CONSUMER RESPONSE TO HIGH HOUSING PRICES: THE CASE OF PALO ALTO, CALIFORNIA*

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A. INTRODUCTION

The price paid for housing is the largest, single expenditure committed during one's lifetime. Therefore, any dramatic price increase affects the ability of low-, middle-, and upper-middle-income groups to obtain housing suitable for economic and social needs. The ability of households to purchase housing has recently emerged as a major national policy issue. This study examines the degree to which consumers are restricted in housing choice and whether the restriction will perpetuate a distinct separation in social class and race.[1]

To analyze the effects of rising house prices on consumer choices, the traditional economic models using price, income, and interest rate variables are inadequate. These models only broadly describe consumer behavior. They subsume the underlying behavioral process and fail to differentiate the behavioral responses within and between housing submarkets.

The housing market is subjected to dynamic processes involving the mechanisms of supply and demand which in turn determine land prices and real estate investment. Since a sharp upward spiral in house prices

has recently occurred in many areas, it is imperative that we understand how the market processes directly affect consumer attitudes, choices, and action.

From a social and economic perspective, housing is perceived as a shelter. However, housing has other critical attributes that act to affect choice. Specifically, housing choice involves accessibility to desired services relative to the location of the house. Trade-offs are often made between the accessibility and demand for space and the location of employment since the marginal utility gained in the accessibility and demand for space may be offset by the cost of transportation.[2] Housing is perceived by consumers as an integral part of the desired environmental qualities. Factors such as open space, neighborhood density, noise, greenery, and pollution are often determinants of housing choice.

Ultimately, it is essential to obtain substantive information which may best explain consumer responses in the housing market. Here we have used behavioral analysis to illustrate consumer choice, expectation, and formation of demand. We have focused on the determinants of consumer behavior and the decision processes which resulted in the purchase or rental of a particular dwelling. The behavioral analysis of consumers examined motivational factors, the search process, and comparison of alternatives and choices.

The city of Palo Alto, California, served as the demographic basis for the empirical study. The Palo Alto housing market is a submarket within the San Francisco Bay Area. Palo Alto has a strong economic base

and a relatively affluent population. The apparent desirability of Palo Alto as a residential community because of employment, industry, close proximity to Stanford University, and other social amenities made this an ideal community for studying consumer responses and house price changes.

The selected population included owners and renters inhabiting single-family detached dwellings and condominiums in Palo Alto. Systematic stratified sampling procedures were used to gather an initial sample of 1,292 households and a subsequent sample of 232 households who had changed residential dwellings between January 1, 1974 and August 15, 1978.

To adequately assess the results of this research, limitations of the study must be delineated. The major limitation in evaluating the effect of rising prices on consumer behavior was the use of only purchased or rented single-family detached dwellings or condominiums. Information was not available for (1) households unable to relocate because of price, and (2) households forced to rent multifamily dwellings as a result of the single-family house price constraint. Our study, therefore, was limited only to the segment of the population successful in overcoming the price constraint.

A second limitation of this research arose from the fact that many of the survey questions used to establish relationships were discrete rather than continuous variables, thereby forcing us to group the choices as a whole rather than weighting them through an impartial, objective process. The net result was that we could not ascertain the relative importance of each choice in relation to other choices made. In order to

compensate for this limitation, we attempted to correlate all choice and satisfaction variables separately, and together, with the price variable, thereby permitting us to determine whether relationships existed.

The third limitation existed in the survey research process because respondents, having become an integral part of the living environment for as long as five years, were asked to recollect their perceptions of this environment at the time of relocation. Although Palo Alto respondents were extremely candid regarding "likes and dislikes" as well as "choices and substitutions," cognitive dissonance may well have been an inherent factor in the data collection process. There is no adequate measure to completely eliminate cognitive dissonance without interviewing respondents at the precise time that they relocate. Moreover, the reconstruction of the residential location decision-making process invariably requires the time-lag element.

B. RESEARCH DESIGN AND METHODOLOGY

Procedures and methods employed in a study ultimately determine the accuracy and reliability of the research. Astute methodological design should result in valid evidence. The purpose of this section is to provide the basis for the study through the research design and methodological approach.

Hypothesis Formulation and Testing Procedure

The major hypotheses for the study address the following relationships:

1) Since price becomes a constraining factor in the purchase or rental of a house, the social demographic characteristics of the population will more likely exhibit a high degree of segmentation between social class and race. Specifically, as prices in the housing market accelerate upward over a short period of time, the accessibility of housing for low- and middle-income groups is significantly diminished.

2) Because of exacerbated market conditions, including the demand for, and access to, specialized functions distributed in urban space, prices throughout the city should vary and sales activity, year of sale, and location should be indicators of price. We expect that the result of numerous sales in certain areas of the city will result in a price spiral effect for the total market.

3) The choices and substitutions consumers make should be more directly related to the price factor and journey to work rather than the social amenities of the community.

The testing procedure was based on a questionnaire of households where cross-tabulation was used to measure attitudes and behavior patterns of consumers. The use of cross-tabulation as a joint frequency distribution has enabled us to segment and isolate the most important factors determining consumer choices.

Data Collection and Analysis

In order to meet the objectives of the study and to examine the Palo Alto housing market, attention was given to the population of owners

and renters inhabiting single-family detached dwellings and condominiums. The focus was made through the delineation of housing submarkets which existed within the city.

The Palo Alto housing market was defined as "all residential land within the city planning territory with the exception of Stanford University property." The outermost boundaries included Bayshore Freeway, San Francisquito Creek, Highway 280, and San Antonio Road. (See Figure 1.)

The research analysis was based on a probability sample drawn with a systematic stratified design. The sample was both representative and random. The Palo Alto planning area was divided into nine areas initially and combined into eight areas according to three criteria:

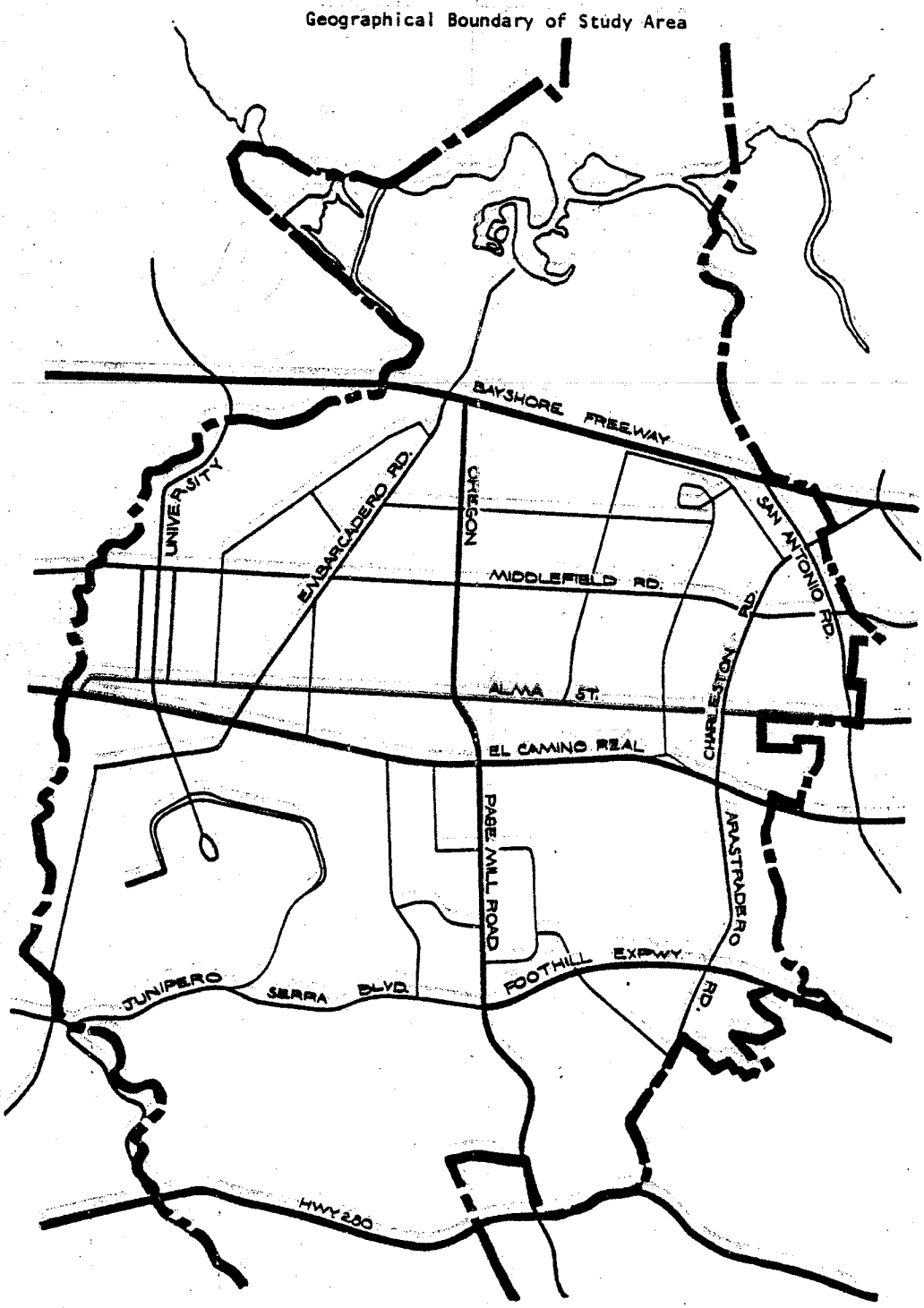
a) census tracts
b) defined boundaries of housing submarkets
c) assessor parcel books

Once the planning area was segmented, the Santa Clara County Assessor's office and the Santa Clara County Data Processing Center programmed the assessor parcel numbers for all parcel books covering the city of Palo Alto. Every twelfth single-family or condominium parcel was extracted, and a total of 1,292 parcels were drawn. (See Appendix A for location of study areas.)

After the initial sample was completed, each parcel number was matched with real estate data information contained in the 1977 Real Estate Atlas.[3] Each real estate transaction that occurred from January 1, 1974, to August 15, 1978, was extracted for the analysis. If the name of the owner of a parcel differed from the owner's name on the computer

FIGURE 1

Geographical Boundary of Study Area



printout from the county assessor, that parcel was checked to ascertain whether a sale occurred. A total of 240 parcels were further examined. Each of the 240 parcels were title searched to determine real estate transactions including sales prices and dates of sale. The sample was further reduced to 232 parcels. For seven parcels only sales dates were indicated since buyers had the option to withhold such information when deeds of sale were recorded. Introductory letters were sent to all respondents and were followed by telephone interviews. When telephone numbers were unavailable, personal interviews were conducted. For eleven households where telephone or personal interviews were unavailable, questionnaires were mailed.

The effectiveness of data collection through the use of telephone surveys, together with the saliency of housing prices as a basic component of the study, was reflected in the response rate of 91 percent. All persons interviewed for this research project were extremely candid about their purchase decisions and the factors which influenced them.

C. PALO ALTO--THE STUDY AREA

Palo Alto is a city of approximately twenty-five square miles, located south of San Francisco and north of San Jose. Its current population is approximately 56,000. Palo Alto experienced its largest population and land area growth in the decade between 1950 and 1960. The population increased 105 percent and the available acreage increased 210 percent. The increase in land area in 1960 was reflected by the annexation of the foothills region.

Palo Alto's commitment to maintain a "suburban-type" community with a strong economic base is well documented in the major publications over the past twenty years.[4] Palo Alto is considered one of the major employment areas in the San Francisco Bay Area. It serves as the primary location for several large national electronics firms,[5] and it is within close proximity to Stanford University. The employment sector is comprised primarily of light industrial, professional, and research and development industries compatible with the "fine" residential neighborhoods Palo Alto seeks to preserve. This is indicated by the fact that in 1977, 91 percent of all residential dwellings were single-family units.[6]

The Housing Supply

The city of Palo Alto has a strong commitment to increase the availability of housing for low-, moderate-, and middle-income families. Land use control techniques emphasize a policy to increase multifamily housing for these groups.

The zoning ordinance reflects the community's desire to diversify its housing stock and balance residential and employment opportunities within the city. The new zoning regulations indicate that housing is permitted in all land use districts with the exception of the public facilities, flood plain, civic center, and pedestrian shopping combining districts. More important, bonus incentives are given to developers who intend to use nonresidential land for residential or mixed use.

Presently, the dwelling unit breakdown is as follows:[7]

Description	Number of Units
Single-family detached	15,112
Single-family attached	159
Multifamily	8,293
Total dwelling units	23,564

Moreover, there are approximately 739 newly constructed multifamily housing units for low- and moderate-income households.[8]

Notwithstanding, the city has increased its multifamily housing stock generally over the past eight years. However, the desire to retain open space in the foothills area has severely impacted the city's ability to increase the single-family housing stock. Figure 2 indicates the growth pattern for single-family and multifamily housing stock from 1970 to 1978.

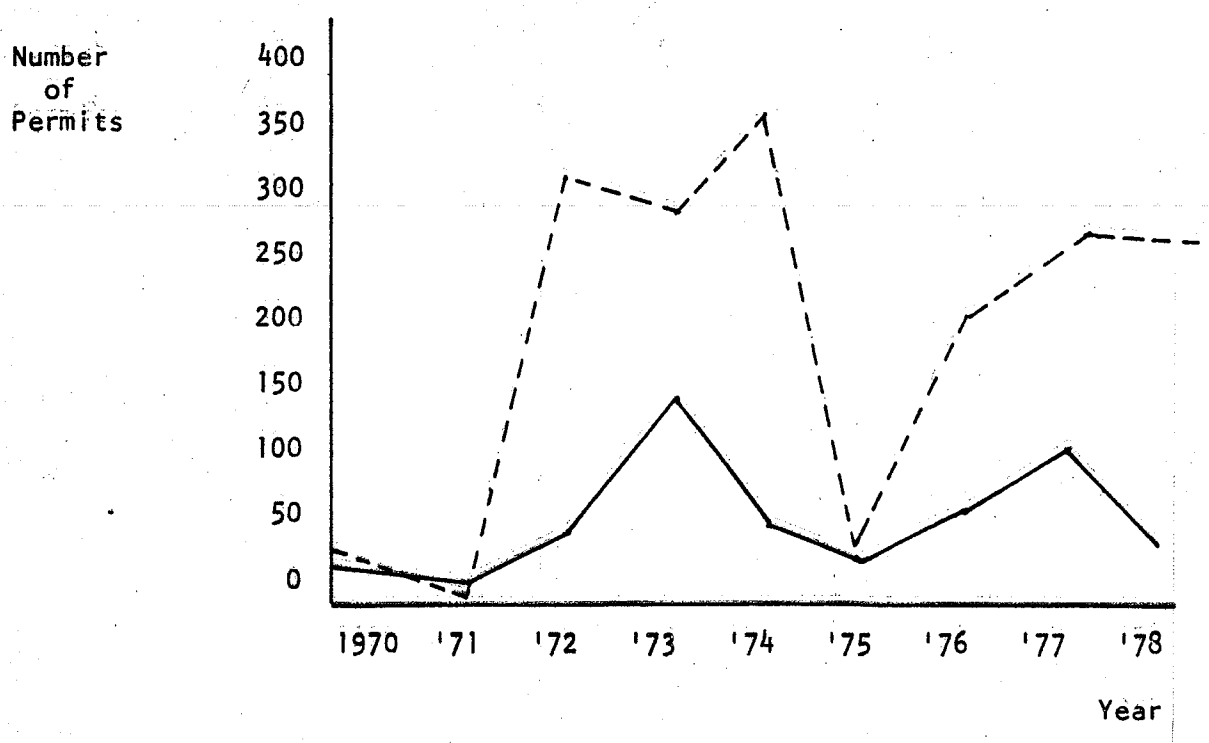
Housing Demand

Santa Clara County as a whole has experienced a dramatic surge in both population and economic activity. With the population increasing fivefold since 1950, and the electronics industry bringing Santa Clara County into prominence as a center for manufacturing and trade, the pressure and demand for housing has increased.

In 1975 there were approximately 508,314 jobs in the county and 454,897 jobs were held by residents of the county.[9] There was a total job surplus of 53,414.[10] Palo Alto's employment increased approximately 70 percent from 1960 to 1970.[11] In 1975 it was estimated that 64,785

FIGURE 2

City of Palo Alto
New Single-family and Multi-family Dwelling Units* by Year,
1970 - 1978



Source: Palo Alto Building Inspection Department.

* Number of dwelling units based on the number of building permits and living units per year.

jobs existed in Palo Alto with the Palo Alto residential employment population measuring 22,882.[12] There were approximately 1.83 jobs per employed resident and a job surplus of 41,903 or 78.4 percent of the total county surplus.[13] (See Table 1.) Projections for future employment growth show an estimated 25.7 percent increase in employment from 1970 to 1980 and a 9.9 percent increase from 1980 to 1990.[14]

TABLE 1

POPULATION AND EMPLOYMENT PROFILE FOR SANTA CLARA COUNTY AND PALO ALTO, 1975 AND 1977

	Santa Clara County	Palo Alto	
		Number	Percent of County
Population	1,169,000	56,000	4.8
Jobs			
1975	508,134	64,785	12.7
1977	543,112	71,199	13.1
Employed residents			
1977	454,897	22,882	5.0
Job surplus or deficit			
1977	453,414	+41,903	78.4

SOURCE: County of Santa Clara, California, Proposed LAFCO Jobs/Housing Guidelines and Review Criteria, January 19, 1978.

In addition to the demand for housing because of the availability of jobs in and near Palo Alto, the community is noted for its fine schools and efficient community services.[15] These factors have strongly increased the desirability of Palo Alto as a residential choice when compared to other communities.[16]

Prices

Although the cost of shelter has increased across the nation, the San Francisco Bay Area has experienced a more rapid price increase than the national average. The average price for housing in the Bay Area in December 1978 was $101,200 for newly constructed units and $87,000 for existing units[17] as compared with the national average of $68,000 for newly constructed units and $61,500 for existing units.[18] A comparison of the 1978 yearly averages for the nation, the Bay Area, and Palo Alto is shown in Table 2. Table 3 shows the 1970-1978 average yearly sales prices for the Bay Area (San Francisco-Oakland-San Jose Standard Metropolitan Statistical Areas) and Palo Alto.

TABLE 2

1978 AVERAGE HOUSE PRICES FOR THE NATION, SAN FRANCISCO BAY AREA[a] AND PALO ALTO[b]

Area	New Construction	Existing
Nation	$62,567	$ 52,208
San Francisco Bay Area	92,300	84,500
Palo Alto	--	112,375

SOURCES: Federal Home Loan Bank Board; Federal Home Loan Bank of San Francisco; Real Estate Research Council of Northern California.

[a]The San Francisco Bay Area is defined as the region included in the San Francisco-Oakland-San Jose Standard Metropolitan Statistical Area (SMSA).

[b]Existing housing only.

TABLE 3

AVERAGE YEARLY PRICES FOR NEW AND EXISTING HOUSES, SAN FRANCISCO BAY AREA[a] AND PALO ALTO,[b] 1970-1978

Year	New Construction Bay Area	Existing Bay Area	Palo Alto	Percent Differences Between Palo Alto and Bay Area (Existing Only)
1970	$39,580	$37,030	$ 41,583	+12.3
1971	33,680	36,380	42,417	+16.9
1972	38,280	37,710	42,464	+12.6
1973	44,480	42,280	45,688	+8.1
1974	48,090	47,760	52,063	+9.0
1975	56,680	53,150	64,875	+22.1
1976	64,750	60,160	78,563	+30.6
1977	75,160	71,000	99,750	+40.5
1978	92,300	84,550	113,375	+34.1

SOURCES: Federal Home Loan Bank of San Francisco; Real Estate Research Council of Northern California.

[a]The San Francisco Bay Area is defined as the region included in the San Francisco-Oakland-San Jose Standard Metropolitan Statistical Areas (SMSAs).

[b]Existing housing only.

As both tables indicate, Palo Alto housing is dramatically higher than the nation, 117.2 percent above the 1978 national average and 34.1 percent above the 1978 regional average.

As Table 3 demonstrates, after 1974 a significant gap occurred in the prices between the region and Palo Alto. Although a comparative demand analysis is not the basis for this study, we may, however, attribute part of the rapid increase in the Palo Alto area to employment and restricted availability of residential land in the immediate vicinity. Most important, the impact of the cost of shelter on consumers becomes dramatic when these consumers are faced with average costs ranging from $49,000 to $113,375 over a five-year period.

D. CONSUMER RESPONSES TO HIGH HOUSING PRICES

In analyzing consumer responses to high housing prices, we are cognizant of the fact that market conditions, demographic characteristics, and previous housing experience operate outside the behavioral process and serve as stimuli for the consumer. This section will discuss the stimuli and their relationship to price and then explain the behavioral process and responses.

1. Stimuli for Consumer Response

Market Conditions

The consumer will adjust the relocation process when faced with the price constraint. Whether or not the adjustment is large or small, severe or minor, depends on the degree to which the consumer needs

housing, and whether the income stream is sufficient to meet the prices in the market place.

The market conditions in Palo Alto are characterized by high prices for old housing. We note that 24.1 percent of Palo Alto houses were built prior to 1939, 15.2 percent were built between 1940 and 1949, and 38.8 percent were built between 1950 and 1959. Most of the houses constructed during this latter period were tract houses built to meet the housing demand following World War II. Understanding that the mean price for housing in 1978 dollars was $110,041, it is obvious that the value of old housing has remained strong as opposed to consumer desire for newly constructed dwelling units.

Of the 232 houses in the sample, 86.2 percent were single-family detached dwellings and 13.8 percent were condominiums. In addition, 78.4 percent were owner-occupied and 19.8 percent were renter-occupied. Tenure varied throughout the city where areas 2, 4, and 5 had the largest number of rental units. The vacancy factor for the sample was 0.8, slightly less than the 0.9 reported in the 1975 census update report. The mean house size was 5.87 rooms.

Since many houses in the sample changed owners more than once during the five-year period, prices and sales activity were analyzed under four conditions:

1) price distribution for houses considering the final sales only
2) mean and median sales prices for each sale where a maximum of three sales per house occurred over the five-year period
3) investment and sales activity where houses sold in less than eighteen months and were (or were not) rental units, and

4) the mean price per room for housing by area thereby controlling for size of house as well as location

Table 4 shows the price distribution of houses where consideration was given to the last sales only. We note that although the mean sales price was $110,041, approximately 22 percent of the house sales exceeded $130,000. The change in the mean price between the first sale and the second sale was an increase of 5.5 percent, but the change between the second and third sales was 28.8 percent with an overall increase of 35.8 percent between the first and third sales.

TABLE 4

PRICE DISTRIBUTION OF LATEST SALES

Price Category	Number	Percent
$ 20,000-$ 50,000	8	3.6
$ 50,001-$ 80,000	49	21.8
$ 80,001-$100,000	56	24.9
$100,001-$130,000	63	28.0
$130,001-$200,000	40	17.8
$200,001-$420,000	9	4.0
Missing	7	
Total	232	100.0
Mean price: $110,041		

In analyzing the investment and sales activity, we found that 10.3 percent of the total sales took place in less than eighteen months and an additional 2.2 percent of the houses sold more than once in less than eighteen months. When we combined the rapid turnover factor with the investment factor in terms of units being purchased and subsequently rented for investment return, we found that 31.6 percent of the total market were tied

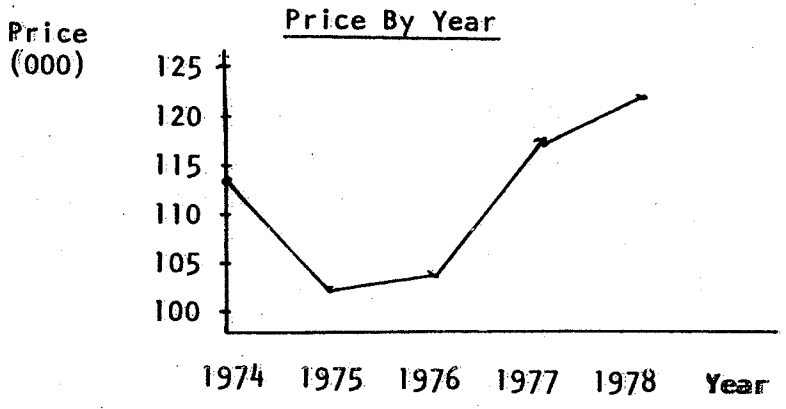
to rapid sales activity and investment. Considering that numerous sales increased the price of the house being sold as well as the prices of all other houses in the neighborhood or area, we have what may be called a "price surge effect" where the prices spiral as the number of sales increase. Area 2 was the one location where this phenomenon was isolated. The area had the highest investment-sales activity and the largest variation in prices over the five-year period.

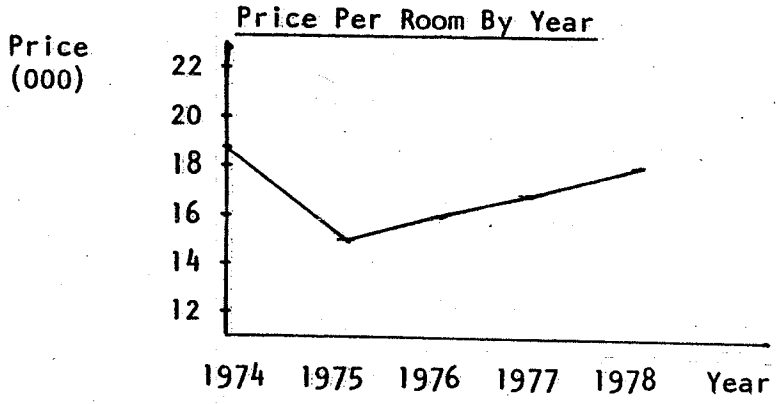
Prices were not uniform throughout the city, and were related to location. Moreover, the variation in housing price was evident when we controlled for the size of the house. Although the mean price per room for the total market was $16,445, the prices by area designation varied from $14,051 to $21,381 with areas 4, 5, 6, and 7 being the less expensive areas and areas 8 and 3 being the most expensive.

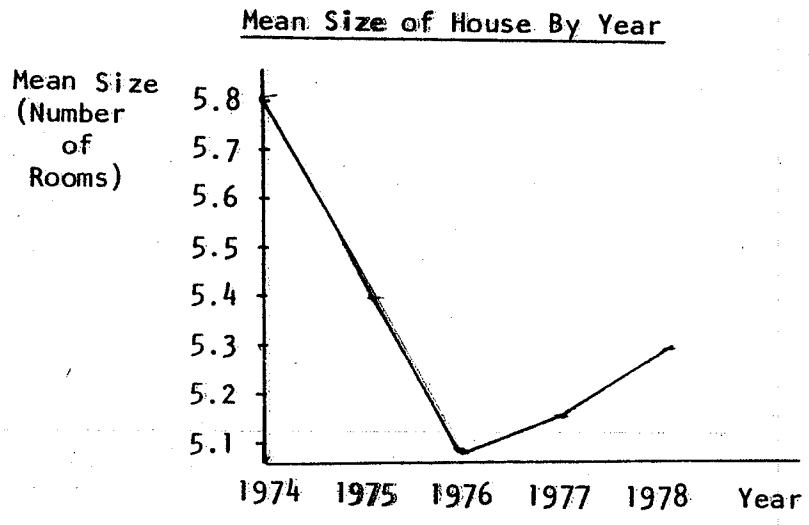
Prices also varied by year of sale. When we converted all sales to 1978 dollars using the Real Estate Research Council's index for housing prices in the San Francisco Bay Area, we found that prices fluctuated with a decrease between 1974 and 1975 followed by increases from 1975 to 1978. When we controlled for the size of house, however, we found that the increase was not as dramatic with minimum price changes between 1977 and 1978. The differences in the prices have occurred where the number of smaller houses increased in price more rapidly during the 1976 period followed by a dramatic price surge in the larger houses. (See Figure 3.) More specifically, during this period of high investment-sales activity, the price increases in the smaller houses were primarily responsible for "fueling" the market for all houses. As consumers looked to alternative

FIGURE 3

PRICE TRENDS IN SAMPLE POPULATION, 1974-1978







investments in real estate, investment-sales activity increased for the cheaper dwelling units; as the demand for the lower-priced units increased, the prices for these units escalated, and the entire market was pushed upward so that the smaller houses selling for $35,000 in 1974 sold for $60,000 in 1976 and $80,000 in 1978 while the larger tract houses sold for $60,000 in 1974, $90,000 in 1976, and $120,000 in 1978. The higher-priced homes experienced increases between $50,000 to $150,000 during the period from 1976 to 1978. For example, houses selling for $110,000 in 1976 sold for $200,000 in 1978 and houses that sold for $150,000 in 1977 sold for $250,000 in 1978.

Market conditions in Palo Alto reflected the price surge effect--especially from 1976 to 1978. In addition to the overall demand for the limited supply of housing available, both sales activity and investment assisted in the price spiral. Consumers purchasing housing under these conditions were forced to assess their overall goals in relation to environment and spatial needs.

Demographic Characteristics

For the purpose of this study, the demographic characteristics serve as the link between the consumer and the environment. Given a set of characteristics such as age, occupation, and income, the consumer may relate spatial preferences to environmental conditions. Therefore, it is critical to provide a useful perspective of the consumer profile to ascertain which groups have moved to Palo Alto during the rapid price spiral. Sample figures will be reported for households (232) except for age, sex,

and occupation characteristics which will include the total population in all households.

The age characteristics of the sample showed that 30.0 percent of the population were between 26 and 35 years of age, 21.8 percent were under 14 years, and 2.2 percent were over 65 years. The sample "newcomer" population was larger than the 1975 population for the age groups between 19 and 45 years of age as well as the below-14-years group. (See Tables 5A and 5B.) The average age of the head of household was 38 years old and the average household size was 2.8 persons. The sex breakdown for children revealed a higher percentage of males than females. This is atypical for the national population but characteristic of the Palo Alto population where both the 1970 and 1975 census figures revealed that the male population below 14 years was higher than the female population.

The marital status and household size for the population sample revealed significant characteristics which represent current trends in housing demand. The unmarried population, composed of single, divorced, and widowed persons, was 43.6 percent of our household population. (See Table 5B.) This fact, together with 47.6 percent of the households with two or less persons, accounted for a relatively high demand for housing in the area. Moreover, the large unmarried and small household populations oriented themselves toward the single-family dwelling as the perceived desired mode of living rather than the apartment, heretofore popular for these households. The net result became a high demand situation where unmarried and married households, together with the small households

TABLE 5A

AGE AND SEX CHARACTERISTICS OF HOUSEHOLD POPULATION

Age Category	Respondent	Spouse	Children	Other	Total	Percent
Below 14 years	--	--	126	--	126	21.8
14-18 years	--	--	38	--	38	6.6
19-25 years	21	5	17	32	75	13.0
26-35 years	91	61	--	21	173	30.0
36-45 years	55	34	--	1	90	15.6
46-55 years	23	12	--	--	35	6.1
56-65 years	15	5	--	7	27	4.7
Over 65 years	6	5	--	2	13	2.2
Total	211	122	181	63	577	100.0
Sex						
Male	112	51	96	38	297	51.5
Female	99	71	85	25	280	48.5
Total	211	122	181	63	577	100.0

TABLE 5B

MARITAL STATUS AND HOUSEHOLD SIZE

		Number	Percent
Married		119	56.4
Unmarried			
Single	49		
Divorced	40		
Widowed	3		
		92	43.6
		211	100.0
Missing		21	
Total		232	
Household size			
1		33	15.7
2		67	31.9
3		47	22.4
4		42	20.0
5		19	9.0
6+		2	1.0
		210	100.0
Missing		21	
Total		232	

(which may or may not be one and the same), competed in the market for the limited housing space available. The impact of the competition was seen where the unmarried population was forced to spend a higher percentage of earnings on shelter cost,[19] as depicted below in Table 6. We found that 53.5 percent of the unmarried households spent more than 25 percent of their income on housing.

TABLE 6

RENT/INCOME RATIO[a] BY MARITAL STATUS

Rent Income Ratio (Percent)	Marital Status	
	Married	Unmarried[b]
0-19.9	31.8	30.6
20.0-25.0	39.3	15.9
25.1-32.0	16.8	20.5
32.1+	12.1	33.0
Total	100.0	100.0

[a]Rent/income ratio is the percent of gross annual income spent on housing.

[b]Unmarried includes single, divorced, or widowed.

After examining the family population we noted that 57.3 percent of the households had no children and 35.4 percent had either one or two children. Only 7.3 percent of the households had three or more children.

Professionals and engineers accounted for 50.7 percent of the sample work force; 19.6 percent were managers, administrators, and salespersons. The income levels for the sample population were extremely high. For example, 29 percent of the population earned in excess of $40,000 annually and 35 percent earned between $24,000 and $39,999. The mean number

of household workers was 1.6; however, 48.3 percent of households had two or more workers. (See Tables 7A, 7B, and 7C.)

The ethnic and racial breakdown of the population showed that 91.2 percent of the sample were nonminority and 8.8 percent were minority with 1.9 percent black and 4.4 percent Asian. (See Table 8.) We found that 47.2 percent of the renters had a rent/income ratio greater than 25 percent, and 33.3 percent of the renters spent over 32 percent of their income on housing. For owners, 37.1 percent spent greater than 25 percent of income on housing and 17.6 percent spent over 32 percent. In addition, 60.7 percent of the owners earned above $24,000 annually as compared with 37.8 percent of the renters earning above that level. However, we must not minimize the fact that 37.8 percent of the renters earned above $24,000 which may affirm the belief that middle-income households are being forced to rent because they cannot adequately compete for home ownership under price constraint.

In summary, the newcomer population to Palo Alto had a dominant orientation toward home ownership and the willingness to allocate additional resources toward the desired goal. More important, this newcomer population was predominantly nonminority, white collar, and earning in excess of $24,000 annually.

Previous Housing Experience

Previous housing experience is often a determinant of future consumption since attitudes and preferences are built on past behavior. Notwithstanding the American cultural pattern of owning a single-family

TABLE 7A

OCCUPATION CHARACTERISTICS OF HOUSEHOLD POPULATION WORK FORCE[a]

Person	1	2	3	4	5	Total	Percent
Occupation							
Professional and engineers	94	67	10	2	0	173	50.7
Managers and administrators	30	10	0	0	0	40	11.7
Real estate and sales	18	7	1	1	0	27	7.9
Clerical and kindred	13	16	5	2	0	36	10.6
Operations, service, craftsmen, laborers, household service	35	19	6	4	1	65	19.1
Total	190	119	22	9	1	341	100.0

[a]Including nonemployed workers.

TABLE 7B

INCOME CHARACTERISTICS OF SAMPLE

Income	Number	Percent
Less than $10,000	11	5.6
$10,000-$13,999	15	7.6
$14,000-$17,999	14	7.1
$18,000-$23,999	31	15.7
$24,000-$39,999	69	35.0
$40,000-$50,000	34	17.3
Over $50,000	23	11.7
	197	100.0
Missing	35	
Total	232	

Median income: $24,000-$39,000

TABLE 7C

NUMBER OF HOUSEHOLD WORKERS

Number of Workers	Number in Sample	Total (percent)
0	14	6.8
1	93	44.9
2	79	38.2
3-5	21	10.1
	207	100.0
Missing	25	
Total	232	

Mean number of workers: 1.6
Median number of workers: 1.5

TABLE 8

ETHNIC AND RACIAL BREAKDOWN

		Number	Percent
Nonminority		187	91.2
Minority:		18	8.8
Mexican descent	0		
Spanish	2		
Black	4		
Japanese	2		
Chinese	7		
Other	3		
		205	100.0
Missing		27	
		232	

dwelling, the location, size, and type of housing occupied previously by the consumer will directly affect the decision-making process.

We found that 72.4 percent of the sample had previously owned or rented more than two single-family dwellings or condominiums; 50.7 percent were former renters, and 49.3 percent were former owners. Moreover, 65.5 percent previously occupied single-family houses or condominiums; 41.7 percent lived in Palo Alto, 40.3 percent lived in other towns or cities in the San Francisco Bay Area, and 18.0 percent lived outside the Bay Area.

Our study revealed that 71.8 percent of the newcomers were former renters. Considering the market conditions, it is critical to comprehend that the new homeowner population capitalized on present and future earnings to purchase housing. Clearly, this population group did not enter the market with the typically large equity from previously owned houses necessary to purchase housing under the high price constraint. As discussed later in this paper, alternative spending patterns were required to meet the high cost of shelter.

Palo Alto residents appeared to have an information advantage in that they were more familiar with market conditions and were in close physical proximity to act upon a housing choice when the opportunity existed. For respondents who lived previously in Palo Alto, 57.3 percent of the current owners were former owners. Moreover, 65 percent did not have to spend more money on housing than anticipated. Specifically, as

prices began to escalate rapidly within the city, Palo Alto residents reaped the profits from the price surge and capitalized on the information in the marketplace. The net result was that 30 percent of the housing in excess of $130,000 and 49.4 percent of housing between $80,000 and $130,000 were purchased by households who were prior residents of Palo Alto.

2. Consumer Responses

Ultimately, the consumer follows a decision-making process which will yield the highest level of satisfaction. If the consumer perceives that the adjustment to market conditions cannot be attained from the alternatives included in the possibility set, the decision-making process will terminate. If, as a result of personal and private resources, the consumer is capable of supplanting desired goals with overt action, the decision-making process continues where motivation, duration and type of search, as well as comparison of alternatives and choices, become the consumer behavioral factors.

Motivational Factors

Privacy more than other factors was a major reason why people chose to buy or rent a single-family dwelling or condominium. As Table 9 indicates, 36.6 percent of the population stated that privacy was important, 27.3 percent said that investment was a factor, and 24.2 percent wanted a pleasant environment for children.

Prices were affected by motivation in that respondents with house prices between $50,000 and $200,000 exhibited high response rates for

privacy. The respondents whose houses were within the lowest and highest price ranges ($20,000-$50,000 and $200,000-$420,000) exhibited the lowest percentages for privacy. For the respondents who purchased houses between $80,000 and $200,000, the response rate for investment averaged 30 percent; in fact, for the price groups within that range, all emphasized investment, privacy, and a pleasant environment for children as the most important motivational factors.

TABLE 9

MOTIVATION FOR BUYING OR RENTING

	Number	Percent
Investment	93	27.3
Privacy	125	36.6
Pleasant environment for children	83	24.2
Living convenience	14	4.1
Pleasant environment for adults	20	5.8
Yard	7	2.0
Total[a]	342	100.0

[a]Multiple response question where respondents could state reasons not necessarily rank ordered.

Owners found privacy, environment for children and adults, and living convenience to be high motivational factors whereas renters stated that the yard and the environment for adults were important.

In assessing the relationship between motivational factors and search duration, we found that a large percentage of the population were not willing to search longer where investment, privacy, and pleasant

environment for children were factors. In fact, 68 percent of the population searched less than three months for each of the motivational factors. In addition, over 70 percent of the population looked for housing in only one location--Palo Alto. From these results we may infer that living in Palo Alto was the primary motivational factor and investment, privacy, and pleasant environment were secondary.

The Search Process

The search process is the means by which the consumer assimilates market information obtained through investigation and probing of alternative resources. The consumer seeks knowledge of the market to reduce both the economic and social risks associated with relocation. After examining motives and using prior housing experience as a guide for possible alternatives, the consumer uses the search process to weigh and evaluate spatial and environmental goals with choices and substitutes available. The extent of investigation depends on the consumer's willingness to explore the available market as opposed to his or her determination to use select criteria in reaching the ultimate housing decision. The search process, therefore, separates into two behavioral modes--duration of search and search space.

The duration of search has been defined as the length of time consumers spend seeking housing. A frequency distribution revealed that 44.4 percent of the sample population looked for housing for less than one month; 26.1 percent looked for one to three months; 13.5 percent looked for four to six months, and 15.9 percent looked for over six

months. When we controlled for year of sale we found that an inverse relationship existed where the search time decreased in the later years. At the time that the price surge commenced (1976), 73.8 percent of the households searched for less than three months. As prices continued to increase, the duration of search decreased in 1977 and then increased slightly in 1978. These findings suggest that consumers reacted quickly to the price surge effect by purchasing houses within a very short search time.

Prior tenure and present tenure were directly related to duration of search; 79.6 percent of the previous owners searched less than six months. More important, 45 percent searched less than one month.

In assessing the relationship between the price variables and duration of search, we controlled for location of the previous house. We found that a relationship existed between respondents who had previously lived in Palo Alto and those who did not increase the amount of money spent on housing. For the respondents who lived in Palo Alto previously and searched for less than one month, 65 percent did not spend more money than anticipated on housing.

We expected that as house prices increased, search space would also increase thereby maximizing alternatives available for the more affluent population. This was not confirmed, and the respondents who purchased higher-priced houses had smaller search spaces. Specifically, the overt behavior of households was manifested in the purchase of a particular location.

The search space for the sample population was heavily contralized from Burlingame to San Jose and Los Gatos. In addition, the communities of Palo Alto, Menlo Park, Mountain View, Los Altos, Sunnyvale, and Cupertino received the heaviest concentration of search (see Figure 4). There were a maximum of seven locations searched with 77.6 percent of the sample looking only in Palo Alto.

To assess the effect of search on choices and substitutions, we tested the relationship between desired house size and size of house purchased by duration of search. We found that 42.4 percent of the households whose search time was less than one month reduced the expectation level and purchased or rented a smaller house. For households who searched over one year, 44.4 percent also reduced the expectation level while 44.4 percent purchased the desired house (see Table 10). Certainly for the cross section of the population, location became the primary criterion for consumer choice as opposed to the percentage of income spent on housing. Additionally, as the duration of search increased, households were more likely to be satisfied with their purchase decisions.

TABLE 10

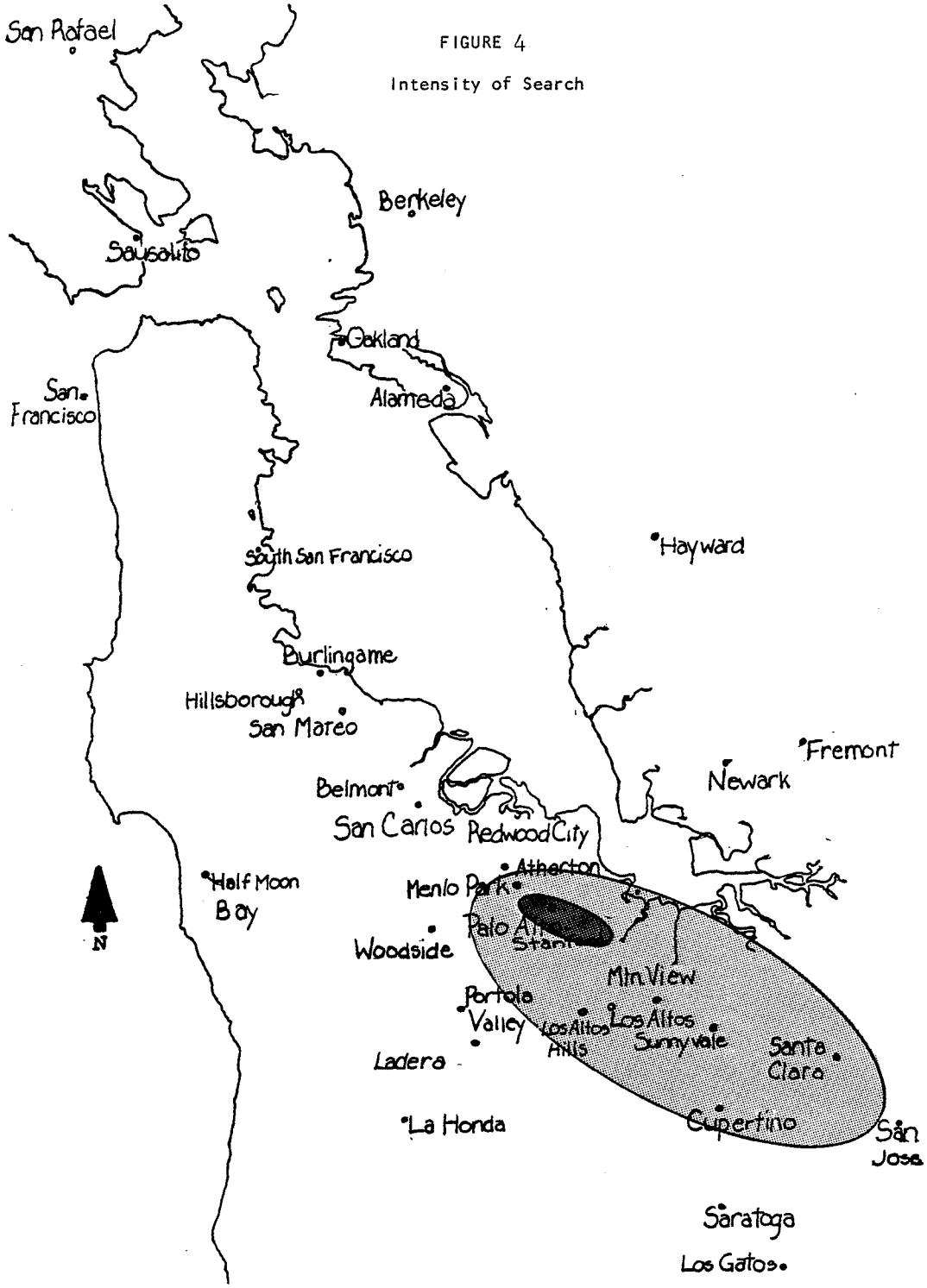
DURATION OF SEARCH BY ROOM INDEX[a]
(Row Percentages)

Duration of Search	Purchased Less than Desired	Purchased What was Desired	Purchased More than Desired
Less than 1 month	42.4	33.7	23.9
1-3 months	22.2	46.3	31.5
4-6 months	35.7	50.0	14.3
7 months-1 year	20.0	40.0	40.0
More than 1 year	44.4	44.4	11.2

[a]Room index was created by comparing a series of variables explaining the characteristics of the desired house with the characteristics of the house purchased.

FIGURE 4

Intensity of Search



Comparison of Alternatives and Choices

> An individual who arrives in a city and wishes to buy some land to live upon will be faced with the double decision of how large a lot he should purchase and how close to the center of the city he should settle. In reality he would also consider the apparent character and racial composition of the neighborhood, the quality of the schools in the vicinity, how far away he would be from relatives he might have in the city, and a thousand other factors. However, the individual in question is an "economic man," defined and simplified in a way such that we can handle the analysis of his satisfaction by owning and consuming the goods he likes and avoiding those he dislikes. Moreover, an individual is in reality a family which may contain several members. Their decisions may be reached in a family council or be the responsibility of a single member. [William Alonso][20]

Ultimately, consumers balance spatial and environmental preferences with financial resources--especially when faced with rapid increases in the price of housing. The consumers may reduce the level of expectation and satisfaction and/or reduce the quantity of housing demanded. Choice, therefore, results from a reevaluation of priorities.

Respondents were asked to describe the housing they considered purchasing or renting in other communities. Housing in these communities was primarily less expensive, larger, and farther from work. For the population who spent more money on housing than anticipated, the housing they examined in other communities was also less expensive, larger, and farther from work. The first major choice consumers made, therefore, was to secure housing within a convenient distance to employment. The demand for reduced spatial distance between employment and residence was manifested in the price paid for housing. For example, 50.5 percent of the respondents and 44.8 percent of the second household wage earners worked in Palo Alto or Stanford and spent more money on housing than anticipated.

In addition, 15.8 percent of the primary wage earners and 15.5 percent of the secondary wage earners worked in the adjacent communities of Menlo Park, Mountain View, or Los Altos and also spent more money on housing. (See Figure 5.)

The sample population expressed numerous factors as being important in the decision to locate in Palo Alto. Location within the city, convenience to work, and community services were the most important; however, the satisfaction level was high for all choice factors. (See Table 11.)

When we analyzed the relationship between choice factors and whether respondents had to increase the amount of money spent on housing, we found that relationships existed for all choices. Of the households who stated that community services were important, 58.2 percent had to spend more money on housing than anticipated; 57.2 percent who felt schools were important spent more; 51.9 percent who said location was important spent more; and 57.4 percent who mentioned sense of community spent more on housing. When we controlled for income, we found that the income groups earning below $10,000 and between $18,000 and $24,000 were pressured by the price increase and the desire for specific ecological attributes such as community services, schools, size of house, and location within Palo Alto.

We found that 40 percent of the households who spent more money than anticipated purchased smaller houses than originally desired. (See Table 12.) Clearly, the expectation level and the quantity of housing demanded was reduced.

Figure 5

Journey to Work

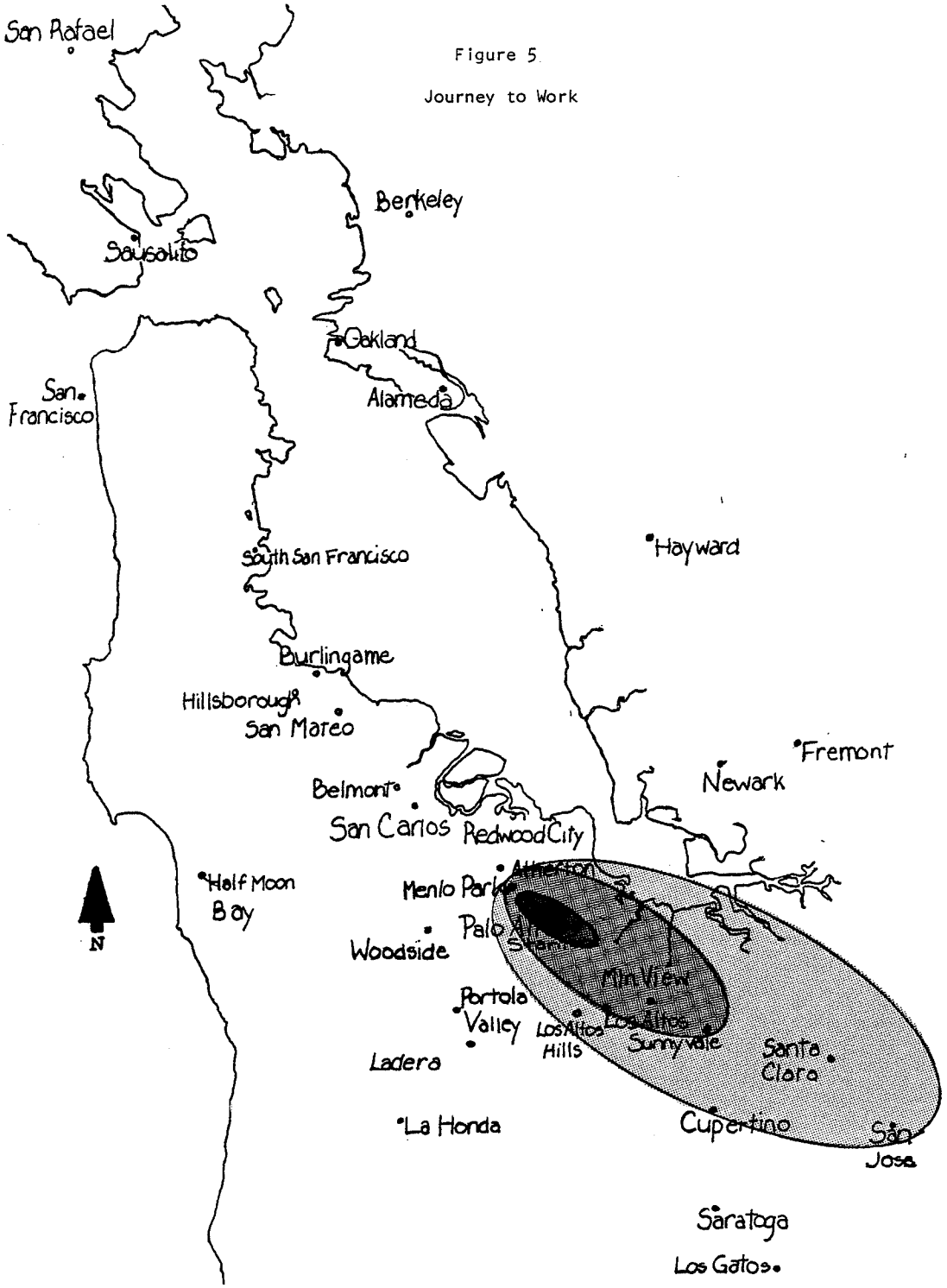


TABLE 11

DESIRED CHOICE ATTRIBUTES BY LEVEL OF SATISFACTION

Choice Attributes	Level of Satisfaction		
	Satisfied	Not Satisfied	Percent Frequency
Community services	98.3	1.7	14.0
Schools	92.8	7.2	11.5
Size of house	80.2	19.8	13.3
Location within Palo Alto	90.2	9.8	15.5
Convenience to work	98.3	1.7	14.1
Close proximity to Stanford	94.2	5.8	7.9
Sense of community	97.1	2.9	12.4
Proximity to San Francisco	91.8	8.2	5.9
Other:			
Near family and friends	90.9	9.1	1.4
Neighborhood	100.0	0.0	0.9
Cultural environment	100.0	0.0	0.5
Property value	100.0	0.0	0.8
Business Factors	80.0	20.0	0.6
Near transportation	100.0	0.0	0.6
Land	75.0	25.0	0.6
Total			100.0

TABLE 12

INCREASED MONEY SPENT ON HOUSING BY ROOM INDEX
(ROW PERCENTAGES)

Increased Money Spent on Housing	Houses Smaller than Desired	Houses Exactly as Desired	Houses Larger than Desired
Yes	40.0	30.9	29.1
No	29.2	51.0	19.8

Since 52.1 percent of the respondents stated that they spent more money on housing than anticipated, it was important to learn what methods were employed to finance this additional cost. As Table 13 indicates, 49.1 percent of the respondents who spent more money said that the additional housing cost would be covered by reduced expenditures of nonhousehold items.

TABLE 13

METHODS FOR FINANCING ADDITIONAL HOUSING COST

	Description	Percent
1.	Respondent secured an additional job	1.8
2.	Respondent extended work hours	2.7
3.	Others in household went to work	1.8
4.	Others in household extended work hours	1.8
5.	Household members spent less on nonhousing items	49.1
6.	Respondent shared house with others to reduce cost	7.3
7.	Household saved less money	5.5
8.	Household took money from savings	13.6
9.	Household borrowed from others	8.2
10.	Household made larger down payment	8.2
	Total	100.0

Consumers' choices were maximized for ecological values but minimized in the demand for physical space. Substitutions were made not necessarily in the quantity of housing services purchased, but in the size of the dwelling unit. Where 52.1 percent of the sample population paid more for housing than previously anticipated, substitutions were made in overall allocation of resources. More of the individual's household budget was used for shelter costs and less was spent on nonhousing items.

E. CONCLUSIONS

The overall analysis of consumer responses in the housing market was developed from an attempt to understand how consumers adjusted to rapid price spirals. In a housing market where price has been the most constraining factor, consumer responses were determined by the interaction of ecological values with the market conditions.

Consumers in Palo Alto have shown a dominant orientation toward home ownership. Strong spatial preferences were exhibited through the high prices paid for housing and the willingness to allocate additional resources toward achieving the desired goal of ownership.

The demographic characteristics exhibited a high degree of segmentation between social class and race. The nonminority, upper-middle class has had accessibility to housing in Palo Alto while the minority and moderate-income groups have not. The market conditions have made the differences more pronounced. Specifically, the newcomer population to Palo Alto during the period of exacerbated housing prices was largely white, professional, and earning well in excess of $24,000 annually.

An interrelationship between market conditions and desired goals was an important factor in consumer responses. With respect to the market, turnover rate affected price as indicated by the investment-sales activity. A price surge effect occurred where the increase in prices of the less expensive houses pushed the entire market into a price spiral. The benefits accrued to the former Palo Alto residents who capitalized on the price surge effect by maximizing housing alternatives and choices within a very short time period. For these residents, the desired and achieved goals were congruent.

Motivation, search, and choices were all predicated on the consumer's desire for accessibility in urban space in which the relative location of the house was considered the essential criterion. Living in Palo Alto was the primary motivation while privacy and investment were secondary. For many consumers, the search duration was less than one month. However, as the duration of search increased, households reevaluated priorities and were more likely to be satisfied with the house choices. Consumers were willing to trade the percentage of income spent on housing and the demand for greater physical space for a location closer to employment. Clearly, the marginal utility gained was perceived in terms of time and money allocated for transportation.

The policy implications for this study are threefold: first, the price surge effect has served to reduce the accessibility to services and the availability for housing for middle-income groups. Only households earning well in excess of $24,000 could purchase housing in this

environment. Although many households were comprised of two wage earners, almost half of the households were either single, divorced, or widowed, and dependent on one income. The constraining effects of price on behavior were felt by the entire population. United States housing policy has ensured that the middle class will have accessibility to housing. This study points out that the limitations for middle-class housing choice are more pronounced now. Consumers must allocate more than the traditional 25 percent of gross annual income for housing and spend less money on nonhouse items.

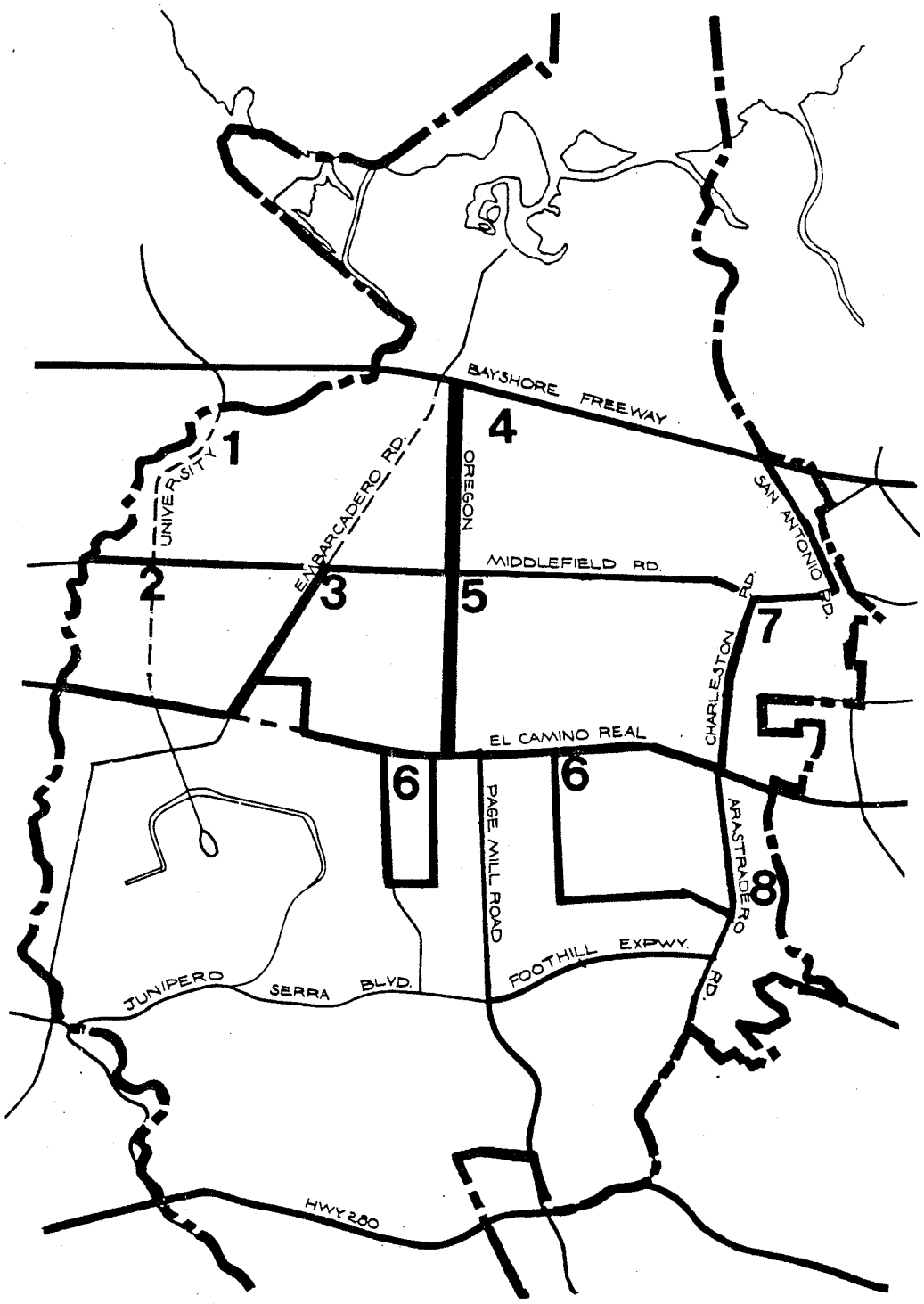
Second, the desire to locate near employment is relatively strong regardless of the price factor. Households are willing to trade size and price of house to reduce the transportation costs. Policymakers should consider the relationship of housing supply to employment. A jobs-housing balance may effectively mitigate the price surge effect through comprehensive planning of employment and housing growth.

Third, the price surge effect exacerbated the total housing market. The combination of real estate investment in inexpensive single-family dwellings together with the rapid turnover of houses in less than eighteen months accounted for the spiral. Policymakers must address this price surge phenomenon in evaluating measures to provide housing for middle- and lower-middle-income groups. We have demonstrated that the middle-income groups are experiencing negative effects. To be sure, the lower-income and lower-middle-income groups are eliminated completely from a price-spiraling market.

Analyzing consumer response to high housing prices has enabled us to differentiate individual behavior from the total aggregated market. As a result of the dynamic processes of supply, demand, and price, we can now understand more clearly how the market conditions affect consumer attitudes, choices, and actions. However, examining consumer response in one city is insufficient for addressing the price surge effect throughout the region or the nation. In order to expand the depth of knowledge of consumer behavior in housing, it is important to select other cities for research to ascertain if, in fact, the accessibility to housing has been reduced for the lower-middle and middle-income groups. More specifically, we must learn to what degree price is a severe constraint. Our increased awareness will enable us to more efficiently predict the effects of severe housing market fluctations on final choice.

APPENDIX A

LOCATION OF STUDY AREAS WITHIN PALO ALTO



FOOTNOTES

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[1]For a more detailed analysis of the findings, see Susan Giles Levy, "Consumer Behavior in the Housing Market" (thesis, University of California, Berkeley, 1979).

[2]See generally, William Alonso, *Location and Land Use* (Cambridge, Mass.: Harvard University Press, 1964); Alan W. Evans, *The Economics of Residential Location* (London: Macmillan Press Ltd., 1973).

[3]Real Estate Data, Inc., *1977 Real Estate Atlas of Santa Clara County, Northern Section* (Miami, Fla.: Real Estate Data, Inc., 1977).

[4]See generally, City of Palo Alto, California, Palo Alto Planning Department, *Palo Alto Interim General Plan* (April 1955); *Palo Alto General Plan* (February 20, 1963); *Palo Alto Comprehensive Plan 1977-1990* (November 29, 1976); Livingston and Blayney Associates, *Foothills Environmental Design Study, Open Space vs. Development* (February 1971). Palo Alto has been classified "suburban with a strong economic base" because of (1) its high percentage of single-family dwellings with high average cost, (2) the service-type employment base, and (3) its location away from the central cities of San Francisco and San Jose.

[5]City of Palo Alto, California, Palo Alto Planning Department, *Palo Alto Comprehensive Plan 1977-1990* (November 29, 1976), p. 14.

[6]City of Palo Alto, California, Palo Alto Planning Department, "Net Land Use and Zoning Acreage as of January 1, 1978."

[7]Ibid.

[8]The newly constructed units are as follows: Arastradero Park, 66 units constructed in 1974; Colorado Park, 60 units constructed in 1972; Lytton Gardens, 218 units constructed in 1975 and 1978; Palo Alto Gardens, 155 units constructed in 1974; Stevenson House, 118 units constructed in 1968; Webster Wood, 68 units constructed in 1978; and the Sheridan, 54 units presently under construction.

[9]County of Santa Clara, California, *Proposed LAFCO Jobs/Housing Guidelines and Review Criteria* (January 19, 1978), p. 9.

[10]Ibid.

[11]City of Palo Alto, California, Palo Alto Planning Department, *Comprehensive Plan, 1977-1990* (November 29, 1976), p. 14.

[12]County of Santa Clara, California, op. cit.

[13]Ibid.

[14]City of Palo Alto, California, Palo Alto planning Department, *Comprehensive Plan 1977-1990* (November 29, 1976), p. 16. For a more in-depth analysis of employment projections and employment breakdown, see pages 14-17 of the Comprehensive Plan.

[15]Interviews with real estate brokers in Palo Alto, Menlo Park, and Los Altos.

[16]Ibid.

[17]Federal Home Loan Bank Board and Federal Home Loan Bank of San Francisco, "Terms on Conventional Home Mortgages," March 7, 1979.

[18]Ibid.

[19]Shelter cost here is defined as principal, interest, taxes, insurance, and utilities for the owner households; and rent, insurance, and utilities for renter households.

[20]William Alonso, *Location and Land Use* (Cambridge, Mass.: Harvard University Press, 1964), p. 18.

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