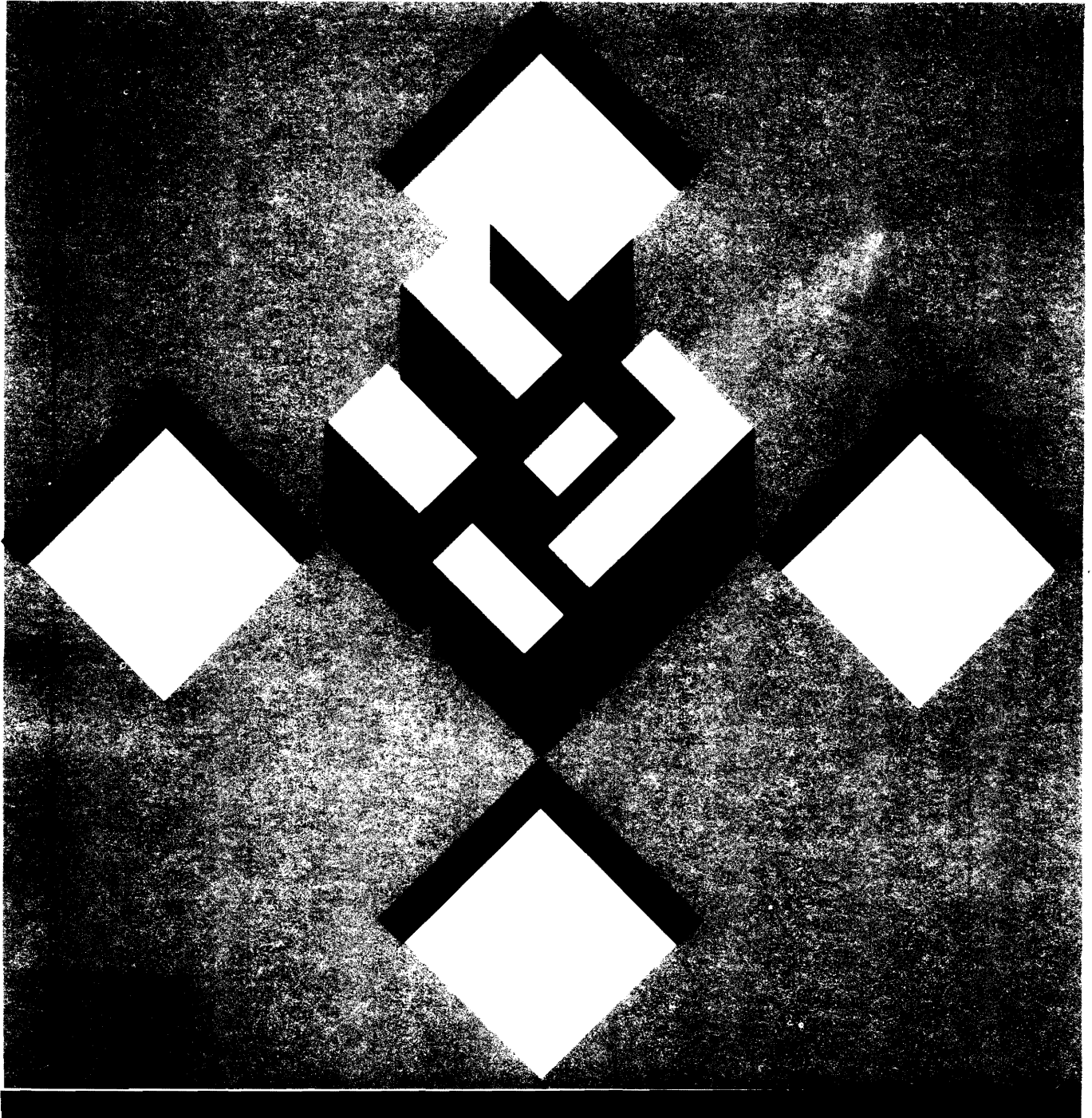
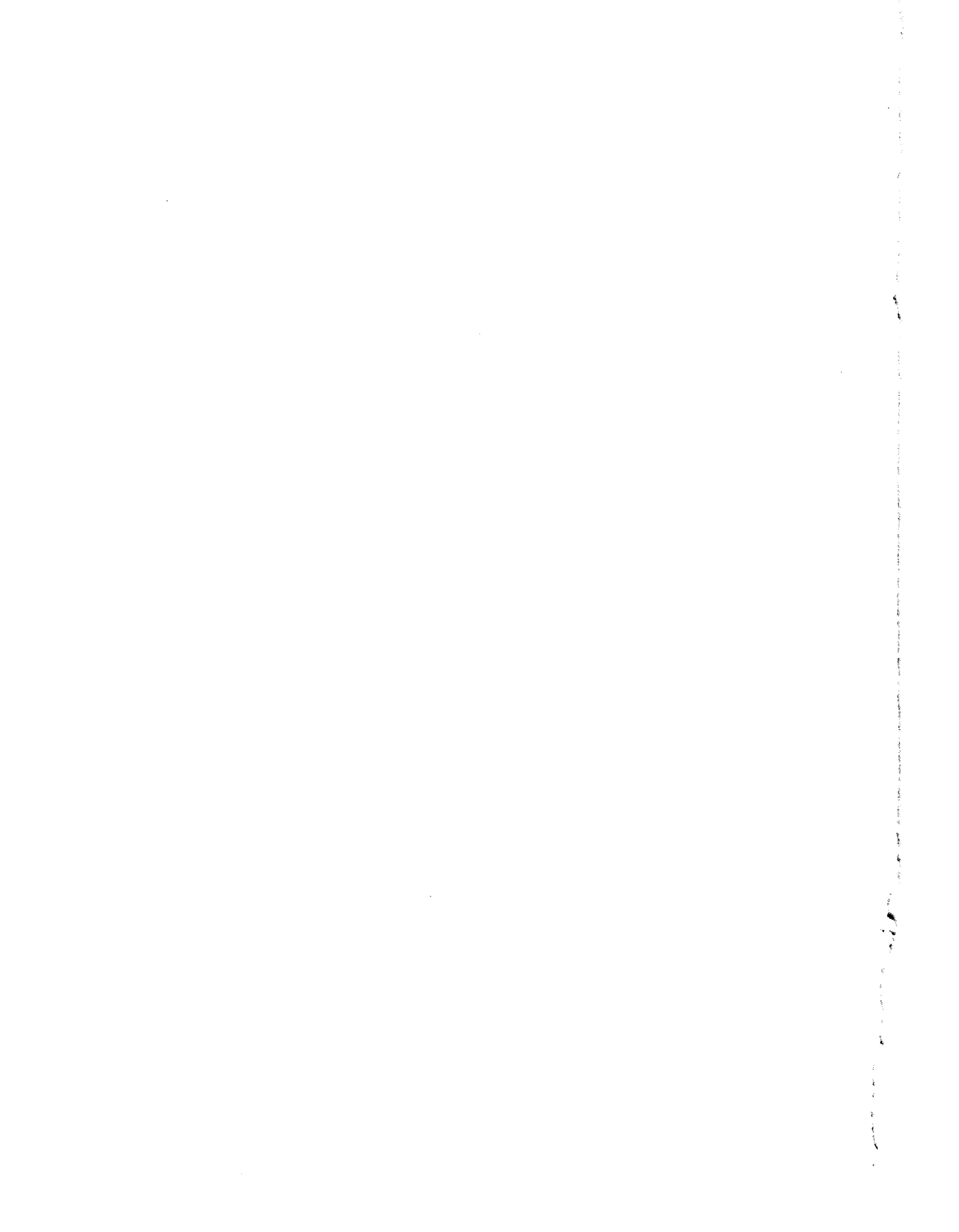




Annual Housing
Survey Studies
No. 5

The Effect of Race on Opinions of Structure and Neighborhood Quality





THE EFFECT OF RACE ON OPINIONS
OF STRUCTURE AND NEIGHBORHOOD QUALITY

Prepared for
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
OFFICE OF POLICY DEVELOPMENT AND RESEARCH

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Data from the Annual Housing Surveys are available in joint HUD-Census publications. The national data are published in Series H-150, comprising six reports, and the metropolitan data are published in Series H-170, with a separate report for each metropolitan area. Series H-171 contains supplementary summary reports on the metropolitan areas surveyed each year.

These reports are also available in microfiche form from the Library, Bureau of the Census, Washington, D.C., 20233. The published reports may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. All the data are available on public use computer tapes from the Data User Services Division, Bureau of the Census, Washington, D.C., 20233.

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Preface

This paper continues our series of Annual Housing Survey studies, reporting on research that utilizes the capabilities of the AHS for monitoring and interpreting current developments in housing, neighborhood, and household characteristics.

The Department of Housing and Urban Development has funded a national housing survey, performed by the Bureau of the Census, since 1973, with separate surveys for 60 metropolitan areas included since 1974. The survey provides current information on the size and composition of the housing inventory, characteristics of its occupants, changes in the inventory resulting from new construction and from losses, indicators of housing and neighborhood quality, and characteristics and dynamics of urban housing markets for the Nation and four census regions. Every third or fourth year, these data are also gathered for many of the largest metropolitan areas and for some smaller, fast-growing metropolitan areas.

The Annual Housing Survey is designed to help planners, policymakers and scholars understand and analyze changes in housing need and supply. Longitudinal linkage of the annual national file provides unparalleled opportunities to study market processes and household mobility; the metropolitan surveys give greater detail on the housing and population characteristics of suburbs and cities in specified metropolitan areas.

Because such substantive uses can only be as valid as the data on which they are based, we continually attempt to evaluate and improve items on the Annual Housing Survey. This paper, prepared under contract with HUD's Office of Policy Development and Research by Stephen C. Casey of the Center for Urban Policy Research of Rutgers University, examines racial variation in opinions of housing and neighborhood quality to determine whether they result from differences in attitude between whites and blacks within similar houses or neighborhoods.

Items eliciting respondents' opinions of neighborhood services, neighborhood conditions and the general living environment were included in the survey because of a growing realization that neighborhood quality, as well as housing quality, is important to residential satisfaction. Yet the utility of subjective evaluations of quality has been open to question. In particular, the consistently higher ratings of structure and neighborhood quality by white residents than by blacks raise questions of inherent racial bias, which, if it existed, would render suspect the validity of subjective evaluations of quality. Dr. Casey's results, however, show that when one standardizes for socioeconomic characteristics and housing features, there appears to be no significant difference attributable solely to race in either owners' or renters' evaluations of housing or neighborhood quality. Such results strengthen our confidence that respondents' evaluations of their housing and neighborhoods thus may be presumed to reflect real variations in their quality.

SUMMARY OF FINDINGS

Simple means or medians of white versus black owners/renters' opinions of structure and neighborhood quality indicate significantly higher white opinions of housing and immediate geographic area than is the case for blacks. These differences range from one-third to one-half of a point on a four point scale.

These racial variations are due to one or both of the following components: (1) the *disparity* in the personal, housing and neighborhood characteristics of blacks versus whites and (2) the difference in attitude between whites and blacks within *similar* housing/neighborhoods. The magnitude of the second component is measured in this research.

Developing regression equations using initially only objective variables to standardize for socioeconomic characteristics and housing features reduces the race effect to a relatively insignificant level of approximately 0.15. Thus, overall, whites and blacks of similar income, education, housing amenities, etc. report the conditions of the housing and neighborhood they occupy similarly. This is true for owners as well as renters. The raw or unrefined race effect essentially disappears when one standardizes for the nature of the populations considered.

The small remnant effect, not explained by economic equivalency of the observed populations, is further scrutinized three ways to evaluate its durability under more intensive analyses. More variables (now including subjective variables) are included in the regression equations; geographic locations of the observed population are taken into account, and finally, one opinion of the respondent (neighborhood) is allowed to affect the other (structure).

In the first case, additional variables reduce the race effect slightly; in the second, geographic differentiation further reduces the race effect and shows that what little effect exists is concentrated in the Southern and Western suburbs and North Central cities; in the third case, the race effect except for these areas is swept away entirely when opinion of neighborhood is allowed to effect opinion of structure.

In sum, there appears to be no significant difference attributable solely to race in either owners' or renters' specification of housing quality. Whites and blacks living in similar conditions evaluate structures and neighborhoods which reflect these conditions similarly. Thus, this rebuts theories that claim the existence of an inherent racial bias in expressed opinion of structure and neighborhood quality.

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INTRODUCTION

For over four decades economists, planners and public policy-makers have sought a consistent and meaningful way to objectively evaluate housing quality.¹ The goal thus far has proved elusive. While typically we have focussed on physical basics, such as complete plumbing, as an objective index of housing quality, there have also been significant demurrers sufficiently so that subjective measures, opinions of residents, are now being tested for their usefulness and reliability.

In 1940, the first major attempt at gathering housing data was initiated. In this Census, two measures of the *state of repairs of the structure* were used - *not needing major repairs and needing major repairs*.² These measures said nothing of the original construction of a structure -- a shack and small single family home in an equal state of repair were classified similarly.

In 1950, an emphasis on the *condition* of a structure rather than its state of repairs was seen in the emergence of a new dichotomous classification of "structure condition"--"*not dilapidated and dilapidated*."³ "Condition" of a structure took into account its original construction. A dilapidated unit was defined as one which had one or more serious deficiencies or was of insufficient original construction so that it either (1) provided inadequate shelter or (2) endangered the safety of its occupants. To provide necessary continuity from one Census to the next, it was assumed that "not needing major repairs" and "not dilapidated" were equivalent and a similar equivalency existed for "dilapidated" and "needing major repairs."

In 1960, a three way classification was used - the 1950 not dilapidated category was divided into two subcategories--*sound and deteriorating*.⁴ The division of "not dilapidated" into "sound" and "deteriorating" reflected user interest in meliorative public programs for a portion of the housing stock which might soon become dilapidated. Assessments of the condition of the "not dilapidated" portion were necessary prior to its partitioning.

While housing "condition" was an improvement over the previous "state of repairs" designation, those associated with housing desired a broader measure than condition - one which included a measure of the completeness of a housing unit in terms of meeting basic health criteria. Thus, since 1940, a combination of (1) the structural condition indices and (2) the availability of specified plumbing facilities has been used to indicate housing as either *not substandard or substandard*.⁵ Through the 1960 Census, this was the most generally accepted definition of housing quality. A housing unit was "substandard" if it was:

- (1) Dilapidated or
- (2) Lacked one or more of the following facilities: hot running water in the structure, flush toilet for private use, bathtub or shower for private use.

This dual emphasis on condition as well as a threshold level of housing "hardware" reflected attempts to eliminate hazards to the "health, safety and welfare" of housing occupants--a basic phrase of most housing legislation of that period.

As a check on reliability, in the late 1960's the Census Bureau attempted to evaluate its enumerators' specifications of housing condition. The results of this report clearly diminished the initial enthusiasm of policymaker with the 1960 Census results.⁶

According to the Census Bureau:

"the statistics are unreliable; our best estimate is that if another group of enumerators had been sent back to rate the housing units of the United States, only about one-third of the units rated as dilapidated or deteriorating by either group of enumerators would be rated the same by both groups of enumerators."

The 1970 Census, reflecting the ambivalence of late 1960 research results, included as a measure of substandard housing: (1) counts of year round housing units lacking some or all plumbing facilities and (2) "estimates" of units with all plumbing facilities but in dilapidated condition.* Estimates were obtained indirectly by combining data on structural condition obtained in the post-Census sample survey of Components of Inventory Change with data on related housing characteristics from the previous decennial Census.

During the 1970s the Annual Housing Survey added to the list of potential objective housing quality measures by including a significant number of additional indications of structure condition. They included detailed data on housing defects and breakdowns in equipment, type of dwelling unit, characteristics of occupant households and their expenditures on housing services.⁷

Several analyses were undertaken of the additional objective housing condition measures. The results of these analyses were summarized in a memo from the Chairman, Subcommittee on Housing Quality to the Chairman, Federal Agency Council on the 1980 Census. It stated:⁸

"Analysis of Annual Housing Survey did not identify any subsets of variables that appeared to provide a clear basis for development of an operational definition of housing quality."

*Information on the structural condition of housing units was not collected in the 1970 Census because of the evidence of response or unreliability.

Following this sobering evaluation, the 1980 Census will contain only information on condition of housing units in the following categories: age of structure, number of toilets, existence of complete kitchen facilities, source of water, sewer disposal and air conditioning.

The 1980 Census will continue to produce two numerically additive measures of substandard housing (1) a count of units lacking some or all plumbing facilities (2) an estimate of dilapidated housing with all plumbing facilities.⁹

As housers/planners have become increasingly dissatisfied with traditional measures of housing quality there has been a call for more information about housing quality - specified not in terms of missing plumbing, peeling paint or enumerator specification of condition, but rather in terms of the opinions of the people who live in this housing, i.e. residents.

Opinions of both housing and neighborhood were included for the first time in the 1973 Annual Housing Survey. The justification for this inclusion was a reflection of paucity or inconsistency of the housing quality information from the decennial Census and a turn towards viewing housing quality "in the eyes of the beholder" -- those who actually occupied the structure or lived in the neighborhood.¹⁰

Several other analyses involving the use of subjective indices of structure quality and quality of the community or neighborhood have also been done in recent years. The scope of the sample, the exact type of question asked and the conclusions involving racial differences have varied across these studies.

Andrews et al.¹¹ and Campbell et al.¹² have completed studies which are national in scope. Both measured, among other things, general satisfaction with the housing environment and concluded that blacks rated their housing more negatively than whites even when differences in socioeconomic status and some geographic indicators were controlled for.

Two other studies, Burby and Weiss¹³ and Nathanson et al. analyzed the evaluations of home and community within seventeen planned communities in the United States. The residents of these communities tend to be younger and have higher income and educational attainment than the populace at large. Thus, the results from these areas cannot necessarily be extrapolated to other locations nationally.

In Columbia, Maryland, Nathanson found a significant relationship between opinion of dwelling unit and race (blacks being more negative) but no relationship between race and attitude toward the community of Columbia. Burby's study, which encompassed more communities, used a seven point scale to measure satisfaction and found blacks somewhat less satisfied than whites in townhouses. On various specific aspects of livability for residents of single family homes, blacks were significantly more satisfied than whites.

Papers by David¹⁵ and Lovrich¹⁶ examined black/white evaluations of local public services in the cities of St. Louis and Denver, respectively. Both found that blacks rated the quality of local services more negatively than whites; a difference which could not be explained by differing socioeconomic characteristics of the two racial groups.

Finally, Diaiso et al.¹⁷ did a study involving perception of housing and neighborhood quality of college students in the Pittsburgh area. Although this sample presents some of the same generalizability problems that the studies on planned communities did, the authors claim that their sample is representative of future middle class housing consumers in Eastern cities similar to Pittsburgh.

This study does not deal exclusively with perception variation by race but rather focuses on any possible racial or other variable which might affect evaluation of both housing and neighborhood attributes. Racial effects are measured by allowing all the subjects to rate a set of pictures of various housing types and then comparing black and white responses. After doing this, the authors found a negligible effect of race on perceptions of housing and neighborhood quality.

The Annual Housing Survey, with its large national sample and wealth of variables, presents an opportunity to combine the positive aspects of the above-mentioned studies on a broad scale. With the breadth of available variables, controls can be made on socioeconomic status, housing tenure, housing physical features, housing age and housing economics. The size of the sample and its national scope allows inter-regional and intra-regional controls and comparisons.

Preliminary analyses of both the housing and neighborhood quality data reported by residents shows consistently higher ratings of structure and neighborhood by white residents than by blacks. Important insight into the reliability of the resident opinion information can be gleaned if this racial reporting difference can be isolated and subjected to statistical analyses to test its actual presence. This is the purpose of the research which follows.

METHODOLOGY

The research design will initially attempt to isolate a "race effect" in evaluations of structure and neighborhood quality in the Annual Housing Survey by comparing white and black mean ratings within the major tenurial categories, owner and renter.

If and where a race effect can be isolated its true nature must be investigated. Is there truly a race effect i.e., an independent effect, not explained by differences in socioeconomic status and housing features between whites and blacks? If an independent race effect does exist the validity of personal subjective evaluation is suspect.

Regression equations will be developed for each race for owner and renter specification of structure and neighborhood quality. Stepwise regression will be used to initially select an array of complete (i.e. provided for all cases) objective variables to explain both white and black opinions of structure and neighborhood.* If the resultant explanatory power of the equations is insufficient, additional objective information not available for all cases will be introduced to the data set. In the end, a regression equation of 9-13 objective variables will emerge to define black/white opinions of their housing and immediate geographic area.

To test the true nature of the race effect, once the equations are developed, one race will be run in the other's equations - i.e., blacks in the white equations; whites in the black equations.** This process standardizes for differences in socioeconomic status and housing features of the two races. Does the race effect stand up or is it reduced to zero for equivalent populations living in similar housing?

If racial differences in perception of neighborhood and structure condition persist, once differences in socioeconomic and housing status are controlled, other explanatory means will be introduced to interpret and explain this difference: 1) adding "subjective" predictor variables to the regression equations, 2) narrowing the geographic scope of the analysis and 3) using one "opinion" variable (neighborhood) to explain the other "opinion" variable (structure).

In addition, two analyses of specific variables will be undertaken because of their singular importance. This will be done for *value** of the structure and for the *neighborhood*** variable. These latter analyses are contained in Appendices V and VI. Among the objective variables for owners, *value* is by far the most highly correlated with both evaluation of neighborhood and structure quality. *Neighborhood* is the sole evaluation of the immediate geographic area made by the enumerator.

*See Appendix I for definitions of these variables.

**See Appendix IV for basic regression equations.

WHAT DO THE DATA SAY - IS THERE A DIFFERENCE OF OPINION ON THE PART OF WHITES AND BLACKS TO NEIGHBORHOOD QUALITY THAT HAS TO BE ANALYZED?

The Response of White and Black Owners to Structure and Neighborhood Quality

Structure Quality (House Opinion)

The sample of specified* owners who have lived in their house for at least three months serves as the data base for owner analyses. Two important variables--value of the house and housing costs--are only given for specified owners. The mandatory residence period serves a dual purpose. First, several structure breakdown variables are only available for the group; second, it provides a reasonable minimum period for residents to base both structure and neighborhood opinions.

Exhibit 1 shows the evaluations of the quality of the structure for both whites and blacks. From this exhibit it is clear that both white and black owners are extremely positive about the condition of their housing. Whites, representing 93 percent of those that own the housing that they occupy, rate their housing as excellent or good in nine out of ten cases. The figure for blacks, while lower than whites, is still a good to excellent rating in close to eight out of ten cases.

EXHIBIT 1

EVALUATION OF STRUCTURE QUALITY (HOUSE OPINION) FOR OWNERS BY RACE

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	16,143 (44.5)	16,999 (46.9)	2,903 (8.0)	204 (0.6)	36,249 (100.0)
Black	731 (25.7)	1,455 (51.1)	595 (20.9)	68 (2.4)	2,849 (100.0)
Total	16,874	18,454	3,498	272	39,098

Mean for whites = 1.646; mean for blacks = 2.000 - white/black difference significant at .001 level.

Notes: 1. Data is weighted and in thousands.
2. In parentheses are the row or race percentages.
3. Numbers on top of columns indicate numeric assignments given to the ratings.

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

*Specified owners are residents who live in a single-family home on less than 10 acres with no commercial, medical or dental offices on their property.

It is interesting to note that while the grouped category excellent/good is relatively close for both whites and blacks, the percentage of black owners who rate their housing as excellent (25.7 percent) is only 58 percent of the figure for whites (44.5). Further, one-in-five blacks rate their housing as fair and one-in-forty as poor. The proportion of whites reporting these latter categories are only one-third those of blacks.

If numbers are assigned to all responses, (1 for excellent, 4 for poor), the mean for whites is 1.65; the mean for blacks is 2.00 (Interpolations of medians yields 1.2 for whites; 1.5 for blacks). A difference of means test applies to the former yields statistically significant differences at the .001 level. Thus while differences appear small because both racial groups, on average, rate their housing good to excellent, whites' average rating of their housing is significantly higher than blacks'.

Neighborhood Quality (Street Opinion)

Exhibit 2 presents the evaluations of *neighborhood* quality of *owned-housing* occupants, also by race. Although reasonably high ratings are again reported by both whites and blacks, the separation between races on the neighborhood variable is more pronounced than it is on the structure variable. Close to 90 percent of white owners rated their neighborhood as excellent or good, with almost equal representation in the excellent and good categories. About 9 percent of white owners rated their housing as fair; 1 percent as poor. Blacks, on the other hand, were less sanguine about their neighborhood. Less than 70 percent of black owners rated their neighborhoods as excellent or good, with almost one-third of the black owners reporting neighborhood conditions as fair or poor.

EXHIBIT 2

EVALUATION OF NEIGHBORHOOD QUALITY (STREET OPINION) FOR OWNERS BY RACE

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	15,991 (44.1)	16,525 (45.6)	3,342 (9.2)	387 (1.1)	36,245 (100.0)
Black	613 (21.5)	1,363 (47.7)	769 (27.0)	108 (3.8)	2,853 (100.0)
Total	16,604	17,888	4,111	495	39,098

Mean for whites = 1.672; mean for blacks = 2.131 - white/black differences significant at .001 level.

Notes: 1. Data is weighted and in thousands.
2. In parentheses are the row or race percentages.
3. Numbers on top of columns indicate numeric assignments given to the ratings.

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

If one again assigns numerical ratings to the responses (1 for excellent, 4 for poor) the mean of all responses to neighborhood quality for whites is 1.67; for blacks, it is 2.13. It is interesting to note that the latter figure falls out of the "good" range, i.e. the average black opinion concerning neighborhood is less than good. A difference of means test again shows that the average rating of neighborhood condition by whites is significantly different than that of blacks at the .001 level.

In sum, on both the indices of structure and neighborhood quality there are observed differences in ratings reported by white and black owners. The differences for white and blacks are more pronounced for neighborhood than structure but both are statistically significant at a conservative level.

The Response of White and Black Renters
to Structure and Neighborhood Quality

Structure Quality (House Opinion)

The sample of specified renters* who have lived in their residence for at least three months serves as the data base for renter analyses. Exhibit 3 presents renter respondent evaluations of structure quality by race. Blacks represent approximately 18 percent of all renters; two and one-half times their representation in owned housing.

EXHIBIT 3
EVALUATION OF STRUCTURE QUALITY (HOUSE OPINION) FOR RENTERS BY RACE

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	3,888 (21.7)	8,874 (49.6)	4,242 (23.7)	889 (5.0)	17,893 (100.0)
Black	408 (10.5)	1,549 (39.9)	1,412 (36.4)	509 (13.1)	3,878 (100.0)
Total	4,296	10,423	5,654	1,398	21,771

Mean for Whites = 2.119; mean for blacks = 2.521 = white/black differences significant at .001 level.

Notes: 1. Data is weighted and in thousands.
2. In parentheses are the row or race percentages.
3. Numbers on top of columns indicate numeric assignments given to the ratings.

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

*Specified renters are residents who live in rental housing units excluding single-family homes on 10 acres or more.

Both white and black *renters* are less positive about housing structure quality than are *owners*. Seventy percent of white renters rate their housing as excellent or good; the equivalent figure for black renters is just over 50 percent. One-in-four white renters state housing quality as only fair; one-in-three black renters report a similar condition. Thirteen percent of blacks report their rental housing as poor.

Assigning numbers to ratings for both racial groups permit tabulation of a mean for white *renter* responses to structure equality of 2.12; for blacks the figure is 2.52. Thus, both white and black renters' average opinions of structure quality fall below the "good" range. The rating differences between whites and blacks, 0.40, is slightly larger than that observed for white versus black *owners* on structure quality, 0.35. The difference of means for white versus black renters is statistically significant at the .001 level.

The two components of the renter population, "cash rent" and "no cash rent", are very similar in results to the grouped category. (The former component represents 93 percent of the renter category). "No cash renters" are slightly more positive about structure quality than is the case for "cash renters," yet white-black differences are similar (See Appendix III.)

Neighborhood Quality (Street Opinion)

EXHIBIT 4

EVALUATION OF NEIGHBORHOOD QUALITY (STREET OPINION) FOR RENTERS BY RACE

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	4,534 (25.3)	9,032 (50.5)	3,617 (20.2)	710 (4.0)	17,893 (100.0)
Black	445 (11.5)	1,629 (42.0)	1,474 (38.0)	332 (8.6)	3,880 (100.0)
Total	4,979	10,661	5,091	1,042	21,773

Mean for whites = 2.028; Mean for blacks = 2.436 - white/black difference significant at .001 level.

- Note:
1. Data is weighted and in thousands.
 2. In parentheses are the row or race percentages.
 3. Numbers on top of columns indicate numeric assignments given to the ratings.

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

Exhibit 4 presents white and black renter responses to neighborhood quality. Both white and black renter responses are slightly more positive for neighborhood quality than they are for structure quality. Approximately 76 percent of white renters rate their neighborhood as excellent or good; 54 percent of black renters give their neighborhood a similar rating. The *neighborhoods* of white and black *renters* are slightly less apt to be given a poor rating than is the case for the *structures* they occupy but are roughly three times more prone to "poor" designation than is the case for neighborhoods of white and black *owners*. The mean numeric for whites is 2.03; the equivalent for blacks is 2.44. Again both average renter opinions fall below the "good" range. The difference of .41 is 10 percent less than the difference noted for white and black owner evaluations of neighborhood but still is statistically significant at the .001 level. (See Appendix III for results by "cash rent" and "no cash rent.")

Summary

Both white versus black owners and white versus black renters have statistically significant differences of opinion on both structure and neighborhood quality. In the case of owners' opinion, the racial difference is larger on opinion of neighborhood quality than opinion of structure quality; in the case of renters the racial differences are similar for the two opinions.

DEVELOPING A MODEL TO ISOLATE THE TRUE RACE EFFECT - CHOOSING THE VARIABLES

The Data Base and Gross Variable Set

Prior to developing equations to test the true race effect, a variable selection process must be undertaken. An effort will be made to concentrate on relevant objective variables first and only if R^2 remains small, to subsequently introduce additional subjective variables.

Again, specified white/black owners who have lived in their residence for more than three months serve as the primary data base. Stepwise multiple regression is undertaken with the various sets for the full sample of 30,471, "90-day" -- 28,280 whites and 2,191 blacks -- and 16,999 "90-day" renters -- 13,981 whites and 2,728 blacks. The choice of variables takes place according to both judgmental and mathematical criteria. Variables are included if they meet a variance explanation, i.e. addition to R^2 lower limit (which ranges from .002 to .005 depending on race and opinion). Thus the procedure is stopped when there do not exist any variables (not already in the equation) which, if added, would add sufficiently to the R^2 of the equation. This method is conservative in terms of R^2 but not so in terms of significance level. However, if significance levels were relied upon exclusively, often the case for

stepwise regression, given this sample size almost any amount of variance explanation would be significant. This would lead to the inclusion of a multitude of variables in the resulting equations, making the analysis unmanageable.

For both opinion of structure and neighborhood, stepwise regression is performed on each race separately so as not to lose a variable which might be important to blacks. For instance, the presence of rats, affecting statements on either structure or neighborhood quality, if unimportant to whites and important to blacks, could be lost as important in a pooled (both races) regression due to the predominant presence of whites versus blacks in the sample.

The first group of variables to be included are those for which data is available in all cases. This primary variable set is listed below.

Primary Variable Set* (full-information)

<u>Geographic:</u>	region, central city-SMSA
<u>Socioeconomic Status (SES):</u>	sex, marital status, age, income, education, pre-school or school-age children
<u>Housing Age:</u>	when built, when moved in
<u>Housing Physical Features:</u>	plumbing, kitchen, heating, air, phone, basement, sewer
<u>Housing Economics:</u>	value (owners), mortgage (owners), cash rent (renters), subsidy (renters)

This variable set is optimal for prediction and analysis purposes. Each person has complete information for this set. Thus the regression equations and the individual predicted values can be computed without any adjustments for missing data. However, if R^2 appears insufficient (say less than .20) additional variables which do not have complete information will be introduced.

Initial Variable Selection -- R^2

The retained "full information" variables for white and black *owners* on *structure* quality are listed below. (Variable lists for white/black owners on neighborhood quality, renters on structure quality and renters on neighborhood quality appear in Appendix II).

*See definitions in Appendix I.

White Owners
Structure Quality

Value
Plumbing
Air
When Built
Phone
Heating
 $R^2 = 0.164$

Black Owners
Structure Quality

Value
Heating
Built
Pre-School Children
Education
Plumbing
 $R^2 = 0.113$

It is interesting to note that the four variables -- *value, plumbing, heating and when built* -- appear as important in both white and black owner specification of structure quality. Thus, the price of a house, the exclusive use and full presence of plumbing, the quality of available heating and the house's age affect both white and black owner's specification of structure quality.

The above equation for both whites and blacks lists the four common variables as well as four additional variables (*air, phone, pre-school children and education*). To these eight variables are added six additional variables for substantive reasons: *Income, age, when moved in, sex, marital status and the presence of school-age children*. These latter variables, which classically have been believed to affect specification of structure or neighborhood quality, are given a final chance to enter the regression equation.

Secondary Variable Set (Limited Information) -- R^2

Since the first set of variables explained less than the desired "first cut" $R^2 = 0.20$, a selected number of these original "full information" variables are retained and combined with other variables for which full data is not available. These latter variables are those for which "no answer" is a reported response. These additional variables are far from ideal from a data manipulation perspective. They pose the statistical problem of causing the data user to either: (1) use a different number of cases in estimating individual correlations, (2) lose all cases where any information is absent, or (3) fill in missing values by some technique. The variables included via these subsequent additions are:

<u>Breakdown Variables:</u>	toilet, rats, fuse blown, leaks, holes, electricity, exterminator, water
<u>Repairs:</u>	alterations done, repairs planned
<u>Insurance:</u>	theft insurance, refused insurance
<u>Housing Economics II:</u>	housing costs (owners), gross rent (renters), costs/income (owners), rent/income (renters)
<u>Housing Physical Features II:</u>	arage (owners), privacy, parking available (renters), crowding, live alone, trash disposal.
<u>Employment:</u>	employed, time to work, distance to work
<u>Neighborhood:</u>	neighborhood

Again a stepwise regression is run for both races and both tenurial categories on structure and neighborhood opinion. (White and black owner opinions of structure quality are shown here.) This yields twelve variables for whites and seven for blacks. Since the seven black variables are subsumed within the twelve white variables, a total of twelve variables are retained for owners on opinion of structure quality. Listed below are the variables selected.

White Owners
Structure Quality

Value
Holes
Leaks
Theft Insurance
Garage
When Built
Rats
Age
Education
Neighborhood
Air
Fuse Blown
 $R^2 = 0.195$

Black Owners
Structure Quality

Value
Holes
Theft Insurance
When Built
Rats
Age
Air

$R^2 = 0.151$

What is obvious from above is that the dominant variables explaining white owner variation are quite similar to those variables which most explain black variation. This is not only true for white/black *owner* specification of *structure* quality but also holds true for white/black *renter* specification of *structure* quality. On the whole, the commonality of variables triggering white/black opinions is much more dominant in their specification of *structure* than *neighborhood*. Appendix IV lists the variables selected for (1) white/black owner specification of neighborhood quality (nine variables*, four in common); (2) white/black renter specification of structure quality (nine variables, six in common) and (3) white/black renter specification of neighborhood quality (eleven variables*, three in common).

SUMMARY

Variable sets were formed for utilization in prediction equations for white/black owner/renter opinions of housing and neighborhood quality. The "full information" variables were not strong enough by themselves to adequately predict the opinions. Thus "limited information" variables were added. After including this latter set of variables, the R^2 s were still relatively low.

*CC-SMSA and Region are counted as one variable each although both actually consist of three dummy variables.

A MODEL TO ISOLATE RACIAL DIFFERENCES IN
SPECIFICATION OF STRUCTURE AND NEIGHBORHOOD QUALITY

To analyze the "race effect"* separate regression equations are constructed for whites and blacks. The data for one group is substituted into the equation for the other to see if observed results differ significantly from predicted results. Thus for a given opinion (structure or neighborhood) and tenure an individual black's appropriate socioeconomic status and housing feature variables are entered into the white equation -- yielding a predicted value for that black if he/she were to change race but keep the appropriate variables constant. This is repeated for each black and the average of these resulting numbers is the mean predicted value for blacks. This mean predicted value is then compared to the actual (i.e. observed) black mean. If the two means are identical, the race effect does not exist. If the "race effect" diminishes but still exists, then the mean of the predicted values will be somewhere between the actual black mean and the actual white mean. This procedure is then reversed for whites in the black equation.

The Unrefined Race Effect

Exhibit 5 presents initial specification of structure and neighborhood opinion by race of respondent, unrefined by comparability of socioeconomic status or housing features. What is apparent from this exhibit is that owners for both opinions and both races give higher ratings than renters and that whites rate both their housing and their neighborhood higher than blacks. On the four point scale, the average ratings for both structure and neighborhood run from 1.6 to 2.5. There is a consistent 20 to 25 percent higher average rating of structure and neighborhood by whites versus blacks. This holds true for both owners and renters. This difference is termed the "raw" race effect and appears in the last column of Exhibit 5.

The True Race Effect -
Objective Variable Set

Exhibit 6 shows the race effect when whites are put into the black equation and Exhibit 7 when blacks are put into the white equation. Column 1 of these exhibits shows the mean predicted value when one race is put into the other's equation; Column 2 shows the estimated race effect (+**the actual mean minus the mean of the predicted values); Column 3 the standard error of that effect; Column 4 the percentage of the raw race effect that the estimated effect represents.

*The believed notion that whites are more positive about the housing that they occupy than blacks.

**The sign of the effect is adjusted so that a positive race effect always refers to whites having a more positive opinion; a negative sign means blacks have a more positive opinion.

EXHIBIT 5

SPECIFICATION OF STRUCTURE AND NEIGHBORHOOD QUALITY
(OWNERS AND RENTERS) BY RACE*

<i>MEANS, RACE EFFECT</i>			
<i>Opinion of Structure/ Neighborhood Quality</i>	<i>Black Mean</i>	<i>White Mean</i>	<i>Black-White Mean (Raw Race Effect)</i>
Structure Quality - Owners	2.000	1.646	.354
Structure Quality - Renters	2.532	2.131	.401
Neighborhood Quality - Owners	2.131	1.672	.458
Neighborhood Quality - Renters	2.450	2.039	.411

White/Black differences significant at .001 level.

*These means are based just on the people who responded to both structure and neighborhood quality questions. Thus, they are slightly different than those in Exhibits 1-4.

EXHIBIT 6

RESULTS OF RECIPROCAL REGRESSION EQUATION (WHITES
IN BLACK EQUATION)

<i>Opinion of Structure/ Neighborhood Quality</i>	<i>MEANS, STANDARD ERROR, % OF RACE EFFECT</i>			
	<i>(1) Mean Predicted Value</i>	<i>(2) Residual Race Effect</i>	<i>(3) Standard Error of Effect</i>	<i>(4) Percentage of Raw Race Effect</i>
Structure Quality - Owners	1.752	.106	.0035	30.0
Structure Quality - Renters	2.337	.206	.0064	51.3
Neighborhood Quality - Owners	1.912	.240	.0039	52.4
Neighborhood Quality - Renters	2.188	.149	.0065	36.2

EXHIBIT 7

RESULTS OF RECIPROCAL REGRESSION EQUATION (BLACKS IN
WHITE EQUATION)

<i>Opinion of Structure/ Neighborhood Quality</i>	<i>MEANS, STANDARD ERROR, % OF RACE EFFECT</i>			
	<i>(1) Mean Predicted Value</i>	<i>(2) Residual Race Effect</i>	<i>(3) Standard Error of Effect</i>	<i>(4) Percentage of Raw Race Effect</i>
Structure Quality - Owners	1.924	.076	.0148	21.5
Structure Quality - Renters	2.372	.160	.0148	39.9
Neighborhood Quality - Owners	1.907	.223	.0161	48.7
Neighborhood Quality - Renters	2.315	.135	.0146	32.8

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

Exhibit 6 demonstrates that when whites are put into the black equation the race effect is reduced to approximately 40 percent of its original value, i.e., the residual race effects are about 40 percent of the corresponding raw race effects. Thus the difference between black and white responses to structure and neighborhood quality has been reduced to less than half of its initial size by standardizing for socioeconomic status and housing features. Exhibit 7 shows that a similar phenomenon takes place when blacks are placed into the white equation. The raw race effect of black-white specification of structure and neighborhood quality is reduced to less than one-half of its original value by standardizing for equivalent socioeconomic status and housing features of the two groups.

In terms of absolute size, the race effect has been reduced to approximately .10 to .20 which is 3 to 7 percent of the absolute range of the evaluation scale or equivalently, 5 to 10 percent of the average responses of whites.

It is significant to note that while the race effect overall is relatively low, it has been reduced least by equivalency in socioeconomic status and housing features for *owners' opinion of neighborhood and renters' opinion of structure*. Equivalent white and black owners have more divergence in opinion on neighborhood quality than they do on structure quality; equivalent white and black renters have greater differences in opinion on structure quality than they do on neighborhood quality. Thus, based on the controls instituted at this stage, black owners are less sanguine (relative to whites) about their neighborhoods than their structures; black renters exhibit less enthusiasm (relative to whites) about their housing than their immediate geographic area.

The "raw" race effect initially observed at approximately 14 percent of the range of the scale has been reduced to less than one-half of this value by standardizing for housing features and socioeconomic status of the reporting race.

The race effect, while reduced significantly, still persists at a low level. At this point, suffice it to say that in terms of potential public meliorative actions, the effect may be viewed as zero. Yet, while for substantive reasons it is sufficiently low to be ignored, black-white differences in the specification of their housing and neighborhood continue to be mathematically identifiable.

ATTEMPTING TO DETERMINE THE TRUE RACE EFFECT - ADDING
SUBJECTIVE VARIABLES, NARROWING THE GEOGRAPHIC FOCUS

There are three potential statistical refinements that may be used to further investigate whether white-black reporting differences in evaluations of structure or neighborhood are attributable to race alone. First, subjective variables may be added to the data set. This assumes that the predictive equations containing just objective variables are

insufficient to correctly specify substantive linkages -- thus the results concerning the estimated race effect may be spurious.* Adding the subjective variables may significantly change the prediction equations (including a substantial increase in R^2) and explain the lingering race effect.**

A second procedure is to apply the analysis to a smaller portion or subgroup of the national population - i.e., regions, portions of regions etc. The rationale for this is that, since characteristics of blacks and whites differ significantly according to the region that they occupy or according to the central-city/non-central-city locations, and the geographical distributions of the two races differ, an analysis that does not take these geographic variations into account may not adequately describe the data.

A third procedure is to allow one opinion to help explain another opinion -- i.e., opinion of neighborhood to partially interpret opinion of structure. This assumes some level of consistency between satisfaction with structure and neighborhood such that failure to include neighborhood ignores a major reason why housing buyers act the way they do in the selection and purchase of a house. It has been shown that satisfaction with neighborhood inflates opinions of house.

*The True Race Effect - The
Introduction of Subjective Variables*

The first probe of the remnant white-black reporting differences consists of adding additional subjective variables to the variable set. Variable additions will be viewed both in terms of affect on R^2 and their reduction of the raw race effect.

Desire-to-move variables (occupants' expressed preference to move because of neighborhood conditions, structural deficiencies or neighborhood services) are entered into the regression equation after the objective variables have been included. For renters, all three of the variables are included in the regression equations for structure and neighborhood quality; for owners' opinions of *neighborhood* quality, due to an insignificant R^2 addition, the variable structural deficiencies was not retained; for owners' opinions of *structure* quality, again due to insignificant R^2 , neither the variable structural deficiencies nor neighborhood services were retained.

*The subjective variables incorporate some error. This leads to some bias in the regression equations and predicted results. However, since the R^2 s with objective variables were low, some bias will be risked by including subjective variables.

**Of course, the estimate race effect may also increase with added variables.

Exhibit 8 presents the effect of the inclusion of these variables on the explanatory power (R^2) of the regression equations for both whites and blacks. The R^2 relating to opinions of *structure* quality (both owner and renter) has been increased for both races via inclusion of the subjective variables by 5 to 30 percent; for *neighborhood* quality by more than 80 percent. The subjective variables obviously increase significantly the explanatory power of equations relating to specification of *neighborhood* quality. Thus, the "desire-to-move" variables contain significant information about expressed *neighborhood* quality not contained in the objective variables.

Following the format of Exhibits 6 and 7, Exhibits 9 and 10 present the results of one race placed in the regression equation of the other. As before, the regression equations are produced for both owners and renters on structure and neighborhood quality and include the subjective "desire-to-move" variables.

Using these Exhibits and comparing them with previous Exhibits 6 and 7, in 3 out of 4 cases the "desire-to-move" variables reduce the race effect by approximately 10 percent from the results reported in Exhibits 6 and 7. Opinion of *neighborhood* quality for *renters* is the only case where inclusion of the "desire-to-move" variable does not diminish the race effect.

Overall, including the subjective "desire-to-move" variables has increased significantly the R^2 of the regression equations (both white and black) for opinions of neighborhood quality and increased moderately the R^2 in the equations for opinions of structure quality. The race effect in most cases has been reduced by an additional 10 percent via the inclusion of these variables.

Thus, desire to move from a neighborhood impacts on both opinions of housing and surroundings within a neighborhood for both whites and blacks.* It contributes slightly to the demonstration of minimal importance of the race effect in black/white specification of structure and neighborhood.

*It is interesting to note that although R^2 s were increased significantly for the opinion of neighborhood quality, the estimated race effect was only changed minimally. Thus the earlier rationale of the lingering race effect as partially due to low R^2 s is not borne out, at least on opinions of neighborhood quality.

EXHIBIT 8

EXPLANATORY POWER OF THE BASIC WHITE/BLACK REGRESSION EQUATIONS
WITH AND WITHOUT THE "DESIRE-TO-MOVE" VARIABLES

<i>Opinion of Structure/ Neighborhood Quality</i>	<i>RACE</i>			
	<i>BLACKS</i>		<i>WHITES</i>	
	<i>R² Without</i>	<i>R² With</i>	<i>R² Without</i>	<i>R² With</i>
Structure Quality - Owners	.151	.176	.195	.206
Structure Quality - Renters	.214	.275	.171	.225
Neighborhood Quality- Owners	.116	.234	.126	.239
Neighborhood Quality- Renters	.153	.283	.106	.254

EXHIBIT 9

RESULTS OF RECIPROCAL REGRESSION EQUATIONS (INCLUDING THE "DESIRE-
TO-MOVE" VARIABLES) (WHITES IN BLACK EQUATIONS)

<i>Opinion of Structure/ Neighborhood Quality</i>	<i>MEANS, STANDARD ERROR, % OF RACE EFFECT</i>			
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
	<i>Mean Predicted Value</i>	<i>Residual Race Effect</i>	<i>Standard Error of Race Effect</i>	<i>Percentage of Raw Race Effect</i>
Structure Quality - Owners	1.743	.097	.0035	27.4
Structure Quality - Renters	2.329	.198	.0062	49.4
Neighborhood Quality- Owners	1.885	.213	.0036	46.5
Neighborhood Quality- Renters	2.203	.164	.0060	39.9

EXHIBIT 10

RESULTS OF RECIPROCAL REGRESSION EQUATION (INCLUDING THE "DESIRE-
TO-MOVE" VARIABLES) (BLACKS IN WHITE EQUATIONS)

<i>Opinion of Structure/ Neighborhood Quality</i>	<i>MEANS, STANDARD ERROR, % OF RACE EFFECT</i>			
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
	<i>Mean Predicted Value</i>	<i>Residual Race Effect</i>	<i>Standard Error of Race Effect</i>	<i>Percentage of Raw Race Effect</i>
Structure Quality - Owners	1.933	.067	.0146	18.9
Structure Quality - Renters	2.392	.140	.0143	34.9
Neighborhood Quality- Owners	1.942	.189	.0149	41.2
Neighborhood Quality- Renters	2.310	.140	.0135	34.1

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

The True Effect - Narrowing
the Geographic Focus

Another means of probing the race effect is to consider geographic subsets of the national sample. The previously used equations, reflecting a national distribution of a particular race, may be drawing upon too broad a base. Subtleties in the race effect on opinions, not apparent using the entire group, may appear when specific subsets are scrutinized.

The first geographic subset comprises central city and suburban areas* within SMSAs. The second partitions this first subset into four Census-defined regions of the United States.**

The analysis will be restricted to *owners'* (both white and black) opinions of *structure* quality. The original twelve objective variables plus a dummy variable for central city versus suburb will be used.

Exhibit 11 presents means and R^2 s for the subsets as well as the total group. As before, the black minus white mean is the "raw race effect". Evident in the Exhibit is the fact that the raw effect is higher in central city and suburb than it is for the nation as a whole (including non-SMSA areas). When the suburbs and central cities are taken as a group and partitioned by region, the raw race effect is higher in the Northeast and North Central regions and lower in the South and West.

Exhibit 12 shows the results of running one race in the other's predictive regression equation. Instead of individually presenting both white-on-black and black-on-white estimates of the race effect,

*"Suburbs" are defined as those areas within an SMSA not in the central city.

**Northeast, North Central, South, West. Technically, the variable selection procedure should be repeated when a subgroup is considered. For practical reasons and the fact that the twelve variables form a broad substantive group, variable selection will not be repeated here. However, the regression equations are recalculated for each area. The "desire-to-move" variables had little impact on the estimated race effect so their results are not reported.

EXHIBIT 11

SPECIFICATION OF STRUCTURE QUALITY (OWNERS) BY RACE (PARTITIONED
BY GEOGRAPHIC REGION)

<i>Geographic Subset</i>	<i>MEANS, RAW RACE EFFECT, R² Black-White</i>				
	<i>Black Mean</i>	<i>White Mean</i>	<i>Mean (Raw Race Effect)</i>	<i>Black R²</i>	<i>White R²</i>
Total - All Areas	2.000	1.646	.354	.151	.195
All Central Cities and Suburbs	2.000	1.605	.395	.145	.176
Central Cities/ Suburbs in Northeast	2.013	1.586	.427	.277	.142
Central Cities/ Suburbs in North Central	2.016	1.588	.428	.204	.206
Central Cities/ Suburbs in South	1.993	1.649	.344	.135	.203
Central Cities/ Suburbs in West	1.975	1.603	.372	.218	.181

White/black difference significant at .001 level.

EXHIBIT 12

RESULTS OF RECIPROCAL REGRESSION EQUATION SHOWING RACE EFFECT
(WEIGHTED WHITE/BLACK IN BLACK/WHITE EQUATIONS)

<i>Geographic Subset</i>	<i>RACE EFFECT, STANDARD ERROR, % OF RACE EFFECT</i>		
	<i>Residual Race Effect</i>	<i>Standard Error of Race Effect</i>	<i>Percentage of Raw Race Effect</i>
Total - All Areas	.104	.0034	29.4
All Central Cities and Suburbs	.127	.0030	32.2
Central Cities/ Suburbs in Northeast	.082	.0102	19.2
Central Cities/ Suburbs in North Central	.032	.0090	7.5
Central Cities/ Suburbs in South	.166	.0105	48.3
Central Cities/ Suburbs in West	.110	.0109	29.6

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban
Development, Annual Housing Survey, 1976.

they are combined using a weighted average.* When one partitions by central city-suburb the race effect is approximately 30 percent of the raw race effect. Within regions, standardizing for equivalent socioeconomic characteristics and housing features has least effect in the South and West. In the North Central region, the race effect, as a percentage of the raw race effect, is only 7.5 percent; in the South it is 48.3 percent. Overall, the race effect is .13 which is less than 5 percent of the 1-4 evaluation range and less than 10 percent of the average white response.

Thus, at this point of the analysis, as one moves from North Central to Northeast to West and finally, South, blacks became more uncomfortable (as a reflection of their opinions) relative to whites when personal and housing characteristics are controlled for.

The analysis of geographic subsets is carried to its final step** when the heavily populated area within regions (central cities-suburbs) are viewed individually within the same region. Again only *owner* opinions of *structure* quality are considered. Similar research questions are now asked of residents within suburbs and central cities separately -- 1) What is the "raw" race effect? 2) How is the effect diminished when one standardizes for socioeconomic characteristics and housing features of black and white respondents?

Exhibit 13 presents white and black means, R^2 s and the raw race effect for owners' opinion of structure quality. The largest raw race effects (.40 to .45) appear in Northeastern and North Central central cities and Southern and Western suburbs. White owners consistently rate housing higher in suburbs than they do in central cities; black owners follow the same general pattern in only two of the four regions - Northeast and North Central.

Exhibit 14 shows the results of placing one race in the other's equation to examine the race effect in both central city and suburb. Again, results for whites and blacks are not presented separately but combined, via weighting, according to sample representation. The "raw" race effect has been reduced significantly (less than 25 percent of original) in Northeastern, North Central suburbs and Western central cities.*** It is one-third to one-half its value in Northeastern, North Central central cities and Southern suburbs; it is 85 percent of its original value in Western suburbs.

*The weight for the white-on-black estimate is the number of whites and for the black-on-white estimate the number of blacks.

**Further partitioning, within suburbs for instance is not feasible due to minimal sample size restrictions.

***In fact, in North Central suburbs the race effect is reversed - black owners being more positive than whites about their structure quality.

EXHIBIT 13

SPECIFICATION OF STRUCTURE QUALITY (OWNERS) BY RACE (PARTITIONED
BY GEOGRAPHIC REGION AND CENTRAL CITY/SUBURB)

<i>Geographic/Areal Subset</i>	<i>MEANS, RACE EFFECT, R²</i>				
	<i>Black Mean</i>	<i>White Mean</i>	<i>Black Minus White Mean (Raw Race Effect)</i>	<i>Black R²</i>	<i>White R²</i>
Central City/ Northeast	2.118	1.699	.419	.260	.129
Suburb, Northeast	1.837	1.552	.285	.434	.139
Central City/ North Central	2.073	1.628	.445	.165	.226
Suburb, North Central	1.762	1.571	.191	.465	.200
Central City/ South	1.968	1.666	.302	.084	.214
Suburb, South	2.047	1.639	.408	.311	.203
Central City/ West	1.960	1.635	.325	.295	.193
Suburb, West	2.006	1.585	.421	.240	.178

EXHIBIT 14

RESULTS OF RECIPROCAL REGRESSION EQUATION SHOWING RACE EFFECT
(CENTRAL CITY-SUBURB) (WEIGHTED WHITE/BLACK IN BLACK/WHITE
EQUATIONS)

<i>Geographic/Areal Subset</i>	<i>RACE EFFECT, STANDARD ERROR, % OF RACE EFFECT</i>		
	<i>Residual Race Effect</i>	<i>Standard Error of Race Effect</i>	<i>Percentage of Raw Race Effect</i>
Central City/ Northeast	.142	.0215	33.9
Suburb, Northeast	.040	.0114	14.0
Central City/ North Central	.211	.0169	47.4
Suburb, North Central	-.163	.0106	-
Central City/ South	.117	.0173	38.8
Suburb, South	.195	.0132	47.8
Central City/ West	.067	.0189	20.6
Suburb, West	.360	.0133	85.5

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban
Development, Annual Housing Survey, 1976.

Standardizing for comparable socioeconomic characteristics and housing features and partitioning by geographic area shows the race effect to virtually disappear in long standing, black-entry, North-eastern and North Central suburbs and Western central cities and to be a small but distinct force in typically-segregated, North Central central-cities, Southern and Western suburbs.*

In summary, while the race effect remains small it still remains above .14 in Northern (Northeast, North Central) central cities and Southern/Western suburbs. Its effect ranges from less than zero to .36 with most values around 0.10. This is only 3 percent of the range of the four point evaluation scale or 5 percent of the average white score.

The True Race Effect - Allowing Opinion of Neighborhood to Explain Opinion of Structure

A final analysis, to simultaneously upgrade the quality of the regressions through increased R^2 s and also view the effect of race, is to use opinion of neighborhood quality as a gauge for predicting both owners' and renters' response to structure quality. The obvious link to the real world, as mentioned previously, is that people "purchase neighborhoods" rather than housing and housing satisfaction flows directly from satisfaction with neighborhood. If this is true one should expect significant increases in R^2 s and relatively low race effects as opinions of neighborhood quality also become part of the standardization process between blacks and whites.

Viewing first white and black owner responses, Exhibit 15 presents R^2 s of the regression equation for white and black owners' opinion of structure quality when the subjective measure of neighborhood quality is added to the twelve objective variables.* It is clear for both whites and blacks that R^2 is improved dramatically. Original R^2 s around the .15 to .20 level have been raised to the .35 to .50 level -- a doubling of the explanatory power for whites; a tripling for blacks.

The race effect using the above variable array is shown in Exhibit 16. It is clear from this Exhibit that the race effect is minimal in most areas when standardizing for equivalent white-black socioeconomic status/housing features and opinions of neigh-

*The "desire-to-move" subjective variables add little explanation here and thus have not been included in the reported analysis.

EXHIBIT 15

SPECIFICATION OF STRUCTURE QUALITY (OWNERS) BY RACE (INCLUDING
NEIGHBORHOOD QUALITY AS PREDICTOR VARIABLE)

<i>Geographic/Areal Subset</i>	R^2	
	<i>White</i>	<i>Black</i>
Total - All Areas	.360	.303
All Central Cities and Suburbs	.338	.358
Central City, Northeast	.336	.409
Suburb, Northeast	.331	.530
Central City, North Central	.325	.312
Suburb, North Central	.399	.589
Central City, South	.394	.282
Suburb, South	.372	.425
Central City, West	.375	.617
Suburb, West	.363	.458

EXHIBIT 16

RESULTS OF RECIPROCAL REGRESSION EQUATION (INCLUDING NEIGHBORHOOD
QUALITY AS PREDICTOR VARIABLE) (WEIGHTED WHITE/BLACK IN BLACK/WHITE
EQUATION)

<i>Geographic/ Areal Subset</i>	<i>RACE EFFECT, STANDARD ERROR, % OF RACE EFFECT</i>		
	<i>Residual Race Effect</i>	<i>Standard Error of Race Effect*</i>	<i>Percentage of Raw Race Effect</i>
Total - All Areas	.012	.0031	3.4
All Central Cities and Suburbs	.043	.0027	10.9
Central City, Northeast	.038	.0194	9.1
Suburb, Northeast	-.049	.0103	-
Central City, North Central	.104	.0152	23.3
Suburb, North Central	-.228	.0095	-
Central City, South	.000	.0156	-
Suburb, South	.157	.0119	38.4
Central City, West	-.087	.0170	-
Suburb, West	.227	.0120	53.9

*Standard error is computed only for total group. The other standard errors are estimates using the total group results and previous results from separate region analysis.

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

borhood quality. In three instances (Northeastern/North Central suburbs and Western central cities) it is even reversed -- black opinions of structure quality being higher than those of whites. Again Southern and Western suburbs and North Central central cities show lingering aspects of the race effect.

Thus, two alternative scenarios present themselves. Either there is some latent discontent by blacks relative to whites in Western or Southern suburbs and North Central cities or juridical differences in these areas, relative to others, is causing an unfair comparison.

The effect of opinions of *owners* on neighborhood quality is clearly very significant as an index of structure quality. This is true for both whites and blacks. The R^2 s of the predictive equations are noticeably increased; the race effect, except in select locations, is virtually nonexistent.

A portion of this final analysis is repeated for *cash renters*. The opinion of neighborhood quality is added to the nine objective variables to predict structure quality opinion for the complete sample of cash renters.

Essentially the same results are found as was the case for owners. The R^2 doubled (from .18 to .36) when neighborhood quality was added to the equation.* The raw race effect, .401, is reduced to .017 (4 percent of the raw effect) when the controls are applied. Thus, as with owners, essentially no race effect exists when the races are standardized for socio-economic status, housing features and opinion of neighborhood quality.

*As with owners, the "desire-to-move" variables added insignificantly to R^2 at this point.

FOOTNOTES

1. See George Sternlieb, "The Sociology of Statistics: Measuring Substandard Housing" Public Data Use, (Vol. 1-3, July, 1973).
2. U.S. Department of Commerce, Bureau of Census, pp. 1-6. Measuring Housing Quality (Washington, D.C. Government Printing Office).
3. U.S. Department of Commerce U.S. Census of Housing, 1950. Bulletin H-B14, "Non-Farm Housing Characteristics," (Washington, D.C. Government Printing Office, 1950), pp. vi-vii.
4. U.S. Department of Commerce, Bureau of Census. U.S. Census of Housing - 1960. Series HC (2)-1 "Metropolitan Housing" (Washington, D.C. Government Printing Office, 1960), pp. x-xi.
5. U.S. Department of Commerce, Bureau of Census, U.S. Census of Housing, 1970. Series HC-6 "Plumbing Facilities and Estimates of Dilapidated Housing," (Washington, D.C. Government Printing Office, 1970), pp. viii-ix.
6. U.S. Department of Commerce, Bureau of Census, Working Paper, No. 25. "Measuring the Quality of Housing: An Appraisal of Census Statistics and Methods," 1967, pp. 1-5.
7. U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey - 1976. "Documentation of the Public Use Tapes," 1978.
8. U.S. Department of Health, Education and Welfare, Office of Secretary, "Memo from Subcommittee on Housing Quality," February, 1977.
9. Telephone conversation with Census Bureau personnel - 1980 Decennial Census - Housing.
10. See George Sternlieb and Robert W. Burchell, Residential Abandonment: The Tenement Landlord Revisited (New Brunswick, N.J. Center for Urban Policy Research, 1972).
11. Frank M. Andrews and Stephen B. Withey, Social Indicators of Well Being (New York, Plenum Press, 1976).
12. Angus Campbell, Philip E. Converse and Willard L. Rodgers, The Quality of American Life (New York, Russell Sage Foundation, 1976).
13. Raymond J. Burby III and Shirley F. Weiss, New Communities, U.S.A. (Lexington, Massachusetts, Lexington Books, 1976).
14. Constance A. Nathanson, Jeanne S. Newman, Elizabeth Moer and Helen Hiltabiddle, "Moving Plans Among Residents of New Towns" A.I.P. Journal (42), June, 1976, pp. 295-302.
15. Roger Durand, "Some Dynamics of Urban Service Evaluations Among Blacks and Whites" Social Science Quarterly (56) March 1976, pp. 698-706.

16. Nicholas P. Lovrich, Jr., "Differing Priorities in an Urban Electorate: Service Preferences Among Anglo Black and Mexican American Voters" Social Science Quarterly (55) December 1974, p. 704-717.
17. Robert J. Diaiso, David M. Friedman, Lester C. Mitchell, and Eric A. Schweitzer, Perception of the Housing Environment: A Comparison of Racial and Density Preferences (Pittsburgh, Pa., University of Pittsburgh Graduate School of Public and International Affairs, 1971).

OTHER REFERENCES

Robert Crosby, "An Item Analysis of the Annual Housing Survey" (Washington, D.C. U.S. Department of Health, Education and Welfare, January 13, 1977) unpublished, 35 pp.

Jeanne E. Goedert and John L. Goodman, Jr. "Indicators of Housing Quality: An Exploration of the Annual Housing Survey" (Washington, D.C. The Urban Institute, November 1976) unpublished, 44 pp.

Kenneth F. Wieand. "Analysis of Multiple-Defect Indicators of Housing Quality with Data from the 1976 Annual Housing Survey" (Washington, D.C., U.S. Department of Housing and Urban Development, June 1978) unpublished, 63 pp.

William T. Bielby, "Measuring Neighborhood Quality in the Annual Housing Survey" (Santa Barbara, Calif.: University of California, November 1978) unpublished, 33 pp.

APPENDIX I

List of Variables, Variable Definitions
and Coding

VARIABLE CODESFull Information Variables

I Geographic Region

- 1) *Region*: 3 dummy variables for the four regions: Northeast, North Central, West and South
- 2) *Central City-SMSA*: 3 dummy variables for four areas: (1) Central City, (2) SMSA but not Central City ("suburb"), (3) SMSA with Central City code not specified and (4) outside SMSA.

II Socioeconomic Status

- 1) *Sex*: 1 = male, 0 = female
- 2) *Marital Status*: 1 = married, 0 = not married
- 3) *Age*: 14-19 = 1, 20-39 = 2, 40-64 = 3, 65+ = 4
- 4) *Income*: <\$10,000 = 1, \$10,000-\$19,999 = 2, \$20,000-\$34,999 = 3, \$35,000+ = 4
- 5) *Education*: < grade 9 = 1, grade 9-11 = 2, grade 12 = 3, 1-3 years college = 4, 4 years college = 5, 5+ years college = 6
- 6) *Pre-School or School-Age Children*: two dummy variables for: (1) children under 6, (2) children 6-17 or both 6-17 and under 6 and (3) no children up to 17.

III Housing Age

- 1) *(When) Built*: 1975 or 1976 = 1, 1970-1974 = 2, pre 1970 = 3
- 2) *(When) Moved-in*: 1975 or 1976 = 1, 1970-1974 = 2, 1965- 1970 = 3, pre-1965 = 4

IV Housing Physical Features

- 1) *Plumbing*: exclusive use = 1, else = 0
- 2) *Kitchen*: exclusive use = 1, else = 0
- 3) *Heating*: room heaters with flue or vent burning gas, oil or kerosene = 1, other means without flue = 2, none = 3

- 4) *Air*: have air conditioning = 1, else = 0
- 5) *Phone*: have one = 1, else = 0
- 6) *Basement*: have one = 1, else = 0
- 7) *Sewer*: public sewer or septic tank or cesspool = 1, else = 0

V Housing Economics I

- 1) *Value (owners)*: < \$20,000 = 1, \$20,000-\$34,999 = 2, \$35,000-\$49,999 = 3, \$50,000-\$74,999 = 4, \$75,000 + = 5
- 2) *Mortgage (owners)*: have one = 1, else = 0
- 3) *Cash Rent (renters)*: yes = 1, no = 0
- 4) *Subsidy (renters)*: living in public housing project or receiving government rent subsidy = 1, else = 0

Limited Information Variables

VI Housing Economics II*

- 1) *Housing Costs (owners)*
- 2) *Gross Rent (renters)*
- 3) *Costs/Income (owners)*
- 4) *Rent/Income (renters)*

VII Housing Physical Features II

- 1) *Garage (owners)*: have one = 1, else = 0
- 2) *Privacy*: must go through bedroom to reach bath or another bedroom = 1, don't have to = 2, no bedrooms = blank
- 3) *Parking Available (renters)*: available = 1, else = 0
- 4) *Crowding*: 1 if # persons/room >1, 0 else
- 5) *Trash Disposal*: garbage collection services not available = 1, else = 0
- 6) *Live Alone*: yes = 1, no = 0

VIII Breakdown Variables

- 1) *Toilet:**** had breakdown = 1, else = 0
- 2) *Rats:*** sign of rats = 1, else = 0
- 3) *Leaks:* sign of basement and/or roof leak = 1, else = 0
- 4) *Fuse Blown:*** blown fuses or breakers = 1, else = 0
- 5) *Holes:* # times answered yes to (1) cracks or holes in walls, (2) holes in floor, (3) peeling paint and (4) broken plaster
- 6) *Electricity:* electric wall outlets not working or wiring not concealed = 1, else = 0
- 7) *Exterminator:* Use one = 1, else = 0
- 8) *Water:*** water source breakdown = 1, else = 0

IX Insurance

- 1) *Theft Insurance:* have it = 1, else = 0
- 2) *Refused Insurance:* yes = 1, no = 0

X Employment

- 1) *Employed:* yes = 1, no = 0
- 2) *Time to Work:* codes 1-7 as is from H399*** (these range from under fifteen minutes = 1 to over 1 hour, 30 minutes = 7); rest = blank
- 3) *Distance to Work:* codes 1-8 on H400 *** as is (these range from under one mile = 1 to over 50 miles = 8); rest = blank

XI Neighborhood

- 1) *Neighborhood:* abandoned or boarded buildings noted by enumerator or (renters only) hazardous steps or stair railings on common stairways = 1, else = 0

XII Repairs

- 1) *Alterations Done:* none = 1, less than \$100 = 2, greater than \$100 = 3
- 2) *Repairs Planned:* yes in next 12 months = 1, else = 0

XIII Desire to Move

- 1) *Neighborhood Conditions*: none = 0, 1 condition = 1,
2-4 conditions = 2, 5+ conditions = 3
- 2) *Structural Deficiencies*: none = 0, 1 deficiency = 1,
2 deficiencies = 2, 3+ deficiencies = 3
- 3) *Neighborhood Services*: not wish to move = 0,
wish to move = 1

* For all four of the variables several recodes were tried. None changed the correlations with the opinion questions appreciably so, in the end, no recodes are used.

** Applies to the last 90 days.

*** See the "Data Base Dictionary" for 1976 National Annual Housing Survey, published by Data Users Services Division, Bureau of the Census.

APPENDIX II

Objective Variables Included in Basic White and Black
Regression Equations - Not Reported in Text

EXHIBIT A-II-1

OBJECTIVE VARIABLES INCLUDED IN BASIC REGRESSION EQUATIONS FOR OWNERS' OPINIONS
OF NEIGHBORHOOD QUALITY

<u>WHITES</u>	<u>BLACKS</u>
Value	Value
Neighborhood	Neighborhood
Education	Region
Age	Employed
Region	Alterations Done
Central City-SMSA	Income
	Central City-SMSA

EXHIBIT A-II-2

OBJECTIVE VARIABLES INCLUDED IN BASIC REGRESSION EQUATIONS FOR RENTERS' OPINIONS
OF STRUCTURE QUALITY

<u>WHITES</u>	<u>BLACKS</u>
Holes	Holes
Rats	Neighborhood
Built	Rats
Leaks	Leaks
Theft Insurance	Age
Electricity	Built
Age	
Neighborhood	
Gross Rent	

EXHIBIT A-II-3

OBJECTIVE VARIABLES INCLUDED IN BASIC REGRESSION EQUATIONS FOR RENTERS' OPINIONS
OF NEIGHBORHOOD QUALITY

<u>WHITES</u>	<u>BLACKS</u>
Holes	Neighborhood
Neighborhood	Holes
Parking Available	Subsidy
Central City-SMSA	Age
Theft Insurance	Central City- SMSA
Live Alone	Built
Gross Rent	Rats

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban
Development, Annual Housing Survey, 1976.

APPENDIX III

Distribution and Means of Cash/No Cash Renters on
Structure and Neighborhood Quality by Race

RACE BY EVALUATION OF STRUCTURE QUALITY (HOUSE OPINION)
FOR RENTERS (FOR SUBSETS OF RENTAL TENURE)

A. TENURE = CASH RENT

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	3,558 (21.2)	8,351 (49.7)	4,044 (24.0)	862 (5.1)	16,815 (100.0)
Black	374 (10.1)	1,485 (39.9)	1,371 (36.8)	492 (13.2)	3,722 (100.0)
Total	3,932	9,836	5,415	1,354	20,537

Mean for whites = 2.131; mean for blacks = 2.532.

B. TENURE = NO CASH RENT

Race	STRUCTURE QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	330 (30.5)	524 (48.5)	199 (18.4)	27 (2.5)	1,080 (100.0)
Black	34 (21.6)	64 (41.0)	41 (26.5)	17 (10.9)	156 (100.0)
Total	364	588	240	44	1,236

Mean for whites = 1.927; mean for blacks = 2.263.

EXHIBIT A-III-2

RACE BY EVALUATION OF NEIGHBORHOOD QUALITY (STREET OPINION)
FOR RENTERS (FOR SUBSETS OF RENTAL TENURE)A. TENURE = CASH RENT

Race	NEIGHBORHOOD QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	4,154 (24.7)	8,524 (50.7)	3,463 (20.6)	676 (4.0)	16,817 (100.0)
Black	410 (1.0)	1,554 (41.7)	1,433 (38.5)	326 (8.8)	3,723 (18.1)
Total	4,564	10,078	4,896	1,002	20,540

Mean for whites = 2.039; mean for blacks = 2.450

B. TENURE = NO CASH RENT

Race	NEIGHBORHOOD QUALITY				Total
	(1) Excellent	(2) Good	(3) Fair	(4) Poor	
White	381 (35.3)	509 (47.2)	154 (14.3)	34 (3.2)	1,078 (100.0)
Black	35 (22.3)	75 (47.6)	41 (26.1)	6 (4.0)	157 (100.0)
Total	416	584	195	40	1,235

Mean for whites = 1.852; mean for blacks = 2.115.

APPENDIX IV

Basic Regression Equations for Owners/Renters on
Structure and Neighborhood Quality by Race

This Appendix first lists the variables selected by a stepwise regression algorithm to predict opinions of structure and neighborhood quality by race and tenure. This list is in Exhibit A-IV-1

Exhibit A-IV-2 gives the regression equations used in the predictions. The predictor variables used for a particular tenure and opinion are a combination of the white and black variables given in Exhibit A-IV-1.

EXHIBIT A-IV-1

VARIABLES SELECTED BY STEPWISE REGRESSION FOR STRUCTURE AND NEIGHBORHOOD QUALITY BY RACE

<u>OWNERS</u>				<u>CASH RENTERS</u>			
<u>STRUCTURE QUALITY</u>		<u>NEIGHBORHOOD QUALITY</u>		<u>STRUCTURE QUALITY</u>		<u>NEIGHBORHOOD QUALITY</u>	
<u>Whites</u>	<u>Blacks</u>	<u>Whites</u>	<u>Blacks</u>	<u>Whites</u>	<u>Blacks</u>	<u>Whites</u>	<u>Blacks</u>
Whites	Value	Value	Value	Holes	Holes	Holes	Neighborhood
Holes	Holes	Neighborhood	Neighborhood	Rats	Neighborhood	Neighborhood	Holes
Leaks	Theft Ins.	Education	Region	When Built	Rats	Parking Available	Subsidy
Theft Insurance	When Built	Age	Employed	Leaks	Leaks	CCSMSA	Age
Garage	Rats	Region	Alterations Done	Theft Insurance	Age	Theft Insurance	CCSMSA
When Built	Age	CCSMSA	Income	Electricity	When Built	Live Alone	Built
Rats	Air		CCSMSA	Age		Gross Rent	Rats
Age				Neighborhood			
Education				Gross Rent			
Neighborhood							
Air							
Fuse Blown							

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

EXHIBIT A-IV- 2

BASIC REGRESSION EQUATIONS FOR STRUCTURE AND NEIGHBORHOOD QUALITY (OWNERS AND CASH RENTERS) BY RACE

Variables	<u>OWNERS</u>				<u>CASH RENTERS</u>						
	<u>STRUCTURE QUALITY</u>		<u>NEIGHBORHOOD QUALITY</u>		<u>STRUCTURE QUALITY</u>		<u>NEIGHBORHOOD QUALITY</u>				
	White	Black	White	Black	White	Black	White	Black			
Value	-.168	-.181	Value	-.158	-.213	Holes	.265	.252	Holes	.157	.123
Holes	.217	.166	Age	-.081	-.032	Built	.152	.195	Built	.044	.164
Leaks	.119	.151	Education	-.052	.013	Leaks	.236	.183	Theft Insurance	-.086	-.076
Built	.093	.134	Neighborhood	.341	.254	Theft Insurance	-.136	-.103	Age	-.048	-.122
Rats	.103	.140	Employed	-.005	.129	Electricity	.337	.112	Neighborhood	.273	.034
Garage	-.097	-.013	Income	-.025	-.103	Age	-.092	-.095	Rats	.114	.124
Theft Insurance	-.149	-.097	Region 1	-.027	-.013	Neighborhood	.168	.238	Gross Rent	-.001	-.001
Age	-.059	-.029	Region 2	.092	-.094	Rats	.252	.195	CCSMSA 1	-.282	-.296
Air Conditioning	-.038	-.101	Region 3	.034	.200	Gross Rent	.001	.002	CCSMSA 2	.025	.129
Fuse Blown	.042	.064	CCSMSA 1	-.174	-.201				CCSMSA 3	.170	.199
Education	-.023	.005	CCSMSA 2	-.030	-.062				Subsidy	.110	.240
Neighborhood	.111	.117	CCSMSA 3	.136	.250				Parking Available	.152	.070
			Alterations Done	.007	.047				Live Alone	-.139	-.029
Constant	2.225	1.994		2.504	2.505		1.949	1.928		2.197	1.997
R ²	.195	.151		.126	.116		.171	.214		.106	.153
Syx	.583	.695		.639	.740		.728	.751		.740	.740

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

APPENDIX V

Analysis of the Effect of the Variable "Value" on
Explaining the Race Effect

INTRODUCTION

The purpose of this Appendix is analyze white-black differences in opinion of structure quality when a specific variable, *value*, is controlled.

For this analysis, value for owners of single-family homes is expressed in dollar ranges of the following categories:

- 1) less than 20,000
- 2) 20,000 - 34,999
- 3) 35,000 - 49,999
- 4) 50,000 - 74,999
- 5) 75,000 and over

The relationship of race and value is clear from the following Exhibit. On the average whites occupy much more expensive houses than blacks do.

EXHIBIT 1

STRUCTURE VALUE BY RACE
(Weighted Sample Sizes in 000's)

		VALUE					
		1	2	3	4	5	
<u>Race</u>	White	7,225 (20.0%)	12,232 (33.7%)	9,211 (25.4%)	5,408 (14.9%)	2,202 (6.0%)	36,278 100%
	Black	1,424 (50.0%)	945 (33.2%)	349 (12.2%)	107 (3.8%)	25 (0.8%)	2,850 100%

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

twenty percent of whites live in the two highest value categories of homes; the same is true for less than 5 percent of blacks. At the other extreme, one-half of all black homeowners fall into the lowest category; the figure for whites is just one-fifth.

It is important to view the strengths that *value* exhibits:

- (1) the highest simple correlation with both resident opinion of structure and neighborhood quality (-.387 and -.324, respectively).
- (2) the highest partial correlations, equivalently F statistics, in the basic regression runs, and
- (3) a strong relationship with race, as noted above.

RESULTS

Exhibits A-V-1 and A-V-2 show the average structure and neighborhood quality responses by race and value of residence. These tables exhibit monotonicity in two ways. First, the average opinion in both tables and for both races becomes more positive as *value* increases and secondly, within each level of *value*, whites' average opinion is more positive than blacks.

As indicated in Exhibit A-V-3, *value* is indeed a very strong control variable. For owner opinions of structure quality more than half of the black-white reporting difference can be explained by differences in value; for opinions of neighborhood quality, an essentially comparable figure of 40 percent is evident.*

In the aggregate and across all classifications, by itself, *value* reduces the "raw" race effect significantly. It is especially stable across categories on opinions of structure quality. Thus, this variable is quite important in attempting to explain the perceived racial differences in expressed opinions of structure and neighborhood.

Furthermore, after comparing the results in this Appendix with those in the text, it is seen that *value* alone explains a considerable amount of the race effect due to all the control variables.

*A tabular approach (as in this Appendix) allows a finer control for *value* than that achieved by the regression method used in the main text. However, when the regression method is used to control (for *value* alone), the results are similar to those presented in this Appendix.

EXHIBIT A-V-1

OWNERS' MEAN RESPONSE ON STRUCTURE QUALITY BY RACE
AND VALUE

<u>Race</u>		<u>VALUE</u>				<u>Weighted Average</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4,5</u>	
White		2.048	1.719	1.510	1.311	1.646
Black		2.194	1.891	1.702	1.439	2.000

EXHIBIT A-V-2

OWNERS' MEAN RESPONSE ON NEIGHBORHOOD QUALITY BY RACE
AND VALUE

<u>Race</u>		<u>VALUE</u>				<u>Weighted Average</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4,5</u>	
White		1.976	1.766	1.560	1.368	1.672
Black		2.257	2.132	1.854	1.481	2.131

EXHIBIT A-V-3

OWNERS' BLACK-WHITE DIFFERENCES OF MEANS ON STRUCTURE
BY VALUE AND NEIGHBORHOOD QUALITY

	<u>Black Minus White Mean</u>	<u>% of Differences of Means in Total Group</u>
<u>Structure Quality</u>		
Total Group	.354	-
Value = 1	.146	41.2%
Value = 2	.172	48.6%
Value = 3	.192	54.2%
Value = 4,5	.128	36.2%
<u>Neighborhood Quality</u>		
Total Group	.459	-
Value = 1	.281	61.2%
Value = 2	.366	79.7%
Value = 3	.294	64.1%
Value = 4,5	.113	24.6%
Weighted* black-white differences:		
Structure Quality	.163 = 45.5% of .354	
Neighborhood Quality	.280 = 61.1% of .459	

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

*The weights used are the percentages of residences within each level of value.

APPENDIX VI

Analysis of the Effect of the Neighborhood

Variable on Explaining the Race Effect

INTRODUCTION

The purpose of this Appendix is to analyze white-black differences in opinions of structure/neighborhood quality when one aspect of neighborhood condition is controlled. This is accomplished by using the variable *neighborhood*. For owners, this variable is enumerator observation of abandoned or boarded buildings in the neighborhood; for renters, it is the same observation or observation of either hazardous steps or stair railings not firmly attached on common stairways. Hereafter, neighborhoods are classified into "good" and "bad" categories according to this variable.

In terms of general distribution, 4.8 percent of owned housing was evaluated as being in bad neighborhoods--19.2 percent for blacks, 3.6 percent for whites. Fourteen percent of rental housing was classified as in bad neighborhoods; 28.4 percent for blacks, 10.6 percent for whites.

The neighborhood variable is the only enumerator evaluation relating to either housing or neighborhood conditions in the Annual Housing Survey. It thus represents the only objective measure (i.e., non-opinion of interviewee) of neighborhood quality available from this data source. Further, this variable is highly correlated with race* and thus of potentially significant value in explaining away any observed race effect.

Shortcomings in using the variable include: (1) coarseness (i.e., only a good or bad rating available for each neighborhood) (2) limited applicability (95 percent of owner housing classified in good neighborhoods; 85 percent of rented housing similarly classified) and (3) incompleteness (5.3 percent blank for blank for owners; 3.7 percent blank for renters).**

RESULTS

Overall, for both owners and renters, those residing in bad neighborhoods have lower opinions of both structure and neighborhood quality than comparable populations in good neighborhoods (see Exhibits A-VI-1, 2 and A-VI-4,5).

When the neighborhood variable is controlled in the case of owners, the white-black difference in scores (raw race effect) is reduced by one-third for those in bad neighborhoods and one-tenth for those residing in good neighborhoods. Thus for owners, differences in neighborhood conditions, as measured by enumerator indication of the presence of abandoned buildings broken stairs/railing, etc., does explain a small portion of

*There are five times as many black owners in "bad neighborhoods" as white owners; for renters almost three times as many.

**For the purposes of this analysis, blanks are lumped with good neighborhoods.

black-white differences in opinion of structure and neighborhood quality. A great deal of these differences remains unexplained, however.

For renters, reductions in black-white opinion differences are somewhat weaker than those of owners. Also, contrary to the owner's case, *neighborhood* is a stronger control variable within good neighborhoods than within bad neighborhoods. Differences shrink about one-tenth for people in bad neighborhoods and approximately one-fifth for renters in better neighborhoods.

Thus, the results are not strong in light of the great potential that the neighborhood variable would seem to offer. This may be due to the coarseness or limited range of the variable or to the historic inconsistencies of enumerator ratings when dealing with conditions of structure or neighborhood.

EXHIBIT A-VI-1

OWNERS' MEAN RESPONSE ON STRUCTURE QUALITY BY RACE AND NBD

		<u>RACE</u>	
		<u>WHITE</u>	<u>BLACK</u>
Neighborhood (NBD)	Bad	1.965	2.194
	Good	1.634	1.954
	Weighted Average	1.646	2.000

EXHIBIT A-VI-2

OWNERS' MEAN RESPONSE ON NEIGHBORHOOD QUALITY BY RACE AND NBD

		<u>RACE</u>	
		<u>WHITE</u>	<u>BLACK</u>
Neighborhood (NBD)	Bad	2.143	2.418
	Good	1.655	2.062
	Weighted Average	1.672	2.131

EXHIBIT A-VI-3

OWNERS' BLACK-WHITE DIFFERENCES OF MEANS ON STRUCTURE AND NEIGHBORHOOD QUALITY BY NBD

	<i>Black Minus White Mean</i>	<i>% of Differences of Means in Total Group</i>
<u>Structure Quality</u>		
All People (Total Group)	.354	-
People in Bad NBD	.229	65%
People in Good NBD	.320	90%
<u>Neighborhood Quality</u>		
All People (Total Group)	.459	-
People in Bad NBD	.275	60%
People in Good NBD	.407	89%

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

*(.229 is 65 percent of .354, etc.)

EXHIBIT A-VI-4

RENTERS' MEAN RESPONSE ON STRUCTURE QUALITY BY RACE
AND NBD

		<u>RACE</u>	
		<u>WHITE</u>	<u>BLACK</u>
Neighborhood (NBD)	Bad	2.440	2.813
	Good	2.081	2.405
	Weighted Average	2.119	2.521

EXHIBIT A-VI-5

RENTERS' MEAN RESPONSE ON NEIGHBORHOOD QUALITY BY RACE
AND NBD

		<u>RACE</u>	
		<u>WHITE</u>	<u>BLACK</u>
Neighborhood (NBD)	Bad	2.407	2.771
	Good	1.983	2.305
	Weighted Average	2.028	2.437

EXHIBIT A-VI-6

RENTERS' BLACK-WHITE DIFFERENCES OF MEANS ON STRUCTURE AND
NEIGHBORHOOD QUALITY BY NBD

	<i>Black Minus White Mean</i>	<i>% of Differences of Means in Total Group</i>
<u>Structure Quality</u>		
All People (Total Group)	.402	-
People in Bad NBD	.373	93%
People in Good NBD	.324	81%
<u>Neighborhood Quality</u>		
All People (Total Group)	.409	-
People in Bad NBD	.364	89%
People in Good NBD	.322	79%

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

APPENDIX VII

Plumbing as a Control Variable Within the Basic
Regression Equations

INTRODUCTION

The use of complete plumbing facilities or the lack thereof has been utilized as one component of housing quality analyses since the 1950 Census. The same information regarding plumbing is contained in the Annual Housing Survey. It is thus interesting to analyze the effect, if any, that the plumbing variable has on expressed opinions of structure quality. One component of this effect is investigated in this Appendix.

RESULTS

This analysis will be restricted to the owners' opinion of structure quality. *Plumbing* (which is a dummy variable: complete use of plumbing versus non-complete use) was not one of the twelve control variables chosen for this group. Thus, for the country as a whole, *plumbing* has little predictive power for opinion of structure quality when the specified twelve variables have been controlled. However, *plumbing* may be important in some areas -- while not in others -- and thus might not enter the regression equation based on the full country.

Plumbing was thus considered separately within each of the four regions for central cities, suburbs and non-SMSA areas of standard Metropolitan Statistical Areas. In each of these (12) areas the weighted percentage of houses with full plumbing is computed along with the amount *plumbing* would add to R^2 if it were to be included as a thirteenth control variable.

Interestingly, all sampled black-owned houses have full plumbing in the North Central and West regions while essentially all have full plumbing in the Northeast. In the South, suburbs and non-SMSA areas show substantial lack of plumbing but its effect on R^2 is still trivial.

For whites, in all regions, the structures within central cities have 99 percent or more full plumbing. All the suburbs are also above 99 percent level, except for the South (98.5 percent). In non-SMSA areas lack of plumbing is more prevalent (up to 5 percent in the South) but *plumbing's* effect on R^2 is still relatively small.

Thus, as far as R^2 is concerned, *plumbing's* effect on opinion of structure quality is minimal. In most areas, this is because essentially all structures have full plumbing. In the other areas *plumbing's* effect, if any, is accounted for by other control variables considered -- probably *value, holes, leaks, and rats*.

EXHIBIT A-VII-1

PLUMBING MEANS* AND ADDITIONS TO R² - OWNERS' OPINIONS OF STRUCTURE QUALITY

<i>Geographic Subset</i>	<i>RACE</i>			
	<i>WHITES</i> Mean	<i>Addition to R²</i>	<i>BLACK</i> Mean	<i>Addition to R²</i>
NORTHEAST				
Central City	.990	.002	1.000	-
Suburb	.992	.000	.971	.000
Non-SMSA	.966	.002	1.000	-
NORTH CENTRAL				
Central City	.998	.000	1.000	-
Suburb	.992	.001	1.000	-
Non-SMSA	.964	.001	1.000	-
SOUTH				
Central City	.993	.002	.979	.000
Suburb	.985	.002	.878	.001
Non-SMSA	.953	.001	.674	.004
WEST				
Central City	1.000	-	1.000	-
Suburb	.998	.001	1.000	-
Non-SMSA	.984	.000	1.000	-

Source: U.S. Department of Commerce, U.S. Department of Housing and Urban Development, Annual Housing Survey, 1976.

*Plumbing is coded "1" if complete facilities are available, "0" elsewhere.





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