

Housing and Society
Vol. 10, No. 3, 1983

RACE, HOUSING ATTRIBUTES, AND SATISFACTION WITH HOUSING

Jean Kinsey and Sylvia Lane

ABSTRACT

The effect of housing characteristics on the probability of satisfaction with housing for blacks and whites with specific demographic characteristics was estimated in this study. The estimated probability of being satisfied with current housing is slightly less for blacks than for whites. The characteristic that contributes most to black dissatisfaction is the lack of space. Within 3/4 of the specific demographic categories the data indicate that blacks may have different preferences for housing characteristics than do whites.

PURPOSE

Observed differences in housing quality and location between blacks and whites in the U.S. have motivated numerous empirical studies but few investigators have examined whether blacks are less satisfied with their housing than are whites. Lawton (1978) found very small differences in housing satisfaction between elderly blacks and whites while Lane and Kinsey (1981) found significant differences between whites' and nonwhites' probabilities of satisfaction with housing after controlling for other demographic characteristics.

This paper is an attempt to go beyond the differences between the races in housing satisfaction to examine the sources of satisfaction and the demographic correlates of satisfaction. The purposes of this paper are (1) to examine the differences between blacks and whites in the probability of satisfaction with the dwelling where selected characteristics of the dwelling are controlled, (2) examine the differences in the effects of the selected housing characteristics on the probability of satisfaction where demographic characteristics are similar, and (3) to make inferences about differences in preferences between blacks and whites.

Scientific Journal Series No. 13,268 of the Agricultural Experiment Station, University of Minnesota and Giannini Publication No. 664. Jean Kinsey is Associate Professor in the Agricultural and Applied Economics Department, University of Minnesota. Sylvia Lane is Professor Emeritus of the Department of Agricultural and Resource Economics, University of California, Davis and Agricultural Economist with the Giannini Foundation.

Hypotheses

The hypotheses tested are:

- (1) Blacks and whites with otherwise similar demographic characteristics and similar housing would have equal probabilities of reporting satisfaction with their housing.
- (2) Blacks and whites with otherwise similar demographic characteristics would display similar preferences for housing characteristics.

There are three important operational definitions needed to make clear what the hypotheses are intended to test: (1) "otherwise similar demographic characteristics" means that demographic characteristics are controlled through the selection of relatively homogeneous subgroupings within the sample, (2) "similarity in preferences" is inferred from the absence of differences in the vector of coefficients for the effects of the housing characteristics on the probability of satisfaction, (3) "otherwise similar housing characteristics" means that housing characteristics are controlled through the inclusion of independent variables in the probit regression.

THEORETICAL MODEL

Housing characteristics are variables over which the consumer has some control. Demographic characteristics determine a large part of one's experiences and attitudes and subsequently one's preferences and expectations (Van Raaij, 1981). When one's preferences and expectations are not met, dissatisfaction tends to occur (Morris and Winter, 1978). If individuals from different races, who are otherwise demographically similar, prefer different housing characteristics, their probabilities of satisfaction could be equal even when housing characteristics are different. The conceptual model includes the proposition that demographic characteristics influence preferences which underlie one's choices in the market. Subject to their budget (and other) constraints, consumers have a degree of control over those choices and expect a certain level of satisfaction from choices made. Demographic characteristics and housing characteristics influence the probability of satisfaction but housing variables have the most direct impact and have been found to be the most important (Campbell, 1976; Lane and Kinsey, 1980).

METHODS

Analysis procedures

Probit was chosen as the estimating technique because with a discrete (in this case a dichotomous) dependent variable it provides estimates of the parameters (β) that are asymptotically consistent, efficient and normally distributed. The latter property is important to obtain valid t statistics for testing the significance of estimated coefficients (Gladhart and Mount). Linear estimating techniques such

as ordinary or weighted least squares do not yield valid test statistics with dichotomous dependent variables and there exists the possibility of estimating P(S) greater than 1 or less than 0.

In a simple regression model with one explanatory variable, we have:

$$Y = \alpha + \beta X + \varepsilon \quad (1)$$

In a discrete choice model Y is not directly observable but observations on the dependent variable are coded 1 if a response occurs (housing is satisfactory) and 0 otherwise. Observations on X are continuous or discrete and ε is the error term. α and β are the intercept and slope parameters to be estimated. Assuming the frequency of responses is normally distributed, plotting X against the observed percentage of positive responses produces a sigmoid (S) curve as shown in Figure 1. The probit scale is a simple transformation of the percentage scale such that the relationship between X and the probit scale is a straight line (L). The estimated value of the dependent variable in equation (1) is (\hat{Y}) which is converted from the probit value to the probability of a positive response for any given level of X by assuming ε is normally distributed about \hat{Y} .

$$P(S) = \int_{-\infty}^{\frac{X-\mu}{\sigma}} \frac{1}{\sqrt{2\pi}} \exp \left\{ -\frac{1}{2} \varepsilon^2 \right\} d\varepsilon \quad (2)$$

where $\hat{P}(S)$ is the probability of housing satisfaction $X - \mu / \sigma = \hat{Y}$, and $\varepsilon = (Y - \hat{Y})$.

For any given value of X, say X^* , the probability of a positive response is measured as the area under the normal curve that lies above 5 on the probit scale, with the mean of the normal distribution at the estimated value of Y, i.e., ($\hat{Y} = X - \mu / \sigma$) In terms of Figure 1, the probability is measured by all of the area under the bell-shaped curve that is above 50 percent; the part that is not shaded. The transformation of the estimated value of Y on the probit scale to a probability is a fundamental calculation in probit analysis. It assures that probabilities greater than one or less than zero will not be estimated. The maximum likelihood procedure also accounts for the frequency nature of the data which gives rise to heteroscedasticity (nonconstant variance of ε) when using ordinary least squares.

The level of housing characteristics that elicits a positive response (satisfaction) is commonly referred to as the threshold index level (I^*). Respondents are observed to be satisfied ($Y=1$) when the value of the index is above I^* .

In this research I^* is the linear combination of a number of observed variables:

$$I^* = \hat{\alpha} + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \dots + \hat{\beta}_N X_N \quad (3)$$

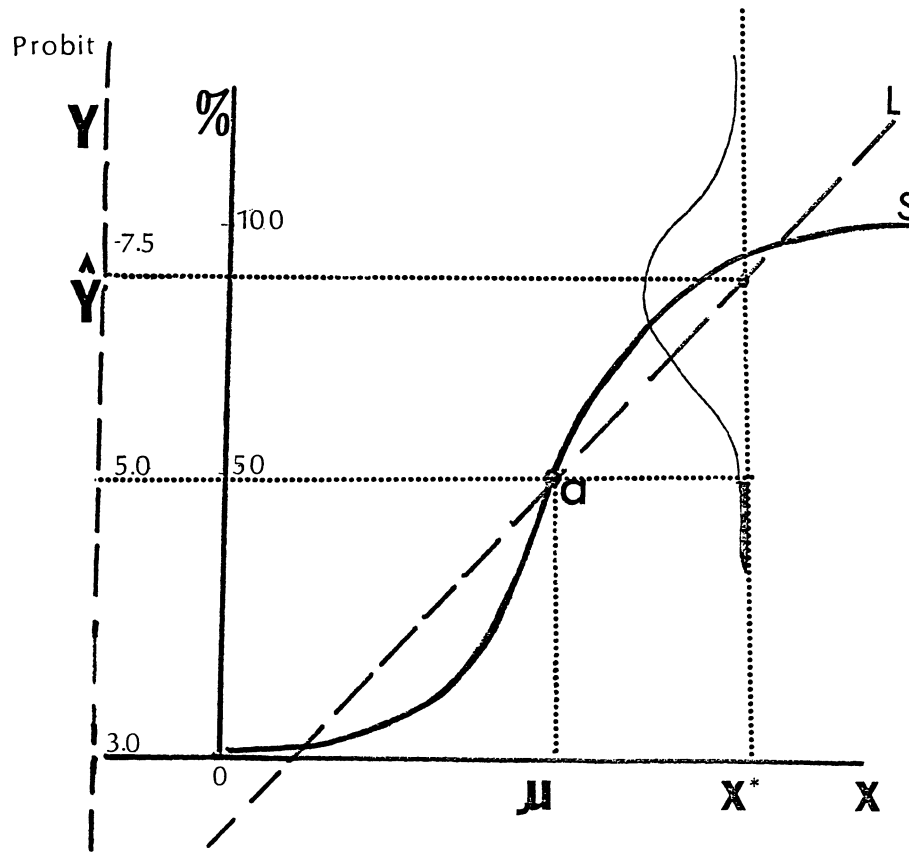


Figure 1. Sigmoid curve of the probit distribution.

The index is exactly like a multivariate regression equation without an error term and can be treated as such in that individual variables can be squared, expressed as logs or interacted without affecting the basic probit calculation. In the multivariate case, equation (2) becomes:

$$P(S) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{I^*} \exp(-\frac{1}{2} \epsilon^2) d\epsilon. \quad (4)$$

I^* is assumed to be normally distributed among the sample as a result of factors not included in the explanatory variables. Different persons may respond positively at different levels of the index.

Demographic characteristics are often used as proxies for tastes and preferences which reflect the underlying utility functions of the consumers being observed. If blacks and whites who belong to otherwise demographically homogeneous groups have different preferences for housing characteristics (represented by the X variables in equations 1 to 4) then, for a given level of housing characteristics, say X^* on Figure 1, the regression line L (and consequently S) will be different (in slope and/or intercept) for blacks and whites.

The link to utility theory is not very complex. It says that:

$$P(S) = \text{prob}(U(X_i) > \epsilon) \quad (5a)$$

$$P(\text{not } S) = \text{prob}(U(X_i) < \epsilon) \quad (5b)$$

where $U(X_i)$ is the utility received from housing characteristics X_i .

If the estimated threshold level of these characteristics

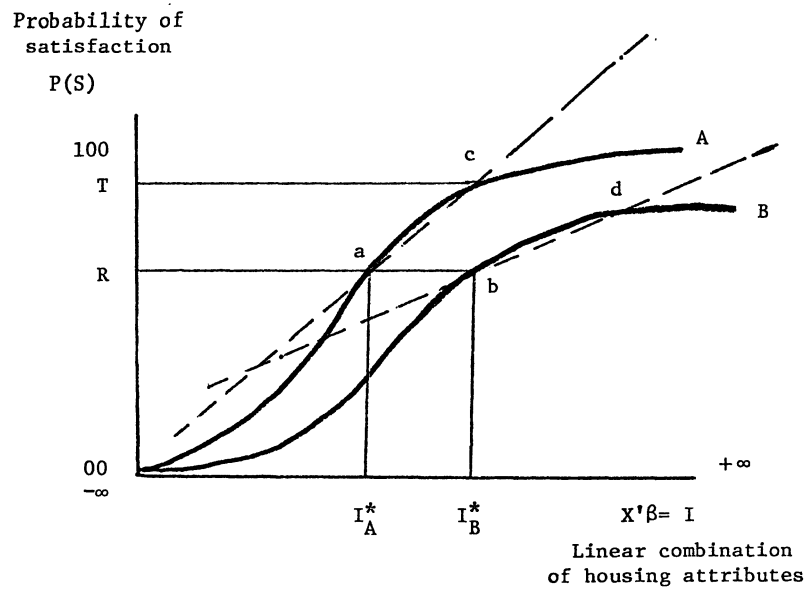
$$(I^* = U(X_i) = \alpha + \sum_{i=1}^n \beta_i X_i) \quad (6)$$

exceeds the average or expected level of utility, satisfaction will be reported. The error term, ϵ , contains all the information not controlled for in the demographic stratification of the sample or accounted for in the explanatory variables.

The statistical test for equal preferences of blacks and whites tests the hypothesis that

$$\hat{\beta}_B = \hat{\beta}_W$$

that is, the slopes are equal for blacks and whites, where separate equations are estimated for each group. If the slope of the regression line is the same for blacks and whites it implies they respond in a similar fashion to their housing characteristics, and a higher level of satisfaction for one of the two groups would imply higher levels of housing characteristics. If the slopes are not equal, then either: (a) the same level of housing characteristics can lead to different probabilities of satisfaction, or (b) the same probability of satisfaction can be obtained at different levels of housing characteristics. This can be seen in Figure 2, where curve A could reflect the preferences of blacks and curve B the preferences of whites (or vice versa) (Struyk, 1977).



A and B are different groups with different preferences. Members of group B have a lower probability of satisfaction at all levels of housing attributes than those in group A.

Figure 2. Estimated probability of satisfaction for two groups.

Points (a) and (c) illustrate the case where the slopes are equal for each group. Points (c) and (b) illustrate the case where the slopes are not equal but housing characteristics are similar. Points (a) and (b) illustrate the case where the slopes are not equal and housing characteristics are not similar. If estimates showed that the threshold index level (I^*) for group A is less than the threshold index for group B at the same satisfaction level, it would indicate that group B needed higher levels of housing characteristics to reach the same satisfaction level as group A, thereby indicating a difference in preferences.

A one unit increment in housing amenities leads to larger increases in satisfaction for members of group A than group B implying that group A's expected or average utility is less. In terms of equation (5a), it takes a higher utility received from housing characteristics to trigger satisfaction for those in group B than in group A.

The variables

The data were collected and compiled by the Survey Research Center of the University of Michigan during the eighth wave of the Panel Study of Income Dynamics (Survey Research Center 1975). The data were collected from a cross-sectional sample of dwellings in the coterminous United States and from a subsample of families interviewed by the Bureau of Census for the Office of Economic Opportunity. The first part of the sample was originally representative of the United States population; the second part over-sampled from low-income households. To obtain a sample representative of the United States population in 1975, the data were weighted using weights provided with the data set. A 40 percent subsample of the total weighted sample was used in the analysis. A sample of 5,701 households which mirrors the distribution of characteristics of the United States population in 1975 resulted.

Dependent variable. A dichotomous dependent variable was used to estimate satisfaction $P(S)$ with housing. Respondents' answers to the question, "All things considered, would you say you are satisfied or dissatisfied with your house or apartment as a place to live?" were coded 1 if they reported being satisfied and 0 if they did not (Survey Research Center 1975, p. 85). Nine percent of the total sample are dissatisfied with their housing; 17.5 percent of blacks and 8 percent of whites.

Housing characteristics. The housing characteristics (Table 1) used as explanatory variables to estimate the parameters of the probit index and the probability of housing satisfaction are:

- (1) an index of problems with the home.
- (2) the number of rooms available compared to the number of rooms needed for a household of that size and composition.
- (3) whether the home is owned.
- (4) miles from the center of a city with a population of more than 50,000.

Table 1. Means of Independent Variables

	Index of Housing Quality	Not Owning	Shortage of Rooms	Just Enough Rooms	Miles From Center City
Total Sample	1.18	0.40	0.048	0.087	26.36
Blacks	2.26	0.57	0.113	0.154	20.08
Whites	1.04	.037	0.040	0.079	27.15

The index of housing problems is available in the data set. It represents a compilation of responses for each household to questions concerning problems with (1) plumbing, (2) security, (3) the structure of the building, (4) pests, and (5) insulation or heating systems and questions about how serious these problems were perceived to be. Low values of the index indicate fewer housing problems. Therefore, the index should be inversely related to the probability of housing satisfaction.

The second explanatory variable is an indicator of available space relative to the need for space. Such variables have been found to be major considerations in the selection of housing (Gallagly, 1974; Roistacher, 1974; Gladhart, 1973) and in housing satisfaction (Campbell, 1976; Newman and Duncan, 1978; Morris, Crull, and Winter, 1976).

An objective criterion for judging whether the number of rooms was adequate was established by the Survey Research Center: Two rooms (excluding bathrooms) for a husband and wife or a single head of household; one additional room for each single person over age 17 and one room for a married couple other than the head of the household and wife; one additional room was allowed for every two children of the same sex under age 18. Children under 10 were paired regardless of sex.

This variable was entered as two dummy variables, the first coded 1 if the house had a shortage of rooms and 0 otherwise; the second coded 1 if the house had just enough rooms and 0 otherwise. Those who had extra rooms are represented in the constant. A shortage of rooms and having just enough rooms were expected to decrease satisfaction relative to having extra space. Because the adequacy of the number of rooms accounts for family size and composition, family size was not used as an explanatory variable.

Home ownership is expected to be associated with a higher probability of satisfaction as previous studies of the general population have indicated (Campbell, 1976; Lane and Kinsey, 1980). The rent/own variable was coded 0 if the home was owned and 1 otherwise,

therefore, its coefficient is expected to be negative.

The last housing characteristic considered, miles to the center of a city with greater than 50,000 population, is an indicator of convenience (which takes into consideration distance to work, school, and major shopping) and urban living. Because the more desirable locations for familial living tend to be in less urban areas, it is expected that increased distance would increase the probability of satisfaction for households with children (Wheaton, 1977). For reasons that would vary for different subgroups, the benefits to distance from the center of a city were expected to diminish at some point. Adding the square of the miles from the center of a city to the analysis enabled us to discover if those benefits do, in fact, diminish, and at what distance the rate of increase in probability of satisfaction started decreasing.

Demographic variables. Four demographic variables were used to stratify the sample. They are:

- (1) Race: blacks and whites
- (2) Total income of the household
- (3) Years of education for the household head
- (4) Stage in the life cycle.

The focus of this study is on differences between blacks' and whites' probabilities of housing satisfaction with housing characteristics, so the first stratification of the sample is along racial lines. Each racial group was further stratified into four groups: those with incomes of less than \$5,000; those with incomes between \$5,000 and \$9,999; those with incomes between \$10,000 and \$14,999; and those with incomes greater than \$14,999.

Similarly, blacks and whites were stratified according to level of education. There are three strata: those with more than 12 years of education, designated as "college"; those with 9 to 12 years, designated as "high school"; and those with less than 9 years, designated as "grade school".

Five stages of the life cycle were delineated (each stage included non-married as well as married households):

- Stage 1: Households with no children presently in the household and the head of the household less than 41 years old.
- Stage 2: Households where the youngest child is under 6 years of age.
- Stage 3: Households where the youngest child is between 6 and 12.
- Stage 4: Households where the youngest child is between the ages of 13 and 17.
- Stage 5: Households with no children presently in the household and the head of the household is over age 40 including those who are retired.

The demographic variables used to stratify the sample were selected after examining their correlations with other characteristics such as sex of head of household and the significance of their

relationship to satisfaction P(S). We found that income, education, and life cycle stage capture the most important differences in households' demographic characteristics. Categorizations of the life cycle followed those of Galster (1979) who relied on work by Lansing and Kish (1956), Duncan and Hauser (1960) and Straszheim (1975). Galster (1979) also used education and income to indicate socioeconomic class as did Gans (1962), Birch et al. (1973), and Rapkin and Grigsby (1960).

FINDINGS AND IMPLICATIONS

Satisfaction and race

Probit models estimated for each demographic subgroup are summarized in Table 2. The hypothesis that

$$\beta_1 = \beta_2 = \dots \beta_n = 0$$

was rejected for every subgroup, i.e. each regression is statistically significant. The adjusted likelihood ratio in Table 2 is a goodness-of-fit statistic that can be interpreted like an R-squared statistic in ordinary least squares. To simplify exposition, only coefficients that are at least 1.65 times their standard errors are reported in the last six columns.

Probit estimates of satisfaction P(S) are reported in the third column of Table 3. High school educated blacks had a satisfaction level of .86 with an index of 1.10 and high school educated whites had a satisfaction level of .93 with an index of 1.44. In Figure 2, this is comparable to point c for whites and point a for blacks since the hypothesis that the slopes for blacks and whites are equal is not rejected for this subgroup. Blacks in this subgroup possess fewer desirable housing characteristics than do whites. This is also the case for blacks and whites whose youngest children are aged 6-12 (Stage 3), and for all blacks compared to all whites. This is consistent with findings from other studies that show that blacks live in lower quality housing than do whites, other things being equal (Wilson, 1979; Kain and Quigley, 1975; Straszheim, 1974; and Hanna and Lindamood, 1979). By contrast, in the subgroup where the youngest child is a teenager (Stage 4), blacks had a high satisfaction level and a very high critical index value (5.18).

Earlier findings suggest middle aged and older people tend to report satisfaction with their housing choices (Campbell, 1976; Lawton, 1978). People at this age have typically adjusted their expectations to conform with the reality of their lifetime resources and constraints and tend to express satisfaction with situations they do not realistically aspire to change. Blacks in life cycle Stage 4 evidenced this type of behavior. Their "index of housing problems" is considerably higher (more problems) than the index for whites (2.39 vs. .85) yet they apparently held this variable to be of little importance compared to whites. Column 4 of Table 3 indicates the marginal change in the threshold index level (I*) for a unit change in the housing index is zero for Stage 4 blacks whereas it is -.03 for whites.

Table 2. Regression coefficients for satisfaction with housing attributes

Demographic Subgroups	Adjusted Likelihood Ratio Statistics	Housing Quality Index	Not Owning	Shortage of Rooms	Just Enough Rooms	Distance from City Center	Miles Squared
All Blacks	.181	-.160	-.385	-.609		+	-.0002
All Whites	.123	-.185	-.248	-.251	-.253	+	-.00008
Income							
<\$5,000							
Blacks	.200	-.162			.583*		
Whites	.242	-.292				-.014	.00001*
\$5,000-9,999							
Blacks	.360	-.208	-1.088	-1.594			
Whites	.167	-.172	-.271	-.617	-.351	.020	-.0002
\$10,000-14,999							
Blacks	.416	-.410				.086	-.001
Whites	.070	-.109	-.338				
>\$15,000							
Blacks	.305		-.760*			+	-.002*
Whites	.079	-.178	-.186*	-.399*	-.366*		
Life Cycle							
Stage 1							
Blacks		.182		-.243			
Whites	.095	-.122	-.654	-.593			
Stage 2							
Blacks	.095	-.085	-.524			.042	-.0006
Whites	.267	-.273		-.538	-.645	.031	-.0004
Stage 3							
Blacks	.216	-.106*	-.748*	-1.463			
Whites	.056	-.071		-.750			
Stage 4							
Blacks	.495	-.271		-1.125		-.293	.0093
Whites	.229	-.296				-.0197*	-.0002
Stage 5							
Blacks	.372	-.214					
Whites	.157	-.235			-.786	-.025	.0002
Education							
Grade School							
Blacks	.076				.638		
Whites	.149	-.224			-.664	-.038	.0003
High School							
Blacks	.343	-.263		-.944			
Whites	.188	-.251	-.170	-.396		.010	
College							
Blacks	.530	-.494	-2.867			.107	-.002
Whites	.112	-.131	-.446		-.298*	.012	-.0002

Table 3. Estimated Probability of Satisfaction with Housing Attributes

Demographic Subgroups	χ^2	Probit Index	Estimated P(S)	$\partial P(S) / \partial \text{Housing Index}$
Total Sample	13.00*			
Blacks		1.02	.85	-.0403
Whites		1.40	.92	-.0241
Income				
<\$5,000	41.42			
Blacks		1.35	.91	-.0262
Whites		1.22	.89	-.0551
\$5,000-9,999	18.74			
Blacks		0.99	.84	-.0510
Whites		1.37	.92	-.0269
\$10,000-14,999	39.94			
Blacks		0.73	.77	-.1226
Whites		1.42	.92	-.0226
>\$15,000	33.20			
Blacks		1.59	.94	-.0202
Whites		1.51	.93	-.0225
Education				
Grade School	34.24			
Blacks		1.19	.88	-.0068
Whites		1.53	.94	-.0180
High School	8.42*			
Blacks		1.10	.86	-.0576
Whites		1.44	.93	-.0356
College	33.22			
Blacks		0.88	.81	-.1338
Whites		1.40	.92	-.0197
Life Cycle				
Stage 1	5.98*			
Blacks		1.11	.87	-.0523
Whites		1.08	.86	-.0272
Stage 2	37.58			
Blacks		0.82	.79	-.0243
Whites		1.49	.93	-.0356
Stage 3	4.39*			
Blacks		0.93	.82	-.0274
Whites		1.16	.88	-.0145
Stage 4	7.64*			
Blacks		5.18	1.00	.0000
Whites		1.58	.94	-.0341
Stage 5	21.36			
Blacks		1.38	.92	-.0329
Whites		1.88	.97	-.0159

*Do not reject null hypothesis at 99 percent level of confidence: $\chi^2=16.81$

Blacks whose youngest child is a teenager apparently considered adequate space more important than do whites, even though only 12 percent of these black families had a shortage of rooms (Table 2, Column 4).

Other differences in the relative importance of home ownership for blacks and whites with similar overall preferences are also apparent in Table 2. Home ownership significantly increases the satisfaction for high school educated whites, young whites who had no children and for blacks whose youngest child is in grade school (Stages 2 and 3). The negative coefficient for "not owning" is larger for blacks than whites in all cases where it is a significant variable indicating blacks generally may conceive of ownership as more important than whites for increasing satisfaction with housing. This corroborates Wilson's (1979) conclusion that the primary means by which blacks can improve their housing quality is through ownership.

Preferences and race

The preferences for housing characteristics for the total black sample were found to be similar to those of the total sample of whites. The preferences of subgroups of blacks are similar to those of subgroups of whites for those (1) with some high school education, (2) in Stage 1 of the life cycle, and (3) in Stages 3 and 4 of the life cycle where the youngest child is still in school. The null hypothesis, that the slopes are equal for blacks and whites, is not rejected for those groups as can be seen in the first column of Table 3.

The Chi Square Test used was

$$2[\log \text{likelihood}_W + \log \text{likelihood}_B - \log \text{likelihood}_{B+W}]$$

which has a Chi Square distribution with (in this case) 6 degrees of freedom. Within the groups mentioned, the slope of the sigmoid curve (Figure 1) is the same for blacks and whites; differences in the levels of satisfaction reflected different housing characteristics. The estimated satisfaction levels for blacks and whites are most alike for the young and childless (Stage 1). This connotes having blacks and whites at nearly the same point, such as point a, on Sigmoid Curve A in Figure 1.

In spite of similar overall preferences for blacks and whites in four subgroups, some differences in the signs of estimated coefficients can be observed. Miles from city center affects some blacks and whites differently. Whites lived an average of 27 miles from a city center while blacks lived an average of 20 miles away. The distance from a city center at which the satisfaction levels ceased to increase (or decrease) was calculated by noting that the estimated index is

$$I = \alpha + \sum_{i=1}^n X_i \beta_i + \beta_5 X_5 + \beta_6 (X_5)^2$$

where X_5 is the miles from a city center.

Setting $\partial I / \partial X_5$ equal to zero and solving for X_5 equals yields

$$X_5 = \beta_5 / 2\beta_6.$$

Using these calculations it was determined that distance from a city center increases satisfaction for white families with teenagers until they were approximately 40 miles from a city center; then satisfaction declined significantly. Satisfaction for black families with teenagers *decreased* with distance from the city center until they were 16 miles away and then increases. Sixty-four percent of blacks with a teenager as their youngest child lived in the city core defined to be within 8 miles of the central business district (Berry and Horton 1976). Even though the signs on the coefficients of "miles to city center" were reversed, we discovered that satisfaction increases for blacks and whites as they move into outer suburbs. The impact of miles from a city center on satisfaction for blacks and whites in Stage 4 is illustrated in Figure 3. The curves were constructed by varying the value of X_5 in equation 2 and calculating $P(S)$ for each new value, similar to curves constructed by Gladhart (1973).

Interracial Differences

The null hypothesis that the slope for blacks is equal to the slope for whites is rejected for three-fourths of the subgroups (Table 3) implying that blacks and whites in those groups had different preferences for housing characteristics.

Lower quality housing, as measured by the "index of housing quality," decreases the satisfaction for all subgroups, but not significantly so for blacks with a grade school education or with upper incomes. The mean value of the problems index is 2.3 for all blacks and 1.1 for all whites; blacks had lower average housing quality in every subgroup. The marginal effect of improved housing quality on satisfaction is greater for all blacks and for blacks in every subgroup for which the index is a significant explanatory variable (Column 4, Table 3). (One exception is Stage 4 blacks discussed earlier).

The general pattern indicates a preference for owning which strengthened at higher levels of education. Blacks had to have higher levels of education than whites before not owning significantly affected their satisfaction. Young whites without children apparently feel compelled to own whereas blacks do not strongly exhibit this desire until they had children.

Kain and Quigley (1975) found that blacks buy lower quality characteristics in housing, except for space. Smith (1980) reports that blacks pay more for space and less for other housing characteristics. We found that among owners, 9 percent of blacks and 1.5 percent of whites had a shortage of rooms. The coefficient on shortage of rooms is particularly large for blacks with annual incomes between \$5,000 and \$9,999 and for those whose youngest child is between 6 and 12 or 13 and 17 years old. A shortage of rooms is the most important determinant of satisfaction for whites whose youngest child is between 6 and 12 (Stage 3). Space is also a very important factor for whites whose youngest child is under 6 years old.

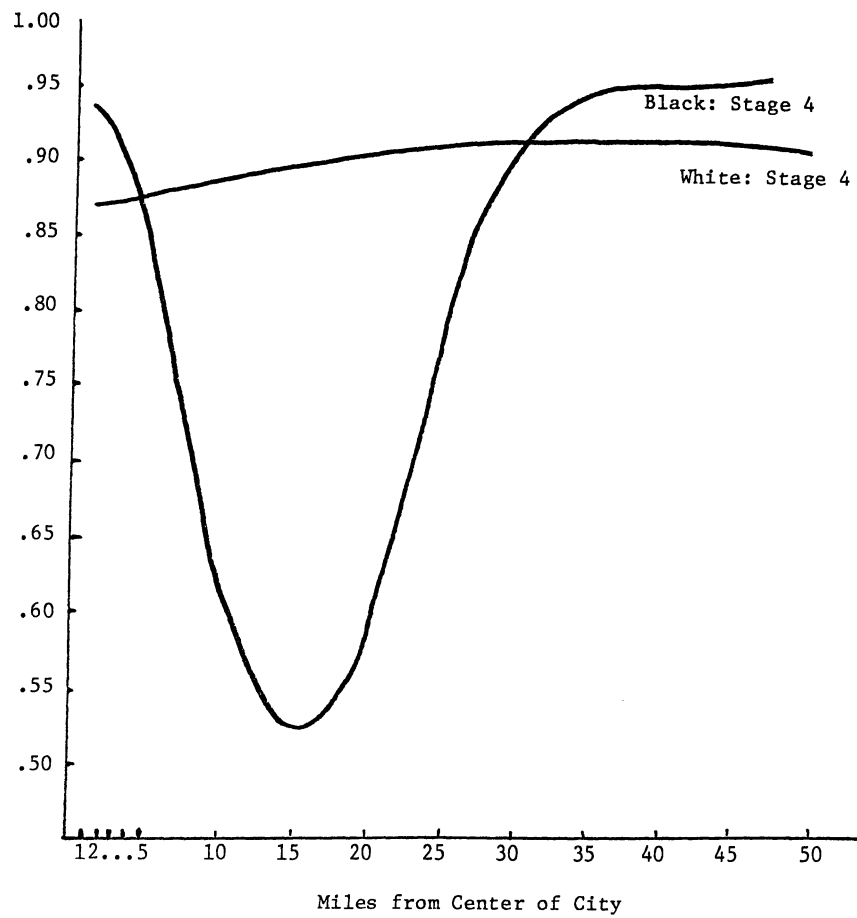


Figure 3. Probability of satisfaction as a function of distance.

Having just enough rooms does not decrease satisfaction for any subgroup of blacks. In fact, it increases satisfaction for blacks with a grade school education and those in the lowest income group. Dissatisfaction arising from a lack of space is most prominent among black and white families with children, beginning with preschoolers for whites and grade school age children for blacks.

"Miles to the center of a city" is a significant variable and behaved in the expected manner for the total sample and for blacks and whites with college educations and for those whose youngest child is under 6 years old (Stage 2). The distance at which the rate of increased satisfaction begins to diminish is the same for college educated blacks and whites, but greater for whites than blacks with preschool children.

Three white subgroups found distance from the city center decreases satisfaction until they were well beyond suburban fringes. These are whites with a grade school education, whites who earned less than \$5,000 a year and white householders over age 40 with no children at home. Because forty-two percent of low-income white households had heads with less than high school education and 72 percent of the latter group are in Stage 5 of the life cycle, those subgroups contained many of the same households.

As expected, both races apparently preferred not to rear small children in a city core where play areas are likely to be scarce and relatively unsafe and where schools often have poor reputations. For blacks, living between 9 and 14 miles or over 29 miles from city center increases the chance of ownership by more than 20 percent. For whites, suburban locations also offer more spacious housing. Ownership and space are significant variables in determining their respective probabilities of satisfaction.

SUMMARY AND CONCLUSIONS

The data used in this study show that blacks whose other demographic characteristics are similar to whites' consistently had dwellings with more serious quality problems, are less likely to own their homes, lived an average of seven miles closer to the centers of cities and had less interior space. In short, the overall quality of housing for blacks could be objectively judged inferior to the quality of housing enjoyed by whites. This, in itself, is not new information. The discrepancy in housing characteristics has typically been attributed to discriminatory practices and/or income differentials (Hanna and Lindamood, 1979).

In three-fourths of the subgroups, blacks and whites had different underlying preferences and expectations. In most cases this corresponds to curve A in Figure 2 belonging to blacks and curve B belonging to whites. This implies that the average and/or expected utility is less for blacks than for whites and that smaller increases in housing quality triggered increases in the levels of satisfaction for blacks than for whites. Point a for blacks and point d for whites represent the typical positions for subgroups with different underlying preferences. Regression lines tended to be steeper for blacks; a marginal increase in housing quality would increase their satisfaction more than it would for whites. In most cases whites needed a higher

level of housing characteristics to reach the same level of satisfaction as blacks and, in most demographic subgroups, satisfaction for blacks is less than for whites.

We expected to find an increase in satisfaction with increased income, and a decrease in satisfaction with higher levels of education and with the presence of young children. We found that satisfaction is lower for black households whose youngest child is less than 12 years old than for black households in other life cycle stages. For whites, satisfaction increases steadily as they progressed through stages in the family life cycle. Satisfaction is only slightly lower for black and white households with higher levels of education. Satisfaction does not rise steadily with income. In fact, it declined for blacks until they reached upper income levels while it increases only slightly for whites after they reached the \$5,000-\$9,999 income category. Upper income blacks and young blacks with no children had only slightly higher satisfaction than whites in the same subgroup. It seems reasonable to speculate that young blacks' expectations are high and they had attempted to obtain housing to which they feel entitled and which they could afford (Malcolm X, 1964; Rainwater, 1973).

Blacks' satisfaction may be expected to improve markedly if they have an adequate number of rooms for their families' size and composition. Improvements in the quality of the dwelling, i.e., better plumbing, structural soundness, heating and insulation, security, and a lack of pests, would also increase satisfaction for blacks. It is not clear that home ownership would significantly improve satisfaction in and of itself, except for those with a college education. Clean, structurally sound, rented housing with adequate space may be expected to improve housing satisfaction for black households in a number of subgroups including those in the upper middle income bracket as well as those with low incomes, and the elderly as well as middle-aged families with school age children.

Whites' satisfaction would be increased by having more than adequate space, and, just as for blacks, would be higher if the general quality of the dwellings are higher. More subgroups of white consumers displayed strong preferences for home ownership than subgroups of black consumers.

There is little evidence that blacks are overwhelmingly less satisfied with their housing than are whites. This finding may indicate that discrepancies between expectations and reality are not very great for either race. Given the location and housing characteristics being consumed by blacks, the most severe housing housing problem found to affect their satisfaction is inadequate space.

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