

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: An Econometric Analysis of the Urban Housing Market

Volume Author/Editor: Mahlon R. Straszheim

Volume Publisher: NBER

Volume ISBN: 0-870-14512-6

Volume URL: <http://www.nber.org/books/stra75-1>

Publication Date: 1975

Chapter Title: Housing-Market Discrimination and Black Housing Consumption

Chapter Author: Mahlon R. Straszheim

Chapter URL: <http://www.nber.org/chapters/c0981>

Chapter pages in book: (p. 116 - 141)

HOUSING-MARKET DISCRIMINATION AND BLACK HOUSING CONSUMPTION

1. INTRODUCTION

There are several competing hypotheses which seek to explain the concentration of blacks in certain portions of the city and their occupancy of older, lower-quality housing. Blacks may consume less housing because they are poorer, because they have different tastes, or because they are discriminated against in the marketplace.

At one extreme, analysts have assumed the existence of a perfect housing market. Under this assumption, differences in black and white housing consumption are attributed to socioeconomic differences. Blacks are poorer than whites. The dramatically lower levels of financial savings by blacks reduce the likelihood that they can make a down payment. In addition, lower levels of financial net worth for black families increase the risk to mortgage lenders. Moreover, the black population has a higher percentage of single and separated households and female-headed households. These types of households consume less housing than married households at any given income level. Also, black tastes are often hypothesized to be different, blacks purportedly preferring to acquire less housing at any income level than whites. Finally, segregation may be self-imposed, blacks preferring to live among blacks.

Under the above assumptions, the existence of older, lower-quality housing in the core provides housing most suitable for the majority of the black population—particularly for separated households, those with very large families, and those with lower incomes. Self-segregation is adduced to explain the fact that middle- and upper-income blacks congregate in the core area.¹

1. Richard Muth, *Cities and Housing* (Chicago: University of Chicago Press, 1969), pp. 237-40, 284-303.

The alternative viewpoint would recognize the role of income differences and the different composition of black households by life-cycle group but would stress the importance of racial discrimination in housing markets. According to this view, the major explanation for housing patterns is that blacks have become discouraged from entering higher-quality suburban markets by the high prices which they confront, by the high costs of search, and by the high noneconomic costs arising from individual and community harassment. The concentration of blacks in central ghettos is largely attributed to the white preference for a segregated market, with suburban and certain central submarkets effectively closed to blacks through discriminatory practices which discourage black entry.²

It is difficult to refute the self-segregation thesis—namely, that blacks' desire to live among blacks makes middle- and upper-income blacks willing to purchase lower-quality housing—though the author believes it an implausible explanation for the large differences in housing patterns which exist. There is no evidence that any large number of blacks prefer segregated housing. Also, the price paid by blacks who choose to remain cloistered in core ghettos is substantial. Employment continues to decentralize, the quality of education in the core is inferior to that in the suburbs, and the quality of urban life in terms of crime, health, and the environment is much below that of the suburbs.

Perhaps the most convincing case that discrimination is important in understanding the current scene lies in the growing body of qualitative evidence describing the nature of discriminatory practices. Kain and Quigley's forthcoming book provides a comprehensive review of this literature.³ In brief, discrimination barriers remain despite steps taken to eliminate discriminatory practices through legal restrictions or administrative procedures. Racial covenants in deeds have been struck down by the courts, and stronger open-housing legislation has recently been enacted. Nevertheless, it is hard to prohibit discrimination in individual housing transactions, in either the sale or rental of units. As long as large numbers of white households prefer a segregated market, discrimination in financing, in zoning decisions, by real estate agents, and by individuals selling or renting is likely to persist.

In addition, the process of neighborhood tipping may add to the

2. John Kain, "Theories of Residential Location and Realities of Race," Harvard Program on Regional and Urban Economics, Discussion Paper No. 47, June 1969; processed. Anthony Downs, *Urban Problems and Prospects* (Chicago: Markham, 1970), pp. 75-114.
3. John F. Kain and John M. Quigley, *Housing Markets and Racial Discrimination: A Microeconomic Analysis* (New York: NBER, 1975), Chap. 3.

entry barriers which blacks face. One important side effect of the tipping process is that it encourages white residents to resist the first black entrant, even though their preferences may be to live in a neighborhood with some modest proportion of blacks. Sharp reductions in prices often occur in the short run as neighborhoods tip. That these changes in prices are often transitory is not a widely accepted proposition. Moreover, what happens in the long run may assume little importance if white households do not want to live in a neighborhood with a substantial percentage, or a majority, of blacks. In these circumstances, the sharp reductions in prices in the short run and the large associated transfers in equity among neighborhood residents at different points in time assume paramount importance in households' decisions. In the face of uncertainty over what other neighborhood residents may do when the first black family enters, white households all too often conclude they must be the first to leave. Perhaps more important, as suggested above, white households' perceptions of the process of neighborhood tipping reinforces the tendency for communities to resist the first black entrant.

Little hard empirical evidence has been available to measure the relative importance of socioeconomic differences versus market discrimination as explanations for the type and location of housing consumed by blacks. Ex ante measures of the magnitude of discrimination barriers in particular submarkets or affecting particular transactions are largely unavailable. Interpreting ex post housing and location patterns is complicated by the possibility that tastes for housing or choice of neighborhood differs by race.

Quantitative analysis of the extent of discrimination has followed two broad approaches. The first is to estimate the difference in prices which black and white households pay for comparable housing. This literature was summarized in Chapter 3. A major difficulty is that of measurement; specifying comparable units and neighborhoods for purposes of comparison is difficult if the market is highly segregated. In addition, if discrimination is pervasive and the market is segregated by race, the important comparisons are between the prices paid by the majority of black households who remain in the black submarket and white households with similar incomes and tastes. The experience in the suburban housing market of the minority of all black households who escape the ghetto may tell little about the extent or consequences of discrimination. Price comparisons across racial submarkets were presented above.

The second approach draws inferences about discrimination from indirect evidence. Differences in housing consumption between blacks and whites, independent of income and other life-cycle characteristics, can be deduced by the analysis of variance. The race effect can be

attributed either to discrimination or to differences in tastes.

This chapter extends the latter type of approach. As expected, stratification of households by race, income, and life cycle reveals a large race effect in housing consumption. A model of black housing choice and housing demands permits a separation of the effects of income, housing prices, and other supply-side differences. Black housing consumption is related to income and housing prices and to location options open to blacks in San Francisco. As has been noted, entry barriers facing blacks have created substantially different housing markets for blacks and whites. The estimates reveal that much of the race effect can be explained in terms of blacks' responses to higher prices and to the confinement to a ghetto submarket location. The residual differences in housing consumption between whites and blacks attributable to differences in tastes (i.e., for constant incomes and prices) prove to be quite small empirically.

2. HOUSING DIFFERENCES ATTRIBUTABLE TO RACE

The evidence that there are significant racial differences in housing (consumption and location) independent of income is becoming increasingly persuasive. Kain has been the principal investigator developing this evidence. His examination of individual-household interview data collected for transportation studies of Detroit and Chicago provided the first systematic evidence that neither work site nor income could explain the differences in black and white residential location choices. That data revealed that black residences were concentrated in downtown ghettos, which entailed "reverse commuting" for a significant number of blacks. Whereas the classical model of household location dictated that a household would commute outward from an employee's place of work, down the rent gradient, Kain found that significant numbers of blacks working outside the central city commuted up the rent gradient to central locations.⁴ Kain's explanation was that entry to suburban markets was closed to them.

More recently, Kain has extended these comparisons of black and white residential locations to many cities. These comparisons reveal that, even after classifying by income, the percent of blacks and whites living outside the central cities in 1960 was dramatically different. The differences in location choice by blacks versus whites is striking—espe-

4. John Kain, "The Commuting and Residential Decisions of Central Business District Workers," in *Transportation Economics* (New York: NBER, 1965), pp. 252-62.

cially as regards high-income blacks, who, unlike whites, remain inside central cities. In New York, only 8.2 percent of blacks with incomes below \$3,000 in 1960 lived outside the central city; but for blacks with incomes over \$10,000, the figure rises only to 13.9 percent. (Comparable figures for whites were 16.3 percent and 39.2 percent.) Most of the older northern cities exhibit a similar pattern. In San Francisco, the percentage of blacks with incomes below \$3,000 living in the suburbs was 25.8 percent versus 31.5 percent for those blacks with incomes in excess of \$10,000. (Comparable figures for whites were 48.8 percent and 60.8 percent.)⁵ These simple comparisons provide convincing evidence that income alone cannot explain the differences between blacks' and whites' residential location choices.

Kain and Quigley also find a dramatic difference in home ownership rates between blacks and whites, adjusting for income and family-size differences. They computed the expected level of home ownership for blacks in eighteen cities in 1960 by a weighted sum of the individual probabilities of ownership by income and family-size class, based on the assumption that the likelihood of ownership for blacks in each class was the same as for whites so classified in that city. Actual black ownership rates proved to be dramatically lower. A cross-section regression of the differences between predicted and actual ownership levels in these eighteen cities revealed that the differences were largest in cities with the highest percentage of blacks living in the central core, and in cities with a high proportion of multifamily units in the central-city stock. Kain and Quigley conclude that a major consequence of blacks being excluded from suburban areas in which there is more single-family housing available is the reduction of home ownership among blacks.⁶

This finding is corroborated in a separate analysis of the differences in the probability of ownership between blacks and whites using a household interview survey from St. Louis. Regressing the probability of home ownership on income, education, employment status, and life-cycle differences, they find significant differences in the probability of ownership according to race. The race coefficient indicates that black households have a probability of ownership .09 less than whites. Repeating the analysis of tenure choice for that subset of households who are moving reveals a race coefficient of .12; including prior tenure in the equation for movers yields a race coefficient of .09.⁷ Using the same

5. John Kain, "Theories of Residential Location," p. 5.

6. John Kain and John Quigley, "Housing Market Discrimination, Home Ownership, and Savings Behavior," *American Economic Review* (June 1972), pp. 263-77.

7. *Ibid.*, pp. 265-67.

technique of cross-section regression analysis, Kain and Quigley also find significant differences between blacks and whites in St. Louis in dwelling-unit type, dwelling-unit condition, and neighborhood characteristics, holding income, life cycle, and education constant.⁸ While no price variables or other measures of discrimination are included in the analysis, the authors conclude that supply restrictions and entry barriers confronting blacks provide the principal explanations for the race differences.

Data for the San Francisco Bay Area housing market also reveal a large race effect. Comparisons of housing consumption across house-

TABLE 5.1
PROBABILITY OF HOME OWNERSHIP BY INCOME AND RACE

Life-Cycle Class	Income	Black	White
Single and separated or divorced without children	<\$5,000	22.4 ^b	39.5
	5-7,000	28.3 ^b	35.4
	7-10,000	25.5 ^b	36.9
	>10,000	36.8 ^b	40.1
Persons separated with children	<\$5,000	10.9 ^b	26.8
	5-7,000	30.7 ^b	46.4
	7-10,000	40.0 ^a	58.0
	>10,000	50.0 ^a	72.6
Persons married, head under 35 years, no children	<\$5,000	16.0	2.4
	5-7,000	0.0 ^b	10.8
	7-10,000	18.7	19.0
	>10,000	25.0 ^a	36.8
Persons married, head under 35 years, with children	<\$5,000	8.5 ^b	17.6
	5-7,000	19.5 ^b	39.8
	7-10,000	44.8 ^b	60.3
	>10,000	59.3 ^b	73.3
Persons married, head over 35 years, no children	<\$5,000	50.0 ^b	70.9
	5-7,000	62.0 ^b	73.1
	7-10,000	77.0 ^b	78.9
	>10,000	81.0 ^b	85.2
Persons married, head over 35 years, with children	<\$5,000	37.2 ^b	52.9
	5-7,000	63.7 ^b	70.6
	7-10,000	77.7 ^b	82.9
	>10,000	79.2 ^b	89.2

^aSample size less than ten.

^bEquality of means for blacks and whites can be rejected at .05 level.

TABLE 5.2
 QUANTITY OF HOUSING SERVICES CONSUMED BY INCOME AND RACE: OWNERS

Life-Cycle Class	Income	Number of Rooms		Structure Age: Percent Built Pre-1939		Condition (Percent Unsound)		Lot Size (Percent with <.2 Acre)	
		Black	White	Black	White	Black	White	Black	White
Single and separated or divorced without children	<\$5,000	5.2	5.0	54.3	60.9	8.6	7.6	77.1 ^b	68.7
	5-7,000	6.1	5.4	58.8 ^b	47.4	11.8 ^b	3.8	70.6	65.7
	7-10,000	5.4	5.5	41.7 ^b	37.9	0	3.3	83.3 ^b	56.6
	>10,000	6.7 ^a	5.9	71.4 ^a	40.9	0 ^a	1.7	42.9 ^a	56.0
Persons separated with children	<\$5,000	5.4	5.8	60.0 ^b	23.1	40.0 ^b	3.8	80.0 ^b	55.1
	5-7,000	5.6 ^a	5.8	62.5 ^a	16.5	12.5 ^a	5.5	62.5 ^a	53.8
	7-10,000	5.5 ^a	6.1	50.0 ^a	10.8	0 ^a	5.6	75.0 ^a	52.6
	>10,000	6.0 ^a	6.5	33.3 ^a	29.0	0 ^a	5.8	66.7 ^a	43.5
Persons married, head under 35 years, no children	<\$5,000	4.5 ^a	5.5	50.0 ^a	22.4	0 ^a	4.1	50.0 ^a	66.7 ^a
	5-7,000	^c	5.6	^c	9.5	^c	5.2	^c	88.9
	7-10,000	5.6 ^a	5.8	26.9 ^a	7.8	3.8 ^a	1.9	33.3 ^a	57.7
	>10,000	5.9 ^a	6.2	15.8 ^a	10.8	0 ^a	2.3	50.0 ^a	57.9

Persons married, head under 35 years, with children	<\$5,000	6.0 ^a	5.5	33.3 ^a	22.4	33.3 ^a	4.1	33.3 ^a	44.9
	5-7,000	4.8 ^b	5.6	66.7 ^b	9.5	11.1 ^b	5.2	88.9 ^b	54.9
	7-10,000	5.6 ^b	5.8	26.7 ^b	7.8	3.8 ^b	1.9	57.7	55.5
	>10,000	5.9 ^b	6.2	15.8 ^b	10.8	0	2.3	57.9 ^b	49.9
Persons married, head over 35 years, no children	<\$5,000	5.4	5.1	59.5 ^b	47.5	16.2 ^b	3.5	64.9	62.3
	5-7,000	5.1	5.3	48.6 ^b	35.2	8.6 ^b	2.2	68.6	61.6
	7-10,000	5.2 ^b	5.5	40.4 ^b	29.4	8.5 ^b	2.1	74.5 ^b	62.4
	>10,000	5.6 ^b	6.1	41.3 ^b	24.1	0	1.2	67.4 ^b	50.8
Persons married, head over 35 years, with children	<\$5,000	5.6	5.5	56.3 ^b	27.2	25.0 ^b	3.7	75.0 ^b	62.0
	5-7,000	5.8	5.8	47.1 ^b	16.4	11.8 ^b	2.4	66.7 ^b	58.2
	7-10,000	5.9	6.0	44.2 ^b	12.0	7.8 ^b	2.3	64.9	58.1
	>10,000	6.2 ^b	6.7	29.5 ^b	12.9	3.3	1.6	60.7 ^b	45.7

^aSample size less than ten.

^bEquality of means for blacks and whites can be rejected at .05 level.

^cNo black owners.

TABLE 5.3
 QUANTITY OF HOUSING SERVICES CONSUMED BY INCOME AND
 RACE: RENTERS

Life-Cycle Class	Income	Number of Rooms		Structure Age: Percent Built Pre-1939		Condition (Percent Unsound)	
		Black	White	Black	White	Black	White
Single and separated or divorced without children	<\$5,000	3.2	3.2	56.2	54.5	32.2 ^b	9.6
	5-7,000	3.4	3.2	48.8	43.7	11.6 ^b	4.9
	7-10,000	3.6	3.5	34.3	34.7	11.4 ^b	4.1
	>10,000	4.5	3.8	33.3	33.3	8.3 ^b	2.9
Persons separated with children	<\$5,000	4.4	4.2	43.2 ^b	41.8	30.9 ^b	20.7
	5-7,000	4.1	4.3	55.6 ^b	32.4	27.8 ^b	7.6
	7-10,000	4.8 ^a	4.6	83.3 ^a	41.7	16.7 ^a	8.3
	>10,000	5.3 ^a	5.1	33.3 ^a	34.6	0 ^a	11.5
Persons married, head under 35 years, no children	<\$5,000	3.9	3.5	30.0	38.5 ^a	0	5.7
	5-7,000	3.7	3.6	45.5 ^b	20.6	18.2 ^b	7.2
	7-10,000	4.0	3.6	30.0 ^b	18.0	15.4 ^b	2.4
	>10,000	4.3 ^a	3.8	50.0 ^a	21.7	16.7 ^a	1.5
Persons married, head under 35 years, with children	<\$5,000	4.0	4.3	18.8 ^b	30.7	21.9 ^b	13.6
	5-7,000	4.2	4.5	40.5 ^b	26.5	16.2 ^b	9.5
	7-10,000	4.1	4.7	37.5 ^b	23.4	12.5 ^b	5.8
	>10,000	4.6	4.9	53.8 ^b	20.4	7.7 ^b	2.4
Persons married, head over 35 years, no children	<\$5,000	4.0	3.8	59.5	47.8	29.7 ^b	9.8
	5-7,000	3.9	4.0	66.7 ^b	45.5	28.6 ^b	7.4
	7-10,000	4.6	4.2	35.7	39.2	7.1	4.1
	>10,000	5.4 ^a	4.5	71.4 ^a	29.6	0 ^a	2.6
Persons married, head over 35 years, with children	<\$5,000	5.1	4.6	48.1	48.6	40.0 ^b	31.9
	5-7,000	5.3	5.1	48.3	44.8	51.0 ^b	12.3
	7-10,000	5.3	5.2	45.5 ^b	34.5	27.3 ^b	11.3
	>10,000	5.3	5.6	56.3 ^b	24.2	25.0 ^b	3.3

^aSample size less than ten.

^bEquality of means for blacks and whites can be rejected at .05 level.

holds classified by income and life-cycle class reveal significant differences in housing consumption attributable solely to race. Six life-cycle classes were defined. The most heterogeneous is the classification "unmarried households," which includes both single individuals and persons currently separated or divorced but without children present. The second life-cycle group, "separated, with children," refers to married households with only one parent in residence and children under fifteen present.

This largely consists of broken families headed by a female, a classification which includes 11.6 percent of all black households (versus 3.5 percent for white households). Married households with both husband and wife present were stratified according to age (below or about thirty-five) and whether children were present. Four income classes were used. Sample sizes prohibited any further breakdown by age or family size. Black family composition includes a large number of "single" and "separated" households: 34.6 percent of all black households fall into this category versus 21.6 percent for whites.

Table 5.1 presents comparisons of home-ownership levels. This table confirms the results of Kain and Quigley, namely, that blacks are less likely to be owners. In addition, differences in the probability of ownership accounted for by race are probably not invariant across income or life-cycle groups; the biggest differences exist for the poorest blacks in comparison with equally poor whites, for young black families with children, and for separated households. While the difference in ownership rates associated with race declines with income, a difference still persists at the highest income levels—about 10 percent. Some of this may be accounted for by the fact that the average black income in the open-ended above \$10,000 class is below the average for whites.

Tables 5.2 and 5.3 compare consumption of different housing-quality attributes for renters and owners. The biggest difference between housing consumed by black as against white renters lies in the condition of the structure. Of blacks with incomes below \$5,000, almost a third occupy unsound units; for equally poor whites, the figure is only 13 percent. At successively higher levels of income, the number of blacks who occupy unsound units declines very sharply. Also noteworthy is the fact that, among renters, higher-income blacks' choice of structure age is not statistically different from the choice at lower income levels; for whites, there is a significant reduction in the proportion who occupy the oldest structure as income rises. As will be seen below, the income elasticity for structure age for black families who are renters is insignificant.

A somewhat different pattern is apparent for owners. Black owners occupy lower-quality units than whites at every income level. Blacks occupy more unsound units than whites, though the levels for owners are below those for renters. With regard to structure age, higher-income black owners occupy significantly newer units than poorer blacks. As income rises, a reduction in the proportion of black owners who occupy lots smaller than .2 acre is also apparent; the difference in lot size between blacks and whites at each income level are marginally less than the differences in structure age. However, differences by race persist even for the highest income classification.

3. A MODEL OF BLACK HOUSING CONSUMPTION

The existence of discrimination and entry barriers implies that the model for white households' choices developed and estimated in Chapter 4 is inappropriate for black households. As with whites, the optimal location and amount of housing for any black household will depend on its work-site location (or locations if more than one member is employed), differences in public services, taxes, and other neighborhood characteristics, commuting time and costs, and prevailing housing prices by submarket. In addition, the height of entry barriers, economic and otherwise, will be important. Most black households have much less latitude in altering their residential location than white households, owing to the high price of black entry into many suburban neighborhoods.

The existence of substantial entry barriers to many neighborhoods implies that work-site differences for black households assume much less importance in explaining black households' housing consumption than is the case with white households. Black households from a wide range of work sites may commute to the same black submarkets. Thus, while commuting time is relevant, travel time can hardly be included as a continuous variable of choice in a utility maximization format as can be done with white households. The length of the commuting trip may therefore say less about preferences for trading off housing versus commuting costs at the margin; instead commuting patterns for black households probably reflect the location of employment opportunities, black households' ability to gain access to particular suburban labor markets, and the spatial characteristics of housing-market discrimination barriers. The problem facing a black household might be better characterized as a discrete programming problem, in which the household compares the utility associated with the optimal bundle of housing services if buying in one ghetto to the "solution" associated with purchase in a few other black submarkets and in a few isolated suburban markets where entry may be possible.

The model of black housing consumption estimated below treats the residential location choice as separable from the amount of housing consumed. It is assumed that black households first choose a neighborhood, then choose the amount and type of housing available, given prevailing prices.

Of the several factors influencing black households' choice of any particular suburban or ghetto location, the height of entry barriers in each housing submarket appears to be the most important. The three major black ghettos in the Bay Area each attract blacks with work sites dispersed over a wide geographic area, suggesting that the price of black entry into other neighborhoods is high. Unfortunately, there

are no measures of ex ante entry barriers by submarkets available, and hence there is little basis for explaining why black households choose one residential submarket over another. The role of income in black households' choices can be analyzed. Increasing black incomes have generally been hypothesized to lead to black suburbanization. Higher-income blacks may have more information and resources to conduct the search, or more incentive to do so, especially since black preferences for education and housing opportunities probably rise with income. Higher-income blacks may also appear less threatening to whites and hence face lower entry barriers. A simple test of the role of income is presented below.

A more systematic analysis can be made of the type of housing which black households consume. For such an analysis, the consumption of different housing attributes is related to the household's income and market options, as defined by prices in the area of residence and by two submarket dummy variables indicating whether the residence site can be characterized as belonging to the ghetto, to the mixed-racial, or to the white submarket. A submarket refers to all neighborhoods with a given racial composition and serves as a proxy for certain supply conditions, as explained below. The ghetto submarket classification includes all neighborhoods which were more than 60 percent black. Mixed-racial submarkets include areas 15 to 60 percent black; the neighborhoods denoted by the mixed-racial submarket classification were adjacent to a ghetto neighborhood in every case but one, a suburban concentration of black households north of Oakland.

This specification presumes that the relevant prices at which blacks may substitute housing for other goods, or one housing attribute for another, are defined by prices in the area in which the black household resides. These differences in choice of residential location are the source of price variation, allowing estimation of the effect of prices in black demand functions. (These prices are not work-site specific, since blacks from many different work sites may live in one residential submarket.)

The housing attributes analyzed included choice of tenure, dwelling-unit size, age of structure, and lot size in the case of owner units. Age and lot size were represented in both continuous and discrete forms. A logarithmic form was employed if the dependent variable was continuous, and a semilog form was used if the dependent variable was a zero-one dummy. (These nonlinear forms proved superior to linear equations.) The dependent variables were:

Q_1 = probability of ownership (1 if owner, 0 if renter);

Q_2 = number of rooms in dwelling unit;

Q_3 = structure age (years);

- $Q_4 = 1$ if unit built prior to 1939, 0 otherwise;
 $Q_5 = 1$ if unit built 1960-65, 0 otherwise;
 $Q_6 =$ lot size (acres);
 $Q_7 = 1$ if unit built on lot less than .2 acre, 0 otherwise.

Separate estimates were made for six life-cycle classes, as a means of stratifying by tastes. Independent variables included income, two submarket dummy variables, and a series of price variables—the price of a composite bundle of housing characteristics and the incremental price associated with several particular attributes.

$Y =$ Income.

$P_0 =$ Price of standardized unit—5.5 rooms, built since 1960, on .2 to .3 acre lot, in sound condition.

$R_0 =$ Rent of standardized unit—4 rooms, built since 1960, in sound condition.

$P_R, R_R =$ Price of additional room in owner and rental unit, respectively.

$P_a, R_a =$ Incremental price of a newer owner unit and newer rental unit, respectively. Ratio of price of standardized unit built since 1960 to price of a standardized unit built in 1950-60.

$P'_a, R'_a =$ Incremental price of a newer owner unit and rental unit, respectively. Ratio of price of standardized unit built 1940-1950 to price of unit built before 1940.

$P_1 =$ Incremental price of large lot. Ratio of price of standardized unit with lot .2 to .3 acre to price of standardized unit on lot $< .2$ acre.

$X_1 = 1$ if unit in ghetto, 0 otherwise.

$X_2 = 1$ if unit in mixed-racial area, 0 otherwise.

The submarket classification dummies, which show that blacks in the ghetto buy less housing—given their income and prevailing prices—than blacks living in white submarkets, may reflect two factors subject to very different interpretations. One possibility is differences in tastes; blacks who prefer to consume more housing at any given price have an incentive to enter white submarkets. There is no information upon which to estimate differences in tastes; however, any differences in tastes independent of income and life cycle are likely to be small.

The other explanation arises from the existence of nonprice rationing in black submarkets. If nonprice rationing is pervasive in the ghetto and not in the suburbs (or vice versa), observed prices may be a poor approximation of the options open to blacks wishing to substitute one attribute for another. As has been previously noted, it appears that at prevailing prices, there is excess demand for single-family units—especially better-quality units—in the ghetto and an excess supply of rental

units. The analysis of price differentials within black submarkets suggests that nonprice rationing may be used to clear the market. Inclusion of submarket classification dummies captures these differences in nonprice rationing by submarket. This latter explanation for the significance of the submarket dummy variables is the one which I support.

A. Results: Choice of Submarket

The causal relationships between employment location and residential location choices for black households are complex. However, stratification of black households by place of residence and place of work (see Table 5.4) provides a summary picture of the effects of discrimination. This stratification reveals a very different pattern for blacks than that observed for whites.

Considering first all those black households residing in the several ghetto submarkets, these black households are employed over a wide

TABLE 5.4
COMMUTING PATTERNS: BLACK HOUSEHOLDS

Work Site	Residence Site		
	Oakland Ghetto #1 ^a	Oakland Ghetto #2 ^b	San Francisco Ghetto ^c
Oakland ghetto #1 ^a	66	34	0
Oakland ghetto #2 ^b	18	31	0
All other locations in Oakland County except <i>a</i> and <i>b</i> above	82	44	0
San Francisco ghetto ^c	14	13	24
All other locations in San Francisco City except <i>c</i> above	15	4	46
Suburbs to south of San Francisco ^d	7	4	21
Total:	202	130	91
Subtotal: Number who work outside ghettos:	104	52	67
Subtotal: Number who work outside ghetto and commute up rent gradient:	52	38	21

TABLE 5.4 Concluded

Residence Site	Work Site			
	Alameda and Central Oakland ^f	Central Business District San Francisco ^g	Suburban Job Sites	
			To South of San Francisco ^h	To South of Oakland ⁱ
Oakland ghetto #1 ^a	40	27	4	10
Oakland ghetto #2 ^b	21	12	2	7
Richmond "mini-ghetto" ^c	4	2	2	17
All other locations in Oakland County except Oakland ghettos	24	17	4	33
San Francisco ghetto ⁱ	0	47	21	0
All other locations in San Francisco City	0	32	29	0
Total:	89	137	82	67
Subtotal: Residence site outside ghetto	24	49	33	33

^aOakland, Tracts OK8-OK24.

^bOakland, Tracts OK46A-OK47B, OK52-OK56, OK63A-OK69B.

^cSan Francisco City, Tracts J1-J16.

^dSan Mateo County.

^eRichmond City, Tracts 76-82.

^fOakland, Tracts AL1-AL16B, OK15-OK33.

^gSan Francisco, Tracts A1-A23, K1-K6.

^hSan Francisco, Tracts M1-M9, O1-R1, and San Mateo County.

ⁱContra Costa County, Tracts 1-92.

geographic area. Table 5.4 reveals that only 27.9 percent of black households residing in the principal ghettos work where they reside; another 20.5 percent work in other ghettos. (The fact that this latter group of households do not move to the ghetto in which they work probably reflects the costs of relocation.) The figures show that 51.6 percent work outside the ghetto and commute in. Of this number, 49.8 percent commute up the rent surface, i.e., prices for older owner-occupied housing in the work-site zone are below those in the ghetto residence zone. This is a very conservative estimate of the extent to which blacks are prohibited from taking advantage of (or forgo) lower housing prices in the suburbs, since outside the ghetto there are generally many additional zones adjacent to or near black work sites where housing is available

at more favorable prices than in the ghetto. This estimate of the percentage of black households who work outside the ghetto and in areas where housing prices are cheaper much exceeds the percent of white households who commute up the rent gradient. Again, this suggests that the choices of black households are much more limited than those of white households.

Alternatively, examination of choices of blacks employed at a given work site reveals the same pattern—a huge concentration of residence sites in the ghettos. Of those blacks working in the central business districts of Oakland and San Francisco, only 32.3 percent reside outside the black ghettos. White households working in these same downtown areas reside over a much wider geographic area. Of those black households with a work site in selected suburbs of San Francisco or Oakland, 44.3 percent live outside the ghetto, a significantly higher percentage than those with core-city job sites (the difference is significant at the 5 percent level). With a single cross section, it is impossible to determine whether these households first obtained a suburban job, then found a suburban residence, or vice versa.

Only limited inferences can be made about the basis for black households' choice of a white versus a black submarket. Table 5.5 presents estimates of the likelihood of a black household residing in a white submarket for six life-cycle classes. Only a limited number of black households in this sample gained access to white suburbs: 35.4 percent of blacks live in the ghetto, 23.6 percent in the ghetto boundary, and 40.0 percent in white submarkets.⁹ Blacks most likely to gain access are married families with both spouses present (49 percent enter white submarkets); in contrast, only 35 percent of black households of single individuals or households made up of separated parents gain entry. There is no means by which to determine whether these statistics reflect differences in the level of entry barriers confronting the two groups or different preferences for a white submarket—or both.

The effect of income can be treated more formally by relating the probability of a black household residing in a white submarket to household income. The data were first stratified into six life-cycle classes. Income proved statistically significant for black married households with children (see Table 5.5). The elasticity of a white submarket location with respect to income is low, about .20. The fact that income is significant for black families with children but not for other household classifications

9. The percentage of black households residing in the black submarket based on the household-interview survey used in this study understates the extent of racial concentration reported in the 1960 Census. The most likely explanation is that the Bay Area household-interview survey undersampled households in the ghetto relative to black families residing in other parts of the Bay Area.

TABLE 5.5
BLACK SUBMARKET CHOICES BY LIFE-CYCLE CLASS

Life-Cycle Class	Percentage Distribution by Submarket			Effect on Income of Probability of Residence in White Submarket		
	Ghetto	Mixed Racial	White	β	t Value	Elasticity at Mean
Single and separated or divorced without children	41.8	22.1	36.1	-.0238	-.554	-
Separated with children	38.4	26.9	34.7	.0804	1.663	.228
Married, head under 35 years, no children	43.6	23.1	33.3	-.1586	.760	-
Married, head under 35 years, with children	29.7	25.8	44.5	.0899	1.387	.202
Married, head over 35 years, no children	35.5	23.7	40.8	-.0044	.017	-
Married, head over 35 years, with children	24.9	22.6	52.5	.0757	1.714	.144

Note: Z = 1 if black residence in white submarket, 0 otherwise.

Y = Income.

Z = $\alpha + \beta \log(Y)$.

suggests that the quality of education is probably a primary consideration in black households' decisions to seek a white submarket.

B. Results: Housing Consumption

The specification of the equations and the results for the life-cycle class "married households with children and with the age of head over 35" are shown in Table 5.6. Estimates for other life-cycle groups appear in Appendix B. For the probability-of-ownership equation, only the price and the rent of a standardized bundle of services were included. In equations for the other quality attributes of housing, the prices of the several particular attributes were included—the incremental price of an additional room, a newer unit, and a larger lot. This provides a test for substitute or complementary relationships.

In the probability-of-ownership equation, income is significant, with an elasticity of .421, but prices prove insignificant. The ghetto location dummy is highly significant. Suburban blacks are both wealthier and able to buy at prices relative to renting which are more favorable than blacks who remain in the black submarkets. However, *independent of income and housing-price differences*, black households are about 20 percent less likely to be owners if they live inside the ghetto than if they live outside. The ghetto dummy reflects the nonprice rationing arising from the shortage of owner units available to blacks.

In the case of dwelling-unit size, the estimated income elasticity for blacks is low, about .10. There is also little evidence of a direct price effect on space consumption. However, for both owners and renters, the estimates suggest that dwelling-unit age is a complementary good with size; the cross-price elasticity is generally significant, ranging from $-.10$ to $-.50$ across different life-cycle classes. The lot-size cross-price elasticity proves insignificant. Finally, there are significant submarket location effects for renters, with blacks confined to the ghetto and ghetto boundary consuming less space. For owners, there is no significant submarket location effect; the fact that owner-occupied units available to blacks in the ghetto submarket are as spacious as those which blacks buy outside reflects the large size of many of the older single-family structures in the central portions of the city.

The structure-age equations for owners and renters are similar, including both income and direct- and cross-price effects. In addition to an equation treating dwelling unit age in years as a continuous variable, two dichotomous variables were represented: the probability that the structure chosen was pre-1939 and the probability that it was post-1960. Both income and the price of the composite bundle of housing proved statistically significant in the structure-age equations for owner-occupants, with the elasticities well below one (for most life-cycle classes).

TABLE 5.6
DEMAND ESTIMATES, BLACK MARRIED HOUSEHOLDS WITH CHILDREN, HEAD OVER 35

Dependent Variable	Independent Variable (Logs)										Elasticities at Mean				
	Income					Prices					Location Dummies				
	Y	(P_0/R_0)	P_0	P_R	P_a	P_1	X_1	X_2	Y_1	P_0	P_R	P_a	P_1		
Probability of ownership:															
Q_1	.2656 (4.50)	^a	-	-	-	-	-2.108 (2.43)	-.1005 (1.40)	.421	-	-	-	-		
Q_2	.0824 (2.03)	-	-	^a	-.1853 (.45)	-.1432 (.72)	^a	.0726 (1.14)	.082	-	^a	-.185	-.143		
Rooms:															
Q_3	-.1698 (1.40)	-	.7236 (3.33)	-	.1460 (1.58)	-.2800 (1.51)	.5097 (2.49)	.2050 (1.88)	-.169	.723	-	.146	-.280		
Age:															
Q_4	-.0870 (1.64)	-	.4237 (2.83)	-	^a	-.1385 (1.35)	.2935 (2.08)	.3199 (2.44)	-.211	1.460	-	^a	-.472		
Q_5	.0748 (1.68)	-	-.3916 (3.18)	-	^a	.1917 (1.61)	-.3298 (2.85)	-.2458 (2.28)	.271	-1.733	-	^a	-.875		
Lot size:															
Q_6	.0288 (1.02)	-	^a	-	^a	-.1156 (1.53)	-.0832 (1.07)	.0810 (1.12)	.029	-	-	^a	-.116		
Q_7	-.0437 (1.26)	-	-.1454 (1.41)	-	^a	.1853 (.71)	.0917 (.95)	.0902 (1.00)	-.049	-.165	-	.003	.208		

B. Renters

Dependent Variable	Independent Variable (Logs)										Elasticities at Mean						
	Income					Prices					Location Dummies			Y	R ₀	R _R	R _a
	Y	R ₀	R _R	R _a	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆							
Rooms:	Q ₂	.0699 (1.59) a	-	.0990 (1.63)	-.0305 (1.13)	a	-.0595 (.87)	.070	.099	-.030							
Age:	Q ₃	.3571 (1.58) a		-	2.145 (1.94)	.7315 (3.24)	.5630 (2.08)	-	.357	2.145							2.145
	Q ₄	.4229 (1.25) a		-	.1294 (1.86)	.3907 (3.16)	.3080 (2.08)	-	.735	.225							.225
	Q ₅	.0446 (.71)	-.0911 (1.65)	-	-.2831 (1.37)	-.1425 (1.25)	-.1886 (1.93)	-	.813	-2.528							-2.528

Note: A dash indicates that the variable is not included in the equation. Figures in parentheses are *t*-ratios.
 aCoefficient had *t*-ratio less than one and wrong sign.

Married households exhibit a higher price elasticity than single or separated households. The incremental price of a newer unit or a larger lot size were generally insignificant. The submarket location dummies were significant; a ghetto location results in owner-occupants having a structure which is 10.1 years older, holding income and housing prices constant. Equations for the likelihood that a very old or a very new unit is chosen also reveal the dramatic submarket location effect. The likelihood that a black owner-occupant acquires a unit built since 1960 is about 25 percent less if he lives in the black submarket; the likelihood that the unit was built prior to 1939 is about 35 percent higher for residents of the black submarket than for the same household buying at the same price in the white submarket. (Other life-cycle groups exhibit similar differences due to location.) Comparison of these equations for structure age to those for whites (Table 4.3 and Appendix B, Table B.3) reveals that black households' demands for structure age are less price elastic than is the case for white households. This would account for the larger price spread among units with different ages in the black submarket than in the white submarket, as described in Chapter 3.

The demand equations for structure age for renters are based on a larger sample and are generally a better statistical fit than the owner equations. In contrast to black owners, the income variable for black renters is either insignificant or exhibits a very low elasticity. Price effects are very substantial, with both the price for the composite bundle of services and the incremental price of a newer unit statistically significant. The former exhibits an elasticity approaching or exceeding one in most of the equations and across most life-cycle classes. The decision to occupy the newest rental units exhibits especially high price elasticities. The elasticity for the incremental price of a newer unit ranges from $-.5$ to -1.0 for different life-cycle groups in the equation denoting the decision to acquire the older units, and from -2.0 to -10.0 in the equation denoting the decision to occupy the newest units. Thus, for black renters, income does not seem to influence the choice of a structure age, nor do blacks seem prepared to pay much of a premium for newer rental units. The higher estimated price elasticities for age for black households than for white households is consistent with the smaller price spreads among rental units of different ages in the black submarket. Finally, the submarket location dummies are again quite high. The probability of occupying a rental unit built prior to 1939 is about 35 to 40 percent higher in the ghetto, and the probability of occupying a unit built since 1960 is 10 percent lower. Again, these location dummies reflect the available supply of rental units. Black renters who escape from the ghetto much improve their likelihood of getting out of the

oldest units, though their chances of occupying the newest units are not so significantly raised.

Estimates of the lot-size equations are less reliable than those for age, tenure, or structure size. In part, this may reflect the fact that blacks face severe constraints in acquiring any but the highest-density units. The equation for the dichotomous variable denoting the choice of the smallest lot is probably the most accurate specification. That equation has a significant income term but the elasticity is generally less than .15 (much below the income elasticity for white households). The incremental price of a larger lot over the smallest lot is significant for most of the life-cycle groups but displays elasticities below one. Again, the submarket location dummies are highly significant.

4. IMPROVING BLACK HOUSING CONDITIONS

The demand estimates provide a basis for relating housing differentials by race to differences in income between blacks and whites, housing discrimination, and differences in tastes. Income and price effects can be directly calculated, with the residual attributable to differences in tastes. These estimates also reveal what might be expected from public policies which eliminate income and market differentials.

The effect of income differentials between blacks and whites is given by the predicted increase in housing consumption if black incomes were increased to levels comparable with whites in the same life-cycle class. For married households with children and the head over thirty-five, black incomes in San Francisco in 1965 would have to be increased from \$8,610 to \$11,450. This increase has a direct effect which is given by the income coefficients. In addition, the higher income increases by 3.5 percent the number of black households in this life-cycle class residing outside ghetto markets. These households buy at more favorable prices and escape the nonprice rationing represented by the location dummies. These changes are also included in the estimate of the income effect.

Predicting the effects of eliminating market discrimination by means of the equations is more complex. The principal problem encountered in estimating how much prices must be changed for blacks is that of determining how much prices now differ for housing with the same characteristics. Many attributes of the dwelling unit and of the neighborhood are relevant in defining housing quality. In the analysis above, dwelling units were described by their age, lot size, number of rooms, and whether they were sound or unsound. In this study, no data is

available on other dwelling-unit attributes. In determining "equal prices for equal quality," only dwelling-unit quality was considered, using the attributes listed above. While, in principle, neighborhood characteristics are also relevant in defining "comparable" housing, no data permitting standardization for neighborhood characteristics is currently available.

As has been noted, when standardized on the basis of the above dwelling-unit attributes, housing in the ghetto exhibits prices which are below prices of comparable units in contiguous central-city white submarkets, but which are often above the prices of such units in suburban markets. The procedure used to measure equal prices for equal quality was an adjustment of prices so that price/income ratios for each dwelling-unit type in the black submarket were equal to the average levels prevailing in the white submarket. (Due to differences in demand functions and housing supplies across submarkets, such ratios exhibit variation across different white neighborhoods, with higher price/income ratios in central markets and lower ratios in the suburbs.) This criterion requires that housing prices assumed to confront blacks be lowered by 16 percent for newer owner units, 6 percent for older units, and 21 percent for housing with the largest lots. Rents must be lowered by about 17 percent for the newest units and 5 percent for older units.

Were data available, more sophisticated measures of price differences would be desirable. For example, to the extent that ghetto units are of lower quality because of the crudeness of the sound-unsound classification, the price effects estimated below understate the amount by which prices must be reduced to achieve price equality. Neighborhood differences may also exist, and hence comparability might imply additional price changes. However, lot size, age, structure size, and the sound-unsound classification probably account for most of the important dimensions of dwelling-unit quality. Despite these remaining measurement problems in defining equal prices for equal quality, the above price changes are a good approximation of the effects of eliminating price discrimination.

A summary of the estimated consequences of these income transfers and changes in prices to blacks are shown in Table 5.7. Increasing black incomes to levels comparable with whites in this life-cycle class would only reduce the gap between black and white housing consumption by 10 to 20 percent, depending on the attribute of housing considered.

In contrast, changing prices confronting blacks has a significant impact. Dwelling-unit size would increase by .18 rooms, or by over one-third of the gap between blacks and whites; and average age of owner-occupant housing demanded would be reduced by 2.47 years, which constitutes about 30 percent of the gap between blacks and whites. Lot size would be increased by .025 acres, about 20 percent of the

TABLE 5.7
 SOURCES OF THE BLACK-WHITE HOUSING DIFFERENTIAL: MARRIED HOUSEHOLDS WITH CHILDREN,
 HEAD OVER 35

Housing Attribute	Housing Consumed		Difference Between Black and White	Increase Black Incomes			Eliminate Discriminatory Market	
	White	Black		Direct Effect	Induced Access to White Submarkets	Total Effect	Reduce Prices to Blacks	Eliminate Submarket Dummies
I. Probability of owning (per cent):								
II. Owners:								
Number of rooms	85.6	64.3	21.3	5.8	.6	6.4	0	10.4
Age (years)	6.44	5.99	.47	.102	.011	.113	.181	0
Lot size < .2 acre (percent)	14.21	22.30	8.11	.105	.44	1.49	2.47	4.85
III. Renters:								
Number of rooms	51.5	89.0	27.5	1.0	.4	1.4	3.0	4.5
Age (years)	5.38	5.26	.120	.068	.002	.070	.025	.026
	17.19	24.74	7.55	-	.51	.51	2.13	6.21

total gap. Rental units consumed would also be of higher quality. Equally large changes in black housing consumption are associated with eliminating the submarket dummy variables. While the dummy variable may reflect differences in tastes, this effect is slight, since the major determinants of housing tastes—such life-cycle characteristics as marital status, age of head, and the presence of children—have been accounted for. The dummies are more likely to reflect supply rationing. A huge increase in the probability of ownership is predicted by eliminating the submarket location dummies. In addition, newer, lower-density housing would be occupied.

The price effects, together with that (unspecified) portion of the submarket dummy-variable effect attributable to supply rationing, provide an estimate of the effects of making market opportunities facing blacks comparable to those open to whites. This factor has a substantially greater potential effect on housing consumption than the results of equalizing black and white incomes. Taken together, these changes in income and market opportunities account for most of the gap between blacks and whites in the several measures of housing consumption. This implies that differences *between* blacks and whites in tastes for housing are clearly of limited importance in explaining racial differentials in housing consumption. (There are, of course, differences in tastes *among* white households or *among* black households which remain unexplained by the demand equations!) The one possible exception is lot size, where significant differences between blacks and whites would persist even with equal incomes and prices. However, the income and price elasticities in the estimated demand equations for lot size have low levels of significance, and hence any conclusion about differences between blacks and whites in tastes for lot size must be considered highly tentative.

5. CONCLUSIONS

The evidence that differences in income alone will not account for the observed differences between black and white housing consumption is quite persuasive. Examination of the data for San Francisco reveals large differentials between blacks and whites which persist even for those comparisons involving the highest-income households.

The explanation for differentials such as these lies largely in entry constraints, which limit the supply of housing available to blacks. While no *ex ante* measures of discrimination barriers are available, their effects on housing prices and the supplies available to blacks can be measured and are dramatic. The majority of black households in the San Francisco Bay Area reside in three small geographic areas which contain the oldest,

highest-density housing stock. A minority of blacks, predominantly middle- and upper-income, enter white submarkets. These fortunate few consume substantially better housing. However, the much larger number of middle- and upper-income black households confined to black submarkets fare much worse; the model shows their housing consumption reduced by higher prices and by nonprice rationing of better-quality housing. Virtually all of the observed differentials in housing consumption attributable to race can be traced to these market imperfections. By comparison, differences in tastes between blacks and whites appear relatively insignificant.

This chapter also suggests that increases in black incomes alone, through conscious public policy or by other means, will not eliminate the gap between black and white housing consumption. The summary statistics for the 1960s revealing the limited number of black households obtaining access to the suburbs are highly suggestive. Based on the more detailed cross-section analysis here, only small numbers of blacks can be expected to enter white submarkets, even with dramatic increases in income.

Unless more housing is made available to blacks, the primary result of rising incomes may be price increases, with the captive demand in the black housing market bidding up prices of better-quality housing. In short, in the context of a continued segregated market of the type prevailing in the Bay Area in 1965, increases in black family incomes will not solve blacks' housing problems. This circumstance provides strong support for an open-housing policy, a conclusion only further emphasized by the likelihood that the San Francisco housing market is less discriminatory than that of most other major urban areas.