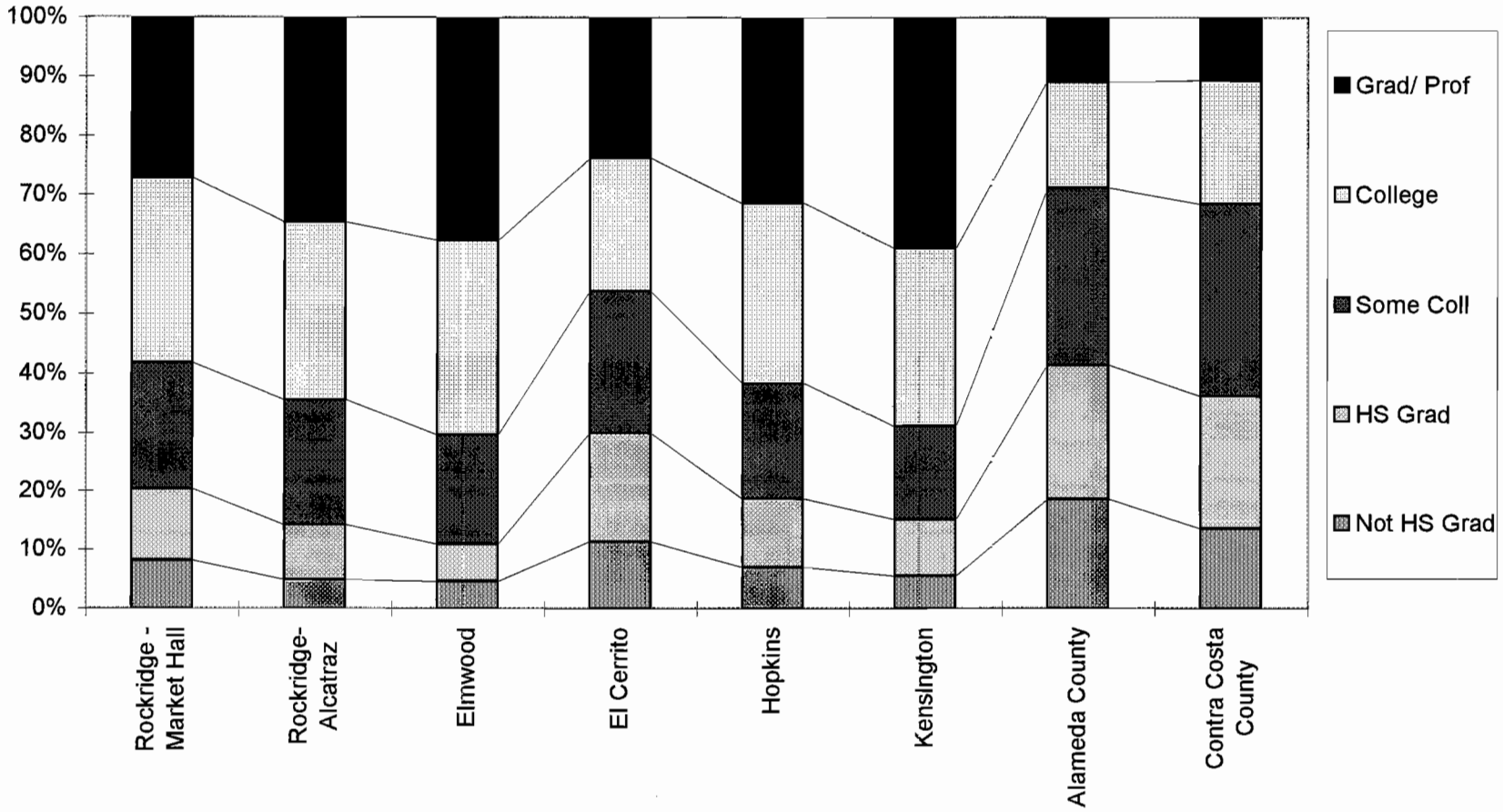
Source: 1990 Census of Population and Housing

Figure 5-5. Race and Ethnicity in Case Study Neighborhoods and Related Counties



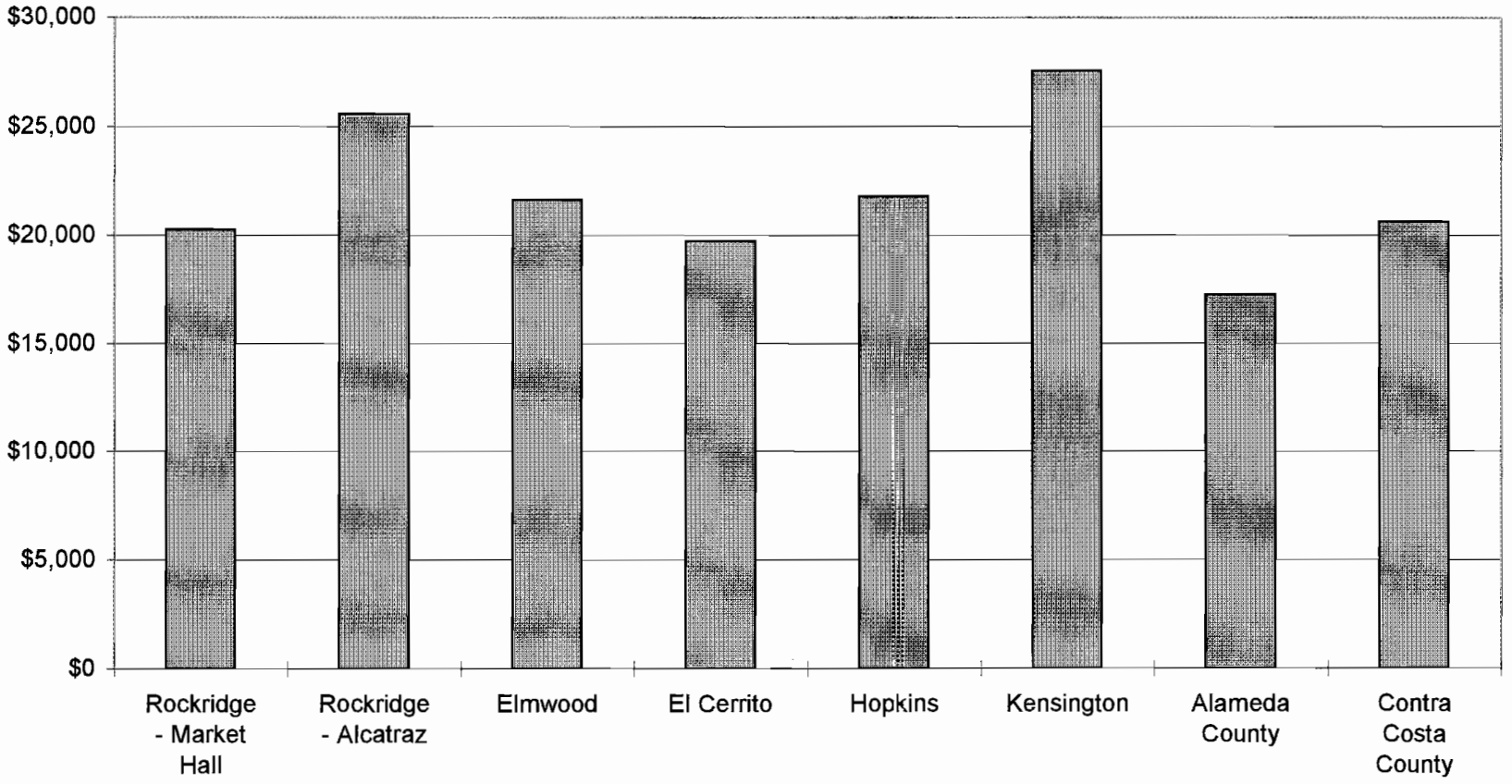
Source: 1990 Census of Population and Housing
Notes: Hispanics are included in other racial categories.

Figure 5-6. Educational Levels in Case Study Neighborhoods and Related Counties



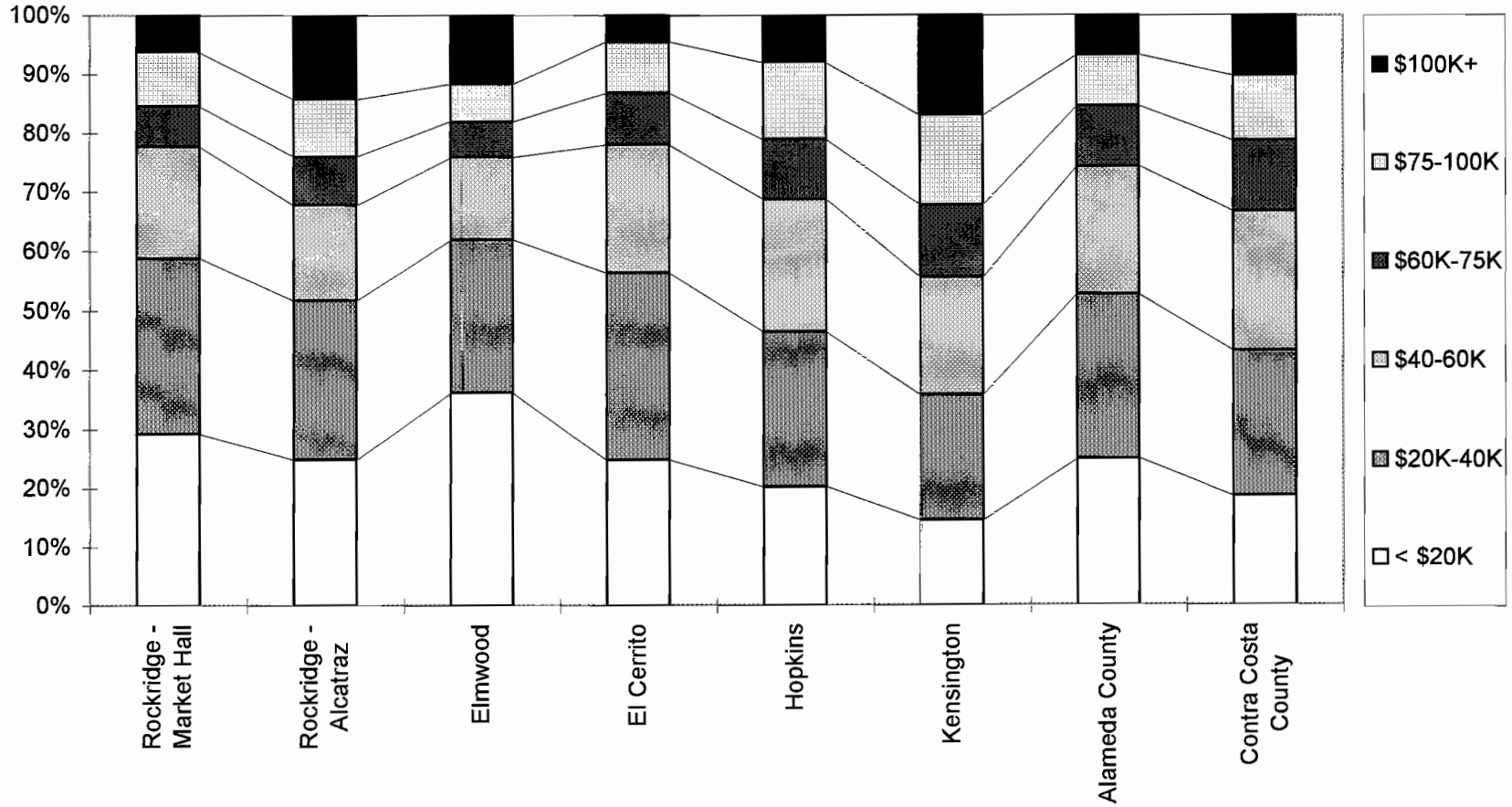
Source: 1990 Census of Population and Housing

Figure 5-7. Per Capita Income in Case Study Neighborhoods and Related Counties



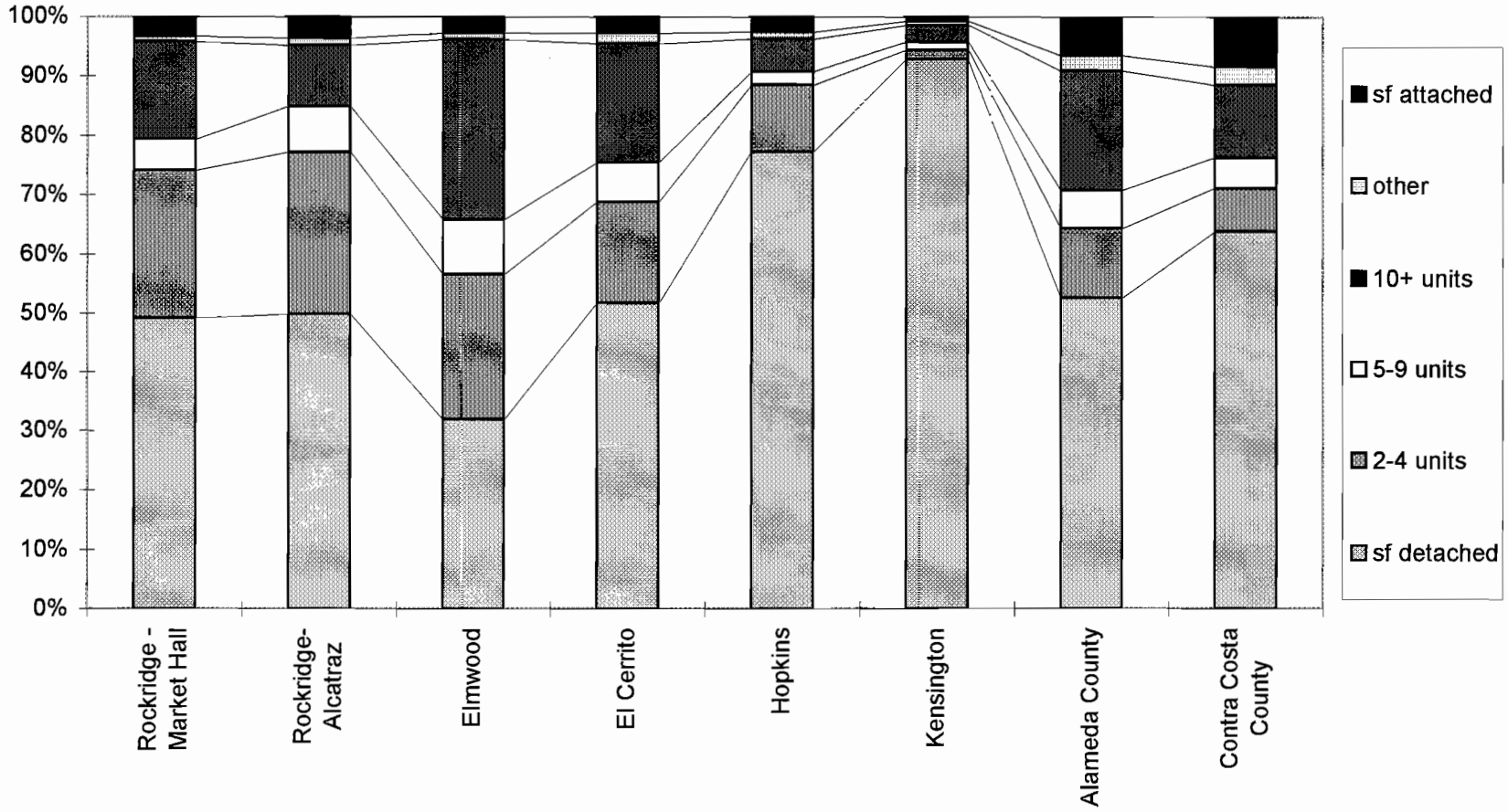
Source: 1990 Census of Population and Housing

Figure 5-8. Percent Household Income by Range in Case Study Neighborhoods and Related Counties



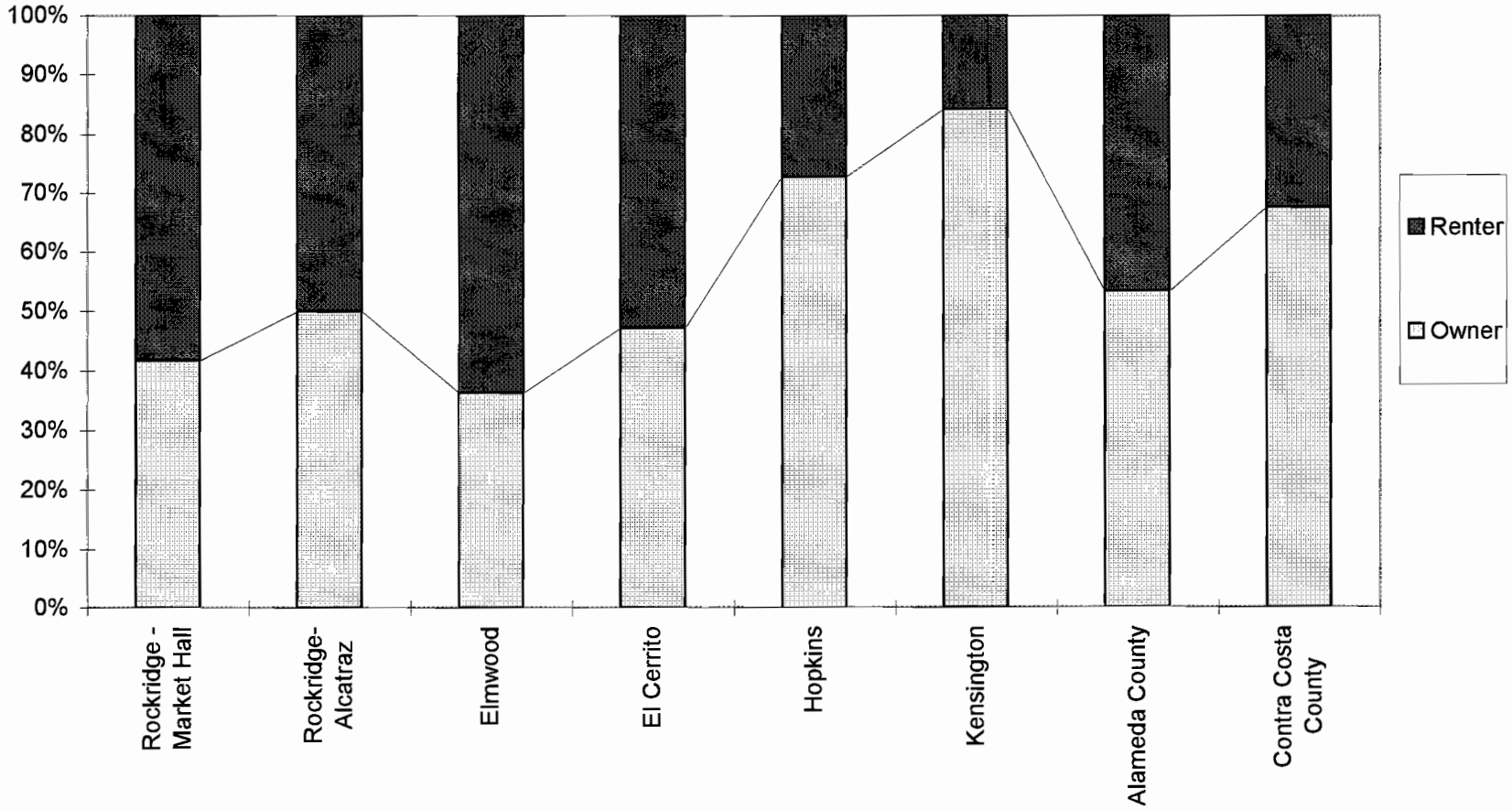
Source: 1990 Census of Population and Housing

Figure 5-9. Housing Type by Number of Units in Case Study Neighborhoods and Related Counties



Source: 1990 Census of Population and Housing

Figure 5-10. Housing by Tenure in Case Study Neighborhoods and Related Counties



Source: 1990 Census of Population and Housing

Summary

In this chapter five prototypical case study areas (and six shopping areas) are described. The shopping areas represent the full range of types of shopping areas that, that New Urbanists are seeking to build in their new developments (or, the case of El Cerrito Plaza, hope to retrofit through redesign or redevelopment). All are located in areas surrounded by medium-density, medium-income residential areas. They range in scale from the two smallest, Kensington and Hopkins, which are of the neighborhood scale, to the community (or even regional) scale in Rockridge and El Cerrito Plaza. (Elmwood is somewhere in between the neighborhood and community scale.) They range in the types of services from convenience-oriented to heavily comparison in orientation. With the exception of El Cerrito Plaza and the two major grocery stores in Rockridge, the scale of the stores in all of these shopping areas is relatively small. Finally, all have some bus service -- several are well-served -- and two are served by BART. The six shopping areas -- hereafter, Rockridge - Market Hall and Rockridge - Alcatraz will be treated separately--thus offer a full range of "exemplars" for assessing the claims of the New Urbanists about the potential trip reduction effects of shopping that is integrated into a neighborhood.

CHAPTER 6. CUSTOMERS IN TRADITIONAL SHOPPING AREAS AND THEIR SHOPPING AND TRAVEL CHOICES

As noted in earlier chapters, the neighborhood designs of New Urbanism are predicated on two arguments: (1) that the town center or shopping area will largely attract people who live in the nearby neighborhood; and (2) that many of these users of the shopping area will, because of the proximity, walk to the shopping area. In contrast, travel behavioralists' studies to date indicate that (1) people are likely to shop in whatever stores or shopping areas provide the combination of goods and services that they are seeking, trading off accessibility costs and store/area attractiveness; and (2) many of these shoppers will drive to the shopping area. However, each side bases its arguments on studies that are only partially appropriate. The New Urbanists rely on studies that extrapolate from grossly aggregate data, or focus on residents' behavior. The travel behavioralists rely on analyses from areas that may not reflect New Urbanists, or even traditional urban design characteristics.

In this chapter, the basic question of who the customers are and what they are doing the in the six "traditional" shopping areas is considered, using data from the surveys of customers. Six basic questions are answered: (1) Where do respondents live? (2) What are the personal and other characteristics of shoppers and how do they compare to the residents of the neighborhood? (3) How do the uses that attract residents compare to those that attract non-residents? (4) What mix of uses attract customers to each shopping area? and (5) How do patterns of trip-making (number of stops, trip chaining, trip frequency) differ between residents and non-residents?

Where Do Respondents Live?

As a part of the intercept survey, customers were asked several questions to determine their connection to the shopping area: (1) whether they live in the neighborhood; (2) in what city they live, and (3) if they live in the same or a nearby city, the name of the street and cross-street on which they live. Based upon this information, residence status is classified as follows[1]: all respondents who live within one mile (straight line distance), are classified as neighborhood residents, and all respondents who live beyond one mile are identified as non-residents. Residents are further categorized as (1) living within a half mile, and (2) living between one-half mile and one mile from the shopping area. Non-residents are further classified as (1) living one to five miles, and (2) living more than five miles from the shopping area. Table 6-1 shows the percentage of respondents by shopping area in each of the distance categories. As expected based upon

[1] A comparison of the self-definition of the customer (Question 1, above) and the reclassification based upon distance (Questions 2 and 3, above) can be found in Appendix C, Tables C-10 through C-12. Customers of more the more well-defined neighborhoods, Kensington and Rockridge, were less likely to be reclassified (less than 10%) compared to El Cerrito, where 24% were reclassified, and Hopkins, where 17% were reclassified. In Elmwood, 13% were reclassified including many who live in Rockridge and also within a mile of Elmwood.

the scale of the shopping areas and the mix of uses, the composition of respondents is significantly different among the shopping areas.

Table 6-1. Percentage of Respondents by Distance of Residence from Shopping Area by Shopping Area

	Live within .5 miles (a)	Live between .5 and 1 mile away (b)	Live within 1 Mile (Residents) (a+b)	Live between 1 and 5 miles away (c)	Live more than 5 miles away (d)	Live more than 1 mile away (Non-resident) (c+d)	Total (a+b+c+d)
Rockridge - Market Hall	24	14	37	32	31	63	100
Rockridge - Alcatraz	40	21	62	25	13	38	100
Elmwood	33	18	51	29	20	49	100
El Cerrito Plaza	12	27	39	52	9	61	100
Hopkins	32	20	52	33	15	48	100
Kensington	58	18	76	19	5	24	100
All Respondents	32	20	52	32	16	48	100

Source: Customer Intercept Survey (unweighted data)
Note: Residence is calculated based upon responses to Questions 9, 10 and 11: *In what city do you live? On what street? On what cross street?* Distance is measured as straight line distance. Percentages may not total due to rounding.
Statistics: Chi-squared ($p < .05$). In comparison of residents to non-residents, shopping areas are significantly different.

Kensington and Rockridge - Alcatraz attract mostly local residents, with 76% and 62% of respondents, respectively, from the surrounding residential areas. Kensington, which is the smallest of the shopping areas and contains mostly convenience and other services, is the most oriented toward local residents with 59% of respondents living within the first half mile. Rockridge - Alcatraz, which also contains mostly convenience goods and services also similarly serves a high percentage of residents.

Respondents in Hopkins and Elmwood are almost evenly split between residents and non-residents. The smaller scale of Hopkins, with about 15 stores and 30,000 square feet of retail compared to about 71 stores and 103,650 square feet of retail in Elmwood, would suggest that it have a smaller drawing area; however, the specialty produce market, Monterey Market, which was visited by 75% of respondents in Hopkins, and other specialty food shops attract many non-residents. Elmwood, which has attempted to keep convenience uses in the shopping area, draws as many residents as non-residents.

El Cerrito Plaza, with a large retail square footage, and Rockridge - Market, which is part of a larger shopping area, draw from the broader region with 63% and 61% of their respondents, respectively, living more than a mile from each shopping area. Most of El Cerrito Plaza's respondents come from less than five miles from the shopping area (91%), while Rockridge - Market Hall draws about 31% of its respondents from more than five

miles distant. A surprisingly large 14% of the respondents in Rockridge - Market Hall live outside of the East Bay.

Non-residents are attracted to El Cerrito Plaza for three stores: the Emporium Capwell department store, the Lucky's grocery store and the Payless drug store. In contrast, non-residents are attracted to Rockridge - Market Hall for its mix of specialty foods and comparison shopping.

What Are the Other Personal and Household Characteristics of the Shoppers?

Although the New Urbanists claim to be building communities for a diversity of housing types and a mix of incomes, most New Urbanist development has been positioned to serve medium to high-income households (see Calthorpe 1993, Katz 1994). The residents in the six shopping areas considered here are similarly middle-income, though within several of the shopping areas a range of income groups are present. A basic question is whether the respondents in the shopping areas reflect the overall characteristics of the surrounding neighborhoods, or whether, as some critics charge, they cater to more affluent residents and non-residents and they serve a diverse set of customers, or they serve customers who are like the residents of the shopping areas. In this section, the characteristics of residents who are respondents are compared to respondents who are non-residents, as well as the characteristics of the neighborhood as a whole.

In Tables 6-2 and 6-3, the characteristics of resident respondents are compared to non-resident respondents for each shopping area. On all characteristics, except the number of persons per household, the number of vehicles per licensed driver, and the percentage of persons with a graduate education, the residents are like non-residents. Furthermore, the characteristics of resident shoppers are generally consistent with the characteristics of the neighborhood, in terms of race, age, marital status, education, employment status, and income. (In Appendix C the socio-economic and demographic characteristics of residents and non-residents in each area are described in detail and the respondents are compared to residents of the area.)

Table 6-2. Personal and Household Characteristics of Residents Compared to Non-Residents in Shopping Areas (Averages)		
	Residents	Non-residents
Age	44.9	46.9
Household Members	2.39§	2.20§
Household Vehicles	1.70	1.79
Vehicle per Licensed Driver*	.88#	.98#
Housing Tenure	10.6	10.5
Workers per Household	1.26	1.26

Source: Customer Mailback Survey (weighted data)
* - Licensed Drivers include all person over age 16. This likely overstates the rate of licensure.
Statistics: (Independent sample t-test)
- $p < .05$
§ - $p < .10$

Table 6-3. Personal and Household Characteristics of Residents Respondents Compared to Non-resident Respondents (in Percentages)		
	Residents	Non-residents
Females	58%	62%
Accompanied by Children	10%	8%
White	86%	83%
Employed Full-time	58%	62%
Student	10%	8%
Less Than College Education	15%	14%
Graduate Education	55%*	42%*
Income < $40,000	36%	21%
Income > $60,000	41%	44%
Single Family Dwelling	65%	68%
Own Dwelling Unit	41%	38%
Single Person	25%	27%
Couple, No Children	36%	39%

Source: Customer Mailback Survey; Customer Intercept Survey (unweighted data)
Statistics: (Chi-squared)
* - $p < .05$

How Do the Mix Of Uses that Attract Residents Compare to Those that Attract Non-Residents?

Resident and non-resident shoppers in the six traditional shopping areas travel there for different purposes. Residents are more likely than non-residents to stop for only convenience goods and services, and are less likely to make trips that include stops for comparison goods and other services (see Table 6-4). The difference in the pattern of shopping among respondents in is significant all distance ranges.

Table 6-4. Percentage of Respondents Making Combination of Stops by Distance of Residence from Shopping Area

	Less than .5 Miles	From .5 to 1 Mile	From 1-5 Miles	More Than 5 Miles	All Respondents
Only Convenience Goods and Services	78	72	62	57	69
Only Comparison Goods and Other Services	3	3	5	13	5
Both Convenience and Comparison Goods and Services	16	25	33	26	23
No Stops	4	4	5	4	5
Total	100	100	100	100	102

Source: Customer Intercept Survey (unweighted data)
Note: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.
Statistics (Chi-Squared) $p < .05$. In comparison of respondents by distance from shopping area, the difference in the type of shopping is significantly different.

Types of Convenience and Other Stops by Residents and Non-residents

Among survey respondents, similar percentages of residents and non-residents make stops for convenience shopping (see Table 6-5). However, residents and non-residents show differences in the share of shopping for specific types of convenience goods (see Tables 6-6 and 6-7). Residents are more likely to make stops for groceries, convenience services, and miscellaneous convenience goods, including stops at pharmacies, and hardware and video stores.[2] Non-residents are significantly more likely to stop at stores that provide comparison shopping.

[2] These relationships are consistent regardless of whether the customers are categorized by the percentage of customers making a specific type of stop, by the specific type of stop as a the percentage of the total stops, or by the average number of stops made by residents and non-residents.

Table 6-5. Percentage of Respondents Making One or More Stops by Type of Stop and Distance of Residence from Shopping Area

	Less than .5 Miles	From .5 to 1 Mile	From 1-5 Miles	More Than 5 Miles	All Respondents
Specialty Food Shopping	39	29	37	46	38
Grocery Shopping	32	33	24	9	26
Cafés and Coffee Shops	18	19	22	26	21
Miscellaneous Convenience	26	24	15	11	18
Flowers, Cards and Books	7	9	7	16	9
Restaurants	7	8	8	11	8
All Convenience Shopping	85	87	85	81	85
Convenience Services	34	25	19	11	24
Any Convenience Stops	91	92	88	84	91
Comparison Shopping	14	20	30	30	23
Other Services	4	3	3	6	4
Any Comparison Stops	17	23	31	35	26
No Stops	4	4	4	4	4
Total Respondents	322	197	319	159	997

Source: Customer Intercept Survey (unweighted data)
Notes: Percentages will not total to 100% because customers may have made multiple stops. Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 6-7 for a comparison of the mean number of stops by residents and non-residents.

Table 6-6. Percentage of Stops Made Respondents by Type of Stops by Distance of Residence from Shopping Area

	Less than .5 Miles	From .5 to 1 Mile	From 1-5 Miles	More Than 5 Miles	All Respondents
Specialty Food Shopping	28	27	32	37	30
Grocery Shopping	15	16	11	4	11
Cafés and Coffee Shops	9	10	11	13	10
Miscellaneous Convenience	13	12	7	5	10
Flowers, Cards and Books	5	5	4	7	4
Restaurants	3	4	4	5	4
All Convenience Shopping	71	69	70	71	71
Convenience Services	18	15	10	6	13
All Convenience Stops	89	86	80	77	83
Comparison Shopping	9	13	19	20	15
Other Services	1	2	1	3	2
All Comparison Stops	11	15	21	24	17
Total Stops by Respondents	100	100	100	100	100

Source: Customer Intercept Survey (unweighted data)
Note: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 6-7 for a comparison of the mean number of stops by residents and non-residents. Subtotals may not equal parts due to rounding.

Table 6-7. Average Number of Stops Made by Customers by Type of Stops by Distance of Residence from Shopping Area

	Residents	Non-residents	All Customers
Specialty Food Shopping	.58	.62	.61
Grocery Shopping	.28*	.19*	.23
Cafés and Coffee Shops	.25	.30	.28
Miscellaneous Convenience	.25*	.14*	.19
Flowers, Cards and Books	.10	.11	.11
Restaurants	.09	.10	.09
All Convenience Shopping	1.56	1.46	1.51
Convenience Services	.34*	.18*	.26
All Convenience Stops	1.90*	1.64*	1.76
Comparison Shopping	.31*	.49*	.41
Other Services	.03	.05	.04
All Comparison Stops	.34*	.55*	.45
Total Stops	2.24	2.18	2.21

Source: Customer Intercept Survey (weighted data)
Note: Average number of stops is less than one in most cases because not all customers stop for a specific category of goods. Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.
Statistics: (T-test for independent samples) The average number of stops per resident is compared to the average number of stops per non-resident.
* - $p < .05$

The higher percentage of residents who stop at grocery stores, convenience services and miscellaneous convenience stores is consistent with the assumptions of the New Urbanists (Duany 1995) and the research of the central place theorists (Garrison 1958; Clark and Rushton 1970); stores offering convenience goods cater mostly to local residents while non-residents are more likely to stop for comparison shopping. This seems logical. Why would customers drive five miles to go to Safeway when they could go to a closer location for similar goods? Why would a customer drive five or more miles to go to a dry cleaners or a pharmacy when there is one closer to their home?

However, specialty foods present a different picture. Central place theorists and empiricists categorize the butcher shop, the bakery, the deli and other specialty foods as low-order goods that would serve the residents of the adjacent neighborhood (see, for example, Berry 1963, Garner 1965, Morrill 1987). Arguably, the designation of these goods as convenience goods reflects the retail landscape of the 1960s and earlier. In any event, specialty food shops are often identified by the New Urbanists as the type of shops that they would include in their mixed-use, high-density developments (Duany 1995). However, the high rate of attraction of non-residents at similar levels to residents to these specialty food stores suggests that they may have the characteristics of specialty goods, providing the high quality and/or uniqueness that customers are willing to drive

considerable distances to find. On the other hand, for at least some customers, stopping at specialty food stores may simply substitute for grocery shopping; local residents do, in fact, make considerable use of these establishments.

How do the Patterns of Shopping Differ Among Shopping Areas?

In this section, the patterns of shopping in each of the shopping areas and these types of shopping areas are considered. First, the types of stops are compared in each shopping area. Then the patterns of shopping among non-residents in each shopping area are compared to those of residents.

The percentage of respondents making stops by type of business varies significantly among the shopping areas because of differences in the mixes of uses in each shopping area. However, in all shopping areas, a significant percentage of respondents and of all stops (see Tables 6-8 and 6-9) are for convenience shopping and convenience services with over 83% and 72%, respectively. Convenience shopping represents the largest single category, with over 70% of all respondents making one or more such stop in each shopping area. The percentage of stops for convenience services varies considerably among the shopping areas ranging from 42% and 44% of respondents, respectively, in Kensington and Elmwood to 11% and 9% in Rockridge - Market Hall and Hopkins, respectively.

Comparison shopping represents a much smaller percentage of all shopping activity and the share of stops varies with the land use mix from about 40% in Elmwood and El Cerrito to only 29% and 21%, respectively, of respondents in the Market Hall and Alcatraz area of Rockridge.

Table 6-8. Percentage of Respondents Making One or More Stops by Type of Stop and Shopping Area

	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Specialty Food Shopping	5	60	22	3	88	6
Grocery Shopping	6	25	n.a.	59	n.a.	68
Cafés and Coffee Shops	41	25	32	14	12	1
Miscellaneous Convenience	7	19	14	33	12	33
Flowers, Cards and Books	16	8	13	7	2	6
Restaurants	11	7	12	4	6	8
All Convenience Shopping	83	85	70	88	97	88
Convenience Services	11	22	44	17	9	42
Any Convenience Stops	86	90	83	91	97	99
Comparison Shopping	29	21	39	40	6	n.a.
Other Services	6	3	6	2	1	5
Any Comparison Stops	35	22	42	41	7	5
No Stops	6	6	8	1	1	1
Total Respondents	177	156	163	180	164	157

Source: Customer Intercept Survey (unweighted data)
Note: Percentages will not equal to 100% because customers made multiple stops. Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.
n.a. - not applicable, category of shopping not found in shopping area
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 6-10 for a comparison of the mean number of stops by residents and non-residents in each shopping area.

Table 6-9. Percentage of Stops Made by Respondents by Type of Stop by Shopping Area

	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Specialty Food Shopping	35	37	11	1	80	3
Grocery Shopping	3	11	n.a.	31	n.a.	37
Cafés and Coffee Shops	19	11	16	8	5	1
Miscellaneous Convenience	3	7	7	17	5	22
Flowers, Cards and Books	7	4	7	3	1	3
Restaurants	5	3	6	3	3	5
All Convenience Shopping	73	75	47	63	94	71
Convenience Services	5	11	25	9	4	27
All Convenience Stops	78	86	72	72	97	97
Comparison Shopping	2	13	26	27	2	n.a.
Other Services	3	1	3	1	1	3
All Comparison Stops	22	14	28	28	3	3
Total Stops	404	354	368	348	404	297

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding. Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.
n.a. - not applicable, category of shopping not found in shopping area
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 6-10 for a comparison of the mean number of stops by residents and non-residents in each shopping area.

The two Rockridge subareas and Elmwood have a higher percentage, compared to other shopping areas, of respondents making no stops with between 6% and 8% compared to 1% or less in the other three shopping areas. This may be related to higher use of transit through these areas (i.e., some respondents were only in the shopping area to use transit) and/or the walking environment of these shopping areas.

In Kensington, the percentages of respondents making stops for convenience shopping and services are the highest of all shopping areas. This result is not surprising given the dominance of convenience uses among the major activity generators (both in

number and square footage) in the shopping area. Three types of uses dominate in Kensington: grocery shopping, miscellaneous convenience, and convenience services. About 68% of the respondents stop at the grocery, where 37% of the stops are made. A third of the respondents stop at the pharmacy or the hardware store, where 22% of the total stops are made. Convenience services such as, the video store and the bank, account for 27% of all stops made for convenience services and 42% of the respondents making such stops.

In Rockridge - Alcatraz, 90% of respondents make stops for convenience goods and services with about 60% of the respondents and 37% of the stops at specialty food shops. However, about a fifth of the respondents in Rockridge - Alcatraz also make stops for comparison shopping.

In Hopkins, 88% of all respondents and about 80% of the all stops are made at specialty food shops. About 75% of all respondents stop at the Monterey Market.

Elmwood shows the greatest diversity of types of stops and the least concentration of activity in any single category of stops, with 44% of respondents stopping for convenience services. Respondents in Elmwood stop in substantial percentages in all categories of convenience shopping, except grocery shopping (which is not present in the shopping area). Comparison shopping, such as clothing stores and gift shops, attract a substantial percentage of respondents.

In Rockridge - Market Hall and El Cerrito Plaza, a large percentage of the respondents make stops for comparison shopping (29% and 40%, respectively). A large percentage of respondents in Rockridge - Market Hall also stop at specialty food stores, and cafés and coffee shops, whereas in El Cerrito Plaza a high percentage of respondents also stop at grocery stores, miscellaneous convenience stores and convenience services; in each case, they simply reflect the kinds of uses available.

Differences in Types of Stops by Residents and Non-residents by Shopping Area

When the average number of stops by residents in each shopping area is compared to the number of stops of non-residents, the pattern is significantly different for comparison shopping and in several categories of convenience shopping: grocery shopping, miscellaneous convenience, and convenience services (see Table 6-10). In each of the shopping areas, there is a significant difference between residents and non-residents in the number of stops made for at least one category of convenience stops.

In El Cerrito Plaza, the number of stops made by residents is similar in all categories except grocery shopping where residents are slightly more likely to stop than non-resident.

The differences in the types of stops that residents make compared to non-residents are the greatest in Elmwood. Residents are significantly more likely to make

stops for miscellaneous conveniences and convenience services, while non-residents are significantly more likely to stop for comparison shopping.

In Rockridge - Market Hall, Rockridge - Alcatraz and Kensington residents are more than non-residents to stop for groceries and miscellaneous conveniences. (In Rockridge - Market Hall, residents are also more likely to stop for convenience services.) In Kensington, non-residents who shop there are attracted to the restaurant, while in Hopkins, non-residents are make greater use of specialty food stores.

Table 6-10. Average Number of Stops Made by Residents and Non-residents by Type of Stop and Shopping Area

	Specialty Food	Grocery Shopping	Cafes and Coffee Shops	Miscellaneous Convenience	Flowers, Cards and Books	Restaurant	Convenience Services	Comparison Shopping
Rockridge - Market Hall								
Residents	.74	.12*	.44	.12*	.15	.16	.23*	.49
Non-residents	.84	.04*	.46	.04*	.18	.10	.06*	.43
Rockridge - Alcatraz								
Residents	.80	.34*	.21#	.24*	.08	.07	.31	.24
Non-residents	.90	.12*	.33#	.10*	.10	.09	.19	.38
Elmwood								
Residents	.28	n.a.	.35	.24*	.15	.11	.68*	.35*
Non-residents	.25	n.a.	.38	.07*	.15	.16	.43*	.84*
El Cerrito Plaza								
Residents	.06	.66#	.13	.36	.07	.03	.17	.44
Non-residents	.01	.55#	.15	.32	.06	.06	.18	.57
Hopkins								
Residents	1.70*	n.a.	.22*	.17	.01	.07	.10	.04
Non-residents	2.29*	n.a.	.03*	.09	.04	.04	.05	.07
Kensington								
Residents	.07	.72#	.01	.48#	.07	.06*	.57	n.a.
Non-residents	.05	.52#	.03	.26#	.04	.22*	.39	n.a.
All Customers								
Residents	.58	.28*	.25	.25*	.10	.09	.34*	.31*
Non-residents	.62	.19*	.30	.14*	.12	.10	.18*	.49*

Source: Customer Intercept Survey (weighted data)
Note: Percentages will not equal to 100% because respondents made multiple stops. Types of stops are categorized in Appendix B.1 Tables B-2 through B-5.
n.a. - Not applicable, category of land use not found in shopping area
Statistics: T-test for independent samples of residents and non-residents by category of use by shopping area.
* - $p < .05$
# - $p < .10$

How Do the Trip-making Patterns of Residents Differ from Non-residents?

Earlier literature on trip making for shopping suggests that customers who live farther from the shopping area are more likely to make multiple purpose, multi-stop shops the farther they live from the shopping area (Garrison 1958, Hanson 1980). More recent research on shopping travel suggests that the percentage of trips that are simple, home to shop to home is decreasing, especially with longer distances from residence to the shopping and other uses (Kim *et al.* 1994; Strathman *et al.* 1994; Ewing *et al.* 1994; Ewing1995). In this section, the patterns of trip making based upon the number of stops, the complexity of trip chains, and the frequency of travel are considered.

Number of Stops Made by Distance from Shopping Area

Customers make similar numbers of stops in the shopping area irrespective of the distance they travel, with between 2.17 and 2.29 stops per person (see Table 6-11). The number of stops is not significantly different among the distance categories.

Approximately 5% of respondents in all distance categories make no stops in the shopping area. These customers walk through the shopping area as a part of their work/school commute, as a part of a daily exercise program, or on their way to other destinations in the area.

Table 6-11. Percentage of Customers Making Number of Stops by Distance of Residence from Shopping Area

	0	1	2	3	4+	Total	Mean
Less than .5 Miles	4	29	32	18	17	100	2.29
From .5 to 1 Mile	5	27	29	28	11	100	2.17
From 1-5 Miles	5	29	32	22	12	100	2.18
More Than 5 Miles	6	27	32	19	17	100	2.20
All Customers	5	28	31	21	15	99	2.21

Source: Customer Intercept Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons (p = .05) In comparison of mean number of stops by distance from shopping areas, the no two groups are significantly different.

Number of Stops in Shopping Areas

On average, customers made just over two stops per shopping trip (see Table 6-12). The mean number of stops is significantly different between shopping areas from a high of 2.46 stops per customer in Hopkins to lows of 1.90 and 1.93 stops per customer in Kensington and El Cerrito Plaza, respectively. In the latter areas, 43% and 39% of the customers, respectively, make only a single stop. In Kensington about two-thirds of customers only stop at Young's Market and another 14% only stop at the video store. In

El Cerrito Plaza about 65% stop only at Lucky's supermarket and 10% each only stop at Emporium and Long's drug store.

Table 6-12. Percentage of Customers Making Number of Stops by Shopping Area

	0	1	2	3	4	5+	Total	Mean
Rockridge - Market Hall*	7	24	28	25	9	7	100	2.32
Rockridge - Alcatraz*	7	26	28	21	12	6	100	2.28
Elmwood*	9	24	26	24	11	6	100	2.28
El Cerrito Plaza	1	39	37	16	4	3	100	1.93
Hopkins	2	16	40	25	12	5	100	2.47
Kensington	0	43	34	14	5	3	99	1.90
All Customers	5	28	31	21	9	6	100	2.21

Source: Customer Intercept Survey (weighted data)
* - The mean number of stops is slightly underestimated in Rockridge - Market Hall, Rockridge - Alcatraz, and Elmwood because a small number of customers (about 10 per area did not indicate all of their stops because they were "browsing").
Statistics: Scheffé multiple comparisons (p = .05) In comparison of means for all shopping area, Hopkins differs from El Cerrito Plaza and Kensington.

Trip Chaining by Distance of Respondent from Shopping Area

Trip chains are categorized into simple and complex chains (see Strathman, Dueker and Davis, 1992). By definition all chains begin and end at home. A simple chain is defined as any trip from home to a shopping area to home. Complex chains include all trips with multiple destinations between home, including the shopping area. Respondents were asked two questions that were combined to define their trip patterns, "Where were you before you came to <shopping area> today?" and "Where will you go after you have made all of your stops in <shopping area>?"[3] Because of the wording of these questions, three links of each respondent's trip are identified: the place where the respondent is immediately before she went to the shopping area, the stops she made in the shopping area, and the place she went after she completed her stops in the shopping area. On the basis of the responses to these questions, a trip chain is defined for each respondents as a simple chain, home to shop to home, or a complex chain.

Complex chains are further categorized into: work/school commutes, home-based complex chains, and other chains. Work/school commutes include all trips in which the origin or destination is work or school and the paired destination or origin is home. Home-based complex chains include any trip that has home as the origin or the destination and a paired origin or destination with a location other than home, work, or

[3] Within the trip to the shopping area, a customer stopped at multiple destinations for different purposes. The different trip purposes within the same shopping area are not considered as a part of the trip chaining. The number and purpose of stops within the shopping area have already been described.

school. Work/school commutes and home-based complex chains have at least four links in the chain. Trips categorized as other chains are potentially the most complicated of all trips; they include all trips in which home is neither the origin nor the destination. These trips have at least five links in the chain.

The pattern of trips by distance from the shopping area is consistent with the results suggested by the travel behaviorists and some early central place theorists and empiricists (Hanson 1980; Garrison 1958; Bucklin 1967). Respondents from greater distances are more likely to have more complex travel patterns, while respondents who live close by are more likely to make simple, home-shop-home trips (see Table 6-13).

Table 6-13. Percentage of Respondents Making Types of Trips by Distance of Residence from Shopping Area

	Simple Home-Shop-Home	Work/School Commutes*	Home-based Complex Chains#	Other Complex Chains§	Total Trips
Less than .5 Miles	55	13	28	4	100
From .5 to 1 Mile	44	16	32	9	101
From 1-5 Miles	29	14	41	17	101
More Than 5 Miles	29	21	32	28	100
All Respondents	39	15	33	13	100

Source: Customer Intercept Survey (unweighted data)
Notes: Type of Trip is based upon Questions 5 (*Where were you before you came to <shopping area> today*) and 6 (*Where will you go after you have made all of your stops in <shopping area>?*). Residence is based upon straight line distance from shopping area to home. Percentages may not total to 100% due to rounding.
* - Included Home-Shop-Work/School and Work/School-Shop-Home
# - Included Home-Shop-Other and Other-Shop-Home
§ - Included Work/School-Shop-Other, Other-Shop-Work/School and Other-Shop-Other
Statistics: (Chi-squared) In comparison of types of trips by distance, the types of trips are significantly different ($p < .05$).

Trip Chaining in Shopping Areas

Three shopping areas, Rockridge - Market Hall, El Cerrito Plaza and Hopkins, show about 43% of their trips as simple, home-shop-home, trips; the other 57% are complex linked trips with similar distributions among work/school commute, home-based complex chains and other chains (see Table 6-14). In contrast, the three other shopping areas, Rockridge - Alcatraz, Elmwood and Kensington, have slightly lower percentages of trips as simple, home to shop to home, trips. The distribution of the complex chains by

type varies slightly with Elmwood having higher percentages of other complex chains and Kensington having a lower percentage of other complex chains.

Table 6-14. Percentage of Respondents Making Type of Trip Chain by Shopping Area

	Home-Shop-Home	Work/School Commute*	Home-based Complex Chain#	Other Chain§	Total
Rockridge - Market Hall	42	16	29	13	101
Rockridge - Alcatraz	34	16	37	14	101
Elmwood	33	10	36	21	100
El Cerrito Plaza	43	15	32	11	101
Hopkins	43	15	29	14	101
Kensington	36	20	38	5	99
All Respondents	39	15	33	13	100

Source: Customer Intercept Survey (unweighted data)
Notes: Type of Trip based upon Questions 5 (*Where were you before you came to <shopping area> today*) and 6 (*Where will you go after you have made all of your stops in <shopping area>?*). Percentages may not total to 100% due to rounding.
* - Included Home-Shop-Work/School and Work/School-Shop-Home
# - Included Home-Shop-Other and Other-Shop-Home
§ - Includes Work/School-Shop-Other, Other-Shop-Work/School and Other-Shop-Other
Statistics: (Chi-squared). In comparison of shopping areas, the types of trips are significantly different ($p < .05$).

Trip Chaining of Residents Compared to Non-residents

When the residents are compared to the non-residents in each shopping area, the trip chaining pattern is significantly different in each shopping area (see Table 6-15). Although, as noted above, each shopping area shows some variation in distribution of types of trips, all shopping areas show the pattern of a lower percentage of simple chains among non-residents. Kensington exhibits a unique pattern that is likely related to its relatively inaccessible location. It has the lowest percentage of non-residents making the simple chains and the highest percentage making work/school commutes and the lowest percentage of residents making the most complex, other chains.

Table 6-15. Percentage of Respondents by Type of Trip Chain by Residents and Non-residents by Shopping Area

	Home-Shop-Home	Work/School Commute*	Home-based Complex Chains#	Other Chains§	Total
Rockridge - Market Hall£					
Residents	64	15	17	5	101
Non-Residents	29	16	37	18	100
Rockridge - Alcatraz£					
Residents	45	16	33	6	100
Non-Residents	17	17	42	25	101
Elmwood£					
Residents	45	8	35	12	100
Non-Residents	21	11	38	30	100
El Cerrito Plaza£					
Residents	50	17	29	4	100
Non-Residents	38	13	35	15	101
Hopkins£					
Residents	64	11	19	7	101
Non-Residents	20	19	39	22	100
Kensington¥					
Residents	44	17	36	3	100
Non-Residents	13	29	45	13	100
All Respondents£					
Residents	51	14	29	6	100
Non-Residents	26	16	38	20	100

Source: Customer Intercept Survey (unweighted data)

Notes: Residents live within one mile (straight line) from the shopping area. Percentages may not total to 100% due to rounding.

* - Includes Home-Shop-Work/School and Work/School-Shop-Home

- Includes Home-Shop-Other and Other-Shop-Home

§ - Includes Work/School-Shop-Other, Other-Shop-Work/School and Other-Shop-Other

Statistics: (Chi-squared) Comparison of residents to non-residents in each shopping area and for all respondents.

£ - In comparison of residents to non-residents in each shopping area and overall ($p < .05$).

¥ - In comparison of residents to non-residents ($p < .10$).

Frequency of Stopping by Distance from Shopping Area

The closer a respondent lives to the shopping area, the more frequently he or she goes to the shopping area (see Table 6-16). Among respondents who live within the first half mile, 75% stop three or more times per week, compared to about 16% of those who live more than five miles from the shopping area. In contrast, about 5% of respondents who live within the first mile stop less than once a week compared to 58% of respondents who live more than five miles from the shopping area. Respondents in the one through five mile distance from the shopping areas are almost evenly distributed among the frequencies of making stops.

Table 6-16. Percentage of Respondents by Distance of Residence from Shopping Area and Frequency of Stopping in Shopping Area

	Less than Once a Week	One to Two Times Per Week	Three or More Times Per Week	Total
Less than .5 Miles	5	19	75	99
From .5 to 1 Mile	10	35	55	100
From 1-5 Miles	31	32	35	98
More Than 5 Miles	58	26	16	100
All Respondents	23	28	49	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding. Residence is based upon straight line distance from shopping area to home.
Statistics: (Chi-squared) In comparison of frequency of making stops by distance from shopping area, the difference in frequency is significant ($p < .05$).

Frequency of Shopping by Shopping Area

The frequency with which respondents visit the shopping areas shows four different patterns depending upon the characteristics of the respondents (see Tables 6-17 and 6-18). Kensington and Rockridge - Alcatraz, the shopping areas with the highest percentage of residents, also have a high percentage, about two-thirds, of the respondents who come to the shopping area more than three times per week. These two shopping areas also show similar distributions of frequencies of stops among residents and non-residents.

In Hopkins, most of the respondents, 45%, come to the shopping area one or two times per week. Another 39% come to the shopping area three or more times per week. Over half of residents, 53% come to Hopkins, three or more times per week, while more than half of non-residents, 54%, come there one or two times per week.

In Elmwood and Rockridge - Market Hall, significant percentages come to the shopping area less than once a week, and significant percentages also come more than three times per week. Respondents from the surrounding residential area stop frequently, and respondents who drive a long distance come infrequently. The percentage of residents who come to Rockridge - Market Hall frequently is striking, with 87% coming there more than three times per week.

In El Cerrito Plaza about an equal percentage of respondents come to the shopping area for each of the frequency categories. Local residents are less likely to stop frequently (three or more times per week) than are residents near any shopping areas, except Hopkins.

Table 6-17. Frequency with which Respondents Stop in Shopping Area (in Percentages)

	Less than Once a Week	One to Two Times Per Week	Three or More Times Per Week	Total
Rockridge - Market Hall	29	19	52	100
Rockridge - Alcatraz	12	26	62	100
Elmwood	35	24	41	100
El Cerrito Plaza	31	32	36	99
Hopkins	16	45	38	99
Kensington	11	22	66	99
All Respondents	26	28	49	103

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics: (Chi-squared) In comparison of frequency in among shopping areas, the difference is significant.

Table 6-18. Frequency of Stopping in Shopping Area by Residents and Non-residents by Shopping Area

	Less than Once a Week	One to Two Times Per Week	Three or More Times Per Week	Total
Rockridge - Market Hall				
Residents	2	12	86	100
Non-residents	45	23	32	100
Rockridge - Alcatraz				
Residents	3	20	75	98
Non-residents	28	35	38	101
Elmwood				
Residents	13	27	60	100
Non-residents	58	21	21	100
El Cerrito Plaza				
Residents	11	36	53	100
Non-residents	44	30	26	100
Hopkins				
Residents	11	37	52	100
Non-residents	23	54	23	100
Kensington				
Residents	4	21	75	100
Non-residents	32	26	42	100
All Respondents				
Residents	7	25	68	100
Non-residents	40	29	29	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics: (Chi-squared, $p < .05$) In comparison of residents to non-residents in each shopping area, the frequency is significantly different in each shopping and for all respondents.

Conclusions

The share of residents and non-residents varies significantly by shopping area, but in every area there are a significant number of non-residents. Most of the respondents of the convenience-oriented areas, Kensington and Rockridge - Alcatraz, are from the surrounding neighborhood, but even so 24% in Kensington and 38% in Rockridge - Alcatraz are from outside the neighborhood. In Hopkins and Elmwood the respondents are almost evenly split between residents and non-residents. A majority of the respondents in El Cerrito Plaza and Rockridge - Market Hall are from outside of the neighborhood.

While the characteristics of respondents differ among shopping areas, with a few exceptions, the characteristics of non-resident shoppers are similar to the residents of the surrounding neighborhoods and the residents who are shopping there. The shopping areas do not, therefore, appear to serve exceptional or "elite" shoppers.

Customers make similar numbers of stops irrespective of the distance they live from the shopping area. Among shopping areas, customers make the most stops at the specialty food stores in Hopkins and the fewest in Kensington and El Cerrito Plaza. Not surprisingly given the diversity of uses in shopping areas, the types of stops respondents make varies across shopping areas; however, more than 83% of respondents in all shopping areas make at least one stop for convenience goods and services. Overall, residents of shopping areas are more likely to make stops for groceries, miscellaneous conveniences like hardware, videos and the pharmacy, and convenience services. Non-residents are more likely to make stops for comparison shopping. The pattern of differences between residents and non-residents is not consistent across shopping areas, however. In El Cerrito Plaza, resident and non-resident shoppers are quite similar, except residents are more likely to stop for groceries. This probably reflects El Cerrito Plaza's large market area (a function of both its own characteristics and the characteristics of retail in the City of El Cerrito). Elmwood's residents and non-residents are quite different, with residents shopping for miscellaneous convenience goods and convenience services and non-residents shopping for comparison shopping.

A higher proportion of trip in complex, other, chains increases with greater distance from the shopping area. Residents are more likely to make simple, home to shop to home, chains than non-residents. All shopping areas show a significantly different pattern between residents and non-residents. The specific chains vary from one shopping area to another reflecting individual land use and transportation characteristics as well as the percentages of residents and non-residents.

Residents are more likely to stop frequently in each of the shopping areas than non-residents. Among the shopping areas, the frequency with which respondents stops differs. In general, where residents are stopping for convenience goods and services, and where the shopping area is well-connected to transit, as in Rockridge - Market Hall, the

percentage of residents who stop frequently is higher. In areas where more respondents stop for comparison shopping, they also stop less frequently. In Hopkins, where most of the stores provide specialty foods, non-residents stop once or twice a week while residents stop three or more times per week.

CHAPTER 7. FACTORS AFFECTING MODE CHOICE TO TRADITIONAL SHOPPING AREAS

Previous chapters show that customers of traditional shopping areas are drawn from outside the neighborhood as well as from within it. Regardless of the distance they live from the shopping area, customers make similar number of stops and most make stops for one or more convenience goods and services. However, residents are more likely to stop for groceries, miscellaneous convenience items, and convenience services while non-residents are more likely to stop for comparison shopping. Residents are likely to go the shopping area more frequently and make more simple, home to shop to home, chains than non-residents.

This chapter turns to the mode of travel to these traditional shopping areas. Influencing mode choice is one of the most critical elements in the New Urbanists' schemes for a new development paradigm. The New Urbanists argue that shopping in the neighborhood should increase walking, reduce automobile use and reduce the need for parking (Calthorpe 1993; Katz 1994). In this chapter, the general question of "what factors affect the mode choice for shopping?" is examined by answering the following questions: (1) How do customers get to the shopping area? (2) How do the characteristics of customers vary with mode? (3) How do their mode of travel vary with the distance they live from the shopping area? (4) How do their shopping and travel activity vary by mode of travel? and (5) How does the shopping and travel patterns among residents differ by mode of travel? Finally, a binomial logit model of the choice to walk versus not walk to these shopping areas is developed.

Mode Share of Customers

Mode shares vary among shopping areas, reflecting the differing customers bases and access characteristics. In general, however, walk and transit shares are much higher than many skeptics of New Urbanism would have predicted. In all shopping areas, except El Cerrito Plaza, at least 24% of respondents walk; in Rockridge - Alcatraz about 40% walk to the Yasai Market and other small shops (see Table 7-1).[1] In Elmwood about 33% walk, in Rockridge - Market Hall and Hopkins, 27%, and in Kensington, 24%. About 10% walk to El Cerrito Plaza; this is lower than the other shopping areas but still higher than typical trip generation rates would suggest.

The transit share ranges from 1% to 2% in the small shopping areas, to 11% in the best served area, Rockridge - Market Hall. Customers' mode choices are similar for the

[1] A sample of 50 customers were interviewed at the Safeway store on a weekday to determine if the mode choice, residence and types of stops differed from the customers who were stopped across the street at the Yasai Market. The results of this survey suggest that the customers are equally likely to be residents (62% in both samples) and about 25% of the customers stopped on each side of the street make stops on the other side of the street. The mode share is significantly different, however. About 70% of the Safeway sample drive, 18% walk, 6% use the bus, 2% use BART and 2% bicycle. When the rates are adjusted based upon this subsample and the number of customers per hour, about 33% walk, 59% drive and the remaining 8% use transit or bicycle.

trip to the shopping area and from the shopping area, with a slightly lower usage of transit on the trip from the shopping area (see Table 7-2).

The distance by respondents who walk averages approximately .36 miles from their home to the shopping areas. About 75% are calculated to walk one half mile or less. The longest distance any one customer walks from home to the shopping area is about 1.8 miles. Among drivers who live within the first two miles of the shopping area, the average distance to the shopping area is about .85 miles.[2]

Table 7-1. Percentage of Respondents by Mode to Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall	27	3	5	11	55	101
Rockridge - Alcatraz	40	2	3	3	53	101
Elmwood	32	4	4	2	58	100
El Cerrito Plaza	10	3	3	2	82	100
Hopkins	26	4	1	1	68	100
Kensington	24	1	1	0	75	101
All Respondents	26	3	3	3	65	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics: (Chi-Squared) In a comparison of mode (walk, auto, and other), the difference between shopping areas is significant ($p < .05$).

Table 7-2. Percentage of Respondents by Mode From Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall	32	2	2	7	57	100
Rockridge - Alcatraz	42	2	1	2	53	100
Elmwood	33	4	6	1	56	100
El Cerrito Plaza	10	3	3	3	81	100
Hopkins	25	3	1	1	70	100
Kensington	24	1	0	0	75	100
All Respondents	28	3	2	2	65	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics: (Chi-Squared) In a comparison of mode (walk, auto, and other), the difference between shopping areas is significant ($p < .05$).

[2] The distances that customers drive are less reliable for distances beyond the first two miles because distances are calculated as a straight line.

The mode choice varies little between weekdays and Saturday, except for transit (see Tables 7-3). As is shown later, higher usage of transit on weekdays is associated with the higher rate of usage of transit for commute trips to the shopping areas.

Table 7-3. Percentage of Respondents by Mode To Shopping Area on Weekdays and Saturdays by Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall						
Weekdays	26	4	11	19	41	101 n=81
Saturdays	28	2	1	3	66	100 n=96
Rockridge - Alcatraz						
Weekdays	38	0	3	5	54	100 n=81
Saturdays	41	3	3	1	52	100 n=75
Elmwood						
Weekdays	28	5	6	3	58	100 n=79
Saturdays	36	4	1	2	57	100 n=84
El Cerrito Plaza						
Weekdays	10	5	3	2	78	98 n=87
Saturdays	10	2	2	1	85	100 n=93
Hopkins						
Weekdays	23	5	0	3	68	99 n=79
Saturdays	29	2	1	0	67	99 n=85
Kensington						
Weekdays	20	0	1	0	79	100 n=80
Saturdays	27	1	0	0	71	99 n=77
All Respondents						
Weekdays	24	3	4	5	64	100 n=487
Saturdays	28	2	1	1	67	99 n=510

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics (Chi-squared) In comparison of weekdays to Saturdays in each shopping area (walk vs. auto and other), only Rockridge - Market Hall is significantly different ($p < .05$).

Mode Choices of BART Users

The localized effect of a BART station and the importance of a good connection between the station and the shops is also apparent. In the Market Hall area, which is immediately adjacent to the BART station in Rockridge, about 11% of the respondents took BART to get there, while 7% are on their way to BART from the shopping area. The percentage of customers using BART drops rapidly with distance, however. In Rockridge - Alcatraz, which is located about three-eighths of a mile from the BART station, and in El Cerrito Plaza, which is located about a quarter of a mile from the BART station with poor quality pedestrian access, only 3% of the trips to and from the shopping areas are on the BART. These rates are not much higher than the 1% to 2% rate of BART users in Elmwood, which is located about a mile from both the Rockridge and Ashby BART stations, and Hopkins, which is located about just over a half mile from the North Berkeley BART station.

The surveys of BART passengers at the Rockridge and El Cerrito Plaza stations illustrate the importance of the link between the shopping area and the BART station itself. A significant percentage of customers walk to these BART stations (see Table 7-4). About one-third of the BART passengers walk to each BART station in the morning; over 40% walk in the afternoon. Since many of these passengers walk through (or past) the shopping area, they represent a group of potential customers. Only a small fraction do stop to shop, however. The percentage of BART passengers stopping in the shopping area on their way to the BART station varies from about 10% at El Cerrito Plaza area to about 15% at the Rockridge station. The percentage of customers stopping in the shopping area is higher in the afternoon, with 17% at El Cerrito Plaza and 22% at Rockridge, when the general level of activity is also higher.[3]

[3] The sample size in the BART survey is too small to generalize about the type of stops and other behavior of customers.

Table 7-4. BART Customer Activity				
Access Mode to BART Station (Number and Percentage)				
	Rockridge		El Cerrito Plaza	
	Morning Commute	Afternoon Commute	Morning Commute	Afternoon Commute
Walk/Bike	34 35%	22 44%	33 33%	43 43%
Bus	6 6%	3 6%	7 7%	11 11%
BART#	1 1%	5 10%	0 0%	4 4%
Auto (driver or drop-off)	56 58%	13 26%	56 57%	41 41%
Other*	0 0%	7 14%	3 3%	1 1%
Total	97 100%	50 100%	99 100%	100 100%
Customers Making Stops in Shopping Area (Number and Percentage)				
	11 11%	11 22%	3 3%	17 17%

Source: BART Platform Survey
Note: Percentages may not total to 100% due to rounding.
* - Included taxis and employee shuttle services.
# - Persons listing BART as a mode were coming off of a train. Most missed their stop or were waiting for someone in the platform area.

Parking Choices of Drivers

The ease of finding parking may be a factor in a customer's mode choice to the shopping area, especially if they live close to the shopping area. Table 7-5 shows where respondents who drive to the shopping area park their car. Almost all respondents in El Cerrito Plaza park in the shopping area adjacent to the shopping area. A high percentage of customers in Kensington, 79%, are able to find on-street parking in front of the shopping area. In contrast, a high percentage of customers in the other four shopping areas find parking on side streets or in private lots in the shopping area.

Table 7-5. Percentage of Respondents Parking at Type of Location by Shopping Area

	On Shopping Street	On Side Street	In Public Lot*	In Other Private Lot#	Total
Rockridge - Market Hall	30	40	15	15	100 n=90
Rockridge - Alcatraz	43	25	4	29	101 n=77
Elmwood	34	40	14	11	99 n=82
El Cerrito Plaza	98	0	0	2	100 n=144
Hopkins	25	38	0	36	99 n=110
Kensington	79	6	0	15	100 n=116

Source: Customer Intercept Survey (unweighted data)
Notes: Based upon response to Question 4A: (*Where did you park?*). This question was only asked of customers who indicated they drove or were a passenger in a vehicle. Percentages may not total to 100% due to rounding.
* - Public lots included the following locations in the respective shopping areas: Elmwood (city lot) and Rockridge - Market Hall (BART station parking lot).
# - Other parking locations include the following lots in the respective shopping area: Rockridge - Market Hall (Market Hall parking lot); Rockridge - Alcatraz (Safeway and Bank of America); Hopkins (Monterey Market parking lot); and Kensington (hardware store parking lot)

How Do Personal Characteristics of Respondents Vary by Mode?

In Tables 7-6 and 7-7, the characteristics of walkers are compared to non-walkers who responded to the mailback survey.[4] Walkers are younger, have a lower income, own fewer vehicles and are less likely to own and live in a single family dwelling than non-walkers. In most other characteristics walkers are not significantly different from non-walkers. They have similar levels of education, similar sizes and types of households, and are similar in ethnicity, and gender.

Table 7-6. Personal and Household Characteristics of Walkers Compared to Non-walkers (Averages)

	Walkers	Non-walker
Age	43.3*	47.0*
Household Members	2.39	2.29
Vehicles per Household	1.56*	1.83*
Vehicles per Licensed Driver	.80*	.97*
Housing Tenure	9.50	11.10
Workers Per Household	1.24	1.26

Source: Customer Mailback Survey (weighted data)
*- Licensed Drivers includes all person over age 16. This likely overstates the rate of licensure.
Statistics: (t-test for independent sample) Walkers are compared to non-walkers.
* - $p < .05$

Table 7-7. Personal and Household Characteristics of Walkers Compared to Non-walkers (Percentage)

	Walkers	Non-walker
Females	58%	61%
Accompanied by Children	11%	11%
White	86%	84%
Employed Full-time	55%	62%
Student	12%*	8%*
College or Graduate Education	85%	86%
Single Person	25%	26%
Couple, No Children	37%	37%
Income > $60,000	24%	19%
Income < $40,000	38%*	29%*
Single Family Dwelling	56%*	71%*
Own Dwelling Unit	50%*	64%*

Source: Customer Mailback Survey; Customer Intercept Survey (unweighted data)
Statistics: (Chi-squared). Residents are compared to non-residents.
* - The characteristic of residents and non-residents are significantly different ($p < .05$).

The attitudes about the shopping area differ among walkers and non-walkers with respect to many characteristics of the shopping area (see Table 7-8). Walkers are more satisfied with the convenience of the shopping area, the walking environment, the

[4] All non-walkers are grouped together because the number of people using transit who responded to the mailback survey is too small to support a three-mode analysis.

atmosphere and the safety of the area. Walkers are less satisfied with the availability of parking and the prices. These differences would suggest that walkers pay more attention to the various characteristics that make it pleasant for them to walk: the atmosphere, the walking environment and safety. They also live within convenient distances. However, they also may be walking because they are not satisfied with parking. The overall level of satisfaction is also not significantly different between walkers and non-walkers.

Table 7-8. Average Level of Agreement to Statement "I like to shop in <shopping area> for the following reason..." by Mode to Shopping Area

	Walkers	Non-walker
it has reasonable prices	3.00#	3.17#
it is convenient	4.70*	3.97*
it has parking that is easy to find	2.83*	3.18*
it has a wide selection of goods	3.86	3.72
it has high quality products	4.09	3.96
it has a pleasant atmosphere	4.32#	4.17#
it has a good mix of stores	4.01	3.87
I like to walk along <shopping street>	4.38*	3.79*
I feel safe when I shop there	4.03#	3.89#

Source: Customer Mailback Survey (weighed data)
Note: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Walkers include any respondent who walk to or from the shopping area. Non-walkers include respondents who do not walk for either access mode to the shopping area.
Statistics: (t-test for equality of means). Walkers are compared to non-walkers.
* - $p < .05$
# - $p > .05$ and $p < .10$

How Does the Mode Choice Vary with Distance From the Shopping Area?

Different patterns begin to emerge once the mode split is categorized according to the distance that the respondent lives from the shopping area. In Tables 7-9 through 7-11, the mode of non-residents are contrasted with those of residents of the neighborhood surrounding each shopping area. Only 1% (El Cerrito and Hopkins) to 6% (Elmwood) of non-residents walk to the shopping area, whereas 24% (El Cerrito) to 65% (Rockridge - Market Hall) of residents do so. Auto use varies, as well, from 74% to 92% of non-residents depending upon the shopping area to 21% to 70% of residents.

Among residents who live within a half mile of the shopping area, 67% of respondents walk and 25% drive. The percentage who walk is 70% or higher in the four more walkable shopping areas. In Kensington, with its steep slopes, 38% of respondents who live within the first half mile walk to the shopping area, while in El Cerrito Plaza, about 33% walk. Among residents who live within the first half mile, the shopping areas show two patterns; in Kensington and El Cerrito under 40% walk while in the other four shopping areas between 69% and 81% walk.

Table 7-9. Percentage of Resident Respondents by Mode To Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall	65	3	3	6	21	98
Rockridge - Alcatraz	62	1	3	3	31	100
Elmwood	58	8	2	1	31	100
El Cerrito Plaza	24	4	0	1	70	99
Hopkins	48	5	0	1	45	99
Kensington	30	0	1	0	68	99
All Respondents	47	4	2	2	46	101

Source: Customer Intercept Survey (unweighted data)
Note: Residents live within one mile (straight line distance) of the shopping area. Percentages may not total to 100% due to rounding.
Statistics: (Chi-squared) Due to the small number of respondents bicycling or using transit, a comparison is between people who use automobiles and other modes. The mode choice of automobile compared to using other modes is significantly different among shopping areas ($p < .05$).

Table 7-10. Percentage of Non-resident Respondents by Mode To Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall	5	3	5	14	74	101
Rockridge - Alcatraz	5	2	2	2	90	101
Elmwood	6	0	5	3	85	100
El Cerrito Plaza	1	3	5	2	89	100
Hopkins	1	5	1	1	92	100
Kensington	3	0	0	0	97	100
All Respondents	3	2	4	4	86	99

Source: Customer Intercept Survey (unweighted data)
Note: Non-residents live more than one mile (straight line distance) from the shopping area. Percentages may not total to 100% due to rounding.
Statistics: (Chi-squared) Due to the small number of respondents walking, bicycling or using transit, a comparison is between people who use automobiles and other modes. The mode choice of automobile compared to using other modes is significantly different among shopping areas ($p < .05$).

Table 7-11. Percentage of Respondents Living with .5 Mile of Shopping Area by Mode to Shopping Area

	Walk	Bicycle	Bus	BART	Auto (Driver or Passenger)	Total
Rockridge - Market Hall	81	2	2	6	8	99
Rockridge - Alcatraz	74	2	1	5	18	100
Elmwood	73	9	2	0	16	100
El Cerrito Plaza	33	5	0	5	57	100
Hopkins	71	0	0	2	28	101
Kensington	38	1	1	0	60	100
All Respondents	67	4	1	3	25	100

Source: Customer Intercept Survey
Note: Percentages may not total to 100% due to rounding.
Statistics: (Chi-squared) Due to the small number of respondents bicycling or using transit, the comparison is between people who walk and use other modes. The mode choice of walking compared to using other modes is significantly different among shopping areas ($p < .05$).

How Do Shopping Patterns Differ Based Upon Mode Of Travel?

The shopping patterns -- types and number of stops -- differ only marginally with the mode of travel (see Table 7-12). The mean number of stops varies from 1.85 stops for people using transit to 2.29 stops for people who go to a shopping area by automobile; these means are not significantly different. When the types of stops are broken down by the mode of travel different patterns began to emerge (see Tables 7-13 through 7-15).

Table 7-12. Percentage of Customers Making Number of Stops by Mode To Shopping Area (in Percentages)

	0	1	2	3	4	5+	Total	Mean
Walk/Bike	8	26	29	22	8	6	99 n=292	2.18
Transit	18	38	18	9	8	9	100 n=70	1.93
Automobile Driver or Passenger	2	28	34	22	9	6	101 n=635	2.26
All Customers	5	28	31	21	9	6	100	2.21

Source: Customer Intercept Survey (weighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$). In comparison of means by mode of travel, mean number of stops is not significantly different.

The pattern of stops differs among customers based upon the mode of travel with the users of transit showing a different pattern of usage than other customers (see Table 7-13 and 7-14). Almost one in seven of all transit users do not make any stops in the shopping area. Transit users are less likely to use convenience services (14% using these services compared to 22% of all customers) or convenience shopping (64% compared to 84% overall).

In most categories of convenience shopping, customers have similar patterns of stops irrespective of the mode they use (see Table 7-15). The two exceptions are that automobile users are more likely to stop for groceries than users of other modes and users of transit are less likely to stop for convenience services than walkers and bicyclists.

Table 7-13. Percentage of Respondents Making Stops by Type of Stop by Mode

	Walkers and Bicyclists	Transit	Automobile Driver or Passenger	All Respondents
Specialty Food Shopping	40	36	38	38
Grocery Shopping	22	14	30	27
Cafés and Coffee Shops	24	20	20	21
Miscellaneous Convenience	22	9	19	19
Flowers, Cards and Books	8	3	10	9
Restaurants	7	14	8	8
All Convenience Shopping	80	66	89	85
Convenience Services	31	14	22	24
Any Convenience Stops	89	73	94	91
Comparison Shopping	19	29	24	23
Other Services	4	7	4	4
Comparison Shopping and Other Services	22	36	27	26
No Stops	7	15	2	4
Number of Respondents	287	59	651	997

Source: Customer Intercept Survey (unweighted data)
Note: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Percentages do not total to 100% because respondents may make multiple types of stops.
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 7-15 for a comparison of the mean number of stops by residents and non-residents.

Table 7-14. Percentage of Stops by Respondents by Type of Stop by Mode to Shopping Area

	Walkers and Bicyclists	Transit	Automobile Driver or Passenger	All Respondents
Specialty Food Shopping	29	28	31	30
Grocery Shopping	10	7	15	12
Cafés and Coffee Shops	13	12	9	10
Miscellaneous Convenience	11	6	9	10
Flowers, Cards and Books	4	2	5	4
Restaurants	3	8	4	4
All Convenience Shopping	70	63	72	71
Convenience Services	17	9	11	13
Any Convenience Stops	86	73	83	83
Comparison Shopping	12	23	15	15
Other Services	2	5	2	2
Comparison Shopping and Other Services	14	28	17	17
Total Stops by Respondents	618	109	1451	2175

Source: Customer Intercept Survey (unweighted data)
Notes: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Percentages may not total to 100% due to rounding.
Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 7-15 for a comparison of the mean number of stops by residents and non-residents.

Table 7-15. Average Number of Stops Made by Respondents by Mode to Shopping Area

	Walkers and Bicyclists	Transit	Automobile Driver or Passenger	All Customers
Specialty Food Shopping	.59	.53	.62	.60
Grocery Shopping*	.18	.13	.27	.22
Cafés and Coffee Shops	.31	.24	.27	.22
Miscellaneous Convenience	.22	.09	.18	.19
Flowers, Cards and Books	.10	.04	.12	.11
Restaurants	.07	.15	.09	.11
All Convenience Shopping*	1.48	1.19	1.55	1.50
Convenience Services*	.34	.18	.23	.26
Any Convenience Stops*	1.82	1.37	1.78	1.76
Comparison Shopping	.32	.46	.44	.41
Other Services	.03	.09	.04	.04
Comparison Shopping and Other Services	.36	.56	.48	.45
Total Stops	2.18	1.93	2.26	2.21

Source: Customer Intercept Survey (weighted data)

Notes: Number of stops is an average number of stops per customer; because customers do not stop at all types of uses, the numbers are less than one stop per customer for most uses. The use of average number of stops allows a comparison to determine the statistical significance of the differences between modes of travel. Types of stops are categorized in Appendix B.1, Tables B-2 through B-5.

Statistics: Scheffé multiple comparisons ($p < .05$). Mean number of stops differs between transit users and users of other modes for all convenience stops and between transit users and auto users for convenience shopping. Mean number of stops for convenience services differs between users of transit and users of non-motorized transportation (walkers and bicyclists). Mean number of stops for grocery shopping differs between auto users and users of other modes.

* - Mean number of stops significantly different among at least two modes.

How Do Travel Patterns Differ Based Upon Mode Of Travel?

About 63% of walkers and bicyclists responding to the survey make simple home-shop-home trips (see Table 7-16). Among automobile users, 40% make trips in which the origin or destination is home, 16% stop in the shopping area as a part of a work/school commute, 29% make single linked, home-shop-home trips and 15% come from places other than home and go to other places. Among transit users, who are about 6% of respondents, 37% stop as a part of a work/school commute, 25% make a simple home-shop-home trip, 22% take trips where home is paired with a non-home origin or destination, and 15% make the most complicated type of trip where home is neither the origin nor the destination.

Table 7-16. Percentage of Respondents by Type of Trip Chains by Mode to Shopping Area

	Walkers and Bicyclists	Transit	Automobile Driver or Passenger	All Respondents
Simple Home-Shop-Home	63	25	29	39
Work/School Commute*	8	36	16	15
Home-based Complex Chains#	22	24	39	33
Other Complex Chains§	7	16	15	13
Total Trips by Respondents	100	101	99	100

Source: Customer Intercept Survey (unweighted data)
Notes: Type of Trip based upon Questions 5 (*Where were you before you came to <shopping area> today*) and 6 (*Where will you go after you have made all of your stops in <shopping area>?*). Percentages may not total to 100% due to rounding.
* - Include Home-Shop-Work/School and Work/School-Shop-Home
# - Include Home-Shop-Other and Other-Shop-Home
§ - Include Work/School-Shop-Other, Other-Shop-Work/School and Other-Shop-Other
Statistics Chi-Squared The type of trip is significantly different between modes of transportation ($p < .05$).

Frequency of Stopping in Shopping Area

Respondents who walk or bike are more likely than other respondents to go to the shopping areas very frequently, more than three times per week (see Table 7-17). They are also likely to live close to the respective shopping areas. Transit users' behavior varies, with some stopping very frequently and others infrequently. Some are merely walking through the shopping area on their way home, while others live nearby and use the shopping area regularly. Drivers are the most evenly distributed by frequency of shopping because respondents who drive come from both within and outside the neighborhoods. Non-residents respondents who drive tend to stop less frequently than other non-residents.

A similar pattern can be seen when the frequency with which walkers make certain types of stops is compared to the frequency of non-walkers. In Table 7-18, the frequency of specific types of stops is compared. Respondents who walk to the shopping area stop more frequently overall, and especially for both grocery and specialty food shopping. They make similar numbers of stops at restaurants compared to people who drive, use transit or use bicycles.

Table 7-17. Percentage of Residents and Non-residents Respondents by Mode and Frequency of Stopping in Shopping Area

	Less than Once a Week	One to Two Times Per Week	Three or More Times Per Week	Total
Walkers and Bicyclists				
Resident	5	20	76	101
Non-resident	33	17	50	100
All Walker and Bicyclists	7	20	73	100
Transit				
Resident	11	16	74	101
Non-resident	40	16	45	101
All Transit Users	30	16	54	100
Automobile Driver or Passenger				
Resident	10	32	59	101
Non-resident	40	34	26	100
All Automobile Users	29	33	38	100
All Respondents				
Resident	7	25	68	100
Non-resident	40	31	29	100
Total Respondents	23	28	49	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total to 100% due to rounding.
Statistics (Chi-squared) In comparison of residents to non-residents by mode, the difference between residents and non-residents is significantly different ($p < .05$).
For transit, categories are collapsed into two categories (2 times per week or less and more than two times per week) to make the comparison.

Table 7-18. Average Number of Stops Per Week Made by Walkers and Non-walkers

	Walkers	Non-walkers
Stops in Shopping Area	4.90*	2.38*
Grocery Shopping	2.22*	1.85*
Specialty Food Shopping	1.99*	1.61*
Restaurants	1.01	.97

Source: Customer Mailback Survey (weighted data)
Notes: Walkers included any person who walks either to or from the shopping area. Non-walkers included persons who do not walk for either leg of the trip.
Statistics: (T-test for independent samples - $p < .05$)
* - In a comparison of walkers to non-walkers, the difference in the mean number of stops is significantly different.

How does the Pattern of Shopping and Travel Differ Among Residents Based Upon Mode?

Residents who are not walking are more likely to make convenience stops with about 98% doing so compared to about 89% of walkers (see Table 7-19). All residents make similarly small percentages of stops for only comparison shopping and other services. Another difference between residents who walk and who drive is that a higher percentage of walkers do not make any stops in the shopping area.

Table 7-19. Percentage of Resident Respondents Making Combination of Stops by Mode to Shopping Area

	Walkers	Non-walkers	Total Resident Respondents
Conveniences Shopping and Services	71	80	76
Comparison Shopping and Other Services	5	1	3
Convenience and Comparison Shopping and Services	18	18	18
No Stops	7	1	4
All Combinations of Stops	101	100	101

Source: Customer Intercept Survey (unweighted data)
Notes: Residents live within one mile (straight line distance) of their respective shopping area. Walkers included all persons who walks for at least one leg of the trip. Others includes all persons who do not walk for either leg of the trip. Percentages may not total 100% due to rounding.
Statistics: (Chi-squared, $p < .05$) Residents who walk are significantly different from residents who do not walk.

When the residents who walk are compared to non-walkers based upon the type of convenience stops they make, some differences are more noticeable (see Tables 7-20 through 7-22). Walkers are more likely to stop at cafés and coffee shops. Auto drivers or passengers are significantly more likely to make stops for groceries, and slightly more likely to stop for miscellaneous convenience shopping. For many other categories, including restaurants, flowers, cards and books, and convenience services a similar percentage of respondents make stops, irrespective of the mode of travel to the shopping area.

Table 7-20. Percentage of Resident Respondents Making One or More Stops by Type of Stop by Mode

	Walkers	Non-walkers	Total Resident Respondents
Specialty Food Shopping	41	31	36
Grocery Shopping	23	45	33
Cafés and Coffee Shops	22	14	18
Miscellaneous Convenience	22	28	25
Flowers, Cards and Books	6	9	8
Restaurants	9	6	8
All Convenience Shopping	80	92	86
Convenience Services	31	30	31
Any Convenience Stops	89	98	94
Comparison Shopping	18	15	17
Other Services	3	2	3
Comparison Shopping and Other Services	21	18	20
No Stops	7	1	4
Number of Respondents	n=266	n=213	n=479

Source: Customer Intercept Survey (unweighted data)

Notes: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Residents live within one mile of a shopping area. Walkers included all persons who walks for at least one leg of the trip. Non-walkers include all respondents who do not walk for at least one leg of the trip. Percentages do not total to 100% because respondents can make multiple types of stops.

Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 7-22 for a comparison of the mean number of stops by residents and non-residents.

Table 7-21. Type of Stops Made by Resident Respondents by Mode to Shopping Area (Percentage of Total Stops)

	Walkers	Non-walkers	Total
Specialty Food Shopping	29	25	17
Grocery Shopping	11	20	15
Cafés and Coffee Shops	12	6	9
Miscellaneous Convenience	11	14	13
Flowers, Cards and Books	3	5	4
Restaurants	4	3	4
All Convenience Shopping	70	72	71
Convenience Services	17	17	17
Any Convenience Stops	87	89	88
Comparison Shopping	11	10	11
Other Services	2	1	2
Comparison Shopping and Other Services	13	11	12
Total Stops	n=572	n=569	n=1141

Source: Customer Intercept Survey (unweighted data)

Notes: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Residents live within one mile (straight line distance) of a shopping area. Walkers included all persons who walks for at least one leg of the trip. Non-walkers include all persons who do not walk for at least one leg of the trip.

Statistics: This table is an accumulation of more than one variable, therefore statistical significance is not easily calculated. See Table 7-22 for a comparison of the mean number of stops by residents and non-residents.

Table 7-22. Average Number of Stops by Residents by Mode			
	Walkers	Non-walkers	All Customers
Specialty Food Shopping	.62	.54	.59
Grocery Shopping	.20*	.40*	.29
Cafés and Coffee Shops	.30*	.19*	.25
Miscellaneous Convenience	.22	.28	.25
Flowers, Cards and Books	.08	.12	.10
Restaurants	.10	.07	.09
All Convenience Shopping	1.51	1.61	1.56
Convenience Services	.34	.34	.34
Any Convenience Stops	1.86	1.95	1.90
Comparison Shopping	.31	.30	.31
Other Services	.03	.03	.03
Comparison Shopping and Other Services	.35	.33	.34
Total Stops	2.20	2.28	2.24

Source: Customer Intercept Survey (weighted data)
Notes: Types of stops are categorized in Appendix B.1, Tables B-2 through B-5. Residents live within one mile of a shopping area (straight line distance). Walkers include all respondents who walk for at least one leg of the trip. Non-walkers include all respondents who do not walk for at least one leg of the trip.
Statistics: T-test for independent samples ($p < .05$)
* - in comparison of walkers to non-walkers, average number of stops is significantly different.

Trip Patterns

When residents responding to the survey are compared based upon the nature of the trip pattern, significant differences emerge (see Table 7-23). Resident respondents who walk are almost twice as likely to make simple, home to shop to home, chains as residents who drive. Automobile users make more complex chains. Compared to non-resident drivers, resident drivers are more likely to have home as an origin or a destination and they make a smaller percentage of the most complex, other chained trips than non-resident drivers.

Table 7-23. Percentage of Type of Trip Chains Made by Resident Respondents by Mode to Shopping Area

	Walkers	Auto Drivers and Passengers	Total Resident Respondents
Simple Home-Shop-Home	65	36	52
Work/School Commute*	11	18	14
Home-based Complex Chains#	19	39	29
Other Complex Chains§	5	7	6
Total	100	100	101

Source: Customer Intercept Survey (unweighted data)
Notes: Type of Trip based upon Questions 5 (*Where were you before you came to <shopping area> today*) and 6 (*Where will you go after you have made all of your stops in <shopping area>?*). Residents live within one mile of a shopping area. Walkers included all persons who walks for at least one leg of the trip. Auto users include all persons who do not walk but who use an auto for at least one leg of the trip. Persons who use transit or bicycle to and from the shopping area are excluded.
* - Included Home-Shop-Work/School and Work/School-Shop-Home
# - Included Home-Shop-Other and Other-Shop-Home
§ - Included Work/School-Shop-Other, Other-Shop-Work/School and Other-Shop-Other
Statistics: (Chi-squared) $p < .05$

Frequency of Making Stops

Among respondents, the frequency with which residents stop is significantly different for walkers compared to automobile users (see Table 7-24). Residents who walk are more likely to go to the shopping area frequently, with 78% going to the shopping area three or more times per week, compared to 58% of the residents who drive to the shopping area.

Table 7-24. Percentage of Resident Respondents by Frequency of Stops and Mode to Shopping Area

	Walkers	Non-walkers	All Resident Respondents
Less than Once a Week	4	10	7
One to Two Times Per Week	18	32	25
Three or More Times Per Week	80	58	69
Total	102	100	101

Source: Customer Intercept Survey (unweighted data)
Notes: Residents live within one mile (straight line distance) of a shopping area. Walkers include all persons who walk for at least one leg of the trip. Non-walkers include all persons who did not walk for either leg of the trip. Percentages may not total 100% due to rounding.
Statistics: (Chi-squared), $p < .05$

Logit Model of Choice to Walk for Shopping

In this section, the relative importance of a set of the variables affecting mode choice is sorted out through the development of a logit model. Five binary logit models developed using the intercept surveys and the mailback survey are presented.

In the first model, based on the intercept survey data, shopping trip mode choice is represented as binary choice of whether to walk or not walk as a function of: (1) the distance from the respondent's home to the shopping area; (2) the type of stops in the shopping trip; (2) the type of trip chain (simple, home to shop to home; work commute; home based complex trips; and other complex chains); (3) the frequency at which the respondent makes stops in the shopping area (infrequent, or less than once a week); regular, or once or twice a week; and frequent; or three or more times per week; (4) the gender of the respondent; (5) the age of the respondent; (6) characteristics of the shopping areas; and (7) dummies for each shopping area compared to Kensington[5] (see Table 7-25). While income and other household characteristics are usually included in models of mode choice, they are not available in the intercept survey dataset. (They are included in the later models which use the mailback surveys.)

Distance is represented by a logistic transformation approximating the actual distance walked and driven by respondents beyond the first two miles of the shopping area. This curve is used because distances for drivers are not accurate beyond two miles and none of the respondents walk more than 1.75 miles.

The types of stops made during the trip are classified as: convenience shopping, convenience services, and comparison shopping. After these broad categories were found not to be significant, the six types of convenience shopping are specified separately: grocery, specialty food, cafés and coffee shops, miscellaneous convenience, restaurants, gifts, cards and books, and convenience services. Grocery shopping and specialty food shopping are the only convenience goods categories that are significant and are included in each of the models. To distinguish between quick stops at a single store and stops at several specialty food stores, which would be more similar to a grocery shopping trip, the specialty food variable is represented by a threshold number of different specialty shops where a respondent stops and is tested in the range from one or more to three or more.

Variables for the various types of trip chains, and frequencies at which respondents stops in the shopping area are included in the model. Respondents could be grouped into categories using different age ranges; in the models the age ranges are under 30, 30-39, 40-60 and 60 and older.

All of the variables in Model 1 have signs in the expected direction. T-statistics are all adequate, but several are on the low side. The results of Model 1 suggest that the most important factor working against the choice to walk is the distance from home to the

[5] The model was run with dummies comparing each shopping area to the other shopping areas. In all other comparisons, except Kensington, the dummy for one or more shopping areas is not significant.

shopping area. Other factors working for respondents decision to walk included simple, home to shop to home, chains, frequent trips (more than three times per week) to a shopping area and when the person is under age 30. In addition to distance from the shopping area, the following factors entered the model with a negative sign and are associated with the decision not to walk to the shopping area: shopping for groceries, making stops at three or more specialty food stores and being between the ages of 40 and 60.

Table 7-25. Probability of Choosing to Walk for At Least One Access Leg With Dummies for Shopping Areas (Model 1)

Parameter	Value	Std. Deviation	Est. T
Constant	14.00	1.26	
Distance	-18.45	1.42	-13.04
Grocery Shopping	-.81	.27	-2.95
Specialty Food Stops (3 or more)	-1.57	.51	-3.07
Single Linked Trip	.67	.20	3.41
3 or more stops per week	.44	.21	2.14
Age < 30 and < 40	.65	.25	2.59
Age > 40 and < 60	-.53	.22	-2.40
Rockridge - Market Hall	2.06	.39	5.27
Rockridge - Alcatraz	1.54	.35	4.41
Elmwood	1.69	.37	4.54
El Cerrito	.79	.36	2.20
Hopkins	1.16	.40	2.93

Statistics:
Number of observations in model: 924
Log Likelihood with Null Coefficient Vector L[0]: -640.47
Log Likelihood with Estimated Coefficients L[*]: -346.48
Percent with Highest Probability for Chosen Alternative: 83.3%
Unadjusted rho-squared: .459
Adjusted Rho-squared: .449
Chi-squared Statistic: 587.48 with 13 degrees of freedom.

Source: Customer Intercept Survey

Location specific variables are tested in the model to replace the dummy variables for each of the shopping areas.[6] The following location specific variables are tested separately and in combination with each other and found not to be significant in the model: adjusted parking availability, the density of housing, density of residents, the traffic level on the adjacent street, log of the number of businesses, retail square footage and measures of convenience uses in the area. Two of the location specific variables, a scaled measure of walking environment (which includes factors for continuity of sidewalk connectivity, street crossings, protection from the weather, topography, and

[6] The dummy variables were tested in comparison to each of the shopping areas and the only comparison for which each of the shopping areas is significant is when they are compared to Kensington.

other barriers) and the estimated number of parking spaces per 1,000 square feet of retail, are found to be significant.[7] In Table 7-26, the values used for these two factors are shown. These and all other location specific variables are described in detail in Appendix D.

Table 7-26. Location Specific Variable Used in Logit Model of Mode Choice for Walking.

	Scale	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins Avenue	Kensington
Walking Environment	1= poor 5 = good	4.9	4.7	4.7	3.1	4.3	3.7
Parking Availability-estimated	per 1,000 square feet of retail	2.0	3.7	1.2	5.3	2.9	4.7

In Table 7-27, Model 2 is shown. This model includes the variable for parking availability. Although the signs for all variables are in the corrcct dircction, the model has a slightly higher log likelihood (i.e., lower probability) with the estimated coefficients and slightly lower rho-squared (.445) and percent with highest probability for chosen alternative (82.7%) than Model 1.

In Table 7-28, Model 3 is shown using the walking environment variable to describe the variation that is found in each of the shopping areas. The model using the walking environment variable, Model 3, has improved lower log likelihood, rho-squared and percentage with highest probability of being chosen compared to Model 2, but is still slightly worse than Model 1. (Another model attempted to incorporate both of these location specific variables into the same model. In this model, the parking availability variables was not significant and its sign was in the wrong direction. This model is not presented here.)

[7] Note that parking availability tends to increase as walking environment worsens.

Table 7-27. Probability of Choosing to Walk for At Least One Access Leg With Parking Availability (Model 2)

Parameter	Value	Std. Deviation	Est. T
Constant	15.05	1.23	
Distance	-17.02	1.29	-13.25
Grocery Shopping	-.95	.26	-3.63
Specialty Food Stops (3 or more)	-1.59	.47	-3.39
Single Linked Trip	.70	.19	3.64
Making Three or more stops in shopping area per week	.52	.20	2.59
Age < 30	.71	.25	2.86
Age > 40 and < 60	-.62	.22	-2.87
Parking Availability	-.34	.08	-4.29

Statistics:
Number of observations in model: 924
Percent with Highest Probability for Chosen Alternative: 82.7
Log Likelihood with Null Coefficient Vector L[0]: -640.47
Log Likelihood with Estimated Coefficients L[*]: -355.28
Unadjusted rho-squared: .445
Adjusted rho-squared: .438
Chi-squared Statistic: 570.37 with 9 degrees of freedom.

Source: Customer Intercept Survey

Table 7-28. Probability of Choosing to Walk for At Least One Access Leg With Walking Environment Variables (Model 3)

Parameter	Value	Std. Deviation	Est. T
Constant	10.30	1.36	7.56
Distance	-16.85	1.28	-13.14
Grocery Shopping	-.98	.26	-3.85
Specialty Food Stops (3 or more)	-1.55	.47	-3.32
Single Linked Trip	.72	.19	3.76
Making Three or more stops in shopping area per week	.44	.20	2.17
Age < 30	.67	.25	2.69
Age > 40 and < 60	-.64	.22	-2.91
Walking Environment	.83	.18	4.60

Statistics:
Number of observations in model: 924
Percent with Highest Probability for Chosen Alternative: 82.8
Log Likelihood with Null Coefficient Vector L[0]: -640.47
Log Likelihood with Estimated Coefficients L[*]: -353.53
Unadjusted rho-squared: .448
Adjusted rho-squared: .441
Chi-squared Statistic: 573.87 with 9 degrees of freedom.

Source: Customer Intercept Survey

A second set of models are developed using the mailback surveys. Several individual and household variables are tested separately and in combination in the model: household size, automobiles per household, households living in a single family dwelling, home ownership, the amount of time living at current residence, and employed persons, students. Many of these variables are highly correlated with income, which is found not to be statistically significant. The only additional household variable that is added to the model is the number of automobiles in the household. Although other factors, such as age, number of vehicles per household, income below $40,000, status as a renter in a multiple unit building are significantly different for walkers compared to non-walkers, all of these variables, except possibly age, are associated with a lower income status. Each of these variables was tested and the number of vehicles per household had the greatest explanatory power. The number of vehicles per household might pick up the non-income related factors such as the decision of a household not to own a car because they can use transit or walk to more destinations.

Model 4 (see Table 7-29) shows the model using the dummies for shopping areas compared to Kensington and other variables that are included in Model 1. The mode choice model using the mailback survey has a lower log likelihood because of the smaller number of observations were available for the model. The sign for all variables are in the correct direction. The results of this logit model show some minor differences including the loss of a significance of the variable for the age of the respondent, and a decrease in the number of stops for the specialty foods from three or more stops to two or more stops. The change in the number of specialty food shops may reflect a lower threshold for residents (who are more likely to respond to the mailback survey) to use their automobile for specialty food shopping than non-residents. Grocery shopping has been included in this model even though it is not statistically significant (it is also highly correlated with Kensington because a significant percentage of respondents in that neighborhood stop for groceries).

Table 7-29. Probability of Choosing to Walk for At Least One Access Leg With Dummies for Shopping Areas (Model 4)			
Parameter	Value	Std. Deviation	Est. T
Constant	15.45	2.34	
Distance	-20.00	2.60	-7.71
Grocery Shopping	-.90	.47	-1.89
Specialty Food Stops (2 or more)	-1.35	.50	-2.72
Single Linked Trip	.79	.33	2.39
Making Three or more stops in shopping area per week	.16	.08	2.02
Household Automobiles	-.41	.19	-2.20
Rockridge - Market Hall	2.69	.72	3.75
Rockridge - Alcatraz	1.47	.58	2.52
Elmwood	1.97	.62	3.17
El Cerrito	1.34	.61	2.18
Hopkins	1.74	.69	2.52
Statistics: Number of observations in model: 336 Percent with Highest Probability for Chosen Alternative: 84.8 Log Likelihood with Null Coefficient Vector L[0]: -232.90 Log Likelihood with Estimated Coefficients L[*]: -124.13 Unadjusted rho-squared: .467 Adjusted rho-squared: .441 Chi-squared Statistic: 217.53 with 12 degrees of freedom.			
Source: Customer Intercept Survey			

In Model 5 (see Table 7-30), the walking environment variables is shown in combination with other variables that are included in Model 4. The signs for all variables are in the correct direction and all are statistically significant, although the log-likelihood is less (with fewer degrees of freedom) than the model using the dummies for the shopping areas. It should be noted that the variable for grocery shopping is significant in this model.

Table 7-30. Probability of Choosing to Walk for At Least One Access Leg With Walking Environment Variables (Model 5)			
Parameter	Value	Std. Deviation	Est. T
Constant	11.11	2.40	4.64
Distance	-17.05	2.24	-7.61
Grocery Shopping	-1.29	.43	-3.01
Specialty Food Stops (2 or more)	-1.23	.40	-3.09
Single Linked Trip	.87	.32	2.75
Three or More Stops Per Week	.16	.07	2.20
Walking Environment	.80	.33	2.41
Household Automobiles	-.49	.19	-2.57
Statistics: Number of observations in model: 336 Percent with Highest Probability for Chosen Alternative: 85.4 Log Likelihood with Null Coefficient Vector L[0]: -232.90 Log Likelihood with Estimated Coefficients L[*]: -129.67 Unadjusted rho-squared: .443 Adjusted rho-squared: .426 Chi-squared Statistic: 206.45 with 8 degrees of freedom.			
Sources: Customer Mailback Survey; Customer Intercept Survey			

The results of these models suggest that parking availability and walking environment only partially account for differences among shopping areas. The goodness of fit measures are slightly better when using shopping area dummies (because they have more degrees of freedom) than when using either the walking environment or the parking availability measures of shopping areas. The lack of the significance when variables are used in the model suggests they might be picking up some of the same factors in the environment. (Since the signs are opposite, a good walking environment may not be easily accomplished in an area with lots of parking.)

Conclusions

This chapter has examined the factors that affect the mode choice to shopping in six traditional shopping areas using the surveys of respondents in the six shopping areas. The following conclusions are reached: (1) a significant portion of respondents walk in all shopping area, except El Cerrito Plaza; (2) mode choice is highly dependent on the distance that respondents live from the shopping areas; (3) walkers are similar to non-walkers except for a few factors that are associated with lower incomes; (4) the pattern of stops in the shopping area differs based upon mode of travel; and (5) among residents, walkers differ from non-walkers.

Taking respondents as a group, 65% drive or are a passenger in an automobile, 26% walk, 3% use bicycles, and 6% use transit. For BART users, only a small percentage also make shopping trips, and the impact of the BART station as a source of respondents is very localized and fairly small. Although over a third of BART users walk to the BART station in El Cerrito and Rockridge, only about 15% stop in the adjacent

shopping area. Only about 10% of respondents at Market Hall, which is across the street, use BART; this compares to 2%-3% in shopping areas that are more than .25 miles from the station.

Mode choice is highly correlated with the distance a respondent lives from the shopping area; 85% of respondents who live more than a mile away drive. For respondents who live within a mile of the various shopping areas, equal percentages walk as drive (just over 45%). For respondents within a half mile of the shopping area, over 60% walk and about a third drive. Respondents walk about .36 miles, in each direction, and about 75% walk less than half a mile.

Walkers are younger, earn less, own fewer automobiles, and are less likely to own or live in a single family dwelling unit. In other ways, however, they are surprisingly similar to non-walkers. However, they have different attitudes about the transportation and environmental aspects of the shopping area. They are more likely to consider the shopping area to be convenient and safe and have a good walking environment and a pleasant atmosphere. They are less satisfied with parking and the prices. They may be walking because they are not satisfied with parking. They may be less satisfied with prices for goods because they earn less.

The patterns of stops differs depending upon the mode to the shopping area. Transit users make fewer stops or stops for comparison shopping and restaurants and use convenience goods and services less frequently than users of other modes. They also stop more frequently than drivers but less frequently than walkers. Walkers and drivers make similar types of stops but walkers are more likely to make simple, home to shop to home, chains, and to stop in the shopping area frequently. Drivers make more complex chained trips, and go to the shopping areas less frequently.

Among residents, walkers are more likely to stop at cafés and coffee shops. They are more likely to make simple, home to shop to home, chains, and to stop in the shopping area frequently. Resident drivers are more likely to stop for groceries, and make complex trips and stop less frequently than walkers (but more frequently than non-residents).

The logit model of mode choice shows distance is overwhelmingly the most important factor in the decision to not walk to the a neighborhood shopping area. Quite simply, people who live farther away are much more likely to drive. Younger people (< 30) and older people (> 60) also are more likely than others to walk. Persons who stop at three or more specialty food shops are more likely to drive, as are grocery shoppers.

The results also suggest the possibility of a lifestyle effect: respondents who shop more frequently are more likely to walk than those who shop less often. The causality may be questioned, however. Perhaps, people who walk to the store must go shopping more often in order to be able to carry their goods.

Not surprisingly, the decision to walk differs among the shopping areas. When the dummies for shopping areas are included in the model, the results are consistent with the opinions of various urban designers/planners and architects about the relative pedestrian-friendliness of these shopping areas; respondents from the two subareas of Rockridge and Elmwood are more likely to walk, all other factors held equal. Also as expected, a good walking environment is positively associated with the decision to walk and the availability of parking is associated with the decision not to walk.

CHAPTER 8. TRIP GENERATION IN TRADITIONAL SHOPPING AREAS

Previous chapters show that customers in traditional neighborhood shopping areas are drawn not only from the surrounding neighborhoods but also from the broader region. Most of the respondents who come from beyond one mile drive, and even among respondents who live within the first mile, about half drive, especially if they are going grocery (or specialty food) shopping or are combining the shopping trip with other activities as a part of a more complex trip chain.

This chapter turns to the number of trips that are generated in these traditional shopping areas. The New Urbanists assume that because more customers walk, bicycle or use transit to such shopping areas, the number of parking spaces in the shopping area can be reduced, for example, from the standard rate of 5 parking spaces per 1,000 square feet of retail to as low as 3 parking spaces per 1,000 square feet of retail (Calthorpe 1993: 108). Transportation engineers remain skeptical of New Urbanists' claims that the parking ratios can be reduced. Similarly, New Urbanists' claims that transportation impact fees should be reduced for their developments are met with skepticism. The transportation engineers cite the ITE trip generation studies as a source of carefully documented levels of shopping activity, and many base parking requirements and impact fees on the ITE data.

While the ITE studies have been developed in a wide range of shopping areas throughout the United States, they are usually based upon automobile-oriented, planned shopping centers. ITE studies sometimes consider trips by transit (Fijal 1989; Hsu 1984), but the rate of walking and bicycling to neighborhood shopping is seldom described. Hence, studies that provide insight on trip rates and parking needs in traditional shopping areas are greatly needed.

In this chapter, the trip generation rates and parking needs of the six traditional shopping areas are examined. Trip generation rates are first estimated using ITE's data for comparison purposes. The trip generation rates for each type of retail in these shopping areas are calculated using the survey data collected in this study and compared to the ITE rates. Finally, an estimate of the level of parking that is required to support that level of trip generation is developed.

Before beginning the comparison of the trip generation rates, the differences between the methodologies used to gather information for the trip generation rates should be discussed. ITE trip generation rates are mostly based upon data that has been collected with automatic counters that record the vehicular traffic entering and exiting a site. Sometimes the automatic counts are supplemented by manual counts to verify the results or to determine vehicle occupancy and classification (ITE 1991: I-3). Because the automatic counters record both the entry and exit of a vehicle from a shopping area, the trip generation rates represent two trip ends per vehicle. Moreover, because traffic on foot or other modes not counted by the equipment is missing, the data represent the vehicle (auto) trip ends.

In this study, the customer intercept survey is used together with data on overall activity levels in the shopping areas to estimate the number of person trips and trip ends in the shopping area. Mode share data from the survey and regional auto occupancy data then is used to approximate auto trip ends.

The ITE reports both total daily trips and peak hour trips. In contrast, the person counts for this study were completed between 2:30 p.m. and 6:00 p.m. on weekdays and between 9:30 a.m. and 3:30 p.m. on Saturdays and, thus, approximate average hourly trip rates. The comparison of average hourly and peak hourly rates requires adjustments; this is issue is addressed in greater detail later in the chapter.

Calculation of the ITE Trip Generation Rates for the Six Shopping Areas

Although trip generation rates are often calculated using ITE data, and indeed many local governments require that ITE data be used for planning purposes, ITE lacks a specific category for neighborhood shopping. The Fifth Edition of ITE Trip Generation Manual and the 1995 Update (ITE 1991, ITE 1995) list four types of land uses that appear to be comparable to the shopping areas in this study: (1) specialty retail; (2) high-turnover (sit-down) restaurant; (3) shopping center; and (4) supermarket. ITE's specialty retail center is described as "small strip shopping centers containing a variety of retail shops, specializing in quality apparel, hard goods, services such as real estate offices, dance studios, or florists and small restaurants (ITE 1991: 1126)." However, the sample size of specialty retail centers is small (n=3), casting doubts on its reliability. Similarly, the high-turnover (sit-down) restaurant category meets the description of several restaurants in these shopping areas, but again the sample sizes for the various rates are small (n is between 3 and 24).[1]

Shopping centers are described by ITE as "an integrated group of commercial establishments which is planned, developed, owned and managed as a unit. . . . Shopping centers provide on-site parking facilities (ITE 1991: 1230)." Only one of the shopping areas in this study, El Cerrito Plaza, meets this description of a shopping center and it is not a complete match because it has three separate owners and several peripheral buildings.

Table 8-1 shows the daily and peak hourly rates for specialty retail centers, supermarkets, and high turnover sit-down restaurants. Peak hour rates range from 6.58% of average daily trip ends, for high-turnover sit-down restaurants, to 19.76% for supermarkets.

[1] Equations are provided for the trip generation per seat in the restaurant (ITE 1995: 76-84). However, data were not collected on the number of seats in restaurants in this study, so this equation could not be used.

Table 8-1. ITE Trip Rates for Selected Land Uses (In Trip Ends Per 1,000 Square Feet)				
	Average Daily Vehicle Trip Ends		Average Vehicle Trip Ends (Peak Hour of Generation)	
	Weekdays	Saturdays	Weekdays	Saturdays
Specialty Retail Centers	40.67 (21.30-50.94)	42.04 (22.57-54.47)	4.93 (4.59-5.75)	5.09*
High Turnover Sit-down Restaurants	177.87 (112.00-363.16)	229.34 (144.60-411.58)	12.92 (2.80-47.00)	15.09 (10.80-24.33)
Supermarket	128.12	177.59 (168.41-190.43)	11.06 (8.69-12.67)	15.33 (5.00-22.60)
Source: ITE 1991: 1127-30, 1391-93; ITE 1995: 67-73. * - Rates are not reported by ITE for these uses during these times. Value are calculated assuming that the relationship a constant between average peak hour trip ends and average daily trips ends for both weekdays and Saturdays.				

Another source of potential data on "typical" trip rates for this study National Cooperative Highway Research Program Report 187 (Sosslau *et al.* 1978). These data are somewhat dated and draw upon a variety of sources, including earlier ITE studies and state and local reports, for the report trip generation rates. Still, the report does list a number of useful land use types of relevance to this study, including smaller neighborhood and community shopping centers. Relevant data presented in Table 1 of NCHRP Report 187 (Sosslau *et al.* 1978) is shown here in Table 8-2.

Table 8-2. Selected Trip Rates Reported in NCHRP Report 187 (Trips Per 1,000 Square Feet of Retail)			
	Average Daily Vehicle Trip Ends	Trips in P.M. Peak Hour	Trips in Peak Hour of Generation
Neighborhood Retail (Under 200,000 square feet)	97.0	11.15	12.03
Community Shopping Centers (100,000 - 500,000 square feet)	45.9	5.14	5.19
Supermarket	135.3	11.77	17.03
Sit-Down Restaurant	56.3	3.38	n.r.
Banks	388	n.r.	n.r.
Source: Sosslau 1978, 11-12. n.r. - not reported			

The lack of direct "matches" in the ITE data for shopping centers such as the ones examined in this study, the small sample for certain uses that are reported, and the age of the NCHRP data pose something of a dilemma: what trip generation rates are appropriate to use? This, of course, is the same dilemma New Urbanists face when required to come up with trip rates for their proposed projects in environmental reviews, for impact fees, and for parking planning purposes.

A common response is to calculate the rates several ways; I do that here, using (1) peak hour rates for shopping centers and groceries, from ITE, (2) daily rates for these uses, again from ITE, and (3) selected daily rates from NCHRP 187.

ITE Peak Hour Rates

The ITE provides the following formula for calculating the peak hour trip generation for shopping centers on weekdays:

Ln(T) = 0.637 Ln(X) + 3.553
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1237).

For Saturdays, ITE's shopping center formula is:[2]:

Ln(T) = 0.635 Ln(X) + 3.867
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1241).

The following formulas is used to calculate the peak hour generation for supermarkets on weekdays:

Ln(T) = 0.952 Ln(X) +2.679
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1392).

For Saturdays, the formula is:

Ln(T) = 2.065 Ln(X) - 0.896
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1394).

In the two shopping areas with supermarkets (Rockridge - Alcatraz and El Cerrito Plaza), the trip generation rate is calculated separately for each of these uses and the gross square footage of the shopping center is decreased by the amount in the supermarket.

In Table 8-3, the peak hour trip generation, as calculated using the above formulas, is shown for each of the shopping areas.

[2] The same formula is used for the Saturday peak hour trip generation rate for two types of shopping centers: shopping centers with less than 200,000 square feet of gross leasable area (ITE 1991: 1241) and shopping centers (ITE 1991: 1240).

Table 8-3. ITE Peak Hour Trip Generation Rates for Shopping Areas								
Shopping Area	Retail Square Footage (1,000 square feet)		Shopping Center Peak Hour Trip Ends (per 1,000 square feet of retail)		Supermarket Peak Hour Trip Ends (per 1,000 square feet of retail)		Total Peak Hour Trip Ends (per 1,000 square feet of retail)	
	Shopping Center	Super-Market	Weekday P.M.	Saturday	Weekday P.M.	Saturday	Weekdays	Saturdays
Rockridge - Market Hall	64.12		7.71	10.47			7.71	10.47
Rockridge - Alcatraz	49.70	24.00	8.46	11.49	12.51	12.04	20.97	23.53
Elmwood	103.65		6.48	8.78			6.48	8.78
El Cerrito	400.75	33.00	4.09	5.53	12.32	16.91	16.41	22.44
Hopkins	30.00		10.16	13.81			10.16	13.81
Kensington*	19.75		11.82	16.09			11.82	16.09
Source: Merchant Survey; ITE (1991, 1995) * - Kensington shopping area has a grocery store that is too small (3,000 square feet) for the range of trip generation rates that is covered in the ITE formula for Saturday peak hourly rates. This grocery store square footage has, therefore, been included with other uses in the calculation of the trip generation rates.								

ITE Average Daily Rates

The ITE provides the following formula for calculating the daily trip generation for shopping centers on weekdays:

$Ln(T) = 0.756\ Ln(X) + 5.154$
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1234).

For Saturdays, ITE's shopping center formula for daily trip generation is:[3]:

$Ln(T) = 0.628\ Ln(X) + 6.229$
where T is the average vehicle trip ends; and
X is 1,000 square feet of gross leasable area (ITE 1991: 1239).

ITE does not provide a formula, based on retail square footage, for calculating the average daily trip ends for supermarkets. Therefore, standard rates are reported.

In Table 8-4, the average daily trip rates, as calculated using the above formulas, is shown for each of the shopping areas.

[3] The same formula is used for the Saturday peak hour trip generation rate for two types of shopping centers: shopping centers with less than 200,000 square feet of gross leasable area (ITE 1991: 1241) and shopping centers (ITE 1991: 1240).

Table 8-4. ITE Average Daily Trip Rates for Shopping Centers (Trip Ends per 1,000 Square Feet)

Shopping Area	Weekdays	Saturdays
Rockridge - Market Hall	83.49	107.90
Rockridge - Alcatraz	91.86	118.62
Supermarket	128.12*	177.59
Elmwood	69.73	90.25
El Cerrito Plaza	41.99	54.57
Supermarket	128.12*	177.59
Hopkins	111.00	143.13
Kensington#	129.84	167.21

Source: ITE (1991; 1995); Merchant Survey

* - The shopping center rates are taken from the average daily rate reported for Saturdays in the ITE *Trip Generation Manual* (1991, 1393) and adjusted based upon the peak hourly usage for weekdays (see Table 8-1).

- Kensington shopping area has a grocery store that is too small (3,000 square feet) for the range of trip generation rates that is covered in the ITE formula for Saturday peak hourly rates. This grocery store square footage, therefore, has been included with other uses in the calculation of the trip generation rates.

Average Hourly Trip Rate

An average hourly trip generation rate based upon ITE data is more difficult to calculate because ITE only presents formulas for the average daily trip rate and an hourly peak trip generation rate. While in theory it should relatively easy to convert from one to the other, ITE simply does not provide enough information to support an easy translation. Therefore, three methods are considered for deriving an average hourly trip rate for each shopping area from the local average daily trip rates (or the peak hourly trip rate). The third method, using the ratio of average hourly percentage of traffic to the highest hourly percentage times the ITE peak hourly trip rate, is used for further analysis.

The first method considered is to use ITE's data on the hourly variation in shopping center traffic (reported as percentage of total daily traffic for each hour between 10 a.m. and 10 p.m. on a weekdays and Saturdays) and multiplying the average hourly percentage by the ITE average daily trip rate to calculate and average hourly trip rate for each shopping area. Two tables in the *Trip Generation Manual* (ITE 1991: 1232) summarize the hourly variation in shopping center traffic entering and exiting shopping centers with under 100,000 square feet, and over 300,000 square feet of gross leasable area for an average weekday and Saturday from the hours of 10 a.m. and 10 p.m. To match the sample in this study, an average percentage is calculated by taking the average hourly percentage of traffic entering and exiting the shopping center parking lot from 2 p.m. through 6 p.m. on weekdays and from 10 a.m. to 4 p.m. on Saturday. Table 8-5 summarizes the resulting rates derived using this approach. Table 8-6 shows the rates calculated using this method and the other two methods. When the rates calculated using

this method are compared to ITE peak hourly rates, they are higher in all shopping areas except El Cerrito Plaza and in Kensington on Saturdays.

Table 8-5. Average Hourly Percentage of Traffic to Shopping Centers		
	Weekdays	Saturdays
Shopping Centers With Under 100,000 Square Feet		
Highest Hourly Percentage (entering or exiting)	11.0% (exiting between 5 p.m. and 6 p.m.)	10.7% (entering and exiting between 4 p.m. and 5 p.m.)
Average Hourly Percentage During Study Hours*	9.7%	8.9%
Ratio of Average Hourly Percentage to Highest Hourly Percentage	.88	.83
Shopping Centers With Over 300,000 Square Feet		
Highest Hourly Percentage (entering or exiting)	9.5% (exiting between 5 p.m. and 6 p.m.	12.9% (exiting between 3 p.m. and 4 p.m.)
Average Hourly Percentage During Study Hours*	8.6%	10.2%
Ratio of Average Hourly Percentage to Highest Hourly Percentage	.91	.79

Source: ITE *Trip Generation Manual*, Land Use: 820 Shopping Center, Tables 2 and 3
* Average hourly percentage averages the hourly percentage of entries and exits from shopping center parking from the hours of 2 p.m. through 6 p.m. on weekdays and 10 a.m. through 4 p.m. on Saturdays.

The second method uses the number of hours of operation to calculate an average hourly trip rate. In this calculation the average number of hours of operation on weekdays and Saturdays in each shopping area, based upon responses in the Merchant Survey (see Table 8-7), is divided into each shopping area's average daily trip rate calculated using ITE formulas (see Tables 8-4) to obtain an average hourly rate. In all shopping areas, except Kensington on weekdays, the average hourly trip ends are higher than the ITE peak hourly trip ends.

Table 8-6. ITE Average Hourly Trip Rates for Shopping Areas (Rate per 1,000 Square Feet)						
Shopping Area	Weekdays			Saturdays		
	Using Average Hourly Percentage for Hours of Study*	Using Hours of Operation#	Using Ratio of Average Hourly Rate to Percentage of Highest Hourly Percentage§	Using Average Hourly Percentage for Hours of Study*	Using Hours of Operation#	Using Ratio of Average Hourly Rate to Percentage of Highest Hourly Percentage§
Rockridge - Market Hall	8.09	8.34	6.79	9.60	11.99	8.71
Rockridge - Alcatraz	8.91	9.42	7.46	10.56	13.18	9.56
Supermarket§	12.43	5.34	11.01	15.81	7.40	9.99
Elmwood	6.76	7.75	5.71	8.03	10.31	7.30
El Cerrito Plaza	3.61	4.31	3.70	5.56	6.06	4.37
Supermarket	12.43	5.34	11.21	15.81	7.40	13.36
Hopkins	10.77	12.33	8.96	12.74	16.36	11.48
Kensington	12.59	11.80	9.83	14.88	16.72	13.38

Source: Merchant Survey; ITE *Trip Generation Manual* (1991, 1995)
* -The hourly average trip ends is calculated by taking an average hourly percentage of traffic entering the shopping center during the hours of interviews and multiplying by the ITE daily trip rate.
# - The daily hours of operation for each shopping area (see Table 8-7) are divided into the ITE daily trip rate. The supermarkets are open 24 hours per day.
§ - The ratio of average hourly percentages divided by the highest hourly percentage is multiplied by the peak hourly rate.

The third method of calculating the average hourly trip rates uses the ratio of the average hourly percentage of trips and the highest average hourly percentage (see Table 8-5) to scale down ITE's peak hourly rate to an average hourly rate for each shopping area on weekdays and Saturdays. The average hourly rates calculated in this manner are lower than the other two and hence are probably a more conservative estimate of the trips generated in the shopping areas. They are consequently chosen for use in the analysis.

Calculation of Trip Generation Based Upon Survey Data and Counts

Trip generation rates for each of the shopping areas next are developed using the following information gathered as a part of the study: (1) the number of persons interviewed per hour; (2) the pedestrian count during a comparable period; (4) the retail square footage (in 1,000 square feet); (5) the total number of stops made by customers at a specific type of shop in the shopping area,[4] (6) customers arriving by auto for each area (auto share) and (7) daily hours of operation. Table 8-7 presents these data for each of the shopping areas.

[4] In the two areas of Rockridge the number of stops was reduced by the number of stops made in other areas of the Rockridge shopping area, and only the square footage of the specific study area is included in the calculations.

Table 8-7. Customer Activity and Interviewing Sampling Rates in Shopping Areas

	Number Interviewed	Hours of Interviews	Interviews Per Hour	Pedestrians Per Hour	Sampling Rate	Expansion Factor	Auto Share	Hours of Operation
	a	b	c=a/b	d	e=c/d	f=1/e	g	h
Rockridge - Market Hall								
Weekdays	81	4.75	17.05	618	0.028	36.24	0.41	10.00
Saturdays	96	5.58	17.20	760	0.023	44.18	0.66	9.00
Rockridge - Alcatraz								
Weekdays	81	4.42	18.33	308	0.059	16.81	0.54	9.75
Saturdays	75	4.67	16.06	418	0.038	26.03	0.52	9.00
Grocery -Weekday	50	1.50	33.33	150	0.222	4.50	0.70	24.00
Elmwood								
Weekdays	79	3.75	21.07	552	0.038	26.20	0.58	9.00
Saturdays	84	4.00	21.00	804	0.026	38.29	0.57	8.75
El Cerrito Plaza								
Weekdays	87	6.17	14.10	501	0.028	35.53	0.78	9.75
Saturdays	93	5.92	15.71	553	0.028	35.20	0.85	9.00
Hopkins								
Weekdays	79	4.25	18.59	232	0.080	12.48	0.68	9.00
Saturdays	85	4.00	21.25	408	0.052	19.20	0.67	8.75
Kensington								
Weekdays	79	4.25	18.59	140	0.133	7.53	0.79	11.00
Saturdays	77	4.17	18.47	200	0.092	10.83	0.71	10.00

Source: Customer Intercept Survey; Observations; Merchant Survey

For each area, the trip generation rate for an average hour for each category of retail land use is calculated separately for weekdays and Saturdays (see Tables 8-8 through 8-13). The methodology is as follows:

1. The number of persons stopping per hour by type of stop is divided by the number of hours of interviews to determine the rate at which stops in the sample were made each hour (see Table 8-7 for number of hours of interviewing).

2. An estimate of the all customers stopping for a specific retail use is calculated by multiplying the stops per interview hour by the appropriate expansion factor (see Table 8-7 for expansion factors).

3. The number of stops per 1,000 square feet of each category of retail is calculated by dividing estimated total stops per hour by the total square footage of the applicable category of retail type.

4. Trip ends per hour are calculated by multiplying the number of customers making stops per 1,000 square feet of retail by two to translate "persons" into person trip ends (in and out of the shopping area) as reported in trip generation rates.

5. An adjustment is made for the mode to the shopping area based upon the day of the week. This adjustment provides an estimate of the level of trip ends by vehicles traffic associated with each of these shopping areas.

6. Then, an adjustment is made to account for the number of persons per vehicle to obtain an average hourly auto trip end rate. The survey did not collect this datum, so vehicle occupancy is taken to be the regional average for all shopping trips, 1.23 (Purvis 1994). This rate is identical to the 1.23 that is used in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual* for specialty retail centers (1991: 1126) and lower that the 1.64 that is used for neighborhood and community shopping centers (NCHRP 1978).[5]

7. Finally, the average hourly rates are multiplied by the number of hours of operation in each shopping area to calculate the total daily auto trip ends. The number is taken from responses to questions about the hours of operation in the Merchant Survey.

Trip generation rates for "other services" are omitted from the analysis; square footage for these uses are also omitted. The number of reported stops for these other services is relatively small (about 4% of respondents and 2% of total stops were for other services). These uses might need to be accounted for if the objective of this study was to make decisions about a specific shopping area, but for the broader purposes of this study this omission is not important.

[5] ITE does not report the vehicle occupancy rates for trips to shopping centers or supermarkets.

Table 8-8. Trip Generation Rates for Rockridge - Market Hall Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Sampled Persons/Hour l=j/b Weekdays	Sampled Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. Per Hour p=n/i Weekdays	Persons Per 1000 Sq. Ft. Per Hour q=o/i Saturdays
Cafe/Coffee Shop	10.25	22	48	4.63	8.60	167.85	380.00	16.38	37.07
Flowers, Cards and Books	2.6	9	20	1.89	3.58	68.67	158.33	26.41	60.90
Misc. Convenience	2.2	5	4	1.05	0.72	38.15	31.67	17.34	14.39
Restaurants	11.8	6	10	1.26	1.79	45.78	79.17	3.88	6.71
Specialty Food	5.45	40	40	8.42	7.17	305.19	316.67	56.00	58.10
All Convenience Shopping	32.3	58	84	12.21	15.05	442.52	665.00	13.70	20.59
Convenience Services	1.2	11	8	2.32	1.43	83.93	63.33	69.94	52.78
All Convenience Stops	33.5	66	87	13.89	15.59	503.56	688.75	15.03	20.56
Comparison Shop	30.65	12	40	2.53	7.17	91.56	316.67	2.99	10.33
Total	64.15	81	96	17.05	17.20	618.00	760.00	9.63	11.85

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	32.75	74.15	13.43	46.94	10.92	39.79	109.17	358.07
Flowers, Cards and Books	52.82	121.79	42.94	99.02	17.61	65.35	176.07	588.18
Misc. Convenience	34.68	28.79	28.20	23.40	11.56	15.45	115.60	139.02
Restaurants	7.76	13.42	6.31	10.91	2.59	7.20	25.86	64.80
Specialty Food	111.99	116.21	91.05	94.48	37.33	62.36	373.32	561.20
All Convenience Shopping	27.40	41.18	22.28	33.48	9.13	22.09	91.34	198.85
Convenience Services	139.88	105.56	113.72	85.82	46.63	56.64	466.26	509.76
All Convenience Stops	30.06	41.12	24.44	33.43	10.02	22.06	100.21	198.58
Comparison Shop	5.97	20.66	4.86	16.80	1.99	11.09	19.91	99.79
Total	19.27	23.69	15.66	19.26	6.42	12.71	64.22	114.43

Source: Customer Intercept Survey

Notes: Total number of customers making specific type of stop includes only stops made within the two block area around to the south of Market Hall (on both sides of the street). Stops in other parts of Rockridge are excluded.

Table 8-9. Trip Generation Rates for Rockridge - Alcatraz Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Samplec Persons/Hour l=j/b Weekdays	Samplec Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. Per Hour p=n/i Weekdays	Persons Per 1000 Sq. Ft. Per Hour q=o/i Saturdays
Cafe/Coffee Shop	3.3	15	20	3.39	4.28	57.04	111.47	17.28	33.78
Flowers, Card and Books	1	6	3	1.36	0.64	22.81	16.72	22.81	16.72
Misc. Convenience	7.1	15	11	3.39	2.36	57.04	61.31	8.03	8.63
Restaurants	2.3	2	5	0.45	1.07	7.60	27.87	3.31	12.12
Specialty Food	12.6	48	41	10.86	8.78	182.52	228.51	14.49	18.14
All Convenience Shopping	26.3	66	67	14.93	14.35	250.96	373.41	9.54	14.20
Convenience Services	16.9	11	19	2.49	4.07	41.83	105.89	2.47	6.27
All Convenience Stops	43.2	71	69	16.06	14.78	269.98	384.56	6.25	8.90
Comparison Shop	6.5	17	14	3.85	3.00	64.64	78.03	9.94	12.00
Total Excluding Grocery	49.7	81	75	18.33	16.06	308.00	418.00	6.20	8.41
Grocery	24	66	90	44.00	59.71	198.00	268.71	8.25	11.20

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	34.57	67.56	18.67	35.13	15.18	28.56	147.97	257.04
Flowers, Cards and Books	45.63	33.44	24.64	17.39	20.03	14.14	195.32	127.24
Misc. Convenience	16.07	17.27	8.68	8.98	7.05	7.30	68.77	65.71
Restaurants	6.61	24.23	3.57	12.60	2.90	10.24	28.31	92.20
Specialty Food	28.97	36.27	15.64	18.86	12.72	15.33	124.01	138.01
All Convenience Shopping	19.08	28.40	10.31	14.77	8.38	12.01	81.69	108.05
Convenience Services	4.95	12.53	2.67	6.52	2.17	5.30	21.19	47.68
All Convenience Stops	12.50	17.80	6.75	9.26	5.49	7.53	53.50	67.74
Comparison Shop	19.89	24.01	10.74	12.48	8.73	10.15	85.14	91.35
Total Excluding Grocery	12.39	16.82	6.69	8.75	5.44	7.11	53.05	64.00
Grocery	16.50	22.39	11.55	15.68	9.39	12.74	225.37	305.85

Source: Customer Intercept Survey

Notes: Auto share for grocery store is .70 for weekdays and Saturdays. Mode share for other uses is .54 on weekdays and .52 on Saturdays. Total number of customers making specific type of stop includes only stops made within the three block area from just north of Alcatraz Avenue to Claremont Avenue (on both sides of the street). Stops in other parts of Rockridge are excluded. Stops at grocery store on Saturdays are assumed to be roughly proportional to the two to one ratio of customers between Yasai and Safeway. Trip generation rate is calculated separate y for grocery store.

Table 8-10. Trip Generation Rates for Elmwood Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Sampled Persons/Hour l=j/b Weekdays	Sampled Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. Per Hour p=n/i Weekdays	Persons Per 1000 Sq. Ft. Per Hour q=o/i Saturdays
Cafe/Coffee Shop	9.35	22	28	5.87	7.00	153.72	268.00	16.44	28.66
Flowers, Cards and Books	6.9	8	10	2.13	2.50	55.90	95.71	8.10	13.87
Misc. Convenience	6.1	10	12	2.67	3.00	69.87	114.86	11.45	18.83
Restaurants	12.25	8	12	2.13	3.00	55.90	114.86	4.56	9.38
Specialty Food	7.5	13	23	3.47	5.75	90.84	220.14	12.11	29.35
All Convenience Shopping	42.1	48	63	12.80	15.75	335.39	603.00	7.97	14.32
Convenience Services	25.25	34	38	9.07	9.50	237.57	363.71	9.41	14.40
All Convenience Stops	67.35	71	74	18.93	18.50	496.10	708.29	7.37	10.52
Comparison Shop	36.3	18	32	4.80	8.00	125.77	306.29	3.46	8.44
Total	103.65	79	84	21.07	21.00	552.00	804.00	5.33	7.76

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	32.88	57.33	19.07	33.25	15.51	27.03	139.55	236.53
Flowers, Cards and Books	16.20	27.74	9.40	16.09	7.64	13.08	68.76	114.47
Misc. Convenience	22.91	37.66	13.29	21.84	10.80	17.76	97.22	155.38
Restaurants	9.13	18.75	5.29	10.88	4.30	8.84	38.73	77.37
Specialty Food	24.22	58.70	14.05	34.05	11.42	27.68	102.80	242.22
All Convenience Shopping	15.93	28.65	9.24	16.61	7.51	13.51	67.62	118.19
Convenience Services	18.82	28.81	10.91	16.71	8.87	13.58	79.86	118.87
All Convenience Stops	14.73	21.03	8.54	12.20	6.95	9.92	62.52	86.78
Comparison Shop	6.93	16.88	4.02	9.79	3.27	7.96	29.41	69.63
Total	10.65	15.51	6.18	9.00	5.02	7.32	45.20	64.01

Source: Customer Intercept Survey

Table 8-11. Trip Generation Rates for El Cerrito Plaza Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Sampled Persons/Hour l=j/b Weekdays	Sampled Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. Per Hour p=n/i Weekdays	Persons Per 1000 Sq. Ft. Per Hour q=o/i Saturdays
Cafe/Coffee Shop	5.25	6	19	0.97	3.21	34.55	112.98	6.58	21.52
Flowers, Cards and Books	3.7	2	9	0.32	1.52	11.52	53.52	3.11	14.46
Misc. Convenience	18.5	33	26	5.35	4.39	190.03	154.60	10.27	8.36
Restaurants	24.5	3	5	0.49	0.84	17.28	29.73	0.71	1.21
Specialty Food	20.65	2	3	0.32	0.51	11.52	17.84	0.56	0.86
All Convenience Shopping	72.6	79	80	12.80	13.51	454.93	475.70	6.27	6.55
Convenience Services	21.7	10	21	1.62	3.55	57.59	124.87	2.65	5.75
All Convenience Stops	94.3	80	84	12.97	14.19	460.69	499.48	4.89	5.30
Comparison Shop	306.45	29	43	4.70	7.26	167.00	255.69	0.54	0.83
Total Excluding Grocery	400.75	87	93	14.10	15.71	501.00	553.00	1.25	1.38
Grocery Store	33	52	54	8.43	9.12	299.45	321.10	9.07	9.73

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	13.16	43.04	10.27	36.58	8.35	29.74	81.38	267.68
Flowers, Cards and Books	6.23	28.93	4.86	24.59	3.95	19.99	38.49	179.92
Misc. Convenience	20.54	16.71	16.02	14.21	13.03	11.55	127.02	103.95
Restaurants	1.41	2.43	1.10	2.06	0.89	1.68	8.72	15.09
Specialty Food	1.12	1.73	0.87	1.47	0.71	1.19	6.90	10.75
All Convenience Shopping	12.53	13.10	9.78	11.14	7.95	9.06	77.49	81.50
Convenience Services	5.31	11.51	4.14	9.78	3.37	7.95	32.82	71.58
All Convenience Stops	9.77	10.59	7.62	9.00	6.20	7.32	60.41	65.89
Comparison Shop	1.09	1.67	0.85	1.42	0.69	1.15	6.74	10.38
Total Excluding Grocery Store	2.50	2.76	1.95	2.35	1.59	1.91	15.46	17.16
Grocery Store	18.15	19.46	14.16	16.54	11.51	13.45	276.21	322.76

Source: Customer Intercept Survey
Notes: Trip generation rate is calculated separately for grocery store.

Table 8-12. Trip Generation Rates for Hopkins Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Sampled Persons/Hour l=j/b Weekdays	Sampled Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. p=n/i Weekdays	Persons Per 1000 Sq. Ft. q=o/i Saturdays
Cafe/Coffee Shop	2	10	10	2.35	2.50	29.37	48.00	14.68	24.00
Flowers, Cards and Books	0.2	1	3	0.24	0.75	2.94	14.40	14.68	72.00
Misc. Convenience	0.4	6	13	1.41	3.25	17.62	62.40	44.05	156.00
Restaurants	1	5	5	1.18	1.25	14.68	24.00	14.68	24.00
Specialty Food	13.2	70	75	16.47	18.75	205.57	360.00	15.57	27.27
All Convenience Shopping	16.8	79	82	18.59	20.50	232.00	393.60	13.81	23.43
Convenience Services	3.8	9	5	2.12	1.25	26.43	24.00	6.96	6.32
All Convenience Stops	20.6	77	82	18.12	20.50	226.13	393.60	10.98	19.11
Comparison Shop	9.4	5	4	1.18	1.00	14.68	19.20	1.56	2.04
Total	30	79	85	18.59	21.25	232.00	408.00	7.73	13.60

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	29.37	48.00	19.97	32.16	16.24	26.15	146.12	228.78
Flowers, Cards and Books	29.37	144.00	19.97	96.48	16.24	78.44	146.12	686.34
Misc. Convenience	88.10	312.00	59.91	209.04	48.71	169.95	438.36	1487.07
Restaurants	29.37	48.00	19.97	32.16	16.24	26.15	146.12	228.78
Specialty Food	31.15	54.55	21.18	36.55	17.22	29.71	154.97	259.98
All Convenience Shopping	27.62	46.86	18.78	31.39	15.27	25.52	137.42	223.33
Convenience Services	13.91	12.63	9.46	8.46	7.69	6.88	69.21	60.21
All Convenience Stops	21.95	38.21	14.93	25.60	12.14	20.82	109.23	182.14
Comparison Shop	3.12	4.09	2.12	2.74	1.73	2.23	15.54	19.47
Total	15.47	27.20	10.52	18.22	8.55	14.82	76.96	129.64

Source: Customer Intercept Survey

Table 8-13. Trip Generation Rates for Kensington Shopping Area

Type of Retail	Square Footage i 10^3	Sampled Number of Persons j Weekdays	Sampled Number of Persons k Saturdays	Sampled Persons/Hour l=j/b Weekdays	Sampled Persons/Hour m=k/b Saturdays	Estimated Total Persons Per Hour n=l*f Weekdays	Estimated Total Persons Per Hour o=m*f Saturdays	Persons Per 1000 Sq. Ft. Per Hour p=n/i Weekdays	Persons Per 1000 Sq. Ft. Per Hour q=o/i Saturdays
Cafe/Coffee Shop	0.5	0	2	0.00	0.11	0.00	1.17	0.00	2.35
Market	3	66	41	3.55	2.22	26.74	24.05	8.91	8.02
Flowers, Cards and Books	0.3	6	4	0.32	0.22	2.43	2.35	8.10	7.82
Misc. Convenience	7.1	19	33	1.02	1.79	7.70	19.36	1.08	2.73
Restaurants	1.25	4	9	0.22	0.49	1.62	5.28	1.30	4.22
Specialty Food	1.7	4	6	0.22	0.32	1.62	3.52	0.95	2.07
All Convenience Shopping	13.85	72	66	3.87	3.57	29.17	38.71	2.11	2.80
Convenience Services	5.9	29	37	1.56	2.00	11.75	21.70	1.99	3.68
All Stops	19.75	79	77	4.25	4.17	32.01	45.17	1.62	2.29

Type of Retail	Person Trip Ends r=p*2 Weekdays	Person Trip Ends s=q*2 Saturdays	Adjustment for Auto Share t=r*g Weekdays	Adjustment for Auto Share u=r*g Saturdays	Hourly Auto Trip Ends v=t/1.23 Weekdays	Hourly Auto Trip Ends w=u/1.23 Saturdays	Total Daily Auto Trip Ends x=v*h Weekdays	Total Daily Auto Trip Ends y=w*h Saturdays
Cafe/Coffee Shop	0.00	4.69	0.00	3.33	0.00	2.71	0.00	27.09
Market	17.83	16.03	14.08	11.38	11.45	9.25	125.96	92.55
Flowers, Card and Books	16.21	15.64	12.80	11.11	10.41	9.03	114.51	90.29
Misc. Convenience	2.17	5.45	1.71	3.87	1.39	3.15	15.32	31.47
Restaurants	2.59	8.45	2.05	6.00	1.67	4.88	18.32	48.76
Specialty Food	1.91	4.14	1.51	2.94	1.22	2.39	13.47	23.90
All Convenience Shopping	4.21	5.59	3.33	3.97	2.71	3.23	29.76	32.27
Convenience Services	3.98	7.36	3.15	5.22	2.56	4.25	28.14	42.47
All Stops	3.24	4.57	2.56	3.25	2.08	2.64	22.90	26.40

Source: Customer Intercept Survey

Notes: Comparison Shopping is not included in analysis because no customers made stops for comparison shopping. Trip generation rates are not calculated for grocery store/market because the square footage is too small for the applicable range of the ITE trip generation rates.

Comparison of Trip Generation Rates by Shopping Area

In this section the trip generation rates calculated using ITE data are compared to the rates calculated using the local data collected in the six shopping areas. Both data adjusted for mode shares and data unadjusted for mode shares are considered. The unadjusted data permit a comparison of the rates that would be estimated if simple pedestrian counts, rather than more detailed travel and activity surveys, were used to gauge the level of trip generation in these shopping areas. For clarity, the average hourly rates that are calculated using the ITE hourly percentages of traffic are called the ITE rates and the average hourly rates calculated using specific shopping area data are called "local" trip generation rates or "local" trip ends.

Average Hourly Trip Rates by Shopping Area

Before adjusting for mode shares, the local trip generation rates for an average hour of shopping, based upon the survey, exceed the average hourly rates in four of the six shopping areas (see Table 8-14). Even when the rates are adjusted for the high share of trips to these shopping areas that are completed by modes other than autos, the local trip ends for an average hour exceed the ITE hourly trip generation rates.

In Rockridge - Market Hall the unadjusted local hourly trip rates for weekdays and Saturdays are more than twice the ITE average hourly trip rate: 15.66 trip ends per 1,000 square feet of retail compared to 6.79 (ITE rates) trip ends for weekdays and 19.26 trip ends compared to 8.71 (ITE rates) trip ends on Saturdays. When the local trip generation rate is adjusted for the share of trips that are completed by modes other than the automobile, the local weekday hourly auto trip rate is lower, at 6.42 trip ends per 1,000 square feet, than ITE's average hourly trip ends. However, on Saturdays, when a higher share of trips are taken by automobiles, the adjusted local trip rate of 12.71 auto trip ends exceed the ITE average hourly generation rate of 8.71 trip ends per 1,000 square feet of retail.

Table 8-14. Comparison of ITE Average Hourly Trip Ends and Location Specific Hourly Trip Ends (Trip Ends per 1,000 Square Feet of Retail)

	Average Hourly Trip Ends (ITE data)		Hourly Person Trip Ends (Local Data)		Trip Ends Adjusted for Auto Share (Local Data)	
	Weekdays	Saturdays	Weekdays	Saturdays	Weekdays	Saturdays
Rockridge - Market Hall	6.79	8.71	15.66	19.26	6.42	12.71
Rockridge - Alcatraz	7.46	9.56	10.08	13.68	5.44	7.11
Supermarket	11.01	9.99	13.41	18.21	9.39	12.74
Elmwood	5.71	7.30	8.66	12.61	5.02	7.32
El Cerrito Plaza	3.70	4.37	2.03	2.24	1.59	1.91
Supermarket	11.21	13.36	14.75	15.82	11.51	13.45
Hopkins	8.96	11.48	12.57	22.11	8.55	14.82
Kensington	9.83	13.38	2.64	3.72	2.08	2.64

Source: ITE (1991, 1995), Customer Intercept Survey

A similar pattern is found in Hopkins where on weekdays, the unadjusted local trip generation rate is 12.57 trip ends per 1,000 square feet compared to the ITE average hourly rate of 8.96 trip ends. Once the local rate is adjusted for the 32% of customers who use other modes to the shopping area, the weekday rate drops to 8.55 trip ends. On Saturdays, the local hourly trip rate is 22.11 trip ends per 1,000 square feet of retail compared to the ITE average hourly rate of 11.48 trip ends. Once this local rate is adjusted for the 33% of customers who use other modes to the shopping area, the local rate is 14.82 trip ends per 1,000 square feet, is still higher than the ITE average hourly trip rate of 11.48 trip ends.

In Rockridge - Alcatraz and Elmwood, the local trip generation rates, assuming that all customers drive to the shopping area, exceed the ITE average hourly trip generation rates. Once they are adjusted for the share of trips made by other modes, the local rates are lower than the ITE average hourly rates. In Rockridge - Alcatraz, the local hourly trip rates are 10.08 trip ends per 1,000 square feet for weekdays and 13.68 trip ends for Saturdays compared to the ITE average hourly rates of 7.46 and 9.56 trip ends, respectively. The grocery store in Rockridge - Alcatraz has similarly higher rates, 13.41 on weekdays and 18.21 trip ends per 1,000 square feet on Saturdays, compared to the ITE-based average hourly rates of 11.01 trip ends and 9.99 trip ends, respectively. Once the local trip rates are adjusted for the 30% of customers who do not drive to the grocery store, for weekdays, the hourly rates is 9.39 trip ends per 1,000 square feet and the Saturday rate is 12.74; the weekday rates are lower than the ITE average hourly trip rates.

In Elmwood, the unadjusted local hourly rate also exceeds the comparable average hourly rate for both weekdays and Saturdays. After adjusted for modes shares, the local hourly rates for both weekdays and Saturdays are lower than ITE's average hourly rates.

The local average hourly rates for El Cerrito Plaza's grocery are higher than the ITE hourly rates (14.75 trip ends per 1,000 square feet on weekdays and 18.21 on Saturdays, compared to the ITE hourly rate of 11.21 trip ends and weekdays and 13.36 trip ends on Saturdays). When these rates are adjusted for non-auto mode share, the local trip rates are lower than the ITE supermarket rates.

For other uses in the shopping area, however, the local data produce trip generation rates that are significantly lower than the rates generated with the ITE equations. For example, the local data indicate that the weekday average hourly trip generation rate is 2.03 trip ends per 1,000 square feet and the Saturday rate is 2.24 trip ends per 1,000 square feet, compared to the average hourly rates of 3.70 trip ends and 4.37 trip ends, respectively. The difference in these rates could be associated with an underrepresentation of the customers using comparison shopping because of the location of the interviews, or it could be related to an unusually low level of retail activity at the El

Cerrito Plaza.[6] To test this, trip generation rates were calculated for only convenience shopping and services (excluding the grocery store). The revised ITE rates are 5.90 and 7.56 average hourly trip ends for weekdays and Saturdays for the 94,300 square feet of convenience retail.[7] The local unadjusted weekday rates of 7.94 average hourly trip ends per 1,000 square feet for weekdays and 8.61 trip ends for Saturdays exceed the ITE average hourly rate. After these local rates are adjusted for the share of trips taken by modes other than the automobile the local rates are higher on weekdays and lower on Saturdays. This result appears to confirm that comparison shopping is underrepresented in the El Cerrito sample.

In Kensington, the local data produce trip rates of 2.64 hourly trip ends per 1,000 square feet of retail for weekdays and 3.72 trip ends for Saturdays, significantly lower than the ITE -based hourly rates of 11.82 and 15.33 trip ends per 1,000 square feet of retail for weekdays and Saturdays, respectively. These results suggest that the level of activity in Kensington is either much lower than the usual level of activity the ITE has reported or the local survey does not capture the actual level of activity. The shopping activity in Kensington has the most pronounced peaking pattern of any of these shopping areas -- the area has a constant flow of customers during the weekday evening commute and on Saturday mornings, but at other times the level of activity is generally low -- this is another potential source of error.

Average Daily Trip Rates by Shopping Area

In Table 8-15, the average daily trips ends based upon local data are compared to the ITE daily trip ends and the NCHRP daily trip ends. The local daily rates exceed the ITE daily rates in only Rockridge on Saturdays and at the supermarket in El Cerrito Plaza on weekdays. These results suggest a mismatch between the ITE rates and the local rates. For example, the hours of operation of these traditional shopping areas do not match the hours of operation in the planned centers used by ITE. The ITE average hourly traffic shows about 90% of the traffic to the planned centers to occur between the hours of 10 a.m. and 10 p.m., while the hours of operation for most stores in these traditional shopping areas, with the exception of grocery stores, seldom operate more than 10 hours per day. The NCHRP rates are close to the ITE rates in El Cerrito Plaza and in Rockridge - Alcatraz on weekdays and Elmwood on Saturdays. The limitations of these rates are shown by comparison to ITE rates, which account for differences in retail square footage.

[6] The El Cerrito Plaza has faced many business difficulties. At the time of the surveys, a large space formerly occupied by Woolworth's was vacant. Since then, the largest tenant, Emporium Capwell has failed.

[7] The comparable peak hourly rates are 6.70 trip ends for weekdays and 9.09 trip ends on Saturdays.

Table 8-15. Comparison of Daily Trip Ends based upon ITE Rates, NCHRP Rates and Local Rates (Per 1,000 Square Feet of Retail)						
	ITE Daily Trip Ends		NCHRP Daily Trip Ends*		Local Daily Trip Ends	
	Weekdays	Saturdays	Weekdays	Saturdays	Weekdays	Saturdays
Rockridge - Market Hall	83.49	107.90	97.0	97.0	64.22	114.43
Rockridge - Alcatraz	91.86	118.62	97.0	97.0	53.05	64.00
Supermarket	128.12	177.59	135.3	135.3	112.69	152.93
Elmwood	69.73	90.25	97.0	97.0	45.20	64.01
El Cerrito Plaza	41.99	54.57	45.9	45.9	15.46	17.16
Supermarket	128.12	177.59	135.3	135.3	138.10	161.38
Hopkins	111.00	143.13	97.0	97.0	76.96	129.64
Kensington	129.84	167.21	97.0	97.0	22.90	26.40
Source: ITE (1991, 1995), Customer Intercept Survey						

Parking Requirement for Level of Activity

Based upon the trips generated in each of these shopping areas, the requirements for parking can be estimated (see Tables 8-16 and 8-17). The number of parking spaces required to serve an average hour of shopping is calculated using the following information: (1) the average shopping time; and (2) the demand for parking based upon the number of customers driving to the shopping area. Separate parking requirements for weekdays and Saturdays are calculated through the following series of steps:

1. The parking turnover (spaces per hour) is calculated by dividing the average shopping in minutes time into 60 minutes per hour.

2. The total hourly parking demand is calculated by dividing the hourly trip ends by two (to adjust for the two trip ends per vehicle) and multiplying by the square footage in thc shopping area.

3. The required parking spaces is calculated by dividing the range of total hourly demand by the range of parking turnover.

Table 8-16. Parking Usage and Demand by Shopping Area

	Average Shopping Time (minutes)* a		Parking Turnover (vehicle parking spaces per hour) b= 60/a		Hourly Parking Demand# (number of vehicles) c		Hourly Parking Usage§ (Number of Spaces) d=c/b	
	Weekdays	Saturdays	Weekdays	Saturdays	Weekdays	Saturdays	Weekdays	Saturdays
Rockridge - Market Hall	77	53	.78	1.14	206	408	263	357
Rockridge - Alcatraz¥	44	48	1.38	1.25	248	330	98	141
Elmwood	48	50	1.25	1.21	260	379	208	313
El Cerrito Plaza¥	35	45	1.74	1.33	508	604	183	287
Hopkins	36	38	1.67	1.60	128	222	77	139
Kensington	12	14	5.00	4.44	21	26	4	6

Sources: Customer Intercept Survey, Merchant Survey, Observations, ITE (1991, 1995)

* - Average shopping time is based upon response of auto drivers and passengers to Question 2: "*How long have you spent shopping or doing errands on <shopping street> today?*" The minimum number is taken from the customer responses. The maximum number is twice that number under the assumption that customers on average were stopped in the middle of the shopping trip. The average is then calculated using these two numbers.

- - Hourly demand equals the trip ends (adjusted for mode share) divided by 2 and multiplied by the square footage of the shopping area.

§ - The estimate of hourly parking usage uses an average hourly rate of parking demand and the average parking turnover.

¥ - The hourly parking demand and the parking spaces required for grocery shopping were calculated separately and then combined with the rest of the shopping area.

Table 8-17. Comparison of Parking Standards, Number or Existing Spaces and Parking Required for Drivers to Shopping Area

	Average Hourly Parking Usage For Only Auto Trips (Number of Parking Spaces)		Existing Parking Spaces*	Parking Standards# (Number of Parking Spaces)	
	Weekdays	Saturdays		New Urbanist Minimum	ITE Recommended
Rockridge - Market Hall	263	357	128	192	321
Rockridge - Alcatraz§	98	141	270	221	369
Elmwood	208	313	124	311	518
El Cerrito Plaza¥	183	287	2,200	1301	2169
Hopkins	77	139	87	90	150
Kensington	4	6	93	59	93

Sources: Customer Intercept Survey, Merchant Survey, Observations, ITE Trip Generation Manual

Notes: Hourly demand is calculated using the trip ends after the adjustment for automobile usage. Thus this is a measure of the average range of demand for parking using the two rates of parking turnover.

* - Number of parking spaces is calculated based on number of parking spaces along the shopping street and in off-street parking lots. It does not include spillover parking in the adjacent neighborhoods.

- Parking standards present a range of 3.0 parking spaces per 1,000 square feet of retail, as recommended by Calthorpe (1993) and 5.0 as recommended by ITE standards.

§ - The hourly parking demand and the parking spaces required for grocery shopping were calculated separately and then combined with the rest of the shopping area.

In Table 8-16 estimates of the parking usage in each of these shopping areas are shown. The hourly parking usage estimate is based, roughly on average, that is, with customers driving to the shopping area at the rate of the customers sampled in this research and staying an average length of time. Clearly an improved estimate could be obtained by using a distribution of turnover rates, durations, and other characteristics of parking, but more data would be needed. The "average" calculation serves as a first-cut indication of actual needs.

Using local data and these simple assumptions, the minimum standard of 3 parking spaces per 1,000 square feet of retail recommended by the New Urbanists would exceed actual need in all but one of six cases for weekdays (Rockridge - Market Hall). Hopkins would exceed the New Urbanist standard on Saturdays, by a significant amount; the New Urbanist standard would just barely meet the requirement in Elmwood on Saturdays. The estimate of average usage on Saturdays in Rockridge - Market Hall shopping areas exceeds the ITE standard of 5 parking spaces per 1,000 square feet of retail by 11% -- the local need is about 5.56 shopping spaces per 1,000 square feet of retail.

A comparison of the hourly parking demand compared to the available parking spaces hints at the pressure that is placed on the adjacent neighborhoods to provide parking for a highly successful shopping area, even if it is in a traditional neighborhood. In Rockridge - Market Hall and Elmwood, the number of existing parking spaces is not sufficient to meet the needs for the average level of parking on an average hour on a weekday. While Rockridge - Market Hall has 889 parking spaces in the BART parking lot that are used by customers on Saturdays, there is no place for customers in Elmwood to go but to park in the adjacent neighborhoods. These two shopping areas and Hopkins also do not have sufficient parking spaces for the additional traffic on Saturdays.

Conclusions

The claims of the New Urbanists that the parking requirements can be reduced from the 5.0 spaces per 1,000 square feet of retail can not be supported wholeheartedly, if the Saturday peak loads are to be met. In two of our exemplar shopping areas the New Urbanists' standards would be inadequate, in one case by a considerable amount. In two of the three shopping areas that have specialty food shops, the number of trips generated per hour are almost double the ITE average hourly rate and even after these trip rates are adjusted for the trips that are made by modes other than the automobile, the trip vehicle rates exceed the ITE average hourly rate.

Simply stated, these shopping areas may be so successful that the trips by modes other than autos are offset by the higher level of overall activity in the shopping area. Thus, the desire of the New Urbanists to reduce the parking requirement may be misguided. If they seek a lively pedestrian environment with attractive shopping, they may also create a demand for auto access. While customers become pedestrians along the

shopping street, some are attracted from a long distance away, drive and require a place to park.

These results also point to the need for additional study of the trip generation rates and the parking requirements for New Urbanist developments. The ITE trip generation rates do not provide an adequate match for the type of activity that is generated in traditional and neo-traditional shopping areas because the pedestrian and other non-automobile trips are not captured, and the shopping street carries through-traffic and traffic for which the destination is the shopping area. Capturing the level of activity in these shopping areas will require modifications to the standard method used by ITE of capturing the trips at the entrance to the parking lot.

CHAPTER 9. HOW DO RESPONDENTS CHOOSE WHERE TO SHOP? HOW DO MERCHANTS CHOOSE WHERE TO LOCATE?

The New Urbanists propose a commercial area that includes retail uses to which residents of the surrounding neighborhoods and workers in the center can walk. As the researchers in retail geography suggest, the decision about where businesses locate is based upon a complex set of tradeoffs among various factors. Similarly, households make complex decisions about where to shop. While the New Urbanists suggest that the shopping areas should include the mix of uses in ULI's neighborhood centers (Duany 1995), it can be more difficult to control the mix of tenants based upon the level of competition with nearby shopping areas. Thus, while the developers of these centers may prefer to provide convenience goods and services, they will lease a location to a provider of comparison goods rather than leave a store empty. We have seen that the traditional shopping areas attract both residents and non-residents, largely as a function of the variety and type of goods they offer, and the accessibility of the area. In this chapter, the attitudes of respondents towards the areas in which they shop are examined, and the factors that merchants consider important in their location decisions are reviewed.

The following questions are answered: "What factors influence respondents choice of shopping areas?" and "What factors do merchants consider in choosing where to locate?" First the attitudes of shoppers towards each of the shopping areas are considered. Next, the attitudes of merchants about the importance and their satisfaction with locational factors are described. Finally, the actual behavior of the respondents is compared to the assumptions of the merchants about their shoppers.

Attitudes of Respondents Towards Various Factors in the Shopping Environment

Respondents' Assessment of Shopping Areas

A majority of respondents in all shopping areas, 92% to 99%, indicate they are either satisfied or very satisfied with their shopping area (see Table 9-1). Most could chose to shop elsewhere if they are not satisfied with a particular shopping area. However, the strength of satisfaction varies across shopping areas. The highest level of satisfaction is with Hopkins Avenue, where 85% of respondents indicate they are very satisfied; the lowest level is for El Cerrito Plaza, with 26% indicating they are very satisfied.

Table 9-1. Level of Satisfaction by Respondents with Shopping Area (Percentages and Average)

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Total	Average
RR-Market Hall	58	38	3	2	101 n=64	1.49
RR-Alcatraz	64	35	0	1	100 n=81	1.38
Elmwood	54	42	5	0	101 n=65	1.51
El Cerrito Plaza	26	64	7	3	100 n=72	1.86
Hopkins Avenue	85	14	1	0	100 n=86	1.16
Kensington	65	31	2	1	99 n=83	1.40
All Respondents	60	36	3	1	100 n=449	1.45

Source: Customer Mailback Survey (unweighted data)
Notes: Averages are calculated using 1 for very satisfied to 4 for very dissatisfied. Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$). Customers in El Cerrito Plaza are significantly less satisfied than customers in all other shopping areas, while customer in Elmwood and Rockridge - Market Hall are significantly less satisfied than those in Hopkins.

Prices

The importance of prices as a factor in choice of shopping area varies from one shopping area to another as customers appear to trade off higher prices for other characteristics of the shopping area (see Table 9-2). In two shopping areas, Hopkins and El Cerrito Plaza, customers are likely to agree that the prices are reasonable. In contrast, 36% of customers in Rockridge - Market Hall and 34% of customers in Elmwood disagree that prices are reasonable. Overall, customers give less importance to prices than to most other factors, with about 43% indicating that they are neutral on this issue or do not consider reasonable prices as a factor in their choice of shopping area.[1]

[1] This somewhat surprising result may reflect a relative lack of variation in prices for the goods in question.

Table 9-2. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...it has reasonable prices

Shopping Area	strongly disagree	disagree	neutral	agree	agree strongly	Total	Average
Rockridge - Market Hall	9	27	48	15	2	101	2.73
Rockridge - Alcatraz	5	19	53	21	3	101	2.98
Elmwood	5	29	57	19	0	100	2.81
El Cerrito Plaza	1	4	33	54	7	100	3.61
Hopkins	0	3	25	48	24	100	3.92
Kensington	8	17	57	19	0	101	2.87
All Customers	5	18	43	30	5	100	3.11

Source: Customer Mailback Survey (weighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$). Responses in El Cerrito Plaza and Hopkins are significantly different from all other shopping areas.

Convenience

Customers generally agree that the shopping area in which they were interviewed is convenient (see Table 9-3). Convenience is rated highest among in two shopping areas, with the highest percentage of customers who are residents, Kensington and Rockridge - Alcatraz and El Cerrito Plaza, which provides the most parking. Rockridge - Market Hall, which has the highest percentage of customers who disagree that their shopping area is convenient, also has the highest percentage of customers coming from long distances.

Table 9-3. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...it is convenient

Shopping Area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average*
Rockridge - Market Hall	2	14	9	37	39	101	3.97
Rockridge - Alcatraz	5	2	7	24	61	99	4.34
Elmwood	2	6	10	37	46	101	4.19
El Cerrito Plaza	0	0	5	51	44	100	4.39
Hopkins	2	5	17	33	43	100	4.10
Kensington	0	0	3	21	76	100	4.72
All Customers	2	5	9	37	48	101	4.22

Source: Customer Mailback Survey (weighted data)
Note: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$). The average response in Market Hall is significantly different from Kensington and Hopkins.

Parking

Customers' agreement that parking is easy to find varies from one shopping area to another, with the highest level of agreement in El Cerrito Plaza and Kensington (see Table 9-4). Customers in Elmwood and Hopkins are slightly less likely to agree that parking is a positive reason for choosing their shopping area, with about 40% disagreeing and 30% agreeing. In Rockridge - Alcatraz about 40% disagree that the ease of finding parking is a reason for shopping there, while just over 15% agree that parking is a reason to shop there. Customers in Rockridge - Market Hall are most likely to disagree that parking is easy to find. As is discussed earlier, persons who walk to a shopping area are more likely to rate the ease of finding parking less favorably. Overall, about 28% of all customers say ease of finding parking is not a factor or they are neutral about it in their decision to go to a particular shopping area. In Rockridge - Alcatraz, about 44% of customers indicate that the ease of finding parking is not a factor or they are neutral about it in their choice of where to shop. In contrast, in El Cerrito Plaza, where parking is abundant, about 15% say parking is not a factor (or they are neutral about it) in their choice of shopping areas.

Table 9-4. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...it has parking that is easy to find

Shopping Area	strongly disagree	disagree	neutral	agree	agree strongly	Total	Average*
Rockridge - Market Hall	17	39	27	14	3	100	2.47
Rockridge - Alcatraz	14	26	44	15	1	100	2.64
Elmwood	19	22	30	25	3	99	2.70
El Cerrito Plaza	0	0	15	41	44	100	4.30
Hopkins	8	29	33	24	6	100	2.91
Kensington	6	15	26	36	17	100	3.43
All Customers	11	22	28	25	13	100	3.06

Source: Customer Mailback Survey (weighted data)
Note:. Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentages may not total 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$) Responses in El Cerrito are significantly different from all other shopping areas. Responses in Kensington are significantly different from the other four shopping areas.

Mix of Stores, Selection of Good and Quality of Products

A majority of customers in every shopping areas, except El Cerrito Plaza, agree that the shopping area has a good mix of stores (see Table 9-5). The level of disagreement is between 2% and 7% in other shopping areas, while it is about 25% in El Cerrito Plaza. This result is surprising given the diversity of uses in the El Cerrito Plaza, but is generally consistent with the attitudes of customers about the quality of products and the selection of goods there (see Tables 9-6 and 9-7). Only 35% agree that El Cerrito Plaza has high quality products, compared to greater than 50% in all other shopping areas. Further, only about 45% agree that El Cerrito Plaza has a wide selection of goods. This compares to 34% for Kensington, the smallest and least diverse of the shopping areas, and over 65% for all other shopping areas (see Table 9-7).

Table 9-5. Percentage of Customers by Shopping Area by Level of Agreement to statement: I shop in <shopping area> for the following reason...it has a good mix of stores

Shopping Area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average*
Rockridge - Market Hall	0	5	13	46	36	100	4.13
Rockridge - Alcatraz	2	2	7	45	43	99	4.23
Elmwood	2	2	17	54	27	100	4.03
El Cerrito Plaza	4	21	33	37	6	101	3.19
Hopkins	0	2	9	42	47	100	4.33
Kensington	0	7	15	59	18	99	3.88
All of Customers	2	7	17	46	29	101	3.92

Source: Customer Mailback Survey (unweighted data)
Note: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$) The responses of shoppers in El Cerrito Plaza are significantly different from all other shopping areas.

Table 9-6. Percentage of Customers by Shopping Area by Level of Agreement to statement: I shop in <shopping area> for the following reason...it has a wide selection of goods

Shopping area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average
Rockridge - Market Hall	2	3	21	44	30	100	3.98
Rockridge - Alcatraz	3	0	9	54	35	101	4.19
Elmwood	2	5	25	55	13	100	3.75
El Cerrito Plaza	6	24	26	32	13	101	3.22
Hopkins	0	3	12	52	32	99	4.13
Kensington	1	24	40	29	5	99	3.12
All Customers	2	9	21	45	23	100	3.74

Source: Customer Mailback Survey (weighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentage may not total to 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$). Responses in Kensington are significantly different from Rockridge - Market Hall, Hopkins, and Rockridge - Alcatraz. Responses in El Cerrito Plaza are significantly different from all other shopping areas, except Kensington.

Table 9-7. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in (shopping area) for the following reason...it has high quality products

Shopping area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average
Rockridge - Market Hall	0	0	15	41	44	100	4.29
Rockridge - Alcatraz	1	0	10	41	47	99	4.35
Elmwood	0	0	20	54	24	98	4.06
El Cerrito Plaza	1	11	54	31	4	101	3.22
Hopkins	0	0	2	30	67	99	4.66
Kensington	0	4	43	44	8	99	3.58
All Customers	0	3	24	40	33	100	4.01

Source: Customer Mailback Survey (weighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentage may not total to 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$). Responses in El Cerrito Plaza are significantly different from all other shopping areas, except Kensington, responses in Kensington are significantly different from the two subareas of Rockridge and Hopkins and the responses in Elmwood are significantly different from Hopkins.

A percentage of customers indicate that the mix of stores (17%), high quality products (21%) and a wide selection of goods (24%) are neutral or not a reason for choosing a particular shopping area. Thus, these three factors may be more important than other factors in where customers choose to shop.

Shopping Atmosphere

Customers in all shopping areas, except El Cerrito Plaza, overwhelmingly agree (93% to 95%) that the shopping area has a pleasant environment (see Table 9-8). In El Cerrito Plaza, only about 51% agree that the shopping area has a pleasant environment.

Table 9-8. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...it has a pleasant atmosphere

Shopping area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average*
Rockridge - Market Hall	0	2	7	42	51	101	4.42
Rockridge - Alcatraz	1	2	3	38	55	99	4.43
Elmwood	0	0	5	38	57	100	4.53
El Cerrito Plaza	3	11	36	47	4	101	3.38
Hopkins	0	1	6	28	65	100	4.56
Kensington	0	0	8	36	57	101	4.49
All Customers	1	3	12	40	44	100	4.22

Source: Customer Mailback Survey (weighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentage may not total to 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$). Response in El Cerrito Plaza are significantly different from all other shopping areas.

Agreement that a shopping area has a pleasant atmosphere does necessarily translate into agreement that a shopping area is located along a street, or in a place, that people like to walk (see Table 9-9). For example, from 93% to 95% of customers in Elmwood, Rockridge - Alcatraz, and Rockridge - Market Hall agree that their shopping area has a pleasant atmosphere, but only 84% to 86% agree that they like to walk along College Avenue. In the Hopkins area, 93% like the pleasant atmosphere, but only 70% like to walk there. Only 61% agree that they like to walk in the Kensington shopping area, compared to 93% who feel it has a pleasant atmosphere. This suggests that the walking environment is only one of many factors in the creation of a pleasant atmosphere for shopping.

Table 9-9. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...I like to walk along (name of street or shopping area)

Shopping area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average*
Rockridge - Market Hall	0	2	14	34	51	101	4.34
Rockridge - Alcatraz	3	1	12	36	48	100	4.26
Elmwood	3	3	11	32	51	100	4.25
El Cerrito Plaza	4	16	40	32	8	100	3.23
Hopkins	3	3	25	28	42	99	4.02
Kensington	1	5	33	34	27	100	3.80
All Customers	2	6	29	33	39	100	3.99

Source: Customer Mailback Survey (unweighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentage may not total to 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$). Responses in El Cerrito are significantly different from all shopping areas, except Kensington.

The perception of safety appears to be a less important factor in customers' assessment of the shopping areas. Overall, about 8% of all customers indicate that "feeling safe" is not a reason for shopping at their respective shopping areas (see Table 9-10). Between 64% and 87% of customers agree that they feel safe when they shop at a specific shopping area. Customers in Kensington and Hopkins are the most likely to agree that they feel safe. This higher level of agreement about safety is likely related to the smaller scale of the shopping area, which may result in customers and merchants being familiar with each other. In Kensington, the shoppers are also residents and, therefore, likely to know each other.

Table 9-10. Percentage of Customers by Shopping Area by Level of Agreement to statement:
I shop in <shopping area> for the following reason...if feel safe when I shop there

Shopping area	Strongly Disagree	Disagree	Neutral	Agree	Agree Strongly	Total	Average*
Rockridge - Market Hall	0	2	32	30	37	101	4.03
Rockridge - Alcatraz	2	1	25	51	21	100	3.87
Elmwood	0	9	18	44	29	100	3.94
El Cerrito Plaza	3	8	26	52	12	101	3.63
Hopkins	0	0	20	31	50	101	4.31
Kensington	0	0	13	30	57	100	4.43
All Customers	1	4	24	42	30	101	3.93

Source: Customer Mailback Survey (weighted data)
Notes: Average is calculated using values from 1 through 5 for strongly disagree, disagree, neutral, agree and agree strongly, respectively. Not a reason is given a value of 3. Percentage may not total to 100% due to rounding
Statistics: Scheffé multiple comparisons ($p < .05$). Responses in El Cerrito Plaza are significantly different from Rockridge - Market Hall, Hopkins and Kensington.

What Do Respondents Like Most about Their Shopping Area?

The responses to the questions, "What do you like most about <shopping area>?" and "What do you like least about <shopping area>?" provide another indication of what respondents value in the six shopping areas. For the most part, the likes and dislikes of respondents are consistent with their evaluations of specific factors in each shopping area. However, the likes and dislikes provide a slightly different viewpoint of the importance respondents attribute to these factors. Respondents are more likely to indicate what they like about a shopping area than what they dislike as is shown by the higher number of positive than negative responses.

Based upon these assessments, most of the attributes can be seen as factors that attract respondents rather than keep them away. The two factors that respondents are most likely to say they like, atmosphere and convenience, are also given the highest average rating in response to the statement, "I shop in <shopping area> for the following reason..." (see Table 9-11). Respondents in Kensington say they like the convenience of the shopping area. The relatively high percentage of respondents in El Cerrito Plaza who say it is convenient suggests that they either include parking as a part of their definition of convenience or they have few other reasons to be positive about the Plaza. The extent to which respondents are attracted to the shopping areas is shown by the 22% who indicate a specific store when asked what they liked most. In most shopping areas, respondents are attracted to a variety of stores; the major exceptions are Market Hall in Rockridge - Market Hall and Monterey Market in Hopkins, which are overwhelmingly popular. At El Cerrito Plaza respondents are attracted mostly to Lucky's, Long's, and Emporium Capwell.

Table 9-11. Percentage of Respondents by Shopping Area by type of response to question: What do you like most about <shopping area>?

	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins Avenue	Kensington
Pleasant Atmosphere	52	47	56	7	40	42
Convenience	13	27	22	52	22	73
Specific Store or Service	30	12	18	31	36	9
Mix of Stores	13	24	22	13	6	3
Quality of Products	7	19	3	0	25	0
Selection of Goods	18	12	5	0	9	0
Safety	5	3	5	3	4	10
Appearance	7	4	5	1	4	1
Walking Environment	7	8	5	0	0	0
Parking	0	0	0	9	1	0
Number Responding	61	74	65	67	81	79
Total Responses	92	117	92	82	119	117

Source: Customer Mailback Survey (unweighted data)
Notes: Percentages do not total to 100% due to multiple responses. Table only includes responses where more than 5% of respondents in any one shopping area gave that response.

What Do Respondents Like Least about the Shopping Areas?

In all shopping areas, except El Cerrito Plaza, respondents do not like parking and the traffic congestion (see Table 9-12). Among the other factors respondents do not like is the characteristics of other shoppers, including some who are described as "yuppies" and "panhandlers." Respondents also indicate that certain shopping areas have a poor mix or stores or "missing" stores, especially in Elmwood and El Cerrito Plaza.

Table 9-12. Percentage Of Respondents By Shopping Area By Type Of Response To Question: What do you like least about <shopping area>?

	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins Avenue	Kensington
Parking	28	22	18	5	29	38
Traffic Congestion	21	32	24	3	42	10
Unpleasant Atmosphere/ Characteristics of Other Customers	26	26	36	17	8	3
Poor Mix of Stores/ Missing Stores	6	4	24	40	7	11
High prices	13	12	9	0	1	15
Appearance	6	3	0	15	1	3
Specific Store or Service	13	4	2	7	4	3
Safety	11	3	4	7	0	0
Quality of Products/ Selection of Goods	0	0	0	10	0	13
Hours	0	3	5	0	4	3
Inconvenient	0	3	2	2	5	0
Number Responding	53	68	55	59	77	61
Total Responses	71	78	70	65	83	69

Source: Customer Mailback Survey (unweighted data)
Notes: Percentages do not total to 100% due to multiple responses. Table only includes responses where more than 5% of respondents in any one shopping area gave that response.

The interaction between the factors, good mix of stores, high quality of products, and wide selection of goods is illustrated by the pattern of likes and dislikes. The higher level of agreement that Hopkins has a wide selection of goods and a good mix of stores is surprising when it is compared to other shopping areas. But the result seems to be explained by the expectations and pattern of uses of the respondents in different types of shopping areas. Respondents in Hopkins are quite satisfied with the mix of stores even though the size and number of stores are limited, because they have the mix of uses for which they are looking. When asked what kinds of uses they would like to see in the shopping area, respondents in Hopkins indicate they would like a meat market (21% of respondents) and a restaurant[2] (7% of respondents). Both of these types of stores are consistent with the specialty foods stores that currently are found in the area. About 28% say they can't think of any kind of store or service they would like to see in Hopkins. They also suggest that the mix of stores is less important among what they like, even as they assessed it positively. In Kensington, which is of a similar scale of Hopkins but with

[2] Since the time of the survey, a meat counter has been added in one of the stores, and the restaurant, operating on a limited schedule during the survey period, has opened for regular hours.

a different mix of uses, respondents overwhelmingly like the convenience and are less likely to indicate that they like the quality of products, selection of goods and mix of stores. Among the services that a high percentage of respondents of Kensington would like are a dry cleaners (25% of respondents) and a bookstore (13% of respondents).

In contrast, few respondents at El Cerrito Plaza indicate that it has a good mix of stores. A higher percentage of respondents, 81%, responded to the question, "What kinds of store or service would you most like to see in < shopping area>?" than in other shopping areas (64% to 68% of respondents), except Elmwood. The most common response to this question is a better quality of store (15% of respondents). Among the types of store that respondents would like to see in El Cerrito Plaza are a discount store (16% of respondents), a café (11% of respondents), a movie theater (9% of respondents), clothing stores (8% of respondents) and another department store (8% of respondents). These responses could be explained by the diversity of purposes for which people come to El Cerrito Plaza and the different views of what the shopping area could be. While the shopping area has a diverse mix of convenience services, it also has a major department store and an empty location where a Woolworth's was located for many years.

Respondents' expectations of the appropriate mix of uses may be driven by what they are used to finding in the shopping area or what they find in a nearby shopping area. In Elmwood, 27% of respondents indicate that they would like to see a movie theater and 9% would like to see a grocery store. The movie theater had been closed for a few years prior to these surveys (it reopened in the fall of 1994) and a grocery store is located about a half mile from Elmwood in Rockridge - Alcatraz. Respondents in both subareas of Rockridge say they would like to have a movie theater (11% of respondents in each subarea) and a hardware store (17% of respondents in Alcatraz subarea and 11% of respondents in Market Hall subarea), both of which can be found in Elmwood. Respondents in Rockridge - Alcatraz would also like a natural foods store (7% of respondents), which can also be found in Elmwood.

Respondents apparently consider three factors less important than others: prices safety and the walking environment. High prices appear to be a negative factor that may keep respondents away rather than an attractor to the shopping area. Although customers indicate a low level of satisfaction with prices (a ranking of 3.1 out of 5.0 overall), only 8% indicate high prices are what they like least about the shopping area. While respondents report a high level of satisfaction with safety (the third highest rating among the reasons they shop in a shopping area) with an average score of 3.93 out of 5, only 5% of respondents list it as something they "like" about their shopping area. Similarly, while respondents rate high their level of satisfaction with the walking environment, with an average of 3.99 out of 5, only 3% say they "like" the walking environment. However, respondents in the two subareas of Rockridge and in Elmwood rate their level of satisfaction above 4.25 and more than 5% of respondents in these three areas indicate the walking environment is what they "like" most.

The respondents' assessment of the their reasons for shopping in a specific shopping area and the pattern of their likes and dislikes suggest that respondents want convenience, a pleasant atmosphere, high quality products, a wide selection of goods, and parking that is easy to find. They appear willing to trade higher prices for these other characteristics and they get convenience. However, respondents seem to be making other tradeoffs in each shopping area.

Merchants' Assessment of Their Locational Characteristics

For the shopping areas in the New Urbanist neighborhoods to be successful they need to attract merchants who provide the types of goods and services that will attract residents who can walk to the shopping area. Presumably, many of these businesses will provide convenience goods and services. However, merchants who provide comparison shopping and other services are also likely to locate in these shopping areas. In this section, the importance of and satisfaction with various locational factors by merchants in the six traditional shopping areas are compared. First, the importance of and satisfaction with various factors are explored. The importance of and satisfaction with various factors are compared based upon the type of goods and services merchants provide. Then, the importance of and satisfaction with these factors are described. Finally, the likes and dislikes of merchants are presented.

The Importance of Various Locational Factors

Merchants in all shopping areas generally attribute similar importance to various locational factors (see Table 9-13). The only significant difference in the importance given to various factors relate to the Kensington shopping area.[3] The assessment by Kensington's merchants of the importance of accessibility to public transportation differs from that of El Cerrito Plaza and the flow of pedestrian traffic is relatively less important to merchants in Kensington than in Elmwood. Kensington depends upon automobile traffic, especially from commuters, along the Arlington rather than people who happen to wander into the shopping area, thus merchants are not likely to rate transit accessibility and pedestrian traffic as being important.

[3] Because of the small sample size in Kensington, Hopkins and the two subareas of Rockridge, attaining statistical significance on the difference of means and other statistical tests can be difficult.

Table 9-13. Merchants' Assessment of Importance of Various Locational Factors by Shopping Area (Average)							
	Rockridge Market Hall	Rockridge Alcatraz	Rest of Rockridge	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Flow of Automobile Traffic	3.41	3.72	3.60	3.53	3.84	3.20	4.18
Accessibility to Public Transportation#	3.81	3.31	3.44	3.44	3.96	2.80	2.33
Flow of Pedestrian Traffic#	4.41	3.37	3.98	4.49	4.04	3.60	3.00
Availability of Parking Nearby	4.52	4.10	4.27	4.56	4.62	4.20	4.42
Proximity to Other Related Services or Retailers	4.22	3.83	3.83	4.12	3.89	4.33	4.08
Presence of Other Businesses of Similar Quality	4.00	3.31	3.59	3.77	3.49	4.33	3.75
Presence of Other Competitors	2.84	2.92	2.77	2.97	2.69	2.53	1.91
Absence of Other Competitors	3.15	3.62	3.19	3.17	3.55	2.86	3.42
Image of the Neighborhood	4.14	4.21	4.46	4.60	4.02	4.40	3.75
Cost to Own or Lease Property	3.60	4.11	4.18	4.26	4.21	4.00	3.83
Number of Responses*	20-27	26-30	95-103	61-68	42-45	14-15	11-12

Source: Merchant Survey (unweighted data)
Note: Average is calculated on a scale from 1 for least satisfied to 5 for most satisfied.
* - Show range of number of responses to question about level of satisfaction with specified characteristic.
Statistics: Scheffé multiple comparisons ($p < .05$) Compares shopping areas on difference of mean for all factors.
- Differences are found between one or more combinations of shopping areas.

The Satisfaction with Various Locational Factors

The merchants' levels of satisfaction with various factors are similar among shopping areas with a few minor exceptions (see Table 9-14). Merchants in El Cerrito Plaza differ from other shopping areas in their level of satisfaction with two transportation characteristics: they are less satisfied with the flow of pedestrian traffic and they are more satisfied with the availability of parking. Does the provision of parking for customers in El Cerrito Plaza interfere with the flow of pedestrian traffic? How closely related these two factors are to each other is a part of the New Urbanist, however, the particular situation of the El Cerrito Plaza as a declining, old regional mall may explain this result. What is clear, however, is that merchants, in all other shopping areas, are not satisfied with the availability of parking.

Merchants in Hopkins have a higher level of satisfaction on factors related to the characteristics of other businesses in the shopping area. They are significantly more satisfied with their proximity to other related services or retailers than merchants in Rockridge - Alcatraz. Merchants in Hopkins are significantly more satisfied with the presence of business of similar quality than merchants in El Cerrito and Rockridge - Alcatraz. Finally, merchants in Hopkins are more satisfied with the level of competition

than merchants in Rockridge - Alcatraz and El Cerrito Plaza. These responses are consistent with the results of the customer survey in which respondents indicate that Hopkins has a good mix of stores and high quality products. The lower level of satisfaction among merchants in Rockridge - Market Hall may relate to the level of competition among stores within the Rockridge shopping area generally.

The overall level of satisfaction among merchants in the six shopping areas is generally consistent with the evaluation of the respondents. Hopkins is rated among the highest among both its respondents and its merchants and while El Cerrito Plaza is rated lowest.[4]

Table 9-14. Merchant Satisfaction with Various Locational Factors by Shopping Area (Average)

	Rockridge Market Hall	Rockridge Alcatraz	Rest of Rockridge	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Flow of Automobile Traffic	3.33	3.34	3.85	3.61	3.76	3.40	4.17
Accessibility to Public Transportation	4.56	3.66	4.02	4.09	4.34	3.73	3.33
Flow of Pedestrian Traffic§	4.31	4.07	3.53	3.86	3.31	3.67	3.33
Availability of Parking Neurby§	2.70	2.66	2.51	2.51	4.53	2.80	2.00
Proximity to Other Related Services or Retailers§	3.96	3.61	3.62	3.87	3.84	4.60	3.83
Presence of Other Businesses of Similar Quality§	3.81	3.29	3.34	3.77	3.27	4.53	3.75
Presence of Other Competitors§	3.30	2.68	3.46	3.46	2.82	4.14	4.00
Absence of Other Competitors	3.43	2.84	3.07	3.51	2.83	3.93	4.17
Image of the Neighborhood	4.00	4.10	3.90	3.82	3.58	4.60	4.17
Cost to Own or Lease Property	3.24	3.04	3.22	3.44	3.10	4.07	3.67
Overall Satisfaction*	4.11	4.00	3.81	4.08	3.54	4.60	4.67
Number of Responses#	21-27	26-29	91-101	55-68	39-46	14-15	12

Source: Merchant Survey (unweighted data)
Note: Average is calculated on a scale from 1 for least satisfied to 5 for most satisfied.
* - This question was added after about 19 surveys had been completed. Thus, the number of respondents in Rockridge - Alcatraz is only 10 compared to about 29 responses for most questions.
# - Show range of number of responses to question about level of satisfaction with specified characteristic.
Statistics: Scheffé multiple comparisons ($p < .05$). Compares shopping areas in difference in mean of all variables.
§ - Average assessment is statistically different among one or more combinations of shopping areas.

[4] The merchants' overall level of satisfaction is much higher than the level given to any single attribute. This seems to suggest that this research does not capture the factors merchants consider to be important. Responses to what they like most about their present location suggest that a question about the characteristics of the neighborhood and of the customers should have been asked. However, a high overall level of satisfaction is shown by the small number of responses to the question, "If you could change one thing about your present location, what would it be?"

Importance of Locational Factors to Providers of Convenience versus Comparison Goods and Services

Merchants who provide convenience goods and services generally have a similar assessment, to merchants who provide comparison shopping goods and other services, of the importance of various factors in the shopping areas (see Table 9-15). These groups of merchants differ on the importance of two locational factors: the availability of parking nearby and the absence of other competitors. In each case, merchants who provide convenience goods and services are more likely to attribute greater importance to each of these factors. Merchants providing convenience goods and services are understandably more concerned about competition for their products in a neighborhood, while merchants providing comparison products may prefer to locate within a group of similar stores. The greater importance of nearby parking is not explained by anything in the survey. Merchants were asked how many times per month they received comments about parking. The average number of comments is not significantly different for merchants who provide convenience goods and services than for those providing comparison goods and other services.

Table 9-15. Merchants' Assessment of Importance of Various Locational Factors by Type of Merchant (Average)

	Merchants Providing Convenience Goods and Services		Merchants Providing Comparison Shopping and Other Services		All of Sample	
	Average	Number of Respondents	Average	Number of Respondents	Average	Number of Respondents
Flow of Automobile Traffic	3.61	170	3.62	127	3.62	297
Accessibility to Public Transportation	3.37	171	3.54	128	3.45	299
Flow of Pedestrian Traffic	4.17	173	4.04	128	4.12	301
Availability of Parking Nearby#	4.48	171	4.28	128	4.40	299
Proximity to Other Related Services or Retailers	4.04	170	3.88	128	4.40	299
Presence of Other Businesses of Similar Quality	3.73	170	3.58	127	3.67	297
Presence of Other Competitors	2.87	166	2.66	127	2.78	293
Absence of Other Competitors*	3.42	163	3.07	126	3.27	289
Image of the Neighborhood	4.34	170	4.34	128	4.34	298
Cost to Own or Lease Property	4.11	153	4.14	112	4.13	271

Source: Merchant Survey (unweighted data)
Note: Average is calculated on a scale from 1 for least satisfied to 5 for most satisfied.
Statistics: T-test for equality of means (two-tailed test)
* - In comparison of providers of convenience to providers of comparison goods and services, difference is significant at .05.
# - In comparisons of providers of convenience to providers of comparison goods and services, difference is significant at .10.

Comparison of Satisfaction with Locational Factors of Providers of Convenience Goods and Services to Providers of Comparison Goods and Services

Providers of convenience good and services are more likely to be satisfied with their shopping area than merchants providing comparison goods and other services (see Table 9-16). This may be explained by the ongoing relationship with respondents from the neighborhood that merchants provide convenience services often have. In contrast, merchants providing comparison goods and other services are more satisfied with the accessibility to public transportation. This result is probably an artifact of the sample: the two shopping areas that have BART access also have a high percentage of providers of comparison goods and other services.

Table 9-16. Satisfaction of Merchants with Various Locational Factors by Type of Merchant (Average)

	Merchants Providing Convenience Goods and Services		Merchants Providing Comparison Shopping and Other Services		All of Sample	
	Mean	Number of Respondents	Mean	Number of Respondents	Mean	Number of Respondents
Flow of Automobile Traffic	3.63	168	3.73	127	3.67	295
Accessibility to Public Transportation*	3.96	167	4.18	126	4.05	293
Flow of Pedestrian Traffic	3.79	170	3.57	126	3.70	296
Availability of Parking Nearby	2.79	169	2.91	127	2.84	296
Proximity to Other Related Services or Retailers	3.75	167	3.86	127	3.80	294
Presence of Other Businesses of Similar Quality	3.54	165	3.55	126	3.54	291
Presence of Other Competitors	3.09	164	3.30	121	3.18	285
Absence of Other Competitors	3.22	148	3.27	110	3.24	258
Image of the Neighborhood	3.96	168	3.84	127	3.91	295
Cost to Own or Lease Property	3.34	150	3.24	112	3.30	262
Overall Satisfaction§#	4.43	170	4.09	127	3.94	277

Source: Merchant Survey (unweighted data)
Note: Average is calculated on a scale from 1 for least satisfied to 5 for most satisfied.
§ - This question was added after about 19 surveys had been completed.
Statistics: T-test for equality of means (two-tailed test)
* - In comparison of providers of convenience to comparison goods and services, difference is significant at .05.
# - In comparisons of providers of convenience to comparison goods and services, difference is significant at .10.

Satisfaction with and Importance of Various Locational Factors by Type of Merchant

A comparison of the importance of and satisfaction with various locational factors shows several gaps in the satisfaction of merchants (see Table 9-17). These provide give an indication of the merchants' attitudes about four groups of locational factors: transportation, characteristics of other businesses in the area, the image of the shopping area, and the cost to lease or own the property.

Table 9-17. Satisfaction with and Importance of Various Locational Factors by Type of Merchant

	Merchants Providing Convenience Goods and Services		Merchants Providing Comparison Shopping and Other Services		All of Sample	
	Level of Importance	Level of Satisfaction	Level of Importance	Level of Satisfaction	Level of Importance	Level of Satisfaction
Flow of Automobile Traffic	3.61	3.63	3.62	3.73	3.62	3.67
Accessibility to Public Transportation	3.37*	3.96*	3.54*	4.18*	3.45*	4.05*
Flow of Pedestrian Traffic	4.17*	3.79*	4.04*	3.57*	4.12*	3.70*
Availability of Parking Nearby	4.48*	2.79*	4.28*	2.91*	4.40*	2.84*
Proximity to Other Related Services or Retailers	4.05*	3.75*	3.88	3.86	3.98*	3.80*
Presence of Other Businesses of Similar Quality	3.73#	3.54#	3.58	3.55	3.67	3.54
Presence of Other Competitors	2.87	3.09	2.66*	3.30*	2.78*	3.18*
Absence of Other Competitors	3.42	3.22	3.07	3.27	3.27	3.24
Image of the Neighborhood	4.34*	3.96*	4.34*	3.84*	4.34*	3.91*
Cost to Own or Lease Property	4.11*	3.34*	4.14*	3.24*	4.13*	3.30*

Source: Merchant Survey (unweighted data)
Note: Average is calculated on a scale from 1 for least satisfied to 5 for most satisfied.
Statistics: T-test for equality of means of paired sample (two-tailed test)
* - In comparison of importance of to satisfaction with factor, difference is significant at .05.
# - In comparisons of importance of to satisfaction with factor, difference is significant at .10.

Transportation Characteristics

Merchants, irrespective of whether they provide convenience or comparison goods and services, are more satisfied with the accessibility to public transportation than the importance they attribute to it. In contrast, the availability of parking nearby is, on average, given the highest level of importance, but the level of satisfaction is, on average, the lowest. Merchants, similarly, are less satisfied with the flow of pedestrian traffic than the importance they attribute to it. Finally, the level of importance attributed to the flow of automobile traffic is not statistically different from the merchants' level of satisfaction with the traffic flow.

These findings illustrate some contrasts between the ideas of the New Urbanists and the merchants regarding transportation in shopping areas. The New Urbanists and

the merchants agree on the importance of an active flow of pedestrians and to the lesser importance of the flow of automobile traffic. However, they disagree on parking and public transportation. The New Urbanists stress the integration of public transportation into close proximity with the shopping area, while merchants, especially those providing convenience goods and services, consider accessibility to public transportation as fairly unimportant. The New Urbanists see the active pedestrian life on the street as a way of reducing the need for parking nearby; merchants rate the availability of parking with the highest level of importance and their level of satisfaction with it is lowest of any factor, except presence of competition. The merchants apparently assume that customer will drive to the parking area while the New Urbanists assume they will walk.

Characteristics of Other Businesses in Area

The characteristics of other businesses include: the proximity to other businesses, the presence of other businesses of similar quality, the presence of other competitors, and the absence of other competitors. The importance of and satisfaction with these attributes differs between merchants who provide comparison shopping and other services, and those who provide convenience goods and services. Merchants who provide convenience goods and services are more likely to consider it important to locate near other related goods and services and businesses of similar quality. They are also likely to prefer less competition. In contrast, merchants who provide comparison goods and services often prefer to locate near other businesses that provide competitive services because customers will be attracted for the diversity of business providers.

The characteristics merchants consider important appears to depend upon the characteristics of businesses in the shopping areas well as the size of the area. For example, merchants in the Hopkins area rank proximity to related businesses as relatively important and are satisfied to be located near a set of related high-quality shops. Merchants in Kensington rated the absence of other competitors as very important, and their satisfaction with the absence of other competitors is high.

Image of the Shopping Area

The image of the shopping area is consistently rated as the second most important locational factor, after the availability of parking nearby. However, it is less clear what factors constitute the "image" of a shopping area. The perception of safety and the pleasantness of the environment are a part of the image. Overall, merchants are not as satisfied with the image of the shopping area as the importance they attribute to it; the two small shopping areas are exceptions.

Cost of the Lease

Merchants rank the cost of the lease (or ownership of the property) third in terms of importance, but second lowest in terms of their satisfaction with it. Merchants in Hopkins, many of whom own their stores are more satisfied than merchants in other shopping areas, where leasing in the norm.

What Businesses Like about Their Location

What merchants like most about their location hints at additional factors that may be a part of the image and the overall satisfaction with which merchants view their shopping area (see Table 9-18). In all shopping areas, a high percentage of merchants report that neighborhood characteristics and the characteristics of the customers are among what they like most about their present location. To the extent that customers are from the adjacent neighborhood or similar to the residents of the adjacent neighborhood, these two factors are related. With the moderately high income of the residents of the neighborhoods surrounding each shopping areas, these areas have desirable socio-economic and demographic profiles.

Table 9-18. Percentage of Merchants by Shopping Area by type of response to question: What do you like most about your present location?

	Rockridge Market Hall	Rockridge Alcatraz	Elmwood	El Cerrito Plaza	Hopkins Avenue	Kensington
Neighborhood Characteristics	27	38	45	16	60	33
Characteristics of Customers	12	17	20	11	20	21
Pedestrian/Foot Traffic	23	10	20	16	0	0
Reputation of Shopping Area	12	14	19	7	0	17
Convenience of Shopping Area	12	0	11	18	20	8
Characteristic of Building/Location	8	7	8	9	7	0
Mix of Stores/Proximity to Other Businesses	19	21	9	7	13	8
Accessibility to Public Transit	8	0	0	13	7	0
Safety	8	7	3	9	0	0
Parking	4	7	2	20	0	0
Number of Responses	36		93	59	20	14
Number of Merchants Responding	26		64	45	15	12

Source: Merchant Survey (unweighted data)
Note: Percentages do not total to 100% due to multiple responses. Table only includes responses by more than 5% of merchants in any shopping area.
* - All merchants have been included in these responses because only 10 responded in the Alcatraz subarea and 29 responded in the Market Hall subarea. Difference in responses in the subareas will be discussed in the text.

Other factors that merchants like highlight some of the locational factors that have already been discussed. Merchants in all but the two small shopping areas, Kensington and Hopkins, like the pedestrian foot traffic. El Cerrito Plaza merchants' rating pedestrian traffic high is not totally consistent with their other answers; however, this result may be due to the responses of smaller businesses that benefit from being located close to the Plaza's three major attractors: Emporium Capwell, Lucky's and Long's. Reputation is reported as something merchants like in all areas except Hopkins and El Cerrito Plaza. Hopkins merchants show the highest level of overall satisfaction and are the most satisfied with their image. They may include reputation with the characteristics of the neighborhood, which 60% liked the most. The relatively low ranking of the

reputation of the shopping area in El Cerrito Plaza is consistent with merchant's low overall satisfaction.

In both areas that are served by BART, merchants indicated that the access to public transportation is what they like most even though this contradicts their assessment about the relatively low importance of being located near public transportation. It appears that merchants are satisfied when they are near public transportation, but they don't consider it as important as many other locational factors.

What Businesses Would Change About Their Location

The merchants' desire for parking close to their businesses is reiterated in their responses to what they would change about their location (see Table 9-19). In all locations except El Cerrito Plaza, a third or more of the merchants indicate that they would want more parking. A large number of merchants indicate that they would change something about the characteristics of their building; the specifics range from complaints about a pillar that is located in the wrong place, or a door that is not the right size, to much more major concerns, like increasing or decreasing the size of the store. One factor about the building that merchants in El Cerrito Plaza, and especially those in the inside of the Plaza, indicate is something they would change is that lack of visibility. Merchants in El Cerrito Plaza would also like to change the reputation of the shopping area. Only about 10% of all merchants in these shopping areas indicate that they would change the rent. This is fewer than might have been expected based upon their level of satisfaction with the cost to own or lease the property.

Table 9-19. Percentage of Merchants by Shopping Area by type of response to question: If you could change one thing about your present location, what would that be?

	Rockridge Market Hall	Rockridge Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Parking	42	29	41	0	40	42
Characteristics of Building	15	18	23	9	20	33
Rent	15	11	5	9	0	17
Lack of Visibility of Business	0	7	6	23	0	8
Pedestrian/Foot Traffic	0	0	9	2	0	8
Location in Proximity to Specific Store	0	0	2	9	7	0
Reputation of Shopping Area	0	0	0	12	7	0
Owner/Landlord	8	4	0	0	0	0
Number of Responses	27	31	64	35	14	13
Number of Merchants Responding	26	28	59	34	14	11

Source: Merchant Survey (unweighted data)
Note: Percentages do not total to 100% due to multiple responses. Table only includes responses by more than 5% of merchants in any shopping area.

Comparison to Merchant's Assessment of Their Customer Base

A comparison of the merchants' assessment of their customers of their shopping area as shown by the surveys reveals a mixed picture. While the results are not directly comparable because merchants were asked to assess their customer base and not the customer base of the shopping areas, they nonetheless reveal how merchants who provide comparison goods and services assess their customer base differently than providers of convenience goods and services.[5] Overall, businesses that provide comparison goods and other services assume that a higher percentage of customers live more than one mile from their store than businesses that provide convenience goods and services (see Table 9-20). Merchants in most shopping areas over-estimate the percentage of customers who live within one mile of the shopping area; however, in the two locally oriented shopping areas, Kensington and Rockridge - Alcatraz, the merchants underestimate the percentage of customers who live within a mile. Merchants in the shopping areas that attract a high percentage of non-residents, Rockridge - Market Hall and El Cerrito Plaza, significantly underestimate the percentage of non-residents that come to their shopping area.

Table 9-20. Merchants' Assessment of Customers' Residence by Type of Goods and Service Provided (in Percentages)*

Type of Business	Within .5 Mile#	Within 1 mile	Greater Than 1 Mile§
Merchants Providing Convenience Goods and Services	49% (n=160)	64% (n=158)	36%
Merchants Providing Comparison Goods and Other Services	30% (n=120)	44% (n=118)	56%
All Responding Merchants	41% (n=280)	56% (n=276)	44%

Source: Merchant Survey (unweighted data)

* - Percentage are presented as a simple average of the responses of all businesses. Responses are based upon Questions C.3. *About what percentage of your customers live within one half mile of your business?* and C.4. *About what percentage of your customers live within one mile of your business?*

- Customers within .5 mile are included in customers within one mile.

§ - Calculated by subtracting customers within one mile from 100%.

[5] Their is insufficient information to weigh the responses by the number of customers for each business, or, other similar measure of the magnitude of activity.

Table 9-21. Merchants' Assessment of Customers' Residence Compared to Residence of Customers by Shopping Area (in Percentages)*

Shopping Area and Type of Business	Within .5 Mile#	Within 1 mile	Greater Than 1 Mile§
Rockridge - Market Hall			
Merchants Assessment	28	54	46
Customer Residence	24	37	63
Rockridge - Alcatraz			
Merchants Assessment	41	56	44
Customer Residence	40	62	38
Elmwood			
Merchants Assessment	44	58	42
Customer Residence	33	51	49
El Cerrito Plaza			
Merchants Assessment	41	57	43
Customer Residence	12	39	61
Hopkins			
Merchants Assessment	47	62	38
Customer Residence	32	53	47
Kensington			
Merchants Assessment	50	64	36
Customer Residence	59	76	38

Source: Merchant Survey (unweighted data)

* - Percentage are presented as a simple average of the responses of all businesses. Responses are based upon Questions C.3. *About what percentage of your customers live within one half mile of your business?* and C.4. *About what percentage of your customers live within one mile of your business?*

- Customers within .5 mile are included in customers within one mile.

§ - Calculated by subtracting customers within one mile from 100%.

Merchants Assessment of Mode Choice

The merchants' assessment of the mode choices of their customers in most shopping areas are close to the actual mode splits (see Table 9-22). Again, these percentages should be interpreted with caution because the merchants were asked about their customers and not about the customers of the shopping area and information is readily not available to weigh the responses of individual businesses. Merchants in Rockridge - Market Hall come the closest to the actual mode split. Merchants in Hopkins and Kensington, the two smallest shopping areas, underestimate the percentage of customers who walk to their shopping area. In El Cerrito Plaza, the merchants overestimate the percentage of customers using transit.

Table 9-22. Merchants' Assessment of Customers' Residence Compared to Residence of Customers by Shopping Area (in Percentages)*

Shopping Area	Walk	Bike	Bus	BART	Auto	Other
Rockridge - Market Hall						
Merchants Assessment	28	5	4	10	53	1
Customer Mode Choice	27	3	5	10	55	
Rockridge - Alcatraz						
Merchants Assessment	29	6	6	6	52	2
Customer Mode Choice	33	2	3	3	59	
Elmwood						
Merchants Assessment	31	5	5	1	55	4
Customer Mode Choice	33	4	4	2	58	
El Cerrito Plaza						
Merchants Assessment	12	6	6	8	69	3
Customer Mode Choice	10	3	3	2	82	
Hopkins						
Merchants Assessment	16	1	2	2	74	4
Customer Mode Choice	27	3	1	1	68	
Kensington						
Merchants Assessment	18	3	1	1	75	0
Customer Mode Choice	24	1	1	0	75	

Source: Merchant Survey (unweighted data)

* - Percentage are presented as a simple average of the responses of all businesses. Responses are based upon Questions C.3. *About what percentage of your customers live within one half mile of your business?* and C.4. *About what percentage of your customers live within one mile of your business?*

- Customers within .5 mile are included in customers within one mile.

§ - Calculated by subtracting percentage of customers within one mile from 100%.

Conclusions

Merchants and customers emphasize different factors in their assessments of the attractiveness of the six shopping areas in traditional neighborhoods. Customers want convenience, a pleasant atmosphere, high quality products, a wide selection of goods, and parking that is easy to find, though they recognize that different shopping areas serve different functions. They appear to be willing to trade off higher prices and easy parking for the other characteristics. Merchants want many of the same things as customers -- a good, safe neighborhood and a shopping area with a good reputation -- but the needs of all merchants are not the same, especially if they provide convenience rather than comparison goods and services. Providers of convenience goods and services want to locate near businesses that provide related, but not competitive, goods, while providers of comparison goods often want to locate near other competitors. Providers of convenience goods and services consider convenient parking to be more important than providers of comparison goods and other services.

Customers express their dislike of parking and traffic congestion. Merchants do not consider auto traffic flow to be as important as other transportation characteristics, especially pedestrian traffic. They seem less concerned about how customers arrive than about enticing them into their stores. But they share the desire of customers for more convenient parking. Businesses providing comparison goods and other services have a

high level of satisfaction with the accessibility of transit, but all businesses do not consider it as important as most other transportation factors.

The results of these surveys suggest two areas, transportation and mix of uses, where the New Urbanists may be promoting design alternatives that are not consistent with the experience and expressed interests of customers and merchants. While merchants and customers, and even more so customers who walk, express dissatisfaction with the availability of parking, and are relatively uninterested in transit, the New Urbanists suggest that better connections to transit and walking can decrease the need for parking. It is not clear based upon these results whether residents walk to the shopping area because of they enjoy walking, or, whether the tight parking induces walking.

Though the New Urbanists are not in complete agreement about what types of uses should be in the shopping areas, some suggest that it should be the goods and services found in neighborhood convenience centers: beauty, medical and dental offices, restaurants, and cleaners. Even the existing "neighborhood" convenience centers include a wide range of goods and services, including comparison shopping, like jewelry, small clothing stores, and home appliances and music. Customers appear to recognize that shopping areas serve differing functions. Merchants indicate that they are balancing a variety of factors in deciding where they locate.

Merchants in most of these shopping areas overestimate the percentage of customers who come from the surrounding neighborhood. They also underestimate the percentage of customers who walk to the shopping area, especially in the smaller shopping area. Thus, merchants may also be assuming that the parking would be used by customers from the adjacent neighborhood. On the other hand, the customers may be walking to the shopping area because the parking is so difficult to find.

CHAPTER 10. CONCLUSIONS AND AREAS FOR FURTHER RESEARCH

New Urbanists and other advocates of higher density, mixed-use development assume that changes in land use will lead to mode shifts and travel reductions. Of particular interest in this study are the assumptions (1) that "town" center or neighborhood retail uses will attract people who live within walking distance of the shopping area rather than people who live beyond a walking distance; and (2) that residents will chose to walk and bicycle in large numbers to their neighborhood shopping areas.

Using six prototypical neighborhood shopping areas at the basis for comparison and intercept and mailback surveys as the primary data source, several questions are addressed in this research: (1) To what extent do such shopping areas attract residents and to what extent are the customers drawn from outside the neighborhood? (2) To what extent do residents and non-residents walk, bike or use transit, to the shopping area, and to what extent do they drive? (3) How does the complexity of travel, frequency of shopping and types of goods and services used by residents differ from non-residents? (4) What characteristics of travel (complexity of travel, frequency of travel) and shopping (number and types of stops) influence mode choice? (5) What level of shopping activity is supported in these shopping areas and can they support lower levels of parking as suggested by New Urbanists? (6) What factors do customers consider in determining where to shop and how do these attitudes differ among drivers and walkers? and (7) What factors lead merchants to locate (and stay) in various shopping areas, and how well do merchants understand their customer base?

These questions are important because they speak to the utility of neighborhood retail as a way of reducing automobile trips, to the mix of retail uses to which residents might walk, to the importance of providing parking for customers, and the scale of the shopping area that is needed to balance the needs of residents for services against the needs of merchants for a viable market area.

Summary of Findings

The key findings of this research are:

- Overall, about half of the respondents to the survey are not from the adjacent neighborhood. The actual percentage ranges from 24% in the smallest shopping area to over 60% in the two largest shopping areas.

- On average, residents are equally likely to drive as walk. Residents also tend to shop more often than non-residents, make simple, home to shop to home, trip chains, and stop for groceries, miscellaneous convenience shopping and convenience services.

- Almost all non-residents drive to the shopping area. Non-residents are, however, less frequent shoppers and make more complex trip chains on their trips. Comparison shopping is a major attractor for non-residents.

- The presence of a transit stop is not a big generator of additional trips. In fact, transit users are less likely to stop on their trips than are walkers or auto users. Among users of BART, interviewed on the platforms of two stations with adjacent shopping, about one-sixth made a stop in the shopping area as a part of their trip.

- Walkers are younger, less likely to own or live in a single-family house, lower income, and own fewer vehicles than auto or transit users.

- Among residents, walkers are more likely to shop for cafés and coffee shops and make simple, home to shop to home, trips and shop frequently. Residents who use automobiles are more likely to shop for groceries and make more complex trips.

- The most important variable in the decision to walk is the distance from home to the shopping area. Walk shares range from 10% to about 40% of customers in various shopping areas.

- The trip generation, adjusted for non-auto modes, in some of these shopping areas exceeds the ITE average trip rates. Thus, the claims of the New Urbanists that the parking requirement can be reduced are not supported if the Saturday peak loads are to be met.

- Merchants, especially those providing convenience goods and services, and customers, especially those who walk, express greater dissatisfaction with the availability of parking than their counterparts.

Each of these findings is discussed in more detail below.

About half of respondents are not from the adjacent residential area. The percentage of respondents who come from outside of the neighborhood varies in part with the size of the shopping area and the mix of uses in the shopping area. The smallest shopping area draws most of its customers (over 70%) from the surrounding neighborhood. The subarea of Rockridge that is dominated by specialty food shops, a grocery store and convenience services, also draws most of its respondents (62%) from the surrounding neighborhood. The one mid-sized shopping area attracts almost equal percentages of residents and non-residents. The second small shopping area, which also has high-quality specialty food shops, also attracts almost equal percentages of residents

and non-residents. The two largest shopping areas attracted mostly non-residents, with one, Rockridge - Market Hall, attracting 14% of its respondents from outside of the East Bay. The attractiveness of high-quality specialty food stores also explains the attraction of non-residents to two of the shopping areas.

Residents are equally likely to drive as to walk to the shopping area. Although the New Urbanists hope for walking to be the major mode of travel, just over 45% of residents interviewed in this study drive to their neighborhood shopping areas; the same percentage walk. Among those who live within a half mile of the shopping area, between 35% and 80% walk to each shopping area. Respondents in the shopping areas with steep slopes and a hostile pedestrian environment (large parking lot surrounding a plaza) walk in lower percentages (about 37%), while between 70% and 80% walk in the other four areas. The average distance walked is about .36 miles from home to the shopping area and about 75% walk one-half mile or less.

Residents are more likely than non-residents to stop three or more times per week, to make simple, home to shop to home, trip chains and to make stops for groceries, miscellaneous convenience shopping, like the pharmacy, the hardware, the liquor store, and convenience services, like dry cleaning, library, shoe repair, and banking .

Almost all of the non-residents drive to the shopping area. About 85% of non-residents respondents drive to the shopping area; 10% use transit and the remainder walk or use a bicycle. Non-residents are more likely to stop less frequently with 58% of those who live beyond five miles stopping less than once a week and 31% of those living from one to five miles stopping less than once a week. Non-residents are also more likely to make the most complex other trips, with 28% making such trips, compared to 17% who live from one to five miles and 4% of respondents who live with the first half mile. Non-residents are also more likely to stop for comparison shopping, and in Hopkins for specialty foods. While the pattern of stops differs in all shopping areas, the pattern of shopping is the most distinct in Elmwood, which is a small community shopping area. Residents of Elmwood are more likely to stop for miscellaneous conveniences and convenience services while non-residents are more likely to stop for comparison shopping.

Transit users are less likely to stop in the commercial area than walkers, bicyclist or automobile users; among those coming to the shopping area to use transit, about 15% make no stops within the shopping area. Transit users made few (albeit not significantly fewer) stops and are less likely to make stops for convenience goods and services. Among users of the BART system, over a third walk to the station but only about 15% stop in the shopping area as a part of their transit trip.

Walkers are younger and poorer, own few vehicles and are less likely to own and live in a single-family dwelling than users of other modes. In other ways they are similar; they have a similar levels of education, numbers of persons in the household, household types, and are equally likely to be white and female. Their attitudes about the

shopping areas differ, especially about the shopping environment and parking. Walkers are more satisfied with the convenience, the walking environment, the atmosphere, and the safety, and they are less satisfied with parking and prices.

Among residents, walkers are more likely to make more simple and frequent shopping trips than their auto-using counterparts. About 65% of resident walkers make simple, home to shop to home, trip chains compared to 36% of resident auto-users. Resident walkers go to the shopping area more frequently with 78% going more than three or more times per week compared to 58% of automobile users. Walkers are more likely to stop at cafés and coffee shops. Resident drivers are more likely to stop for groceries, to make more complex trip chains and to stop less frequently than walkers (but more frequently than non-residents).

The most important variable in the decision to walk is the distance from home to the shopping area. The likelihood of not walking to the shopping area increases with distance from the shopping area, greater availability of parking, and when the purpose of the shopping trip is grocery and shopping at three or more specialty food stores. Middle-age customers (between the ages of 40 and 59) also are likely to drive to the shopping area. Walkers are more likely to be under the age of 30, to make frequent , simple trips and to own fewer automobiles.

The trip generation, adjusted for non-auto modes, in some of these shopping areas exceeds the ITE average trip rates. Thus, the claims of the New Urbanists that the parking requirement can be reduced cannot be supported if the Saturday peak loads are to be met. In two of the shopping areas with specialty food shops, the number of trips generated per hour are more than double the ITE average hourly rates. These shopping areas may be so successful that the trips by modes other than autos may be offset by the higher level of activity in the shopping area. While New Urbanists seek a lively pedestrian environment, they may attract people from outside the neighborhood who can't walk (and who won't use transit) and residents who will not walk and thus also create demand for auto access and parking.

Merchants who provide convenience goods and services are less satisfied with the availability of parking than merchants who provide comparison goods. In most other ways, these groups of merchants consider the same factors important in where they locate. Merchants providing convenience goods and services have a similar assessment as providers of comparison service of the importance of the flow of automobile traffic, accessibility to public transportation, the flow of pedestrian traffic, the image of neighborhood and the cost to lease the property. However, convenience providers are more likely to be more satisfied with the shopping area and to prefer less competition than providers of comparison shopping. They are also less satisfied with the availability of parking. Providers of comparison shopping are more likely to be satisfied with the accessibility to public transportation. Both types of business owners express satisfaction with the accessibility to public transportation.

Conclusions

Based on the finding of this research, three areas of concern can be identified as key to the development of new neighborhood centers and the redevelopment of old traditional centers: the mix of uses, the scale of the shopping area, and the level of parking that is provided. Planners have the challenging of balancing the needs of customers and merchants in these shopping areas. Non-residents will be attracted to comparison shopping and specialty foods in these shopping areas, and they will drive. Residents will stop in traditional shopping areas to use miscellaneous convenience goods and convenience services and grocery stores. About half of these resident shoppers will drive to the shopping area, especially if they are going grocery shopping. Providers of convenience goods and services stress the importance of less competition and the need for parking that is located nearby. Thus the dilemma for planners and urban designer is to provide for both the shopping and parking needs of both the merchants and the customers in these areas.

The dilemma for planners will be finding the balance between the mix of uses, the scale of the shopping areas and the needs for parking. This research suggests that there are few goods and services that attract mostly residents of the adjacent neighborhood; these include drug stores, hardware stores, liquor stores, quick stop convenience stores, hairdressers, video stores, postal convenience stations, laundry and dry cleaners, copy shops, shoe repair stores, and barber shops. Some of these uses, for example, drug stores, hardware stores, and video stores are receiving competition from larger scale stores that can sell at a discount to a larger market area. If the neighborhood store is to be of a scale that is consistent with the neighborhood it will be small but it must also be able to compete with these larger stores.

Another use is generally assumed to attract primarily residents is the grocery store. However, these groceries are also quite heavily auto-oriented. Even people who live close by are likely to drive to grocery shopping. Thus, while the provision of a grocery store may shorten shopping trips, it will not necessarily reduce parking requirements.

Specialty food stores are another use that has often been considered local-serving, and these stores are of a scale that is consistent with a good pedestrian environment. Furthermore, specialty food stores are cited as one of the more desirable elements of neighborhood shopping. But their trip generation and mode share attributes are complex. Specialty food store can provide services for residents who walk to the shopping area, as they do in Rockridge - Alcatraz shopping area; as the Rockridge - Market Hall and Hopkins cases show, specialty food stores can become so successful that they attract customers from long distances. Even if a significant percentage of residents in such shopping areas walk, the overall level of activity can be so high that the reduction in parking need associated with the higher rate of residents walking is offset by the increase in parking demand from non-residents. Thus, the parking requirements in these areas may even exceed the ITE standard of 5.0 spaces per 1,000 square feet of retail.

The Kensington and Elmwood cases illustrate the importance of scale in attracting a high percentage of residents. While Elmwood has attempted for many years to maintain a neighborhood orientation, its 71 stores are simply too many for the population base of the neighborhood. Thus its customer base is about even divided between residents and non-residents, with the latter group attracted to the comparison shopping that has filled the "extra" stores. In contrast, Kensington, with only twelve stores providing convenience goods and services, can maintain a neighborhood focus (helped by the slightly higher incomes and buying power of the surrounding residential areas).

The key issue in these traditional shopping areas is the parking. Merchants and customers alike are dissatisfied with the availability of parking. Customers who walk are even more likely to rate parking more harshly than those who drive. This may suggest that customers, especially those who live within the first half mile, walk to the shopping area because of the inconvenience of parking. This also results in a high percentage of customers in all shopping areas, except Kensington and El Cerrito Plaza, who park on side streets in the residential areas.[1] On the other hand, this research suggests that merchants may over-estimate the need for parking because they underestimate the willingness of local residents to walk. Certainly they are more likely to hear complaints about the lack of parking than about the walking environment, which may explain their overestimation of the need for parking, especially in the shopping areas with less overall activity.

The balance between the needs for convenience goods and services to attract local residents, the proper scale of the shopping area, and the need for parking will be difficult in most circumstances. Parking will be required in all neighborhood shopping centers because not all residents are likely to walk, especially for grocery shopping (and specialty foods shopping that is like grocery shopping). The complexity of their daily lives also leads many to drive as part of a longer trip chain. However, parking can be designed in such a way that it does not conflict with the pedestrian environment, and design concepts that accomplish this may be an area for further research.

Limitations of the Research

This research provides important insights into the patterns of use neighborhood shopping of the "traditional" style in middle income, medium-density areas. However, there are some limitations to this research:

- First, the shopping areas were specifically chosen to be ones serving surrounded by residential areas with a medium density (13-21 persons/acre). Areas with higher densities may be able to support more activities or generate larger non-auto shares; areas with lower densities may perform considerably less well.

[1] The complaints about parking may also reflect the shortage of parking in most of these shopping areas.

- Second, all of the neighborhoods used in this study are middle class/middle income. The result do not necessarily apply to lower-income neighborhoods because the pattern of retail and the travel patterns of residents will be different. For similar reasons, higher income neighborhoods may differ.

- Third, the results must be considered to be optimistic estimates of shoppers' willingness to walk. The surveys were completed during the nicest time of the year rather than at times when there was a threat of rain. Since few areas of the United States have the predictable Mediterranean climate of the San Francisco Bay area, any study of this type would need to factor in the possibility of rain or other inclement weather as a possible deterrent in the decision to walk to shopping.

Areas for Further Research

Several areas for further research are suggested from this study. First, this research could be replicated in other regions to test the robustness of the findings in other contexts. In such a study, neighborhoods in similar commercial areas with similar demographic and socio-economic characteristics and similar land use density could be tested. This could reveal whether the variables analyzed here are the correct ones or whether other factors which vary by region (e.g., weather) need to be considered.

Second, the research could be applied to areas built at different densities and/or include higher or lower income households. These factors are roughly held constant in this study.

Another issue that this research hinted at indirectly is the extent to which residents of the adjacent neighborhood actually use the nearest shopping area. The results suggest that a significant percentage of customers in all shopping areas live within one mile of that shopping area. However, this research method does not systematically address what percentage of the people from the adjacent neighborhood stay in their own neighborhood for shopping, nor does it address whether the existence of convenient shopping actually allowed them to substitute walking trips for automobile trips.

This research has not considered the relationship between transit and retail shopping in great detail. Among customers of the shopping areas, the sample of transit users was too small to generalize about many relationships. The survey of BART passengers gave a slightly different picture of that relationship, but even these surveys did not yield a large enough sample to generalize about the types of services that would uniquely support transit users. In fact, this research suggests that transit users make fewer stops than walkers or drivers and are not as likely to use convenience goods and services. Thus their needs appear to be unique, and will require further research.

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APPENDIX A. COPIES OF SURVEYS

Intercept Survey of Customers

The intercept survey was printed on a double-sided 8 - 1/2" by 11" paper.

INTERCEPT SURVEY OF CUSTOMERS

Hello, my name is _____ and I am a researcher with at the University of California at Berkeley. We are doing a study of activity and travel in the El Cerrito Plaza shopping area. Would you be willing to take 2-3 minutes to answer a few questions about your activities at the El Cerrito Plaza today? All of your responses will be confidential.

[If person refuses to be interviewed, write down characteristics of the person or persons on separate sheet and ask questions of the next customer to walk past.]

Location of Interview: _____
Date of Interview: __ / __ / 94
Interviewer: _____

TODAY'S ACTIVITY.

1. *Where have you stopped at El Cerrito Plaza today?* [fill in response]

_____ __ no stops
_____ __ no response
_____

2. *How long have you spent shopping or doing errands at El Cerrito Plaza today?* [fill in response]

_____ hours ____ minutes __ just got here __ works here __ no response

3. *Where else do you expect to stop at the El Cerrito Plaza today?*

_____ ___ no additional stops
_____ __ don't know
_____ __ no response

4. *How did you get to the El Cerrito Plaza today?* [circle response; prompt if necessary]

a. walk __ no response
b. auto-driver
c. auto-passenger
d. bus [*which bus*: # ___]
e. BART [*from where*: _____]
f. bicycle
g. other (*specify*) _____

[If auto-driver...]

4A. *Where did you park?* [check or fill-in response]

__ no response

__ in the El Cerrito Plaza parking lot
__ on side street (*indicate if they specify street name*) _____
__ BART parking lot
__ Other (*specify*): _____

5. *Where were you before you came to El Cerrito Plaza today?* [check or fill-in response]

__ home __ no response
__ work [*where* _____]
__ school
__ other (*specify purpose and location*)_____

6. *Where will you go after you have made all of your stops at El Cerrito Plaza?* [check or fill in response]
   __ home
   __ work [*where:*_____]
   __ school
   __ other (*specify purpose and location*)_____
   __ no response

7. *How will you get there?*
   a. walk
   b. auto-driver
   c. auto-passenger
   d. bus [*bus number:*____]
   e. BART [*where* _____]
   f. bicycle
   g. other (*specify*) _____
   __ no response

8. *How frequently do you come to the El Cerrito Plaza?* [check response, prompt if necessary]
   __ Less than once a month
   __ 1-3 times per month
   __ 1-2 times per week
   __ 3-4 times per week
   __ 5-6 times per week
   __ every day
   __ no response

9. *Do you live in the neighborhood?* (check response) Yes ___ No ___ ___ no response

[If no...]
9A. *In what city do you live?* _____ __ no response

[If Yes, or person lives in Berkeley, Albany, El Cerrito, Kensington or Richmond, ask Questions 10 and 11, otherwise go to Question 12...]

10. *On what street?* _____ __ no response
11. *What is the nearest cross street?* _____ __ no response

[If person does not live in neighborhood...]
12. *How did you first learn about El Cerrito Plaza?* (check or fill-in response)
   __ from a friend or relative
   __ used to live in neighborhood
   __ have lived here for ___ years
   __ other (*specify*)_____
   __ no response

Thank you for answering questions about your activities today. Would you be willing to assist us further in this research by filling out a more detailed survey of your activities in at El Cerrito Plaza? It should take about 10 to 15 minutes and we will pay for the postage. Again all of the responses will be confidential.

(If they agree to take the mail-back survey, write the number from the survey here: _____.)

13. Write down characteristics of person interviewed and persons with them:

Age	Sex	Age of Children	Characteristics
	M F		
___	M F	_____	_____

Characteristics include race/ethnicity, dress (e.g., casual, business, student, shopper, blue -collar, pink collar) and other unusual attributes).

Ending Time: __:__:__

Mailback Survey

The mailback survey was printed on a double-sided 8 - 1/2" by 14" card stock paper. The survey was folded into fourths to provide a self-mailer. Postage was provided for respondents to the survey.

EL CERRITO PLAZA ACTIVITY SURVEY

Thank you for participating in the survey at El Cerrito Plaza and for agreeing to complete this survey for a study by the University of California Transportation Center. It is a part of a continuing effort to understand travel patterns for shopping and services in the Bay Area. All of your responses will be completely confidential. *Please complete the survey within a week and drop it in any U.S. Postal Service mailbox.* If you have any questions, please contact Ruth Steiner at (510) 486-4364.

Section 1. Information on Your Household *(For Statistical Purposes Only)* *

1. Including yourself, how many people live in your household? _____
2. What are the ages of members of your household? (*list your age first*) _____
3. How many autos, pickups, and vans are available for use by members of your household?_____
4. In what city do you live? _____
5. Street on which you live _____ Nearest cross street _____
6. Housing type (*circle one*)

   1 = Single family detached
   2 = 2-4 unit building
   3 = 5-9 unit building
   4 = 10 or more unit building
   5 = Other (*specify*): _____

7. Do you own or rent your home? (*check one*): Own ____ Rent ____
8. How long have you lived at your current residence?_____

Section 2. Activity at El Cerrito Plaza *

9. About how many times per week do you come to the El Cerrito Plaza shopping area?_____
10. Approximately how often do you go to the following types of business or places at the El Cerrito Plaza (*please check frequency for each type of business or location*)

	Frequency					
	Less Than 1 Time Per Month	1-3 Times Per Month	1-2 Times Per Week	3-4 Times Per Week	5-6 Times Per Week	Every Day
cafés and bakeries	☐	☐	☐	☐	☐	☐
specialty food stores	☐	☐	☐	☐	☐	☐
grocery stores	☐	☐	☐	☐	☐	☐
restaurants	☐	☐	☐	☐	☐	☐
bars	☐	☐	☐	☐	☐	☐
pharmacy	☐	☐	☐	☐	☐	☐
dry cleaning and laundry	☐	☐	☐	☐	☐	☐
banking	☐	☐	☐	☐	☐	☐
entertainment (video store, theatre)	☐	☐	☐	☐	☐	☐
newspaper, book or stationery stores	☐	☐	☐	☐	☐	☐
clothing stores	☐	☐	☐	☐	☐	☐
El Cerrito BART station	☐	☐	☐	☐	☐	☐
other (*please specify*) _____	☐	☐	☐	☐	☐	☐

11. How do you usually get to the El Cerrito Plaza? auto ___ walk ___ BART ___ other (*specify*): _____
12. Do you work at El Cerrito Plaza? Yes ___ No ___
13. When do you usually do your shopping or other errands at El Cerrito Plaza? (*circle all that apply*)

    1 = on the way to work
    2 = during lunch hour
    3 = on the way home from work
    4 = on weekends
    5 = at no regular time
    6 = other (*specify*): _____

Section 3. Attitudes about Shopping at El Cerrito Plaza *

14. Please indicate whether you STRONGLY DISAGREE, DISAGREE, ARE NEUTRAL, AGREE or STRONGLY AGREE to the following statements by checking the appropriate box.

I shop at El Cerrito Plaza for the following reason...	**Disagree Strongly**	**Disagree**	**Neutral**	**Agree**	**Agree Strongly**	**Not A Reason**
it has reasonable prices	☐	☐	☐	☐	☐	☐
it is convenient	☐	☐	☐	☐	☐	☐
it has parking that is easy to find	☐	☐	☐	☐	☐	☐
it has a wide selection of goods	☐	☐	☐	☐	☐	☐
it has high quality products	☐	☐	☐	☐	☐	☐
it has a pleasant atmosphere	☐	☐	☐	☐	☐	☐
it has a good mix of stores	☐	☐	☐	☐	☐	☐
I like to walk in the area	☐	☐	☐	☐	☐	☐
I feel safe when I shop there	☐	☐	☐	☐	☐	☐

15. How satisfied are you with the stores and services at El Cerrito Plaza? (*circle one*)

    1= very satisfied
    2=somewhat satisfied
    3=somewhat dissatisfied
    4=very dissatisfied

16. What do you like most about El Cerrito Plaza? _____
17. What do you like least about El Cerrito Plaza? _____
18. What kind of store or service would you most like to see El Cerrito Plaza? _____

PLEASE COMPLETE BOTH SIDES
THEN FOLD AND SEAL WITH TAPE OR STAPLE

Section 4. Information on Your Usual Food Shopping Trips to El Cerrito Plaza and Elsewhere *

19. How many times per week do you go to shop at the supermarket? _____
20. How many times per week do you go to shop at specialty food shops (including bakeries)? _____
21. How many times per week do you go to restaurants for your evening meal? _____
22. What percentage of your household's food shopping do you do? _____
23. What percentage of your overall food shopping trips do you do at El Cerrito Plaza? _____

If you live in the neighborhood around El Cerrito Plaza or do more than 25% of your food shopping trips at El Cerrito Plaza, answer the following questions. Otherwise, Go to Section 5.

24. At which supermarket do you shop most frequently? Name: _____
    Location: _____
25. How do you usually get to the supermarket? (*circle one*)
    1=Drive 4=Ride Bus
    2=Ride as a Passenger 5=Walk
    3=Bicycle 6=Other (*specify*):_____
26. How do you usually get to specialty food shops? (*circle one*)
    1=Drive 4=Ride Bus
    2=Ride as a Passenger 5=Walk
    3=Bicycle 6=Other (*specify*):_____

Section 5. Other Information (*For Statistical Purposes Only*) *

27. Employment status (*circle one; full time applies to anyone working more than 20 hours per week*)
    1= full time paid employment 4=full-time student
    2=part-time paid employment 5=part-time student, employed part-time
    3=unpaid employment 6= other (*specify*):_____
28. Sex: (*circle one*) 1=Female 2=Male
29. What is the highest level of education you have completed? (*circle one*)
    1= junior high school 4=four years of college
    2=high school 5=graduate school
    3= two years of college 6=other (*specify*): _____
30. How many adults in the household, **excluding yourself**, work full-time outside of your home?_____
31. Please indicate your approximate household income in 1993 (*circle one*):
    1=Less than $20,000 4=$60,000 to $79,999
    2=$20,000 to $39,999 5=$80,000 to $99,999
    3=$40,000 to $59,999 6=$100,000 or more

Section 6. General Comments *

Please provide any general comments or suggestions about how to improve transportation in the Bay Area and in your neighborhood.

_____

_____

_____

_____

_____

_____

Thank you for your time in completing this survey. The results of the survey will be available during the fall of 1994. If you are interested in obtaining results of this survey, please send a postcard to Ruth Steiner at the address below.

Institute of Urban and Regional Development
316 Wurster Hall
University of California at Berkeley
Berkeley, CA 94720

Ruth Steiner
Institute of Urban and Regional Development
316 Wurster Hall
University of California at Berkeley
Berkeley, CA 94720

BART Intercept Survey

The BART intercept survey was printed on a double-sided 8 - 1/2" by 11" paper.

INTERVIEW AND CODING SYSTEM

Date_____ Time_____

Hello, my name is _____ and I am a researcher with the University of California onducting a survey on how people use the area around the El Cerrito BART station. May I ask you a ew questions while you wait for your BART train?

. How did you get to the El Cerrito BART station (*check response*)?

1)_____Car
2)_____Bus (AC Transit)
3)_____Walk
4)_____BART
5)_____Bike
6)_____Dropped off in Car
7)_____Carpool
8)_____Other (please specify)_____

2. From where did you just come? (Read passenger options.) (*check response*)

1)_____Home
2)_____School
3)_____Work
4)_____Shopping
5)_____Other (please specify)_____

3. How long did it take you to get here? (*check response*)

1)_____Less than 5 minutes
2)_____5-10 min
3)_____10-20 min
4)_____20-30 min
5)_____30-40 min
6)_____40-50 min
7)_____50-60 min
8)_____Over an hour

4. Do you live in the neighborhood around the El Cerrito Plaza? (*Circle one*)

(1) Yes (2) No

5. What is the purpose of the trip you are making? You may state more than one.

1)_____Work
2)_____School
3)_____Shopping
4)_____Social/Recreational
5)_____Medical/Dental
6)_____Personal Business
7)_____Home
8)_____Other (please specify)_____

6. Where is your final destination for this trip? (*Check response*)

1)_____Berkeley	(8)_____Oakland (Downtown)
2)_____Concord	(9)_____Other Oakland
3)_____Daly City	(10)_____Pleasant Hill
4)_____Fremont	(11)_____Richmond
5)_____Hayward	(12)_____San Francisco
6)_____Lafayette	(13)_____Walnut Creek

7. Did you make any stops in the El Cerrito Plaza shopping area on your way to the BART station **today?**(*circle response*)

(1) Yes (2) No

IF NO, GO TO QUESTION #9.

8. What type of stores did you patronize? (*check response*)

(1)_____Groceries
(2)_____Restaurant/Cafe
(3)_____Gifts
(4)_____Personal (dry cleaning, hairdresser, banking)
(5)_____Books/Newspaper
(6)_____Video
(7)_____Specialty food store _____
(8)_____Convenience store
(9)_____Other (please specify)_____

9. How often do you make stops in the El Cerrito Plaza shopping area on your way to the El Cerrito Plaza BART? (*fill in response*)

___ Never
___ < 1 times per month
___ 1-3 times per month
___ 1-3 times per week
___ 4-6 times per week
___ everyday

10. How often do you make stops at the El Cerrito Plaza shopping area on your way from El Cerrito Plaza BART? (*fill in response*)

___ Never
___ < 1 times per month
___ 1-3 times per month
___ 1-3 times per week
___ 4-6 times per week
___ everyday

11. How many days per week do you use BART from the El Cerrito BART station? (circle one)

Less than 1 1 2 3 4 5 6 everyday

12. What places in the El Cerrito Plaza area do stop in most frequently?

_____ ___ never stop ___ no response

13. As you think about the El Cerrito Plaza BART area, is anything missing?

_____ ___ nothing ___ no response

14. Is there anything you would like to get rid of in the El Cerrito Plaza BART area?

_____ ___ can't think of anything ___ nothing ___ no response

15. How many adults (including yourself) live in your household?_____(exact number recorded)

16. How many children live in your household?_____(exact number recorded)

17. For statistical purposes, what is your household income. Please stop me when I state your income bracket.

)_____Less than $19,999
)_____$20,000-39,999
)_____$40,000-59,999
)_____$60,000-79,999
)_____$80,000-99,999
)_____$100,000 or above

18. Gender: 1 = Female 2 = Male

Merchant Survey

SURVEY OF MERCHANTS IN CASE STUDY AREAS

May I speak to the Manager or owner of the business?

* If manager or owner is not available:
  Is there a good time for me to speak to him or her?
  Note time available and name of person to ask for

If the manager or owner is available:

Hello, my name is _____, and I am with the University of California at Berkeley. We are conducting a study of shopping and travel in your shopping district. The purpose of this study is to understand how people's shopping trips differ from neighborhood to neighborhood. A part of that research is a survey of all merchants in the neighborhood. All of the responses to this survey will be confidential. The questionnaire will take about 10 minutes.

Name and Address of Business: _____
_____
_____

2. Type of Business: _____

3. Person inteviewed: Owner ___ Manager ___ Employee ___

Date of inteview: __/ __/ 94
Interviewer _____
Start time: __ __ : __ __

Section A. GENERAL INFORMATION. *I am going to start by asking some general questions about your business...*

1. Which of the following best describes your business? Is it a ...[circle answer, prompt if necessary]:

a. national chain __ no response
b. franchise of national chain
c. local chain
If local chain:
How many other stores there? [fill in response]
Number ____ __ no response

Where are the other stores located? [fill in response]
Locations: _____ __ no response
_____
_____
d. single location

2. How many employees, including family members, work here? [fill in response, prompt if necessary]

Part-time _____ __ no response
Full-time _____

3. During what hours are you open for business: [fill in response, prompt if necessary for weekend hours]

_____ __ no response

4. Do you own or lease the property? [circle response]

a. Own __ no response
b. Lease

5. What is the square footage of the store? [fill in answer]

Square footage _____ __ no response

6. *How long have you been in business?* [fill in answer]

____ years __ no response

7. *How long has the business been at this location?.* [fill in answer]

____ years __ no response

[If the business has been at the same location for at least as long as it has been in business, skip to Section B. Otherwise...]

8A. Where was the business previously located? [fill in answer]

_____ __ no response

8B. Were you involved in the decision about the present location? [fill in answer]

Yes ___ No ___ __ no response

[If yes, ...]

8B1. Why did you move to this location? [fill in answer]

_____ __ no response

Section B. LOCATIONAL FACTORS.

1. Now I am going to read a list of common factors that contribute to the success of a business at a particular location. How important are the following factors to your business? Please indicate the importance on a scale from 1 for ***Not important*** *to 5 for* ***Very Important.***

	Not Important		**Important**		**Very Important**	**No Response**
The flow of pedestrian traffic	1	2	3	4	5	___
Accessibility to public transportation	1	2	3	4	5	___
The flow of automobile traffic	1	2	3	4	5	___
The availability of parking nearby	1	2	3	4	5	___
Proximity to other services or retailers	1	2	3	4	5	___
Presence of other businesses of similar quality	1	2	3	4	5	___
Presence of other competitors	1	2	3	4	5	___
Absence of other competitors	1	2	3	4	5	___
Image of the neighborhood	1	2	3	4	5	___
Cost to lease or own the property	1	2	3	4	5	___

2. Now I am going to read the same list of factors and ask you to indicate how satisfied you are with respect to your current location. Please indicate on a scale from 1 for ***Not satisfied*** *to 5 for* ***Very Satisfied.***

	Not Satisfied		**Satisfied**		**Very Satisfied**	**No Response**
The flow of pedestrian traffic	1	2	3	4	5	___
Accessibility to public transportation	1	2	3	4	5	___
The flow of automobile traffic	1	2	3	4	5	___
The availability of parking nearby	1	2	3	4	5	___
Proximity to other services or retailers	1	2	3	4	5	___
Presence of other businesses of similar quality	1	2	3	4	5	___
Presence of other competitors	1	2	3	4	5	___
Absence of other competitors	1	2	3	4	5	___
Image of the neighborhood	1	2	3	4	5	___
Cost to lease or own the property	1	2	3	4	5	___
Overall	1	2	3	4	5	___

3. Some businesses feel it is important to be located near complementary businesses so they can increase sales. Others do not feel they need to be located near any particular type of business. Are there certain types of businesses that you feel you need to be located near? [fill in answer]

No ___
Type of business _____ __ no response

4. Are there certain types of businesses that you would not want to locate close to? [fill in answer]

No ___
Type of business _____ __ no response

5. What do you like the most about your present location? [fill in answer]

_____ __ no response

6. If you could change one thing about your present location, what would that be? [fill in answer]

_____ __ no response

Section C. DEFINITION OF CUSTOMER BASE. *I am interested in knowing a bit about your customers...*

1. Do you keep mailing lists, computerized lists or have other mechanisms to know where your customers live? [circle answer]

a. Yes __ no response
b. No

2. About what percentage of your customers are repeat customers? [fill in answer]

____ % __ no response

3. About what percentage of your customers live within a HALF MILE of your business? [fill in answer]

_____ % __ no response

4. About what percentage of your customers live within A MILE of your business? [fill in answer]

_____ % __ no response

5. About what percentage of your customers work in the neighborhood? [fill in answer]

_____ % __ no response

6. Is there a particular set of customers to whom you target your sales? For example, do you have a specific age, income, or lifestyle to which you target your business? [fill in answer]

No ___
_____ __ no response

7. Where do you advertise? [fill in answer]

_____ __ no response
__ Does not advertise

[If this business provides a service (e.g., hair styling, restaurant, etc. , go to Section D]

8. What percentage of your customers come to your business to buy goods and what percentage just come here to browse? [fill in answer, This should total to 100%]

____ % buy goods/use services ____ % browsing __ no response

Section D. TRANSPORTATION. *Finally, I am going to ask you a few questions about transportation to your business...*

1. Do you provide parking for your customers? [circle answer]

a. Yes
b. No

__ no response

[If Yes...]
A. How many spaces? [fill in answer]

____ spaces

__ no response

[If No ...]
B. Where do your customers park? [circle or fill in answer]

a. at meters in front of store
b. in surrounding neighborhood
c. other _____

__ no response

2. About what percentage of your customers use the following modes of transportation to get to your business? [fill in response, prompt if necessary; responses should total to 100% but do not need to]

____ % walk
____ % by auto
____ % by bicycle
____ % by bus
____ % by BART
____ % other

__ no response

3. Have your customers made comments about the availability of parking? [circle answer]

a. Yes
b. No

[If Yes ...]
4A. How many times per month? [fill in answer]

____ times

__ no response

4. How do most of your employees get to the business?

____ walk
____ by auto
____ by bicycle
____ by bus
____ by BART
____ other

__ no response

Thank you for helping with this important research. We appreciate your participation.

Section E. CUSTOMER INFORMATION.

Fill out thc following at the end of the survey:

1. Sex of Respondent F M

2. Ending Time: __ __ : __ __

3. Customer in store at end of interview:

4. Total Number of Customers _____

Age	Sex	With Children?	Children's Age	Characteristics
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____
___	M F	Y N	_____	_____

APPENDIX B.1 PROCESSING OF DATA FROM CUSTOMER INTERCEPT SURVEYS

Analysis of some variables in the intercept survey is relatively straightforward, while other variables are recoded or combined to form new variables. Table B-1 defines the variables used in the analysis. In the rest of the appendix, the processing of data is described in greater detail.

Table B-1. Variables Used in Analysis of Intercept Surveys

Variable	Origin	Original Values	Values Used In Analysis
Stops	Questions 1 and 3	Names of stores	Recoded according to business categories and business types in Tables B-2 through B-5.
Estimate of time spent shopping	Question 2	Estimate of time spent shopping	As recorded
Type of Shopping Trip	Derived from Questions 1 and 3	Names of stores	Recoded according to types of stops. See Tables C-2 through C-5 for business types and categories. 1 = Only convenience goods and services 2 = Only comparison goods and other services 3 = Both convenience and comparison goods and services 4 = No stops
Mode to Shopping Area	Question 4	a = walk b = auto-driver c = auto-passenger d = bus e = BART f = bicycle g = other	Recoded to: 1 = a, f (non-motorized transportation) 2 = b, c (automobile driver or passenger; motorcycle; motor scooter) 3 = d, e (transit user; employee shuttle)
Parking	Question 4A	Specific to each neighborhood	Recoded to: 1 = on shopping street 2 = public parking (city lot or BART) 3 = side street 4 = other locations (including private lots)
Before (Purpose)	Question 5	h = home w = work s = school p = shopping r = recreation v = visiting friend or relative e = errands o = other	Recoded to: 1 = home 2 = work or school 3 = other (includes shopping, recreation, visiting, errands, and other)
After (Purpose)	Question 6	Same categories as Before	Same categories as Before (purpose)

Table B-1. Variables Used in Analysis of Intercept Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Trip Type	Derived from Questions 5 and 6	1 = home to home 2 = work/school to home 3 = home to work/school 4 = other to home 5 = home to other 6 = other to work/school 7 = work /school to other 8 = other to other 9 = work to work	combined to: 1 = simple chain (home to home) 2 = work/school commute (home to work/school or work/school to home) 3 = home-based complex, chain (home to other, other to home) 4 = other chain (work to work, other to work, work to other, other to other)
Mode From Shopping Area	Question 7	Same categories as Mode To Shopping Area	Same categories as Mode To Shopping Area
Change Mode	Derived from Questions 4 and 7		0 = no change in mode 1 = change in mode
Modewalk	Derived from Questions 4 and 7		0 = other mode of travel to and from shopping 1 = walk trip either to or from shopping
Frequency of going to shopping area	Question 8	a = < 1 times/month b = 1-3 times/month c = 1-2 times/week d = 3-4 times/week e = 5-6 times/week f = everyday	1 = a, b (infrequent; < 1 time/week) 2 = c (regular; 1-2 times/week) 3 = d, e, f (frequent; > 2 times/week)
Resident of neighborhood	Questions 9, 10 and 11	Yes = resident No, maybe or not recorded = non-resident	recalculated based upon street and cross street 1 = resident; lives within .5 mile 2 = resident; lives within 1 mile 3 = non-resident; lives 1 - 5 miles away 4 = non-resident; lives 5+ miles away
City of Residence	Question 9A	City of residence	Recoded to following: 1 = Berkeley 2 = Oakland 3= Albany 4= Kensington 5 = El Cerrito 6 = Richmond 7 = Other East Bay 8 = Other Bay Area 9 = Outside Bay Area
How Learned about shopping area	Question 12	f = from friend or relative l = lived or lives nearby y = have known about for years o = other (including specific location)	Other recoded to: w = works or worked here d = driving through the area u= when was a student at UCB m = Monterey Market o = other (including specific location)
Age	Question 13	As recorded	As recorded
Accompanied by children	Question 13	As recorded	0 = not accompanied by children 1 = accompanied by children
Ethnicity/Ability to Speak English	Question 13	As recorded	1 = Caucasian 2 = Asian 3 = Afro-American 4 = Hispanic or Latino 5 = Non-English speaking
Gender	Question 13	As indicated	1 = woman 2 = man 3 = man and woman

Stops/Categories of Businesses

In questions 1 and 3, customers were asked where they stopped in the shopping area on the day of the survey. Each of the responses is recoded according to the type of business. These types of businesses are then combined into four categories: convenience shopping, convenience services, comparison shopping and other services. Tables B-2 through B-5, indicate the types of businesses that are included in each shopping category. In Table B-2, stores that provide convenience shopping goods are further classified into 6 categories: cafés and coffee shops, grocery stores, flowers, books and gifts, miscellaneous convenience, restaurants, and specialty food stores. The classification of stores is based, in part, on previous literature on retail structure and the type of stores that are likely to provide certain types of goods.

Classification of Land Uses

As is described in Chapter 3, the definition of convenience shopping has generally been equated with the neighborhood-level of shopping. However, researchers have not always agreed about what the types of goods and services are provided at the neighborhood level. In the tables below, the types of stores in the shopping areas are categorized based upon the following research: Berry's (1963) and Garner's (1965) central place studies, the application of the central place hierarchy to Seattle by Morrill (1987); Nelson's (1958) discussion of convenience and comparison goods; and the Urban Land Institute's (1995) description of the most common tenants in a planned neighborhood center. Generally, goods that would be found at the neighborhood level are also defined as convenience items to be purchased by residents on a regular basis.

Convenience Goods

The classification of convenience shopping, shown in Table C-2, is based upon previous research (Nelson 1958, Morrill 1987, Berry 1963, Garner 1965, Casazza and Spinks 1985) as well as my own evaluation of the function of the goods being provided. Six subcategories of convenience shopping are included: cafés and coffee shops. restaurants, specialty gift shops, , specialty food stores, grocery stores, and miscellaneous convenience stores. Each category is described below.

Cafés and coffee shops include places that customers would make a quick stop for food or drink as a part of a shopping trip. Only two of these stores, donut/coffee shop and bars are identified as convenience goods in prior research. I consider ice cream shops and candy shops to be convenience items because they are often purchased on impulse.

Restaurants can serve a variety of clientele, but all restaurants are included in the analysis as convenience stops. (The surveys were conducted when "destination" restaurants were not open for dinner.)

Flowers, books and cards, or specialty gift shops, are included as convenience items after Morrill (1987) who found that these types of stores are often used as such in higher income neighborhoods. Although the case study areas are not uniformly high income, the shops in question do appear to be serving a convenience function. For example, the flower shops are small shops or flower stands rather than full-service florists; similarly, items in the stationery store/card shop would have been found in the nearly extinct variety stores of the 1960s neighborhood studies (Berry 1965; Garner 1963). Bookstores are ubiquitous in the retail landscape in the Berkeley area and thus are considered as convenience goods in this study.

Specialty food stores are grouped together as a subcategory of convenience shopping. While specialty foods are not consistently identified as convenience items, both Garner (1965) and Berry (1963) indicate that a mixture of small food shops are typically included at the neighborhood level, and these size of these stores in the case study areas is consistent with small-scale neighborhood shopping.

Grocery stores and other smaller food markets are included as a separate subcategory. While the chain grocery stores provide goods for ever larger market areas, they are still found at the neighborhood level in planned centers (Casazza and Spinks 1985), and are frequent enough in the East Bay that a neighborhood destination (especially for the specialty foods considered here) is probably accurate.

The "miscellaneous convenience shopping" subcategory includes liquor stores, quick stop convenience stores, variety stores, drug store/pharmacy and hardware stores. There is some disagreement in the literature about whether hardware stores are convenience businesses (See, e.g., Berry 1963 and Casazza and Spinks 1985); mostly reflecting the variety of stores that offer hardware. Here hardware stores are classified as convenience stores because of their small size, minimal parking, and lack of large-scale building supplies. Drug stores and pharmacies are also included because they have generally been found at the neighborhood level; they also provide many of the goods that had been found in the neighborhood-serving variety stores of past decades.

Table B-2. Types of Business Providing Convenience Shopping by Category of Convenience Goods		
Category	Type of Business	Notes
Cafés and Coffee Shops		
	Café/Coffee Shop	
	Ice Cream/Frozen Yogurt	
	Candy Shop	
	Donut/Coffee Shop	b
	Bar/Live Entertainment	ace
Grocery		
	Chain Supermarket	dfij
	Other Market/Grocery Store	ae
Specialty Goods: Flowers, Books and Cards		
	Flower Shop	hij
	Stationery Store/Card Shop	hij
	Bookstore	h
Miscellaneous Convenience		
	Liquor	acij
	Quick Stop Convenience Store	
	Variety Discount Store	bd
	Drug Store/Pharmacy	acegj
	Hardware Store	f
Restaurant		
	Sit-down restaurant	acej
	Fast Food restaurant	
Specialty Food Shops		
	Bakery/Bagel Shop	be
	Deli	b
	Cheese Shop	b
	Poultry	b
	Fish Market	bdf
	Produce	b
	Natural Foods	
	Wine Shop	
	Butcher/Meat Market	b

NOTES:
a - defined as basic business in the Berry's (1963) unplanned neighborhood center
b- defined as one of possible businesses in Berry's (1963) unplanned neighborhood center
c - included as basic businesses in Berry's (1963) planned neighborhood center
d - included as one of possible businesses in Berry's (1963) planned neighborhood center
e - included as core business in Garner's (1965) neighborhood center
f - included as one of possible businesses in Garner's (1965) neighborhood center
g - included as a basic convenience business in Morrill's (1987) typology
h - convenience businesses found in higher income neighborhoods (Morrill 1987)
i - convenience businesses according to Nelson (1958)
j - included in the Urban Land Institute's neighborhood center (Casazza and Spinks 1985)

Convenience Services

Previous research is silent about many of the services that are categorized as convenience services in this research. There is consensus in earlier studies that the hairdresser, dry cleaner, and the barber shop are neighborhood convenience services; the Urban Land Institute's more recent work (Casazza and Spinks 1985) adds video stores and banks as neighborhood services. Postal convenience stations and copy shops, both relatively recent additions to the retail landscape, are also included here as convenience services.

Table B-3. Businesses Providing Convenience Services

Type of Business	**Notes**
Hairdresser/Nail Salon	acfgj
Neighborhood Recreation (Park, Pool, Running Track, Bench, Theater, Place To Hang Out After Work)	
Library	
Bank	aej
Video Rental	j
Gas Station	d
Phone/Mailbox/BART Station	
Post Office/Postal Convenience Station	
Dry Cleaners/Laundry	acegj
Copy Shop	
Shoe Repair	f
Barber Shop	acfgj
Church	
School	
Preschool	

NOTES:
a - defined as basic business in the Berry's (1963) unplanned neighborhood center
c - included as basic businesses in Berry's (1963) planned neighborhood center
d - included as one of possible businesses in Berry's (1963) planned neighborhood center
e - included as core business in Garner's (1965) neighborhood center
f - included as one of possible businesses in Garner's (1965) neighborhood center
g - included as a basic convenience business in Morrill's (1987) typology
j - included in the Urban Land Institute's neighborhood center (Casazza and Spinks 1985)

Comparison Shopping

Berry (1963) and Nelson (1958) identify several types of comparison shopping items as being sold in planned neighborhood centers: jewelry, shoe stores, furniture, gardening supplies, toy stores, camera shops, hobby stores, and men's, women's and children's clothing. Since most of these items are purchased less frequently and based upon a comparison of price, suitability and other characteristics, these types of stores are considered comparison shopping goods here.

Table B-4. Businesses Providing Comparison Shopping

Type of Business	Notes
Home Furnishings (Including Interior Decoration)	
Antique Shop	
Nursery/Garden Supply Store	i
Record/Music Shop	
Frame Shop	
Toy Store	i
Gift - Specialty	
Jewelry	c
Toiletries	
Shoe Store	d
Art Gallery	
Movie Theater	
Furniture	d
Camera Shop	i
Carpet Shop	
Sporting Goods	
Hobby Store (Including Comic Books, Sewing, Crafts, etc.)	i
Pet Store	
Baby Store	
Clothing-Men's	c
Clothing-Children's	d
Clothing-Women's	c
Clothing -Unspecified	
Department Store	
Clothing -Vintage	
Thrift Shop (Used Clothing)	

c - included as basic businesses in Berry's (1963) planned neighborhood center
d - included as one of possible businesses in Berry's (1963) planned neighborhood center
i - convenience businesses according to Nelson (1958)

Other Services

Previous research identifies offices of real estate brokers, insurance agents, doctors, dentists, chiropractors, travel agents and optometrists as neighborhood services. Interviews with a few owners of these types of businesses suggest that they probably locate in these types of shopping areas because the needs of business owners (i.e., convenience, low rent, access, image) and they are consistent with the characteristics of the case study shopping area. However, these services are not dependent upon the residents of the neighborhood, nor do their users select them principally because of proximity.

Table B-5. Businesses Providing Other Services

Type of Business	Notes
Travel Agent	j
Computer/Electronics	
Real Estate Office	bdf
Optometrist	
Veterinary Clinic	
Garage	
Weight Watchers	
Dentist	j
Watch Repair	
Rental Agency	
Exercise/Dance/Bowling Alley	
Office Supply	i
Therapist	
Cleaning Service	
Offices (Unspecified)	
Architect Office	
Massage Studio	
Insurance Agents	bd
Medical Office	bdfj

NOTES:
b- defined as one of possible businesses in Berry's (1963) unplanned neighborhood center
d - included as one of possible businesses in Berry's (1963) planned neighborhood center
f - included as one of possible businesses in Garner's (1965) neighborhood center
i - convenience businesses according to Nelson (1958)
j - included in the Urban Land Institute's neighborhood center (Casazza and Spinks 1985)

Classification of Type of Shopping Trips

Using the business classifications to define the types of stops made, I then classified the type of shopping trip of each person interviewed into four categories: convenience only (shopping and/or services), comparison only (shopping and/or services), convenience and comparison (shopping and/or services), and no stops. The "no stops" category is created because some of those intercepted were merely passing through the shopping area.

Mode of Travel

Each shopper was asked to indicate their mode to and from the shopping area (Questions 4 and 7). The following choices were available: walk, auto-driver, auto-passenger, bus, BART, bicycle, and other. For purposes of analysis, three categories are created: non-motorized transportation (walkers and bicyclists), auto users (drivers and passengers), and transit users (BART and bus). The "other" category included only three respondents: one who took a work shuttle to Rockridge, one who used a motorcycle at El Cerrito Plaza and one who used a scooter in Hopkins. The work shuttle was recoded as transit and the motorcycle and scooter are included with automobiles.

The percentage of customers who changed mode during their travel is calculated. Persons who changed mode constituted about 8% of the sample, with most of them shifting from transit (either BART or bus) to walking.

In some of the analysis, the variable "modewalk" is used. This variable is defined to include anyone who walks to or from the shopping area. Thus, anyone who used an automobile, bicycle, or transit, or some combination thereof for both parts of the trip is categorized as a non-walker.

Before/After and Trip Types

The type of trips of customers was determined based upon the answer to questions 5 (Where were you before you came to <shopping area> today?) and 6 (Where will you go after you have made all of your stops at <shopping area>?). Answers to these questions are categorized as: home, work, school, shopping, visiting family or friends, errands, recreation, and other. After a preliminary analysis, these categories were merged into three: home, work and school, and other. These responses are defined as before and after trip purposes rather than trip origins and destinations because customers merely indicated a general location or activity where they had been before the interview or where they planned to be after the interview.

A variable called trip type, indicating the chain of activities in which a customer is engaged when they were stopped in a shopping area, is then constructed. For convenience, the middle of the chain is called "shopping" even if the person interviewed is using services only (about 15% of total respondents) or simply walking through the shopping area (about 4% of total respondents). Trips are categorized into two types of

chains: simple and complex. A simple chain is defined as any trip from home to shopping to home. Complex chains include all trips with multiple destinations away from home. Complex chains are further categorized into: work/school commutes, home-based complex chains and other chains. Work/school commutes include all trips through the shopping area in which the origin or destination is work or school and the paired destination or origin is home. Home-based complex chains include any trip that has home as the origin or the destination and the paired origin or destination is a location other than home, work, or school. For consistency, these trips were called simple, home-shop-home, chains; work/school commutes; home-based complex chains; and other chains.

Frequency of Visits to Area

Customers were asked how frequently they came to the shopping area (Question 8: How frequently do you come to <shopping area>?). The responses were recorded in the following categories: less than once a month, 1-3 times per month (i.e., less than once a week), 1-2 times per week, 3-4 times per week, 5-6 times per week, and every day. After preliminary analysis, these categories were merged into three: infrequent, regular and frequent shoppers. Infrequent shoppers come to the shopping area less than once a week or were shopping in the area their first, second or third time. Regular shoppers indicated that they come to the shopping area one to two times per week. Frequent shoppers are those who come to the shopping area more than two times per week.

Residency

The residence status of shoppers is measured using two separate definitions. All respondents were asked, "Do you live in the neighborhood?" This question was asked to try to understand how customers defined their neighborhood. In addition, customers were asked what city they lived in. If they responded that they lived in the neighborhood or in the same or a nearby city, they were also asked for their street and cross street. Based upon this latter information, the residence status is reclassified based upon the distance of the customer's residence from the shopping area. All respondents living within a straight line distance of one mile are classified as residents, while all persons who live more than one mile from the location of the interview are classified as a non-residents. Residents are further divided into two categories, those within one-half mile (straight line distance) and those between one-half and one mile from the location of the interviews. Non-residents also are further categorized into those that live between one and five miles from the center and those living more than five miles away.

City

The city of residence was recorded for all customers. For purposes of analysis, the following cities of residence were defined separately: Berkeley, Oakland, Albany, Kensington, El Cerrito and Richmond. All other East Bay cities are combined into one category "Other East Bay", which includes locations in Alameda and Contra Costa Counties. Other locations in the nine-county San Francisco Bay Area are included in the

"Other Bay Area" category. Customers who live outside the Bay Area, in other parts of California, other parts of the United States, or other parts of the world are included in the category "Outside the Bay Area."

Characteristics of Customers

At the end of the interview, the interviewer recorded characteristics of the persons interviewed. These characteristics include: age, gender, age of children accompanying the respondents, ethnicity/ability to speak English, type of dress, and other unusual characteristics. The data are incomplete, however, especially in the two areas of Rockridge, because one interviewer failed to complete this information.

The interviewers' estimated age of persons interviewed appears to be low based upon comparisons with the mailback surveys. Ethnicity is divided into the following categories: white, Asian, Afro-American, Hispanic, and non-native English speakers. Non-native English speakers included all persons, including Asian, Africans, and Europeans, who spoke English with a noticably strong accent or could not speak it at all.

APPENDIX B.2. PROCESSING OF DATA FROM CUSTOMER MAILBACK SURVEYS

The analysis of variables from the customer mailback surveys is relatively straightforward. Most variables are taken directly from the responses to the survey. Other variables were recoded or combined with other variables to form new variables that were used in the analysis of the surveys. Table B2-1 defines the variables used in the analysis. In the rest of the appendix, the processing of selected variables is discussed in greater detail.

Table B2-1. Variables Used in Analysis of Mailback Survey

Variable	Origin	Original Values	Values Used In Analysis
Members in Household	Question 1	As reported	As reported
Ages of Household Members	Question 2	As reported	Recoded into Household Type
Household Types	Derived from Questions 1 and 2	1= single person of working age 2 = elderly person 3 = couple of working age 4 = couple, both over 65 5 = single parent 7 = more than two adults, no children 8 = two adults with children 9 = more than two adults, with children (three generations, etc.)	Combined and recoded to: 1 = single person (1 and 2) 2 = couple (3 and 4) 3 = households with child(ren) (5, 8, 9) 4 = more than two adults, no children (8) 5 = one or three and more adults with children (7 and 9)
Household Vehicles	Question 3	As reported	As reported
Vehicles per licensed driver	Questions 1, 2, and 3	Number of household vehicles divided by number of persons over 16	As derived
City of Residence	Question 4	As reported; used to verify match to intercept survey	Recoded to: 1 = Berkeley 2 = Oakland 3 = Albany 4 = Kensington 5 = El Cerrito 6 = Richmond 7 = Other East Bay 8 = Other Bay Area 9 = Outside Bay Area
Street, Cross Street	Question 5	As reported; used to verify match to intercept survey	As reported
Housing Type	Question 6	1 = single family detached 2 = 4 units/building 3 = 5-9 units/building 4 = or more units in building	Recoded as: 1 = single family detached 2 = other
Home ownership	Question 7	1 = Own 2 = Rent	As reported

Table B2-1. Variables Used in Analysis of Mailback Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Shopping Frequency	Question 9	As reported	Recoded to: 1 = (infrequent; < 1 time/week) 2 = (regular; 1-2 times/week) 3 = (frequent; > 3 times/week)
Frequency of Making Stops at Specific Types of Businesses	Question 10	Types of Businesses vary depending upon uses in the shopping area; respondents checked one of following: < 1 times/month 1-3 times/month 1-2 times/week 3-4 times/week 5-6 times/week everyday	Recoded to: 1 = (infrequent; < 1 time/week) 2 = (regular; 1-2 times/week) 3 = (frequent; > 3 times/week)
Usual mode	Question 11	a = auto w = walk B = BART b = bus	As reported
Work in Shopping Area	Question 12	1 = yes 2 = no	As reported
Usual shopping Time	Question 13	1 = on way to work 2 = during lunch hour 3 = on the way home from work 4 = on weekends 5 = at no regular time 6 = other	Recoded to 5 if circled more than one "usual shopping time"
Attitudes about shopping area (Prices, parking, convenience, selection, quality, atmosphere, mix of stores, walking environment, safety)	Question 14	ds = disagree strongly d = disagree n = neutral a = agree sa = strongly agree na = not a reason	Recoded to: 1 = disagree strongly (ds) 2 = disagree (d) 3 = neutral (n, na) 4 = agree (a) 5 = strongly agree (sa)
Satisfaction	Question 15	1 = very satisfied 2 = somewhat satisfied 3 = somewhat dissatisfied 4 = very dissatisfied	As reported
Like Most	Question 16	As reported	Recoded to: 1 = reasonable prices 2 = convenience 3 = parking 4 = selection of goods 5 = high quality of products 6 = pleasant atmosphere 7 = good mix of stores 8 = walking environment 9 = safety 10 = specific store 11 = specific service (includes restaurants) 12 = appearance 13 = traffic congestion

Table B2-1. Variables Used in Analysis of Mailback Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Like Least	Question 17	As reported	Recoded to: 1 = prices were too expensive 2 = inconvenient 3 = parking 4 = selection of goods 5 = quality of products 6 = unpleasant atmosphere 7 = poor mix of stores 8 = poor walking environment 9 = safety 10 = missing store 11 = missing service (includes restaurants) 12 = appearance 13 = traffic 14 = specific store 15 = hours
What's Missing	Question 18	Used same categories as types of Businesses (See Tables B-2 through B-5)	As reported
Frequency at Supermarket	Question 19	As reported	Recoded to: 1 = (infrequent; < 1 time/week) 2 = (regular; 1-2 times/week) 3 = (frequent; > 3 times/week)
Frequency at Specialty Food	Question 20	As reported	Recoded to: 1 = (infrequent; < 1 time/week) 2 = (regular; 1-2 times/week) 3 = (frequent; > 3 times/week)
Frequency at Restaurants	Question 21	As reported	Recoded to: 1 = (infrequent; < 1 time/week) 2 = (regular; 1-2 times/week) 3 = (frequent; > 3 times/week)
Percentage of Household Shopping	Question 22	As reported	As reported
Percentage of Shopping in Shopping Areas	Question 23	As reported	As reported

Table B2-1. Variables Used in Analysis of Mailback Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Primary Supermarket	Question 24	As reported	Recoded to: a = Safeway on College and Claremont b= Safeway on 51st and Pleasant Valley c = Lucky on College d = Whole Foods on Telegraph and Ashby e = Berkeley Bowl f = Market Hall g = Andronico's on Telegraph h = Andronico's on Solano i = Monterey Market j = Yasai Market k = Andronico's on University l = Andronico's on Cedar/Shattuck m = Raleigh's in El Sobrante n = other small grocers o = other stores in other cities p = Lucky on San Pablo q = Safeway on Solano (in Berkeley) r = Lucky at El Cerrito Plaza s = Safeway in Richmond t = Safeway in El Cerrito u = Safeway on Shattuck/Rose v = Young's Market w = Park and Shop on Solano x = Lucky on Lakeshore and Alameda y = Costco in Richmond z = Burnaford's aa = Elmwood Natural Grocers bb = Park N Shop on Telegraph cc = Park N Shop on Shattuck
Usual mode to Supermarket	Question 25	1 = drive 2 = ride as passenger 3 = bicycle 4 = ride bus 5 = walk	As reported
Usual Mode to Specialty Food	Question 26	1 = drive 2 = ride as passenger 3 = bicycle 4 = ride bus 5 = walk	As reported
Employment Status	Question 27	1 = full-time paid employment 2 = part-time paid employment 3 = unpaid employment 4 = full-time student 5 = part-time student, employed part-time 6 = unemployed/disability 7 = self-employed 8 = retired 9 = visiting scholar 10 = housewife	1 = full-time employment (1, 7, 9) 2 = part-time employment (2, 5) 3 = un(paid) employment (3, 6, 10) 4 = student (4) 8 = retired (8)
Gender	Question 28	1 = female 2 = male	As reported; used gender of respondent to intercept survey if not reported

Table B2-1. Variables Used in Analysis of Mailback Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Education	Question 29	1 = junior high school 2 = high school 3 = two years of college 4 = four years of college 5 = graduate school 6 = other 7 = Ph.D.	Recoded to: 1 = less than college (1, 2, 3) 4 = four years of college 5 = graduate school (5, 7)
Household Workers	Derived from Questions 27 and 30	If Question 27 equals 1 or 2, add 1 to Response to Question 30	As reported
Household Income	Question 31	1 = Less than $20,000 2 = $20,000 to $39,999 3 = $40,000 to $59,999 4 = $60,000 to $79,999 5 = $80,000 to $99,999 6 = $100,000 or more	Recoded to: 1 = Less than $40,000 3 = $40,000 to $59,999 4 = $60,000 or more

Household Types

Household types are determined through an analysis of the number of members of the household and the ages of members. Children are defined as anyone who is under the age of 18. Because the respondents were not asked to characterize the household, the categories are sometimes difficult to determine. Any single person is categorized as being of working age, under sixty-five, or of retirement age, over sixty-five. Among two person households, two forms of household are defined: single parents, or couples. Single parent household include a child under the age of 18. Couples include persons who are both adults and lived in the same household. No assumption is made about their marital status. Persons with three or more persons in the household are categorized into four different household types: single parents with children, couples with children, more than two adults with children, and unrelated persons living in the same households. The unrelated persons living in the same household include all households with no children. Single parents with children include all households with one adult and more than one child. Couples with children include all households with only two adults, whose age is within 15 years of each other, and one or more children. Households with more than two adults and children frequently include households with three generations.

After preliminary analysis, these household types are merged into 4 household types because of the small number of household types in certain categories. These household types included: single persons, couples, couples with children, unrelated adults, and households with children (with one or three or more adults in the household).

Usual Mode of Shopping

Respondents were asked to report their usual mode of travel to the shopping area. About a third circled two or mode modes. These responses were compared to the actual

mode of travel and were found to be similar, with about 90% correspondence between the actual and usual mode.

Usual Shopping Time

Respondents were asked to indicate when they were most likely to shop. They were allowed multiple responses. A preliminary analysis found that most respondents reported two or three times of the week or they reported that they shopped "at no regular time". This variable was not used in subsequent analyses because over 75% of respondents specified more than one category or that they shop at "no regular time".

APPENDIX B.3. PROCESSING OF DATA FROM MERCHANT SURVEY

The analysis of the merchant survey was relatively straightforward. Few of the responses are recoded or combined with other variables to form new variables. Table B3-1 defines the variables used in the analysis.

Table B3-1. Variables Used in Analysis of Merchant Surveys

Variable	Origin	Original Values	Values Used In Analysis
Type of Business	Question 2.	Coded with same business types as are used in Customer Intercept Surveys (See Tables B-2 through B-5)	Recoded into Categories of Businesses: 1 = Cafés and Coffee Shop 2 = Grocery Store 3 = Flowers, Books and Cards 4 = Miscellaneous Convenience 5 = Restaurant 6 = Specialty Food 7 = Convenience Services 10 = Comparison Shopping 11 = Other Services
Person interviewed	Question 3	am = assistant manager e = employee l = librarian m = manager o = owner v = volunteer	As reported
Form of Ownership	Question A.1	a = national chain b = franchise of national chain c = local chain d = single location	As reported
Number of Part-time Employees	Question A.2	As reported	As reported
Number of Full-time Employees	Question A.2	As reported	As reported
Number of Employees	Derived from Question A.2		total employees = part-time + full-time employees
Hours Open	Question A.3	As reported	As reported
Property Ownership	Question A.4	1 = own 2 = lease	As reported
Square Footage	Question A.5	As reported	As reported
Years in Business	Question A.6	As reported	As reported
Years in Shopping Area	Question A.7	As reported	As reported
Previous Location	Question A.8A	As reported	As reported
Location Decision	Question A.8B	1 = yes 2 = no	As reported
Reason for Moving	Question A.8B1	As reported	As reported
Importance of Locational Factors	Question B.1	On scale from 1 to 5: 1 = not important 3 = important 5 = very important	As reported
Satisfaction with Locational Factors	Questions B.2	On scale from 1 to 5: 1 = not satisfied 3 = satisfied 5 = very satisfied	As reported

Table B3-1. Variables Used in Analysis of Merchant Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Complementary Businesses (businesses would like to locate near)	Question B.3	As reported	Recoded to: 0 = none 1 = quality of clientele/services 2 = competitors (based upon agglomeration) 3 = small-scale stores or non-chain stores/neighborhood 4 = current neighbor -- (specific store indicated) 5 = specific store type 6 = diversity of stores 7 = other retail 8 = other services 9 = ones that generate foot traffic (nothing specific indicated) 10 = complements 11 = draw in crowds/similar customers 12 = close to ... 13 = cafe 14 = restaurants 15 = food stores 16 = children's stores 17 = bank 18 = bookstore 19 = convenience/practical items 20 = clothing 21 = grocery 22 = florist 23 = light industrial
Undesirable Businesses (businesses would not like to locate near)	Question B.4	As reported	Recoded to: 1 = quality of clientele/undesirable 2 = competition 3 = large scale chains 4 = current neighbor 5 = specific store type 8 = services 9 = ones that draw limited traffic 10 = ones that draw too much traffic 11= industry/automotive 12 = bars/liquor stores 13 = fast food 14 = porno & other "sleazy" uses 15 = cemetery/mortuary 16 = ones that attract children/teens 17= check cashing 21 = discount/grocery stores

Table B3-1. Variables Used in Analysis of Merchant Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Like Most About Current Location	Question B.5	As reported	Recoded to: 1 = safety 2 = parking 3 = automobile traffic 4 = pedestrian/foot traffic 5 = characteristics of building/location 6 = mix of stores 7 = accessibility, convenience 8 = mix of uses in neighborhood (residential and retail) 9 = scale of stores 10 = location in proximity to specific store 11 = characteristics of residents/customers 12 = neighborhood characteristics 13 = rent 14 = competition 15 = public transportation 16 = reputation of shopping area/established, stability 17 = nothing 18 = hours 19 = visibility
Like Least About Current Location	Question B.6	As reported	Recoded to: 1 = safety 2 = parking 3 = automobile traffic 4 = pedestrian/foot traffic/ public transportation 5 = characteristics of building 6 = characteristics of neighborhood merchants 7 = accessibility 8 = mix (or lack of) of uses in neighborhood 10 = location in proximity to specific store 11 = characteristics of residents/customers 12 = neighborhood characteristics/reputation of shopping area 13 = rent 14 = competition 15 = owner/landlord 16 = inaccessibility of public transportation 19 = lack of visibility 20 = street reconstruction/city actions
Mailing Lists	Question C.1	a = yes b= no	As reported
Percentage of Repeat Customers	Question C.2	As reported	As reported
Customers within Half Mile	Question C.3	As reported	As reported
Customers within Mile	Question C.4	As reported	As reported
Customers Work in Neighborhood	Question C.5	As reported	As reported

Table B3-1. Variables Used in Analysis of Merchant Surveys (con't)			
Variable	Origin	Original Values	Values Used In Analysis
Targeted Customers		Coded two per business (where applicable one from each group) 1- 9 Socioeconomic characteristics 1 = upscale, high-income 2= middle class 3 = working class 4 = professional 5 = specific characteristics (e.g., skaters, runners, etc.) 6 = homeowners 7 = students 8 = women 9 = men 10-19 Demographic characteristics 10 = Elderly 11 = all adults 12 = Middle age 13 = 12 and 14 combined 14 = young adult 15 = adults and children 16 = Children 17 = families 18 = all ages	As reported
Advertising Location	Question C.7	As reported	As reported
Percentage of Customers who are Browsers	Question C.8	As reported	As reported
Provide Customer Parking?	Question D.1	a = yes b = no	As reported
Number of Parking Spaces	Question D.1A	As reported	As reported
Parking Locations of Customers	Question D.1B	a = in front of store b = in surrounding neighborhood c = parking lot	As reported
Customer Mode Choice	Question D.2	As reported	As reported
Parking Availability	Question D.3	a = yes b = no	As reported
Comments on parking per Month	Question D.3A	As reported	As reported
Employees" Mode to Work	Question D.4	w = walk a = auto b= bicycle	As reported

APPENDIX B.4. PROCESSING OF DATA FROM BART INTERCEPT SURVEY

The analysis of variables from the BART intercept survey was relatively straightforward. Most variables were taken directly from the responses to the survey. Other variables were recoded or combined with other variables to form new variables that were used in the analysis of the surveys. Table B4-1 defines the variables used in the analysis.

Table B4-1. Variables Used in Analysis of BART Intercept Surveys

Variable	Origin	Original Values	Values Used In Analysis
Access Mode	Question 1	1 = car 2 = bus 3 = walk 4 = BART 5 = Bike 6 = car (dropped off) 7 = carpool 8 = other	Recoded to: 1 = car (including drop-off) 2 = bus 3 = walk 4 = BART 5 = bike 6 = other (including carpool, taxi, employee shuttle)
Location prior to coming to BART	Question 2	1 = home 2 = school 3 = work 4 = shopping 5 = other	As recorded
Time to get to BART station	Question 3	1 = less than 5 minutes 2 = 2-10 minutes 3 = 10-20 minutes 4 = 20-30 minutes 5 = 30-40 minutes 6 = 40-50 minutes 7 = 50 -60 minutes 8 = over an hour	As reported
Residence of Customer	Question 4	1 = yes customer lives in neighborhood 2 = no, customer does not live in neighborhood	As reported
Trip Purpose	Question 5	1 = work 2 = school 3 = shopping 4 = social/recreational 5 = medical/dental 6 = personal business 7 = home 8 = other	As reported

Table B4-1. Variables Used in Analysis of BART Intercept Surveys (con't)			
Variable	Origin	Original Values	Values Used in Analysis
Final Destination	Question 6	1 = Berkeley 2 = Concord 3 = Daly City 4 = Fremont 5 = Hayward 6 = Lafayette 7 = Other 8 = Oakland - Downtown 9 = Oakland - Other Locations 10 = Pleasant Hill 11 = Richmond 12 = San Francisco 13 = Walnut Creek	As reported
Make stops in Shopping Area	Question 7	1 = yes 2 = no	As reported
Types of Stops Made in Shopping Area	Question 8	1 = grocery 2 = restaurant 3 = gifts 4 = personal services (dry cleaning, hairdresser, banking) 5 = books/newspaper 6 = video store 7 = specialty food store 8 = convenience store 9 = other	As reported
Frequency of stopping in Shopping area on way to BART	Question 9	1 = never 2 = < 1 times/month 3 = 1-3 times/month 4 = 1-3 times/week 5 = 4-6 times/week 6 = everyday	1 = 1, 2, 3 (infrequent; < 1 time/week) 2 = 4 (regular; 1-3 times/week) 3 = 5, 6 (frequent; > 3 times/week)
Frequency of stopping on way from BART	Question 10	1 = never 2 = < 1 times/month 3 = 1-3 times/month 4 = 1-3 times/week 5 = 4-6 times/week 6 = everyday	1 = 1, 2, 3 (infrequent; < 1 time/week) 2 = 4 (regular; 1-3 times/week) 3 = 5, 6 (frequent; > 3 times/week)
Frequency of Using BART	Question 11	1 = less than once a week 2 = once a week 3 = twice a week 4 = three times a week 5= four times a week 6 = five times a week 7 more than five times a week	As reported
Places in Shopping Area used most frequently	Question 12	As reported	0 = never go to shopping area 1= food related 2 = services 3 = library 4 = gifts/books

Table B4-1. Variables Used in Analysis of BART Intercept Surveys (con't)			
Variable	Origin	Original Values	Values Used in Analysis
What is Missing in Shopping Area	Question 13	As reported	Recoded to: 1 = can't think of anything 2 = nothing 3 = hardware store 4 = ATM/bank 5 = parking 6 = bookstore 7 = movie theater 8 = other 9 = food-related 10 = drugstore 11 = ambiance 12 = clothing 13 = department store 14 = discount store 15 = specialty store 16 = services 17 = transportation-related 18 = security 19 = mix of stores 20 = entertainment
Would like to get rid of in Shopping Area	Question 14	As reported	Recoded to: 1 = can't think of anything 2 = nothing 3 = congestion 4 = street people/panhandlers 5 = dirt/trash 6 = pigeons 7 = ambiance/atmosphere 8 = other 9 = security 10 = food-related
Adults in Household	Question 15	As reported	As reported
Children in Household	Question 16	As reported	As reported
Household Income	Question 17	1 = less than $20,000 2 = $20,000 - $39,999 3 = $40,000 - $59,999 4 = $60,000 - $79,999 5 = $80,000 - $99,999 6 = $100,000 or above	As reported
Gender	Question 18	1 = female 2 = male	As reported
Ethnicity	Question 18	As reported	Recoded to: 1 = white 2 = Asian 3 = black 4 = Hispanic 5 = non-native speaker

APPENDIX C. CHARACTERISTICS OF RESPONDENTS TO CUSTOMER SURVEY

Basic information on customers was gathered in two stages in this research: (1) in the intercept survey; and (2) in the mailback survey. During the intercept survey, information was recorded about where the customer lives and other characteristics based upon the observation of the person interviewed, including: (1) gender; (2) approximate age; (3) ethnicity; and (4) whether they were accompanied by one or more children during the shopping trip. Similar information on the characteristics of non-respondents, based upon the observations of the interviewers, was also recorded. In the mailback survey, customers were asked several questions about their household and housing characteristics including: (1) number of persons in household; (2) ages of members of household; (3) vehicle ownership; (4) type of housing; (5) ownership status of housing; (6) length of time at current residence; (7) employment status; (8) gender; (9) highest level of education; (10) number of workers in household; and (11) household income.

In this appendix, the characteristics of respondents are presented for each of the shopping areas. First the characteristics based upon the observations of respondents during the intercept surveys are presented. Next, the characteristics of non-respondents are presented and compared to respondents to the intercept surveys. The residence of customers based upon the intercept survey are then considered. The observational and residence characteristics of customers based upon the mailback survey are then compared to the mailback survey. Finally, the additional socio-economic and demographic characteristics based upon the mailback survey are examined. The characteristics of customers of each shopping area may differ significantly from characteristics of the residents of the shopping area because only about half of the customers came from within one mile of the shopping areas.

Observable Characteristics of Respondents - Intercept Surveys

Gender

Overall, about 57% of the respondents to the intercept survey are women. Table C-1 shows that the percentage of customers who are women varies from about 67% in Elmwood to about half in the two areas of Rockridge.

Table C-1. Gender of Respondents by Shopping Area (Percentage)

	Male	Female	Male and Female* or Not Recorded	Total
Rockridge - Market Hall	43	51	6	100
Rockridge - Alcatraz	43	48	9	100
Elmwood	31	66	3	100
El Cerrito Plaza	38	61	2	101
Hopkins	37	62	2	101
Kensington	38	60	1	99
All Respondents	38	58	4	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
* - In some cases more than one person responded to the survey. If two women or two men responded this was recorded under the respective genders. If a man and a woman who were walking together responded to the survey they were recorded as male and female.
Statistics: (Chi-squared) In comparison by shopping area (including only females and males), the distribution is significantly different ($p < .10$).

Age

The average age of customers is in the late 30s (see Table C-2). The age of customers ranges from about 32 years in Rockridge - Market Hall to about 43 years in Kensington.

Table C-2. Estimated Age of Respondents by Shopping Area (Percentage)

	Less than 20	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60+ Years	Total	Average Age
Rockridge - Market Hall	1	22	52	13	9	4	101	32.3
Rockridge - Alcatraz	1	27	31	18	14	10	101	35.4
Elmwood	2	21	31	16	17	13	100	37.3
El Cerrito Plaza	1	17	25	16	20	22	101	41.4
Hopkins	1	12	34	24	24	6	101	37.8
Kensington	1	8	22	22	29	19	101	43.2
All of Sample	1	20	35	17	16	12	101	37.0

Source: Customer Intercept Survey (weighted data)
Note: Percentages may not total 100% due to rounding. The ages reported on the mailback surveys suggest that age is underestimated slightly, but not consistently, across shopping areas because of differences in the ability of interviewers to estimate ages.
Statistics: Scheffé multiple comparisons (two -tailed at .05 level). Mean age of Kensington shoppers differs from Rockridge - Market Hall, Rockridge - Alcatraz, Elmwood and El Cerrito. Mean age of respondents in Hopkins differs from two areas of Rockridge and mean age in Elmwood and Hopkins differs from Rockridge - Market Hall.

Race/Ethnicity

Respondents in all shopping areas are overwhelmingly white (see Table C-3). In all shopping areas, with the exception of El Cerrito Plaza, 85% or more of the customers are white. In El Cerrito Plaza, 64% of customers are white.

Table C-3. Ethnicity of Respondents by Shopping Area (Percentage)

	White	Asian	Afro-American	Hispanic	Non-native speakers of English*	Total
Rockridge - Market Hall	88	3	6	0	3	100
Rockridge - Alcatraz	90	6	2	0	1	99
Elmwood	86	6	5	1	3	101
El Cerrito Plaza	64	12	14	4	6	100
Hopkins	91	5	2	1	1	100
Kensington	90	3	3	1	5	102
All Respondents	84	6	6	1	3	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
* - This includes persons of all ethnicities who are not native speakers of English.
Statistics: (Chi-squared) In a comparison of whites to other ethnicities among shopping areas, they are significantly different ($p < .05$).

Accompanied by Children

Just over 10% of respondents were accompanied by children while they were shopping (see Table C-4). The percentage of customers accompanied by children varies from 6% in Rockridge - Alcatraz to 15% at El Cerrito Plaza.

Table C-4. Respondents Accompanied by Children in Shopping Area (Percentage)

	With Children*	Alone or with other adults	Total
Rockridge - Market Hall	10	90	100
Rockridge - Alcatraz	6	94	100
Elmwood	8	92	100
El Cerrito Plaza	15	85	100
Hopkins	11	89	100
Kensington	13	87	100
All Respondents	11	89	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
* - In a few cases, the person interviewed was a teenager unaccompanied by an adult.
Statistics (Chi-squared) In comparison of shopping areas, the percentage of customers is significantly different ($p < .05$).

Characteristics of Persons Who Refused to Participate in Survey

Overall, persons who were willing to participate in the intercept survey are similar to those who refused to participate. A representative sample of customers was found in each shopping area with a few exceptions stated below.

The percentage of women, is similar for respondents and non-respondents in all shopping areas, except Rockridge - Alcatraz (see Tables C-1 and C-5) where a slightly higher percentage of women refused to participate in the survey. The average age of respondents is similar to that of non-respondents with all customers averaging about 38.1 years of age (see Tables C-2 and C-6). The estimated age is higher among participants in Rockridge - Market Hall and Hopkins and lower in Elmwood. The ethnicity of participants is similar to that of non-participants with the single exception that non-native speakers of English refused to participate at a slightly higher rate (see Tables C-3 and C-7). This result is not surprising given that many non-native speakers of English do not speak English well enough to answer the survey. El Cerrito Plaza had a disproportionate percentage of non-native speakers of English who did not participate, with 12% compared to 6% of participants overall. Also, a higher percentage of participants at El Cerrito Plaza, 64%, are white than are non-participants (about 54% white). Finally, a lower, although not significantly different, percentage of customers who were accompanied by children refused to participate in the survey -- 8% compared to 12% of participants overall (see Tables C-4 and C-8).

Table C-5. Gender of Non-respondents by Shopping Area (Percentage)

	Male	Female	Female and Male*	Total
Rockridge - Market Hall	42	44	15	101
Rockridge - Alcatraz	27	63	10	100
Elmwood	29	57	14	100
El Cerrito Plaza	27	63	11	101
Hopkins	34	49	16	99
Kensington	36	59	5	100
All Non-respondents	32	56	12	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
* - Members of a group that include both men and women refused to participate. Since all members of the group refused to participate, the group has been categorized as male and female.
Statistics (Chi-squared) In a comparison of only males and females in shopping areas ($p < .10$). In a comparison between participants and non-participants, the proportions of females and male are significantly different only in Rockridge - Alcatraz ($p < .05$). All other shopping areas are not significantly different at the .10 level.

Table C-6. Estimated Age of Non-Respondents by Shopping Area (Percentage)

	Less than 20	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60+ Years	Total	Average Age
Rockridge - Market Hall	0	18	39	17	20	7	101	35.9
Rockridge - Alcatraz	3	15	35	27	12	9	101	36.0
Elmwood	2	20	47	14	11	7	101	33.3
El Cerrito Plaza	1	12	14	31	25	21	101	43.1
Hopkins	0	7	32	15	38	8	100	40.8
Kensington	2	9	24	24	26	15	100	41.7
All of Sample	1	14	32	21	21	11	100	38.1

Source: Customer Intercept Survey (weighted data)
Note: The ages indicated on the mailback surveys suggest that age was underestimated slightly, but not consistently, across shopping areas because of differences in the ability of interviewers to estimate ages. Percentages may not total to 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$) Mean age of El Cerrito's non-respondents differs from Elmwood's, Rockridge - Market Hall's and Rockridge - Alcatraz's. Both Kensington's and Hopkins' mean ages differ from Elmwood's.
In comparison of participants to non-participants, using independent sample t-tests with equal variance, the age of participants is different from non-participants in Rockridge - Market Hall and Elmwood ($p < .05$) and Hopkins ($p < .10$).

Table C-7. Ethnicity of Non-Respondents by Shopping Area (Percentage)

	White	Asian	Afro-American	Hispanic	Non-native speakers of English*	Groups of Mixed Ethnicity	Total
Rockridge - Market Hall	94	1	3	0	3	0	101
Rockridge - Alcatraz	90	7	3	0	1	0	101
Elmwood	86	3	6	1	3	2	101
El Cerrito Plaza	55	15	16	4	10	1	101
Hopkins	88	5	0	0	4	3	100
Kensington	85	4	0	2	9	0	100
All Non-respondent	82	6	5	1	5	1	100

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not equal to 100% due to rounding.
* - This includes persons of all ethnicities who are not native speakers of English many of whom could not understand the interviewer.
Statistics: (Chi-squared) In comparison of whites in other ethnicities in shopping areas, shopping areas are significantly different ($p < .05$). In comparison of participants to non-participants, the populations are not significantly different in any shopping area.

Table C-8. Non-Respondents Accompanied by Children in Shopping Area (Percentage)

	With Children*	Alone or with other adults	Total
Rockridge - Market Hall	91	9	100
Rockridge - Alcatraz	96	4	100
Elmwood	93	7	100
El Cerrito Plaza	89	11	100
Hopkins	92	8	100
Kensington	86	714	100
All Non-respondents	92	8	100

Source: Customer Intercept Survey (unweighted data)
* - In a few cases, the person who refused to be interviewed was a teenager unaccompanied by an adult.
Statistics: (Chi-squared) In comparison of shopping areas, none are significantly different ($p > .10$). In comparison of participants to non-participants, using chi-squared, the populations are not significantly different in any shopping area.

Reasons for Non-participation

The most common reason people gave for refusing to participate in the intercept survey was that they are in a hurry (see Table C-9). Some of the non-participants expressed skepticism that the survey could be completed within a few minutes. About 6% of non-participants include people who could not understand the interviewer well enough to complete the survey. These non-participants include many of the non-native speakers of English and people who could not hear well enough to answer the survey. Another 4% of the non-participants, about 20 people, completed the survey at another time either on a previous day in the same shopping area or in another shopping area. The fact that a person had previously answered the survey in another shopping area did not, in and of itself, disqualify them from participating in the survey. However, it is understandable that people would not be willing to participate in the same survey more than once. Finally, about 2% of non-participants were joggers, skateboarders, bicyclists (riding on the sidewalk) or in wheelchairs. These customers often went past the interviewer before they could be engaged in conversation.

Table C-9. Most Common Reason for Not Participating in Survey (Percentage of Non-respondents)

In a Hurry/Too Busy	9
Could not Understand Survey	6
Repeat	4
Could not stop person (person on rollerblades, in a wheelchair or jogging)	2

Source: Customer Intercept Survey
Note: Percentages were based upon recorded explanation. Most customers did not give a reason for refusing to participate in the survey. Thus, the percentage who did not participate because they were in a hurry is likely underestimated, while other reasons for refusing to participate are more accurate.

Residence of Respondents

The residence status of respondents is classified in two ways: (1) by whether the respondent reports living in the neighborhood; and (2) by calculating a straight line distance from the shopping area to their home based upon the city, and street and cross street on which they live. Using the reported information on the location of their residence, a resident is defined as a person who lives within one mile, in a straight line distance from the shopping area. Non-residents are those who live more than one mile from the shopping area. Tables C-10 and C-11 show the breakdown based upon respondent identification and based upon distance from the shopping area, respectively. The direction of the adjustments is shown in Table C-12.

Table C-10. Residence Status as Defined by Respondents by Shopping Area (Percentage)				
	Resident	Non-resident	Maybe resident or not recorded*	Total
Rockridge - Market Hall	75 42%	101 57%	1 1%	177 100%
Rockridge - Alcatraz	95 61%	55 35%	6 4%	156 100%
Elmwood	70 43%	88 54%	5 3%	163 100%
El Cerrito Plaza	100 56%	59 33%	21 12%	180 101%
Hopkins	73 45%	69 42%	22 13%	164 100%
Kensington	118 75%	26 17%	13 8%	157 100%
All Respondents	531 53%	398 40%	68 7%	997 100%

Source: Customer Intercept Survey (unweighted data)
Note: Based upon responses to Question 9: "*Do you live in the neighborhood?*" Percentages may not total 100% due to rounding.
* - Respondents did not answer "yes" or "no" to question.
Statistics: (Chi-squared) Shopping areas are significantly different in the percentage of residents and non-residents ($p < .05$)

Table C-11. Respondents' Residence by Shopping Area, as Calculated Based upon Distance from Shopping Area (Percentage)			
	Live within 1 Mile (Residents)	Live more than 1 mile away (Non-resident)	Total
Rockridge - Market Hall	66 37%	111 63%	177 100%
Rockridge - Alcatraz	96 62%	60 38%	156 100%
Elmwood	83 51%	80 49%	163 100%
El Cerrito Plaza	70 39%	110 61%	180 100%
Hopkins	85 52%	79 48%	164 100%
Kensington	119 76%	38 24%	157 100%
All Respondents	519 52%	478 48%	997 100%

Source: Customer Intercept Survey (unweighted data)
Notes: Residence calculated based upon responses to Questions 9, 10 and 11: *In what city do you live? On what street? On what cross street?* Distance measured as the crow flies.
Statistics: (Chi-squared): Shopping areas are significantly different in the percentage of residents and non-residents ($p < .05$).

In Kensington and Rockridge - Alcatraz, the self-definition and the classification based upon distance yield similar distributions of residents and non-residents. Each of these shopping areas draws respondents who live close to the shopping area and the neighborhoods are generally well-defined. The Rockridge - Market Hall shows a smaller percentage of residents based on distance; many who classify themselves as residents live just beyond the one mile limit for the distance classification.

Table C-12. Direction of Reclassification of Residence by Shopping Area

	Residents Reclassified as Non-residents Based on Distance	Non-residents reclassified as Residents Based on Distance*
Rockridge - Market Hall	11 of 75	2 of 102
Rockridge - Alcatraz	7 of 61	6 of 95
Elmwood	4 of 70	17 of 93
El Cerrito Plaza	37 of 100	7 of 80
Hopkins	8 of 73	20 of 91
Kensington	3 of 118	4 of 39

Source: Customer Intercept Survey (unweighted data)
Notes: Totals are presented based upon the customer's self-identification of residence. For example, in the Market Hall area of Rockridge, prior to the reclassification, 75 customers, or 42%, indicated they were residents. After the adjustment based on distance from the commercial center, 66 customers, or 36% were classified as residents. Using the information on this table: 75 self-identified as residents - 11 reclassified as non-residents + 2 self-identified as non-residents reclassified as residents = 66 residents (based on distance from center).
* - Non-residents includes customers whose response was not recorded, or who hesitated, or indicated they did not know, when asked if they were a resident.

In Elmwood and Hopkins, the reclassification of customers shifts the balance from a majority of non-residents to a small majority of residents in the shopping area (51% and 52% respectively). While the Elmwood area is generally well-defined as a neighborhood, it is located close to Rockridge. Thus some residents of Rockridge live within one mile of Elmwood but they do not identify themselves as residents of the Elmwood area. In contrast, the Hopkins shopping area is located near the City of Albany between two neighborhoods in Berkeley: Westbrae and North Berkeley. The ambiguity of what defines the neighborhood around the Hopkins shopping area is shown by the 13% of the respondents who did not respond "yes" or "no" to the question, "Do you live in the neighborhood?"

At El Cerrito Plaza, about 56% of respondents identified themselves as living in the neighborhood around the Plaza, compared to 39% who actually lived within one mile of the shopping area. Most of the people who live more than one mile from the Plaza but identify themselves as living in neighborhood live in the northern part of the City of El Cerrito. An additional 12% were not sure if they lived in the neighborhood; most of them did not live within a mile of the shopping center. The El Cerrito Plaza is the only

identifiable shopping plaza in El Cerrito; the much of the rest of the commercial development in El Cerrito is located in strip malls or along the sidewalks on San Pablo.

City of Residence

Tables C-13 through C-15 provide a slightly different picture of residence based upon the city in which the respondents live rather than only the distance from the shopping area. The distances people are willing to drive for shopping activities is also shown. Overall, 16% of respondents live more than five miles from the shopping area in which they were interviewed. The percentages vary from 31% at Rockridge Market Hall to under 10% in El Cerrito Plaza and Kensington. Based upon the city of residence, the extent of the market area of Rockridge - Market Hall is shown, with 9% of respondents traveling from the West or South Bay and another 5% from outside of the Bay Area. This breakdown also suggests the extent to which Rockridge - Market Hall serves residents of Oakland, including those who do not live in the surrounding neighborhoods. This contrasts with the market areas of the Rockridge - Alcatraz and Elmwood, which serves the surrounding neighborhoods and Oakland and Berkeley. Hopkins generally serves Berkeley and other areas of the East Bay. Kensington serves the unincorporated area of Kensington, and the adjacent areas of Berkeley and El Cerrito. El Cerrito Plaza generally serves many areas of the East Bay, although it draws many of its respondents from adjacent neighborhoods in El Cerrito and Albany.

Table C-13. City of Residence by Shopping Area (in Percentages)

City of Residence	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Berkeley	14	27	53	26	69	19
• Within 1 mile	4	23	42	1	49	15
• More than 1 mile	10	4	12	25	20	3
Oakland	57	58	26	4	5	2
• Within 1 mile	33	38	9	0	0	0
• More than 1 mile	23	20	17	4	5	2
Albany	1	0	1	29	4	0
Kensington	1	0	1	4	4	59
El Cerrito	3	0	1	18	6	10
Richmond	1	2	1	11	6	6
Other East Bay	12	7	10	5	2	1
Other Bay Area	9	5	3	1	4	1
Outside of Bay Area	5	1	4	1	1	2
Total	102 n=177	100 n=156	101 n=163	99 n=179	101 n=164	100 n=157

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding. Subtotals not may equal parts due to rounding.

Differences Between Weekdays and Weekends

Most shopping areas attract customers from a longer distances on Saturdays than on weekdays (see Tables C-14 and C-15). This is especially apparent at Rockridge - Market Hall and Elmwood. At Rockridge - Market Hall, more respondents, about 20%, come from outside of the East Bay on Saturdays compared to about 5% on weekdays. In Elmwood, the customer base shifts from Oakland and Berkeley on weekdays to the East Bay and the Bay Area generally on Saturdays. At El Cerrito Plaza and Hopkins, there is a slight shift from respondents who live locally to respondents in the East Bay more generally. This could be related to the regional draw of the Emporium Capwell and other clothing stores at El Cerrito Plaza and the Monterey Market on Hopkins Avenue. Kensington and Rockridge - Alcatraz show a shift toward a more local clientele on Saturdays compared to weekdays. This may be related to their position along major commute routes and the absence of stores dependent on, and drawing from, a larger market area.

Table C-14. City of Residence of Respondents by Shopping Area on Weekdays (in Percentages)

Location	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Berkeley	17	30	53	21	68	18
• Within 1 mile	7	25	41	0	46	15
• More than 1 mile	10	5	13	21	23	3
Oakland	56	52	29	5	5	3
• Within 1 mile	31	33	13	0	0	0
• More than 1 mile	25	19	16	5	5	5
Albany	1	0	1	27	6	0
Kensington	0	0	1	5	4	55
El Cerrito	6	0	0	22	5	11
Richmond	3	4	1	16	8	8
Other East Bay	12	9	9	2	0	1
Other Bay Area	4	5	1	1	4	3
Outside of Bay Area	1	1	4	1	0	3
Total	100	101	99	100	100	102

Source: Customer Intercept Survey
Note: Percentages may not total 100% due to rounding. Subtotals not may equal parts due to rounding.

Table C-15. City of Residence of Respondents by Shopping Area on Saturdays (in Percentages)

Location	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Berkeley	10	24	54	31	69	20
• Within 1 mile	1	21	43	2	53	16
• More than 1 mile	9	3	11	29	16	4
Oakland	57	65	23	3	5	1
• Within 1 mile	35	43	5	0	0	0
• More than 1 mile	22	23	17	3	5	1
Albany	0	0	1	31	1	0
Kensington	1	0	1	4	4	62
El Cerrito	0	0	1	15	7	9
Richmond	0	0	1	7	5	5
Other East Bay	12	5	11	8	4	1
Other Bay Area	13	4	4	3	5	0
Outside of Bay Area	7	1	5	0	1	1
Total	100	99	101	102	101	99

Source: Customer Intercept Survey

Note: Percentages may not total 100% due to rounding. Subtotals may not equal parts due to rounding.

Comparison of Mailback Surveys to Intercept Surveys

A further indication of the demographics of the shopping areas is seen in responses to the mailback surveys. The mailback surveys are matched to the intercept surveys based upon a survey number. The match is further verified by comparing the city of residence and the street and cross street. The observable characteristics of respondents are taken from the intercept surveys. In this section, the characteristics of customers reported in the mailback surveys are compared to the intercept surveys.

Residence of Customers

The mailback surveys were accepted and returned in greater numbers by those who live close to the shopping area than by those who live some distance away. Overall, in the intercept surveys, 52% of respondents are residents of the surrounding neighborhoods; sixty percent of the persons who returned the mailback survey are residents. The higher response rate among residents was expected because people who live in the area are more likely to be interested in studies of the area and to feel they could contribute to such studies. Among persons who completed the intercept survey, the percentages willing to take the mailback survey ranges from 87.6%, among persons who live within the first half mile, to 83.8%, 77.1%, and 64.2%, respectively, for customers who live between one half and one mile, one to five miles and five or more miles from the shopping area. Similarly, the response rates (completed surveys) among those who took mailback surveys ranges from 65.6% for respondents who live within the first mile, to 57.0%, 54.9% and 47.0%, respectively, for customers who live between one-half and one mile, one to five miles and five or more miles from the shopping area.

Table C-16 shows the distribution of customers who returned the mailback survey by the distance they lived from each shopping area. In Table C-17, the percentage difference in sample shares by distance of residence is shown. Higher response rates for residents are found in all shopping areas. Generally the response rates drop when a customer's residence is beyond one mile, and especially when the respondent lives beyond five miles. El Cerrito Plaza and Hopkins are the only shopping areas for which the residence of respondents of the intercept survey and the mailback survey are not significantly different.

Table C-16. Respondents to Mailback Survey by Distance from Shopping Area (Percentage)

	Lived within .5 miles	Lived between .5 and 1 mile away	Lived within 1 Mile (Residents)	Lived between 1 and 5 miles away	Lived more than 5 miles away	Lived more than 1 mile away (Non-resident)	Total
Rockridge - Market Hall	25	21	46	25	29	54	100
Rockridge - Alcatraz	51	18	70	22	10	30	100
Elmwood	44	17	61	24	14	39	100
El Cerrito Plaza	15	28	43	52	5	57	100
Hopkins	32	24	55	35	10	45	100
Kensington	70	12	82	16	2	18	100
All Respondents	40	21	60	29	11	40	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics (Chi-squared) In comparison of shopping areas, the differences are significant ($p < .05$).

Table C-17. Comparison of the Sample by Distance from Shopping Area between Intercept Surveys and Mailback Surveys (Difference in the Percentage of Customers)

	Live within .5 miles	Live between .5 and 1 mile away	Live within 1 Mile (Residents)	Live between 1 and 5 miles away	Live more than 5 miles away	Live more than 1 mile away (Non-resident)
Rockridge - Market Hall	+1	+7	+9	-7	-2	-9
Rockridge - Alcatraz	+11	-2	+8	-2	-6	-8
Elmwood	+11	-2	+10	-5	-6	-10
El Cerrito Plaza	+3	+1	+4	0	-4	-4
Hopkins	0	+4	+3	0	-4	-4
Kensington	+12	-6	+6	-3	-3	-6
All Respondents	+6	+2	+7	-3	-4	-7

Source: Customer Intercept Survey; Customer Mailback Survey (unweighted data)
Note: Numbers may not equal zero due to rounding.
Statistics: A comparison of the respondents and non-respondents to the mailback survey shows that the residence characteristics are significantly different ($p < .05$) in the following shopping areas: Rockridge - Market Hall, Rockridge - Alcatraz, Elmwood, and Kensington and all of the sample.

Gender of Respondents

The respondents to the mailback survey also were more likely to be females than respondents to the customer intercept survey (see Tables C-18 and C-1). Females represent 66% of respondents to the mailback survey compared to 57% of the respondents to the intercept survey. In two shopping areas, El Cerrito Plaza and Hopkins, the respondents to the mailback survey are significantly more likely to be female than respondents to the intercept survey.

Table C-18. Gender of Respondent by Shopping Area (Percentage)

	Male	Female	Total
Rockridge - Market Hall	47	53	100
Rockridge - Alcatraz	49	51	100
Elmwood	33	67	100
El Cerrito Plaza	31	69	100
Hopkins	32	68	100
Kensington	41	59	100
All Respondents	39	61	100

Source: Customer Mailback Survey (unweighted data)

* - If the respondent did not indicate their gender on the mailback survey it was presumed to be the same as the person who responded to the intercept survey. In some cases, both a man and a woman that were walking together responded to the intercept survey. If these same respondents did not record the gender on the mailback, they are listed as not recorded.

Statistics: (Chi-squared) A comparison of the respondents and non-respondents to the mailback survey, shows that the gender characteristics are significantly different ($p > .05$ and $< .10$) in the following shopping areas: El Cerrito Plaza and Hopkins. In comparison of shopping areas, gender of respondents is significantly different.

Race/Ethnicity and Language Ability

Respondents to the mailback survey are likely to white. Whites constitute 90% of the respondent to the mailback survey compared to 84% of the responses to the intercept survey (see Tables C-3 and C-19). The major difference in the ethnicity results from the lower percentage of respondents to the mailback survey who are non-native English-speakers in Kensington and El Cerrito Plaza. Elmwood had a lower response rate among Asians and Afro-Americans.

Table C-19. Ethnicity of Respondents by Shopping Area (in Percentages)

	White	Asian	Afro-American	Hispanic	Non-native speakers of English*	Total
Rockridge - Market Hall	90	3	3	0	3	99
Rockridge - Alcatraz	95	2	1	0	1	99
Elmwood	91	1	3	0	4	99
El Cerrito Plaza	72	9	12	3	4	100
Hopkins	92	3	2	1	1	99
Kensington	96	2	0	0	1	99
All Respondents	90	4	4	1	3	102

Source: Customer Intercept Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
* - This includes persons of all ethnicities who are not native speakers of English.
Statistics: (Chi-squared) A comparison of the respondents and non-respondents to the mailback survey and comparing whites to non-whites (and non-English speakers), shows that the ethnicity characteristics are significantly different ($p < .05$) in Kensington and ($p > .05$ and $< .10$) Elmwood and El Cerrito Plaza.

Age of Customers

The average age of respondents as reported in the mailback survey is about 46 years old and ranges from 40 to 54 years among shopping areas (see Table C-20). The average age of customers responding to the mailback surveys is not statistically different from those responding to the intercept survey (see Table C-21).

Table C-20. Respondents by Age by Shopping Area (Percentage)

	20-30 Years	30-40 Years	40-50 Years	50-60 Years	60+ Years	Total	Average Age
Rockridge - Market Hall	15	40	28	12	6	101	40.1
Rockridge - Alcatraz	24	26	26	12	12	100	41.3
Elmwood	24	19	20	20	17	100	44.9
El Cerrito Plaza	15	21	15	15	33	99	48.9
Hopkins	5	30	36	16	14	101	44.9
Kensington	6	12	22	23	37	100	53.8
All of Sample	17	27	24	15	18	101	44.3

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$): Average age of Kensington's respondents to the mailback survey differs from all other shopping areas. El Cerrito Plaza's mean age differs from Rockridge - Market Hall and Rockridge - Alcatraz. Both Hopkins' and Elmwood's mean age differs from Rockridge - Market Hall.

Table C-21. Comparison of Average Ages As Estimated by Interviewers and Self-Reported by Respondents to Mailback Survey

	Intercept Survey - All Respondents (a)	Intercept Survey - Did Not Return Mailback (b)	Intercept Survey - Returned Mailback (c)	Mailback Survey (Self-Reported) (d)
Rockridge - Market Hall	32.3	31.9	32.8	40.1
Rockridge - Alcatraz	35.4	34.2	36.4	41.3
Elmwood	37.3	35.4	39.8	44.9
El Cerrito Plaza	41.4	39.8	43.7	48.9
Hopkins	37.8	36.8	38.6	44.9
Kensington	42.7	39.5	45.6	53.8
All of Sample	37.8	36.2	39.7	44.3

Sources: Customer Intercept Survey; Customer Mailback Survey (weighted data)
Notes: The age on intercept surveys was estimated by the interviewers, while the age on the mailback surveys was self-reported. The difference in the estimated and actual age of customers is shown by the difference between columns (c) and (d). The difference in age between the respondents and non-respondents is shown by the difference between columns (b) and (c).
Statistics: T-test for equality of means (two-tailed test with equal variance). Age of respondents who returned compared to those who did not return the mailback survey is statistically different in all of sample and Kensington ($p < .05$) and in Elmwood and El Cerrito Plaza ($p < .10$).

The age on the mailback survey is reported by respondents, whereas the age on the intercept survey is estimated by the interviewer. The actual age is higher than the estimated age due to two factors: (1) interviewers underestimated the age of respondents to the intercept surveys; and (2) older persons are slightly more likely to respond to the

mailback survey. In Table C-21 the nature of these differences is shown. The difference between the estimated age and the self-reported age can be calculated as the difference between the last two columns which differ by between 5 and 8 years in each shopping area; this (or the difference between the first and last column) approximates the amount by which the interviewers underestimated the age of the respondents to the intercept survey.

Other Characteristics of Customers in Shopping Areas

In the mailback survey, customers were asked several questions about their household and housing that include: (1) number of persons in household; (2) ages of members of household; (3) vehicle ownership; (4) type of housing; (5) ownership status of housing; (6) length of time at current residence; (7) employment status; (8) gender; (9) highest level of education; (10) number of workers in household; and (11) household income. The response to each item is discussed briefly below.

Household Composition - Size and Type

The household size of respondents to the mailback survey is not statistically different among the shopping areas (see Table C-22). Households are smaller than the average household in Alameda and Contra Costa Counties, which averaged about 2.6 persons per household in 1990. Customers who are residents have, on average, more persons per household than non-residents in all shopping areas, except Kensington (see Tables C-22 and C-23). The number of persons per household is only significantly different between residents and non-residents in Rockridge - Alcatraz and in the sample as a whole.

Table C-22. Persons per Household of All Respondents by Shopping Area (Percentage)

	1	2	3	4	5+	Total	Average
Rockridge - Market Hall	19	44	25	10	2	100	2.31
Rockridge - Alcatraz	32	44	9	13	2	100	2.11
Elmwood	27	41	13	11	7	99	2.36
El Cerrito Plaza	30	31	24	11	4	100	2.30
Hopkins	24	38	17	15	7	101	2.46
Kensington	18	52	10	15	5	100	2.39
All of Sample	26	40	18	12	5	100	2.29

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons (two-tailed test, $p < .05$) Mean number of persons per household is not statistically different among shopping areas.

Table C-23. Average Number of Persons per Household of Resident and Non-resident Respondents by Shopping Area			
	Residents	Non-residents	Average
Rockridge -Market Hall	2.48	2.16	2.31
Rockridge - Alcatraz	2.25	1.81	2.11
Elmwood	2.37	2.33	2.36
El Cerrito Plaza	2.50	2.14	2.30
Hopkins	2.53	2.36	2.46
Kensington	2.36	2.53	2.39
All of Sample	2.40	2.16	2.32

Source: Customer Mailback Survey (weighted data)
Statistics: (T-test for equality of mean) In comparison of residents to non-residents in each shopping area and all of sample, Rockridge - Alcatraz and all of sample are significantly different ($p < .10$).

The household types in the shopping areas are slightly different from each other (see Tables C-24 and C-25). This finding is not surprising given the difference in household types in the residential areas surrounding these shopping areas. Overall, about 25% of the customers in these shopping areas have children. Couples, defined as two adults living together without children, comprise the largest single group of customers in all shopping areas, except El Cerrito Plaza. Single persons comprise the largest group of customers in El Cerrito and the second largest group overall. The lower percentage of customers with children is consistent with the composition of households in these shopping areas but represents a lower percentage of households than in Alameda and Contra Costa Counties. The percentage of couples without children and household with more than two adults represents a higher percentage of households than in Alameda and Contra Costa Counties.

Table C-24. Type of Household by Shopping Area (Percentage)					
	Single Person	Couple (Two Adults)	Households With Child(ren)	More than Two Adults, No Children	Total
Rockridge - Market Hall	19	38	27	16	100
Rockridge - Alcatraz	33	37	18	12	100
Elmwood	27	37	14	21	99
El Cerrito Plaza	30	28	28	14	100
Hopkins	25	34	33	9	101
Kensington	19	47	24	10	100
All Respondents	25	38	24	13	100

Source: Customer Mailback Survey
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) In comparison between shopping area, the types of households are significantly different ($p < .10$).

Table C-25. Type of Household of Resident and Non-resident Respondents by Shopping Area (Percentage)

	Single Person	Couple (Two Adults)	Households With Child(ren)	More than Two Adults, No Children	Total
Rockridge -Market Hall					
Resident	23	26	36	16	101
Non-resident	16	49	19	16	100
Rockridge - Alcatraz#					
Resident	26	39	21	14	100
Non-resident	46	35	12	8	101
Elmwood					
Resident	30	35	12	23	100
Non-resident	22	41	19	19	101
El Cerrito Plaza					
Resident	25	25	38	13	101
Non-resident	33	31	21	14	99
Hopkins					
Resident	27	29	37	8	101
Non-resident	23	40	28	10	101
Kensington#					
Resident	19	50	22	9	100
Non-resident	20	33	33	13	99
All Respondents					
Resident	25	33	27	15	100
Non-resident	27	39	20	13	99

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) In comparison of residents and non-residents in each shopping area, none are significantly different ($p < .10$).
- Includes insufficient sample of non-residents to assess statistical significance.

Employment Characteristics - Employment Status and Number of Workers

Respondents to the survey are most likely to be employed full-time with 58% of all respondents in that category (see Tables C-26 and C-27). The difference in the composition of the population based upon employment status is significantly different among the shopping areas. In Hopkins 75% of the respondents are employed full-time compared to 45% at El Cerrito Plaza. Students constitute over 10% of the respondents in all shopping areas except Hopkins and Kensington. Retirees constitute over 25% of the customers in Kensington and El Cerrito Plaza; this percentage is consistent with the percentage of household in these neighborhoods that are headed by persons over 65. The two areas of Rockridge and Hopkins have a lower percentage of retired persons in the sample than the percentage of households in the neighborhood that are headed by persons over age 65. In all shopping areas, except Rockridge - Alcatraz, residents and non-residents are equally likely to be employed full-time.

Table C-26. Employment Status of Respondents by Shopping Area (Percentage)

	Full-time	Part-time	Unpaid/ Housewife	Student	Retired	Total
Rockridge - Market Hall	65	9	6	14	6	100
Rockridge - Alcatraz	63	7	11	12	6	99
Elmwood	52	15	3	16	15	101
El Cerrito Plaza	45	6	10	11	29	101
Hopkins	75	6	13	2	5	101
Kensington	57	7	6	2	28	100
All of Sample	60	8	8	9	15	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) In comparison of full-time employment to other statuses in all shopping areas ($p < .05$)

Table C-27. Employment Status of Resident and Non-resident Respondents of Shopping Areas (Percentage)

	Full-time	Part-time	Unpaid/ Housewife	Student	Retired	Total
Rockridge - Market Hall						
Resident	62	10	3	17	7	99
Non-resident	67	8	8	11	6	100
Rockridge - Alcatraz						
Resident	57	11	11	14	7	100
Non-resident	77	0	12	8	4	101
Elmwood						
Resident	49	14	2	21	14	100
Non-resident	58	15	4	8	15	100
El Cerrito Plaza						
Resident	52	7	10	10	23	102
Non-resident	41	5	10	12	33	101
Hopkins						
Resident	76	4	14	2	4	100
Non-resident	74	8	11	3	5	101
Kensington						
Resident	56	7	7	2	28	100
Non-resident	62	7	8	8	15	100
All Respondents						
Resident	59	10	7	13	13	100
Non-resident	59	7	8	10	15	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics (Chi-squared) In comparison of residents to non-residents (full-time employment compared to other categories) in each shopping area, only Rockridge - Alcatraz is significantly different ($p > .10$)

The number of workers per household closely tracks the employment status of the respondents to the survey (see Tables C-28 and C-29). Hopkins has the highest average number of workers per household while El Cerrito Plaza has the lowest; however, the difference is not significant.

Table C-28. Workers in Household by Shopping Area (Percentage)

	0	1	2	3+	Total	Mean
Rockridge - Market Hall	14	42	42	3	101	1.34
Rockridge - Alcatraz	16	49	28	6	99	1.26
Elmwood	20	41	32	7	100	1.32
El Cerrito Plaza	38	31	27	4	100	.97
Hopkins	7	44	47	2	100	1.46
Kensington	33	22	40	6	100	1.19
All of Sample	21	39	34	5	99	1.24

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons. No two groups are significantly different ($p < .05$).

Table C-29. Average Number of Workers in Household of Resident and Non-resident Respondents by Shopping Area

	Residents	Non-Residents	Shopping Area Mean
Rockridge - Market Hall	1.31	1.36	1.34
Rockridge - Alcatraz	1.25	1.24	1.26
Elmwood	1.19	1.38	1.32
El Cerrito Plaza	1.06	.90	.97
Hopkins	1.41	1.48	1.46
Kensington	1.17	1.27	1.19
All of Sample	1.25	1.23	1.24

Source: Customer Mailback Survey (weighted data)
Statistics: (T-test for equality of means) In comparison of residents and non-residents in each shopping area, none are significantly different ($p < .10$).

Household Income

As expected based on neighborhood differences, shoppers' household incomes are statistically different among shopping areas (see Tables C-30 and C-31). The income of shoppers tracks that of the shopping areas. The average income falls on the low end of the $40,000 to $60,000 range which is similar to the median income of the surrounding neighborhoods (assuming that incomes increased at similar rates from the 1990 Census and 1993). The shopping area with customers with the highest income is, not surprisingly, Kensington and the shopping areas with customers with the lowest income are El Cerrito Plaza and Rockridge - Alcatraz.

Table C-30. Household Income of All Respondents by Shopping Area (Percentage)

	Less than $40,000	$40,000-59,999	$60,000-79,999	$80,000 - 99,999	Total
Rockridge - Market Hall	39	13	21	27	99
Rockridge - Alcatraz	41	27	18	14	100
Elmwood	36	26	15	23	100
El Cerrito Plaza	44	25	15	15	101
Hopkins	25	29	24	23	101
Kensington	21	23	17	40	101
All of Respondents	34	24	18	24	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) The income distribution is significantly different among shopping areas ($p < .05$).

Table C-31. Household Income of Resident and Non-resident Respondent by Shopping Area (Percentage)

	Less than $40,000	$40,000-59,999	$60,000-79,999	$80,000 - 99,999	Total
Rockridge - Market Hall					
Resident	36	14	25	25	100
Non-resident	41	12	18	29	100
Rockridge - Alcatraz					
Resident	47	25	15	13	100
Non-resident	28	32	24	16	100
Elmwood					
Resident	46	24	12	17	100
Non-resident	20	28	20	32	100
El Cerrito Plaza					
Resident	40	30	23	7	100
Non-resident	48	21	10	21	100
Hopkins					
Resident	31	29	27	14	101
Non-resident	17	29	20	34	100
Kensington*					
Resident	20	20	19	41	100
Non-resident	21	36	7	35	99
All Respondents					
Resident	36	24	20	21	101
Non-resident	31	25	17	27	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics (Chi-squared): In comparison of residents to non-residents in each shopping area, none are significantly different ($p < .10$).
* - Includes insufficient sample of non-residents to assess statistical significance.

Education Level

The education level of the shoppers in each of the shopping areas is higher than residents of the surrounding residential areas and Alameda and Contra Costa County generally (see Tables C-32 and C-33). In all shopping areas, over 79% of customers have at least a college education. The shoppers in the Kensington shopping area are the most highly educated; shoppers in Rockridge - Alcatraz and El Cerrito Plaza are the less educated but nonetheless more highly educated than the population of the area generally.

Table C-32. Education Level of Respondents by Shopping Area (Percentage)

	Less Than College Education	College Graduate	Graduate Degree	Total
Rockridge - Market Hall	12	44	44	100
Rockridge - Alcatraz	20	40	41	101
Elmwood	8	41	52	101
El Cerrito Plaza	21	32	48	101
Hopkins	11	45	45	101
Kensington	15	19	66	100
All Respondents	15	39	47	101

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) In comparison of respondents in shopping areas, the level of education is significantly different ($p < .05$).

Table C-33. Education Level of Resident and Non-resident Respondents by Shopping Area (Percentage)

	Less Than College Education	College Graduate	Graduate Degree	Total
Rockridge - Market Hall				
Resident	7	33	60	100
Non-resident	17	53	31	101
Rockridge - Alcatraz				
Resident	20	38	42	100
Non-resident	20	42	39	101
Elmwood				
Resident	7	39	54	100
Non-resident	8	44	48	100
El Cerrito Plaza				
Resident	30	13	57	100
Non-resident	14	44	42	100
Hopkins				
Resident	13	38	49	100
Non-resident	8	53	40	101
Kensington				
Resident	14	21	66	100
Non-resident	20	13	67	100
All Respondents				
Resident	15	31	55	101
Non-resident	14	45	42	101

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared): In comparison of residents to non-residents in each shopping areas, only Rockridge - Market Hall is significantly different ($p < .10$).

Vehicle Ownership and Availability

The rate of automobile ownership of the customers in these shopping areas is slightly higher than that of the adjacent residential areas (see Tables C- 34 and C-35) and similar to that of Alameda and Contra Costa Counties. The rate differs among areas, but is only significantly different between customers of Rockridge - Alcatraz and Kensington.

Table C-34. Automobile Ownership by Shopping Area (Percentage)

	0	1	2	3	4+	Total	Mean
Rockridge - Market Hall	8	34	42	12	5	101	1.72
Rockridge - Alcatraz	11	48	33	4	5	101	1.44
Elmwood	7	34	38	15	6	100	1.84
El Cerrito Plaza	4	49	27	16	3	99	1.66
Hopkins	6	33	47	12	4	102	1.78
Kensington	1	23	53	21	3	101	2.01
All of Sample	7	39	37	12	4	99	1.74

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$) Kensington is significantly different from Rockridge - Alcatraz.

Table C-35. Automobile Ownership by Resident and Non-resident Respondents of Shopping Areas (Household Average)

	Residents	Non-residents	Overall Average
Rockridge - Market Hall	1.74	1.69	1.72
Rockridge - Alcatraz	1.43	1.46	1.44
Elmwood	1.71	2.03	1.84
El Cerrito Plaza	1.47	1.79	1.66
Hopkins	1.71	1.86	1.78
Kensington	2.02	2.00	2.01
All of Sample	1.63	1.77	1.74

Source: Customer Mailback Survey (weighted data)
Statistics: (T-test for equality of means) In comparison of residents to non-residents in each shopping areas, none are significantly different ($p < .05$).

The number of vehicles per licensed driver is calculated to produce an estimate of automobile availability. The relative numbers remain the same, with the highest auto availability among residents of Kensington and the lowest availability among shoppers of Rockridge - Alcatraz and El Cerrito Plaza (see Tables C-36 and C-37). Overall, residents are significantly more likely to own fewer cars per licensed driver, but the difference between the availability of vehicles is only significantly different in Rockridge - Alcatraz.

Table C-36. Vehicles per Licensed Driver* by Shopping Area (Percentage)

	Less than 1	1	More than 1	Total	Mean
Rockridge - Market Hall	30	58	12	100	.87
Rockridge - Alcatraz	38	59	4	101	.82
Elmwood	34	56	10	100	.91
El Cerrito Plaza	38	43	19	100	.95
Hopkins	22	66	12	100	.94
Kensington	16	70	13	99	1.01
All of Sample	29	59	12	100	.92

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
* - Licensed drivers includes all persons over age 16. This likely overstates the rate of licensure.
Statistics: Scheffé multiple comparisons. No two groups are significantly different ($p < .05$).

Table C-37. Average Number of Vehicles per Licensed Driver* for Residents and Non-residents of Shopping Area (Average and Number of Respondents)			
	Residents	Non-residents	All of Sample
Rockridge - Market Hall	.84	.90	.87
Rockridge - Alcatraz	.74	.97	.82
Elmwood	.83	1.02	.91
El Cerrito Plaza	.86	1.01	.95
Hopkins	.91	.98	.94
Kensington	1.02	.97	1.01
All of Sample	.84	.97	.92

Source: Customer Mailback Survey (weighted data)
* - Licensed drivers includes all persons over age 16. This likely overstates the rate of licensure.
Statistics: (T-test for equality of mean) The average number of vehicles licensed drivers per vehicle is significantly different between residents and non-residents in Rockridge - Alcatraz ($p < .10$) and all of sample ($p < .05$).

Housing Characteristics - Housing Type, Ownership and Tenure

Shoppers in all shopping areas are likely to live in single family housing units, but there are significant differences among the shopping areas (see Tables C-38 and C-39). In Rockridge - Alcatraz and Elmwood, just under 50% of the customers lived in single-family detached housing, compared to almost 95% in Kensington. Some of this difference simply reflects the distribution of housing types in the surrounding residential areas. However, the respondents in Elmwood and El Cerrito Plaza who live in single-family detached housing are over-represented compared to the residents of the neighborhood.

Table C-38. Respondents' Housing Type by Shopping Area (Percentage)						
	Single-family detached	2-4 units	5-9 units	10 or more units	Other	Total
Rockridge - Market Hall	65	20	6	8	2	101
Rockridge - Alcatraz	48	28	10	14	0	100
Elmwood	48	30	10	9	3	100
El Cerrito Plaza	72	8	7	10	4	101
Hopkins	69	20	5	6	1	101
Kensington	94	5	0	1	0	100
All Respondents	66	18	6	8	2	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared): In comparison of single family to other types of units, there is a significant difference among shopping areas ($p < .05$).

Table C-39. Housing Type for Resident and Non-resident Respondents by Shopping Area (Percentage)						
	Single-family detached	2-4 units	5-9 units	10 or more units	Other	Total
Rockridge - Market Hall						
Resident	65	23	7	7	0	102
Non-resident	66	17	6	9	3	101
Rockridge - Alcatraz						
Resident	55	29	5	11	0	100
Non-resident	35	27	19	19	0	100
Elmwood						
Resident	36	38	17	10	0	101
Non-resident	67	19	0	7	7	100
El Cerrito Plaza						
Resident	66	19	6	6	3	100
Non-resident	76	0	7	12	5	100
Hopkins						
Resident	65	27	4	2	2	100
Non-resident	74	10	5	10	0	99
Kensington*						
Resident	94	6	0	0	0	100
Non-resident	93	0	0	7	0	100
All Respondents						
Resident	65	23	6	6	1	101
Non-resident	68	12	7	11	3	101

Source: Customer Mailback Survey (unweighted data)
Notes Percentages may not total 100% due to rounding. Unweighted data is used in each shopping area.
Statistics: (Chi-squared) In comparison of residents to non-residents in each shopping area, respondents in Elmwood are significantly different ($p < .05$).
* - Includes insufficient sample of non-residents to assess statistical significance.

Customers' rate of home ownership is at the same level or higher than residents of the surrounding residential areas (see Tables C-40 and C-41). This finding is consistent with the type of housing unit in which residents live. People who own their home are more likely to live in a single-family detached unit. Thus, the pattern of a higher percentage of shoppers living in single-family housing compared to the surrounding neighborhood, especially in El Cerrito and Elmwood, is consistent with this finding.

Table C-40. Home Ownership Status by Shopping Area (Percentage)			
	Rent	Own	Total
Rockridge - Market Hall	52	48	100
Rockridge - Alcatraz	56	44	100
Elmwood	51	49	100
El Cerrito Plaza	42	58	100
Hopkins	30	70	100
Kensington	16	84	100
All of Sample	40	60	100

Source: Customer Mailback Survey (unweighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: (Chi-squared) Home ownership is significantly different among shopping areas ($p < .05$).

Table C-41. Home Ownership of Resident and. Non-resident Respondents by Shopping Area (Percentage)			
	Resident	Non-resident	Total Sample
Rockridge - Market Hall	48	46	48
Rockridge - Alcatraz	43	48	44
Elmwood	42	59	49
El Cerrito Plaza	47	67	58
Hopkins	71	69	70
Kensington	84	87	84
All of Sample	59	61	60

Source: Customer Mailback Survey (unweighted data)
Statistics: (Chi-squared): Comparison of residents to non-residents is significantly different only in El Cerrito Plaza ($p < .10$).

The housing tenure of respondents differs significantly among the residents in the shopping areas with the customers of Kensington, who are largely from the surrounding neighborhood, living in the same house for an average of over 17 years (see Tables C-42 and C-43). This compared to an average of about 11 years for all customers. The average tenure or non-residents compared to residents is different only in El Cerrito Plaza where non-residents have lived in the area longer. This may reflect the changing demographics of the neighborhood surrounding El Cerrito Plaza or the loyalty of long-term residents of the surrounding neighborhoods.

Table C-42. Housing Tenure by Shopping Area (Percentage)							
	Less than 5 Year	5-10 Years	10-19 Years	20-29 Years	30+ Years	Total	Average
Rockridge - Market Hall	64	9	13	10	3	99	6.6
Rockridge - Alcatraz	56	21	10	9	5	101	7.6
Elmwood	61	10	12	9	9	101	8.3
El Cerrito Plaza	40	14	13	25	8	100	12.5
Hopkins	33	29	22	8	8	100	10.3
Kensington	28	8	18	26	21	101	17.3
All of Sample	54	16	14	10	7	100	9.3

Source: Customer Mailback Survey (weighted data)
Note: Percentages may not total 100% due to rounding.
Statistics: Scheffé multiple comparisons ($p < .05$) Tenure in Kensington is significantly different from the two subareas of Rockridge and Elmwood. The tenure in Hopkins is significantly different from Rockridge - Market Hall.

Table C-43. Average Tenure of Resident and Non-resident Respondents by Shopping Area (in Years)

	Residents	Non-residents	Total
Rockridge - Market Hall	6.2	7.0	6.6
Rockridge - Alcatraz	8.7	5.3	7.6
Elmwood	8.3	8.4	8.3
El Cerrito Plaza	8.4	15.7	12.5
Hopkins	9.1	11.9	10.3
Kensington	18.0	14.1	17.3
All of Sample	8.7	10.1	9.3

Source: Customer Mailback Survey (weighted data)
Statistics: (T-test for equality of means) In comparison of residents to non-residents respondents in each shopping area, only El Cerrito Plaza is significantly different ($p < .05$)

APPENDIX D. DEVELOPMENT OF LOCATION SPECIFIC VARIABLES IN LOGIT MODEL

Several location specific variables are tested in a logit model of the choice of mode to neighborhood shopping in Chapter 8. These include: walking environment, parking availability, density, traffic level, number of businesses in the shopping area, retail square footage in the shopping area, and a measure of the availability of convenience uses in the shopping area. Each of these variables is tested separately, and in combination with others, as each is postulated to have a relationship, albeit in some cases a weak one, to the mode choice decision in these shopping areas. Table D-1 summarizes the variables tested in the model and the variables used. In this appendix, the variables for each shopping area are described.

Table D-1. Location Specific Variable Used in Logit Model of Mode Choice for Walking.

	Range	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Walking Environment	1= poor 5 = good	4.9	4.7	4.7	3.1	4.3	3.7
Parking Availability - estimated	per 1,000 square feet of retail	2.0	3.7	1.2	5.3	2.9	4.7
Adjusted Parking Availability	1 = poor 5 = good	2.3	2.4	2.4	4.9	1.3	4.0
Density - persons/acre	13-20.6	18.1	16.0	20.6	15.9	15.5	13.0
Density - units/acre	5.6-9.8	8.8	7.5	9.8	6.5	7.0	5.6
Traffic Level (log)	4.2-4.6	4.3	4.3	4.2	4.6	4.3	4.2
Number of Businesses (log)	1.4-1.9	1.5	1.5	1.9	1.7	1.4	1.4
Square Footage (log)	4.2-5.6	4.8	4.8	5.1	5.6	4.3	4.2
Convenience Uses - Number of Uses	12-45	18	26	45	29	14	12
Convenience Uses - Percentage of Total Uses	percentage (0-1)	.60	.79	.50	.53	.78	.50

Walking Environment

The walking environment variable is calculated as a combination of five characteristics for which each shopping area received up to one point for each for a total of five points. The following variables are used: sidewalk continuity, street crossings, protection from weather (windiness/amount of sun), topography, and other barriers. In Table D-2, the values given to each shopping area are listed.

Table D-2. Location Specific Variable Used for Walking Environment in Logit Models of Mode Choice for Walking.						
	Rockridge - Market Hall	Rockridge - Alcatraz	Elmwood	El Cerrito Plaza	Hopkins	Kensington
Sidewalk Connectivity	1.0	1.0	1.0	.8	1.0	.6
Street Crossings	.9	.7	.7	.3	.6	.5
Protection from the Weather	1.0	1.0	1.0	.5	.7	.9
Topography	1.0	1.0	1.0	1.0	1.0	.7
Other Barriers	1.0	1.0	1.0	.5	1.0	1.0
Walking Environment - Total	4.9	4.7	4.7	3.1	4.3	3.7

Rockridge - Market Hall is ranked the highest in most categories. It is located near a BART station and has a relatively minor street signalized crossing at College Avenue just south of the BART station. The street faces north and south, providing some sunlight during the middle of the day. Rockridge - Alcatraz and Elmwood have similar ratings to Rockridge - Market Hall except both of them are located near a busier cross street (Ashby Avenue in Elmwood and Claremont Avenue and Alcatraz Avenue in Rockridge - Alcatraz) that interferes with the flow of pedestrian traffic.

Hopkins is rated lower on the street crossing because it is a busy street with an unmarked intersection. Customers who park on the north side of Hopkins sometimes have a difficult time crossing it to get to the specialty food shops. Hopkins Avenue is located on an east-west axis which leaves the sidewalk in shade much of the day. In addition, the cool breezes from the San Francisco Bay blow through the shopping area.

El Cerrito Plaza is not well connected to the surrounding neighborhood because of its large parking lot and the poor street crossing on the major arterials on two sides of the Plaza and the embankment between the parking lot and the bicycle and pedestrian path under the BART tracks. The parking lot also has few trees to protect pedestrians from the sun and wind. Finally, with the plaza there are many blank walls that create empty spaces for pedestrians.

The Kensington shopping area is the only case study area that is located among the steep slopes of the East Bay Hills. To the east of the shopping area, the slopes are very steep and to the west they are walkable, but nonetheless at a slope. Along the Arlington, in a north and south direction, the terrain is relatively flat. The street crossings are difficult in most directions from the shopping areas. There are only sidewalks along the Arlington. In the proximity of the shopping area, the street is divided and the southbound (west side) of the street is several feet lower than the east side of the street, which runs along the shopping area.

Parking Availability

The parking availability variable is used to measure the adequacy of parking in the shopping area. It was calculated in two ways: (1) the number of parking spaces per

1,000 square feet of retail space; and (2) a measure of the availability, based upon where customers parked in the shopping area. The number of parking spaces per 1,000 square feet of retail is calculated by totaling the number of on-street parking spaces and the public and private off-street parking spaces in the shopping area. The easiest shopping area to calculate was the El Cerrito Plaza where there are 2,200 parking spaces for 433,000 square feet of retail.[1] Similarly, other shopping areas were calculated. Rockridge - Market Hall includes on-street parking, parking at Market Hall. Rockridge - Alcatraz includes, on-street parking, 40 parking spaces at the Bank of America and 175 spaces at Safeway. Elmwood included the 43 parking spaces in the city lot and the on-street parking. In Hopkins, the 56 parking spaces at Monterey Market are included in the total. In Kensington, the 40 parking spaces at the hardware store are included in the total.

The second calculation, called the adjusted parking availability is calculated using the percentage of customers who parked in public locations in the shopping area (and in the private lots at El Cerrito Plaza) and multiplying the percentages by the standard number of parking spaces for retail of 5.0 per 1,000 square feet of retail. The following percentages were used: 40% for Rockridge - Market Hall, 47% for Rockridge - Alcatraz, 48% for Elmwood, 98% for El Cerrito Plaza, 25% for Hopkins, and 79% for Kensington.

Density

The density variables are tested using the level of density in persons/acre and units/acre of the adjacent census tracts (see maps of vicinity of each shopping area in Chapter 5 for the adjacent census tracts). These variables are included in the model under the assumption that higher density in the residential area surrounding the shopping area would place more households closer to the shopping area and thus afford the opportunity for more people to walk to the shopping area.

Traffic Volume

A variable for the log of the traffic volume on the adjacent streets is included in the model to determine if larger volumes of traffic on the adjacent streets are an indicator of good highway accessibility and hence supportive of driving to shopping from other neighborhood and/or the immediate vicinity. (Conversely, a higher level of traffic could induce neighborhood people to walk to the shopping area because they do not want to fight traffic to get there.)

Measures of Retail Attraction

The log of the number of businesses and the log of retail square footage are included in the model even though it is likely that they have already been picked up by the distance variable. Previous modeling work suggests that the scale of the shopping area is a good predictor of the size of its trade area (Reilly 1931; Huff 1962); to the extent that a shopping area draws from a large trade area, its customers are more likely to drive

[1] Interview with Dan McNeer, manager of El Cerrito Plaza.

(since walking becomes impractical). These variables are included in the model to determine if the distance variable picked up the variation that is due to the scale of the shopping area.

Availability of Convenience Services

A measure of the convenience uses in the shopping area was developed because it was assumed that resident shoppers, who would also be more likely to walk, would be attracted to areas with more convenience services. Two measures of the availability of convenience shopping and services are used: (1) the absolute number of businesses that provide convenience goods and services; and (2) percentage of all businesses that provide convenience services. The absolute number of businesses that provide convenience services in each shopping area varies from 12 in Kensington to 45 in Elmwood. These values are shown in Table D-1. The number of businesses that provide convenience services as a percentage of total businesses ranges from 50% in Elmwood and Kensington to 53% in El Cerrito Plaza, 60% in Rockridge - Market Hall, 78% in Hopkins and 79% in Rockridge - Alcatraz. This variable may or may not duplicate an individual shopper's choices of the stores during her shopping trip.