

A MODEL OF HOUSING SATISFACTION FOR FAMILIES  
IN LOW-INCOME RURAL AREAS

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## PREFACE

This study is a part of the Southern Regional Research Project, S-95, funded through the Oklahoma State University Agricultural Experiment Station. Concentration for the study deals with the family's satisfaction with its present housing and the desire to change housing. Four hundred families in Adair and Okfuskee counties of Oklahoma were interviewed. The goal of this study was to stimulate a better understanding of the factors which influence housing satisfaction and aid in identifying and implementing programs to assist families in reaching their housing goals.

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## CHAPTER I

### INTRODUCTION

#### Statement of the Problem

In the United States, the general literature on housing reflects an urban bias brought about through increased public awareness of urban housing problems. Indeed, cities have serious problems with poor housing, but housing problems which exist in rural communities are more critical.

The 1970 Census of Housing showed that the non-metropolitan areas contained almost 1-1/2 times as many households living in substandard housing as the metropolitan areas, and that the percentage of occupied housing rated as substandard was almost twice as high in non-metropolitan areas as in metropolitan ones (U.S. Department of Agriculture, Rural Housing Alliance, 1970, p. 1).

Lower family income level, higher percentage of substandard units and lack of financial assistance greatly contribute to the poor housing conditions in rural communities. It is generally recognized that income for families in rural areas compares unfavorably with the income for families in urban communities. Relatively few new rural houses are being built because of the low economic incentives and the absence of economies of scale to entice builders in rural areas. There are no extensive programs of "rural slum clearance" or "rural renewal." Farmers Home Administration provides some

mortgage interest subsidy funds for rural families but this assistance does not begin to scratch the surface of the need. The burden of improving rural housing rests on the shoulders of the rural families, many of whom cannot afford costly repairs, renovations or construction of new homes.

Although there is a real need for improved housing in the low-income rural areas, there are no easy answers as to the best solutions to the problem. One way of beginning to work toward a solution is to provide detailed information about the characteristics of rural families and their housing and the impact of these characteristics on housing satisfaction. A better understanding of the factors which influence housing satisfaction could aid in identifying and implementing programs to assist families in reaching their housing goals.

#### Purpose of the Study

The purpose of this study was to further test a theory that a family's satisfaction with their housing acts as an intervening variable between family/housing characteristics and their desire to change present housing. The model was tested in low-income rural counties of Oklahoma.

#### Objectives

The specific objectives of this study were:

1. To examine the relationship between family characteristics (i.e., income, age of head, education of head and family

size) and present housing characteristics (i.e., location, space, structural quality and tenure).

2. To analyze the impact of family and housing characteristics, on satisfaction with various aspects of housing (i.e., space, arrangement storage, physical appearance, structural quality, services, location and street/road condition).
3. To examine the influence of family characteristics, housing characteristics and satisfaction with housing on the family's desire to change its present housing situation (by moving or making alterations in present housing).

#### Procedure

##### Introduction

This study analyzed data from the Southern Regional Research Project, S-95. The regional project includes participants from nine Southern states along with the Rural Housing Research Center of the United States Department of Agriculture and the Tennessee Valley Authority. The purpose of the project was to study the housing environment of low-income rural families in order to identify the housing needs, satisfaction, expectations and aspirations of low-income families in rural areas and to identify the limitations and constraints that keep families from attaining the kinds of housing that they need and/or want.

To obtain the essential data, identical interview schedules were used to collect data in each state. Later, data from the individual states will be combined for a total southern regional analysis. The

findings from the regional study will then be shared with architects, environmentalists, planners, economists, engineers and extension workers who participated in the project. The present study utilized only data on Oklahoma families.

#### Description of the Sample

The selection of counties to be included in the regional study followed certain criteria:

1. Based on median family income, the counties were within the lowest one-third of the counties in the state;
2. There were no towns with a population in excess of 20,000;
3. Topography of each county was comparable to that of at least one county in another state included in the study, one hilly terrain and one non-hilly terrain.

The two counties selected in Oklahoma, Adair and Okfuskee, closely resemble the criteria developed by the S-95 Regional Project in the following manner:

	<u>Adair</u>	<u>Okfuskee</u>
Largest town (Population)	2,134	2,913
Median annual income	3,997	4,549
Density (Persons/Sq.Mile)	26.6	16.8
Percent of Population below poverty level	41.7	34.6

During the spring of 1975, a two-stage sampling technique was used to draw a sample of 200 families from each county. Maps which divided each county into one-mile sections were obtained from the Oklahoma Department of Highways Planning Division. The location and

identification of all structures in the one-mile sections were shown on these maps. The maps were then divided into clusters of approximately 20 dwelling units each and a random sample of 45 clusters was drawn. Beginning in the northeast corner of each cluster and working in a clockwise direction, the first house was selected. Every fourth house in the cluster was systematically drawn into the sample for a total of five interviews within each cluster and 200 interviews in each county.

The female head of household or the wife of the male head of household was interviewed. If the household did not include an adult female the male head was interviewed. In the event the desired respondent was not at home an appointment was set up to return for an interview at a more suitable time. If no response was obtained after three attempts, the next house was drawn into the sample.

#### Method for Collecting Data

Data were collected by personal interview schedule. The interview schedule was pretested in one county of each of the states involved in the S-95 project. The pretest schedule was then revised and condensed by the research directors in the project's nine southern states. The final draft of the interview schedule consisted of 107 items designed to obtain data pertinent to:

1. Social, demographic and economic characteristics of residents;
2. Housing characteristics and adequacy;
3. Residents satisfaction with housing, housing expectations and the constraints to action that could change housing.

During June through August, 1975, trained interviewers administered the schedules to acceptable respondents. Direct responses were recorded by each interviewer on their respective interview schedules and were edited in the field by the field supervisor. Interviews lasted an average of 30 to 45 minutes. The interview schedules were prepared to include a common coding system used by all nine states. Information in the interview schedules was edited, coded and prepared for computer analysis on IBM cards.

### Analysis of Data

#### Statistical Tests to be Used

In the preliminary analysis of the data frequency distributions were tabulated for all variables. Frequencies and percentages were used to describe the characteristics of the sample (Tables I, II).

Pearson Correlations were used for developing the housing satisfactions scales (Tables III-VII)..

The specific objectives of the study were analyzed by path analysis, an approach which made it possible to isolate theoretically meaningful variables and simultaneously examine the relationships among them.

## CHAPTER II

### REVIEW OF LITERATURE

#### A Broadened Housing Concept

The importance of housing quality and the need for "adequate" housing was stressed as a major national concern in the Housing Acts of 1949, 1968 and 1974. These Acts set "a decent home and suitable living environment for every American family" as their goal. In reaching toward a "suitable living environment for every American family" it was necessary to consider the determinants of housing. Housing was defined by Abrams (1971, p. 137) in a most general sense as "shelter inhabited by man." However, housing is a broad area which embodies far more than a dwelling unit inhabited by man. It is a basic component of the human environment--one that is essential to human existence and should therefore be viewed in broader terms such as location, services, costs, tenure, quality and space. In addition to a broadened housing concept, information is needed concerning (1) the characteristics of American families and their housing; (2) the impact of these characteristics on housing satisfaction and the housing goals toward which these families are moving.

## Housing Satisfaction and Residential Mobility

Earlier housing literature contains several studies which measured the families residential mobility in terms of family characteristics, housing quality and housing aspirations. More recent studies have utilized such variables as family life-cycle stage, age and education of the household head, tenure, location, quality and space to develop models of residential mobility. The models were further developed by including various measures of residential satisfaction as an intervening variable between family/housing variables and mobility.

Housing dissatisfaction as a potential cause of residential mobility was investigated in a study by Rossi (1955) among 900 families in Philadelphia around 1950. He examined present mobility behavior as "essentially the household's present desires and plans concerning moving in the future" (Rossi, 1955, p. 16). Rossi measured the family's residential satisfaction by constructing "Complaints" Indexes, based on the answers to 14 questions concerning the respondent's satisfaction with, dissatisfaction with, or indifference to different aspects of their dwelling unit (Rossi, 1955, p. 196). He found that a respondent's satisfaction with housing was not a necessary determinant of long distance moves. These moves were most likely due to such things as job change, preference for another location or family change. However, in cases where intra-community mobility was a factor, dissatisfaction with the amount of dwelling space played a role in the majority of the moves studied.



The important things the respondents had in mind in choosing their present homes from all those available them were, in rank order: space in the dwelling, particular dwelling design features, dwelling location, and finally, cost. However, costs appeared as the major consideration in the actual choice, followed by space, location, and neighborhood in that order (Rossi, 1955, p. 9).

Satisfaction has proven to be difficult to measure confidently. Numerous studies have employed various measures of satisfaction and most reported the respondents were satisfied with their present housing situation. The general feeling of the respondents who reported being satisfied seemed to be "I'm living here, I'm satisfied or I would have done something to improve it."

Montgomery, Sutker and Nygren's study (1959) of rural housing in the open country area of Garfield County, Oklahoma measured the satisfaction with housing of 212 rural housewives in four different ways:

- (1) Respondents were asked how well satisfied they were with their house as a whole.
- (2) They were asked how well satisfied they were with each of ten selected aspects of their houses.
- (3) A composite satisfaction score was made from the responses on these ten items.
- (4) The respondents were also asked if in starting all over again they would build or buy a house similar to their present one (Montgomery, Sutker and Nygren, 1959, pp. 20-21).

Response to the first question, "How well satisfied are you with your house as a whole?" revealed that the housewives were quite satisfied with their homes. When responses to the second question were assessed it became evident that some aspects of their housing did not measure up as well. Age became a significant factor highly

related to satisfaction. The older the respondents, the more satisfied they were with their present housing. Other variables related to satisfaction with some of the housing items were family life cycle stage, socio-economic status and occupation.

The third measurement of satisfaction, a satisfaction-dissatisfaction continuum, found three variables to be related to the respondent's satisfaction scores, respondent's age, family life cycle stage and type of occupation. It was found that younger families in the earlier life cycle stages were less satisfied with their housing than were the older families, that farmers were more satisfied with their homes than were nonfarm families. The ages of the farm families were older than those of nonfarm families.

The final measurement of satisfaction found:

. . . 14 percent of the respondents replied that they would want a house 'just like' their present one; 28 percent indicated that they would want a house somewhat like it or that they were undecided; and 58 percent, that they would want a house different from their present one (Montgomery, Sutker and Nygren, 1959, p. 25).

This measure of satisfaction suggests that if given a chance to build or buy a new home, many would want a different type of home.

When all the housing satisfaction indexes were viewed separately, it was clear to see that the majority of the rural people were not satisfied with their present housing. It was found that the farm families could make minor changes in their housing situation but were unable to determine what changes to make concerning major problems and were unable to finance major changes in their housing due to the absence of financial resources and professional skills.

In a review of research prior to 1960, Foote, Abu-Lughod, Folley and Winnick (1960) found that not all dissatisfied homeowners moved from their present housing and that not all those who moved from their present homes were dissatisfied. However, many households were not satisfied with their housing due to increasing family size and moved for that reason. Foote, et al., summarized as follows the major sources of dissatisfaction with housing which led the families to move:

- (1) Space within the dwelling (usually too little, occasionally too much).
- (2) The neighborhood surrounding the dwelling (particularly the social composition of the neighborhood; secondarily its physical characteristics).
- (3) Cost of housing (invariably too high, or too high for value received).
- (4) Secondary sources of dissatisfaction, such as poor design or layout of the dwelling; difficulties with the landlord; tensions within the household not necessarily related to the quality of the dwelling; and other more vague and amorphous causes of discontent (Foote, Abu-Lughod, Foley and Winnick, p. 156).

They further concluded space, neighborhood and cost were motives for families to move and they confirmed the finding that young families who were in the expanding stage of the family cycle were the most mobile group.

More recent studies have theorized that "adequate" housing for one family may not be "adequate" housing for another family. The important factor may not be the housing itself but the attitude of the family. If a family desires more housing space or higher quality than its present housing provides the family may be less than

completely satisfied. On the other hand, another family living in the same quality housing and space allotment may desire no more and thus, be satisfied. Housing satisfaction has been used as the measure of how "adequate" the housing is for the family's needs.

In an attempt to better understand housing satisfaction, multivariate analysis has been used by numerous researchers in the field of housing research. Theories were postulated suggesting factors which might influence housing satisfaction and factors which might be influenced by satisfaction, such as, mobility or alteration variables.

Greninger (1973) studied a sample involving two family types, (1) "typical" families and (2) "disadvantaged" families. Sample sizes were 488 and 191 families, respectively, and all families lived in an area within Illinois. Her objective was to determine which socioeconomic, social psychological, and housing variables influenced the housing satisfaction expressed by the wives. She stated that her study differed from previous studies in two ways:

First, various social psychological variables which have not been previously utilized were included. Second, a series of multiple regressions was used to analyze the data (Greninger, 1973, p. 73).

Housing satisfaction was measured in this study through one question, "How satisfactory do you feel your home is in all other respects (other than size)?" The responses for housing satisfaction were assigned values ranging from "very satisfied" to "very unsatisfactory." A total of 109 independent variables were used in the analysis of satisfaction with housing. Greninger grouped the

independent variables into three groups (1) socio-economic, (2) social psychological and (3) housing.

Findings of this study suggest that these three groups of variables influenced the wives housing satisfaction in selected ways. The social psychological variables (these variables pertained to the expectations or desires that the wife had for herself and for her family) however, appeared to have influenced housing satisfaction more than did the socio-economic and housing variables. Satisfaction of the wife with her family's present standard of living was found to be the most important variable in explaining satisfaction.

Greninger's study clearly points out that the social psychological variables, which have not appeared in previous satisfaction studies, had considerable influence on housing satisfaction and should most definitely be tested in future research on housing satisfaction.

Speare (1974) developed a model for residential mobility in which residential satisfaction became an intervening variable between individual and residential variables and residential mobility. The data for his study came from a panel study of Rhode Island residents taken in 1969. Speare measured residential satisfaction through a series of questions concerning specific housing, neighborhood or location items. Variables included in his model were: friends and relatives index, crowding ratio, age of head, duration of residence, own/rent, satisfaction index, wish to move and mobility.

Speare summarized his findings as follows:

. . . residential satisfaction as the first interview is related to the wish to move and to mobility in the year following the interview. Individual and residence characteristics such as age of head, duration of residence, home ownership, and room crowding are shown to affect mobility through their effect on residential satisfaction (Speare, 1974, p. 173).

Speare's study has shown housing satisfaction as a meaningful predictor of mobility, either through an expressed desire to move or through an actual move.

Morris, Crull and Winter (1976) introduced normative housing deficits (space, structure type and tenure) as intervening variables between socio-economic and demographic variables (income; education, background and age of the head; occupation and months married) and satisfaction (housing and neighborhood) into their analysis of the model for the propensity to move. Their findings support the use of a model that includes normative housing deficits, as a predictor of the propensity to move.

Neighborhood satisfaction was found to have the strongest influence on housing satisfaction, ". . . supporting the generalization that a dwelling is evaluated both on the basis of its specific character and on the character of surrounding housing" (Morris, Crull and Winter, 1976, p. 317). The next variable influencing housing satisfaction was living in a multiple dwelling when normative criteria requires a single family dwelling. Bedroom shortage relative to need was found to be the third variable influencing housing satisfaction. Satisfaction decreased, as the need for additional bedroom space increased.

The desire to move and the expectation of moving were both found to be directly influenced by housing satisfaction. As satisfaction decreased, the desire and the expectation of moving increased.

The results of the study were stated by (Morris, Crull and Winter, 1976, p. 309) as ". . . the propensity to move is a response to housing satisfaction which, in turn, is a response to discrepancies between achieved and normatively prescribed housing."

#### Adapting Housing to Meet the Family's Needs

When a degree of dissatisfaction is perceived by the family toward its present housing, the family will seek alternatives and will evaluate the alternatives in relation to its present situation. If a family is sufficiently dissatisfied with its present location, a move to a more desirable location will be considered. Another possible solution to relieving dissatisfaction with housing is altering housing to meet the needs of the household. Residential alteration refers to the family's future plans toward altering its present housing to fit their needs. These might include remodeling, adding a room or rooms or change the rooms primary function.

Bross (1975) examined two types of residential adaptation:

- (1) All activities, including routine interior and exterior maintenance and repairs, remodeling, redecorating, or adding space to the house, and all kinds of additions and improvements to the property in general; and
- (2) strictly housing space related activities, the addition of space, remodeling, and redecorating (Bross, 1975, p. 80).

Bross tested the hypothesis that "... deviation for normatively prescribed housing will tend to result in either residential adaptation or residential mobility" (Bross, 1975, p. 80).

Bross developed a path model in which normative housing deficits (space characteristics, household size, recent mobility, structure type and neighborhood characteristics) intervened between the background variables (marriage month, income, characteristics of the head and length of ownership) and the adaptation variables (additions and renovations, adaptations and improvements), housing satisfaction and neighborhood satisfaction.

Bross dropped the renters from the sample since current literature declares homeownership to be a prerequisite for home adaptation. Bross found that the normative housing deficits positively influenced the family's adaptation activities, and more importantly, the space deficits positively. This implies that the greater the deficit between present space allotment and needed space, the greater the probability of residential adaptation. The adaptations and improvements variables, demonstrating the importance of additional rooms as a factor motivating residential adaptation. Size of the household was found to have a strong positive relationship with the additions and renovations variable.

Bross summarized residential adaptation in relation to satisfaction and mobility as follows:

... residential adaptation during the previous year was shown to have no relationship to present housing satisfaction and to have no relationship to desired mobility or expected mobility. The findings that show neighborhood deviation to have a positive relationship to both adaptation behavior and to expected




mobility, that show occupational status to predict expected mobility, and that show short length of ownership to predict adaptation activities but not to have any direct relationship to expected mobility, imply that households may perform residential adaptation not only to make their homes more livable for the duration of their own residence but also to make the property more salable in the future (Bross, 1975, pp. 85-86).

Bross concluded by stating that ". . . there are enough apparently significant relationships and enough positive and surprising results to indicate that residential adaptation serves some very important functions in our society . . ." (Bross, 1975, p. 87).

#### Summary

The importance of "adequate" housing for all American families has been stressed as a major concern by our nation since the Housing Act of 1949 and continues to be an important factor in housing to date. Although "adequate" housing has been declared a national priority, substandard housing still remains in America, especially in rural areas. A broadened concept of housing including more information on family/housing characteristics and goals could possibly help provide incentive to alleviate the problems contributing to poor housing in America.

The family's attitude toward his housing has become a more prominent factor in the measurement of housing satisfaction, since families view their housing needs differently than do other similar families. Each family determines at what point their housing can no longer satisfy their needs. Therefore, what is determined to be "adequate" for one family may not be "adequate" for another family.



Rossi's (1955) study, as well as other investigations, found one or more of the following variables: age of the household head, family life cycle stage, occupation of the household head, expectations, desires, space, costs, quality, tenure, length of residence, location, services, normative housing deficits and friends and relatives to be important factors relating to a family's housing satisfaction. Investigations have further shown dissatisfaction with housing to be a potential cause of residential mobility. Recent studies, however, have found residential adaptation to be an alternative solution to mobility; that is, altering their home to meet their needs. The most recent method of analysis for examining these relationships empirically has been multivariate analysis which makes it possible to isolate theoretically meaningful variables and simultaneously examine the relationships among them.

## CHAPTER III

### ANALYSIS OF THE DATA

#### The Sample

The sample which served as a data base for this study was obtained during the spring of 1975 from a two-stage cluster sample of 400 households in Adair and Okfuskee Counties in Oklahoma.

The most typical residential location was the open country rural nonfarms where 51 percent of the respondents lived. This compares to 11 percent of the respondents who lived in open country rural farm dwellings. The remaining 38 percent of the respondents lived in or near rural towns of approximately 200 to 10,000 population (Table II).

The size of the families ranged from 1 to 12 persons per household, with the mean family size being 3.08 persons, which is just under the national mean family size of 3.42 persons (U.S. Bureau of the Census, Current Population Reports, 1975, p. 11). Two person households were most representative of family size and involved 39 percent of the sample. Males headed 76 percent of the households and females headed 24 percent of the households. Race of the respondents in the sample included 70 percent white, 21 percent Indian, 8 percent black and 1 percent Mexican American (Table I).

TABLE I  
FAMILY CHARACTERISTICS OF THE SAMPLE

Family Characteristics	Number Reporting	Percent
<b>Monthly Family Income</b>		
\$ 23 - \$ 202	59	18
\$204 - \$ 281	58	17
\$282 - \$ 380	55	17
\$382 - \$ 541	66	20
\$543 - \$ 754	48	14
\$760 - \$1,600	45	14
Total	331	100
<b>Race of Population</b>		
White	279	70
Indian	84	21
Black	33	8
Mexican American	3	1
Total	399	100
<b>Education of the Household Head</b>		
No schooling	10	3
First to eighth grade completed	189	49
Ninth to eleventh grade completed	61	15
Twelfth grade completed	78	20
High school plus three years college	27	7
College graduate	10	3
College graduate plus advanced study	14	3
Total	389	100
<b>Family Size</b>		
One person	62	16
Two persons	156	39
Three persons	46	12
Four persons	47	12
Five persons	44	11
Six persons	24	6
Seven persons	9	2
Eight persons	5	1
Nine persons	3	1
Ten persons	1	0
Eleven persons	1	0
Twelve persons	1	0
Total	399	100

TABLE I (Continued)

Family Characteristics	Number Reporting	Percent
Age of Household Head		
18 years to 25 years	19	5
26 through 44 years	94	23
45 through 61 years	117	30
62 through 74 years	107	27
75 through 91 years	<u>60</u>	<u>15</u>
Total	397	100
Sex of Household Head		
Male	305	76
Female	<u>95</u>	<u>24</u>
Total	400	100

TABLE II

## HOUSING CHARACTERISTICS OF THE SAMPLE

Housing Characteristics	Number Reporting	Percent
Tenure		
Owners	303	76
Renters	<u>97</u>	<u>24</u>
Total	400	100
Structural Quality		
No problems	159	40
Minor problems	230	57
Major problems	<u>11</u>	<u>3</u>
Total	400	100

TABLE II (Continued)

Housing Characteristics	Number Reporting	Percent
Location		
Small town	100	25
Rural village	50	13
Open country rural nonfarm	205	51
Open country rural farm	<u>45</u>	<u>11</u>
Total	400	100
Square-Feet-Per-Person		
72.80 to 190.40	66	17
192.00 to 299.00	63	16
300.00 to 408.00	63	16
414.00 to 544.00	63	16
549.00 to 742.50	62	16
750.00 to 3,200.00	<u>76</u>	<u>19</u>
Total	393	100
Persons-Per-Room		
.5 or less	212	53
.5 to 1.0	145	36
1.1 or more	<u>42</u>	<u>11</u>
Total	399	100

Ages ranged from 18 to 91 years for the household heads with the mean age being 55 years. Forty-two percent of the household heads were over 62 years old (Table I). The national percentage for persons over 65 years old was 17.7 percent (U.S. Bureau of the Census, Current Population Reports, 1975, p. 11). The education level for the household heads ranged from no schooling to graduate college level. Mean education for the head was 9.06 years as compared to the national average education level for males and females of 12.3

years (U.S. Bureau of the Census, Current Population Reports, 1975, p. 60). Thirty-three percent of the household heads had a high school education or more (Table I).

According to the Current Population Reports based on data released in March, 1974, the national average poverty income level for a nonfarm family of four members, with a male head, was \$5,040 per year. For the same size family classified as a farm family the poverty level was set at \$4,303 (U.S. Bureau of the Census, Current Population Reports, 1974, p. 146).

The monthly income for the families in the sample ranged from \$23 to \$1600 per month (Table I). The mean monthly income per household was \$445. This figure is evidence of the fact that Adair and Okfuskee Counties have many families in the low-income category. Families in the sample who had female heads and/or who were elderly families had an even lower average monthly income.

Seventy-six percent of the families in the sample were homeowners and 24 percent of the families were classified as renters. The structural quality of the home for the sample as determined by the respondents ranged from 40 percent who reported high structural quality to three percent who reported poor structural quality (Table II).

The total number of square-feet-per-person for the sample ranged from 72.80 to 3,200 square-feet-per-person (Table II). The mean number of square-feet-per-person for the sample was 520.45 square-feet-per-person.

The range for persons-per-room was .13 to 2.33 (Table II). Eleven percent of the households had greater than 1.0 persons-per-room. The mean number of persons-per-room for the sample was .635 persons-per-room.

### The Variables

Measurement of the family and housing variables, housing satisfaction and the desire to move or the desire to alter housing as reported by the respondent were as follows:

The Housing Satisfaction variable measured the adequacy of present housing for meeting the family's housing needs. The respondent was given a list of 24 housing characteristics and was asked to evaluate the adequacy of each characteristic by assigning it a numerical value from one to nine. The categories were as follows:

- A. 9 = present home is just like family wants,  
.  
.  
.
- B. 5 = present home is adequate,  
.  
.  
.
- C. 1 = present home is not at all like family wants,  
.  
.  
.
- D. 0 = question does not apply.



The 24 items were divided into five categories of satisfaction. A scale was developed for each category using the following correlation technique (Edwards, 1957, p. 155):

1. Responses to all items in the category were summed for each respondent.
2. Each item was correlated with each of the other items in the scale and with the total.
3. Items with low correlations were removed from the scale.

The five satisfaction measures were as follows:

- A. SAT1 was the sum of four housing characteristics measuring the satisfaction the respondents reported with present room arrangement, size of home, number of rooms and arrangement for food preparation (Table III).

TABLE III  
CORRELATION MATRIX FOR VARIABLES IN SAT1

Variables <sup>1</sup>	V132	V133	V134	V135	SAT1
V132	1.000	.606	.547	.474	.802
V133		1.000	.746	.485	.870
V134			1.000	.490	.855
V135				1.000	.743
SAT1					1.000

<sup>1</sup>Variables: V132 = room arrangement, V133 = size of home, V134 = number of rooms, V135 = arrangement for food preparation.

- B. SAT2 was the sum of four housing characteristics measuring the satisfaction of the respondent with present appearance of home's interior, house type (single family, apartment, etc.), structural quality (soundness) of the home and appearance of the home's exterior (Table IV).

TABLE IV  
CORRELATION MATRIX FOR VARIABLES IN SAT2

Variables <sup>1</sup>	V137	V138	V139	V140	SAT2
V137	1.000	.351	.561	.586	.805
V138		1.000	.455	.369	.638
V139			1.000	.688	.861
V140				1.000	.855
SAT2					1.000

<sup>1</sup>Variables: V137 = home's interior appearance, V138 = type of house, V139 = structural quality, V140 = home's exterior appearance.

- C. SAT3 was the sum of three housing characteristics measuring the satisfaction of the respondent with present storage space within the home, storage space outside the home and the amount of outdoor space (Table V).

TABLE V  
CORRELATION MATRIX FOR VARIABLES IN SAT3

Variables <sup>1</sup>	V136	V141	V142	SAT3
V136	1.000	.382	.203	.738
V141		1.000	.360	.828
V142			1.000	.634
SAT3				1.000

<sup>1</sup>Variables: V136 = amount inside storage, V141 = amount of outside storage, V142 = amount of outdoor space.

- D. SAT4 was the sum of five housing characteristics measuring the satisfaction of the respondent with present utility costs, housing costs, water supply, sewage disposal and the conditions of the streets/roads that lead to the home (Table VI).
- E. SAT5 was the sum of five housing characteristics measuring the satisfaction of the respondent with present location in relation to shops, medical services, church/social activities, available fire protection and available police protection (Table VII).

TABLE VI  
CORRELATION MATRIX FOR VARIABLES IN SAT4

Variables <sup>1</sup>	V143	V144	V145	V146	V155	SAT4
V143	1.000	.517	.181	.221	.204	.624
V144		1.000	.267	.215	.201	.652
V145			1.000	.466	.319	.674
V146				1.000	.210	.657
V155					1.000	.641
SAT4						1.000

<sup>1</sup>Variables: V143 = utility costs, V144 = housing costs, V145 = water supply, V146 = sewage disposal method, V155 = street/road conditions.

TABLE VII  
CORRELATION MATRIX FOR VARIABLES IN SAT5

Variables <sup>1</sup>	V148	V149	V150	V152	V153	SAT5
V148	1.000	.525	.432	.347	.407	.739
V149		1.000	.361	.227	.245	.659
V150			1.000	.182	.297	.609
V152				1.000	.720	.736
V153					1.000	.784
SAT5						1.000

<sup>1</sup>Variables: V148 = location of shops, V149 = location of medical services, V150 = location of church/social activities, V152 = fire protection, V153 = police protection.

The structural quality variable measured the structural quality of the family's present housing as reported by the respondent. The structural quality measure was obtained by summing the values indicating the presence or absence of 10 quality indicators. Structural quality was coded as follows:

- A. 2 = not present,
- B. 1 = to small degree,
- C. 0 = to large degree.

The 10 quality indicators consisted of leaks in roof; cracks, sags or bulges in walls or ceiling; peeling paint on inside and outside walls; decay of door, window frames, porch and outside steps; uneven floors; broken or missing window panes; and rodent or insect damage.

Each respondent was asked (1) if present housing completely met the family's needs, (2) if there was a desire to make alterations in the present housing, or (3) if there was a desire to move to different housing. From this question two variables were created--the desire to move and the desire to alter.

The desire to move was a dichotomous variable which measured the family's housing desire. MOVE was coded as follows:

- A. 0 = no change,
- B. 1 = move from the present home.

The desire to alter the family's present home was a dichotomous variable which measured the family's desire to alter present housing. ALTER was coded as follows:

- A. 0 = no change,
- B. 1 = make an alteration in present home.

The family income was defined as the total monthly family income and included the sum of the take home pay of all household members for each month along with income from social security, disability, welfare, etc.

The variable tenure described the respondents present ownership status. Tenure was coded as follows:

- A. 1 = own home,
- B. 2 = rent home.

The square-feet-per-person (SQFT\_PER) variable was a space measure that was created by dividing the total number of square feet in the home by the total number of persons living there.

The variable persons-per-room (PER\_RM) was another space measure that was created by dividing the total number of persons in the household by the total number of rooms in the house.

The location variable identified the type of area in which the respondent lived. Location was coded as follows:

- A. 2 = small town (1,000 to 9,999),
- B. 3 = rural village (less than 1,000),
- C. 4 = open country rural nonfarm,
- D. 5 = open country rural farm.

The age of the household head (AGEHH) variable identified the age of the household head as of the last birthday.

The education of the household head (EDUCHH) identified the last grade completed by the head of the household.

The variable for family size (FAMSIZE) identified the number of persons related or unrelated living in the household.

## Path Analysis

Path analysis was introduced by Sewell Wright (1934, 1954, 1960) and popularized in the social science fields by Otis D. Duncan (1966). Wright (1960, p. 444) stated the primary purpose of the method as follows:

. . . Path analysis is an extension of the usual verbal interpretation of statistics, not of the statistics themselves. It is usually easy to give a plausible interpretation of any significant statistic taken by itself. The purpose of path analysis is to determine whether a proposed set of interpretations is consistent throughout.

The relationships in this study were examined through the use of multivariate path analysis, since path analysis makes it possible to isolate theoretically meaningful variables and simultaneously examine the relationships among them. This method assumes the sets of relationships among the variables are linear, causal and additive. It is further assumed that the variables are of interval scale in measurement.

Path diagrams were developed by Wright (1921, 1960) to present theoretical representations more expeditiously. Land (1969, pp. 6-7) suggested four conventions for construction of path diagrams:

1. The postulated causal relations among the variables of the system are represented by unidirectional arrows extending from each determining variable to each variable dependent on it.
2. The postulated noncausal correlations between exogenous variables of the system are symbolized by two-headed curvilinear arrows to distinguish them from causal arrows.
3. Residual variables are also represented by unidirectional arrows leading from the residual variable to the dependent variable.

4. The quantities entered beside the arrows on a path diagram are the symbolic or numerical values of the path and correlation coefficients of the postulated causal and correlational relationships.

Following these prescribed methods for formulating a path model, hypothesized paths (Figure 1) were developed for the purpose of testing the theory of housing satisfaction and the desire to change housing among families. Once the model was hypothesized, computerized path analysis was begun.

The general multiple linear regression equation is as follows:

$$Y = b_0 + b_1x_1 + b_2x_2 + \dots + b_mx_m$$

where

$Y$  is the predicted dependent variable;

$b_0$  is the additive constant;

$b_1 \dots b_m$  are the regression coefficients; and

$x_1 \dots x_m$  are the independent variables.

From this equation, a path coefficient, which is the standardized beta coefficient, is obtained. The beta coefficient measures the influence of the independent (exogenous) variable on the dependent (endogenous) variable when all the variables in the model are operating. A path coefficient of .32 would be interpreted as follows: an increase of one standard deviation unit in the independent variable would be accompanied by an increase of .32 standard deviation units in the dependent variable. By using standardized path coefficients, it is possible to compare the strengths of various path coefficients.



In this study, the hypothesized paths were allowed to remain in the model if they met the following criteria:

1. the beta value (B) was larger than the standard error of beta and,
2. the standardized beta value sign and the sign of the zero order correlation coefficient between the independent and dependent variable did not change.

The path coefficients that remained in the model after having been tested by the regression analysis determined whether or not the theory described the empirical relationships.

A residual (R) is used to represent the influence on the dependent variable of all unmeasured variables not included in the model. The formula for determining R is as follows:

$$R = \sqrt{1 - R^2}$$

The path analysis in this chapter is presented in four sections. The first section presents the overall hypothesized model for housing satisfaction and the desire to change family housing. The second section presents the five sub-models for housing satisfaction. The third and fourth sections present the two sub-models for MOVE and ALTER.

#### Theoretical Model of Housing Satisfaction and the Desire to Change Present Housing

This study concentrated on a sample of families from low-income rural areas and was designed to further test a theory that housing

satisfaction acts as an intervening variable between the characteristics of family and house and the family's desire to make some change in its housing. Previous studies, involving primarily urban families, have identified some variables which seem to be related to housing satisfaction and the desire to change housing. These variables include age and education of the household head, income, space, structural quality, tenure and location.

A theoretical model was developed to indicate the expected relationships among a selected set of variables which were thought to be related. The model makes no attempt to include all possible variables. It is simply an isolated set of variables which can be examined empirically for purposes of illuminating the simultaneous relationships among the variables.

Figure 1 identifies the variables which were included in the theoretical model. Variables which describe the family and its housing are shown to the left of the figure and the direction of influence flows from left to right. It was expected that the characteristics of the family and its housing would influence the level of satisfaction expressed by the family. This level of satisfaction would then influence the family's desire to alter their present housing or move to different housing. It is also possible that the family/housing characteristics could directly influence the desire to alter or move without involving the level of satisfaction. One advantage of the path analysis method is the possibility of analyzing both the direct and the indirect influences of the family housing variables on the final dependent variable which is the desire to alter or the desire to move.

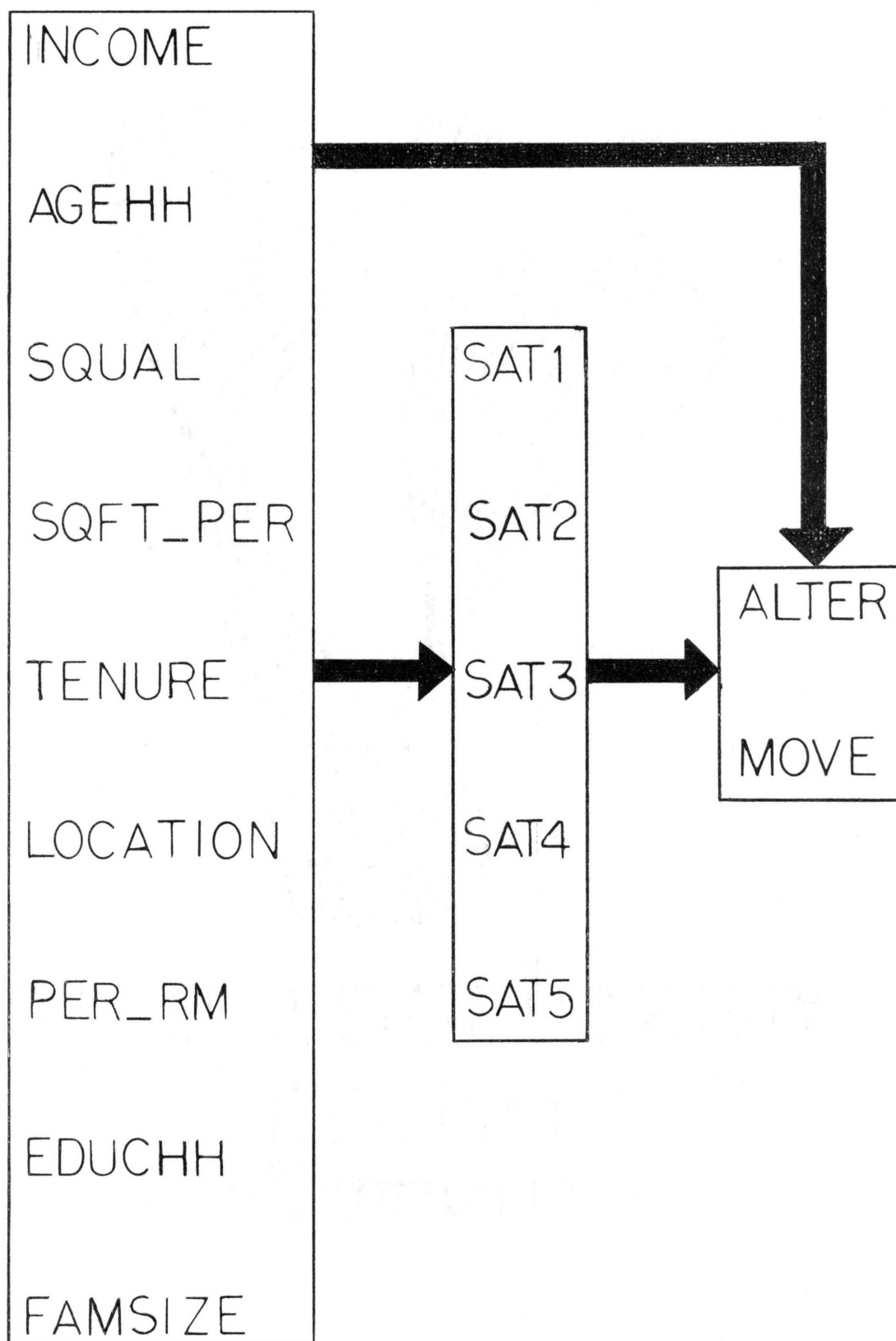


Figure 1. Hypothesized Path Model

Table VIII is a zero order correlation matrix showing the direct correlations between all possible pairs of variables in the theoretical model.

The expected influence of each of the family/housing variables on each of the five measures of satisfaction are shown in Table IX. A positive sign indicates that an increase in the independent variable (family/housing characteristic) will be accompanied by an increase in satisfaction (the dependent variable). A negative sign indicates that an increase in the independent variable will be accompanied by a decrease in the level of satisfaction. No theoretical path could be postulated for some variables since there was no clear theory to indicate that a path would exist or that the influence would be clearly positive or negative. Some of the independent variables were expected to have a positive influence on some of the satisfaction variables and a negative influence on others. For example, it was expected that location (which was coded from urban as the low score to rural as the high score) would be negatively related to satisfaction with quality (SAT2), but positively related to satisfaction with storage and outdoor space (SAT3). Since quality of housing has a tendency to be lower in rural areas, it was expected that the more rural families might be less satisfied with quality (thus the negative sign was hypothesized for that relationship). On the other hand, it was expected that rural families would have more outdoor space and thus would be more satisfied with this aspect of their housing; that is, a positive relationship was hypothesized.

The model was designed to test the simultaneous influence of all variables on the desire to alter or move. This test was carried

TABLE VIII  
CORRELATION MATRIX FOR VARIABLES IN THE PATH MODEL (N = 400)

VAR <sup>1</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1.000	.035	-.079	-.261	.330	.156	-.505	.458	.417	-.122	-.021	-.089	-.130	-.164	.243	.138
2		1.000	.175	-.080	.190	-.079	-.225	-.041	.105	-.191	-.252	-.278	.003	.005	.262	-.199
3			1.000	-.157	.163	-.056	.002	-.206	.139	-.295	-.503	-.260	-.171	.011	.440	.282
4				1.000	-.610	-.268	.380	.103	-.575	.266	.197	.249	.150	.186	-.226	-.203
5					1.000	.228	-.469	.012	.906	-.322	-.233	-.281	-.223	-.223	.268	.182
6						1.000	-.164	-.080	.230	-.038	.065	.052	-.152	-.514	-.047	.096
7							1.000	-.387	-.487	.179	.091	.202	.150	.146	-.314	-.227
8								1.000	.074	.057	.095	.028	-.027	.051	.074	.006
9									1.000	-.216	-.161	-.234	-.200	-.186	.217	.193
10										1.000	.658	.610	.369	.276	-.517	-.246
11											1.000	.581	.356	.234	-.544	-.241
12												1.000	.386	.235	-.376	-.161
13													1.000	.466	-.199	-.200
14														1.000	-.099	-.065
15															1.000	0.000
16																1.000

<sup>1</sup>VARs: 1 = income, 2 = tenure, 3 = SQUAL, 4 = SQFT\_PER, 5 = PER\_RM, 6 = location, 7 = AGEHH, 8 = EDUHH, 9 = FAMSIZE, 10 = SAT1, 11 = SAT2, 12 = SAT3, 13 = SAT4, 14 = SAT5, 15 = MOVE, 16 = ALTER.

TABLE IX  
HYPOTHESIZED PATH MODEL FOR SAT1 TO SAT5

Variables	SAT1	SAT2	SAT3	SAT4	SAT5
Income	(+)	(+)	(*)	(+)	(+)
AGEHH	(+)	(+)	(+)	(*)	(*)
SQUAL	(*)	(+)	(+)	(+)	(*)
SQFT_PER	(+)	(*)	(+)	(*)	(*)
Tenure	(*)	(-)	(-)	(-)	(*)
Location	(*)	(-)	(+)	(-)	(-)
PER_RM	(-)	(*)	(-)	(-)	(-)
EDUCHH	(+)	(+)	(+)	(+)	(+)
FAMSIZE	(-)	(-)	(-)	(-)	(-)

\*Indicates no relationship was hypothesized.

out by treating the desire to move and the desire to alter as the dependent variables and all other variables as independent variables which were operating simultaneously. Table X shows the expected sign for the paths of direct influence on the two dependent variables--the desire to move and the desire to alter.

In order to examine the direct impact of family characteristics and present housing on the five measures of the respondent's satisfaction, five sub-models were tested.

#### The Tested Sub-Models to Explain SAT1 to SAT5

##### Sub-Model for SAT1

Figure 2 supports the hypothesized relationship (Table IX) between space (persons-per-room) and satisfaction with space and

TABLE X  
HYPOTHESIZED PATH MODEL FOR MOVE AND ALTER

Variables	Desire to Move	Desire to Alter
Income	(+)	(*)
AGEHH	(-)	(-)
SQUAL	(-)	(-)
SQFT_PER	(-)	(-)
Tenure	(+)	(-)
Location	(-)	(+)
PER_RM	(*)	(*)
EDUCHH	(+)	(+)
FAMSIZE	(+)	(+)
SAT1	(-)	(-)
SAT2	(-)	(-)
SAT3	(-)	(-)
SAT4	(-)	(-)
SAT5	(-)	(-)

\*Indicates no relationship was hypothesized.

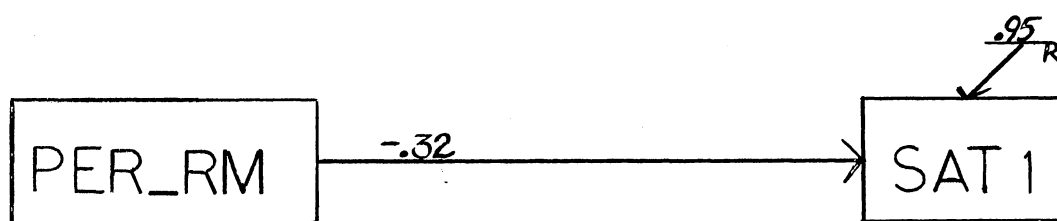


Figure 2. Path Sub-Model for SAT1

arrangement. As persons-per-room decreased, satisfaction with space and arrangement increased. It was hypothesized that satisfaction with space and arrangement (Table IX) would be influenced by the family's income, age of the household head and space. However, persons-per-room was the only variable that was strong enough to remain in the model. For this sample, income, age of the household head, structural quality, square-feet-per-person, tenure and location had no significant influence on satisfaction with space and arrangement.

It was interesting to note that the persons-per-room measure of space was a significant influencing factor on satisfaction with space and arrangement, while space as measured by square-feet-per-person was not. This may indicate that it is not simply the total amount of space that is important, but the way in which the space is divided into rooms.

#### Sub-Model for SAT2

It was hypothesized that satisfaction with quality, type and appearance of housing (Table IX) would depend on ownership, location of the home, structural quality, family income and age of the household head.

Tenure, structural quality (SQUAL) and location were associated with satisfaction with quality, type and appearance of housing (SAT2) as shown in Figure 3. The path coefficient for SQUAL was .45, which indicated that structural quality was a much stronger influence on satisfaction than were tenure and location. The negative sign for tenure indicates that owners were more satisfied with



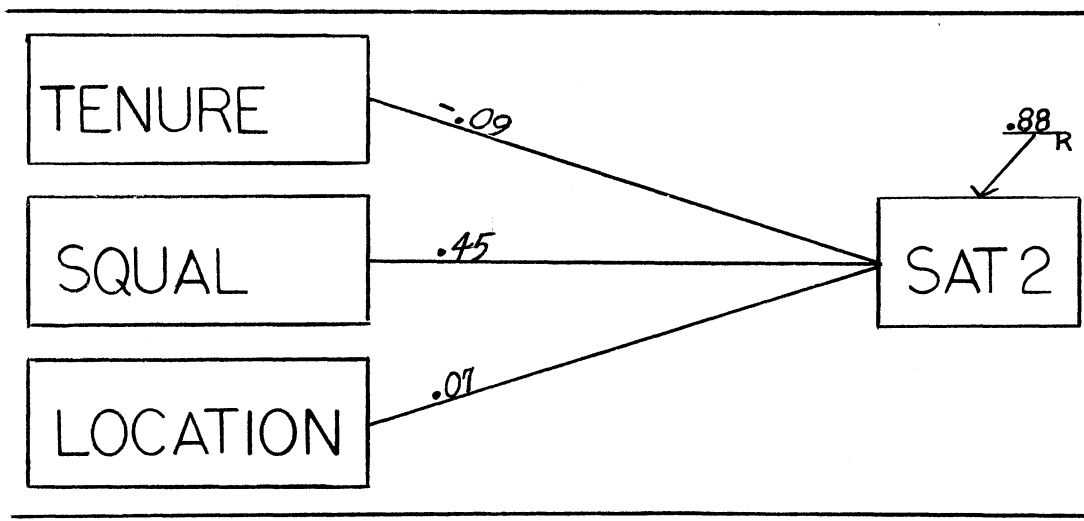


Figure 3. Path Sub-Model for SAT2\* (N=400)

\*Zero order correlations for the variables in the above path model can be found in Table VIII.

quality, type and appearance of their housing. Other family and housing related variables did not have a strong enough influence on SAT2 to be retained in the model.

#### Sub-Model for SAT3

Satisfaction with storage and outdoor space (SAT3) was found to be associated with tenure, structural quality, space, location and age of the household head as shown in Figure 4. Tenure had the strongest path coefficient of  $-.19$ , indicating that owners were more satisfied with storage than were renters.

Income and persons-per-room did not have a strong enough influence on SAT3 to be retained in the model. Square-feet-per-person

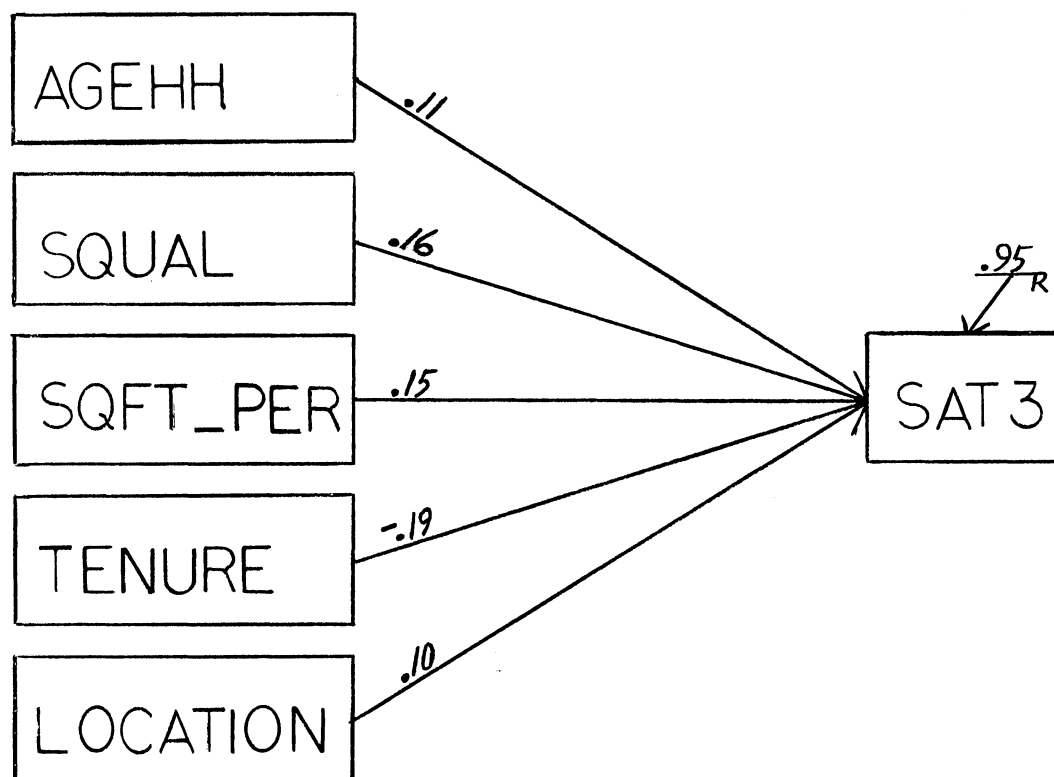


Figure 4. Path Sub-Model for SAT3\* (N=400)

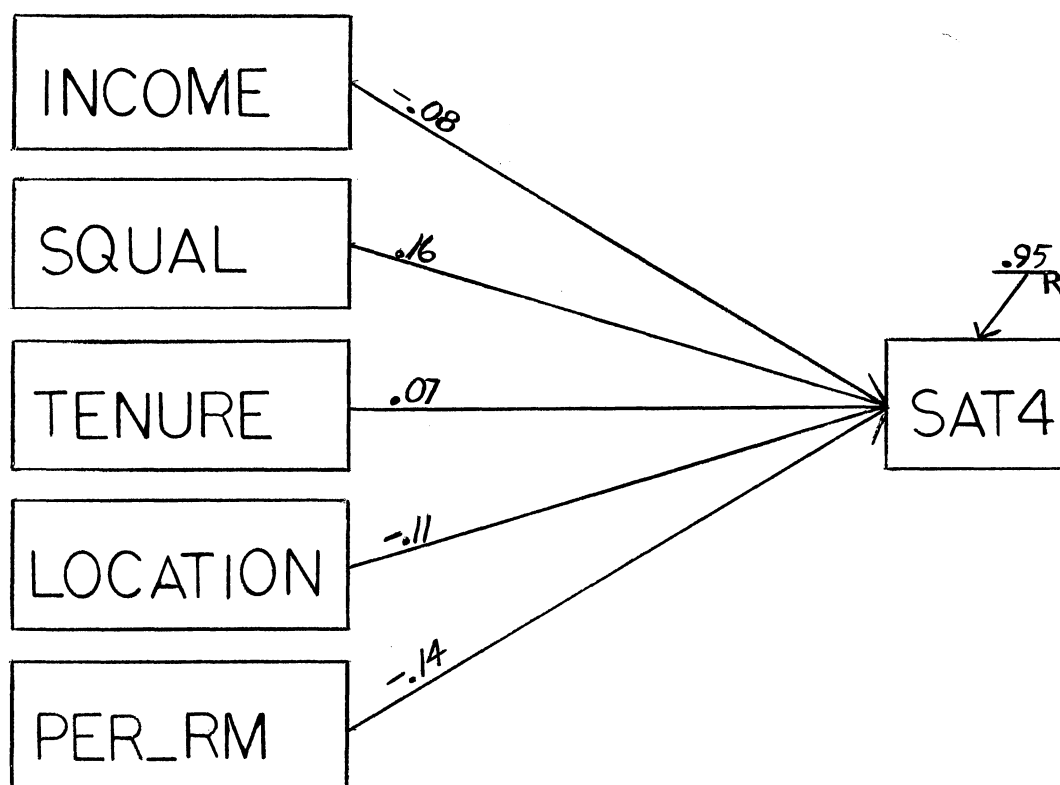
\*Zero order correlations for the variables in the above path model can be found in Table VIII.

was the better measure of space for this model and income was not expected to have any direct influence on satisfaction with storage.

#### Sub-Model for SAT4

Income, tenure, structural quality, persons-per-room and location were related to satisfaction with housing costs and available

services (SAT4), as shown in Figure 5. The three strongest path coefficients were found for structural quality (.16), persons-per-room (-.14) and location (-.11). Income and tenure had weaker associations with SAT4 as indicated by the path coefficients of -.08 and .07, respectively. The relationships were as hypothesized




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Figure 5. Path Sub-Model for SAT4\* (N=400)

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\*Zero order correlations for the variables in the above path model can be found in Table VIII.

in Table IX with the exception of income. The negative sign indicates that families with higher incomes were less satisfied with available services and costs.

#### Sub-Model for SAT5

Satisfaction with location (in relation to shops, church, etc.), fire protection and police protection (SAT5) was related to income, persons-per-room and location as shown in Figure 6. Location had by far the strongest path coefficient ( $-.46$ ) which demonstrated that urban families were satisfied with their location in relation to fire and police protection, shops, church, etc. The strong influence demonstrated by location on satisfaction with location of services was expected.

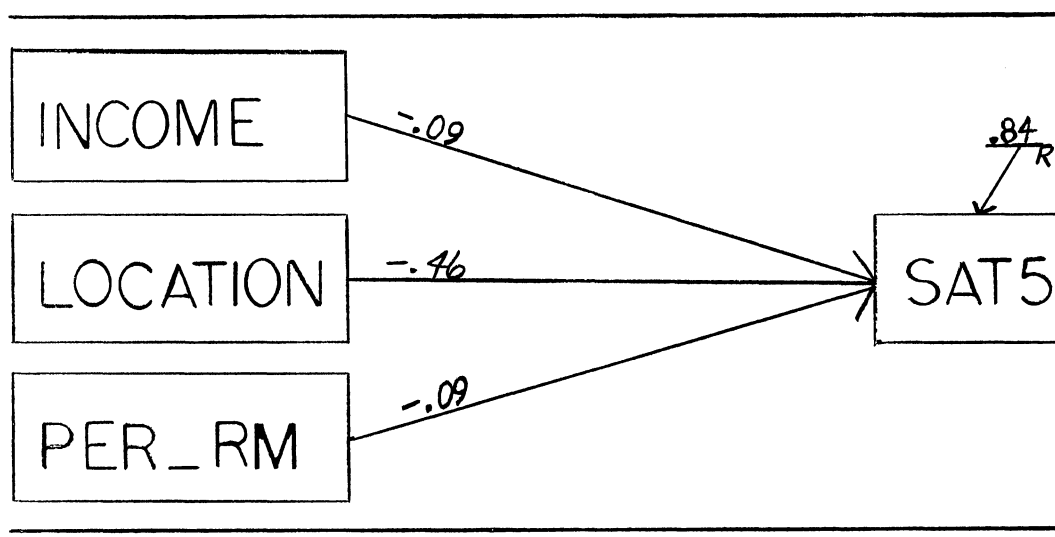


Figure 6. Path Sub-Model for SAT5\* (N=400)

\*Zero order correlations for the variables in the above path model can be found in Table VIII.

Persons living in rural areas were dissatisfied with services available and yet they expressed a preference for rural living. This is interpreted to mean that other aspects of family life and personal satisfaction were more important than being near certain services. It may be more important to have open space, a feeling of privacy or a rural environment for children than to be located close to services.

#### The Tested Sub-Models to Explain Desire to Move or Desire to Alter

##### Desire to Move

The variance in desire to move from present housing is explained by SAT1, SAT2, income, structural quality, location, and age of the household head as shown in Figure 7.

Satisfaction with space and arrangement (SAT1) had a path coefficient of  $-.20$ , which indicated that the less satisfied one was with arrangement and size of the home, the more likely one was to desire to move from present housing. Satisfaction with quality, type and appearance (SAT2) had a  $-.27$  path coefficient, which indicated that as satisfaction with the appearance and structural quality of the home increases, the desire to move from present housing decreases. The influence of other satisfaction variables had a significant influence on the desire to move.

Structural quality had a direct influence on the desire to move and an indirect influence through SAT2 as shown in Figure 3. Age of the household head and income both had direct influences on the

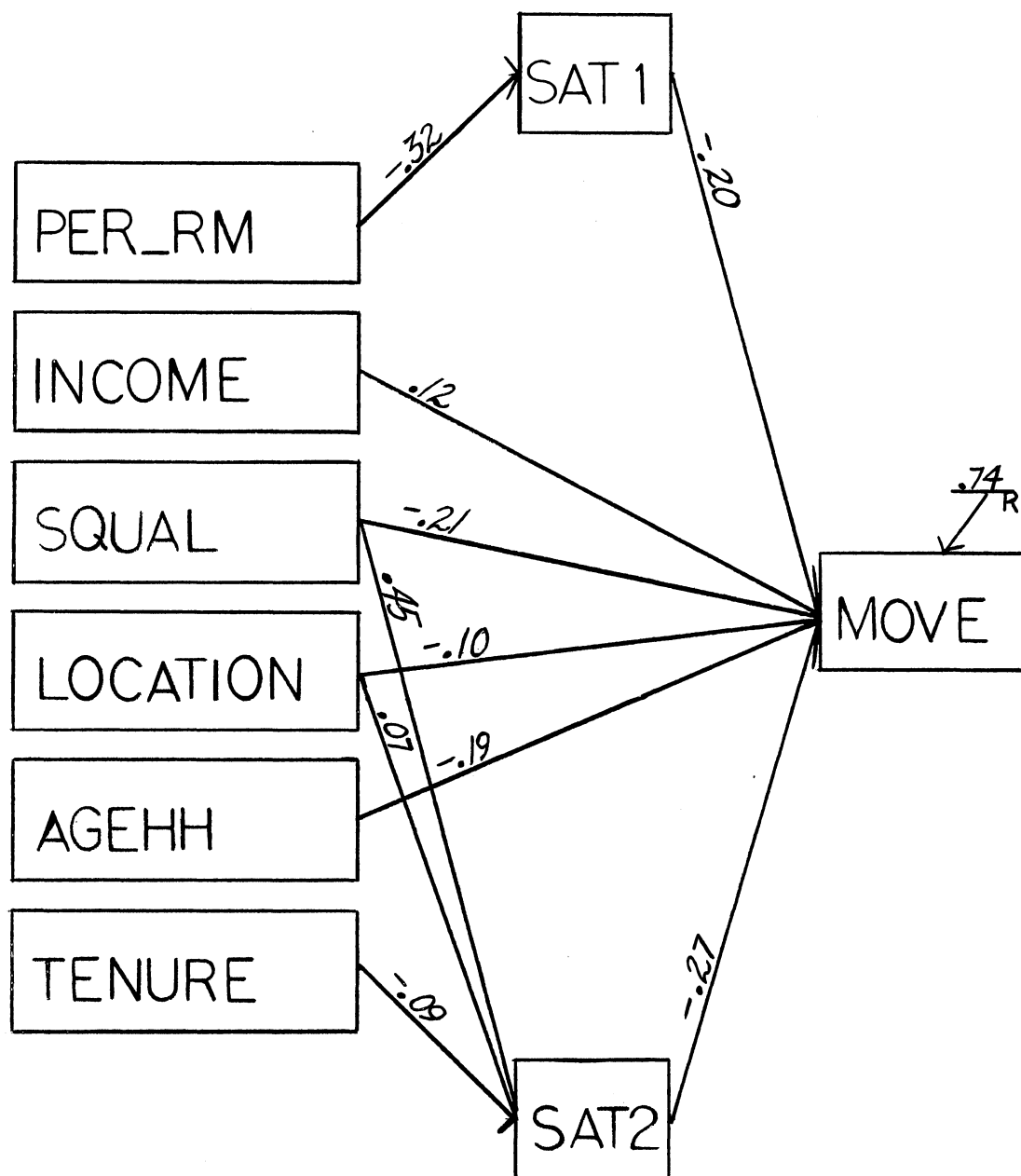


Figure 7. Path Sub-Model for Desire to Move\* (N=400)

\*Zero order correlations for the variables in the above path model can be found in Table VIII.

desire to move. Families with greater income and younger household heads were more likely to desire to move. The negative path coefficient for location (-.10) indicated that rural residents were less likely to express a desire to move in order to more adequately meet their housing needs. Low-income could prevent any action toward improving housing. It could be that families with low-income had faced the reality that they probably could not take action to improve their housing and had suppressed the desire to move.

The negative path coefficient for age of the household head was most likely influenced by the high percentage (see Table I) of older persons in this study who lived in homes which they owned. Even where quality was poor, they wanted to stay where they were, perhaps because of a "sense of place" or a feeling of security--or they may have realized that their limited income offered them no other alternatives.

An interesting finding from this model relates to the difference between the way in which the family variables and the housing variables operate. Income and age (characteristics of the family) directly influence the desire to move. The housing characteristics (persons-per-room and structural quality) operate through the intervening variables of satisfaction to indirectly influence the desire to alter housing. It was not the objective measure of housing space that directly influenced a desire to move. Instead, the desire to move was expressed when there was dissatisfaction with the amount of available space. Tenure did not directly influence the desire to move as has been indicated in studies of urban groups. Apparently,

in rural low income areas, renters are no more likely to desire to move than are owners.

The findings of this study agree with those of previous studies which have found that satisfaction with space and quality are better indicators of the desire to move than are satisfaction with location, services and costs.

#### Desire to Alter

Figure 8 shows the path coefficients for the variables explaining the variance in the desire to alter present housing as explained by SAT2, tenure, structural quality, square-feet-per-persons and age of the household head.

Satisfaction with the structural quality and appearance of the home (SAT2) had a path coefficient of  $-.16$ , which indicated that as satisfaction increased, the desire to alter housing decreased.

Tenure had a strong path coefficient of  $-.30$ , which indicated that owners were more likely to alter their homes while renters were less inclined to make investments in improvements. Structural quality had a path coefficient of  $-.25$  and square-feet-per-person had a path coefficient of  $-.06$ , which indicated that poor quality had a much greater impact on the desire to alter housing than did a more limited amount of space. Where space was tight, families chose to move in order to obtain more adequate housing. But where quality was lower, families expressed a desire to alter the present home.

Age of the household head had a relatively strong path coefficient of  $-.26$ , which indicated that younger people were more likely



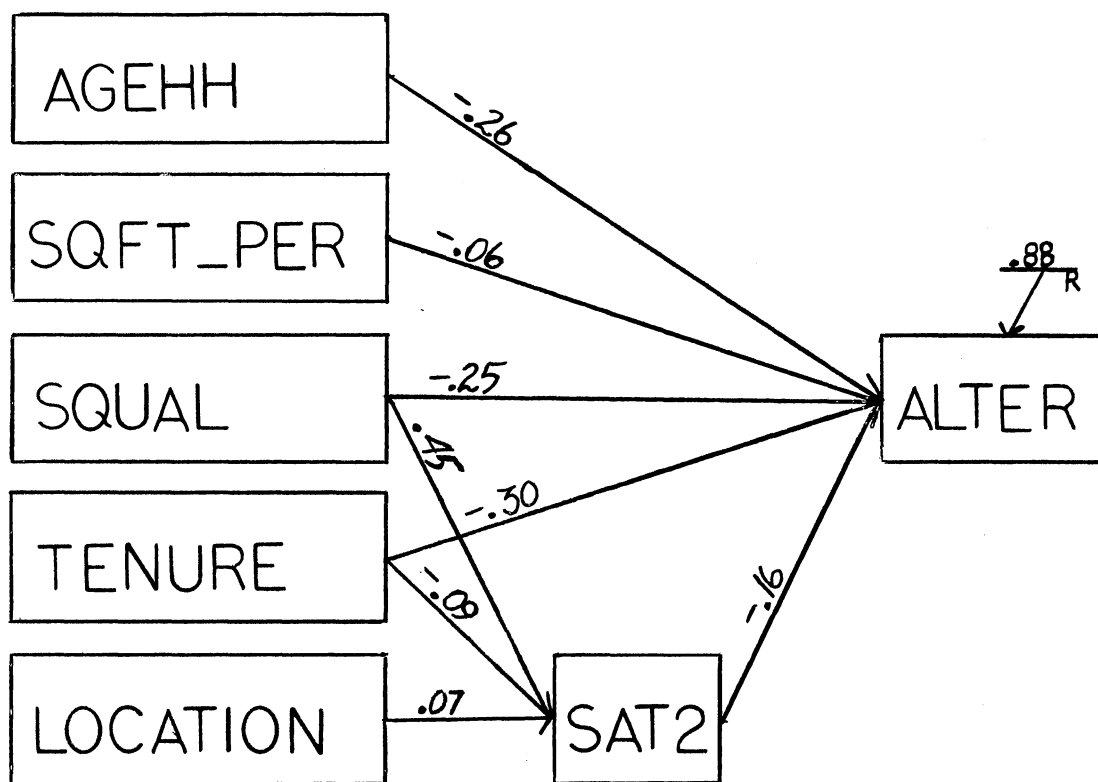


Figure 8. Path Sub-Model for Desire to Alter\* (N=400)

\*Zero order correlations for the variables in the above path model can be found in Table VIII.

to want to alter their homes. The negative path coefficients for age of the household head was again related to the older persons in the study who wanted to live in their homes without making any improvement.

The R value as represented in the path models were to be interpreted as the influence on the dependent variable of all unmeasured variables not included in the study. The  $.88_R$  value for ALTER indicates that 88 percent of the variance in the dependent variable, ALTER, was unexplained by the independent variable included in the

path model for ALTER; therefore, 12 percent of the variance in ALTER was explained by tenure, structural quality, square-feet-per-person and age of the household head.

## CHAPTER IV

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Summary

The quality of housing environment in rural areas of the United States has not kept pace with urban development. This has resulted from a lack of information concerning current housing conditions, characteristics of the families and the housing goals toward which the families are moving. Research in these areas could aid planners, architects, designers and economists, to name a few, in determining what and where the housing needs are. Housing programs for rural areas could also be developed from the assistance of research findings concerning rural housing.

The purpose of this study was to further test the theory of housing satisfaction as an intervening variable which influences the desire to change housing. This study was limited to families in low-income rural counties of Oklahoma. The data analyzed in this study came from the S-95 Southern Regional Research Project. It is the purpose of the S-95 Regional Project to examine quality of the housing environment among low-income rural families.

The method of data collection was personal interview, using an interview schedule which was designed by the research directors from the nine southern states involved in the project. The final

draft of the interview schedule consisted of 107 items designed to obtain:

1. Social, demographic and economic characteristics of residents,
2. Housing characteristics and adequacy,
3. Residents satisfaction with housing, housing expectations and the constraints to action that could change housing.

During the Spring of 1975, a sample of 200 families were drawn from each of the two rural Oklahoma counties, Adair and Okfuskee. In most cases the female head of household or the wife of the male head of household were interviewed.

The most typical area for this study was the open country rural nonfarm where fifty-one percent of the respondents lived. The mean family size was 3.08 persons per household. The household heads were characterized by an average age of 55 years, with 9.06 years of education, on the average, and a mean family income of \$445 per month. Seventy-six percent of these families were homeowners. The average number of square feet per person was 520.45 square feet, with a range of .13 to 2.33 persons per room.

## Findings and Conclusions

### Housing Satisfaction

The first objective of this study was to analyze the impact of family characteristics and housing characteristics on satisfaction with various aspects of housing. This objective was achieved

through the use of path analysis, which makes it possible to simultaneously examine the relationships among the variables. Housing satisfaction was measured in terms of five satisfaction scales which included measures of satisfaction with (1) space and arrangement, (2) quality, type and appearance, (3) storage and outdoor space, (4) housing costs and available services and (5) location (in relation to shops, church, etc.), fire protection and police protection.

Persons-per-room was found to have the strongest influence on satisfaction with space and arrangement. This relationship indicates that the total amount of space available may not be as important to the families as the way in which that space is divided into rooms.

The variable having the strongest influence on satisfaction with quality, type and appearance was structural quality. As structural quality increases, satisfaction with quality, type and appearance increases. The other two variables influencing satisfaction with quality, type and appearance were tenure and location.

Tenure was found to have the strongest influence on satisfaction with storage and outdoor space. This indicated that the owners were more satisfied with storage and outdoor space than were renters. Other variables associated with satisfaction with storage and outdoor space were structural quality, space, location and age of the household head.

Satisfaction with housing costs and available services was influenced by five variables. The first variable was structural quality. As structural quality increases, satisfaction with housing costs and available services increases. The next two variables associated

with satisfaction with housing costs and available services were persons-per-room and location. Weaker associations were indicated for income and tenure. Families with higher incomes were less satisfied with housing costs and available services.

The strongest variable influencing satisfaction with location, fire protection and police protection was location. Urban families were more satisfied with their location to shops, church, fire protection and police protection. People living in rural areas were less satisfied with their location to shops, church and available services, yet they expressed a preference for rural living. Other aspects of rural living may be more important than available services, such as open space, privacy, rural environment or beautiful scenery. Income and persons-per-room were also factors which influenced satisfaction with location, fire protection and police protection.

Both family characteristics and housing characteristics were found to influence the five housing satisfaction variables. However, two family characteristics--family size and education of the household head--dropped out of all the satisfaction models.

Family size was included in the space measures of the ratio of space to persons in the household. The size of the family did not have a strong enough influence to remain in the model as an additional direct effect. Education was correlated with both age and income and did not have a significant direct effect on any of the satisfaction measures.

### Desire to Move

The second objective of the study was to examine the influence of family characteristics, housing characteristics and satisfaction with housing on the family's desire to change its present housing (by moving or by altering the present home). A path model was developed to test the two variables, desire to move and desire to alter, with the family characteristics (income, age of head, education of head and family size). Housing characteristics (location, space, structural and tenure) and satisfaction with housing (five satisfaction measures).

Housing satisfaction was found to be an important determinant of a family's desire to move or alter its present housing. Satisfaction with quality, type and appearance was found to have the strongest influence on the desire to move from present housing. As satisfaction with the appearance and structural quality increases, the desire to move from present housing decreases. The second variable that influenced the desire to move from present housing was satisfaction with space and arrangement. The less satisfied the family was with the space and arrangement of their home, the more likely they were to desire to move from their present home.

An interesting finding of the model for the desire to move relates to the difference between the way in which the family variables and the housing variables operated in the model. Structural quality and persons-per-room had both a direct influence on the desire to move and an indirect influence through the intervening variables of satisfaction with the home. The variables, age of the household head, and

income directly influenced the desire to move. Therefore, it was not the objective measure of quality or space that directly influenced the desire to move. These objective measures influenced the subjective measures (expressed satisfaction with space and quality) and satisfaction, in turn, influenced the desire to move. Housing satisfaction was found to be an intervening variable.

This study did, however, agree with previous studies which found that satisfaction with space and quality were better indicators of the desire to move than were satisfaction with location, services and costs.

#### Desire to Alter

Satisfaction with quality, type and appearance was the only satisfaction variable which influenced the desire to alter. As satisfaction increased, the desire to alter housing decreased. Tenure and structural quality influenced the desire to alter directly as well as indirectly through the intervening variable--satisfaction. Age of the household head directly influenced the desire to alter present housing, which indicated that younger families were more likely to want to alter their housing. Poor quality had a much greater impact on the desire to alter housing than did a limited amount of space.

In summary, the desire to move or alter present housing is stimulated by lower levels of satisfaction with present housing. Where space was tight families chose to move to obtain more adequate housing. But where quality was lower, families expressed a desire to alter the present home. It was further determined that such



background variables as family income, persons-per-room, structural quality, square-feet-per-person, tenure, location and age of the household head influenced the intervening variable, satisfaction, which in turn influenced the desire to alter present housing or move to different housing.

The following general conclusions were drawn:

1. Satisfaction with space and arrangement (SAT1) was explained by the housing characteristic, persons-per-room. A low percentage of the variance was explained by this, which indicates there are other characteristics that could be added to the path model.
2. Satisfaction with type, appearance and structural quality (SAT2) of home was related to characteristics such as tenure, structural quality and location.
3. Satisfaction with storage and outdoor space (SAT3) was explained by tenure, structural quality, square-feet-per-person, location and age of the household head.
4. Satisfaction with housing costs and available services (SAT4) was related to such factors as income, tenure, structural quality, persons-per-room and location.
5. Satisfaction with location of home (in relation to shops, church, etc.), fire protection and police protection, was determined by such variables as income, persons-per-room and location.
6. The intervening variable of satisfaction with space, arrangement, structural quality, type and appearance (SAT1 and SAT2) were found to be the major determinants of the

desire to move. Some family characteristics such as family income and age of the household head had direct influences on the desire to move.

7. Satisfaction with structural quality, type and appearance (SAT2) was the main determinant of the desire to alter. Two other variables, square-feet-per-person and age of the household head, had direct influences on the desire to alter.

This analysis made no attempt to include all possible variables suggested by previous literature. It is acknowledged that many variables were not included in this study which could have been important influences on satisfaction, the desire to move, or the desire to alter housing. Greninger's (1973) study suggested that social-psychological (expectations and desires) were important factors explaining housing satisfaction and it is felt that these measures would add greatly to the explanation of housing satisfaction. Morris, Crull and Winter (1976) introduced normative housing deficits as intervening variables between socioeconomic and demographic variables and housing satisfaction. These variables are also felt to be important determinants of housing satisfaction. However, neither the social psychological nor the normative measures were available in the S-95 project data.

#### Recommendations

The author submits the following recommendations relative to further study in the area of housing satisfaction and family attitudes toward changing present housing:

1. That the studies being conducted in the other southern states be compared to this and other preliminary studies to see if similar relationships exist.
2. That a more sensitive measure for housing satisfaction should be developed.
3. That the model be expanded to include the other intervening variables which influence the families attitude toward changing present housing.
4. That a more detailed study of satisfactions and dissatisfactions with different aspects of housing be conducted to discover what specific improvements in the existing housing supply in the rural areas are necessary to achieve housing which will meet the needs of these families.
5. That one area which calls for further research is the area of residential adaptation (alter). This study shows to some extent that altering ones housing to meet changing needs is definitely an alternative worth future study.
6. That those who wish to assist low-income rural families in improving their housing would do well to consider, foremost, the age of the household head.

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APPENDIX

TABLES OF REGRESSION ANALYSIS

FOR PATH MODELS

TABLE XI  
REGRESSION ANALYSIS FOR SAT1 PATH MODEL

Variable	B	Beta	Standard Error of B	F
PER_RM	-6.759	-0.322	0.998	45.900
$R^2 = 0.104$				

TABLE XII  
REGRESSION ANALYSIS FOR SAT2 PATH MODEL

Variable	B	Beta	Standard Error of B	F
Tenure	-1.285	-0.087	0.811	2.510
Location	0.418	0.067	0.343	1.484
SQUAL	0.997	0.451	0.121	61.299
$R^2 = 0.227$				

TABLE XIII  
REGRESSION ANALYSIS FOR SAT3 PATH MODEL

Variable	B	Beta	Standard Error of B	F
Tenure	-2.632	-0.195	0.731	12.974
SQUAL	0.291	0.163	0.095	9.283
SQFT_PER	0.002	0.150	0.001	6.340
Location	0.642	0.104	0.336	3.652
AGEHH	0.037	0.110	0.019	3.542
$R^2 = 0.165$				

TABLE XIV  
REGRESSION ANALYSIS FOR SAT4 PATH MODEL

Variable	B	Beta	Standard Error of B	F
Income	-0.002	-0.084	0.002	2.107
Tenure	1.214	0.068	0.990	1.503
SQUAL	0.369	0.157	0.132	7.858
PER_RM	-2.910	-0.145	1.219	5.694
Location	-0.877	-0.107	0.460	3.638
$R^2 = 0.085$				

TABLE XV  
REGRESSION ANALYSIS FOR SAT5 PATH MODEL

Variable	B	Beta	Standard Error of B	F
Income	-0.003	-0.087	0.002	2.859
PER_RM	-1.967	-0.086	1.221	2.596
Location	-4.252	-0.459	0.460	85.341
$R^2 = 0.278$				

TABLE XVI  
REGRESSION ANALYSIS FOR MOVE PATH MODEL

Variable	B	Beta	Standard Error of B	F
Income	0.000	0.122	0.000	4.140
SQUAL	-0.054	-0.210	0.016	11.425
Location	-0.085	-0.097	0.046	3.420
AGEHH	-0.009	-0.192	0.003	10.110
SAT1	-0.022	-0.195	0.008	7.566
SAT2	-0.032	-0.274	0.009	12.334
$R^2 = 0.454$				



TABLE XVII  
REGRESSION ANALYSIS FOR ALTER PATH MODEL

Variable	B	Beta	Standard Error of B	F
Tenure	-0.371	-0.301	0.062	35.311
SQUAL	-0.045	-0.246	0.010	19.380
SQFT PER	-0.000	-0.065	0.000	1.456
AGEHH	-0.007	-0.257	0.002	22.771
SAT2	-0.012	-0.157	0.004	7.908
$R^2 = 0.234$				

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