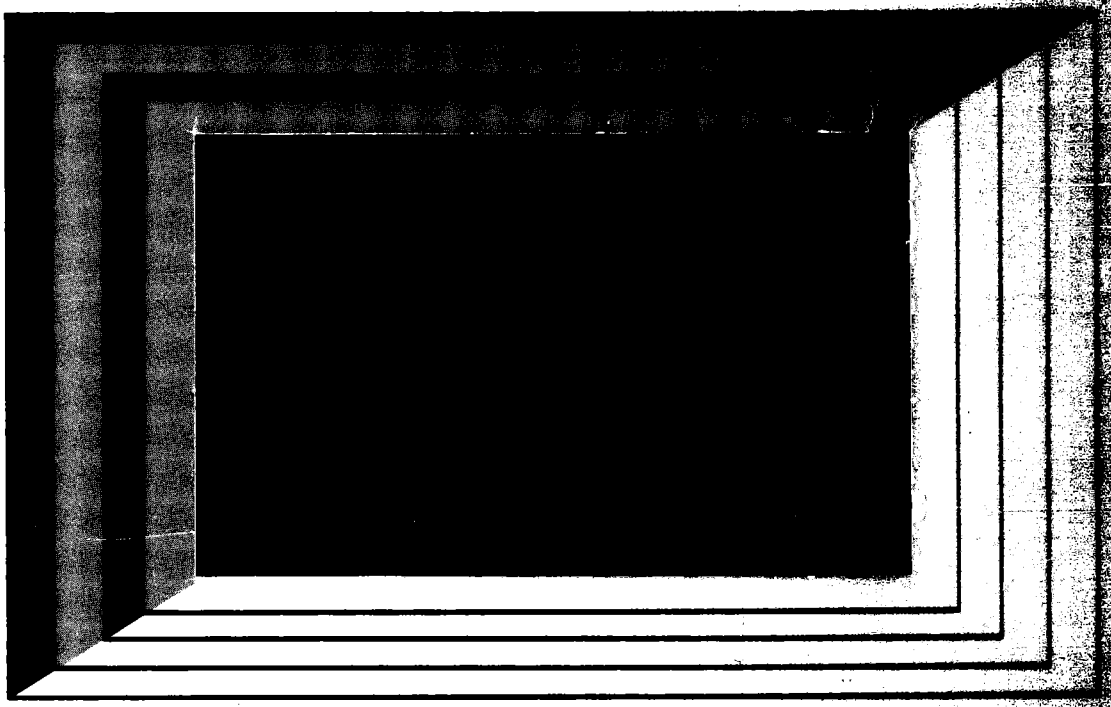
HOUSING ALLOWANCE DEMAND EXPERIMENT

reports



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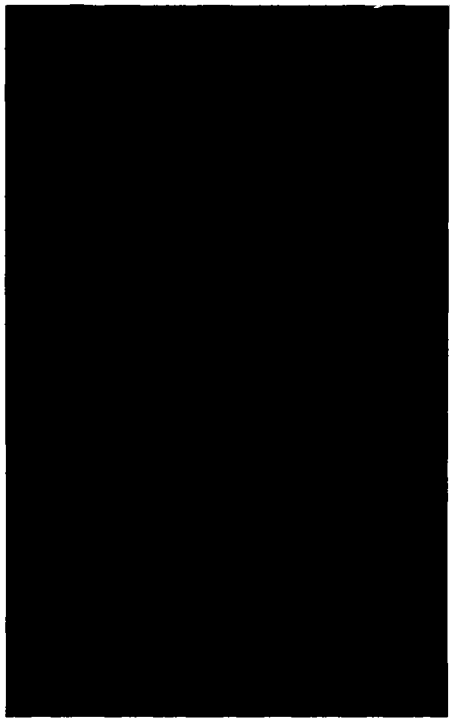

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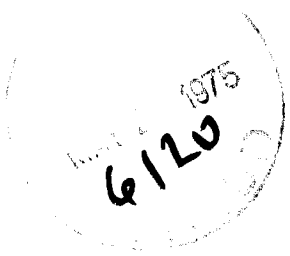

WORKING PAPER ON EARLY FINDINGS

Demand Experiment

Experimental Housing Allowance Program

Contract H-2040R Task 3.4.4

January 31, 1975 AAI# 75-06

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ABSTRACT

This working paper describes the initial (Baseline) position of households enrolled in the Demand Experiment in Pittsburgh and Phoenix. It draws from participant interviews and housing evaluations for three major purposes: 1) demographic descriptions of the enrolled population, 2) preliminary examination of factors involved in the enrollment decision, and 3) examination of the cross-sectional data on enrollees and their housing, especially with respect to housing conditions, housing expenditures, location, and housing satisfaction of enrollees at the outset of the experiment.

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1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This is a working paper. It's purpose is to describe the initial (Baseline) position of households enrolled in the Demand Experiment in Pittsburgh and Phoenix. Based on data gathered from participant interviews and evaluation of participant housing conditions, the paper is a first building block for later analysis of responses to housing allowances.

The housing situation of any given household is subject to a large array of influences and constraints, some introduced by the household, some by the housing market, some by locational decisions of employers, and some by public action. This complex array of influences and constraints affects a household's degree of interest in a housing allowance, its initial position, and its response to the various housing allowance plans. Disentangling separate influences is necessary in order to interpret the anticipated variety of housing outcomes of those responding to the incentives and constraints of housing allowances and, more important, to allow generalization of those responses beyond the local context of Pittsburgh and Phoenix.

The data used in this report are largely taken from the Baseline Interview and Initial Housing Evaluation Form, completed before enrollment. Three basic sub-areas are addressed:

- Demographic descriptions of the enrolled population
- Preliminary examination of factors involved in the enrollment decision
- Examination of the cross-sectional data on enrollees and their housing, seeking connections among housing conditions, housing expenditures, location, and housing satisfaction of enrollees of various demographic characteristics at the outset of the experiment.

It should be borne in mind that the work reported here is of an exploratory nature, often simple bivariate analysis, and may be supplemented in the future.

1.2 KEY OBSERVATIONS

Major observations which can be drawn from the exploratory work reported in Sections 2.0 through 6.0 include the following:

Demographic Characteristics of Enrolled Households

1. Participating households are relatively poor. Approximately half of the households have gross annual incomes of less than $5000.

2. Welfare is the major source of income for one-third of Pittsburgh enrollees, and one-tenth of Phoenix enrollees.

3. Families with children comprise about 70 percent of enrolled households.

4. Minority groups are well represented. Black households constitute 23 percent of Pittsburgh enrollees, while in Phoenix one-third of the enrollees are either Spanish-American, Black or Indian.

5. Elderly-headed households constitute 25 percent of Pittsburgh enrollees and 20 percent of Phoenix enrollees.

Factors Associated with Initial Acceptance

6. Acceptance rates for experimental households are significantly higher (in a statistical sense) than for control households. Other things equal, propensities to accept the various plans of assistance offered appear to increase somewhat with the amount of the allowance, though the relationship is not strong.

7. Simple, first-stage analysis suggests that willingness to move may play a significant role in determining acceptance of a housing allowance. Households more favorably inclined toward housing allowance offers include non-elderly households and generally those who have been more mobile in the recent past.

Housing Consumption

8. Participants do have serious housing problems. Approximately three-fourths of participants in both sites would not meet program housing standards at enrollment. About half do not meet occupancy standards. Nearly two-thirds pay more than 25 percent of income for rent.[1] Severe housing problems--poor quality and overcrowding--most frequently fall on low-income families, on those dependent on welfare assistance, on minority groups, and on those with larger households. The lowest income households and the elderly most often pay more than 25 percent of income for rent. Finally, about one-fourth of all participants both fail to meet housing or occupancy standards and also pay more than 25 percent of income for rent.

9. Based on pre-enrollment data, rents paid by participants in housing of adequate quality and space were far higher on average than that paid by participants whose housing was inadequate by the standards of the experiment. Higher rents significantly increased the likelihood that a household occupied standard housing. However, substandard housing was found even at high rent levels. Thus, while paying high rent may have enabled a household to find standard housing, it did not guarantee it.

10. Previous studies show a wide range of estimates of the value of the income elasticity of housing expenditures, i.e., the percentage change in housing expenditures associated with a given percentage change in household income. Cross-sectional comparisons of enrolled households indicate that for this population, at least, the value may lie at the

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[1] Observations made in this report are based on a net income concept (after deductions for taxes and child care expenses, for example). Essentially the same results are obtained when a Census-like gross income concept is used because of compensations in the definitions. For example, the net income concept used here includes the net cash value of Food Stamps; Census gross income does not.

low end of the range, that is, in the range of 0.08 to 0.28 This is consistent with other studies using individual data.

11. Minority groups on the average spend less on housing than non-minority groups of comparable income and family size. They also obtain housing of poorer quality than non-minorities paying similar rents.

Location

12. Patterns of racial segregation are relatively strong in both Pittsburgh and Phoenix as shown by maps of participant locations at enrollment. Black and white participants do not live in the same neighborhoods. Concentrations of minority households in the sample tend to conform to the geographic distribution of their counterparts in the population as a whole. However, while Spanish-American participants (Phoenix) do tend to live in areas of relatively high concentration of Spanish population generally, the mixture of Spanish-Americans and non-minority whites is much greater than that of blacks and whites.

13. The mobility of households prior to enrolling in the experiment varies markedly between the two sites, with households in Phoenix having moved twice as frequently in the three-year period from 1970 to 1973 as those in Pittsburgh.

14. With respect to the time occupied in looking for housing, those households which spent more time to find their current dwelling included minority households, female-headed households, large families, and households whose principal source of income was welfare.

15. Discrimination in search was relatively infrequently reported by households (less than one out of ten households). Discrimination against children was the most frequently mentioned type of discrimination, followed by age, source of income (welfare), marital status, race, and sex, respectively.

16. Overall about three out of five households said they would move to a new location if they had $50 more to spend on rent every month. Those least satisfied with their current housing and neighborhoods expressed the highest preference to move. The proportion of households preferring to move was highest among black households, households of higher incomes, younger households, male-headed households, and households who had moved more than once in the past three years.

Housing Satisfaction

17. Interview responses to questions on satisfaction with dwelling unit and neighborhood bear reasonable relationships with key response variables such as rent and dwelling unit quality and independent variables such as income and demographic characteristics.

1.3 ORGANIZATION OF THIS WORKING PAPER

Section 2.0 presents a description of the demographic characteristics of the sample of households enrolled in the Demand Experiment. Primary attention is directed to interrelationships between various demographic characteristics.[1]

The earliest indication of responses to housing allowance plans is the decision to accept the enrollment offer. Section 3.0 explores the relation between different types of housing allowance plans offered and the proportion of households accepting the enrollment offer; compares the demographic characteristics of households which accept with households which refuse the offer; and summarizes results of interviews with a sample of households which declined the offer.

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[1] Related issues which are not addressed here, but which are discussed in the Second Annual Report of the Demand Experiment, include comparisons of demographic profiles first between enrolled households and the eligible population defined by Census data, and second among the major experimental treatment groups. The Second Annual Report also describes the sample selection, interviewing, and enrollment process of the Experiment; compares completion rates in the interviewing and enrollment processess; and provides supplementary analyses of responses to the housing allowance offer in terms of household characteristics and initial housing position.

Section 4.0, 5.0, and 6.0 discuss the initial position of enrollees in terms of housing location and housing satisfaction. In addition to participation, these are the key response areas for measuring the impact of a housing allowance program. Each of the major sections of this paper reports ways in which the initial sample in the Demand Experiment or initial response area positions are distinguished by the demographic variables defined in Appendix VI. Where feasible, regressions have been used to help identify the relative importance of the various demographic characteristics. Special demographic groups are thus identified for later analysis.

Key variables for the housing response areas are rent, the ratio of rent to income, and housing standardness. A range of quality levels is defined using measures from the Housing Evaluation Form to enable more refined judgments about quality than would be permitted if the analysis were restricted to the program requirements established for minimum standards.

Maps of enrollee locations and responses to Baseline Interview questions on previous moves, discrimination, and housing preferences are used to assess the initial status of enrollees with regard to locational choice.

Responses to questions on housing satisfaction in the Baseline Interview are used for the housing satisfaction response measure.

Appendix I presents a summary of the structure and design of the Demand Experiment. The reader unfamiliar with the Demand Experiment or with the terminology used to describe the design and "treatments" (housing allowance plans) used is encouraged to read Appendix I before proceeding to the main body of the report. Appendix II describes the basic data sources used for this paper. The origins and definitions of key variables used are discussed in Appendices III through VI (income in Appendix III, rent in Appendix IV, housing standards in Appendix V, and demographic characteristics in Appendix VI). Appendix VII lists the household characteristics used in the regression equation for the expenditure function presented in Section 4.0.

2.0 DEMOGRAPHIC DESCRIPTION OF ENROLLEES

The purpose of this section is to describe the overall characteristics of the sample as a background for later sections. It is not intended to discuss causal links or draw statistical inferences, nor is any attempt made to comment on every comparison of possible importance or interest. For example, as a general rule comparisons between percentages are noted only if they differ by 10 percentage points or more.

The sample of enrolled households is described here in terms of race, income, major source of income, age of head of household, sex of head of household, household size, and household composition. Additional descriptions of the sample, in terms of sample selection, comparisons of the enrolled sample to the eligible population and distribution of the sample and sample characteristics across treatments are presented in the Second Annual Report of the Demand Experiment.

The discussion that follows is drawn from Figure 2.1 which summarizes the distribution of household characteristics and from Tables 2.1 through 2.12 which present two-way cross-tabulations of all characteristics. Definitions of the household characteristics used are provided in Appendix VI.

Figure 2.1 illustrates that demographic groups of presumed interest for a full-scale program will be observed in the Demand Experiment. The enrolled households have the following characteristics:

- Participating households are relatively poor. Approximately half of the households have gross annual incomes of less than $5000.
- Welfare is the major source of income for one-third of Pittsburgh enrollees, and one-tenth of Phoenix enrollees.
- Families with children comprise about 70 percent of enrolled households.

- Minority groups are well represented. Black households constitute 23 percent of Pittsburgh enrollees, while in Phoenix one-third of the enrollees are either Spanish-American, black or Indian.

- Elderly-headed households constitute 25 percent of Pittsburgh enrollees and 20 percent of Phoenix enrollees.

- Female heads of household predominate in Pittsburgh while the substantial majority of households in Phoenix are male headed.

- Family sizes cover a range centered on three- and four-person households.

Figure 2.1 also shows that the Pittsburgh and Phoenix samples differ on most household characteristics. Generally, these differences reflect differences in the characteristics of the eligible populations in each city.[1] For example, the largest minority group in Phoenix is Spanish-American while in Pittsburgh it is black. Differences in income follow from the lower income eligibility limits applied in Pittsburgh. Household size is the only characteristic for which the distributions in the two samples appear to be very similar.

Race/Ethnicity

Tables 2.1 through 2.5 present cross tabulations of race/ethnicity with other household characteristics. Mean incomes are within $100 for black and white households in the Pittsburgh sample; in Phoenix, however, mean incomes for Spanish-American households are lower than that for white households by over $700 (Table 2.1). (Comparisons will not be made here for the residual or "other" categories, nor usually for black or Indian households in Phoenix because of their relatively smaller numbers in that city.)

Although mean income among black and white households in Pittsburgh is similar, major sources of income differ. As shown in

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[1] See Second Annual Report of the Demand Experiment, Section 2.2.

FIGURE: 2.1

DEMOGRAPHIC CHARACTERISTICS OF ENROLLED HOUSEHOLDS

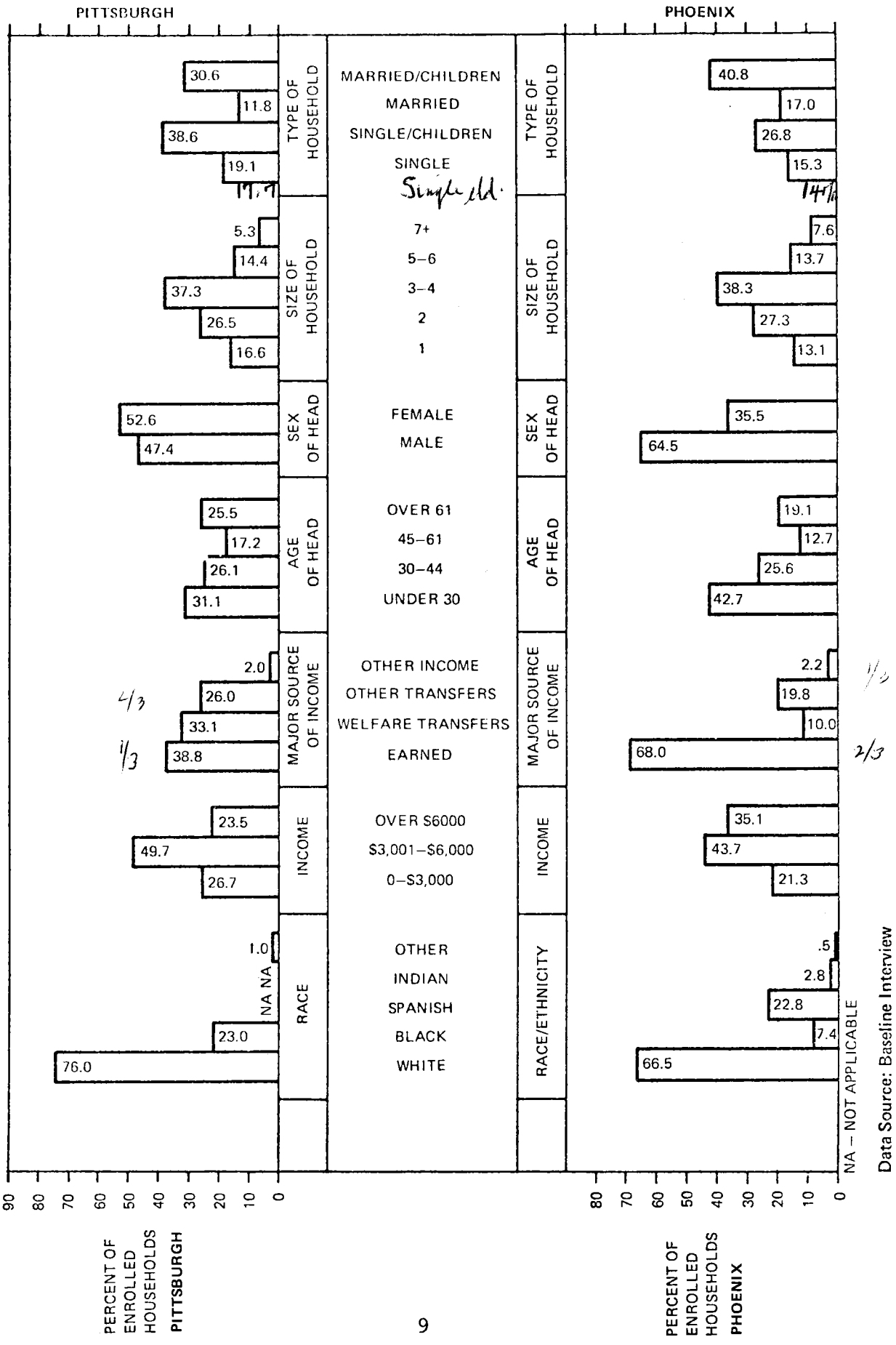

TABLE 2.1

MEAN INCOME BY RACE/ETHNICITY GROUP FOR

PITTSBURGH AND PHOENIX

Race/Ethnicity	Pittsburgh (N = 1703)[1]			Phoenix (N = 1775)[1]		
	Mean Income	Standard Deviation	N[1]	Mean Income	Standard Deviation	N[1]
White[2]	$4522	$2185	1296	$5535	$3010	1185
Black	$4599	$2267	391	$4328	$2437	129
Spanish-American	-	-	-	$4797	$2466	403
Indian	-	-	-	$5631	$3327	50
Other	$5729	$2802	16	$5199	$3499	8

Data Source: Baseline Interview

[1]Households are excluded when income is reported as zero or when income information is missing. (See Appendix II.)

[2]For analytic clarity white Spanish Americans are excluded from the figures under the entry "white".

Table 2.2, a greater proportion of black households in the Pittsburgh sample have welfare transfers as their major source of income, while relatively higher proportions of white households than of black households have other transfers (e.g., Social Security) as their major source. In Phoenix, minority households in general are more likely to have welfare transfers as their major source of income than non-minority households; relatively higher proportions of white households than of Spanish-American households have other transfers as their major source.

TABLE 2.2

DISTRIBUTION OF HOUSEHOLDS BY MAJOR SOURCE OF INCOME WITHIN EACH RACE/ETHNICITY GROUP

Race/ Ethnicity	Earned	Welfare Transfers	Other Transfers	Other Income	Total (N)
Pittsburgh (N=1713)[1]					
White	40.5%	27.9%	29.3%	2.4%	100.0% (1305)
Black	32.9	50.8	15.6	0.8	100.0 (392)
Other	50.0	31.3	12.5	6.3	100.0 (16)
Phoenix (N=1780)[1]					
White	70.0%	5.0%	22.4%	2.6%	100.0% (1187)
Black	48.5	25.4	26.2	0.0	100.0 (130)
Spanish-American	65.7	19.8	12.6	2.0	100.0 (405)
Indian	84.0	12.0	2.0	2.0	100.0 (50)
Other	87.5	0.0	12.5	0.0	100.0 (8)

Data Source: Baseline Interview

[1]Households are excluded when income information is missing (See Appendix II).

The proportion of black households which are single-headed with children is larger than in the white sample for Pittsburgh. Families with children occur in larger proportions for the white Pittsburgh sample, while in Phoenix this type of household occurs proportionately more often for Spanish-American households than for white or black households. (Table 2.3)

TABLE 2.3

DISTRIBUTION OF HOUSEHOLDS BY HOUSEHOLD TYPE WITHIN EACH RACE/ETHNICITY GROUP

Race/ Ethnicity	HOUSEHOLD TYPE				
	Single	Single with Children	Married	Married with Children	Total (N)
Pittsburgh (N=1760)					
White	21.0% 281	32.4% 433	12.5%	34.1%	100.0% (1337)
Black	13.1 53	58.6 237	9.6	18.7	100.0 (405)
Other	16.6 3	44.4 8	5.6	33.3	100.0 (18)
	337	678	493		
Phoenix (N=1840)					
White	17.6% 215	24.0% 294	20.0%	38.4%	100.0% (1223)
Black	17.5 24	40.9 56	13.2	28.4	100.0 (137)
Spanish-American	9.5 40	30.0 126	10.5	50.0	100.0 (420)
Indian	2.0 1	31.4 16	11.8	54.9	100.0 (51)
Other	22.2 1	11.1 1	22.2	44.4	100.0 (9)
	281	493			

Data Source: Baseline Interview

Differences are also found in the distribution of age of head of household by race at both sites as shown in Table 2.4. The predominant difference is that the proportion of elderly headed households is smaller in the major minority group (black in Pittsburgh and Spanish-American in Phoenix) than in the white sample. Experimental eligibility requirements limited eligible one-person households to the elderly or handicapped. Therefore, differences found in the proportion of elderly households by race also appear when observing the proportion of one-person households. As shown in Table 2.5, there are additional differences in household size characteristics by race. In addition, there are proportionately fewer Spanish-American households with two members in Phoenix and more minority households with seven or more members when compared to white households at both sites.

Income and Sources of Income[1]

The mean income of the sample is $4556 in Pittsburgh and $5281 in Phoenix. Differences between Pittsburgh and Phoenix are associated with the lower income eligibility limits in Pittsburgh.[2]

Income differences are also associated with differences in sources of income at the two sites. The mean income of households with earnings (Pittsburgh, $6125; Phoenix, $6157) as the major source is nearly two times greater than that of households whose major source of income is welfare (Pittsburgh, $3681; Phoenix, $3266) or income from other transfers (Pittsburgh, $3421; Phoenix, $3215). The income distributions presented in Table 2.6 reflect the differences between the two sites in major sources of income.

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[1] Income figures in this paper are net income (NIA) obtained from the Baseline Interview. See Appendix III for income definitions.

[2] Income limits were set in terms of estimates of the cost of modest existing standard housing at each site. The estimates of housing costs and hence the income limits were higher in Phoenix.

TABLE 2.4

DISTRIBUTION OF HOUSEHOLDS BY AGE OF HEAD OF HOUSEHOLD WITHIN EACH RACE/ETHNICITY GROUP

Race/Ethnicity	Age of Head of Household <30	30-44	45-61	62+	Total	
Pittsburgh (N = 1759)[1]						
White	31.1%	24.3%	16.5%	28.0%	100.0%	(1336)
Black	31.9	31.1	19.8	17.3	100.0	(405)
Other	16.7	50.0	11.1	22.2	100.0	(18)
Phoenix (N = 1839)[1]						
White	43.5%	23.1%	11.1%	22.3%	100.0	(1222)
Black	37.2	23.4	17.5	21.9	100.0	(137)
Spanish-American	40.5	32.6	16.2	10.7	100.0	(420)
Indian	54.9	31.4	9.8	3.9	100.0	(51)
Other	55.6	33.3	0.0	11.1	100.0	(9)

Data Source: Baseline Interview

[1]Households are excluded when age information is missing.

TABLE 2.5

DISTRIBUTION OF HOUSEHOLDS BY HOUSEHOLD SIZE WITHIN EACH RACE/ETHNICITY GROUP

Race/ Ethnicity	HOUSEHOLD SIZE 1	2	3-4	5-6	7+	Total	(N)
Pittsburgh (N=1760)							
White	19.1%	27.4%	36.4%	13.5%	3.7%	100.0%	(1337)
Black	8.6	24.2	39.8	17.0	10.4	100.0	(405)
Other	11.1	11.1	44.4	22.2	11.1	100.0	(18)
Phoenix (N=1840)							
White	15.6%	31.8%	38.0%	11.2%	3.4%	100.0%	(1223)
Black	13.9	24.8	34.3	14.6	12.4	100.0	(137)
Spanish-American	7.1	15.7	40.5	18.6	18.1	100.0	(420)
Indian	2.0	17.6	43.1	27.5	9.8	100.0	(51)
Other	0.0	44.4	11.1	33.3	11.1	100.0	(9)

Data Source: Baseline Interview

TABLE 2.6

DISTRIBUTION OF HOUSEHOLDS BY INCOME

INCOME	PITTSBURGH (N=1703)[1]	PHOENIX (N=1774)
$1 - 1000	1.5%	1.2%
1001 - 2000	8.2	8.0
2001 - 3000	17.0	12.1
3001 - 4000	20.0	14.8
4001 - 5000	16.3	14.6
5001 - 6000	13.4	14.3
6001 - 7000	10.6	12.0
7001 - 8000	6.0	9.1
8001 - 9000	3.1	5.3
9000+	3.8	8.7
Total	100.0%	100.0%
Mean	$4556	$5281
Standard Deviation	$2212	$2893

Data Source: Baseline Interview

[1]Households are excluded when income is reported as zero or when income information is missing. (See Appendix II.)

As shown in Table 2.7, most single-headed households without children receive income primarily from other transfers (Social Security). This is expected since single-person households were eligible only if elderly or handicapped. Most married couples with children have earnings as the major source of income.

Among the four household types single-headed households with children have the highest incidence of welfare as the major source of income. In Phoenix, however, earned income is still the predominant source of income for this group, whereas in Pittsburgh welfare transfers are predominant. This difference is not unexpected, given the differences in welfare payment levels and relative numbers of welfare recipients between the two sites.[1]

Married couples without children have earnings as their major source of income in Phoenix and other transfers as their major source in Pittsburgh. Married couples with children have earnings as their major source at both sites.

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[1] In Allegheny County (Pittsburgh) 92,337 AFDC recipients are reported, and the average monthly payment is $244. There are only 29,515 recipients in Maricopa County (Phoenix) and the average monthly payment is $129. Source: 1972 City and County Data Handbook, U.S. Department of Commerce.

TABLE 2.7

DISTRIBUTION OF HOUSEHOLDS BY MAJOR SOURCE OF INCOME BY HOUSEHOLD TYPE

	Single	Single with Children	Married	Married with Children
		Pittsburgh (N = 1713)[1]		
Earned	11.8%	22.4%	37.8%	76.6%
Welfare Transfers	10.0	65.0	10.4	16.7
Other Transfers	75.8	9.0	51.2	6.0
Other Income	2.4	3.5	.4	.5
Total	100.0% (331)	100.0% (655)	100.0% (201)	100.0% (526)
		Phoenix (N =1780)		
Earned	14.4	59.6	74.9	91.1
Welfare Transfers	2.2	29.0	.3	4.4
Other Transfers	79.8	6.6	23.4	4.0
Other Income	3.6	4.8	1.3	.4
Total	100.0% (277)	100.0% (480)	100.0% (303)	100.0% (720)

Data Source: Baseline Interview

[1]Households are excluded when income information is missing.

Age of Head of Household

As one would expect, the composition of households changes with age of head of household (Table 2.8). Non-elderly households primarily comprise married couples with children and single-headed households with children. As mentioned earler, experimental eligibility requirements limited one-person households to the elderly or handicapped. Therefore, there are few single-headed households without children among the non-elderly.

Mean income is highest for households with heads 30-44 years of age (Pittsburgh, $5353; Phoenix, $6243), but this is not substantially greater than the mean income of other non-elderly age groupings. Mean income of elderly households is considerably below that for all other age groupings (Pittsburgh, $3144; Phoenix, $3178). This reflects a number of influences, including the smaller household size (Table 2.9) -- which also means that income eligibility limits were lower -- and the predominance of "other transfers" (Social Security, pensions, and the like) for elderly households. Approximately 80 percent of the elderly have these "other transfers" as their major source of income, while for one-half and four-fifths of the non-elderly in Pittsburgh and Phoenix, respectively, the major source of income is earnings.

TABLE 2.8

DISTRIBUTION OF HOUSEHOLDS BY HOUSEHOLD TYPE BY AGE OF HEAD

Age of Head	HOUSEHOLD TYPE				Total (N)
	Single Head	Single Head With Children	Married	Married With Children	
	336 (Pitts) 282 (Phoe)	Pittsburgh (N=1759[1])			
< 30	1.2%	44.0%	8.8%	46.0%	100.0% (548)
30-44	0.2	56.7	2.4	40.7	100.0 (460)
45-61	5.7	49.9	16.2	28.4	100.0 (303)
62+	69.4 (311)	5.6	22.1	2.9	100.0 (448)
		Phoenix (N=1839[1])			
< 30	2.2%	24.3%	21.8%	51.8%	100.0% (785)
30-44	1.9	40.4	5.3	52.3	100.0 (470)
45-61	3.4	42.5	19.7	34.4	100.0 (233)
62+	70.7 (248)	3.4	20.5	5.4	100.0 (351)

Data Source: Baseline Interview

[1]Households are excluded when age information is missing (See Appendix II).

TABLE 2.9

DISTRIBUTION OF HOUSEHOLDS BY AGE OF HEAD OF HOUSEHOLD BY HOUSEHOLD SIZE

Age of Head	Household Size 1	2	3-4	5-6	7+	Total	
Pittsburgh (N = 1759)[1]							
<30	0.0%	25.7%	63.0%	10.2%	1.1%	100.0%	(548)
30-44	0.0	13.5	39.6	33.5	13.5	100.0	(460)
45-61	0.0	44.6	36.0	11.9	7.6	100.0	(303)
>62	65.2 (292)	28.6	4.2	1.6	.4	100.0	(448)
Phoenix (N = 1839)[1]							
<30	0.0	34.1	53.2	10.3	2.3	100.0	(785)
30-44	.2	14.5	38.5	28.9	17.9	100.0	(470)
45-61	.4	37.3	35.2	12.0	15.0	100.0	(233)
>62	67.8 (238)	22.5	6.8	2.0	.9	100.0	(351)

Data Source: Baseline Interview

[1]Households are excluded when age information is missing.

Sex of Head of Household

The majority of Pittsburgh households are female-headed (52.6 percent) whereas the majority of Phoenix households are male-headed (64.5 percent).[1] More than one-third of the Pittsburgh sample are single-headed households with children. As shown in Table 2.10, nearly all of these households are female-headed. There is also a great proportion of one-person, female households in Pittsburgh than in Phoenix. As shown in Table 2.11 the majority of households with heads less than 30 years of age are male-headed. Above 30 years of age, the majority of Pittsburgh households are female-headed. In Phoenix, female-headed households out-number males only within the elderly sample. At both sites, the proportion of female-headed households increases with age.

Mean income for male-headed households (Pittsburgh, $5385; Phoenix, $5948), is substantially higher than income for female-headed households (Pittsburgh, $3787; Phoenix, $4086). This appears to be tied to differences in sources of income. For most male-headed households the major source of income is earnings. By contrast, the majority of female-headed households receive most of their income from sources other than earnings. (See Table 2.12.)

Household Size

The eligibility limit on income increases with family size (actually by increments in dwelling unit size). This accounts for differences in mean income observed for different household sizes. (See Table 2.13.)

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[1]The Census convention for sex of household head is used, i.e., households are defined as female-headed only if headed by a single female. The head of household designated by the respondent in the Baseline Interview differs from this convention in only 32 cases in total for both sites.

TABLE 2.10

DISTRIBUTION OF HOUSEHOLDS BY SEX OF HEAD WITHIN EACH HOUSEHOLD TYPE GROUP

Household Type	Pittsburgh (N=1713[1])			Phoenix (N=1780[1])		
	Male Head	Female Head	Total (N)	Male Head	Female Head	Total (N)
Single	23.5%	76.5%	100.0% (331)	34.3%	65.7%	100.0% (277)
Single With Children	2.0	98.0	100.0 (655)	5.6	94.4	100.0 (480)
Married	100.0	0.0	100.0 (201)	100.0	0.0	100.0 (303)
Married With Children	100.0	0.0	100.0 (526)	100.0	0.0	100.0 (720)

Data Source: Baseline Interview

[1]Households are excluded when income information is missing (See Appendix II).

TABLE 2.11

DISTRIBUTION OF HOUSEHOLDS BY AGE OF HEAD BY SEX OF HEAD

Age of Head	Pittsburgh (N=1759[1])			Phoenix (N=1839[1])		
	Male Head	Female Head	Total (N)	Male Head	Female Head	Total (N)
< 30	55.7%	44.3%	100.0% (548)	75.9%	24.1%	100.0% (785)
30-44	44.3	55.7	100.0 (460)	59.8	40.2	100.0 (470)
45-61	46.5	53.5	100.0 (303)	59.2	40.8	100.0 (233)
> 62	41.3	58.7	100.0 (448)	48.7	51.3	100.0 (351)

Data Source: Baseline Interview

[1]Households are excluded when age information is missing (See Appendix II).

TABLE 2.12

DISTRIBUTION OF HOUSEHOLDS BY MAJOR SOURCE OF INCOME BY SEX OF HEAD OF HOUSEHOLD

Sex of Head	Major Source of Income[1]					
	Earned	Welfare Transfers	Other Transfers	Other Income	Total	(N)
Pittsburgh (N=1713)						
Male	60.6%	13.7%	25.2%	0.5%	100.0%	(817)
Female	19.0	50.9	26.7	3.5	100.0	(896)
Phoenix (N=1780)						
Male	80.8%	3.3%	15.1%	0.8%	100.0%	(1141)
Female	44.9	21.9	28.3	4.9	100.0	(639)

Data Source: Baseline Interview

[1]Households are excluded when income information is missing (See Appendix II).

TABLE 2.13

MEAN INCOME BY HOUSEHOLD SIZE

Household Size	Pittsburgh (N=1703[1])			Phoenix (N=1775[1])		
	Mean Income	Standard Deviation	N	Mean Income	Standard Deviation	N
1	$2616	$1137	282	$2684	$1267	236
2	3849	1674	452	5039	2725	484
3-4	5086	2018	639	5743	2830	678
5-6	5914	2401	244	6180	2699	243
7+	6752	2105	86	6763	3300	134

Data Source: Baseline Interview

[1]Households are excluded when income information is missing (See Appendix II).

3.0 PARTICIPATION

The issue of participation in a housing allowance program has several phases, only the first of which, initial acceptance, is addressed here, and then only in an exploratory fashion. Analysis of participation with respect to the ability of enrollees to meet earmarking requirements and with respect to drop-outs after enrollment will be addressed in the future when program experience and data permit. It should be noted that the initial acceptance of enrollment may be tentative. The enrollment decision is a verbal response to a verbal offer, whereas a decision to continue with the program after participating for some period of time is based on actual experience.

3.1 INTRODUCTION

To understand what factors were relevant in the enrollment decision, gross comparisons are made between households that decided not to enroll and those that enrolled. The factors considered are treatment offer (which includes both the levels of benefits and housing requirements),[1] demographic/socio-economic characteristics, and housing position. These factors are examined separately as a preliminary investigation of enrollment. Obviously, a final analysis must consider these factors in combination. The present results are thus exploratory in nature.

The analysis presented here focuses only upon those households that proceeded far enough in the enrollment process to make an informed decision about accepting or rejecting the housing

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[1] The reader may wish to refer again to Appendix I, where the various treatments of the design are described. The treatments applied to different households are systematic variations in the payment formulas and in the constraints attached. Each treatment is thus a form of housing allowance plan tested in the experiment. Appendix I also defines the payment parameters used in this section.

allowance offer.[1] Therefore, the enrollment outcomes are:

Enrollees: Households that accepted the program offer, met program eligibility and were enrolled.

Turndowns: Households that would have been eligible, but found the program offer unattractive and chose not to enroll.[2]

In the text that follows, the terms acceptance and acceptance rates are applied when comparing the number of enrollees to the number of households that made an informed decision about enrollment. A number of households at each site accepted the offer to enroll but were not enrolled for various reasons (e.g., ineligibility, could not be located). Although these households accepted the enrollment offer, they are not included in these comparisons.

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[1]At the conclusion of an unsuccessful Enrollment Interview, enrollers recorded the outcome as either a turndown or a break-off. A designation of break-off was used by the enroller if the household rejected the offer before being given sufficient information about the program to make an informed decision. A designation of turndown was used for a rejection past this point in the interview. A household rejecting the enrollment offer did not have to be given a subsidy estimate in order to be classified as a "turndown" upon refusal. Typically, the subsidy estimate was given after a complete explanation of the program had been provided. In cases where a subsidy estimate was not given, the household had often refused to provide the income or rent information necessary to calculate subsidy.

[2]Turndowns did not proceed far enough in the enrollment process to permit final eligibility to be determined, particularly income eligibility. Previous income eligibility determination at time of Screening Interview was based on gross numbers. To estimate more precisely whether turndowns might have been eligible, an approximation of income eligibility was made for analysis by computing income using Baseline Interview data. The income definition used had the same elements as that used in determining the income eligibility of households processed for enrollment. It should be noted that some variations between income reported in the enrollment process make it impossible to match income cutoffs precisely for enrollees and turndowns.

(The timing and use of the Screening Interview and Baseline Interview is outlined in Appendix II.)

In order to assess the effect of the type of housing allowance plan, it is important to limit the base population to those who proceeded far enough in the Enrollment Interview for these parameters to make a difference. Therefore, only households that received a subsidy estimate are considered in discussing treatment parameters. This restricted base is relaxed somewhat for analyses of demographic characteristics and housing position to include turndowns who did not receive a subsidy estimate.[1]

A word of caution must be offered regarding the absolute level of the acceptance rates presented in these analyses. Only the relative magnitude of rates with a specific analysis should be compared. The rates for treatment parameters are higher than those presented for demographic and housing position characteristics, since turndowns without subsidy estimates are not included in the base for analysis. Still lower rates would be obtained if the base included all households receiving any information, starting with the initial contact letter.

Among households that made informed decisions about enrollment, 77 percent in Pittsburgh and 87 percent in Phoenix accepted the offer. However, only one-half of all households contacted about enrolling the the Demand Experiment were willing and able to be enrolled, despite the fact that previous screening had established a strong likelihood that the households contacted were eligible.

3.2 EFFECTS OF TYPE OF ALLOWANCE PLAN OFFERED

Nineteen variations were made in the type of housing allowance offered to households (see Appendix I). Acceptance rates would be expected to vary according to the type of offer made, provided that earmarking and payment formulas were uniformly under-

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[1] Analysis of these factors using the restricted base (excluding those households not receiving a subsidy estimate) is presented in the Second Annual Report of the Demand Experiment, February 5, 1975, pp. 99-113.

stood by households and used as criteria for enrollment decisions and presuming reasonably similar households were made the various types of offers. Control households were expected to accept an offer less frequently than other households since they were offered only a token payment. Relatively fewer households receiving an offer with an earmarking constraint (Housing Gap Minimum Standards and Minimum Rent) were expected to accept that offer than were those whose offer involved no earmarking requirements. (However, given the burden of meeting other requirements, this expectation could fail if subsidy estimates were higher in the earmarked offers or if earmarking was perceived as not binding.) A low Minimum Rent requirement was expected to produce a more frequent acceptance than a high Minimum Rent requirement. Higher percentages of rent offered as subsidies (higher values of the percent of rent, "a") were expected to induce relatively greater acceptance. Finally, high basic payment levels (higher values of the payment parameter C*) and low payment reduction rates on increased household income (lower values of "b") were both expected to be more attractive as offers and thereby be more frequently accepted.

A considerable amount of information beyond the explanation of payments and requirements was given to households during the course of the Enrollment Interview. Prior to this interview, households knew very little or nothing about the program. The Enrollment Interview was intentionally structured to provide enough information to prospective enrollees that they could make a fully informed choice. Requirements imposed primarily to satisfy needs for experimental data--monthly filing of reports and repeated interviews and housing evaluations--were carefully explained. A conscious risk thus was taken that the payment offer and direct requirements for earmark compliance might be obscured in the effort to provide full information. Therefore, it cannot be assumed that acceptance decisions were based completely on payments or earmarking requirements. Acceptance responses may be depressed overall and the relative significance of the specific arrangements of the plan missed or confused because of the amount of information presented.

Table 3.2.1 indicates how the rate at which households agreed to participate varied across treatment groups at both sites. Some regularities do appear when tests between logical pairs of treatment groups are made.

In general, acceptance rates were higher in Phoenix (.88) than in Pittsburgh (.77). At both sites, experimental households (those offered a subsidy) agreed to accept at a rate significantly higher than households asked to become controls (Table 3.2.1). This presumably reflects the difference between the subsidy offered experimental households and the token fee offered control households. Among households asked to enroll as non-controls, those receiving Percent of Rent offers accepted with significantly greater frequency than those receiving Housing Gap offers with an earmarking constraint in Pittsburgh. In Phoenix, there was no apparent difference in acceptance between households receiving the Housing Gap offers and those receiving Percent of Rent offers.

Acceptance rates for the highest and lowest Percent of Rent offers ($a = 0.6$ and $a = 0.2$) cannot legitimately be compared because in the experiment the highest offer was made only to low-income househholds and the lowest offer only to the hgiher income households. No distinction is made on income for Percent of Rent offers of $a = 0.5$, $a = 0.4$, or $a = 0.3$. In Phoenix, households receiving high Percent of Rent offers ("$a = 0.5$") accepted at a rate siginificantly above those made low Percent of Rent offers ("$a = 0.3$"). The corresponding variations in Pittsburgh are not statistically significant.

Within the Housing Gap Portion of the design, acceptance rates were higher for households whose subsidy estimates were based on higher levels of basic payment level, C*. The differences are not large. The difference in acceptance rates (C* High vs. C* Low) is statistically significant in Phoenix (at better than .05) but not in Pittsburgh.

TABLE 3.2.1

ACCEPTANCE RATES BY TREATMENT GROUPS[1]

Treatment Groups	Pittsburgh Rate	Pittsburgh N	Phoenix Rate	Phoenix N
Housing Gap, Minimum Standards	.81	344	.90	366
Housing Gap, Minimum Rent	.80	434	.90	403
Housing Gap, Unconstrained	.84	92	.92	74
Percent of Rent	.85	596	.90	547
Controls	.66	745	.84	703
Total	.77	2211	.88	2054
"a" effect (PR)				
a_5 (.6) (highest offer, low income only)	.83	40	.84	38
a_4 (.5)	.84	142	.94	124
a_3 (.4)	.89	163	.94	128
a_2 (.3)	.87	134	.88	161
a_1 (.2) (lowest offer, high income only)	.81	117	.86	96
Basic Payment Level Effect (HG, b = .25)				
C* High	.83	161	.94	135
C* Modal	.80	238	.89	245
C* Low	.79	243	.88	232
"b" effect (HGMS)				
b = .15	.87	63	.93	67
b = .25	.81	208	.90	209
b = .35	.79	73	.90	90
Minimum Rent Effect (HG, b = .25)				
MR Low (= .7C*M)	.77	217	.90	194
MR High (= .9C*M)	.83	217	.89	209

Significant Differences Found in Difference of Proportions Test at Each Site[2]

Comparison	Site with Significant Difference
Experimentals vs. Controls	Pittsburgh and Phoenix
C* High vs. C* Low	Phoenix only
Earmarked Housing Gap vs. Percent of Rent	Pittsburgh only
"a = .5" vs. "a = .3"	Phoenix only

Non-Significant Differences Found at Either Site

Minimum Standards vs. Minimum Rent

Minimum Rent (low) vs. Minimum Rent (high)

"b = .15" vs. "b = .35"

"a = .6" vs. "a = .2"

Earmarking vs. Unconstrained

[1]Data Source: Household Events List
Only households receiving a subsidy estimate in the Enrollment Interview are considered.

[2]Difference of Proportions test--significant at .05 level.

Type of earmarking does not appear to have influenced the decision to participate. Households accepted Minimum Standards and Minimum Rent offers at about the same rate. Similarly, acceptance rates do not vary significantly between the two levels of Minimum Rent required. Unconstrained Housing Gap offers were accepted with somewhat greater frequency than offers with an earmarking requirement, although this difference is again not statistically significant.

The effect of variations in the payment reduction rate (b) across Minimum Standards treatment cells (i.e., the difference between cells where b = .15 and b = .35) was in the expected direction but was not significant in either city.

In summary, propensities to accept the various plans of assistance offered do appear to increase with the allowance level and decrease with earmarking. However, the only statistically significant difference applicable to both sites is that experimental households (those offered some form of direct cash assistance for housing) accepted at a higher rate than control households.

Several possible underlying factors can be identified regarding the lack of stronger differences. First, some individuals may have a basic distrust or aversion to government aid and others may have a basic willingness to receive housing assistance. This may be more important than the subtleties of the forms of that assistance. Second, the understanding of the verbal offers may not allow a clear decision; substantial systematic differences may wait on experience with the program. Third, limiting the analysis of acceptance to those who reached an informed decision and were income eligible based on Baseline data may introduce some error in estimation. Finally, more detailed multivariate analysis may develop sharper differences.

3.3 DIFFERENCES IN ENROLLMENT DECISIONS BY DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

As a measure of the degree to which the characteristics of households themselves were factors in the enrollment decision outcome, comparisons were made between enrollees and turndowns on race/ethnicity, income, major source of income, food stamp recipient status, age and sex of head of household, household size, and household composition. Significant differences in rates of acceptance were found on many of these characteristics, particularly in Pittsburgh. These differences are shown in detail in Tables 3.3.1 through 3.3.7. Generally only differences of 0.05 from the average are discussed.

All experimental households that were turndowns or became enrolled are included in the analysis. Households offered enrollment as controls are, however, excluded in this analysis, since controls received a substantially different offer from experimental households.

Caution should be exercised in drawing causal inferences from the comparisons presented here. As shown in Section 2.0, demographic variables are correlated and associations of acceptance with any one demographic variable may reflect such correlations rather than a direct relation.

Acceptance as related to race/ethnicity is shown in Table 3.3.1. Black households in Pittsburgh accepted the enrollment offer more often than white households. In Phoenix, however, black households accepted less often than average.

Propensity to accept an allowance offer was also tied to the economic welfare of the household. This factor is picked up at several points in the tables that follow: at both sites, households receiving food stamp benefits (Table 3.3.4), single-headed households with children (Table 3.3.7), and in Pittsburgh, households whose major source of income is welfare transfers (Table 3.3.3) all have relatively high acceptance rates.

The interpretation of acceptance rates relative to income is complicated by the eligibility tests applied to the turndown population (Table 3.3.2). (The income eligibility test for enrollees is that applied in the enrollment process.) When no income eligibility test (using Baseline income) is applied to turndowns, acceptance rates are smaller at higher income levels (Table 3.3.2(B)). However, when an approximation is made of income eligibility using Baseline reported income and some turndown households are thus excluded from the analysis, most of those excluded are households in the upper income range and all of the excluded households are turndowns. (Compare Tables 3.3.2(A) and 3.3.2(B).) Hence, screening turndowns for income eligibility produces an apparently larger proportion of households accepting the offer at higher income (Table 3.3.2(A)).[1]

It is also true, of course, that there have not been controls for important additional variables. In particular, subsidy estimate varied with income. Since Housing Gap and Percent of Rent households are treated together in the tables, households at both ends of the income range received widely different subsidy estimates. (Under Housing Gap, higher income households receive lower payments than low-income households. To the extent that they spend more on rent, higher income households receive higher payments than lower income households under Percent of Rent.) Another relevant variable is household size. Controlling for household size would make income a better estimator of the household's economic welfare; this is likely to be especially important in Pittsburgh, where income and household size are fairly highly correlated in the sample.

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[1]The findings presented in this chapter generally are unaffected when the associations of acceptance rates with variables other than income are tested with the Baseline income eligibility test not applied to turndown households.

Age is a key variable associated with differential acceptance rates. At both sites, the likelihood of accepting the enrollment offer declined with age (see Table 3.3.5). Relatively low acceptance by elderly households in Pittsburgh is consistent with the lower acceptance rates found among single-member households (see Table 3.3.6) and households whose major source of income is non-welfare transfer payments (see Table 3.3.3). The only single-person households offered enrollment were elderly or disabled (the overwhelming majority of recipients being elderly).

Additional differences of note appear in the Pittsburgh sample. Low acceptances by those with "other transfers" (Table 3.3.3) as income (mainly Social Security), by one-person households (Table 3.3.6) and couples (Table 3.3.7, these tended to be older in Pittsburgh, see Section 2.0) all seem tied to the low acceptance by the elderly. Finally, larger households (sizes of three to four and up) accepted more frequently in Pittsburgh. Sex of head alone appears unrelated to acceptance rates (Table 3.3.8).

Other differences in acceptance rates can be observed in the tables. Although some of these differences are statistically significant, they do not appear to follow any clear patterns.[1] Some patterns may emerge upon further analysis. Alternatively, further analysis may show that much of the apparent dependence of the offer on household characteristics shown here may actually be a continuation of the demographic pattern of interview attrition experienced between the Screening and Baseline Interviews and not reflect the effect of the enrollment offer.[2]

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[1] Indications in this report of high acceptance by those with children and those receiving Food Stamps are not borne out when the analysis base is limited to those households receiving a subsidy estimate, as reported in the Second Annual Report of the Demand Experiment (February, 1975).

[2] For a discussion of this problem see the Second Annual Report of The Demand Experiment.

TABLE 3.3.1

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY RACE/ETHNICITY

Response To Enrollment Offer	White	Black	Spanish-American	Indian	Other	Total
Pittsburgh						
Number Enrolled	926	308	--	--	13	1247
Number Turned Down	338	61	--	--	0	399
Rate of Acceptance	.73	.84	--	--	1.00	.76
	$\chi^2 = 15.95$**					
Phoenix						
Number Enrolled	841	91	304	33	6	1275
Number Turned Down	116	26	70	5	1	218
Rate of Acceptance	.88	.78	.81	.87	.86	.85
	$\chi^2 = 15.16$**					

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at the .05 level. χ^2 test did not include categories for Spanish-American, Indian, and Other in Pittsburgh; test did not include "Other" category in Phoenix.

TABLE 3.3.2

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY INCOME

TABLE 3.3.2(A): ACCEPTANCE BY INCOME (INCOME ELIGIBILITY TEST FOR TURNDOWNS APPLIED)

Response to Enrollment Offer	Income[1] $0-1000	$1000-1999	$2000-2999	$3000-3999	$4000-4999	$5000-5999	$6000-6999	$7000-7999	$8000-8999	$9000+	Total[2]
Pittsburgh											
Number Enrolled	20	109	215	261	207	155	110	61	26	43	1207
Number Turned Down	6	67	76	76	61	50	32	16	3	0	387
Rate of Acceptance	.77	.62	.74	.77	.77	.76	.77	.79	.90	1.00	.76
Phoenix											
Number Enrolled	18	104	154	178	176	181	148	118	54	101	1232
Number Turned Down	5	18	25	36	28	26	35	15	19	8	215
Rate of Acceptance	.78	.85	.86	.83	.86	.87	.81	.89	.74	.93	.85

Data Source: Baseline Interview and Household Event List.

[1]Distribution of income using analytical definition (see Appendix III). Income eligible turndowns are screened out using eligibility definition of income.

[2]Households are excluded from the analysis when income information is missing.

TABLE 3.3.2(B): ACCEPTANCE BY INCOME (INCOME ELIGIBILITY TEST FOR TURNDOWNS NOT APPLIED)

Response to Enrollment Offer	Income[1]										
	$0-1000	$1000-1999	$2000-2999	$3000-3999	$4000-4999	$5000-5999	$6000-6999	$7000-7999	$8000-8999	$9000+	Total[2]
Pittsburgh											
Number Enrolled	20	109	215	261	207	155	110	61	26	43	1207
Number Turned Down	6	67	76	79	68	59	57	44	36	58	550
Rate of Acceptance	.77	.62	.74	.77	.75	.72	.66	.58	.42	.43	.69
Phoenix											
Number Enrolled	18	104	154	178	176	181	148	118	54	101	1232
Number Turned Down	5	18	25	36	31	28	43	18	30	37	271
Rate of Acceptance	.78	.85	.86	.83	.85	.87	.77	.87	.64	.73	.82

Data Source: Baseline Interview and Household Event List.

[1] Distribution of income using analytical definition (see Appendix III). No income eligibility for turndowns is applied.

[2] Households are excluded from the analysis when income information is missing.

TABLE 3.3.3

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY MAJOR SOURCE OF INCOME

Response To Enrollment Offer	Major Source of Income[1]				
	Earned	Welfare Transfers	Other Transfers	Other Income	Total
Pittsburgh					
Number Enrolled	416	435	327	29	1207
Number Turned Down	120	75	188	4	387
Rate of Acceptance	.78	.85	.64	.88	.76
	$\chi^2 = 70.99$**				
Phoenix					
Number Enrolled	824	130	254	25	1233
Number Turned Down	134	20	57	4	215
Rate of Acceptance	.86	.87	.82	.86	.85
	$\chi^2 = 3.80$				

Data Source: Baseline Interview and Household Event List.

**χ^2 is significant at .05 level. χ^2 test for Phoenix did not include "Other Income" category where expected frequency of turndowns was less than five.

[1]Households are excluded from the analysis when income information is missing.

TABLE 3.3.4

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER

BY FOOD STAMP RECIPIENT STATUS

Response to Enrollment Offer	Food Stamp Recipient Status		
	Food Stamp Recipient	Non-Recipient	Total
Pittsburgh			
Number Enrolled	652	595	1247
Number Turned Down	137	262	399
Rate of Acceptance	.83	.69	.76
	$\chi^2 = 38.31$**		
Phoenix			
Number Enrolled	336	939	1275
Number Turned Down	43	175	218
Rate of Acceptance	.89	.84	.85
	$\chi^2 = 3.98$**		

Data Source: Baseline Interview and Household Event List.

** χ^2 is significant at .05 level.

TABLE 3.3.5

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER

BY AGE OF HEAD OF HOUSEHOLD

Response to Enrollment Offer	Age of Head of Household[1]				
	Less than 30	30-44	45-61	62+	Total
Pittsburgh					
Number Enrolled	375	323	217	331	1246
Number Turned Down	61	61	69	208	399
Rate of Acceptance	.86	.84	.76	.61	.76
	$\chi^2 = 99.93$**				
Phoenix					
Number Enrolled	535	327	159	254	1275
Number Turned Down	69	47	38	64	218
Rate of Acceptance	.89	.87	.81	.80	.85
	$\chi^2 = 17.39$**				

Data Source: Baseline Interview and Household Event List.

**χ^2 is significant at .05 level.

[1]Households are excluded from the analysis when age information is missing.

TABLE 3.3.6

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY HOUSEHOLD SIZE

Response To Enrollment Offer	Number of Persons in Household					
	1	2	3-4	5-6	7+	Total
Pittsburgh						
Number Enrolled	219	321	460	184	63	1247
Number Turned Down	135	107	108	38	11	399
Rate of Acceptance	.62	.75	.81	.83	.85	.76
	$\chi^2 = 55.48$**					
Phoenix						
Number Enrolled	178	342	478	178	99	1275
Number Turned Down	37	62	65	37	17	218
Rate of Acceptance	.83	.85	.88	.83	.85	.85
	$\chi^2 = 5.54$					

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at .05 level.

TABLE 3.3.7

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY HOUSEHOLD TYPE

Response To Enrollment Offer	Household Type				
	Single	Single With Children	Married	Married With Children	Total
Pittsburgh					
Number Enrolled	253	499	133	362	1247
Number Turned Down	151 82	93 65	67 46	88 73	399 266
Rate of Acceptance	.63	.84	.67	.80	.76
	$\chi^2 = 76.11^{**}$				
Phoenix					
Number Enrolled	203	344	215	513	1275
Number Turned Down	50 32	37 29	47 30	84 50	218 141
Rate of Acceptance	.80	.90	.82	.86	.85
	$\chi^2 = 15.21^{**}$				

adjusted to exclude those not having telephone at home
1646 1513
1493 1416

Data Source: Baseline Interview and Household Event List.
$^{**}\chi^2$ is significant at .05 level.

TABLE 3.3.8

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY SEX OF HEAD OF HOUSEHOLD

Response to Enrollment Offer	Sex of Head of Household		
	Male	Female	Total
Pittsburgh			
Number Enrolled	561	686	1247
Number Turned Down	181	218	399
Rate of Acceptance	.76	.76	.76
	$\chi^2 = 0.005$		
Phoenix			
Number Enrolled	816	459	1275
Number Turned Down	155	63	218
Rate of Acceptance	.84	.88	.85
	$\chi^2 = 3.82$		

Data Source: Baseline Interview and Household Event List.

3.4 EFFECT OF HOUSING POSITION ON ENROLLMENT DECISION

Responses to an offer of enrollment in the Housing Allowance Program would be expected to vary with housing position. As applied here, housing position encompasses objective and subjective factors related to current housing and previous housing experience. To assess the effect of housing position on the enrollment decision, households that accepted the offer were compared to those that turned down the offer in terms of their satisfaction with housing and neighborhood, propensity to improve their housing situation, housing burden, housing quality, previous mobility, lease status and experience with discrimination in the housing market. As in Section 3.3, households offered enrollment as controls are not considered in this analysis, since controls received a substantially different offer from experimental households.

It was expected that households would be more likely to accept an enrollment offer if:

- There was dissatisfaction with housing or neighborhood
- There was expressed interest in improving housing
- No lease existed at time of enrollment offer
- There was demonstrated mobility in the recent past
- Housing burden (rent-to-income ratio) was high
- Housing quality was low.

Associations between previous discrimination and acceptance are not easy to anticipate. One possibility is that households who had previously experienced some discrimination in the housing market would see the allowance program (subsidy and Housing Information Program) as a way to overcome such discrimination and would therefore be inclined to enroll more often than households for whom discrimination had been no problem. On the other hand, it was recognized that households who had previously encountered discrimination in looking for housing might be discouraged by that experience and hence disinclined to join a program apparently intended to induce moves to better housing.

In Pittsburgh, significant differences were found in acceptance rates among households expressing differing satisfaction with housing (see Table 3.4.1). As expressed level of dissatisfaction with housing increased, households accepted the offer with greater frequency. A similar pattern appeared in Phoenix but was not strong enough to be statistically significant. Varying levels of neighborhood satisfaction appear to have no effect on the enrollment decision in Phoenix and appear to have an effect (lower acceptance) only at the highest level of expressed satisfaction in Pittsburgh (as shown in Table 3.4.2).

The relation between housing quality and acceptance is shown in Table 3.4.3. In both sites, the lowest acceptance is observed among households with the poorest quality housing. For those offered Housing Gap plans, this may reflect the household's perception of greater difficulty in meeting earmarking. To the extent that low rents are associated with low quality, those offered Percent of Rent plans might not be strongly attracted because of low subsidies. In Pittsburgh, acceptance is highest at the second lowest quality level, but then decreases with increasing levels of housing quality. In Phoenix no pattern in acceptance is apparent at higher quality levels.

TABLE 3.4.1

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER
BY DWELLING UNIT SATISFACTION[1]

Response To Enrollment Offer	Dwelling Unit Satisfaction				
	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	Total
Pittsburgh					
Number Enrolled	449	411	209	178	1247
Number Turned Down	192	121	56	30	399
Rate of Acceptance	.70	.77	.79	.86	.76
	$\chi^2 = 24.35$**				
Phoenix					
Number Enrolled	472	431	221	149	1273
Number Turned Down	94	76	27	21	218
Rate of Acceptance	.83	.85	.89	.88	.85
	$\chi^2 = 5.31$				

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at .05 level.

[1]Data on satisfaction come from Baseline Interview question 2: "In general how satisfied are you with the (house/apartment) you now live in?"

TABLE 3.4.2

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER
BY NEIGHBORHOOD SATISFACTION[1]

Response to Enrollment Offer	Neighborhood Satisfaction				
	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	Total
Pittsburgh					
# Enrolled	585	379	151	130	1245
# Turned Down	220	103	41	35	399
Rate of Acceptance	.73	.79	.79	.79	.76
	$\chi^2 = 8.03$**				
Phoenix					
# Enrolled	616	415	148	95	1274
# Turned Down	108	65	27	18	218
Rate of Acceptance	.85	.87	.85	.84	.85
	$\chi^2 = 0.75$				

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at .05 level.

[1]Data on satisfaction come from Baseline Interview question 1: "In general how satisfied or dissatisfied are you with this neighborhood as a place to live?"

TABLE 3.4.3

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY BASELINE HOUSING QUALITY LEVELS[1]

Response To Enrollment Offer	Baseline Housing Standards[2]				
	Fail BHS Low	Pass BHS Low	Pass BHS Medium	Pass BHS High	Total
			Pittsburgh		
Number Enrolled	115	216	162	754	1247
Number Turned Down	48	43	46	262	399
Rate of Acceptance	.71	.83	.78	.74	.76
	$\chi^2 = 12.47$**				
			Phoenix		
Number Enrolled	102	213	139	821	1275
Number Turned Down	29	27	26	136	218
Rate of Acceptance	.78	.89	.84	.86	.85
	$\chi^2 = 8.42$**				

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at .05 level.

[1]See Appendix V, Section 7.0.

[2]Households are included only under the highest standards level which they passed.

At the time of the Baseline Interview, before households knew that they were being considered for enrollment offers, they were asked what they would do if they had $50 more to spend on rent every month (see Table 3.4.4). Households indicating that they would move and those indicating that they would have the landlord improve their unit exhibited above average acceptance of the offer. Pittsburgh households indicating that they would continue to rent their present units with no improvements necessary, accepted the offer much less often than the average.

As anticipated, associations appear between previous mobility and acceptance decisions at both sites (see Table 3.4.5). Acceptance of the enrollment offer varied positively with increasing numbers of moves within the three-year period prior to Baseline Interview.

The hypothesized relation between rent burden and acceptance decision is supported to some extent but the data (Table 3.4.6) are inconclusive. Although a significant relation between rent burden and acceptance was seen in Phoenix, housing burden is not associated with acceptance in Pittsburgh.

Households at both sites more often accepted the enrollment offer if they had previously been discriminated against in the housing market (see Table 3.4.7). It is possible that, as hypothesized, households saw the program as a way to overcome discrimination. However, factors related to discrimination, e.g., presence of children, source of income, also appear to be associated with high rates of acceptance. Hence the relation observed between acceptance and previously-experienced discrimination may be spurious.

Contrary to expectation, the existence of a lease at the time of Baseline Interview has little effect on enrollment decisions of households at either site. (See Table 3.4.8.)

TABLE 3.4.4

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY PROPENSITY TO MOVE OR TO IMPROVE PRESENT UNIT[1]

Response To Enrollment Offer	Propensity To Move Or Improve					
	Move From This Unit	Have Landlord Improve This Unit	Rent This Unit, No Improvements Necessary	Try To Buy[2] This Unit	Other[2]	Total[3]
Pittsburgh						
Number Enrolled	666	338	172	10	8	1194
Number Turned Down	162	96	119	1	6	384
Rate of Acceptance	.80	.78	.59	.91	.57	.76
	$\chi^2 = 54.91$**					
Phoenix						
Number Enrolled	735	254	198	12	20	1219
Number Turned Down	111	43	40	0	6	200
Rate of Acceptance	.87	.85	.83	1.00	.77	.86
	$\chi^2 = 2.22$					

Data Source: Baseline Interview and Household Event List.

**χ^2 is significant at .05 level.

[1]Data on propensity to move or improve come from Baseline Interview question 77: "If you had $50 more to spend on rent every month, would you move from this (house/apartment) or have the landlord improve this (house/apartment) for a higher rent?"

[2]χ^2 test for both sites collapsed these two categories.

[3]Households responding "Don't Know" to Question 77 were excluded from the analysis.

TABLE 3.4.5

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY PREVIOUS MOBILITY[1]

Response To Enrollment Offer	Previous Mobility				
	No Moves	One Move	Two Moves	Three or More Moves	Total
Pittsburgh					
Number Enrolled	578	354	180	133	1245
Number Turned Down	263	101	18	17	399
Rate of Acceptance	.69	.78	.91	.89	.76
	$\chi^2 = 61.98$**				
Phoenix					
Number Enrolled	258	324	245	445	1272
Number Turned Down	72	66	42	38	218
Rate of Acceptance	.78	.83	.85	.92	.85
	$\chi^2 = 32.98$**				

Data Source: Baseline Interview and Household Event List.

**χ^2 is significant at .05 level.

[1]Data on previous mobility come from Baseline Interview question 83: "How many times have you yourself moved in the last three years--since (Month) 1970?"

TABLE 3.4.6

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY RENT/INCOME RATIO

Response To Enrollment Offer	Rent/Income Ratio					
	0-.09[1]	.10-.19[1]	.20-.29	.30-.39	>.39	Total[2]
Pittsburgh						
Number Enrolled	6	179	336	307	336	1164
Number Turned Down	0	59	99	104	112	374
Rate of Acceptance	1.00	.75	.77	.74	.75	.76
	χ^2 = 2.86					
Phoenix						
Number Enrolled	15	183	352	268	367	1185
Number Turned Down	2	45	67	48	42	204
Rate of Acceptance	.88	.80	.84	.85	.90	.85
	χ^2 = 11.76**					

Data Source: Baseline Interview and Household Event List.

**χ^2 is significant at .05 level.

[1] χ^2 test for both sites collapsed these two categories.

[2] Households with missing rent or income information were excluded from the analysis.

TABLE 3.4.7

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY PREVIOUS DISCRIMINATION EXPERIENCE[1]

Response To Enrollment Offer	Previously Experienced Discrimination		
	Yes	No	Total
Pittsburgh			
Number Enrolled	169	1078	1247
Number Turned Down	18	381	399
Rate of Acceptance	.90	.74	.76
	$\chi^2 = 23.65$**		
Phoenix			
Number Enrolled	227	1048	1275
Number Turned Down	24	194	218
Rate of Acceptance	.90	.84	.85
	$\chi^2 = 5.67$**		

Data Source: Baseline Interview and Household Event List.
**χ^2 is significant at .05 level.

[1]Data on discrimination come from Baseline Interview question 91: "In looking for this (house/apartment) did you experience any discrimination from landlords, superintendents or other people who rent apartments ...?"

TABLE 3.4.8

HOUSEHOLDS WHICH ACCEPTED ENROLLMENT OFFER BY LEASE STATUS[1]

Response To Enrollment Offer	Lease Status		
	Lease In Effect	Lease Not In Effect	Total
Pittsburgh			
Number Enrolled	521	698	1219
Number Turned Down	169	225	394
Rate of Acceptance	.75	.76	.76
	χ^2 = .00003		
Phoenix			
Number Enrolled	138	1119	1257
Number Turned Down	19	194	213
Rate of Acceptance	.88	.85	.86
	χ^2 = .61		

[1]Data on lease status come from Baseline Interview question 8: "Is there now a lease in effect on this (house/apartment)?"

3.5 REASONS FOR REFUSAL (EXIT INTERVIEW)

To understand further what specific factors may have prompted a decision not to enroll, a sample of households that turned down the enrollment offer was interviewed. The sample consisted of 156 households in Pittsburgh and 161 households in Phoenix. The main areas covered by the interview were the program requirements, earmarking requirements, subsidy, attitudes towards site office personnel, and effect of other government programs on housing allowance participation.

Analysis of Exit Interviews at this stage is limited by the lack of comparisons with First Periodic Interview data. Without First Periodic data it is not possible to compare the perceptions of enrollees and turndowns on such key questions as the bother of program requirements, adequacy of subsidy, and so forth. Responses of turndowns in the Exit sample do suggest that certain factors are associated with the enrollment decision. For example, the requirements altogether and monthly reporting in particular are reported to be burdensome by households that decided not to enroll; the question is whether this feeling might have been equally strong for enrollees as well. Negative responses tied primarily to unusual requirements of the experiment, such as monthly reporting, will be important to identify in projecting results to a non-experimental program.

3.5.1 Response to the Offer

Exit respondents were asked, "After you were told how much your payment would be, did you think it was enough money to get better housing?" As shown in Table 3.5.1, the majority of households did not perceive the subsidy to be enough. As expected, the proportion

TABLE 3.5.1

PERCENT OF HOUSEHOLDS WHICH THOUGHT SUBSIDY WAS ENOUGH/NOT ENOUGH FOR GETTING BETTER HOUSING[1]

Opinion About Subsidy	Pittsburgh	Phoenix
	Percent	Percent
Thought subsidy would be enough	39%	29%
Thought subsidy would not be enough	58	68
Don't know	3	3
Total	100% (100)[2]	100% (102)[2]

Data Source: Exit Interview

[1]Exit Question 25: "After you were told how much your payment would be, did you think it was enough money to get better housing?"

[2]Number of respondents who could recall the amount of the subsidy estimate.

TABLE 3.5.2

PERCENT OF HOUSEHOLDS IN EACH SUBSIDY INTERVAL WHICH THOUGHT SUBSIDY WAS NOT ENOUGH[2]

Amount of subsidy estimate	Pittsburgh		Phoenix	
	Percent	Base[2]	Percent	Base[2]
$ 0 - 20	87%	55	86%	58
21 - 40	23	26	68	22
40+	22	18	17	22
Refused		1		--

Data Source: Exit Interview

[1]Cross-tabulation of responses to Exit Interview Question 24A: "How much was it (subsidy amount)" and Exit Question 25- "After you were told how much your payment would be, did you think it was enough money to get better housing?"

[2]Number of respondents who could recall the amount of the subsidy estimate.

of households indicating the subsidy was not enough to improve housing varies with amount of subsidy estimate (see Table 3.5.2). As shown in Table 3.5.3, the majority of households in the sample said they would not have enrolled if they were offered a larger allowance.

Most households offered enrollment made their decision during the course of the enrollment interview. Households reacting negatively to the enroller may have refused to enroll for that reason. As demonstrated by the responses shown in Table 3.5.4, the decision not to enroll did not seem to be made on the basis of the respondent's perception of the enroller. (Confirmation of this awaits comparison with participants' responses to similar questions in the First Periodic Interview).

It was expected that households who turned down an earmarked offer rejected the offer, in part, because of the imposition of the earmarking. As shown in Table 3.5.5, however, most households interviewed had no objection to meeting a minimum rent earmark (paying a minimum amount of rent in order to receive monthly payments). Objection to the minimum standards requirement among turndowns was greater when associated with moving in order to meet the requirement than when associated with fixing-up present dwelling unit (see Table 3.5.6 and 3.5.7).

TABLE 3.5.3

PERCENT OF HOUSEHOLDS BY REPORTED ENROLLMENT DECISION IF OFFERED A LARGER MONTHLY ALLOWANCE[1]

Decision	Pittsburgh	Phoenix
	Percent	Percent
Definitely would have enrolled	5%	12%
Might have enrolled	27	34
Definitely would not have enrolled	65	50
Don't know	2	4
No answer	1	--
Total	100 (100)[2]	100 (102)[2]

Data Source: Exit Interview

[1] Exit Question 26: "If the program had offered you a larger monthly allowance, would you say you definitely would have enrolled, you might have enrolled or you definitely would not have enrolled in the housing allowance program?"

[2] Number of respondents who could recall the amount of subsidy estimate.

TABLE 3.5.4

PERCENT OF HOUSEHOLDS BY PERCEPTION OF ENROLLER[1]

Perception of Enroller	Pittsburgh (N=156)	Phoenix (N=161)
Concerned	88 %	82 %
Not concerned	7	13
Don't know	5	5
Total	100	100
Helpful	90%	86%
Not helpful	5	12
Don't know	5	2
Total	100	100
Friendly	95%	97%
Unfriendly	1	2
Don't know	4	1
Total	100	100
Pressured respondent to enroll	14%	9%
Did not pressure respondent to enroll	85	91
Don't know	1	-
	100	100

[1] Total Percentages are based on responses to Exit Interview question 22:

"How would you describe the enroller from the Experimental Housing Allowance Program who talked to you about the Housing Allowance Program?

A. Concerned about you or not concerned?

B. Helpful or not helpful?

C. Friendly or not friendly?"

Exit Interview question 23:

"Did you feel that the person from the program pressured you in any way to enroll in the Housing Allowance Program?"

TABLE 3.5.5

PERCENT OF HOUSEHOLDS WITH OBJECTIONS TO PAYING A MINIMUM AMOUNT OF RENT UNDER MINIMUM RENT EARMARKING[1]

Objections to Paying	Pittsburgh	Phoenix
Objected	20%	24%
Did not Object	77	68
Don't Know	3	8
Total (N)[2]	100% (30)	100% (37)

[1]Data comes from Exit Interview Question #14:

"Did you have any objections to paying a minimum amount of rent every month so that you could meet the program requirements and start receiving a monthly housing payment?"

[2]Number of households that understood offer and thought they were not already paying in excess of the minimum rent requirement.

TABLE 3.5.6

PERCENT OF HOUSEHOLDS WITH OBJECTION TO MOVING IN ORDER TO MEET THE MINIMUM STANDARDS REQUIREMENT[1]

Objection to Moving	Pittsburgh	Phoenix
Objected	65%	53%
No objection	35	47
Total (N)[2]	100% (20)	100% (38)

[1]Data comes from Exit Interview question 21: "Did you have any objections to finding another house or apartment that would meet the program requirements so that you could start receiving a monthly housing payment?"

[2]Number of households that understood minimum standards requirement.

TABLE 3.5.7

PERCENT OF HOUSEHOLDS WITH OBJECTION TO FIXING UP IN ORDER TO MEET THE MINIMUM STANDARDS REQUIREMENT[1]

Objection to Fixing-Up	Pittsburgh	Phoenix
Objected	10%	37%
No objection	90	60
Don't know	-	3
Total (N)[2]	100% (20)	100% (38)

[1]Data comes from Exit Interview question 20: "Did you have any objections to having your house or apartment fixed up so that you could start receiving monthly housing payments?"

[2]Number of households that understood minimum standards requirement.

3.5.2 Effect of Experimental Setting

During the enrollment interview, households were given some explanation of the requirements in the program such as submitting the Initial Household Report Form, Monthly Household Report Form, and rent receipts, and allowing Periodic Interviews and housing evaluations.

It was thought that the decision not to enroll might be associated with perceived burden of fulfilling the program requirements. To understand this, Exit respondents were asked about the trouble perceived with individual requirements and all the requirements taken together.

Overall, households that decided not to enroll perceived the requirements to be varying degrees of trouble as shown in Tables 3.5.8 (A-G). Of all the requirements presented during the enrollment interview, households had most exposure to the Initial Household Report Form, yet this was not perceived as troublesome. Attending Housing Information sessions, while not a program requirement, was perceived to pose some degree of trouble to a major proportion of households. Full interpretation of these results must, of course, await comparison with the perception of enrollees based upon the First Periodic Interview.

TABLE 3.5.8

PERCENT OF HOUSEHOLDS BY PERCEIVED DIFFICULTY
IN FULFILLING REQUIREMENTS

TABLE 3.5.8 (A)

PERCENT OF HOUSEHOLDS BY PERCEIVED DIFFICULTY IN PREPARING THE INITIAL HOUSEHOLD REPORT FORM[1]

Perceived Difficulty	Pittsburgh	Phoenix
Not difficult at all	75.3%	71.8%
Somewhat difficult	7.8	14.5
Very difficult	6.5	8.3
Don't know	10.4	4.2
No answer	--	1.0
Total (N)[2]	100.0 (77)	100.0 (96)

[1]Data comes from Exit Interview Question 4: "When (NAME OF ENROLLER) came to offer you enrollment in the program he may have asked you questions about your income and expenses which are needed to fill out a form called the Initial Household Report Form. . .

"Did you feel that this form was not difficult at all to prepare, somewhat difficult to prepare, or very difficult to prepare?"

[2]Number of respondents that completed some portion of the Initial Household Report Form.

TABLE 3.5.8 (B)

PERCENT OF HOUSEHOLDS BY PERCEIVED TROUBLE IN FILLING OUT THE MONTHLY HOUSEHOLD REPORT FORMS [1]

Perceived Trouble	Pittsburgh	Phoenix
No trouble at all	42.9%	40.9%
Some trouble	32.1	25.5
A great deal of trouble	20.5	32.3
Don't know	4.5	1.2
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview Question 5: "As you may know, in order to receive regular housing checks you have to fill out a household report form every month."

"Did you think this would be no trouble at all, some trouble, or a great deal of trouble?"

TABLE 3.5.8 (C)

PERCENT OF HOUSEHOLDS BY PERCEIVED TROUBLE IN ALLOWING PERIODIC INTERVIEW[1]

Perceived Trouble	Pittsburgh	Phoenix
No trouble at all	49.4%	54.0%
Some trouble	34.6	23.0
A great deal of trouble	12.2	21.7
Don't know	3.8	1.2
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview Question 6: "In order to receive a monthly housing check you would also have to agree to be interviewed three times by another research agency during the three years of the program."

"Did you think that this would be no trouble at all, some trouble, or a great deal of trouble?"

TABLE 3.5.8 (D)

PERCENT OF HOUSEHOLDS BY PERCEIVED TROUBLE IN ALLOWING HOUSING EVALUATIONS[5]

Perceived Trouble	Pittsburgh	Phoenix
No trouble at all	44.9%	48.4%
Some trouble	30.1	24.8
A great deal of trouble	19.8	25.5
Don't know	5.1	1.2
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview Question 7: "In order to receive a monthly housing check you would also have to agree to have housing evaluators come into your house or apartment to do housing evaluations."

"Did you feel that this would be no trouble at all for you, some trouble for you, or a great deal of trouble for you?"

TABLE 3.5.8 (E)

PERCENT OF HOUSEHOLDS BY PERCEIVED BOTHER OF COMPLYING WITH ALL REQUIREMENTS[1]

Perceived Bother	Pittsburgh	Phoenix
No bother at all	32.7%	41.6%
Somewhat of a bother	40.4	31.7
Very bothersome	26.9	26.7
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview Question 8: "You've told me how you feel about having to fill out the monthly forms, being interviewed three times and having your house or apartment evaluated. Did you think that all together they would be no bother at all, somewhat of a bother, or very bothersome?"

TABLE 3.5.8 (F)

PERCENT OF HOUSEHOLDS BY PERCEIVED TROUBLE IN OBTAINING A RENT RECEIPT EVERY MONTH

Perceived Trouble	Pittsburgh	Phoenix
No trouble at all	72.4%	77.6%
Some trouble	14.1	11.2
A great deal of trouble	10.9	11.2
Don't know	2.6	0.0
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview Question 9: "Did you feel that having to obtain a rent receipt every month would be no trouble at all for you, some trouble for you, or a great deal of trouble for you?"

TABLE 3.5.8 (G)

PERCENT OF HOUSEHOLDS BY PERCEIVED TROUBLE IN ATTENDING HOUSING INFORMATION SESSIONS[1]

Perceived Trouble	Pittsburgh	Phoenix
No trouble at all	28.8%	29.2%
Some trouble	39.6	40.0
A great deal of trouble	29.7	30.7
Don't know	1.8	--
Total (N)[2]	100.0 (111)	100.0 (130)

[1]Data comes from Exit Interview Question 8A: "Did you feel that going to these Housing Information Meetings would be no trouble at all for you, some trouble for you, or a great deal of trouble for you?"

[2]Number of households that were told about Housing Information Program.

At the time of the Enrollment Interview, households were informed that the program would last for a period of three years. The limited duration of the program was expected to have some impact on a decision not to enroll. Exit respondents were asked if they would enroll in the Housing Allowance Program if it were to become a permanent program. The responses, as shown in Table 3.5.9, suggest that the short duration of the experiment may have had some influence on the decision not to enroll.

It should be noted though that households offered enrollment in the experiment were given information about the features of the experimental program only. One can only speculate that the respondents probably assumed these features to be characteristic of a "permanent" program as well.

TABLE 3.5.9

PERCENT OF HOUSEHOLDS BY REPORTED ENROLLMENT DECISION IF OFFERED AS A PERMANENT PROGRAM[1]

Decision	Pittsburgh	Phoenix
Definitely would enroll	5.1%	13%
Might enroll	32.6	29.9
Definitely would not enroll	51.3	50.9
Don't know	10.9	6.2
Total (N)	100.0 (156)	100.0 (161)

[1]Data comes from Exit Interview question 30: "As you know, the housing allowance program lasts for a period of three years. If it were to become a permanent program, would you say you definitely would enroll in the program, you might enroll in the program or you definitely would not enroll in the program?"

3.5.3 Other Reasons

As shown in Section 3.3, acceptance was greater among households participating in welfare and food stamp programs. However, it was expected that households dissatisfied with services received from other government programs would be influenced by this in rejecting a housing allowance offer. Exit respondents that indicated receiving services from a government program in the twelve months prior to the Exit Interview were asked about their satisfaction with the services received. As shown in Table 3.5.10, the housing allowance offer was rejected despite expressed satisfaction with previous government programs.

TABLE 3.5.10

PERCENT OF HOUSEHOLDS BY SATISFACTION WITH SERVICES RECEIVED FROM OTHER GOVERNMENT PROGRAMS[1]

Satisfaction	Pittsburgh	Phoenix
Satisfied	90.6%	91.4%
Not satisfied	9.3	8.5
Total (N)[2]	100.0 (86)	100.0 (70)

[1]Data comes from Exit Interview question 35: "In general, were you satisfied or not satisfied with the services received from another government program?"

[2]Number of households that participated in another government program in the twelve months prior to Exit Interview.

Another factor expected to have some impact on the enrollment decision was the existence of a lease at the time of the enrollment offer. It was feared that a lease obligation would limit the channels available to improve housing (i.e., by moving) and that households would perceive no real advantage to enrolling in the short run. Exit respondents with a lease at the time of the enrollment offer were asked if this had any effect on their decision not to enroll (see Table 3.5.11).

TABLE 3.5.11

PERCENT OF HOUSEHOLDS WHOSE LEASE AFFECTED DECISION NOT TO ENROLL[1]

Lease Affected Decision	Pittsburgh	Phoenix
Yes	6%	0%
No	94	100
Total (N)[2]	100% (72)	100% (20)

[1]Data comes from Exit Interview question 2: "Did your lease have any effect on your decision not to enroll?"

[2]Number of households with lease at time of offer.

A lease at the time of enrollment offer appeared to have virtually no effect on a decision not to enroll. This is consistent with findings of Section 3.4.

3.5.4 Volunteered Reasons

Exit respondents were asked an open-ended question at the beginning of the interview concerning their reason(s) for deciding not to enroll. Reasons given by respondents confirm some factors identified in other Exit Interview questions as shown in Table 3.5.12. Features of the program were often mentioned among reasons for deciding not to enroll. However, more personal reasons were also prevalent, such as a desire for independence or personal problems like poor health.

3.6 CONCLUSIONS

Overall, acceptance of the enrollment offer by those completing the Enrollment Interview was relatively high at both sites. It was expected that households would accept more "attractive" offers more often than less "attractive" ones; however, differences in acceptance by treatment were not pronounced. It was also expected that households living under poorer housing conditions or with greater rent burden would be more prone to accept the offer, but this was not uniformly found to be the case nor to apply consistently at both sites. Certain economic welfare characteristics such as major source of income and food stamp recipient status are associated with acceptance, but the relationship of income and acceptance is less clear.

To understand how important certain factors such as specific reporting requirements and the overall burden of program requirements were in the enrollment decision, comparisons must be made between Exit and Periodic data. Exit data alone reveals that personal reasons for not accepting the offer are most prevalent. These non-program related reasons such as pride, poor health, suspicion and misunderstanding are important factors to appreciate for program design, but they confuse the analysis of the effects on acceptance of program parameters, household characteristics, and housing position.

TABLE 3.5.12

PERCENT OF HOUSEHOLDS BY
REASONS FOR DECIDING NOT TO ENROLL[1]

Reasons for Deciding Not to Enroll	Pittsburgh		Phoenix	
	Percent[2]	(N)	Percent[2]	(N)
Too much bother; too many requirements; too much paperwork	37.8	(59)	39.7	(64)
Won't accept charity; don't need any help; wants to be self-supporting	26.9	(42)	35.4	(57)
Payments too small	19.8	(31)	27.3	(44)
Too sick; ill health; personal problems	19.8	(31)	18.6	(30)
Didn't want to move or upgrade housing	15.3	(24)	14.9	(24)
Didn't want to go to meetings	14.1	(22)	8.1	(13)
Didn't understand program	12.8	(20)	11.8	(29)
Suspicious of government programs	12.1	(19)	13.6	(22)
Didn't want to get involved	11.5	(18)	8.7	(14)
Didn't want to harm relationship with landlord	11.5	(18)	4.3	(7)
Objected to income verification	8.3	(13)	4.3	(7)
Objected to inspections	8.3	(13)	8.7	(14)
Planning to move out of area	7.6	(12)	8.1	(13)
Felt not eligible	7.1	(11)	11.2	(18)
Objected to rent receipt	6.4	(10)	2.5	(4)
Didn't want to send in forms	5.8	(9)	4.3	(7)
Feared would jeopardize other benefits (social security)	5.8	(9)	4.3	(7)
Would reduce food stamp benefits	3.8	(6)	1.2	(2)
Objected to enrollers personality	2.5	(4)	4.9	(8)
Planning to move into subsidized housing	1.2	(2)	1.2	(2)
Planning to buy own home	0.6	(1)	5.5	(9)
Total number of reasons mentioned		374		388

Percents are based on responses to Exit Interview Question:

[1]"What were some of your reasons for deciding not to enroll in the Experimental Housing Allowance Program?"

[2]Percents do not total 100% because households had more than one reason for deciding not to enroll.

It is evident that, even for analysis of initial response, it will eventually be necessary to control for a number of factors, including the relationship of demographic characteristics to the basic response to attempted home interviews, overall reaction to the concept of eligibility for a direct cash assistance for housing, and specific reaction to the payment and earmarking plans presented.

4.0 HOUSING CONSUMPTION

4.1 INTRODUCTION

4.1.1 Major Themes

The two measures of housing consumption discussed in this section are expenditures (rent) and physical housing quality (standardness of dwelling unit). The data involved are cross-sectional, based on the initial position of participants. For each measure, the initial position of participants is described and analyzed in terms of various demographic variables, with particular emphasis on income.

Such descriptions establish that most participants do in fact have inadequate housing or a high rent burden (ratio of rent to income). In addition they highlight some of the major non-experimental factors to be taken into account in developing a model of housing consumption, thereby setting the stage for later analysis.

Following the analysis of each individual measure, the relationship between the two measures (expenditures and quality) is explored. This is a key area for continuing analysis in the experiment. The section also addresses in a preliminary way the appropriateness of the minimum rent levels used with Housing Gap payments.

4.1.2 Outline of Section 4.0

Section 4.2 describes the rental expenditures of major participant groups, both in terms of rent and in terms of rent burden (the rent-to-income ratio). This analysis is synthesized in Section 4.3 in which a multivariate expenditure model is specified and estimated.

A second aspect of the analysis concerns the multidimensionality of the housing bundle and thus housing outcomes. Section 4.4 explores in detail measures of dwelling unit quality, alternative specifications of housing standard criteria, and measures of overcrowding.

Section 4.5 provides a unified description of various housing outcomes for different participant groups. Outcomes of concern are substandard housing, high rent burdens, and overcrowding. The joint occurrence of unacceptable levels for one or more of these outcome variables identifies a major area for potential improvement under the housing allowance.

The association between housing expenditures and levels of housing quality is pursued along several lines in Section 4.6. The first is an investigation of the extent to which the price and quality relationship differs for different racial and ethnic groups. Potential housing market discrimination against minorities, whether due to price discrimination or market segregation, is investigated in a preliminary fashion. The association between price and quality also plays a key role in the analysis of experimental impacts. The shape of the distribution of the supply price of standard housing will affect greatly the effectiveness of a Minimum Rent earmark relative to a Minimum Standards earmark. Thus, housing quality and occupancy outcomes are related to alternative levels of the ratio of rent to C* (basic payment level, see Appendix I). Finally, the relation of length of tenure to rents paid is briefly examined.

In models of housing consumption, decisions concerning consumption of housing and locational choice will be determined simultaneously. In this working paper, however, locational components are analyzed separately in Section 6.0. Thus, rent does not include commuting costs, and the housing outcomes explored in this section do not consider location.

4.1.3 Major Response Measures

The major response variables include rent, the rent to income ratio, five alternative levels of housing quality, and several measures of crowding.

The analytical definitions of rent in this report are described in Appendix III. "Rent" is derived from a concept of shelter cost defined as the monthly cost of an unfurnished dwelling unit plus basic utilities including electricity, heat, gas, water, garbage and trash. In addition, consideration is given to the issues arising from unique conditions of tenure such as households who work in lieu of rent, have roomers and boarders, or pay no cash rent. The level of burden is defined as the ratio of rent to average monthly income.

In the analysis, the rent level is often related to the value of C* for the appropriate household size. The C* schedule for each city is an estimate of the cost of standard housing for that city, by household size. Thus the ratio of rent to C* is used as a preliminary scaling factor for over-all rent levels in each city. It also shows how rents relate to the maximum housing subsidy amount.[1]

The variables used to describe housing quality are defined in Appendix IV. The most important measure is a set of four alternative levels of housing quality, which includes the program definition of standards. These definitions have been developed from a set of dwelling unit component standards; they vary along both the number of components included and the level (or rating) at which the component is defined as acceptable.[2]

The program measure of overcrowding is defined in terms of number of people per "adequate bedroom". Adequacy is defined by various quality criteria for ceilings, walls and floors, light and

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[1] See Appendix II for a discussion of the C* estimates.

[2] Since housing quality is a function of neighborhood and access characteristics, as well as dwelling unit quality, broader measures of quality will be explored in future analyses.

ventilation, electrical outlets, and so forth. An alternative, the Census measure, is defined in terms of the number of people per room.

Throughout Section 4.0, each of the major response variables, as well as the joint occurrence of several response criteria--quality, occupancy, and rent burden--is addressed relative to the major demographic groups identified in Section 2.0. As in other sections, these descriptors include income, race, source of income, age of household head, sex of household head, family size, and household type.

4.1.4 Major Conclusions

The analysis of housing consumption seeks to address many of the issues raised by the model of housing choice while providing a detailed description of pre-program housing conditions. The most important conclusions are briefly summarized below under three topics:

- The demand for housing
- The relationship of housing quality and rent
- Substandardness, overcrowding, and high rent burden.

The Demand for Housing

Expenditure functions for the total enrolled population and major racial/ethnic groups at each site are estimated. Results of the model accord well with major hypotheses concerning independent variables and with the results of other, similar analyses that have been based on cross-sectional data for individual households. Major results, for the demographic variables considered throughout the report are:

- The income elasticities correspond to those obtained in similar analyses--bivariate elasticity estimates range from 0.18 for non-whites in Pittsburgh to 0.28 for Spanish households in Phoenix.

- Minority groups spend significantly less on housing than do non-minorities, even after controlling for other household characteristics.

- Elderly-headed households spend somewhat more than younger age groups.

- Other things being equal, female-headed households spend more than male-headed households.

- Smaller households spend less than larger households. In addition, expenditures are greater for households whose heads are more highly educated, whose occupations are "white collar", and who moved recently.

The Relationship of Housing Quality and Rent

The results of the analysis of price and quality for participants' initial position has direct bearing on the future analysis of the change in housing quality and the assessment of the Minimum Rent earmark relative to the Minimum Standards earmark. Major conclusions are:

- In both Pittsburgh and Phoenix, the average cost of participant housing which meets the Minimum Standards earmark[1] far exceeds what the majority of participants paid prior to the program.

- The average cost of participant housing which meets the Minimum Standards earmark is close to the value of the payments parameter, C* modal. However, since the variance of rents paid at any standards level is very large, the mean is not a very good indicator of the distribution. In addition, the distribution is skewed to the left.

- While it is unlikely that standards and occupancy criteria are met at rents less than the Minimum Rent levels, higher rents do not assure that the Minimum Standards earmark is met.

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[1]The Minimum Standards earmark is met if both the program level of standards and the program occupancy limit are met.

Substandardness, Overcrowding, and High Rent Burden

These three response measures are used to evaluate the scope of pre-program deficiencies in housing condition.

- Approximately three-quarters of the participants in both Pittsburgh and Phoenix would not meet the program level of housing standards.
- About half the sample at each site is overcrowded according to the program occupancy measures.
- Nearly two-thirds of the participants in both Pittsburgh and Phoenix pay more than 25 percent of net income on rent.
- The joint occurrence of these three problems is frequent. About one-fourth of the participants at each site obtain inadequate quality and space and pay more than 25 percent of income on rent.

While the association of housing deficiencies with low-income groups is obvious, the problems facing minorities warrant particular attention.

- At the lowest income levels, it appears that some racial and ethnic minorities in both cities pay slightly more to obtain housing which does not meet the lowest standards criteria.
- The restricted housing market opportunities of minority groups may be expressed in an alternative manner--at a given rent level, minorities less often obtain standard housing than non-minorities.

4.2 HOUSING EXPENDITURES

This section describes the housing expenditures of households enrolled in the Demand Experiment and considers differences in expenditures among demographic groups at the beginning of the experiment. Some groups of households have worse housing problems than others in relation to their expenditures for housing or in relation to the quality of housing obtained. These groups are likely to respond differently to the housing allowance because they face differing opportunities and constraints in the housing market. Minorities may confront racial discrimination, for instance, and large families choose from a relatively limited supply of large units.

Socio-economic groups considered are differentiated by:

- Income
- Race/ethnicity
- Source of income
- Age of head
- Sex of head
- Household size
- Household type.

The measures reported here are rent and rent-to-income ratios (rent burden), which are commonly used for comparison of housing

expenditures among groups.[1] Average rental expenditures and the average rent-to-income ratio are estimated for each group. Since the level of income has such an important influence on the level of rent, the mean expenditures of demographic groups are also estimated for each $1000 income strata in order to assess whether differences, independent of income, are present. All of the relationships described may, upon further investigation, reflect the influence of many household characteristics other than the ones examined. Section 4.3 reports the results of a housing expenditure function which includes many additional socio-economic variables expected to affect demand for housing. The results of the expenditure function clarify the types of relationships between rent or rent burden and demographic group described in this section.

The comparisons between demographic groups identify several groups with especially high rent burdens. Frequently, however, such high burden levels appear to reflect the income distribution of the groups rather than any separate effect. After controlling for income, a difference in burden is shown only for minority status and, to a lesser extent, for source of income, presence of children (at low income levels), sex of head (at high income levels), and age of head (at the lowest income levels).

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[1]The rent variable used in Section 4.2 is ACRA1 based on the Baseline Interview (see Appendix III on rent definitions). In characterizing rent-income ratios, the putative value of 0.25 is assumed as the dividing line between high rent burdens and low rent burdens. This division is somewhat arbitrary. Finer divisions taking into account age of head or household size have been suggested in the recent study by David Birch, et al., of the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University, America's Housing Needs: 1970 to 1980, Cambridge, Mass., December, 1973. For present purposes, it suffices to characterize a rent-income ratio exceeding 0.25 as "failing" because of high rent burden.

Net income (NIA--see Appendix III) is used in the results presented. It should be noted that if gross income comparable to the Bureau of Census definitions were used here, the results would be virtually unchanged. This is because of offsetting income elements used to define "net disposable income" and "Census" income.

Figures 4.2.1 and 4.2.2 and Table 4.2.1 summarize the mean rents and mean rent burdens for demographic groups in Phoenix and Pittsburgh and show the proportion of the population with particularly high or low rent burdens. Figure 4.2.3 shows the average rent burden assumed by minority and non-minority groups within each income strata. Rents are generally higher in Phoenix than in Pittsburgh, consistent with the Housing Cost Panel estimates.[1] Rental expenses are also greater in Phoenix than in Pittsburgh relative to income levels: that is, the proportion of income spent on housing is consistently greater in Phoenix.

4.2.1 Income

The association between income and rent affects all relationships between demographic variables and rent. Many differences in rent occur between demographic groups almost entirely because of differences in income. In general, rents increase with income, but rent burdens decrease with income in both cities (see Figures 4.2.1 and 4.2.2). (See Section 4.3 for a much more detailed discussion of the relationship of rent to income.)

The proportion of households paying less than a quarter of their income for rent varies enormously for different income groups. Only three percent of the lowest income households in Pittsburgh pay less than 25 percent of income for rent compared with 25 percent and 81 percent of moderate and higher income groups.[2] In Phoenix the differences are nearly as marked;

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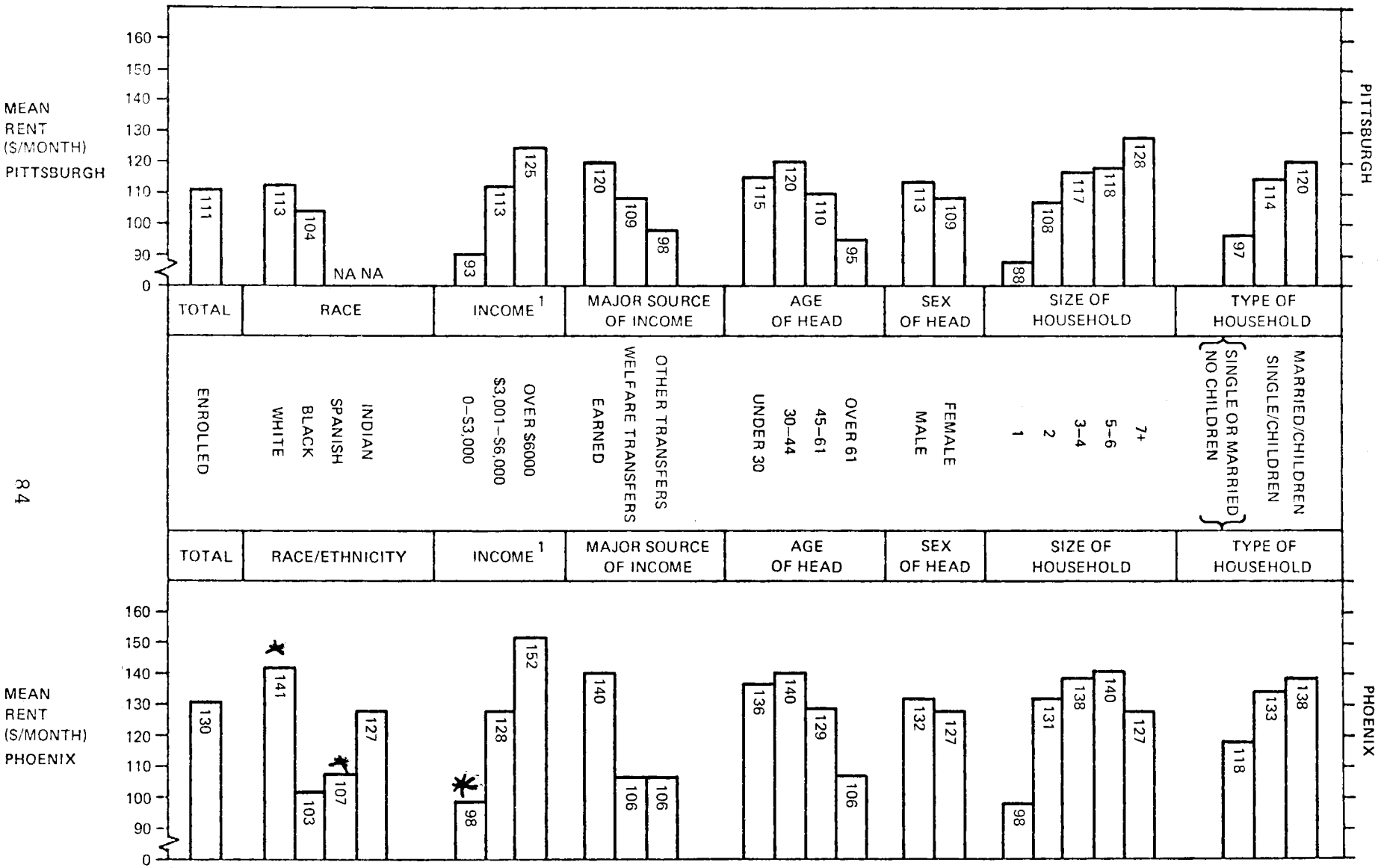
[1] See Appendix II for a discussion of these estimates.

[2] The income groupings chosen for convenience of presentation are "low income" $1,001 to $3000/year, "moderate income" $3,001 to $6,000/year, and "high income" over $6,000/year. It should also be noted that results are based on "NIA"--"Analytical Net Disposable Income". If gross income comparable to the Bureau of Census definition is used to compute rent/income ratios, the results presented here would be virtually unchanged because of offsetting income elements used to define NIA and "Census" income. For example, while NIA is net of taxes, it includes income components such as Food Stamp subsidies and in-kind income derived from work in lieu of rent. For a more complete presentation of income definitions, see Appendix III.



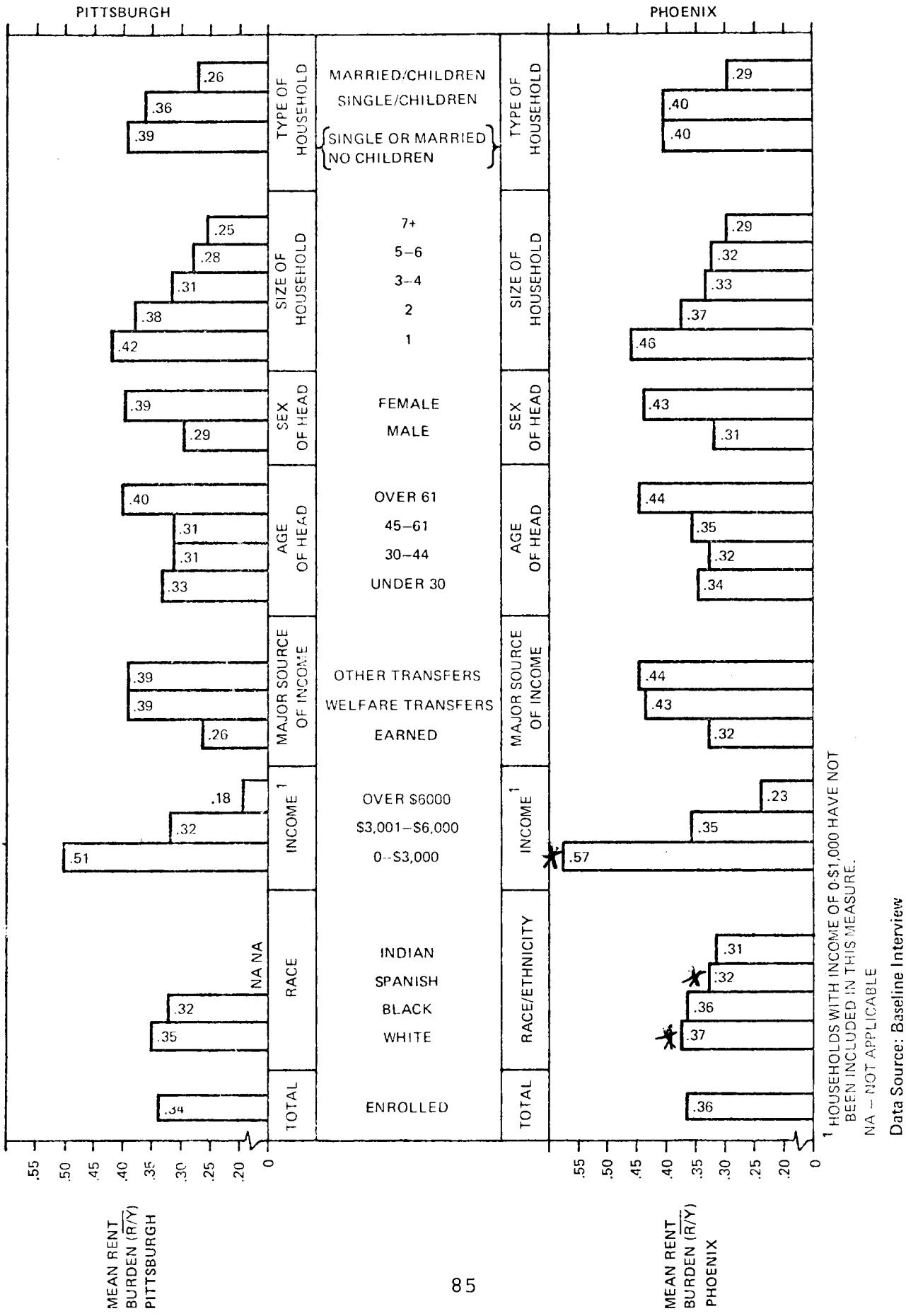
[1]HOUSEHOLDS WITH INCOME OF 0-$1,000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.

NA – NOT APPLICABLE

Data source: Baseline Interview

FIGURE: 4.2.1
MEAN RENT FOR DEMOGRAPHIC GROUPS

FIGURE: 4.2.2
MEAN RENT BURDEN FOR DEMOGRAPHIC GROUPS



[1] HOUSEHOLDS WITH INCOME OF 0-$1,000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.
NA – NOT APPLICABLE
Data Source: Baseline Interview

TABLE 4.2.1

PERCENT OF POPULATION WITH HIGH AND LOW RENT BURDENS FOR DEMOGRAPHIC GROUPS FOR PITTSBURGH AND PHOENIX

Demographic Groups	Pittsburgh			Phoenix		
	Percent with Rent to Income Ratio ≤ .25	Percent with Rent to Income Ratio > .50	N[1]	Percent with Rent to Income Ratio ≤ .25	Percent with Rent to Income Ratio > .50	N[1]
All	33.0 %	12.8 %	1658	31.2 %	15.6 %	1728
Income						
1001-3000	3.3	40.0	424	3.4	50.1	355
3001-6000	25.3	5.3	837	21.0	11.6	761
Over 6000	81.1	0.0	397	60.0	0.2	612
Race						
White	31.1	13.6	1261	28.3	16.9	1151
Black	38.8	10.2	381	31.5	8.7	127
Spanish	-	-	-	39.0	11.9	395
Indian	-	-	-	38.3	8.5	47
Other	43.8	6.3	16	25.0	37.5	8
Major Source of Income						
Earned	55.7	4.2	643	39.2	10.4	1177
Welfare transfers	16.8	16.3	553	12.3	27.5	171
Other transfers	21.5	19.7	432	13.7	28.2	344
Other income	13.3	16.7	30	27.8	27.8	36
Age of Head						
Under 30	34.8	12.2	525	34.7	13.5	743
30-44	38.8	8.0	436	38.2	11.1	442
45-61	40.4	8.5	282	30.2	14.2	212
Over 62	19.8	22.2	415	14.5	27.3	330
Sex of Head						
Male	49.0	6.4	795	40.4	9.5	1106
Female	18.3	18.6	863	14.8	26.4	622
Size of Household						
1	15.1	26.4	265	10.2	32.9	225
2	22.2	15.9	441	27.0	18.9	471
3-4	38.6	8.0	627	33.2	11.5	662
5-6	48.8	7.1	240	40.5	8.9	237
7+	65.9	7.0	85	54.8	10.5	133
Type of Household						
Single with children	22.1	14.3	642	19.4	20.7	468
Married with children	56.1	4.1	515	46.2	8.0	702
Single or married with no children	23.4	19.8	501	22.2	20.8	558

Data Source: Baseline Interviews.

[1]Households were excluded from sample when values were missing for income, demographic variables, or ACRA1 (see Appendix IV).

three percent of the lowest income households pay less than 25 percent of income for rent compared with 21 percent and 60 percent of moderate and high income groups. Conversely, a substantially higher proportion of low income households have very heavy rent burdens in both cities. Forty percent of low income households in Pittsburgh and 50 percent of those in Phoenix have rent burdens greater than 50 percent compared with almost none of the high income group.[1]

4.2.2 Race/Ethnicity

In both cities the greatest differences in rents and rent burdens (holding income constant) are related to race or ethnicity. The rent burden assumed by minority households is less than that for white households at every level of income (see Figure 4.2.3). In Phoenix, blacks, Spanish, and Indians spend similar proportions of income on rent. The differences in expenditures between minority groups and whites in Phoenix are greater than the differences between whites and blacks in Pittsburgh, especially at low income levels where the Pittsburgh groups are nearly the same. In both cities, a higher percentage of minority than of white households have low rent burdens, and a lower percentage have high burdens (see Table 4.2.1).

4.2.3 Source of Income

As shown in Figure 4.2.2 above, households with earned income have a considerably lower average rent burden than those with alternative sources of income. This is primarily because those with

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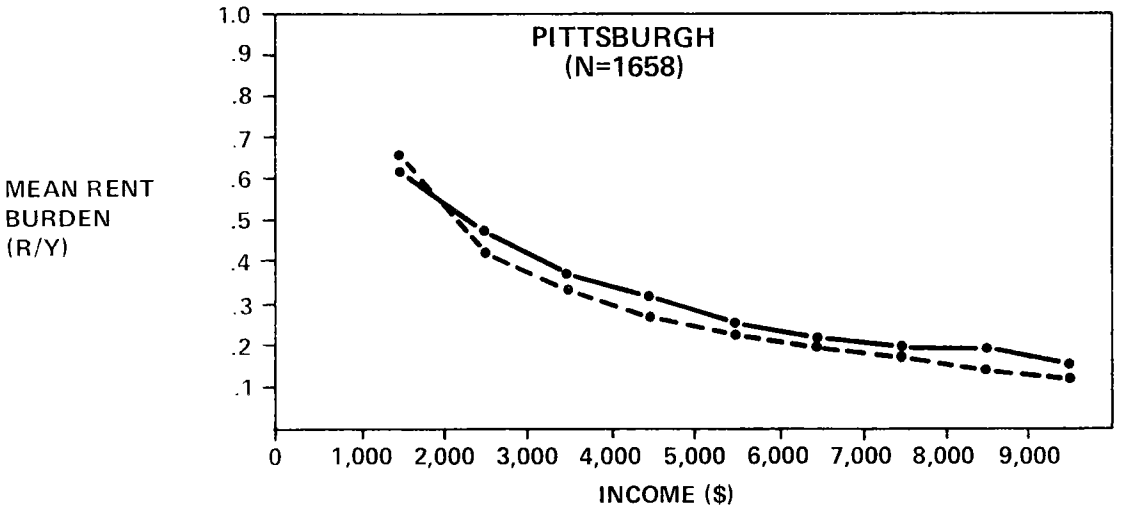
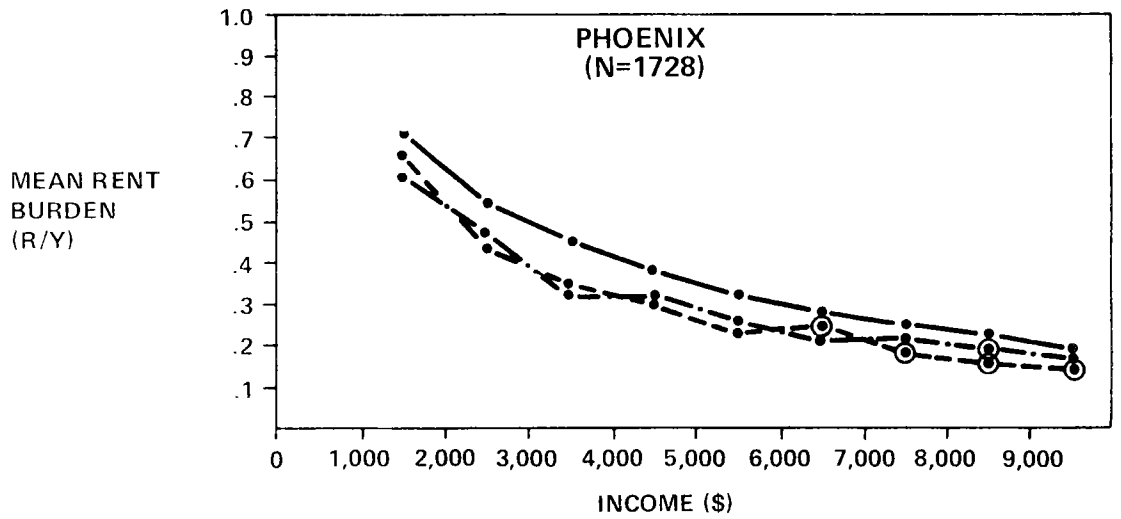
[1]The Joint Center's nation-wide analysis of housing deprivation, using individual family data, confirms the incidence of excessive rent burdens for low income groups found here. Ninety percent of those with family gross income between $0-2,000 pay more than 35 percent of income on rent. For the income groups $2,000-3,000 and $3,000-4,000, 67 and 42 percent respectively, have a rent burden in excess of .35. See "Housing Deprivation in the United States", Analysis of Selected Census and Welfare Program Data, Joint Center for Urban Studies, July 31, 1974.

FIGURE 4.2.3
RENT BURDEN BY INCOME BY RACE/ETHNICITY





DATA SOURCE: BASELINE INTERVIEW

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- ⊙ NUMBER OF OBSERVATIONS AT THIS POINT LESS THAN 15

earned income tend to have higher income than those on transfer income. At the lowest income levels, households with earned income actually have a higher mean rent burden. At other levels of income, the mean rent burden tends to be similar for all sources of income.

4.2.4 Age of Head of Household

As shown in Table 4.2.1, a higher proportion of elderly households bear very high rent burdens than any other age group. In Pittsburgh, 22 percent of all elderly households pay more than 50 percent of income for rent compared with 12 percent or less of every other age group. In Phoenix, the difference is more marked; 27 percent of elderly households pay more than 50 percent of income in rent compared with 14 percent or less for all other age groups.

Within each income stratum, however, there is no difference in rent levels by age of head of household--except at the lowest income level where older households actually spend less on rent. Thus the higher overall mean rent burden for the elderly appears to reflect their generally lower income rather than a greater propensity to consume. However, elderly households are also generally smaller. Equal or lower rent burdens may therefore reflect higher propensities once household size is controlled for. This is borne out by the results of Section 4.3.

4.2.5 Sex of Head of Household

Sex of household head is also associated with differences in rents and in rent burdens in both cities. In Phoenix, male- and female-headed households pay similar rents at lowest income levels but diverge as income increases, so that with incomes of $9,000 or more, female-headed households pay an average of $12 more rent per month than male-headed households. Rent burden for female-headed households is consistently greater than the burden of male-headed households. In Pittsburgh, male-

and female-headed households pay much the same rents at lowest and highest income levels, but female-headed households pay more rent relative to their income in the middle range of income levels.

The substantial differences in the distribution of male- and female-headed households across income levels, however, lead to marked differences in the distribution of rent burdens (see Table 4.2.1). Nearly 50 percent of the male-headed households in Pittsburgh pay less than 25 percent of income for rent compared with only 18 percent of the female-headed households. In Phoenix, 40 percent of the male-headed households pay less than 25 percent of income for rent. Only 15 percent of female-headed households pay so little.

Similarly, more than 18 percent of female-headed households in Pittsburgh pay more than 50 percent of their income for rent, compared to six percent of male-headed households. In Phoenix, 26 percent of female-headed households pay more than 50 percent of income for rent compared to nine percent of male-headed households.

4.2.6 Household Size

In both Pittsburgh and Phoenix, rent tends to increase and rent burden to decrease as the size of the household increases. Larger households are often higher income households in this sample because eligibility income limits increased with family size up to seven. Within each income strata, however, households of different sizes have similar rents and rent burdens except at the lowest income levels where larger households have greater rent burdens. Large households would be expected to pay relatively more for housing because of the need for larger units, but these results suggest that once above the lowest income ranges, they are instead economizing on housing consumption in favor of expenditures on other goods.

4.2.7 Households with Children

At least partly because single-headed households are poorer than married couples, far more married couples with children have a low rent burden than single heads with children. In both cities, a larger proportion (56 percent in Pittsburgh, 46 percent in Phoenix) of married couples with children pay rents that are less than one-fourth of their incomes. A smaller proportion of single-headed households with children have a small rent burden (22 percent in Pittsburgh, 19 percent in Phoenix). Only a small proportion of households without children pay less than 25 percent of income in rent.

4.3 PRELIMINARY ESTIMATION OF DEMAND FUNCTIONS

4.3.1 Introduction

All the relationships described in Section 4.2 reflect the influences of other demographic variables. Not controlling for these other variables may exaggerate or understate the true differences in rent and rent burden for different demographic groups. This section presents an expenditure function that includes many of the demographic variables expected to influence rent and which provides more information about what the effect of any single demographic variable on rent may be. One of the most critical, and unknown, factors in the response to any program of housing assistance is the degree to which households may be expected to change their housing expenditures as a result of income and price changes. Since any form of housing allowance now under consideration acts by changing resources or relative housing prices or both, it is vital to know how households respond to each. While the major thrust of analysis in the experiment is concerned with observing experimentally induced variations in housing demand, there is much to be learned from analysis of the "uncontrolled experiments" that the marketplace has already provided. Observations on the housing of cross-sections of households subject to limited resources, a baffling array of housing alternatives, and their own unique preferences can indicate the nature of choice in the housing market unconstrained by the earmarking requirements of a housing allowance. The degree to which household characteristics affect housing demand in the market bears upon the expected impact of various allowance program designs, including for example the impact of earmarked as opposed to unearmarked income maintenance transfers generally.

This section presents a simple model of housing expenditures that permits some testing of hypotheses concerning the decision to spend money on housing. Numerous attempts have been made to estimate demand functions or, alternatively, expenditure functions for housing. One common specification expresses demand for a quantity of housing services, q, as a logarithmic function of income, y, and the price of housing, p:

$$\ln q = \ln \alpha + \beta_1 \ln y + \beta_2 \ln p, \qquad (1)$$

where α, β_1, and β_2 are parameters to be estimated.[1] Equation (1) is easily transformed to express housing expenditures, the product of price and quantity, as a function of the same variables:

$$\ln pq = \ln \alpha + \beta_1 \ln y + (1 + \beta_2) \ln p \qquad (2)$$

In Equation (1), the coefficients of the logarithms of income and prices are interpreted as the "elasticities of housing demand" with respect to each variable--the percentage change in housing demand for a given percentage change in income or price. From Equation (2), it may be seen that the elasticity of housing expenditures with respect to income is identical to the income elasticity of demand, β, given in Equation (1). The elasticity of housing expenditures with respect to price is equal to the price elasticity of Equation (1) plus one.[2]

Empirical attempts to estimate functions like Equation (2) take account of the fact that expenditures are likely to depend on other variables as well, particularly those that affect "tastes" or "preferences" for housing relative to other goods.

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[1] Such a formulation implies that housing expenditures tend toward zero as income decreases to zero. While it may be more realistic to assume that expenditures tend toward a positive threshold amount as income declines, the formulation generally provides a good empirical fit to data over the range of incomes considered in most analyses.

[2] It may be noted that "rent burden", defined as the ratio of rent to income may be expressed similarly as:

$$\ln \frac{pq}{y} = \ln \alpha + (\beta_1 - 1) \ln y + (1 + \beta_2) \ln p.$$

Consequently, terms involving household demographic characteristics are included to account for taste or preference variations among households. Frequently such models also attempt to test for the behavioral homogeneity of population subgroups by stratifying the population by demographic characteristics, most notably by race, and testing whether estimated parameters are identical among groups.

An approach has been followed here that adheres to the functional form of Equation (2) (but omitting a price term), introduces demographic characteristics to account for variations in household preferences and gauge the possible impact of discrimination.[1] Specifically the model tested for each group is:

$$\ln R = \ln \alpha + \beta_1 \ln y + \sum_{i=2}^{n} \beta_i Z_i \qquad (3)$$

where,

$\ln R$ = natural logarithm of rent[2]

$\ln y$ = natural logarithm of net disposable income[3]

Z_i = a vector of household characteristics defined below.

The Z_i variables are listed in Table 4.3.1 below. Definitions are presented in Appendix VII.

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[1] Alternative functional forms were estimated as well, without greatly affecting conclusions regarding most variables or "goodness of fit" of the regression.

[2] The rent variable used is ACRA1; see Appendix IV for its definition.

[3] The income variable used is NIA; see Appendix III for its definition.

It should be noted at the outset that no price term is included in Equation (3) because of the inherent difficulty of measuring the "price per unit" of housing that confronts households within a given city. As a result, coefficients of included variables may be biased.[1]

The model's parameters are estimated by ordinary least squares regression for the total population and for separate population subgroups at each site. In Phoenix the model is estimated for whites, Spanish-American, and non-whites (most of whom are black). In Pittsburgh, the model is estimated for whites and non-whites.

Hypotheses concerning the major sets of variables are discussed below, followed by the results of the estimation and general conclusions.

4.3.2 Major Hypotheses

- Income - Based on other studies of demand, one would expect that income would be strongly related to current rental expenditures.

  Although income elasticity estimates have seemed to be moving toward a consensus in recent years, they have not in fact. A review by deLeeuw concluded that "the preponderance of evidence supports an income elasticity for homeowners moderately above 1.0, slightly higher than the elasticity for renters".[2] Since the time of that review, however, a number of studies have been completed that call into question the implied consensus.

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[1] Bias of estimated coefficients depends on the true price elasticity of housing expenditures ($1 + \beta_2$) from Equation (2) of Section 4.3.1 and the regression coefficient of log (housing price) on the variable in question. If price elasticities of demand (β_2) are near -1.0, the value of $1 + \beta_2$ will be near zero so that even quite large correlations between log (housing price) and other variables will not lead to significant bias. See Arthur Goldberger, Econometric Theory New York, John Wiley 1964, pp. 194-197 for a discussion of specification bias.

[2] Frank deLeeuw and Nkanta F. Ekanem, "The Demand for Housing: A Review of Cross-Section Evidence," Review of Economics and Statistics (1971), p. 10.

Among the studies that deLeeuw reviewed, only one found income elasticities much below 1.0.[1] That study, by T. H. Lee, found elasticities on the order of from 0.4 to 0.7 for renters depending on assumptions concerning the appropriate treatment of income. Significantly, that study was based on observations of individual households, whereas the other studies analyzed by deLeeuw used observations based on grouped data. In a critique of deLeeuw's review, Maisel and others suggest that using grouped data to estimate income elasticities is one of several major sources of bias in conventional studies of housing demand.[2] Among other sources of bias are the use of mean values of grouped observations rather than medians and specification errors resulting from omission of important variables such as prices or demographic characteristics of households.

Maisel, et al., found that a fully specified demand equation using individual data and price and demographic terms leads to an estimated income elasticity of 0.45 for homeowners. When individual observations are aggregated to the SMSA level, SMSA mean housing values and income are used, and price and demographic terms are omitted, their elasticity estimate rises to 0.90, most of the difference from the other estimate attributable to the grouping procedure. After adjusting their inadequacies, they arrive at an estimate very similar to Lee's.

A number of other analyses using individual households as the unit of observation have found remarkably similar elasticity estimates, uniformly lower than 1.0. Two studies using panel data from the University of Michigan found elasticities on the order to from 0.4 to 0.5 for renters and from 0.5 to 0.75 for owners, the range of values attributable mainly to different income definitions.[3]

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[1]Tong Hun Lee, "Housing and Permanent Income: Tests Based on a Three-Year Reinterview Survey," Review of Economics and Statistics (November 1968), pp. 480-490.

[2]Sherman J. Maisel, James B. Burnham, and John S. Austin, "The Demand for Housing: A Comment", Review of Economics and Statistics (November 1971), pp. 410-413.

[3]Geoffrey Carliner, "Income Elasticity of Housing Demand", Review of Economics and Statistics (November 1973), pp. 528-532; and Stephen K. Mayo, "Welfare and Housing", (Task 5, Subtask D, Analysis of University of Michigan Panel Study), in Joint Center for Urban Studies, Analysis of Selected Census and Welfare Program Data to Determine Relation of Household Characteristics, Housing Market Characteristics, and Administrative Welfare Policies to a Direct Housing Assistance Program, September 1973, pp. 5-1 through 5-41.

Both analyses investigated whether "permanent income" measures led to different results, and concluded that permanent income elasticities were higher though only moderately so.

An analysis of data from the survey of Economic Opportunity led to elasticity estimates of from 0.17 to about 0.31 for a nationwide sample of renters stratified by age and receipt of welfare income.[1]

An analysis of household data in St. Louis produced estimates of from 0.09 to 0.25 for a sample of white renters, the differences attributable to alternative functional forms of the estimating equations.[2] In an analysis of San Francisco household data, the housing expenditure elasticity was calculated as 0.42.[3]

Thus, there is a good deal of evidence which suggests that income elasticities may be considerably lower than the conventionally accepted value near 1.0, and that a more appropriate value is on the order of 0.4 to 0.5.

Some differences may be expected among racial groups as a result of racial discrimination. If one views discrimination in the housing market as raising the effective price that minorities must pay so that a minority dollar "doesn't go as far" as a majority dollar, then the apparent response of expenditures to income changes may differ among groups.[4]

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[1] Mingche M. Li, "An Analysis of Housing Consumption with Implications for the Design of a Housing Allowance Program", in op. cit., Joint Center for Urban Studies, Analysis of Selected Census and Welfare Program Data. . . ., pp. 5-222 through 5-284.

[2] John F. Kain and John M. Quigley, Discrimination in a Heterogeneous Housing Stock (New York: National Bureau of Economic Research), forthcoming.

[3] Mahlon R. Straszheim, An Econometric Analysis of the Urban Housing Market, New York, National Bureau of Economic Research, forthcoming; and A. Thomas King, "Households in Housing Markets: The Demand for Housing Components" Dept. of Economics, Maryland University, March 1973, Mimeo.

[4] In part any measured response may be attributable to failure to include a price term in the estimating equation. Because effective price elasticities among groups may differ, then the bias of estimated income elasticities will differ and measured income elasticities will differ.

Several studies have suggested that income source as well as level may be important in affecting expenditures.[1] Propensities to spend out of particular income sources are likely to vary in response to the uncertainty that attaches to receipt of various types of income. If receipt is highly uncertain, then households may be more cautious in making commitments from current income to things such as consumer durables and housing.

Despite the possible empirical relevance of source of income, no explicit consideration is given to it in the results that are presented. The main reason for omission at this stage of analysis is that income source variables are highly correlated with other included variables such as income level, household size, sex of head, and age. Such multicollinearity is, in fact, definitional since receipt of particular kinds of income transfers depends on having quite particular household characteristics.

On the basis of some early empirical analysis, it was decided such collinearity would be harmful to the estimation of parameters of other variables, so income source was not included in the models presented here.

- Class and Education - Analyses of both housing and locational choice have suggested that both social class and education may bear on housing outcomes.[2] Both types of factors may affect housing demand in a number of ways--through effects on "permanent" as opposed to current income, through effects on tastes for housing vis-a-vis other goods, and through supply side effects which relate to how willing landlords are to rent to individuals of different classes or levels of education.

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[1]Stephen K. Mayo and Mingche M. Li, loc. cit., Joint Center for Urban Studies, Analysis of Selected Census and Welfare Program Data. See also R. Holbrook and F. Stafford, "The Propensity to Consume Separate Types of Income: A Generalized Permanent Income Hypothesis," Econometrica (January, 1971).

[2]See Richard Coleman and Bernice Neugarten, Social Status in the City San Francisco, Jossey Bass, Inc., 1971. Otis D. and Beverly Duncan, "Residential Distribution and Occupational Stratification," American Journal of Sociology (March 1955), pp. 493-503.

It is not intended that such separate effects be disentangled at this stage of analysis. Nevertheless, it is important to bear in mind that such variables may not affect demand solely through their influence on permanent incomes. At issue is the validity of including--in an expenditure function--both current income and factors that are undoubtedly highly related to permanent income; inclusion of the latter may be expected to bias downward the estimated elasticity of demand if it is to be interpreted as a measure of the long-run response of housing expenditures to income. If, on the other hand, one is interested in the short-run response of housing expenditures it may be appropriate to net out the effects of class and education notwithstanding problems of separating out the effects of education or class from permanent income effects.

It is expected that regardless of the reason for the effects of education and class, their influence on housing expenditures will be such that higher levels of education and membership in a white-collar occupation will increase expenditures on housing, other things being equal.

- Labor Force Attachment - Another factor that may affect demand is the degree to which household members participate in the labor force. If household members are unemployed or not actively seeking work they may hedge on long-term commitments to durable goods or housing by purchasing lower quality and thus spending less. Similarly, for a given level of current income, households with more than one employed member may have more or less stable total incomes than households with only one employed member. As a result, they too may modify current purchases requiring long-term spending commitments. Dummy variables are included to test the effect of both "none employed" and "more than one employed".

- Household Size - Household size is likely to result in increasing expenditures on housing, at least over some range of household sizes. Several studies have indicated that for a given level of income expenditures increase for household sizes up to about five and decline beyond as other household spending priorities

predominate.[1] Because of the possibility of such a non-linear relationship between household size and expenditures, a series of dummy variables has been used rather than a continuous variable. The regression tests whether the composition of households is important as well as size by including variables for the numbers of young children (under five) and older children (between five and 18).

- Household Type - Further tests of the influence of household composition may be obtained by considering explicitly the effects of "household types". Household types are defined in this analysis on the basis of marital status and the presence of relatives and children. It is difficult on the basis of past research to argue that household composition has major effects on housing expenditures. Nevertheless full consideration of the general hypothesis that the stage in a family's life cycle affects housing consumption requires that some consideration be given to household composition variables; four such variables are included in the regressions estimated here.

- Other demographic characteristics:

  - Age - Another measure of the influence of "life cycle" variables is that of age of the household head. Both tastes for housing relative to other goods and expectations concerning future income are likely to be affected by age. In particular it is likely that household heads in their prime working years, between 30 and 62, will behave differently than younger households whose incomes and expectations may be somewhat more variable. The elderly may be expected to have different patterns of consumption as well, in part because their incomes are less variable than younger groups, but also because other categories of expenditure such as medical care and food may become relatively more important for them.

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[1] See Sherman J. Maisel and Louis Winnick, "Family Housing Expenditures: Elusive Laws and Intrusive Variances", Proceedings of the Conference on Consumption and Saving, Philadelphia, University of Pennsylvania Press, 1960, and Joseph S. DeSalvo, "Reforming Rent Control in New York City: Analysis of Housing Expenditures and Market Rentals", Papers of the Regional Science Association 27 (1971), pp. 195-227.

- Race - Race is highly likely to affect household expenditures. Many studies have indicated that racial minorities, particularly blacks, pay discriminatory premiums for housing, in effect getting less housing for each dollar of expenditure. A rational response to such differential pricing is to reallocate one's budget toward those items in the budget that are subject to no such racial premium, or subject to smaller premiums than housing. The extent of such shifts depends critically on the price elasticity of demand for housing; the more elastic is housing demand, the greater will be the reduction in housing expenditures by minority group members over otherwise similar white households. DeLeeuw has estimated that price elasticities of demand for blacks are quite high--and higher than those for whites.[1] If his results are correct one would expect blacks to spend less for housing than whites that are similar. Dummy variables have been included in regression equations for the total population for both sites to test whether such a result obtains for either non-whites at either site or for Spanish-Americans in Phoenix.[2]

- Sex - Sex of household head is likely to affect demand for housing as well. Other studies have suggested that female-headed households prefer more geographically accessible housing locations that are coincidentally more expensive than those of male couterparts. One may hypothesize as well that women may have different, and more favorable preferences than men for housing vis-a-vis other goods and on that basis may spend more. Some empirical studies have shown that female-headed households spend more than male-headed households, but that once having controlled for quality differences in housing, no significant spending differences

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[1] Frank deLeeuw, "The Demand for Housing: A Review of Cross-Section Evidence", Review of Economics and Statistics (February 1971), pp. 1-10.

[2] Such price effects may be due to the concentration of minority demand in certain areas due to discrimination, custom, or preference.

exist.[1] This latter conclusion suggests that any strong a priori assumption of discrimination against women in the rental housing market may be inappropriate.

- Demographic Interaction - Patterns of discrimination are likely to be quite complex. It may turn out, for example, that blacks pay a premium of X percent over whites, that females pay a premium of Y percent over males, but that black females pay a premium greater than X plus Y percent over white males. That is, the whole of discrimination may be greater than the sum of its parts. To test for such a possibility, dummy variables embodying multiple criteria according to which discrimination is hypothesized to occur are included in the regressions. For the total population regression the variable tests the combined effect of being non-white, female, on welfare, and having children. For subpopulation regressions, race is dropped as a characteristic in defining the variable.

- Moving status - Whether a household has recently moved or not is likely to affect its housing expenditures. Past analyses have found that length of tenure in particular rental units has been associated with lower rents paid by tenants.[2] Other research has shown that recent movers pay more than non-movers, holding both housing and household characteristics constant.[3] Reasons for such effects may be sought by examining the motivations of landlords in housing markets. Desirous of keeping good tenants, landlords may be less inclined to raise rents as rapidly for proven tenants as for vacant apartments that will be rented to the untried. Since movers almost without exception move to vacant apartments, they are subject to higher rents than are pre-existing occupants of their neighboring apartments. A dummy variable for whether or not a household has moved within the past year has been included in each regression to test for such effects.

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[1] See papers by Mingche M. Li and Stephen K. Mayo, op. cit. in Joint Center for Urban Studies, An Analysis of Selected Census and Welfare Program Data . . . .

[2] See John F. Kain and John M. Quigley, "Measuring the Value of Housing Quality," Journal of the American Statistical Association 65 (1970), pp. 532-548.

[3] Mayo, op. cit., p. 5-280.

4.3.3 Results of the Model

In general results of the model estimated from Equation (3) are highly consistent with the hypotheses set out above, consistent between the two sites, and consistent with other comparable analyses.[1] The overall goodness of fit is comparable to that of other cross-sectional analyses that have relied on individual households as the unit of observation; R^2 statistics range from 0.30 to 0.45 among the regressions estimated. General results of the model are presented in Table 4.3.1.

- Income - The logarithm of income is highly significant in all estimated regression equations. Estimated elasticities are quite low compared to "conventional wisdom" concerning such elasticities which holds that they should be from about 0.8 to 1.0 for renters. They are not, however, unreasonably low compared to previously cited estimates using comparable data. For example, in the analysis most comparable to this one in terms of the unit of observation, the characteristics of the sample, and the variables included in the regression equation, Kain and Quigley estimated income elasticities of demand from 0.07 to 0.15 for black renters and from 0.09 to 0.25 for white renters, depending on the functional form of the estimating equation.[2] The lower estimates are in each instance from "log-log" regressions similar to these. Such elasticities compare to estimates that range from 0.08 for non-whites in Pittsburgh to 0.18 for Spanish-Americans in Phoenix. Estimates for blacks and for the total population in Pittsburgh are thus nearly identical to Kain and Quigley's results for St. Louis.

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[1] See especially John F. Kain and John M. Quigley, Racial Discrimination and a Heterogeneous Housing Stock, New York, National Bureau of Economic Research, forthcoming.

[2] Ibid.

TABLE 4.3.1

REGRESSION COEFFICIENTS FOR LOGARITHMIC EXPENDITURE FUNCTIONS

	Pittsburgh			Phoenix			
Variable	All	White	Non-white	All	White	Non-white	Spanish
Constant	4.541	4.509	4.510	4.600	4.624	4.509	4.304
Income (logarithm)	.081**	.090**	.077**	.160**	.155**	.119**	.184**
Class and Education							
White Collar	.062**	.058**	.041	.057**	.041*	.152**	.038
Grammar School	-.130**	-.164**	-.001	-.175**	-.158**	-.205**	-.187*
High School	-.025**	-.094**	-.021	-.080**	-.085**	-.169**	.001
College	.110**	.101**	.152	.078**	.061	.164	.268**
Labor Force Attachment							
More than one employed	.063**	.077	.005	-.010	.008	-.150**	.007
None employed	-.028	-.029	-.044	.016	-.050*	.095	.015
Household Size							
One	-.338**	-.274**	-.067**	-.292**	-.276**	-.253*	-.263**
Two	-.088**	-.036	-.214**	-.115**	-.116**	-.116	-.049
Five-Six	.003	-.001	-.003	.096**	.053	.125	.171**
Seven or more	.088	.082	.080	.099*	.002	.089	.275**
Young children	.001	.020	-.034	-.028*	-.011	-.006	-.083**
Older children	.007	.018	-.010	-.007	.010	.014	-.035*
Household Type							
Single with relatives	-.156**	-.054	-.374**	.069	.056	.649**	-.061
Married couple	.030	.021	-.003	.048	.071*	.032	-.096
Extended family	.130**	.114	.152	.029	.046	.035	-.018
Extended couple	-.072	.004	-.221*	.035	-.028	.400**	.058
Demographic Characteristics							
Non-white	-.112**	--	--	-.207**	--	--	--
Spanish	--	--	--	-.210**	--	--	--
Male head	.102**	.115**	.043	.113**	.114**	-.053	.150**
Age 30-44	.047**	.042*	.073	.021	.015	-.037	.040
Age 45-61	.023	-.044	-.008	.054*	.035	.004	.097*
Age 62 and over	.169**	.158**	.227**	.062*	.075*	-.140	.038
Multi-problem	-.029	-.058*	.047	-.058	-.082	-.093	-.076
Moving Status							
Mover	.117**	.111**	.161**	.146**	.104**	.150**	.247**
R^2	.27	.28	.31	.39	.30	.45	.38
N[a]	1.681	1.278	.403	.747	1.164	.184	.399

Data Source: Baseline Interviews

*t-statistic indicates that coefficient is significant at the .10 level

**t-statistic indicates that coefficient is significant at the .05 level.

[a]Households were excluded from sample when values were missing for income, demographic variables, or ACRAI (see Appendix IV).

Other analyses based on household data have produced similar results. Mingche M. Li, using data from the Survey of Economic Opportunity estimated income elasticities of demand that ranged from 0.15 to 0.39 (depending on the income definition used and the specific subpopulation considered).[1] Simple bivariate regressions of rent on income for selected SMSA's yielded a somewhat wider range of elasticity estimates (from 0.13 to 0.84), though all may be biased slightly upward as a result of omitting price and demographic variables.[2] Comparable bivariate (rent/income) regressions produce the following elasticity estimates using both data on Demand Experiment enrollees and the Kain/Quigley results and logarithmic and linear forms of each variable:

Table 4.3.2

BIVARIATE ELASTICITY ESTIMATES

Pittsburgh (enrolled households)	log-log ($\ln R = \alpha+\beta \ln y$)	linear ($R = \alpha+\beta y$)
All	0.19	0.21
White	0.19	0.22
Non-White	0.18	0.18
Phoenix (enrolled households)		
All	0.28	0.26
White	0.26	0.22
Non-White	0.25	0.22
Spanish	0.28	0.27
St. Louis (Kain & Quigley)		
All	0.14	0.24
White	0.13	0.26
Non-White	0.14	0.21

[1] Mingche M. Li, "An Analysis of Housing Consumption, With Implications for the Design of a Housing Allowance Program," in Joint Center for Urban Studies, op. cit., pp. 5-1 through 5-41.

[2] See Sherman J. Maisel, et al, "The Demand for Housing: A Comment," Review of Economics and Statistics (November, 1971) pp. 410-3 for a discussion of such estimation biases in cross-sectional demand analyses.

Thus our results using only bivariate relationships are comparable across sites and to other similar research.

Income elasticity estimates based on our "full model" including all demographic characteristics imply that income changes of $1,000 per year will lead to increases of roughly $3.60 per month and $2.20 per month in rent in Phoenix and Pittsburgh respectively. Estimates from the bivariate regressions imply roughly double those responses in each city.

Racial differences in estimated income elasticities are apparent in each city, though probably not much should be made of the small observed differences. The results are consistent with at least some other evidence (Kain/Quigley) that indicates that black income elasticities are lower than those for whites. Without having included a price term in the estimated regressions, and given that the extent of bias present in estimated income elasticities depends on the magnitude of price elasticities, differences in observed results for racial groups could simply be the result of specification bias.[1]

- Class and education - These variables are significant at a consistently high level at both sites for the total population, and vary in exactly the way one would expect. As education levels increase, housing expenditures increase as well. Being a member of a white-collar occupation further increases expenditures. Results for racial subgroups are consistent with the overall relationships at each site, and do not appear to differ greatly in magnitude among groups.

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[1] Bias in income elasticities will be equal to the product of the true price elasticity of housing expenditures, $(1 + \beta_2)$ from Equation (2) of Section 4.1, and the regression coefficient of log (housing price) on log (income). (See Goldberger, op. cit. for a discussion of specification bias.) The price per unit of housing (holding housing characteristics constant) may vary considerably within metropolitan areas because of variations in land prices, spatially variable "quasi-rents" of particular housing bundles, and accessibility costs (see Straszheim, op. cit. for a discussion). The process of housing choice results in households with greater demand for housing choosing to live in housing units with a lower price per unit, again holding housing characteristics constant, thereby leading to a negative correlation between price per unit and income within cities.

- Labor Force Attachment - Having either no one or more than one household member currently employed results in somewhat ambiguous effects among sites and racial groups. When "none employed" coefficients are significant they indicate, as expected, that expenditures are depressed, the effect appearing more significant in Pittsburgh than in Phoenix. Significant coefficients for "more than one employed" occur in only two equations and are of opposite signs.

- Household Size - Household size is significantly associated with housing expenditures at each site. Further, the coefficients of significant household size variables for the total population are quite similar in magnitude at both sites. For example, in Pittsburgh, the smallest households (one person) are estimated to spend only 65 percent as much as the largest households (seven or more persons); in Phoenix, the comparable figure is 68 percent.

  There appear to be substantial differences in the way that different racial groups vary expenditures as their household sizes vary. In both sites, increasing household size for racial minorities appears to result in greater expenditures for each additional household member than for non-minorities. Such a result may be indicative of taste difference among racial groups as concerns housing, but may also be attributable to supply restrictions that are relatively more severe for larger minority households than for larger white households. The latter argument is rather plausible, since it is well documented that as white households increase in size, they tend to move further away from their workplaces in order to economize on the greater amounts of residential space they wish to rent or purchase.[1] Minority households are less able to make such geographical adjustments and as a result wind up confronting a spatially restricted, and relatively more expensive, supply of housing. That is, they are relatively more likely than smaller minorities households to be "banging up against the boundary" of the ghetto. It should be noted that the observed differences among racial/household size do not depend on a generally higher supply price of housing to minorities but on a relatively higher supply price for particular kinds of units--those that are most likely to be sought by larger households.[2]

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[1] See for example, John F. Kain, "The Journey to Work as a Determinant of Residential Location", Papers and Proceedings of the Regional Science Association, 1962, pp. 133-160.

[2] See Section 4.6.1 for some preliminary evidence on general racial premiums for housing of similar quality.

The number of children, either less or older than five, adds nothing to the model except in the case of Spanish-Americans in Phoenix who appear to reduce expenditures as composition of the household (for a given household size) shifts from adults to children.

- Household type - Household type variables, while sometimes significant, are highly variable in their effects among racial groups and sites. It appears likely that collinearity among household type, size, and age of head variables may be responsible for most of the instability in regression coefficients. On balance, however, it does not seem that household type helps much to explain variations in household expenditure patterns.

- Other demographic characteristics:

  - Age - Household head's age appears to contribute significantly to explaining housing expenditures, although the effect does not appear to be a simple one. Regression results indicate that, in general, households whose heads are over thirty increase expenditures above the level of those under thirty, and that, other things equal, elderly headed households spend somewhat more.

  - Race - The effect of race is tested in two ways--by including dummy variables for race in the regression for the total population at each site and by stratifying each site's population by racial groups. Somewhat different information may be obtained from each sort of test. Dummy variables in the "population" regression allow one to evaluate the average amount by which housing expenditures differ among racial groups, holding all household characteristics constant. By stratifying one may learn more about the idiosyncratic features of each group--about the different ways in which specific demographic characteristics affect expenditures among groups.

    Regressions on the entire sample at each site yield similar results. Holding other household characteristics constant, non-whites spend less at each site than do whites. Spanish-Americans spend less than do comparable whites in Phoenix. Percentage reductions in rent compared with non-minority white households are roughly 19 percent and 18 percent for Spanish-Americans and non-whites

respectively in Phoenix and about 10 percent for non-whites in Pittsburgh.[1]

An alternative way of calculating the effect of being a minority group member is to "solve" the white expenditure function using average values of each minority group's household characteristics to project the level of housing expenditures of a white having the same characteristics as the average minority group member. Such figures may then be compared to the actual minority group expenditures to give an indication of what the effects of minority status are. For Phoenix, such calculations indicate that a white having the same characteristics as a typical non-white would have spent $131 per month for housing; and having the same characteristics as a typical Spanish-American, would have spent $127 per month. The actual expenditures for "typical" non-whites and Spanish-Americans were $103 and $107 respectively. A comparison indicates differences between projected and actual figures of around 16 percent for Spanish-Americans and 21 percent for non-whites--roughly the same as the calculation based on the race dummy variables.

Such reductions in housing expenditures, holding demographic characteristics constant, are similar in magnitude to those obtained by previous researchers. Kain and Quigley solve their "white equation" using black mean characteristics and find that blacks are spending roughly 13 percent less than similar whites.[2] Carliner finds that

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[1] It is interesting to note that the apparent differences among racial groups in housing quality and "crowding" outcomes at given expenditure levels is greater in Phoenix than in Pittsburgh (see Section 4.6.1)--a result that is consistent with a larger implicit racial price premium for adequate housing in Phoenix. Presuming that demand is elastic, the effect of such differential premiums could lead to a greater reduction in expenditures among minorities in Phoenix than in Pittsburgh.

[2] Op. cit., Kain and Quigley.

otherwise similar black owners spend 24 percent less and black renters spend nine percent less than do whites.[1]

The present figures suggest that the observed reduction in minority group expenditures is consistent with a discriminatory premium that is substantial relative to rents of otherwise comparable whites. As a result of the premium, minorities confront a higher relative price of housing and thus allocate resources away from housing to other goods.

As concerns the ability of the subpopulation regressions to discern idiosyncratic behavior by different racial groups, not much is forthcoming. While some apparent differences have been discussed in the foregoing sections, the overall impression is that the response of housing expenditures to differences in demographic characteristics among racial groups is rather similar. In particular, in the Pittsburgh regressions the signs of the non-white regression coefficients agree 17 out of 23 times with those of the white regression. In Phoenix the signs of the regression coefficients agree between the white regression and the non-white and Spanish-American regressions 17 and 14 out of 23 times respectively, and between non-white and Spanish-Americans 14 out of 23 times. In nearly all cases, the signs of significant variables are identical across racial groups. Thus on the basis of the signs of estimated coefficients it would appear that basic demographic factors influence housing demand in much the same way for each group, and that complex interactions between race and many demographic variables may not be important empirically.[2]

- Sex - The sex of the household head is significant at both sites in affecting housing expenditures; other things being equal, females spend more than do similar males.

- Demographic interaction - It appears that the effect of minority status, welfare status, and being a female head with children is adequately

[1] Geoffrey Carliner, "Income Elasticity of Housing Demand", Review of Economics and Statistics LV (November, 1973), pp. 528-532.

[2] The significance of differences in coefficents between subpopulation regressions was not explicitly tested in these preliminary runs.

accounted for by considering each component's characteristic separately, and that there is no significant interaction effect among the components (using the particular interaction variables specified here).

- Moving status - Households who have recently moved spend more than those who have not, as expected. It appears that, unlike most other strictly demographic characteristics, an obvious racial difference exists in the additional expenditure that must be borne by movers. In both Phoenix and Pittsburgh, the increment paid for having moved recently appears to be higher for non-whites and for Spanish-Americans.

4.3.4 Conclusions

The model presented here has been a first and somewhat rough attempt to specify and estimate a model for housing expenditures using only cross-sectional data. The results of the model have in general accorded well with hypotheses concerning factors that influence housing demand. In particular the effects of income, class and education, household size, the age, race, and sex of the household head, and whether or not a household has recently moved appear to be important determinants of housing expenditures for all racial subgroups at both experimental sites.

Results of the expenditure functions allow one to better interpret the results of the previous section which considered the effects of two or at most three variables at a time on expenditure levels and rent-to-income ratios. The results also establish a Baseline behavioral relationship among variables against which changes in expenditure and rent burden of program participants may be measured.

There are some limitations to the estimates presented here, however. The most important are likely to be that: (1) Baseline income measures may contain reporting errors that may bias estimated income parameters, (2) baseline income measures are based

on current rather than "permanent" income and thus may be artificially low, and (3) no price data have been included. All of these problems will be addressed in later analysis.

Aside from such limitations, however, both the signs and magnitudes of estimated coefficients have been shown to accord well with those of other similar analyses that have been based on cross-sectional data for individual households.

4.4 MEASURES OF HOUSING QUALITY AND OVERCROWDING

4.4.1 Initial Housing Quality and Overcrowding

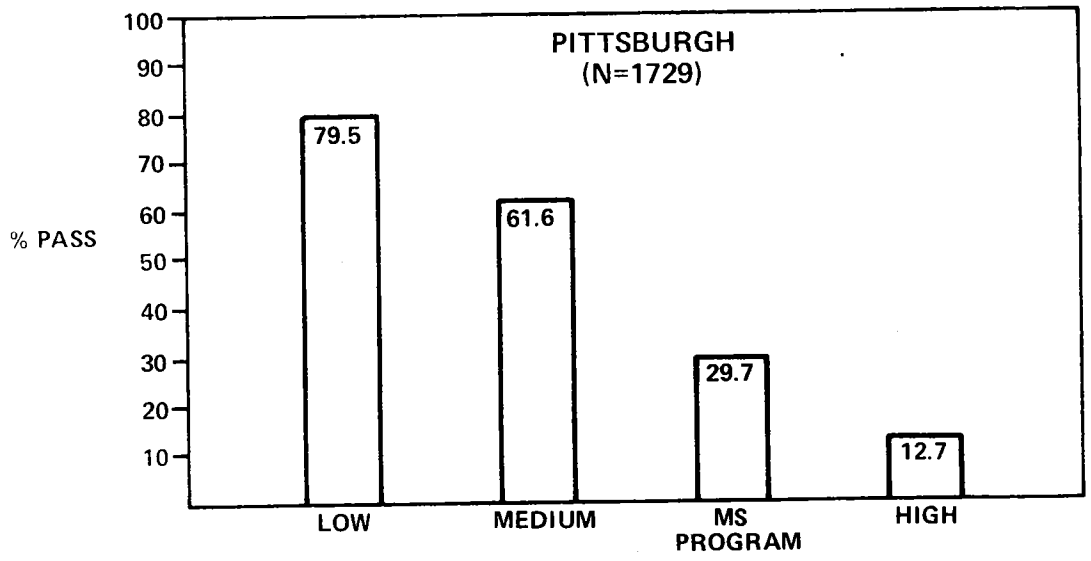
The purpose of this section is to describe the housing conditions of participants at the time of enrollment in the program and is thus a first step in assessing the impact of a housing allowance program on the housing conditions of participants.

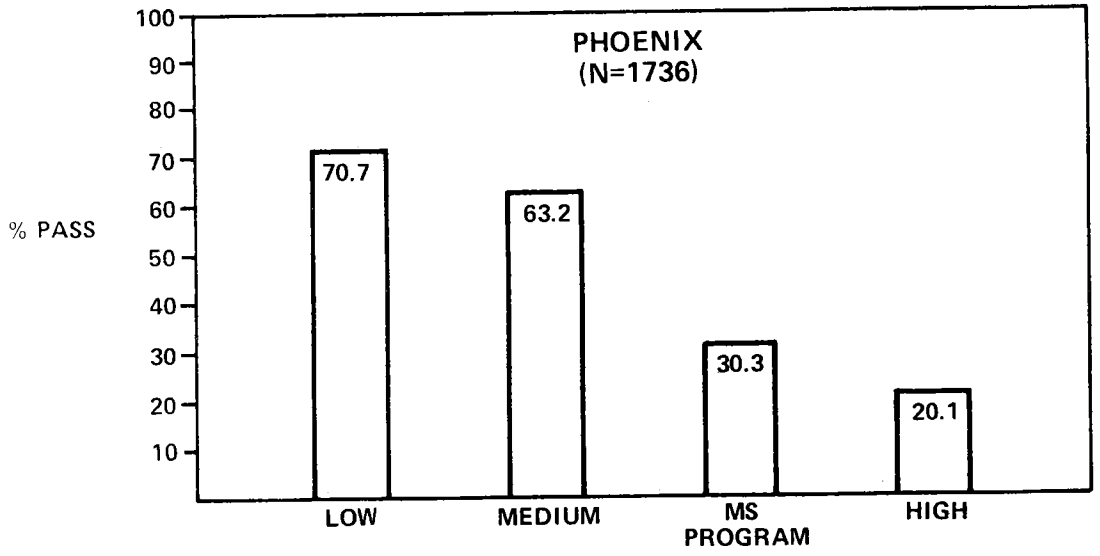
The measures of quality used are the definition of Minimum Standards used in the experiment (MS Program) and three alternative levels of housing quality--Low, Medium and High. All are defined using Housing Evaluation Form (HEF) data and are explained in subsections that follow. It should be noted that only MS Program is acutally used in the Demand Experiment and then only for households required to meet the Minimum Standards earmarked. None of the other quality measures are actually being applied in the Demand Experiment; they are simply alternative quality measures using the basic HEF data. However, the terms "pass" and "fail" are used here as though the quality levels were applied as a requirement for all of the housing units evaluated.

Figure 4.4.1 indicates the "pass rates" for each of these standards levels. Note that the percentages add to over 100 percent since the more stringent definitions are inclusive of the less stringent. The levels are defined so that passing one level implies that lower levels are also passed. From the table it can be seen that of the housing initially occupied by participants, only 12.7 percent in Pittsburgh and 20.1 percent in Phoenix meet the highest level of standards while 79.5 percent and 70.7 percent meet the lowest level. The medium and program levels tend to have intermediate pass rates.

In addition to these measures of housing quality, participants' housing problems may be described in terms of overcrowding. This is discussed in the last sub-section.

FIGURE 4.4.1
PERCENT OF HOUSEHOLDS PASSING DIFFERENT QUALITY LEVELS





DATA SOURCE: INITIAL HOUSING EVALUATION FORM

4.4.2 Minimum Standards Program

The program definition of Minimum Standards is that used as the earmark constraint in Minimum Standards treatment cells. However, it is used here not to describe meeting an earmark, but as a standard of quality by which to evaluate enrollees' housing. This quality level is labeled "MS Program"[1] in this report.

As discussed in Appendix V, the APHA Code and the Urban Institute's modification of the code served as the model for defining the Minimum Standards earmark. The specific items included in the definition, described in detail in Appendix V, may be summarized by fifteen components. For example, "private toilet facilities, a shower or tub with hot and cold running water, and a washbasin with hot and cold running water...present and in working condition" are combined as the component, "Complete Plumbing".

The overall failure rate for MS Program is about 70 percent in both Pittsburgh and Phoenix. Of those failing, 18 percent in Pittsburgh and 30 percent in Phoenix (as shown in Table 4.4.1) fail on the basis of four or more components, indicating a severe housing problem. In contrast, 50 percent of the households failing MS Program in Pittsburgh and 42 percent in Phoenix have units that fail for only one component.

Of those households whose units would fail only one component, the Light-Ventilation component is the single deficiency for 81 percent of households in Pittsburgh and about 84 percent of households in Phoenix. Put in terms of all units failing Minimum Standards Program, 39 percent in Pittsburgh and 36 percent in Phoenix fail on Light-Ventilation alone. Similarly in terms of all enrollee units, including those which would

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[1] The Minimum Standards earmark as used in the Demand Experiment involves both physical standards for the unit and maximum occupancy limits (persons per adequate bedroom). The quality rating "MS Program", refers only to physical standards. Occupancy is discussed separately in section 4.3 below.

TABLE 4.4.1

PERCENT OF HOUSEHOLDS BY NUMBER

OF MS PROGRAM COMPONENTS FAILED

Number of MS Program Components Failed (MS Program includes 15 components)	% of Households That Failed MS Program	
	Pittsburgh (N = 1215)	Phoenix (N = 1210)
1	50.0%	41.7%
2	24.0	16.0
3	8.1	12.6
4	9.9	7.7
5	3.9	7.1
6	2.3	5.8
7	1.5	2.9
8	0.2	2.4
9 or more	0.1	3.9
	100.0%	100.0%

Data Source: Initial Housing Evaluation Form

fail more than one component, about 62 percent in each site fail Light-Ventilation. No other component is failed with nearly such frequency. Failure rates for each component are presented in Table 4.4.2 in terms of households which fail only one component and in Table 4.4.3 for all households.

The Light-Ventilation component includes the requirement that window area be ten percent of floor area and that there be an openable window in rooms other than the bathroom or kitchen; in the latter two, a vent system may substitute. This component may be compared with the less stringent one included under the Medium quality level Light-Ventilation medium, which requires only that a window or vent system be present.[1]

Table 4.4.4 presents pairs of component failures by frequency occurrance. Component pairs with a frequency of less than 10 percent are not shown. It is not surprising that the component combinations which occur most often are made up of the components with the highest failure rates. For example, in Pittsburgh combinations with Light-Ventilation, Complete Plumbing, and Light Fixtures head the list while in Phoenix combinations with Light-Ventilation, Room Surface, Floor Surface, and Heating Equipment occur most often.

For a general analysis of the reasons for failure at the MS Program level, the fifteen components may be grouped into four groupings of related components. The groupings and the components they include are the following:

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[1]Only 15 percent of enrolled households in Pittsburgh and 11 percent in Phoenix would fail this less stringent requirement. This accounts for much of the difference in failure rates between the Medium quality level and MS Program. Two additional variables which are included in MS Program but not in Medium are ceiling height (about nine percent at both sites) and interior components for room and floor structure and surface (11 percent in Pittsburgh and 32 percent in Phoenix).

TABLE 4.4.2

PERCENT OF HOUSEHOLDS FAILING CERTAIN MS PROGRAM COMPONENTS

MS Program Component	% of HH's which Failed MS Program	% of HH's which Failed Only One Component of MS Program
Pittsburgh	N = 1268	N = 609
Light-Ventilation Only	39.0%	81.1%
Adequate Exits Only	4.3	9.0
Electrical Only	1.1	2.3
Complete Plumbing Facilities Only	1.0	2.0
Failed Another Component Only (All other components combined)	2.6	5.6
Failed More Than One Component	52.0[1]	-
	100.0	100.0
Phoenix	N = 1214	N = 529
Light-Ventilation Only	36.4	83.6
Room Surface Only	1.5	3.4
Complete Plumbing Facilities Only	1.4	3.2
Ceiling Height Only	1.3	3.0
Failed Another Component Only (All other components combined)	3.0	6.8
Failed More Than One Component	56.4[1]	-
	100.0	100.0

Data source: Initial Housing Evaluation Forms

[1]As discussed in Appendix II, some additional data runs were made after the data base was revised to include some initial housing evaluation forms; therefore the percentages in this table differ somewhat from those in Table 4.4.1.

TABLE 4.4.3

PERCENT OF HOUSEHOLDS FAILING MS PROGRAM COMPONENTS
BY COMPONENT FOR PITTSBURGH AND PHOENIX

MS Program Component[1]	% of households	% of households which failed MS program
PITTSBURGH	(N=1729)	(N=1215)
Light - Ventilation	61.7 %	87.8 %
Complete Plumbing	16.4	23.3
Light Fixtures	11.0	15.6
Adequate Exits	9.9[2]	14.2
Ceiling Height	9.2	13.1
Electrical	8.8	12.5
Room Surface	8.4	11.9
Living Room, Bathroom, Kitchen Presence	6.5	9.3
Complete Kitchen Facilities	3.4	4.8
Heating Equipment	3.3	4.7
Floor Surface	3.1	4.4
Floor Structure	2.0	2.8
Room Structure	1.1	1.6
Roof Structure	1.0	1.5
Exterior Walls	0.5	0.7
PHOENIX	(N=1736)	(N=1210)
Light - Ventilation	61.5%	88.2%
Room Surface	23.8	34.2
Floor Surface	21.1	30.3
Heating Equipment	18.1	26.0
Complete Plumbing	16.5	23.7
Room Structure	10.4	14.9
Ceiling Height	9.2	13.2
Light Fixtures	9.0	13.0
Exterior Walls	7.5	10.7
Floor Structure	7.3	10.4
Electrical	6.6	9.5
Complete Kitchen Facilities	4.4	6.4
Roof Structure	3.9	5.6
Living Room, Bathroom, Kitchen Presence	2.4	3.5
Adequate Exits	1.0[2]	1.5

Data source: Initial Housing Evaluation Form

[1]The components are listed in order of the frequency with which they are failed.

[2]The Adequate Exits component applies to multi-family buildings only. In Pittsburgh 31.6% of the households in multi-family buildings fail this component while in Phoenix 3.4% of such households fail.

Table 4.4.4: PERCENT OF HOUSEHOLDS FAILING CERTAIN MS PROGRAM COMPONENT COMBINATIONS

MS Program Component Combinations[1]	% of HH's which Failed MS Program	% of HH's which Failed More than One Component of MS Program
Pittsburgh	N = 1268	N = 634
Light-Ventilation/Complete Plumbing	21.1%[2]	42.3%
Light-Ventilation/Light Fixtures	14.7	29.5
Complete Plumbing/Light Fixtures	11.6	23.2
Light-Ventilation/Ceiling Height	11.5	23.0
Light-Ventilation/Room Surface	10.9	21.8
Phoenix	N = 1214	N = 707
Light-Ventilation/Room Surface	29.4	50.5
Light-Ventilation/Floor Surface	28.2	48.5
Light-Ventilation/ Heating Equipment	23.0	39.4
Light-Ventilation/ Complete Plumbing	21.0	35.9
Room Surface/Floor Surface	20.6	35.4
Room Surface/Heating Equipment	15.4	26.4
Floor Surface/Heating Equipment	14.7	25.2
Room Surface/Complete Plumbing	14.2	24.3
Floor Surface/Complete Plumbing	13.6	23.3
Room Surface/Room Structure	12.9	22.2
Light-Ventilation/Room Structure	12.8	21.9
Heating Equipment/Complete Plumbing	12.3	21.1
Light-Ventilation/Light Fixtures	12.1	20.8
Light-Ventilation/Ceiling Height	11.1	19.1
Light-Ventilation/Floor Structure	10.0	17.3

Data Source: Initial Housing Evaluation Form

[1]Only those MS Program component combinations on which at least 10 percent of the households failed are presented in this table.

[2]The component combinations are listed in order of frequency of occurrence. Note that the percentages do not add to 100 because multiple combinations may occur for a given household.

- Basic Systems (complete plumbing; complete kitchen facilities; heating equipment; livingroom, kitchen, bathroom presence)
- Other Program (light-ventilation; electrical, light fixture, ceiling height, adequate exists)
- Interior (room structure, room surfaces, floor structure, floor surface)
- Exterior (roof structure, exterior walls).

Tables 4.4.5 and 4.4.6 indicate the failure rates for these component groupings (as well as those of other quality levels defined in the following section) and the number of component groupings failed. The tables show that the housing stock occupied by participants in Phoenix tend to have substandard elements spread more widely over the component groups of standards. Nine percent of Phoenix households fail on all four MS Program component groupings and 28 percent fail on three or four, while in Pittsburgh no households fail on all four and only seven percent fail on three.

4.4.3 Alternative Levels of Housing Quality

Three additional housing quality measures are defined as variations of the MS Program definition.

Low Quality

The Low quality level represents a basic level which may be considered the very minimum necessary for housing with basic facilities. The Low definition includes only the component groupings Basic Systems and Exterior, which are a sub-set of the program definition. Yet 20 percent of participants' units in Pittsburgh and 24 percent in Phoenix are below this level (Figure 4.4.1). As shown on Tables 4.4.5 and 4.4.6, for households failing Low in Pittsburgh, 99 percent of them fail for only one of these component groupings while in Phoenix 76 percent of those failing Low fail on one and 24 percent fail on both.

TABLE 4.4.5A

PERCENT OF HOUSEHOLDS BY COMPONENT GROUPINGS FAILED AT DIFFERENT QUALITY LEVELS FOR PITTSBURGH

Type of Component Grouping	Low Quality No. and % of HHs that failed Low (N=355)		Medium Quality No. and % of HHs that failed Med (N=664)		MS Program No. and % of HHs that failed MSP (N=1215)		High Quality No. and % of HHs that failed High (N=1510)	
	No.	%	No.	%	No.	%	No.	%
Basic Systems	336	95%	336	51%	336	28%	336	22%
Other								
Other Medium	-[1]		527[1]	80	527[2]	43	527[2]	35
Other Program	-[1]		-[1]		1171[1]	96	1171[2]	78
Other High	-[1]		-[1]		-[1]		1270	84
Interior								
Interior	-[1]		-[1]		194[1]	16	194[2]	13
Interior High	-[1]		-[1]		-[1]		1213	80
Exterior								
Exterior	23[1]	7	23[1]	4	23[1]	2	23[2]	2
Exterior High	-[1]		-[1]		-[1]		240	16

TABLE 4.4.5B

PERCENT OF HOUSEHOLDS BY NUMBER OF COMPONENT GROUPINGS FAILED AT DIFFERENT QUALITY LEVELS FOR PITTSBURGH

Number of Component Groupings Failed	Low Quality % of HHs that failed Low (N=355)	Medium Quality % of HHs that failed Med (N=664)	MS Program % of HHs that failed MSP (N=1215)	High Quality % of HHs that failed High (N=1510)
1	99%	67%	66%	30%
2	1	32	27	43
3	-	1	7	23
4	-	-	0	5
	100%	100%	100%	100%

Data Source: Initial Housing Evaluation Forms.

[1]Component grouping is not included in definition of quality level.

[2]Component grouping is not part of that quality level. Number or percent is a subset of the households that failed the more restrictive component grouping that is included in the quality level.

TABLE 4.4.6A

PERCENT OF HOUSEHOLDS BY COMPONENT GROUPINGS
FAILED AT DIFFERENT QUALITY LEVELS FOR PHOENIX

Type of Component Grouping	Low Quality No. and % of HHs that failed Low (N=509)		Medium Quality No. and % of HHs that failed Med (N=639)		MS Program No. and % of HHs that failed MSP (N=1210)		High Quality No. and % of HHs that failed High (N=1387)	
	No.	%	No.	%	No.	%	No.	%
Basic Systems	470	92%	470	74%	470	39%	470	34%
Other								
Other Medium	-[1]		345[1]	54	345[3]	29	345[2]	25
Other Program	-[1]		-[1]		1118[1]	92	1118[2]	81
Other High	-[1]		-[1]		-[1]		1177	85
Interior								
Interior	-[1]		-[1]		561[1]	46	561[2]	40
Interior High	-[1]		-[1]		-[1]		1083	78
Exterior								
Exterior	162[1]	32	162[1]	25	162[1]	13	162[2]	12
Exterior High	-[1]		-[1]		-[1]		435	31

TABLE 4.4.6B

PERCENT OF HOUSEHOLDS BY NUMBER OF COMPONENT GROUPINGS
FAILED AT DIFFERENT QUAILTY LEVELS FOR PHOENIX

Number of Component Groupings Failed	Low Quality % of HHs that failed Low (N=509)	Medium Quality % of HHs that failed Med (N=639)	MS Program % of HHs that failed MSP (N=1210)	High Quality % of HHs that failed High (N=1387)
1	76%	58%	46%	30%
2	24	32	26	30
3	-	10	19	22
4	-	-	9	18
	100%	100%	100%	100%

Data Source: Initial Housing Evaluation Forms.

[1]Component grouping is not included in definition of quality level.

[2]Component grouping is not part of that quality level. Number or percent is a subset of the households that failed the more restrictive component grouping that is included in the quality level.

More detailed analysis has shown that in Pittsburgh, the major deficiencies at this level are the following (percentages are in terms of households that failed Low): no lavatory sink, 38.3 percent; no bathroom, 27.6 percent; no shower or tub, 19.1 percent; lack of acceptable heating equipment, 14.9 percent. In Phoenix the major causes are lack of acceptable heating equipment, 54.4 percent; exterior walls needing replacement, 25.5 percent; no lavatory sink, 19.3 percent; flush toilet not working, 10.8 percent; roof needing replacement, 13.4 percent.

Medium Quality

About 38 percent of households in Pittsburgh and 37 percent in Phoenix meet Medium but not the next higher level of quality MS Program (Figure 4.4.1). Medium Quality is defined by adding the component grouping "Other Medium" to the Low Quality level. The "Other Medium" grouping introduces standards for electrical outlets and switches, light fixtures, adequate exits, and light and ventilation. Standards for light and ventilation are lower than those included in MS Program which require window area to be 10 percent of the floor area of a room. Even so, this grouping is the major cause for failure of Medium and accounts for 79 percent of the failures in Pittsburgh and 54 percent of the failures in Phoenix (Tables 4.4.5 and 4.4.6).

High Quality

The High quality level represents the highest level of quality considered, combining the requirements of MS Program with several additional ones. Only 13 percent of the participants in Pittsburgh and 20 percent in Phoenix occupy housing units meeting this level (Figure 4.4.1). A major difference between High and MS Program is the Interior High component which requires that the interior surface and structure conditions not only not need replacement (which is the MS Program requirement) but also not need repair. Tables 4.4.5 and 4.4.6 show that of those households failing High, 80.3% in Pittsburgh and 78.1% in

Phoenix fail Interior High while only 12.8% and 40.4% fail the less restrictive component, Interior. A similar variation in definition of Exterior High results in 15.9% of the households failing High in Pittsburgh failing Exterior High and in Phoenix, 31.4%. However, Exterior causes only 15.9% and 11.7% of these households respectively to "fail." Another difference between MS Program and High is that the latter includes a window condition quality measure in the Other High grouping. Separate analysis shows that in Pittsburgh about 54 percent of the households failing High fail the window condition measure while in Phoenix 43 percent do. As shown in Tables 4.4.5 and 4.4.6, at this quality level in Pittsburgh 27 percent of the households fail on at least three components, while in Phoenix this is true of over half the households.

4.4.4 Measures of Overcrowding

Overcrowding is another dimension of housing standards. Several occupancy standards may be used to define the maximum size household for which a specific unit provides standard housing. If a household does not meet a particular occupancy standard, the household is considered overcrowded by that definition. The occupancy standard may be based on the number of adequate bedrooms, the number of bedrooms regardless of condition, or the number of rooms. Standards using these measures are discussed below.

Program Occupancy Standards

The program occupancy standards, which is part of the earmark constraint in Minimum Standards treatment cells, requires that there be at least one adequate bedroom for every two persons in the household.[1] (A studio or efficiency apartment is counted as having a bedroom for occupancy standards.) An adequate bedroom is a room which can be completely closed off from other rooms and which meets the following program housing standards: Ceiling Height, Light-Ventilation, and Electrical. In addition, the room must meet the housing standards for the condition of room structure, room surface, floor structure and floor surface.

Over half the participants in both sites fail to meet this occupancy criterion--50.7 percent in Pittsburgh and 56.7 percent in Phoenix. The proportion of each household size category failing to meet the occupancy criteria is shown in Figure 4.4.2. The proportion of households which would not meet this occupancy standard clearly rises rapidly with increasing household size. The figure also contrasts the program criteria with an overcrowding measure derived from the Census, which is discussed below.

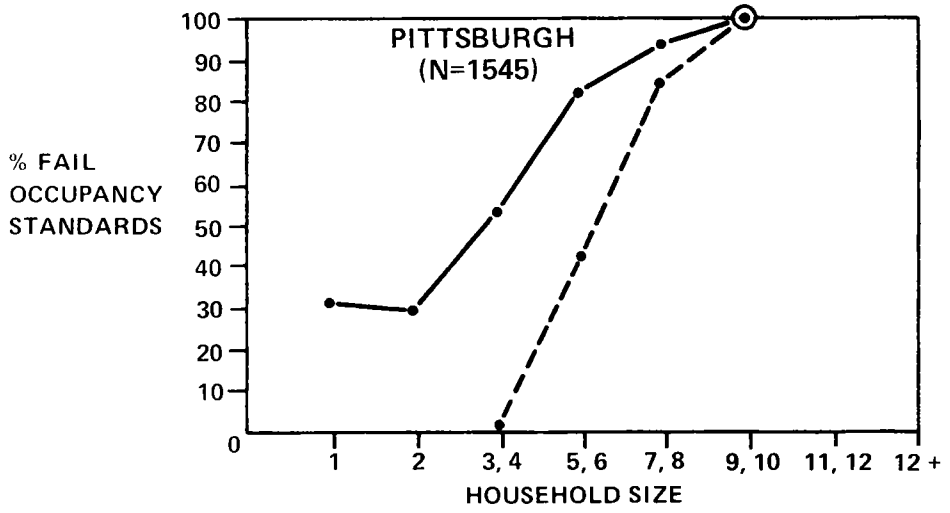
Alternative Occupancy Standards

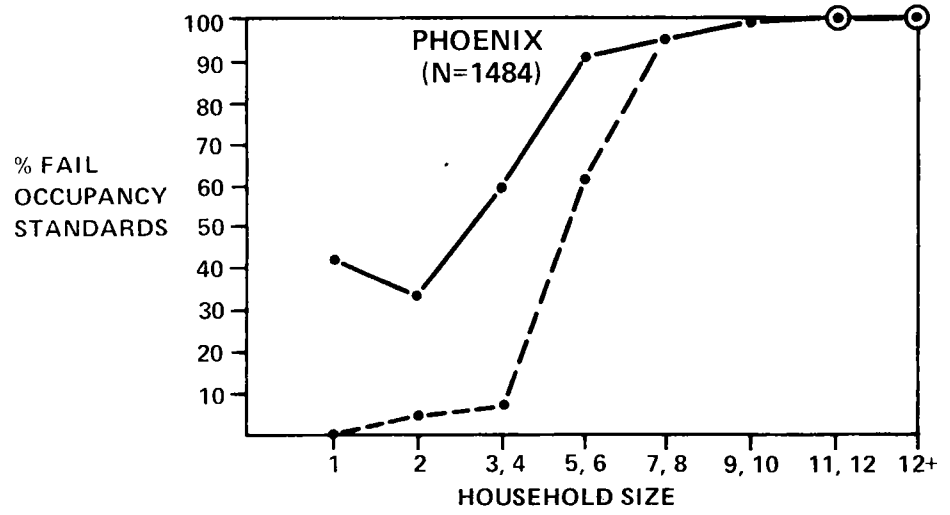
A less stringent occupancy standard is a census type measure based on persons per room. Overcrowding using this measure is defined as more than one person per room, where all rooms are counted except for bathroom(s), hall, closets, porches, and the like. The proportion failing this measure at each household size is shown in Figure 4.4.2. As shown, a substantial proportion of households with five or more members are overcrowded even by this measure.

Another alternative to the program occupancy standard is one based on number of bedrooms, ignoring the housing standards used to define adequate bedrooms. As the Table 4.4.7 shows, over half of the households at both sites have more bedrooms than adequate bedrooms and thus are more likely to meet a standard based on bedrooms than the program occupancy standard.

[1]The results presented apply this standard irrespective of family size. The program rules, however, were altered as of November 1974 to limit the standard to a maximum requirement of four bedrooms, consistent with the Housing Gap payment schedule, which does not increase for family sizes over eight.

FIGURE 4.4.2
PERCENTAGE OF HOUSEHOLDS FAILING PROGRAM OCCUPANCY STANDARD COMPARED TO THOSE FAILING CENSUS OCCUPANCY MEASURES





DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- —— HOUSEHOLDS WITH MORE THAN 2 PERSONS PER ADEQUATE BEDROOM (FAIL PROGRAM OCCUPANCY)
- – – – HOUSEHOLDS WITH MORE THAN 1 PERSON PER ROOM (FAIL CENSUS OCCUPANCY MEASURE)
- ⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

TABLE 4.4.7

PERCENT OF HOUSEHOLDS WHICH HAVE ADEQUATE BEDROOMS BY ACTUAL NUMBER OF BEDROOMS

Actual Number of Bedrooms	Number of Adequate Bedrooms					
	0	1	2	3	4 or more	Total
Pittsburgh (N = 1539)						
1	43.7	56.3	--	--	--	100.0%
2	23.8	30.4	45.8	--	--	100.0
3	16.8	21.9	29.9	31.4	--	100.0
4 or more	8.5	18.1	29.8	27.7	15.9	100.0
Phoenix (N = 1534)						
1	54.5	45.5	--	--	--	100.0%
2	33.1	18.2	48.7	--	--	100.0
3	25.4	20.5	22.0	32.2	--	100.0
4 or more	15.6	12.5	21.9	18.8	31.2	100.0

Data Source: Initial Housing Evaluation Form.

4.5 SUBSTANDARDNESS, OVERCROWDING, AND HIGH RENT BURDENS

Section 4.5 addresses the overall dimensions of the deficiencies in shelter obtained by participant groups.[1] Three major response variables describe the multiple housing problem:[2]

- Most participants are living in dwelling units which fail to meet the program level of housing standards--75 percent of the total in Pittsburgh and 71.2 percent in Phoenix.
- Overcrowding is a problem for over half the households--50.7 percent of participants in Pittsburgh and 56.7 percent in Phoenix fail to meet the program occupancy criteria.
- The level of rent burden is excessive--63.7 percent of households in Pittsburgh and 64.1 percent in Phoenix are paying more than 25 percent of net income on rent.

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[1] The three measures of housing deprivation considered here have been frequently used as indicators. Several conceptual problems should be noted, however. Nothing close to a consensus exists as to what specification of the variable best defines deprivation. This is particularly true with reference to the structural characteristics of the dwelling unit. A tremendous range of criteria exist in official regulations and in the literature. Any definition of "substandardness" is, to some extent, subjective. Similar complications may exist in defining overcrowding as a function of space and the number, age, or sex of household members. Finally, determining what constitutes "excessive" expenditures on rent relative to income should probably involve the level as well as the definition of income and the relative price of housing and other goods. See Chapter II of Analysis of Selected Census and Welfare Program Data, Joint Center of Urban Studies, July 3, 1974, for a discussion of these problems.

[2] The statistics presented in Section 4.5 are based on the sample group for whom the Baseline and HEF addresses are the same, since rent, income, and housing quality information must be considered jointly. This sample is described in Appendix II. The total sample size is 1485 for Pittsburgh and 1426 for Phoenix. The percentages for given housing standards or rent-to-income ratio outcomes may differ slightly from those given in sections 4.2 and 4.4, due to differences in the sample base.

Considered singly, each of these outcomes is revealing. Considered together, however, the incidence of joint occurrence of one or more of these problems is striking. Approximately one-fourth of the participants in both sites fail all three criteria--i.e., fail to meet both program quality and occupancy standards and, in addition, have a rent burden greater than .25. The vast majority of the remaining participants are subject to one or two of these problems. Only a handful meet all three criteria at once. (See Figure 4.5.1)

Section 4.5.1 describes the variation in dwelling unit quality for different demographic groups. Section 4.5.2 presents the results of a preliminary estimate of a probability function for obtaining standard housing. The incidence of overcrowding and the joint occurrence of overcrowding and substandard housing are considered in Section 4.5.3. Finally, the relation of both problems to the level of rent burden is described in Section 4.5.4.

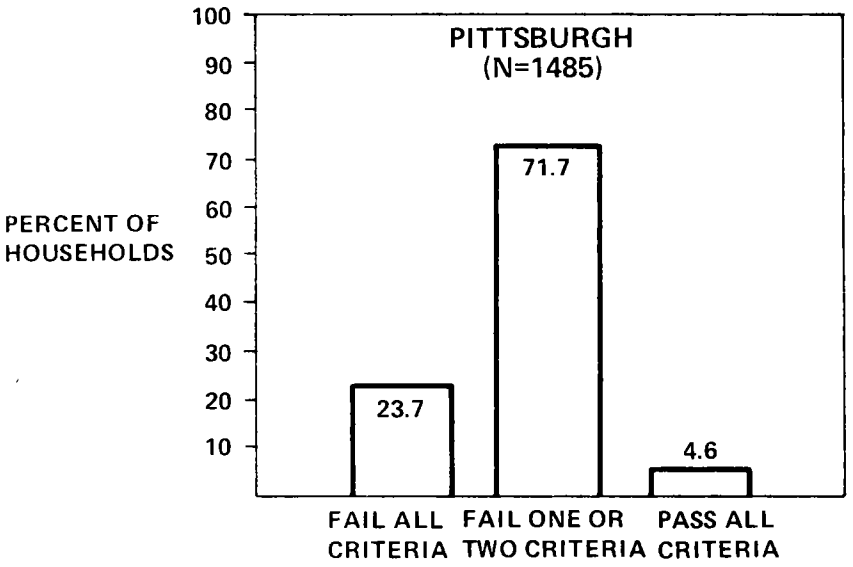
4.5.1 Housing Quality Levels

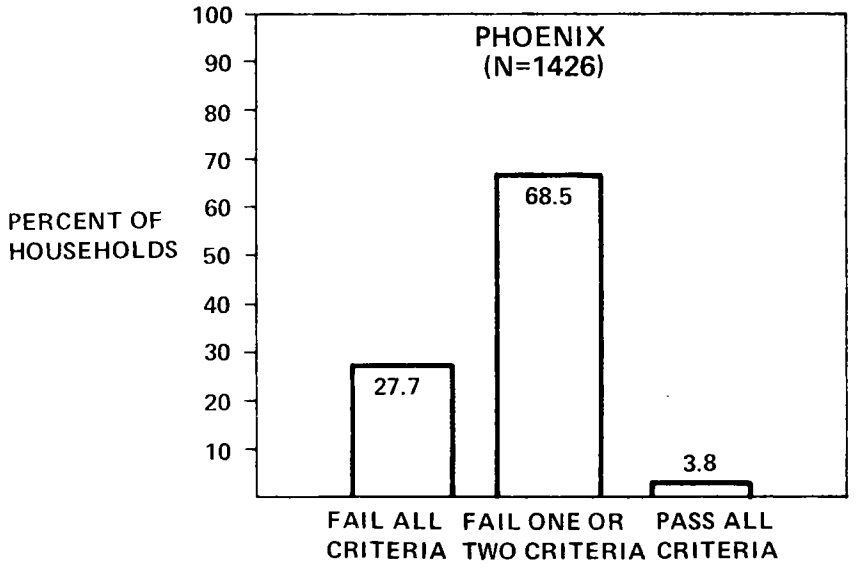
Variations in the level of housing quality obtained by different demographic groups is a function both of the expenditure function and of the association of rent and housing quality. Figures 4.5.2 and 4.5.3 express these variations in terms of outcomes for the two extremes in level of housing quality:

- The proportion of a group meeting the program level of standards.[1]
- The proportion failing the lowest quality level.

[1] Those meeting the program level of standards may, in some instances, also meet High. See section 4.4 and Appendix V for definition of these quality levels.

FIGURE 4.5.1
PERCENT OF HOUSEHOLDS WITH MULTIPLE HOUSING PROBLEMS





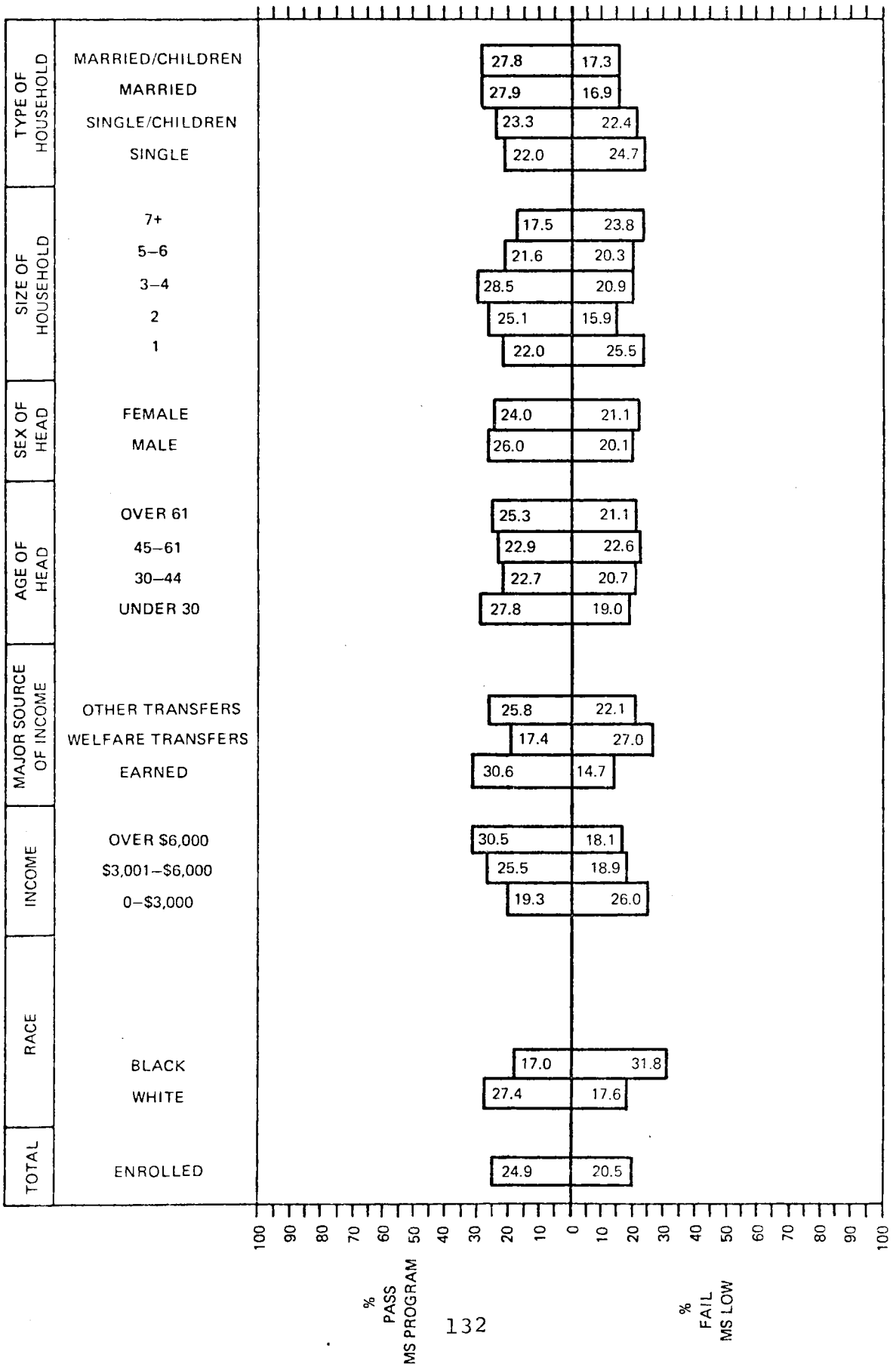
CRITERIA USED IN DEFINING THE MULTIPLE HOUSING PROBLEM:

1) HOUSING STANDARDS (MS PROGRAM)
2) OVERCROWDING (PROGRAM OCCUPANCY)
3) LOW RENT BURDEN (R/Y $\leq$ .25) PASSES CRITERION; HIGH RENT BURDEN (R/Y $>$ .25) FAILS CRITERION

DATA SOURCE: HOUSING EVALUATION FORM AND BASELINE INSTRUMENT

FIGURE: 4.5.2

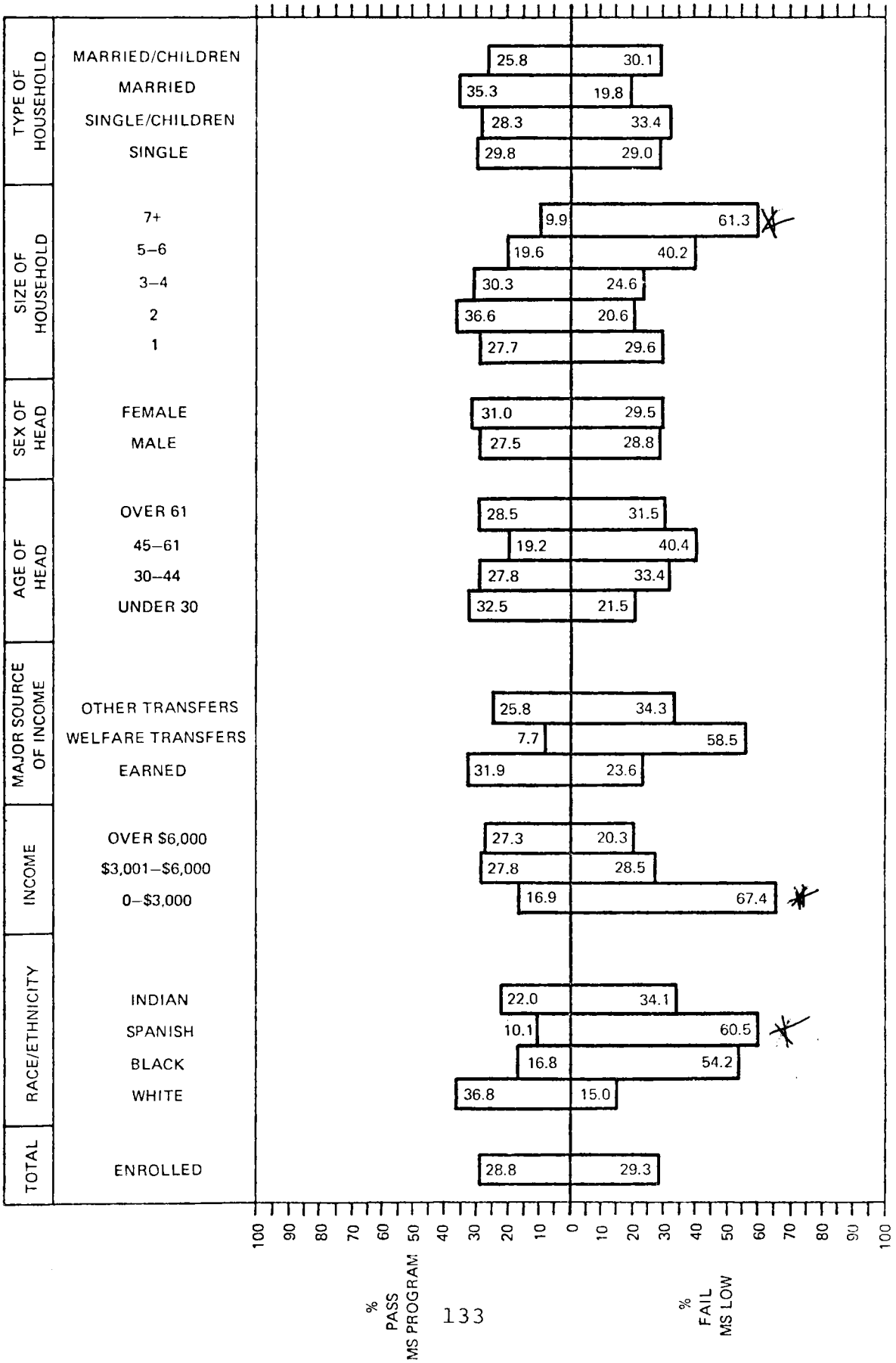
DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS PASSING MS PROGRAM AND OF HOUSEHOLDS FAILING MS LOW IN PITTSBURGH



Data Source: Baseline Interview and Initial Housing Evaluation Form

FIGURE: 4.5.3

DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS PASSING MS PROGRAM AND OF HOUSEHOLDS FAILING MS LOW IN PHOENIX



Data Source: Baseline Interview and Initial Housing Evaluation Form

In comparison with the overall site proportions, quality outcomes are particularly poor for three interrelated demographic groups--the lowest income category, minority groups, and those whose major source of income is welfare (income-conditioned transfers). In Pittsburgh, single-person households are somewhat more likely to have lower quality housing, while in Phoenix, large households have a very high failure rate.

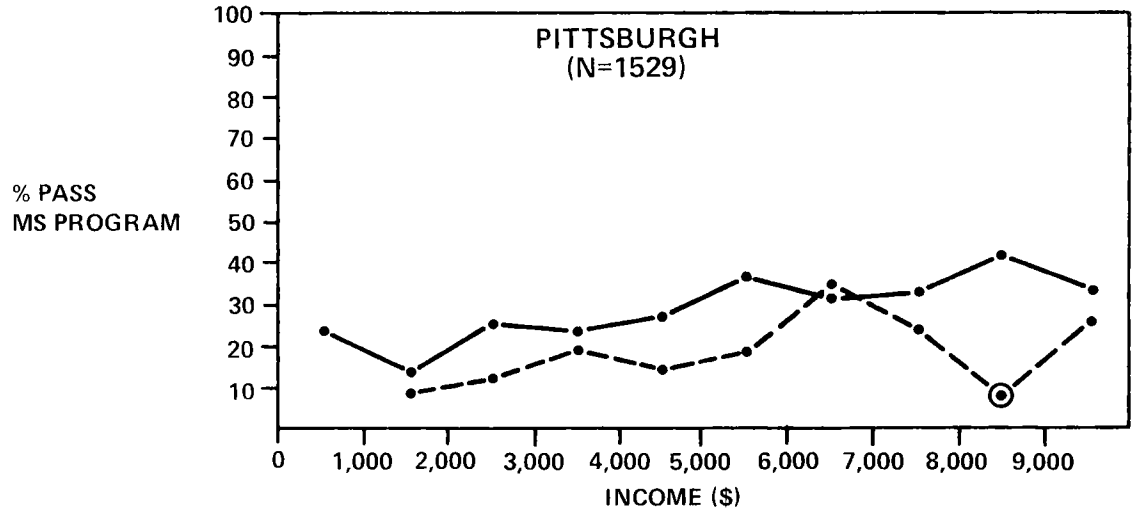
Given the influence of income level on housing quality, outcomes for these demographic groups are considered within income categories. Additional variation may be caused by the association of race and ethnicity with other demographic descriptors. These multiple influences are addressed in 4.5.2 through the estimation of a probability function for obtaining standard housing.

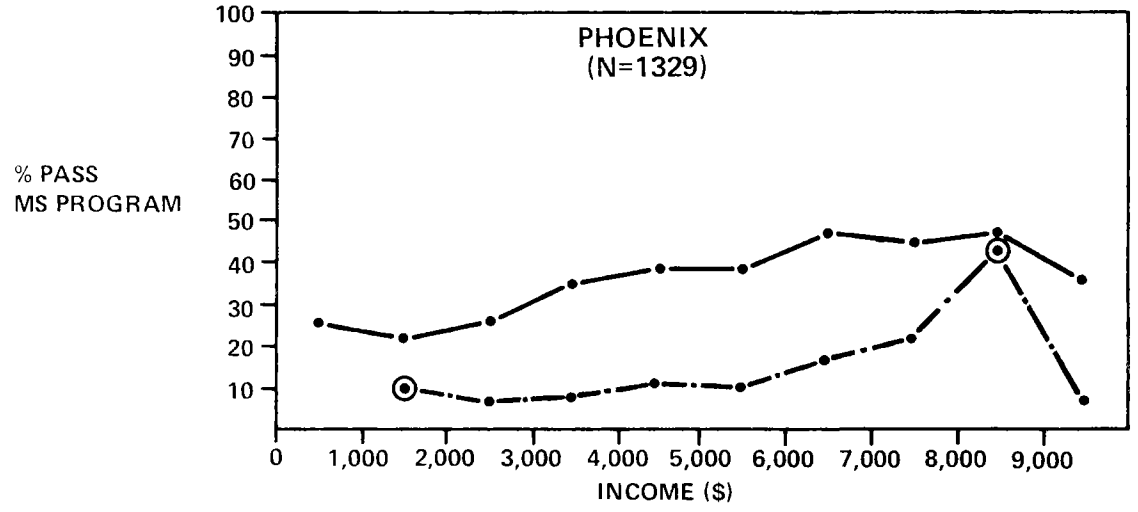
Race/Ethnicity

The poor housing conditions of minority groups in both sites is readily apparent. Nearly one-third of the blacks in Pittsburgh live in the poorest quality housing as compared with about half that rate for whites. The housing conditions for minorities in Phoenix are extremely poor, absolutely and relatively -- 60 percent of Spanish-Americans and 54 percent of blacks occupy the poorest quality housing. The corresponding rate for whites is only 15 percent.

The difference in housing quality outcomes for minority groups is only partially explained by differences in income distribution. The graphs below (Figures 4.5.4 and 4.5.5) indicate the percentage of whites and blacks in Pittsburgh and whites and Spanish-Americans in Phoenix who, within each $1000 income category, pass program physical standards (MS Program) or fail all standards. Almost without exception, the minority groups within each income category experience a lower pass rate. The higher quality dwelling units appear to be unavailable, or at best unappealing, to these groups. In both cities only a handful of the minority groups, at any income level, purchase housing meeting the program standards. Again, the dichotomy is most compelling for the Spanish-Americans.

FIGURE 4.5.4
PERCENT OF HOUSEHOLDS PASSING MS PROGRAM
BY INCOME BY RACE/ETHNICITY

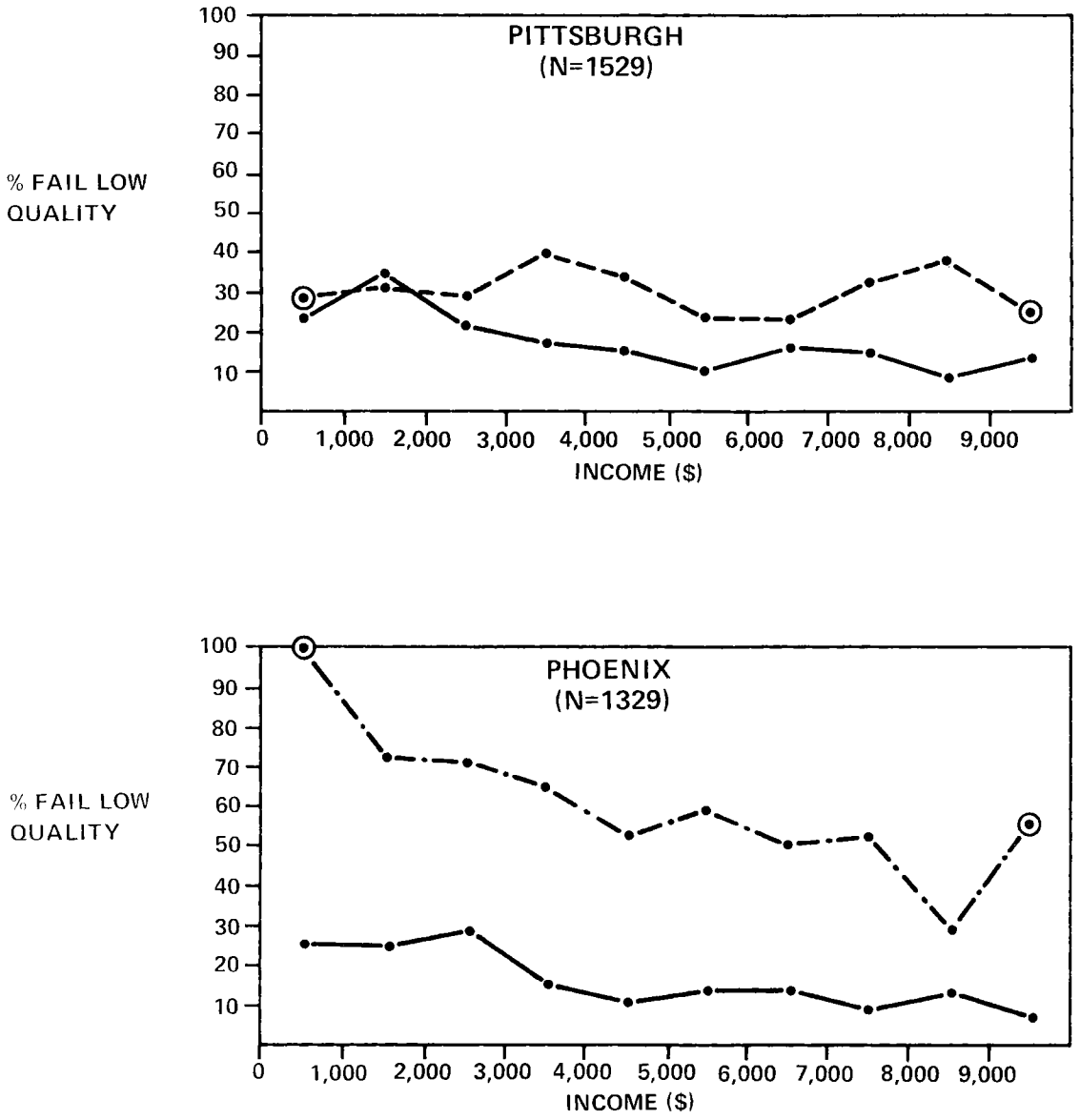




DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- ⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

FIGURE 4.5.5
PERCENT OF HOUSEHOLDS FAILING LOW QUALITY
BY INCOME BY RACE/ETHNICITY



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- ⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

The mean rents paid by each of these groups have been calculated for the two standards outcomes within the low, moderate, and high income categories (see Table 4.5.1). In Pittsburgh, for those who pass the program standards, the average rents paid by blacks are somewhat lower than those paid by whites. This is partially explained by the much higher proportion of whites (13.4 percent, 160) than blacks (4.5 percent, 15) who pass the highest quality level as well as the program level only. However, this finding is reversed for blacks who live in housing failing the lowest standard. Within the low and moderate income groups, the rents paid by blacks are slightly higher than for whites. Within the highest income group, where a far greater proportion of blacks than whites fail, rents paid are approximately the same.

In Phoenix, a very stratified housing market appears to exist for Spanish-Americans. Almost none of this group pass the highest or even the program level of standards. The failure rates of this group are very high within any income category.

As would be expected, the average rents paid by Spanish-Americans are lower than for whites for those who pass program standards. (Again, however, a negligible number of Spanish-Americans pass High as well as MS Program; this barely adequate quality which biases the level may be associated with relatively lower rents than for white households, which have relatively more units in the High quality level.) For the lowest income Spanish-Americans, however, the rents paid by the group failing Low are marginally higher than those for whites.[1]

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[1]These results should be interpreted in light of the other sections of 4.0. Section 4.3 established that minorities generally spend less on rent for a given level of income. The results here suggest that the lowest income minorities pay slightly more for the lowest quality housing. The issue of restricted housing market opportunities for minorities is addressed again in 4.6.2. Overall, the evidence is suggestive, but not conclusive of price differentials for a given quality level.

TABLE 4.5.1

PERCENT AND MEAN RENTS OF HOUSEHOLDS PASSING MS PROGRAM AND PERCENT AND MEAN RENTS OF HOUSEHOLDS FAILING THE LOW QUALITY LEVEL BY LEVEL OF INCOME AND RACE

Income and Race/Ethnicity	Households Passing MS Program		Households Failing Low		N
	Percent	Mean Rent	Percent	Mean Rent	
Pittsburgh (N = 1533) [1]					
Income of $0-2999					
White	21.8%	$114	25.0%	$ 72	331
Black	9.6	96	30.1	76	83
Income of $3000-5999					
White	28.1	128	14.6	98	592
Black	16.6	119	34.3	101	169
Income of $6000+					
White	32.6	141	15.8	102	273
Black	24.7	131	28.2	100	85
Phoenix (N = 1329) [1]					
Income of $0-2999					
White	24.0%	$132	27.2%	78	187
Spanish-American	6.1	97	74.0	80	81
Income of $3000-5999					
White	36.4	155	13.0	104	406
Spanish-American	8.6	145	59.1	98	174
Income of $6000+					
White	43.2	178	11.0	130	389
Spanish-American	16.3	170	45.6	104	92

Data Source: Baseline Interview, Initial Housing Evaluation Form

[1] Households are excluded if they have missing income information or if they are not white or black in Pittsburgh; white or Spanish-American in Phoenix.

Source of Income

A similar dramatic difference in outcome is apparent for households whose major source of income is welfare versus those who have primarily earned income or other types of transfers. As seen in Table 4.5.2, within a given income category, the rates at which welfare households pass program standards is lower than for the other groups. Similarly, the proportion of welfare households failing the lowest level of quality is far higher. This result is, of course, heavily influenced by the differing proportions of minorities and non-minorities whose major source of income is welfare.[1] However, while the association between race and source of income explains much of the variation, it is possible that receiving welfare income per se exacerbates housing difficulties.

Age

In both cities, no major variations are evident (in the two-way analysis) for different age categories. The overall proportion of elderly households, for example, who pass the program quality level or fail the lowest quality is similar to the site average.

Over half the elderly group in each site falls into the lowest (0-$3000) income category. In Phoenix, 41.4% of the low income elderly fail the lowest quality while only 19.7% pass the program level. While this represents a serious housing problem, this group fares somewhat better than the average low income

[1] In Pittsburgh, the proportions of white households whose income is primarily earned, income-conditioned transfers and other transfers are 40 percent, 28 percent, and 29 percent. The corresponding figures for blacks are 33 percent, 51 percent, and 16 percent. In Phoenix, the proportions of non-minority whites having earned, welfare, or other transfer income are 70.1 percent, 5.0 percent, and 22.4 percent. The proportions for Spanish-Americans are 65.7 percent, 19.8 percent, and 12.6 percent.

TABLE 4.5.2

PERCENT OF HOUSEHOLDS PASSING MS PROGRAM AND
PERCENT OF HOUSEHOLDS FAILING THE LOW QUALITY LEVEL
BY LEVEL OF INCOME BY MAJOR SOURCE OF INCOME

Income and Source of Income	% of HHs Pass MS Program	% of HHs Fail Low	N
	PITTSBURGH	(N=1503[1])	
Income of $0-3000			
Earned	30.7	19.2	26
Welfare transfers	14.8	29.1	168
Other transfers	21.2	26.8	198
Income of $3001-6000			
Earned	27.0	13.7	270
Welfare transfers	20.2	23.5	301
Other transfers	31.8	17.9	179
Income over $6000			
Earned	33.8	15.2	296
Welfare transfers	5.7	45.7	35
Other transfers	20.0	16.7	30
	PHOENIX	(N=1445[1])	
Income of $0-3000			
Earned	18.2	40.9	66
Welfare transfers	9.0	55.2	67
Other transfers	17.1	43.5	163
Income of $3001-6000			
Earned	28.6	25.1	450
Welfare transfers	6.0	62.1	66
Other transfers	35.5	23.7	118
Income over $6000			
Earned	36.7	20.0	484
Welfare transfers	11.1	55.5	9
Other transfers	36.3	22.7	22

Data source: Baseline Interview and Initial Housing Evaluation Form.

[1]Households are excluded who have major source of income other than earned, welfare transfers, or other transfers or whose income information is missing.

group in Phoenix, 67.4% of whom fail low and 16.9% of whom pass program quality. In Pittsburgh, the housing quality outcome for the low income elderly is about the same as that for the low income group overall.

Household Size

In both sites, large families obtain poor quality housing more frequently than smaller families. This appears particularly true in Phoenix.

Outcomes for large families may be the result of several influences. Given the program eligibility criteria, some larger families fall into the moderate or higher income groups. Housing quality outcomes for larger families, however, do not reflect overall quality outcomes for these income levels. In Phoenix, especially, the high failure rate may be influenced by the large proportion of minority groups within household sizes of 5 and over, as well as by the inability of large households to spend a high proportion of their income on rent.

Sex of Head of Household

Because of a number of counter-balancing influences, there is little deviation in outcomes from the site average associated with sex of head of household. For example, while female headed welfare households are very likely to fail the lowest standard, female elderly households do so less frequently.

Household Type

Married households obtain higher quality housing somewhat more frequently than single households. Among other factors this outcome is influenced by the greater proportion of non-minority households in the married categories.

4.5.2 Determinants of Minimum Standards

Section 4.5.1 discussed the housing quality of each of the major demographic groups of participants. Clearly, some groups obtain housing of adequate quality much less frequently than others. However, these outcomes reflect the influence of several factors, and it is desirable to attempt to clarify the separate effects of each demographic factor and to identify those of major importance.

The conclusions presented in 4.5.1 are examined through estimation of a probability-like function for passing program standards. The dependent variable is dichotomous -- pass or fail the program level of housing standards.[1] The form is the same as that used for estimation of the expenditure function presented in Section 4.3.1.[2]

The equation takes the form of a linear probability function:

$$p(0,1) \quad MS = \alpha + \beta_1 \ln Y + \sum_{i=2}^{n} \beta_i Z_i,$$

where ln Y is the natural logarithm of net disposable income and the vector Z_i is the set of dummy variables representing class and education, labor force attachment, household size,

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[1] The occupancy component of the Minimum Standards earmark is not included in the definition of the dependent variable in the present analysis. That is, the dependent variable is pass/fail MS Program.

[2] The equations, which are based on a very preliminary specification, were estimated using ordinary least squares. One problem with this approach is that estimation using ordinary least squares with a dichotomous dependent variable yields inefficient estimators due to heteroscedastic error terms. It is also noted that a linear probability function allows estimated probabilities (possibly even within the sample) that fall below zero or above one. The reader bothered by this may prefer to think of the function as a discriminant function and the coefficients as contributions to a discriminant score. The language of probability is used in this section. For an excellent discussion of alternative statistical procedures, see "Stochastic Specification and Estimation Techniques," from A Disaggregated Behavioral Model of Urban Travel Demand, Charles River Associates, March 1972.

household type, race, age of head, sex of head, the multi-problem interaction variable, and moving status. These variables are listed in Tables 4.5.3[1] and defined in Appendix VII.

Equations were estimated for the same population groups as for the expenditure function--the overall site population and each major racial or ethnic subpopulation, i.e., whites and blacks in Pittsburgh, and whites, Spanish-Americans and non-whites (mostly blacks) in Phoenix.

The estimation basically represents a reduced form equation derived from a conditional probability model for meeting Minimum Standards. Levels of rent paid are related to demographic characteristics by way of an expenditure function. The probability of attaining a given housing outcome depends in turn on rent paid, a relationship that is discussed in Section 4.6. The probability of obtaining standard housing is a function of both the probability of meeting the standard given rent and level of rent paid as it depends on demographics. The reduced form equation which has been estimated expresses the likelihood of passing standards as a function of log income and demographics.

The result of the estimation are interesting in several respects. The results are generally consistent with those for the expenditure function in that the level of expenditures for some groups clearly affects the probability of occupying standard housing. In addition, the predominant influences on the probability of occupying standard housing are very similar in Pittsburgh and Phoenix. Significant positive effects are associated with income, non-minority status, level of education, female-headed households, and the elderly in the total population equation for both sites. Tentatively, some shifts in behavior are evident from the minority subpopulation equations.

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[1]The excluded groups for the dummy variables are the following: education through high school diploma or some college, non-minority status, one employed, household size 3 - 4, less than 30 years of age, married couple with children.

TABLE 4.5.3

REGRESSION COEFFICIENTS FOR LOGARITHMIC PROBABILITY OF STANDARD HOUSING EQUATIONS

Variable[a]	Pittsburgh			Phoenix			
	All	White	Non-White	All	White	Non-White	Spanish
Constant	.240	.182	.402	.146	.160	.091	.131
Income (logarithm)	.083**	.084**	.047	.071**	.083**	.122**	.001
Class and Education							
White Collar	.019	.037	-.021	.059**	.061	.071	.107*
Grammar School	-.159**	-.141**	-.187**	-.179**	-.210**	-.130	-.078*
High School (some)	-.079**	-.089**	-.051	-.068**	-.078**	-.097	.007
College	.156**	.181**	.077	.129**	.119**	.069	.244
Labor Force Attachment							
More than one employed	-.043	-.074	.042	.015	.010	.047	.039
None employed	-.019	-.030	-.053	.032	.057	.053	-.010
Household Size							
One	-.095	-.109	-.105	-.045	-.079	-.119	.062
Two	-.048	-.044	-.032	-.001	-.028	.062	.033
Five-six	.024	.011	.011	-.062	-.035	-.035	-.055
Seven or more	.005	-.054	.057	-.101	-.167	.039	-.039
Young children	-.033	-.012	-.054	-.008	-.020	-.007	-.040
Older children	-.016	.016	-.053*	.004	-.001	-.028	.004
Household Type							
Single with relatives	-.058	-.052	.047	.022	-.019	.642**	-.136
Married couple	.077	.131**	-.131	.022	.038	-.142	-.026
Extended family	.010	.067	-.103	.038	.051	-.106	.038
Extended couple	-.073	-.145	-.089	-.028	.015	-.280	.021
Demographic Characteristics							
Non-white	-.067**	--	--	-.083**	--	--	--
Spanish	--	--	--	-.092**	--	--	--
Female head	.065**	.105**	-.128**	.065**	.080*	.014	.021
Age 30-44	-.003	-.048	.083	.021	.014	.096	-.026
Age 45-61	-.025	-.037	-.023	.003	-.023	.178*	-.045
Age 62 and over	.120**	.174**	-.023	.141**	.152**	.195	-.051
Multi-problem	-.071	-.032	.049	-.075	-.060	-.067	-.087
Moving Status							
Mover	.016	.015	.026	.071**	.049	.169**	.085**
R^2	.057	.055	.123	.122	.076	.210	.122
N[b]	1681	1278	403	1747	1164	184	399

Data Source: Baseline Interviews

*t-statistic indicates that coefficient is significant at the .10 level.

**t-statistic indicates that coefficient is significant at the .05 level.

[a]The excluded groups for the dummy variables are the following: education through high school diploma or some college, non-minority status, one employed, household size 3 - 4, less than 30 years of age, married couple with children.

[b]Households were excluded from sample when values were missing for income, demographic variables, or ACRA1 (see Appendix IV).

Finally, some of the present results are consistent with the Joint Center's extensive study of the probability of certain types of housing deprivation.[1]

The Joint Center employed a conditional probability (logit) model, a different definition of substandardness, and stratified their sample according to life cycle variables, so a direct comparison is difficult. However, their results emphasize similar variables--the role of income, female heads of household, and, particularly, level of education, on the increased probability of standard housing.

The present results are given in Table 4.5.3.

Income

The coefficients for (natural log) income are positive and significant for both the total population and non-minority equations. If interpreted as probabilities, results imply a change of .06 in the probability of obtaining standard housing for a doubling of income for the total sample in Pittsburgh. Since the average "probability" for the Pittsburgh sample is .27, this represents a percentage change relative to the average of about 22 percent. For Phoenix, the implied change in probability, given a doubling in income, is about 5 percent points overall. This represents roughly an 18 percent increment over the average probability of occupying standard housing. The results for the minority group equations are discussed below.

Class and Education

The important influence of the level of education on the likelihood of occupying standard housing is evident from nearly all the equations. In addition, the range of the coefficients

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[1] See "Conditional Probability of Housing Deprivation for Urban Centers," Analysis of Selected Census and Welfare Program Data, Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University, draft report July 31, 1974.

from negative to positive is quite similar in both cities. As the level of education increases, the implied increase in probability is quite large--over 30 percent. While this is indicative of a clear shift in preference toward higher quality housing, one could also hypothesize that more informed shopping decisions affect the outcome. The importance of white collar status is also evident in Phoenix. As mentioned above, the level of education was found to be extremely important in the probability estimates of the Joint Center.

Household Size and Household Type

While the expenditure function showed the influence of larger family sizes on rent, the household size variable appears to have no particular effect on the probability of occupying standard housing. Thus, although larger households tend to spend more, there is no evidence of a decision to purchase space at the expense of quality, or the reverse. These results qualify the outcomes for family size indicated by the two-way relationships presented above where larger families appeared less likely to purchase standard housing. Finally, as in the expenditure function, no influence is attributable to the variables representing household type.

Sex of Head of Household

The apparently strong preference shown by female heads of household for standard housing is evident in both cities for the total sample and white subpopulation equations. Again, the multivariate results clarify the outcome discussed above in Section 4.5.1, where no effect was evident for sex of head.

Age of Head of Household

A general tendency is seen, in both cities, for the elderly to be more likely to occupy standard housing than the youngest age group. As discussed above in Section 4.3 the elderly tend to spend somewhat more.

Moving Status

While recent movers in both cities pay more rent, the probability of occupying standard housing is significantly increased only in Phoenix. Since the effect is particularly apparent for the minority population, this may represent an upgrading phenomenon.

Race/Ethnicity

The effects of racial or ethnic status are examined through inclusion of dummy variables in the total population equations and through estimation of sub-population equations. From the regressions on the total sample in each city, it is apparent that minority groups are significantly less likely to occupy standard housing than other groups with similar characteristics. In Pittsburgh the reduction for non-whites is about 6.7 percentage points. The reduction in the implied probability of occupying standard housing is somewhat greater for minorities in Phoenix--about 8.3 percent for non-whites and about 9.2 percent for Spanish-Americans. This is consistent with the fact, as indicated by the expenditure equation, that in Phoenix minorities spend less on rent relative to whites than in Pittsburgh.

Subpopulation Equations

Some differences in behavior in response to income and other demogrpahic characteristics are evident in the minority group sub-population equations. In particular, the income coefficients for blacks in Pittsburgh and Spanish-Americans in Phoenix are small and insignificant. This indicates that the increase in rental expenditures, implied by an increase in income, are apparently not being translated effectively into a higher probability of occupying standard housing. This may be because the level of expenditures is sufficiently low for these groups so that even with a positive expenditure elasticity, rents are not pushed high enough to have a significant effect on the likelihood of purchasing standard housing. Furthermore,

if these groups also face a price premium for standard housing, then each minority dollar purchases less quality.

The results for the other non-white population in Phoenix are somewhat anomolous. The fact that the income coefficient is significant in this equation may be a function of particular characteristics of this sample. First, it is possible that the income variable is picking up the results of the class and education variables, since this is the only equation in which the latter were not significant. However, a strong housing quality upgrading phenomenon could be taking place for this group; the coefficient for recent movers is particularly large.

An examination of the direct relationship between rent and the probability of obtaining standard housing may also help to explain the results of the sub-population equations. The results of the bivariate regression of rent on the probability of standard housing are presented in Table 4.5.4.[1] Equations were estimated for the total population and for each racial or ethnic group. Despite the low R^2 statistics (a typical result in view of the fact that the data are cross-sectional observations on individual households) the regression coefficients are highly significant.

The equations indicate that both blacks in Pittsburgh and Spanish-Americans in Phoenix are less likely than whites to obtain standard housing for a given level of expenditure.[2] This is also true for the "other non-white" group (essentially black or Indian households) in Phoenix over the broadest part of the rent distribution. However, the inappropriateness of interpreting these regressions strictly as probability functions and the inherent risk in the use of linear functional

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[1]The equation estimated was of the form: $p\ (0, 1)\ MS = \alpha + \beta_1 R$. Rent is measured as dollars per month.

[2]This topic is explored in more detail in Section 4.6.1.

TABLE 4.5.4

BIVARIATE REGRESSIONS ON THE
PROBABILITY OF STANDARD HOUSING

	P (MS Program) =	r^2
Phoenix		
Total Population	-.1429 +.0031 R	.118
White	-.0651 +.0028 R	.077
Non-white	-.2619 +.0039 R	.212
Spanish	-.1157 +.0020 R	.075
Pittsburgh		
Total Population	-.1317 +.0037 R	.081
White	-.1189 +.0037 R	.078
Non-white	-.1452 +.0032 R	.071

form when estimating extremes is revealed in the results for this "other non-white" group; the large negative intercept yields a negative "probability" in the lower range of the rent distribution.

Finally, several other tentative differences are evident from the reduced form minority group equations. The preferences observed in the total sample and white subpopulation equations for female heads to occupy standard housing is less evident. For the black population, in Pittsburgh particularly, female heads are less likely to purchase standard housing. The coefficients for the age variables in the minority group equations do not show a discernible pattern. At present, no particular conclusions are inferred from these shifts.

Conclusions

The model presented here represents a preliminary attempt to determine the influence of demographic characteristics on the chances of obtaining standard housing. Future analysis should explore several modifications, particularly an investigation of alternative functional forms.

Future analysis will broaden the probability approach to include the other measures of housing deprivation discussed in Section 4.5 -- overcrowding and excessive rent burden. Different sets of independent variables may influence the occurrence of these housing problems. Furthermore, tradeoffs made among quality, space, and level of burden should be explicitly examined.

The results of the preliminary estimation have, however, provided useful insights. For the total population equations at both sites, the predominant influences on obtaining standard housing are higher level of income, higher level of education, non-minority status, female heads of household, and elderly-headed households. The minority group equations

exhibit some differences in behavior. For the larger minority groups in each city, increased income has little effect on increasing the chances of obtaining standard housing. Overall, the results are consistent with those for the expenditure function and also help to clarify the previous two-way analysis of the influences on obtaining standard housing.

4.5.3 Occupancy and Housing Standards

The predominant influence on outcomes for any overcrowding measure is of course family size. As discussed in section 4.4, under the program definition of occupancy, however, a sizeable proportion of smaller households fail the occupancy criteria because of the quality components involved in defining adequate bedrooms.

While some dependence between outcomes for program physical standards and program occupancy requirements would be expected, there are exceptions. In Pittsburgh, 58.2 percent of those failing standards also fail occupancy, while 70.3 percent of those passing program standards also pass occupancy.[1] The distribution for the total sample over the four possible standards/occupancy outcomes is shown below in Figure 4.5.6.

The contrast in outcomes for those who either fail or meet both criteria is shown in Figure 4.5.7 and 4.5.8. Again, the outcomes for minority groups and those with welfare in-

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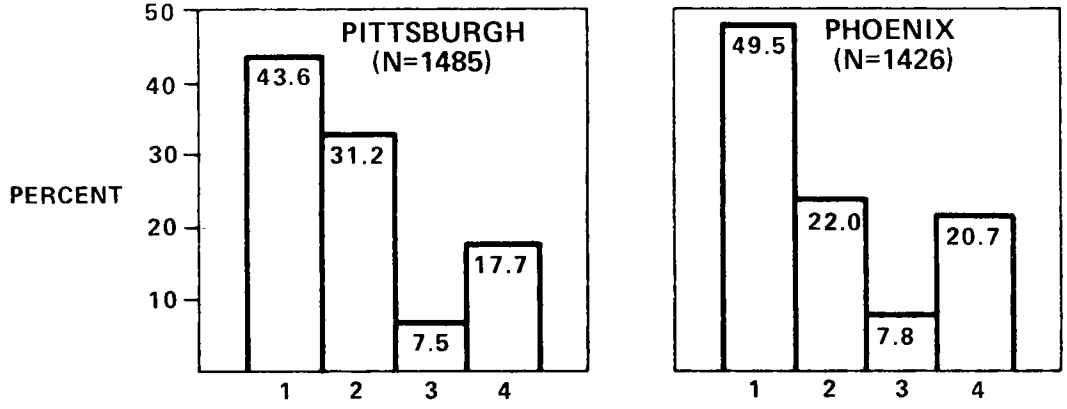
[1] A comparison of standards outcomes with the Census overcrowding measure shows a similar result between the sites. In Pittsburgh, the likelihood of failing the Census measure is 11.4% and the likelihood of failing program standards is 75.3%. The product of these two results is 8.6% which differs only slightly from the joint likelihood of failing both -- 9.3%. In Phoenix, however, the outcomes are less independent. The product of the two percentages is only 15% while the joint likelihood of failing both is 20.8%.

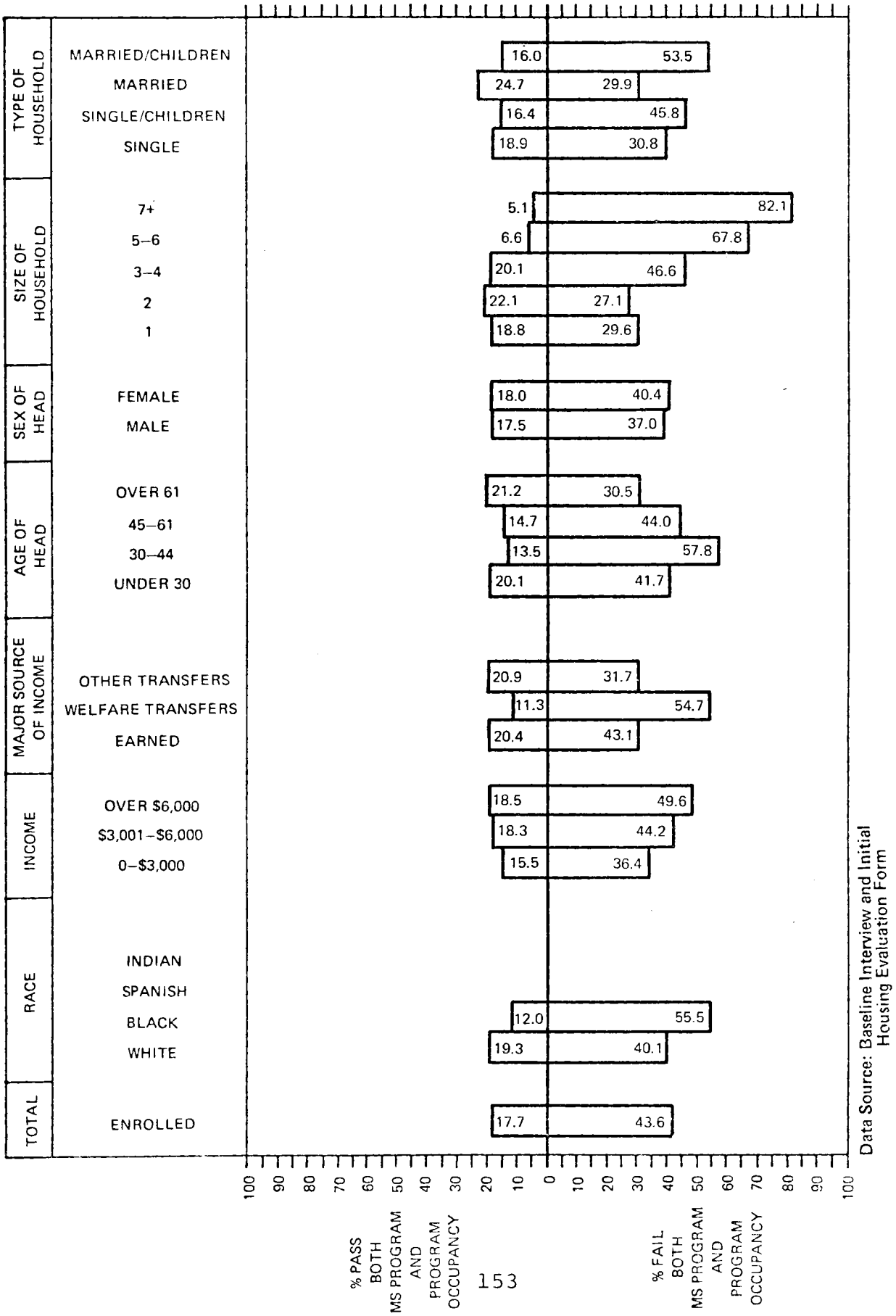
FIGURE 4.5.6
PERCENT OF HOUSEHOLDS FAILING OR PASSING
HOUSING STANDARDS AND OCCUPANCY



1 = FAIL MS PROGRAM AND FAIL PROGRAM OCCUPANCY
2 = FAIL MS PROGRAM AND PASS PROGRAM OCCUPANCY
3 = PASS MS PROGRAM AND FAIL PROGRAM OCCUPANCY
4 = PASS MS PROGRAM AND PASS PROGRAM OCCUPANCY

FIGURE: 4.5.7

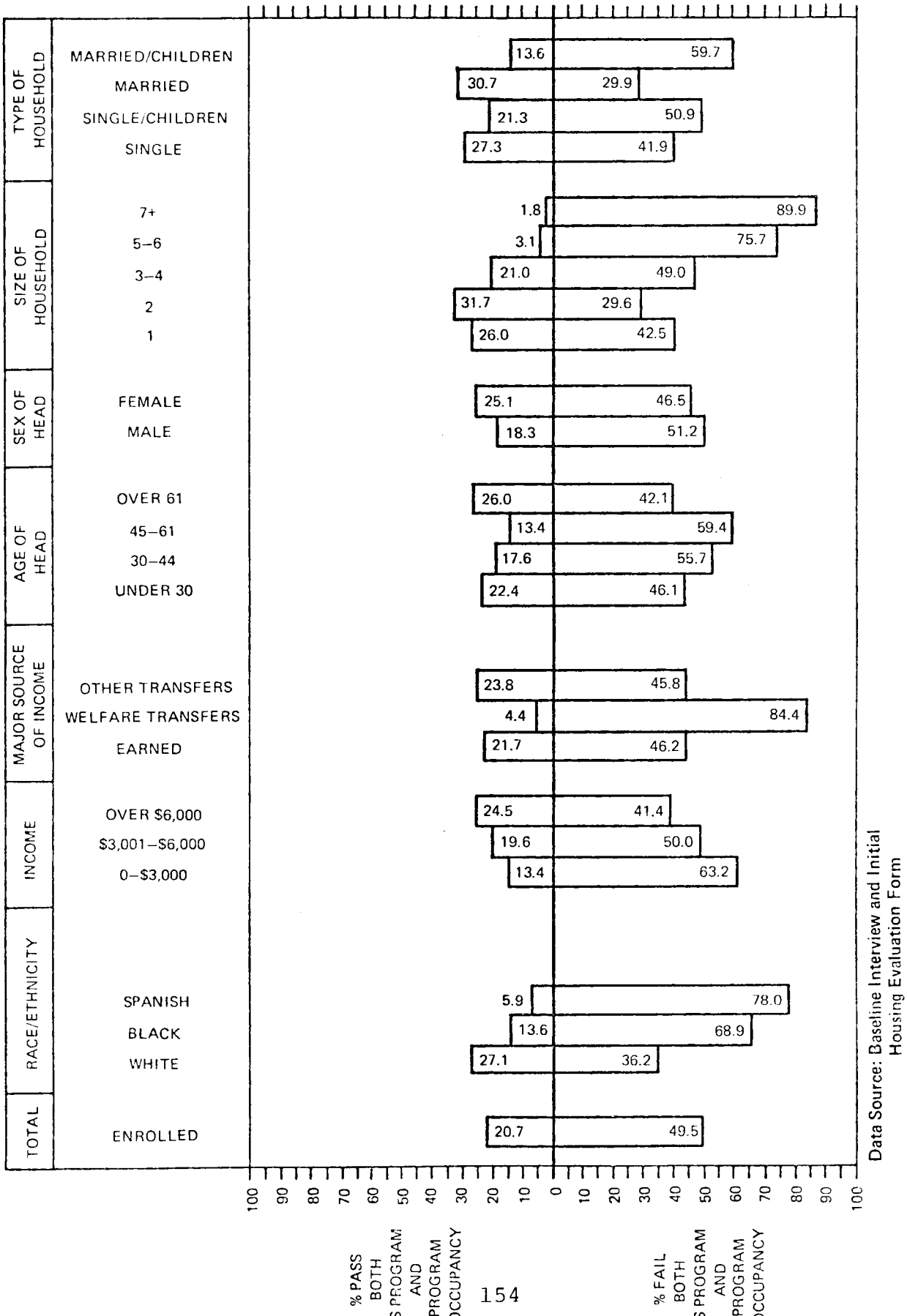
MS PROGRAM AND PROGRAM OCCUPANCY STANDARDS:
DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS PASSING BOTH
AND OF HOUSEHOLDS FAILING BOTH IN PITTSBURGH



Data Source: Baseline Interview and Initial Housing Evaluation Form

FIGURE: 4.5.8

MS PROGRAM AND PROGRAM OCCUPANCY STANDARDS:
DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS PASSING BOTH
AND OF HOUSEHOLDS FAILING BOTH IN PHOENIX



Data Source: Baseline Interview and Initial Housing Evaluation Form

come compare most poorly with site averages. In relation to the standards outcomes presented in Figure 4.5.2, however, the more dominant influence of family size is evident. The high dual failure rates for large households and families with children is obvious; in addition, in Pittsburgh, the frequency of failing both criteria rises slightly with income.

Of the groups not represented on the chart, only the group that fails standards but passes occupancy represents a sizeable proportion of the total sample. As would be expected, over 95 percent of this group in each site are households of size 3 and 4 or less. In Pittsburgh 45 percent of the group is elderly; in Phoenix, 30 percent are elderly and about 40 percent are in the youngest age group. Finally, the small group which passes standards but fails occupancy is represented, in both sites, by large families in the highest income category. The outcomes for the latter group are similar for both minorities and non-minorities.

4.5.4 Multiple Housing Problems

When the outcomes for dwelling unit standards and occupancy requirements are combined with the third criterion--level of rent burden--the full potential for improvement in housing conditions can be assessed. The three measures of need developed previously have been applied to the sample of all enrolled households:

- Program Housing Standards--These standards are summarized in Appendix V. They are applied in the Experiment only to households under one of the Minimum Standards plans, but they provide a measure of the physical conditions of the dwelling units of all enrollees.

- Program Occupancy Standard--Households in one of the Minimum Standards plans must meet the occupancy requirement that there be at least one "adequate bedroom" for every two persons, regardless of age, in the household. The Occupancy standard is further described in Appendix V.

- Rent Burden--For purposes of characterizing rent-income ratios of households the value of 0.25 is again taken as the dividing line between high rent burdens and low rent burdens. (Net income is used for the results reported here.)

Figure 4.5.9 summarizes for each of the experimental sites the relationships among these three measures for all participants. The following observations in addition to those made above can be made about the pre-program housing conditions of participants:

- The joint occurrence of these three problems is frequent. About one-fourth of the participants at each site obtain inadequate quality and space and pay more than 25 percent of income on rent.

- Very small proportions of enrolled households would meet all three criteria. Only 4.6 percent in Pittsburgh and 3.8 percent in Phoenix simultaneously "pass" all three criteria.

- The proportion of the sample falling into a particular category is remarkably similar across both sites.

- Ability to meet program standards appears to be associated with high rent burdens.[1]

There are eight possible groups of pass/fail combinations for the three housing criteria. The most striking fact about the groups is the strong similarity across sites in the types of participants who are most likely to fall in each pass/fail combination. For example, the outcome group with the most severe housing conditions is described

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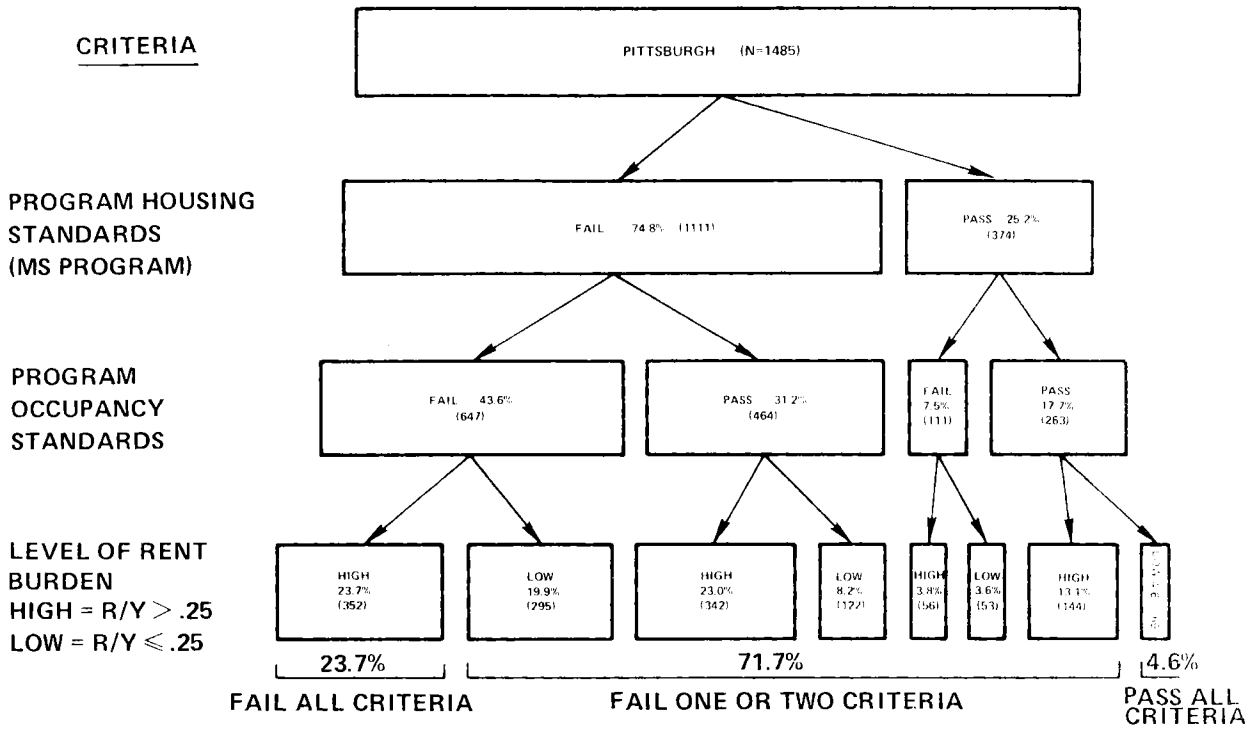
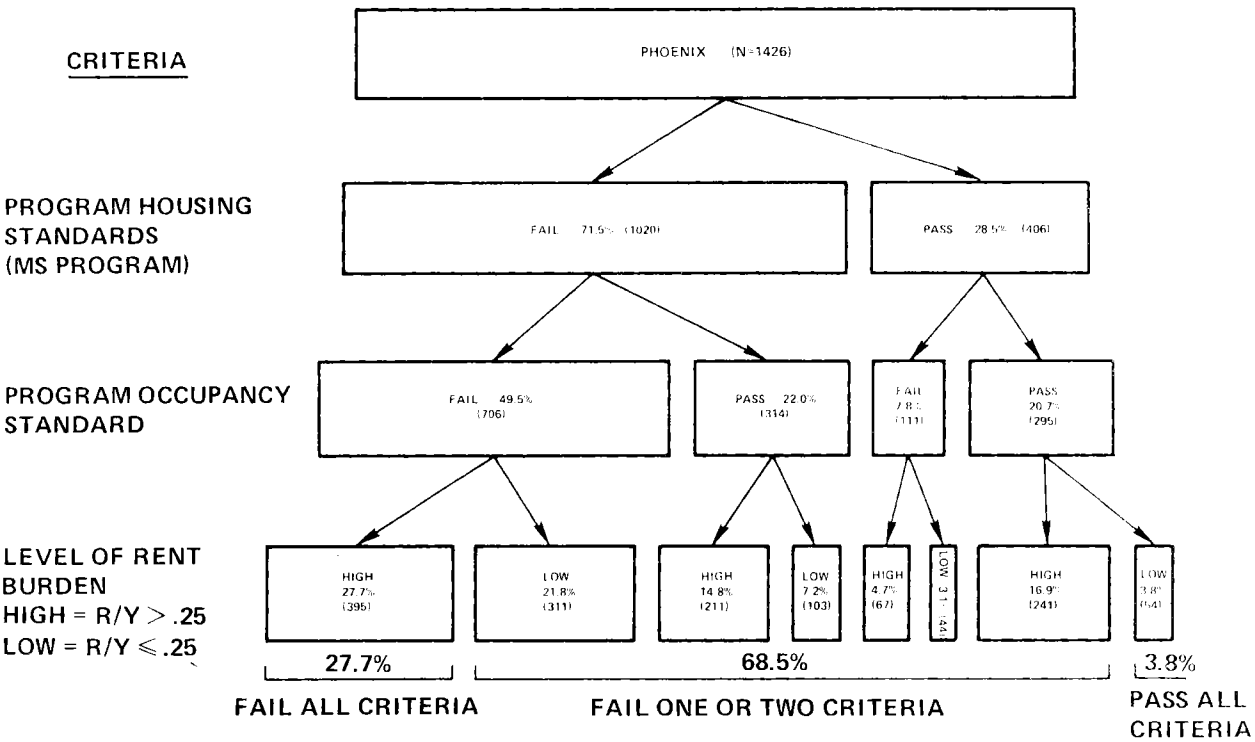
[1]This association is, of course, a function of a wide array of factors. Without considering these intervening variables, however, it is observed that in Phoenix, 75.9 percent of those passing standards have a rent burden greater than .25, compared with 59.4 percent of those failing program standards. In Pittsburgh, 67.1 percent of those passing have a rent burden exceeding .25, compared with 57.1 percent who fail.

FIGURE · 4.5.9

PERCENT OF HOUSEHOLDS WHICH PASSED OR FAILED PROGRAM HOUSING STANDARDS, PROGRAM OCCUPANCY STANDARDS AND RENT BURDEN





DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

below in terms of the demographic descriptors most likely to be associated with this outcome.[1] (The percentage of each group falling within the outcome is given in parentheses.)

(1) Fail All Criteria--Standards, Occupancy, Rent Burden (>.25)

Pittsburgh Site Average (23.7%)	Phoenix Site Average (27.7%)
Welfare Income (39.4)	Welfare Income (67.4)
Female-Headed Household (28.6)	Female-Headed (35.9)
Low Income (34.0)	Low Income (59.6)
Household Size 5, 6 (29.4)	Household Size 5, 6 (39.4)
Single, with Children (30.8)	Single, with Children (36.0)
	Spanish-American (40.5)
	Black (38.8)

This highly correlated set of descriptors defines a group with perhaps the most serious overall housing problem. Minority households in Phoenix are more likely to face these multiple problems. In Pittsburgh, blacks and whites are about equally likely to fall into this group.

(2) Fail Standards and Occupancy, Low Rent Burden ($\leq$ .25)

Pittsburgh Site Average (19.9)	Phoenix Site Average (21.8)
High Income (45.7)	High Income (34.6)
Black (29.3)	Black (30.1)
	Spanish-American (37.5)
Age: between 30-44 (29.3)	Age: between 30-44 (30.2)
Size: 5,6 (38.4)	Size: 5,6 (36.3)
7+ (59.0)	7+ (59.3)
Earned Income (30.9)	Earned Income (26.0)
Male-Headed Households (28.4)	Male-Headed Household (27.9)
Married, With Children (34.7)	Married, With Children (35.2)

[1]The supporting data for these conclusions is found in Table 4.5.5. A demographic descriptor is listed with an outcome in the table shown only when the percentage of the group falling within a given category was higher than the site average percent. Thus, the analysis is bivariate in character. For future analysis of multiple housing problems and demographic groups it may be desirable to develop a multivariate framework and to consider the interaction among the three measures of housing deprivation.

The characteristics describing those who frequently fail program standards and occupancy, but whose rent burden is less than .25, contrast sharply with the first group. Again, a set of highly related factors describe male-headed, minority households, generally of higher income and who more often earn the majority of their income. As discussed in 4.2, these are precisely the groups who on average, pay less rent and/or have a lower rent burden relative to others within the demographic category.

(3) Fail Program Standards, Pass Occupancy, High Rent Burden (>.25)

Pittsburgh Site Average (23.0)	Phoenix Site Average (14.8)
	White (18.6)
Low Income (43.2)	Low Income (19.8)
	Moderate Income (18.4)
Elderly (36.5)	Elderly (23.5)
Household Size 1 (40.8)	Household Size 1 (24.2)
Household Size 2 (38.1)	Household Size 2 (20.2)
Other Transfer Income (33.8)	Other Transfer Income (23.8)
Female-Headed (30.3)	Female-Headed (18.7)
Single, No Children (39.4)	Single, No Children (22.5)

In Pittsburgh, this group tends to represent the low-income elderly households, often female-headed. While these characteristics are dominant in Phoenix as well, the associations are somewhat weaker. In addition, while this group is slightly more likely to be white in Phoenix, minorities are about equally likely to occur in this group in Pittsburgh.

(4) Pass Standard, Pass Occupancy, High Rent Burden (greater than .25)

Pittsburgh Site Average (13.1)	Phoenix Site Average (16.9)
	White (22.1)
Elderly (17.7)	Elderly (23.5)
Household Size 1 (16.3)	Household Size 1 (24.2)
Household Size 2 (17.8)	Household Size 2 (26.5)
Other Transfer Income (17.2)	Other Transfer Income (22.1)
	Female-Headed (22.5)
Married, No Children (18.4)	Married, No Children (24.1)
	Single, No Children (25.5)

This group is nearly identical to the previous outcome group. In Phoenix, the group whose housing and occupancy meet program criteria, but whose rent burden exceeds .25, is again, fairly strongly identified as elderly houseohlds often receiving other transfer income. A similar group is identified in Pittsburgh, but the overall group is smaller and the associations with given characteristics are less strong. For both sides, groups (3) and (4) contain approximately half the elderly population. Considered together, it is apparent that the elderly face a high rent burden. Across outcome groups the elderly are much more likely to fail dwelling unit standards than to pass.

(5) Pass All Criteria

Pittsburgh Site Average (4.6)	Phoenix Site Average (3.8)
High Income (12.0)	High Income (9.0)
Earned Income (8.8)	Earned Income (4.9)
Household Size 3,4 (6.2)	Household Size 2 or 3,4 (5.2)
Married/Children (7.9)	Married/No Children (6.6)
Male-Headed (7.1)	
	White (5.0)

While this group is very small in both sites the characteristics associated with it are reasonably evident. It is interesting to note that this group differs from that which is likely to fail both standards and occupancy, but with rent burden less than .25, in only one major aspect--the latter is somewhat more likely to be from a minority group, particularly in Phoenix. The remaining three groups, not described above, are small and generally have no strongly associated characteristics. Those who pass standards but fail occupancy are likely to be higher income households of size 5 or greater. Finally those who have a low rent burden and pass occupancy but fail standards are identified only as higher income, smaller households.

4.6 HOUSING QUALITY AND RENT

The level of rental expenditures, as determined by income, race, and other demographic factors, was discussed in Sections 4.2 and 4.3. The previous section described the variations in housing quality obtained by these demographic groups. The link between these relationships--the association of rent level with housing standards and occupancy criteria--is the subject of the present section.

Three major issues are pursued within the context of the price/quality relationship:

- The "gap" between the cost of adequate housing and the level of pre-program expenditures made by participants
- Potential discrimination against minority groups
- The effectiveness of the Minimum Rent earmark as a substitute for the Minimum Standards earmark.

Section 4.6.1 examines the cost of housing providing varying levels of quality and space relative to what participants paid at the beginning of the program. Section 4.6.2 addresses the likelihood of obtaining standard housing for a given expenditure level. The primary focus is the difference in outcomes for different racial and ethnic groups. The association between rent paid and housing quality is also the basic relationship for assessing the effectiveness of the Minimum Rent earmark--the subject of Section 4.6.3. Since the Minimum Rent earmark is set as a proportion of C* modal, the emphasis shifts from rent to the ratio of rent to C*. This section describes the likelihood of meeting physical standards and both standards and occupancy criteria in relation to R/C*. Finally, Section 4.6.4 provides a preliminary indication of the variation in R/C* by length of tenure.

Some summary observations are pertinent. The level of rent paid by participants with adequate quality and space far exceeds what most participants were paying prior to the program.

The ability to pay more rent significantly increases the likelihood that participants will occupy standard housing. However, minority groups may fare less well than others. It is found that for a given rent level, minorities are less likely to meet dwelling unit standards than non-minorities. Finally, there is extremely wide variation in the cost of units meeting program standards. Thus, paying higher rents will not ensure a given quality improvement for all participants.

4.6.1 Pre-Program Rents and the Cost of Adequate Housing

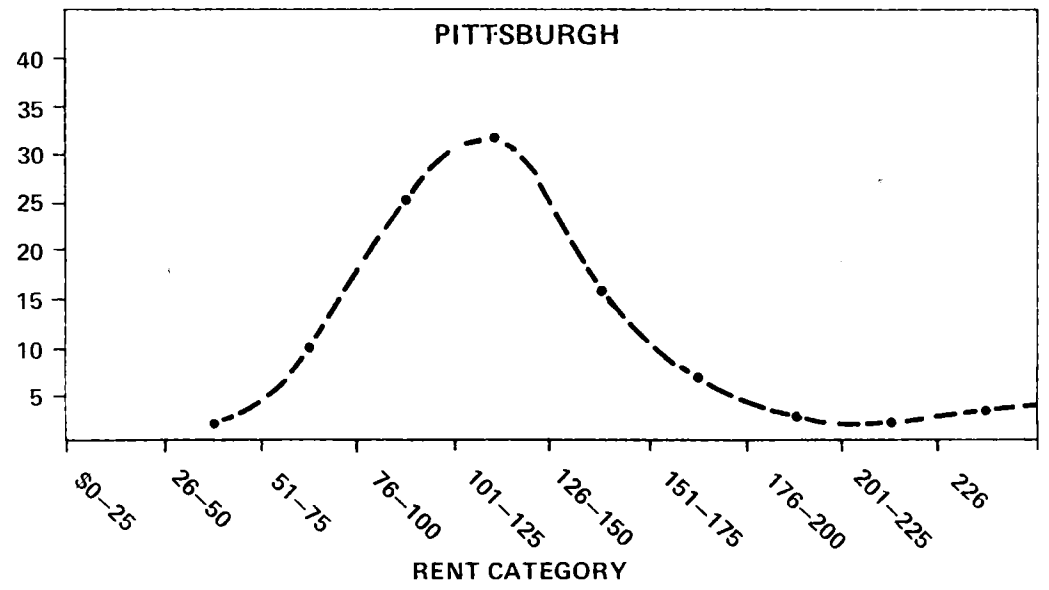
Inadequate housing quality and insufficient space have been identified as two of the major housing problems facing many participants. An examination of the rent participants pay relative to the average cost of adequate housing reveals a substantial gap for most participants. The cost of alternative amounts of quality and space give a preliminary indication of the kind of housing improvements likely to occur in response to increased expenditures.

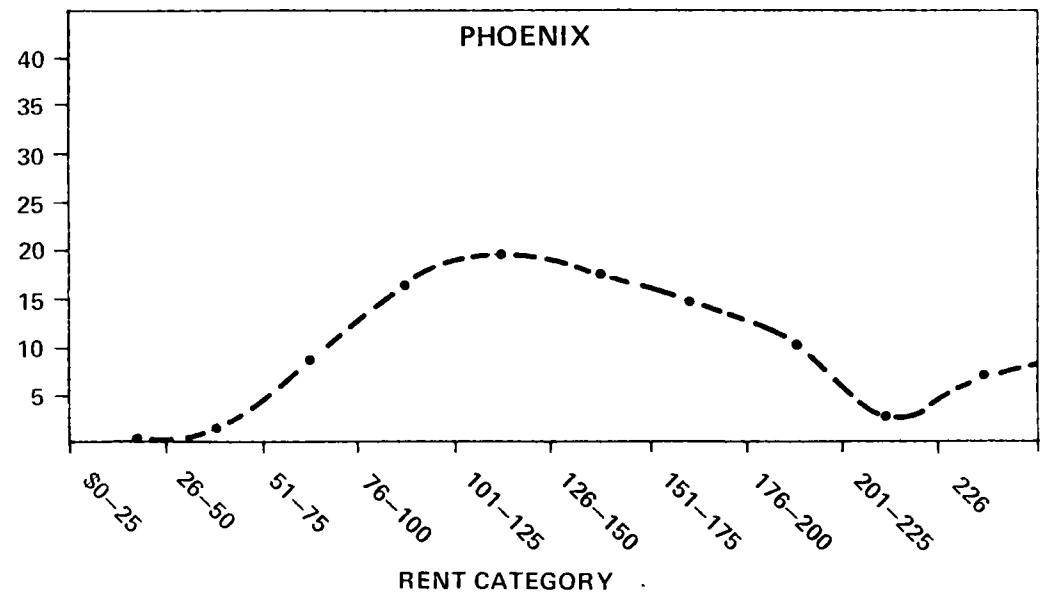
Four measures of housing quality, including the program standard, were described in Section 4.4. The relationships among the four quality levels and the increase in mean rents paid as the standards become more stringent suggest that these measures do, in fact, represent points along a quality continuum.

Figure 4.6.1 indicates the distribution of pre-program rents for Pittsburgh and Phoenix. Table 4.6.1 shows the mean rent for each quality level. Only about a third of the participants in either city were paying rents at or above the average observed cost for housing of program standard quality.[1]

[1] It should be noted that the variance in rents for each quality level is quite large. The implications of the distribution are discussed in Sections 4.6.2 and 4.6.3.

FIGURE 4.6.1
DISTRIBUTION OF PRE-PROGRAM RENTS BY RENT CATEGORY





SOURCE: BASELINE INTERVIEW

THE RENT STATISTIC USED IS ACRA5

TABLE 4.6.1

MEAN RENT BY QUALITY LEVEL

Quality Level	Pittsburgh (N = 1497)			Phoenix (N = 1534)		
	Mean Rent	Standard Deviation	Sample Size	Mean Rent	Standard Deviation	Sample Size
High Quality	$135	37	173	$167	44	264
Program Minimum Standards	121	30	205	149	55	112
Medium Quality	116	31	383	139	39	308
Low Quality	107	30	427	117	42	154
Meet No Quality Level	91	28	309	97	39	342

Source: Baseline Interview and Initial Housing Evaluation Form. The rent statistic used is ACRA 5.

A second consideration is the cost of both adequate quality and adequate space relative to the actual rents paid by participant households. Adequate space is defined by the program as a number of bedrooms appropriate to a given household size. Table 4.6.2 shows the average observed cost of units which meet program quality standards by number of bedrooms. These rents are compared with actual average rents paid by households requiring that amount of space. In almost all cases the gap, or the difference between what families pay and what it might cost to occupy an adequate unit, is large. For large families in particular, the gap between observed rent and the cost of large, high-quality units is wide. Thus, participants under the Minimum Standards earmark will on average have to pay higher rents in order to meet the program quality standard in units of adequate size. These data are, however, based only upon a sample of households eligible and may not provide accurate indications of the full housing market. Thus, participants under the Minimum Standards earmark will on average have to pay higher rents in order to meet the program quality standard in units of adequate size. These data are, however, based only upon a sample of eligible households and may not provide accurate indications of the full housing market.

TABLE 4.6.2

COMPARISON OF AVERAGE RENTS FOR PROGRAM STANDARD UNITS

Number of Physically Adequate Bedrooms	Basic Payment Level (C*Modal)	Average Rent for Units Meeting Program Quality Standards		Household Size	Average Rents Paid by All Participants by Household Size	
Pittsburgh (N = 1684)[1]						
	C*M	Rent	(N)		Rent	(N)
0 (efficiency)	$105	$113	(47)	1	$ 88	(277)
1	$120	$117	(166)	2	$108	(448)
2	$140	$130	(190)	3,4	$117	(633)
3	$160	$149	(54)	5,6	$118	(240)
4	$190	$167	(8)	7,8	$128	(86)
Phoenix (N = 1748)[1]						
	C*M	Rent	(N)		Rent	(N)
0	$125	$153	(55)	1	$ 98	(233)
1	$155	$137	(156)	2	$131	(475)
2	$180	$174	(187)	3,4	$138	(667)
3	$220	$194	(32)	5,6	$140	(240)
4	$265	$213	(7)	7,8	$127	(133)

Source: Baseline Interview and Initial Housing Evaluation Form.

[1]Totals differ from total number of enrolled households because the data file used excluded households with missing values for rent, income, or household size.

4.6.2 Housing Quality and Rent Level

Housing quality outcomes are determined by interactions between households' demand and the characteristics of the supply of housing that is available to them. One would normally expect that if households spend more on housing they will get more in terms of "quality" and "space". However, such a result is likely to be far from uniform for different groups of households within cities. If the price at which housing is available, holding quality and space constant, varies among groups of people or among geographical subareas within cities, then outcomes will differ among groups even if they spend equal amounts for housing.

There are several reasons for expecting that housing prices for equivalent quality and quantity will differ both among groups and geographically. The major sources of variation are attributable to:

- Discrimination
- "Quasi-rents" for particular types of housing
- Accessibility costs
- Land costs

The latter three sources of variation are related to the geographical "submarket" in which households participate. Research suggests that low-income households are strongly tied to particular areas within cities, usually in the vicinity of their workplaces, and that as a result the price that they pay for housing and the types of housing available to them are greatly circumscribed by what is available in a relatively small area. The influence of "housing submarkets" on housing outcomes is a topic for continuing research and is not addressed here.

Variations in price attributable to racial discrimination and the effects of such variations may be directly addressed however. In earlier sections of this report it was found that (1) blacks and Spanish-Americans spend less than otherwise similar whites

(Section 4.3), and (2) low-income blacks and Spanish-Americans who fail the lowest physical standards appear to pay slightly more than do low-income whites (Table 4.5.1). Both results are consistent with the hypothetical effects of price differentials for racial minorities. It should be noted that such price differentials may be attributable either to "pure price discrimination" whereby landlords charge whites and minority groups different prices for identical units or to "market separation" between whites and minorities which in the face of effective limitations of the supply of housing to minorities results in price differentials.[1] In either case the results are the same; higher prices result in decreased expenditures on housing by minorities (assuming that demand is price elastic) and minorities pay more for equivalent housing.

Alternatively, for equal housing outlays one would expect that minority group households would be less likely than non-minority households to pass any housing standard.

Such an expectation is well supported by empirical evidence from other analyses that reveal price differentials paid by minority group members. One should realize though that lower "pass rates" for minorities at given rent levels may not be conclusive evidence of racial discrimination in the housing market or of the existence of effective price discrimination. Housing is a complex good with many attributes. If a housing unit has low physical standards, it may nevertheless be located in a "good neighborhood" or in a location that is highly accessible to centers of employment, and thus may command the same rent as a unit having higher standards in a poorer quality or less-accessible neighborhood. If minority groups have different housing preferences than do non-minority

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[1]See Robert A. Haugen and James A. Heins, "A Market Separation Theory of Rent Differentials in Metropolitan Areas," Quarterly Journal of Economics (November, 1969), pp. 660-72, and Mitchell Stengel, "Racial Price Discrimination in the Rental Housing Market," unpublished Ph.D. dissertation, Department of Economics, Harvard University, 1970.

groups such that they prefer housing attributes other than physical quality or interior space, then they may appear to be paying more for given levels of the latter two attributes. Equivalently, for given levels of expenditure, they are getting less of each. On the other hand, since both physical standards and interior space are among the most important characteristics of housing, and thus account for a large portion of rent, offsetting quality or accessibility attributes would have to be considerable in order to account for lower observed pass rates. Unless there is strong evidence of differences in stated preferences or of offsetting and highly valued housing attributes, the simplest conjecture would be that observed differentials are attributable to racial discrimination. It should be noted, however, that in these preliminary analyses family size has not always been controlled for. A greater proportion of minority groups in both sites have larger family sizes. It is possible that larger households trade off quality and space in a manner that shifts pass rates down for both criteria.

Ability to Pass Program Standards

In both sites rental expenditures are related to the ability to meet MS Program. Figure 4.6.2 presents graphically the relationship in each site. In each site, each additional $25 in rental expenditures appears to produce roughly a seven percentage point improvement in the chances of exceeding program standards.[1] There are, however, significant differences among racial groups.[2]

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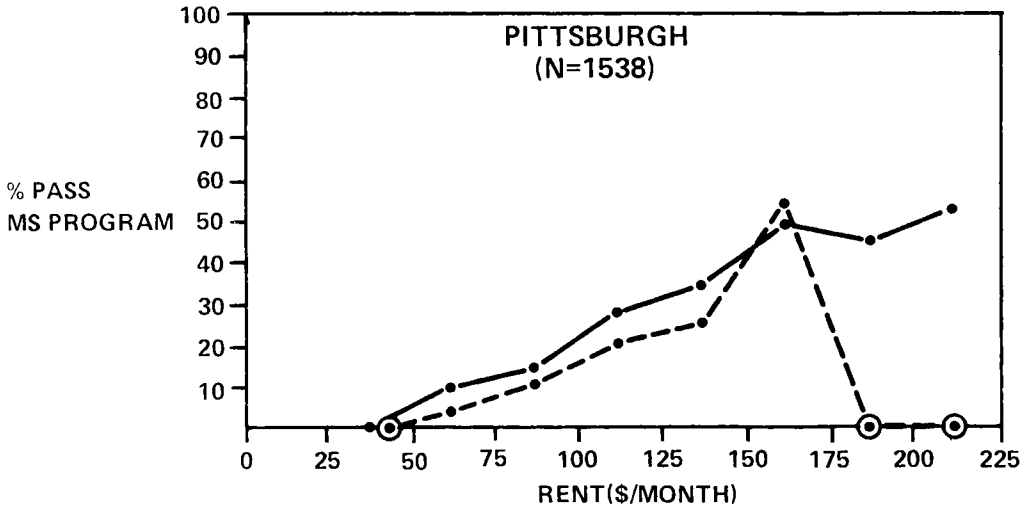
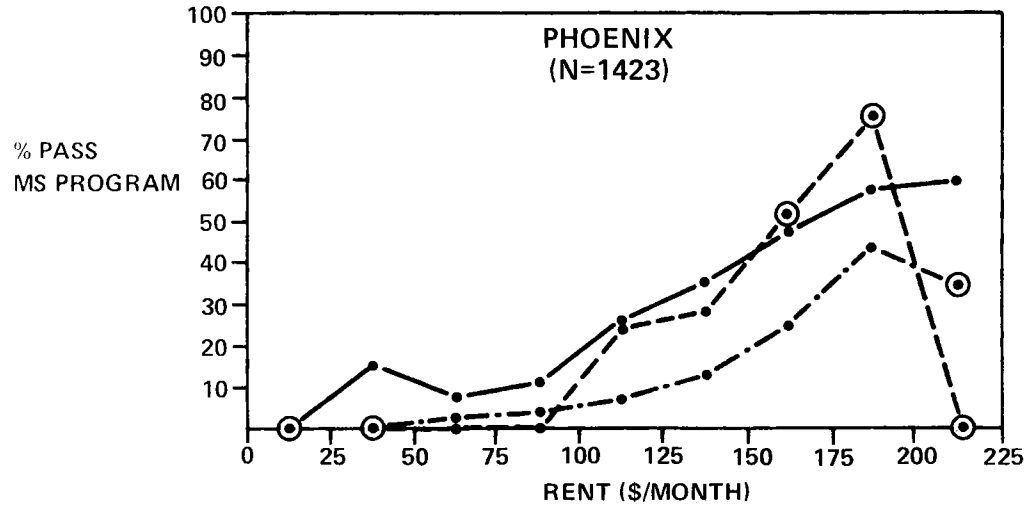
[1]The rent statistic used in Section 4.6.1 is ACRA 5 which excludes all households with roomers and boarders. It is desirable not to make the roomer and boarder adjustment when analyzing rent and quality levels.

[2]The bivariate regressions of rent on the probability of passing MS program, presented in Section 4.5.2, support this conclusion.

FIGURE 4.6.2
PERCENT OF HOUSEHOLDS PASSING MS PROGRAM BY
RENT BY RACE/ETHNICITY





DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

In particular, the proportion of blacks who pass MS is lower at nearly every rent level in Pittsburgh and every rent level with a significant sample size in Phoenix. The Spanish-American population in Phoenix appears to fare significantly worse than blacks or whites over most of the range of rents; there are few rent levels where the pass rate of such households is even half that of whites. At the mean rent level for the entire Phoenix population ($121), the percentage of white households passing Minimum Standards is about 28 percent; at that level the percentage of Spanish-Americans passing is about 11 percent.

Ability to Meet Program Occupancy Standards and Ability to Meet MS Program and Occupancy Simultaneously

The ability to meet occupancy standards is a measure of the demand for a particular housing attribute by various groups.[1] If some groups have a greater relative preference for interior space than for physical standards, then differences in physical standards outcomes for given expenditure levels may be in part explained by the relatively greater budgetary allocations in favor of space. Further, if one examined the ability of households to meet both standards simultaneously, differences among groups could be expected to be reduced.

In our sample, racial differences persist in terms of the inability of racial minorities to meet standards of occupancy even for the same expenditure level. Thus comparisons of joint outcomes of passing physical standards and occupancy standards at various rent levels reinforce rather than moderate conclusions about the inability of minorities to achieve adequate quality or adequate space for the same rents as whites. Results concerning occupancy

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[1]The program occupancy measure, as discussed above, is to some extent correlated with physical standards because of the adequacy criteria defined for bedrooms.

outcomes are presented in Figure 4.6.3; concerning joint outcomes, in Figure 4.6.4. As before, rent levels are positively associated with ability to pass either occupancy or joint standards. Every qualitative comparison among racial groups and sites that applies to ability to pass physical standards applies as well to both occupancy and joint standards.

Thus, on the surface, there is a reasonable conjecture that racial discrimination has pervasive effects on the prices that minorities pay for housing, and on the amount of housing quality and interior space that they are able to buy for their money.[1]

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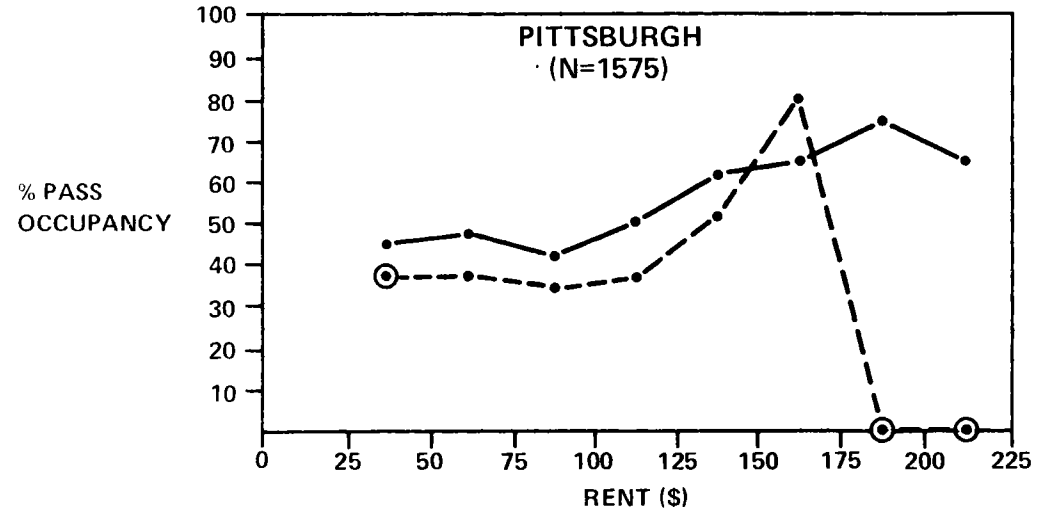
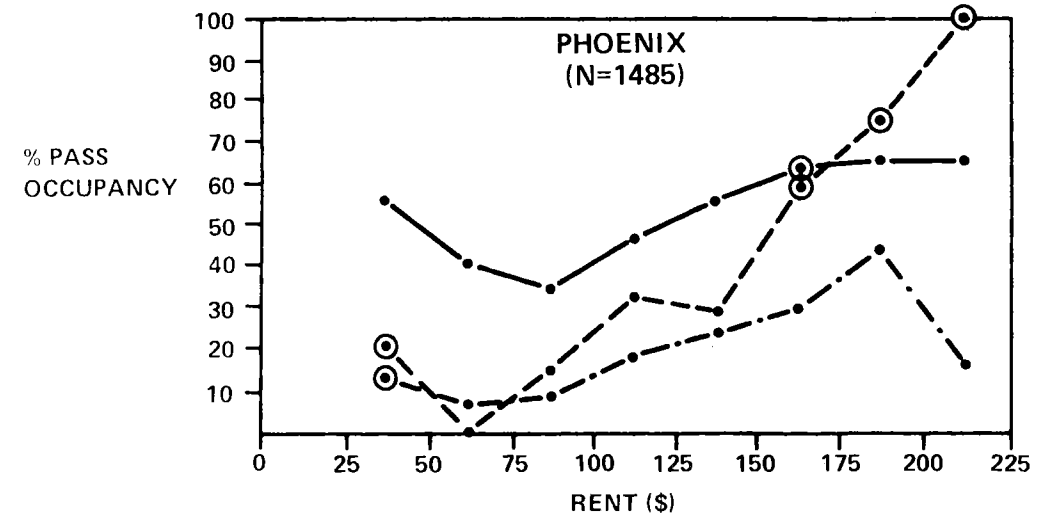
[1]As mentioned above, family size was not controlled for this analysis.

FIGURE 4.6.3
PERCENT OF HOUSEHOLDS PASSING PROGRAM
OCCUPANCY BY RENT BY RACE/ETHNICITY

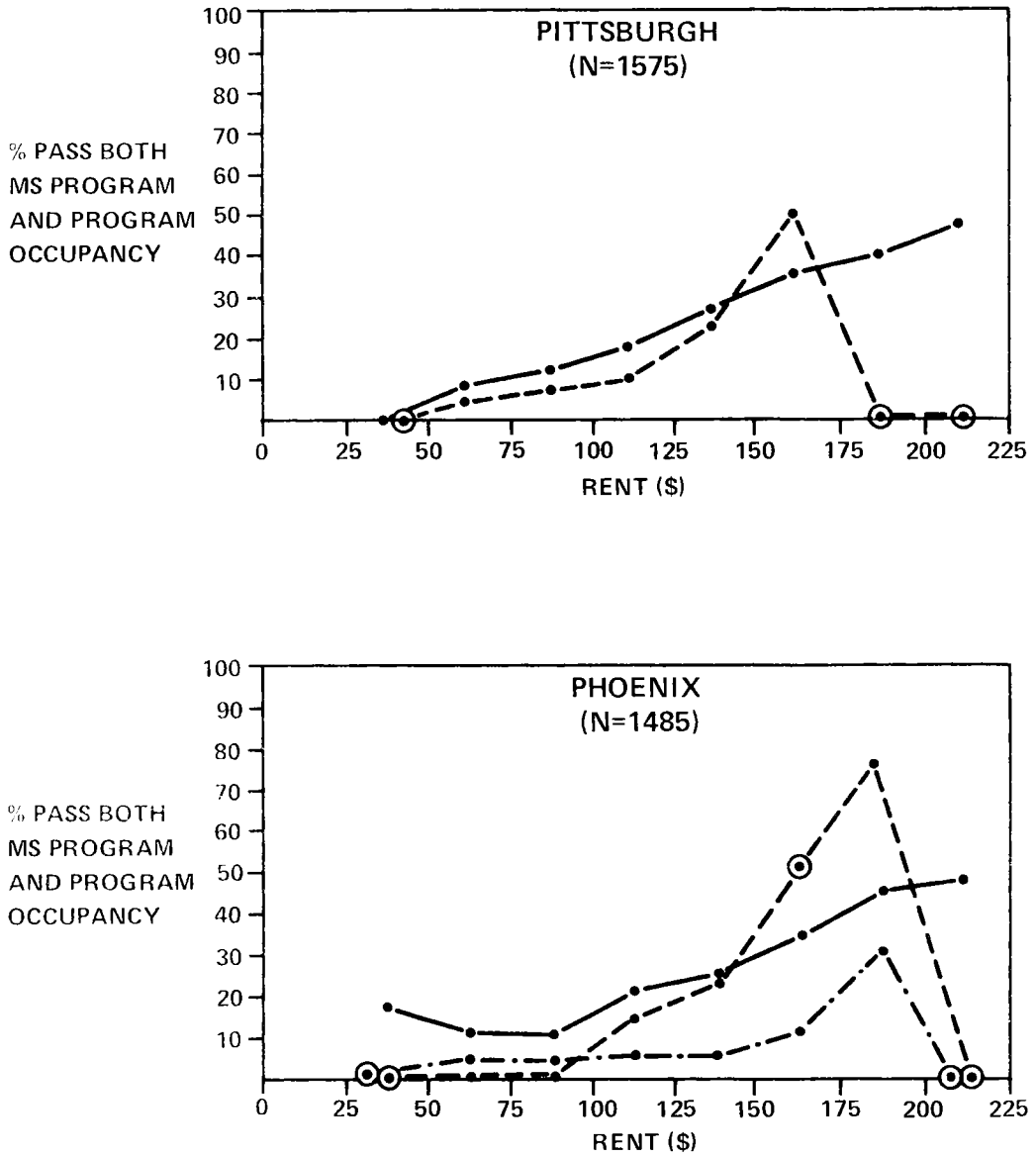




DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- WHITE
- BLACK
- SPANISH
- ⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

FIGURE 4.6.4
PERCENT OF HOUSEHOLDS PASSING BOTH MS PROGRAM AND PROGRAM OCCUPANCY BY RENT BY RACE/ETHNICITY



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION

KEY
- WHITE
- BLACK
- SPANISH
- BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

4.6.3 Minimum Standards and Minimum Rent Earmarking

The association between housing quality and rent is the basis for assessing the effectiveness of the Minimum Rent earmark as a substitute for Minimum Standards. The Minimum Rent earmark has been set as a fraction of the basic payments parameter, C* modal (see Appendix I). Minimum Rent low requires participants to pay at least .7C* modal on rent and Minimum Rent High requires an expenditure of at least .9C* modal. Thus, this section is concerned with the relationship of rent paid to C* and the attainment of housing quality and occupancy standards.[1]

The ratio of rent to C* may be calculated in terms of the C* defined by household size or the C* defined by unit size. The focus of this section is on potential participant response to minimum rent requirements and allowance levels. These are determined by household size, and this is the definition of C* used.[2]

In considering the effectiveness of Minimum Rent as an earmark, two basic issues are addressed:

- To what extent are housing improvements likely to occur in response to increased expenditures? Specifically, how does the likelihood of meeting Minimum Standards change for rents above or below a Minimum Rent level?
- Is the degree of variation in the supply price of standard housing likely to vitiate Minimum Rent as an effective earmark?

The information required to address these issues is presented below for each experimental city. Since the housing quality component of the Minimum Standards earmark--MS Program--is

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[1] It should be noted that the present comparison of Minimum Rent levels and housing standards pertains only to pre-program conditions. It does not address actual outcomes for participants seeking housing satisfying the requirements of the program earmarks (Minimum Standards and Minimum Rent).

[2] Defining C* in terms of unit size is appropriate, e.g., in attempts to use participant data to estimate the accuracy of C* as an estimate of market costs.

particularly important, the first subsection examines this component separately. The subsequent subsection considers both aspects of the Minimum Standards earmark, the housing quality standard and the occupancy criteria.

Some summary observations, based on pre-program conditions, are pertinent:

- The great majority of participants in both cities pay rents less than the estimates of the average cost of standard housing C* made by the Housing Cost Panels.
- The chances of obtaining adequate quality and space increase as the ratio of rent paid to C* increases. For example, very few participants paying less than either Minimum Rent level obtain adequate housing.
- There is, however, extremely wide variation in the supply price of housing of adequate space and quality. Conversely, for a given expenditure, a wide range in quality is purchased. Thus, paying rent in excess of either Minimum Rent level does not ensure standards for more than half the enrollees paying this amount.

Housing Quality and Minimum Rent

Pittsburgh. Table 4.6.3 shows, for Pittsburgh, the mean R/C* value for alternative levels of quality standards.[1] On the average, the rent paid by all participants is equal to .83 C*M. Those who meet program quality standards pay close to the value of C* (R/C* = .96). However, since the distribution is so disperse, the mean is not a good indicator of where many observations lie. Furthermore, the distribution is skewed to the left. Figure 4.6.5, which indicates the proportion of participants meeting MS Program at alternative values of R/C*, illustrates these conclusions. Of those in the interval .91 to 1.00 R/C*, 36.5 percent pass program standards. Of all participants paying greater than .91 R/C*, 41.6 percent pass program standards. Thus, at least for participants' initial

[1] The rent variable used in the calculation of R/C* is ACRA 1, defined in Appendix III.

TABLE 4.6.3

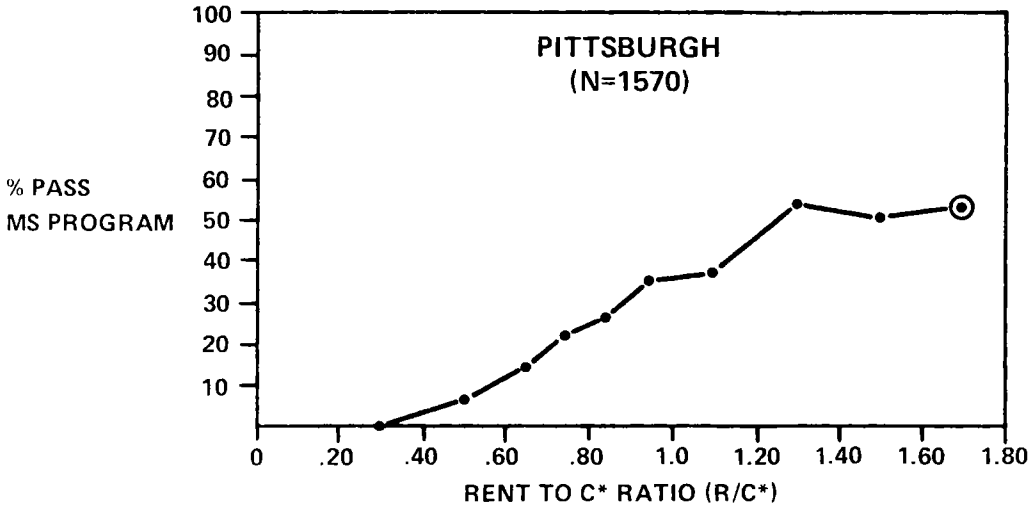
MEAN RENT TO C* RATIOS

Pittsburgh

Physical Standards Outcome	(R = ACRA1) Mean Value R/C* Modal[1]	Standard Deviation	Sample Size	% of Sample
Pass MS Program	.962	.252	394	25.1%
Pass Medium Only	.840	.241	404	25.7%
Pass Low Only	.835	.250	449	28.6%
Fail Low	.669	.183	323	20.6%
Entire Sample	.834	.258	Total 1570	100.0%

[1]The F statistic for the analysis of variance test of the differences in mean ratios for the five level standards outcome was 76.7, significant at the .001 level. In this table, MS High and MS Program were combined to get the overall mean for those passing MS Program.

FIGURE 4.6.5
PERCENT OF HOUSEHOLDS PASSING MS PROGRAM BY RENT TO C* RATIO



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

position, the higher minimum rent earmark (for C* modal) is an effective proxy for quality standards for less than half the Pittsburgh enrollees. Given the skewed distribution, the likelihood of meeting standards at rents less than .9 C* is fairly low, however. Only 17.9 percent of those paying less than .9 C* meet program standards.

Corresponding figures for the lower level of minimum rent follow. Of all enrollees paying greater than .71 C* in rent, only 32.5 percent pass program quality standards; in the interval .71 to .80 R/C*, 22.8 percent of those within this interval pass program standards. Again, however, minimum rent low appears efficient in the sense of providing a necessary (but not sufficient) lower bound for rent; only 10.6 percent of those paying less than .71C* pass standards.

Phoenix. The results for Phoenix differ somewhat. In general, minimum rent is slightly more adequate as a proxy for quality standards, although there still exists substantial variation in the price of standard housing. The average value of rent to C* for the entire sample is somewhat less than in Pittsburgh. Because a larger portion of the entire sample fail the lowest quality level where R/C* = .518, the overall mean is .746. Again, however, the mean price of program standard housing is close to C* (R/C* = .950).

Figure 4.6.6 indicates the percent of participants meeting program standards at R/C* intervals. It is apparent that the chances of passing standards are somewhat greater than in Pittsburgh for R/C* greater than .7. Of those paying greater than .7, 45.5 percent pass. In the .71 to .80 interval, 29.4 percent pass program standards. Conversely, only 10.6 percent paying less than this amount pass.

For minimum rent high, 56 percent of those paying greater than .9 C* meet standards; in the .91 to 1.00 interval, the rate is 42.9 percent. Finally, only 18.3 percent of those paying less than .9 C* obtain standard housing.

TABLE 4.6.4

MEAN RENT TO C* RATIOS

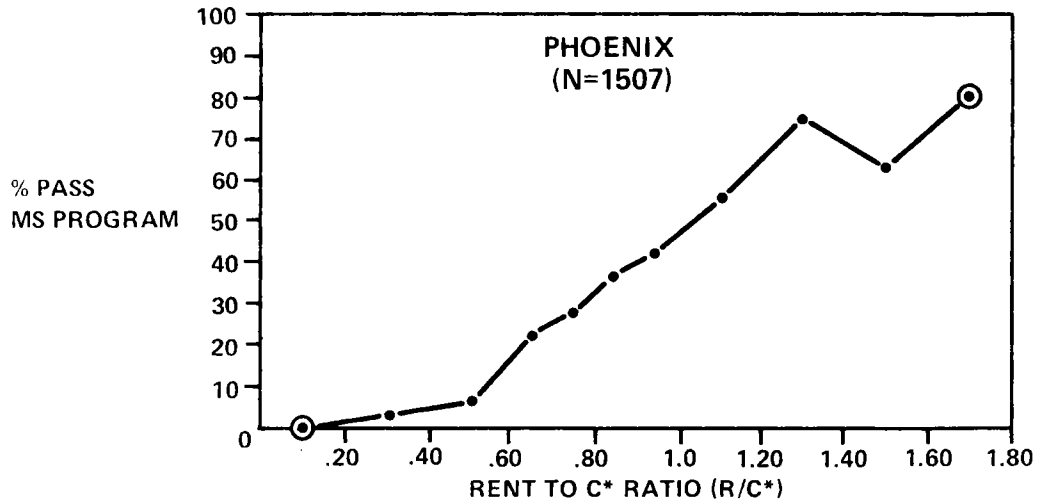
Phoenix

Physical Standards Outcome	(R = ACRA1) Mean Value R/C* Modal[1]	Standard Deviation	Sample Size	% of Sample
Pass MS Program	.950	.260	429	28.5%
Pass Medium Only	.792	.225	460	30.5%
Pass Low Only	.690	.245	179	11.9%
Fail Low	.518	.194	439	29.1%
			Total	
Entire Sample	.746	.288	1507	100.0%

[1]The F statistic for the analysis of variance test of the differences in mean ratios for the five level standards outcome was 214.8, significant at the .001 level. In this table, those passing MS High and MS Program were combined to get the overall mean for those passing MS Program.

FIGURE 4.6.6

PERCENT OF HOUSEHOLDS PASSING MS PROGRAM BY RENT TO C* RATIO



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY

⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

Housing Quality and Occupancy Standards - The Minimum Standards Earmark

The C* payments schedule was derived from housing cost estimates which were based on "adequacy" of interior space as well as of physical standards.[1] This section addresses the same issues raised above for those meeting the Minimum Standards earmark -- i.e., both program standards and the program occupancy criteria. The basic conclusions remain the same.

Pittsburgh

As seen in Table 4.6.5, those who meet both program quality occupancy criteria are paying, on average, almost exactly C*. As a significant contrast, those who fail both pay only .73C*.[2] Again, however, the mean payment is not a good indicator of the distributions.

Figure 4.6.7 shows the distribution by R/C* interval for those passing both program criteria and for those failing to meet both criteria. This contrast emphasized the large variation in the amount of housing quality and space for a given value of R/C*. At about .9C*, the proportion passing and failing are equal. In the results that follow the percent within each R/C* interval meeting physical standards, without considering occupancy, are given in parentheses.

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[1]The Housing Cost Panel also considered "adequate" neighborhood. No locational variables are controlled for in this discussion. This issue is the subject for future analysis.

[2]The rent variable used in these calculations is ACRA 4. This is basically "rent as reported" since no adjustments are made for no cash renters or those who work in lieu of rent. While it was desirable to use "rent as reported" to analyze the Minimum Standards earmark, the differences in the overall mean of R/C* using ACRA 1 or ACRA 4 are negligible.

TABLE 4.6.5

MEAN RENT TO C* RATIOS FOR STANDARDS AND OCCUPANCY OUTCOMES FOR PITTSBURGH

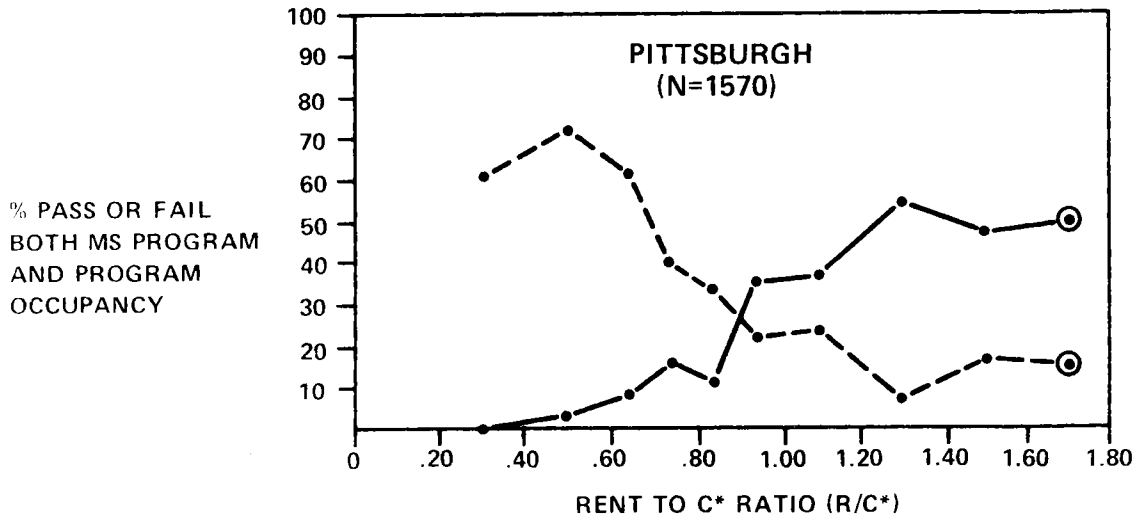
Standards and Occupancy Result	Mean Value of R/C* Model[1]	Standard Deviation	Sample Size	Percent of Total Sample
Pass Standards, Pass Occupancy	1.001	.254	328	20.9%
Pass Standards, Fail Occupancy	.849	.229	142	9.0
Fail Standards, Pass Occupancy	.858	.248	439	28.0
Fail Standards, Fail Occupancy	.725	.215	661	42.1
Entire Sample	.831	.256	1570	100.0%

Data Source: Baseline Interview and Initial Housing Evaluation Form

[1]The F statistic from the analysis of variance is 105.1, significant at the .001 level.

FIGURE 4.6.7

MS PROGRAM AND PROGRAM OCCUPANCY: PERCENT OF HOUSEHOLDS PASSING BOTH AND FAILING BOTH BY RENT TO C* RATIO



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

KEY
- PASS BOTH
- FAIL BOTH
- BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

Of those paying .91 - 1.00 R/C*, 36.8 percent meet the earmark (36.5%); 41.2 percent of those paying more than .9C* pass both criteria (41.6%). However, it becomes more difficult to pass both the quality and space requirements below the Minimum Rent. Only 12.2 percent of those paying less than .9C* pass both (17.9%).

Because the likelihood of obtaining both quality and space at low levels of R/C* is decreased, the effectiveness of minimum rent low as a proxy for minimum standards is considerably reduced. Only 15.6 percent in the .71-80 interval pass (22.8%) and only 28.6 percent of all participants paying more than .7 meet both criteria (32.5%). Only 6.6 percent of those paying less do so (10.6%).

Phoenix

When the occupancy criteria is joined with program standards in Phoenix, the difference in results is much greater than for Pittsburgh. While those meeting both criteria still pay close to C*, (see Table 4.6.6), the likelihood of meeting both is markedly reduced. The curve shown in Figure 4.6.8 has shifted downward at all levels of R/C* between .4 and 1.4. Again, in the results that follow, the percent meeting physical quality standards alone within the R/C* category is given in parentheses.

For minimum rent high, 48 percent of those paying greater than .9C* pass both criteria (56 percent); in the .91-1.00 interval, 22.3 percent pass (42.9 percent). However, only 12.4 percent of those paying less meet both physical standards and occupancy (18.3 percent).

A similar downward shift occurs for minimum rent low. Of all those paying .71C* or above, 35.3 percent meet both criteria (45.5 percent); in the interval .71-80C* only 26.4 percent pass both (29.4 percent). Finally, only 7.9 percent of those paying less than minimum rent low meet standards and occupancy (10.6 percent).

TABLE 4.6.6

MEAN RENT TO C* RATIOS FOR STANDARDS AND OCCUPANCY OUTCOMES IN PHOENIX

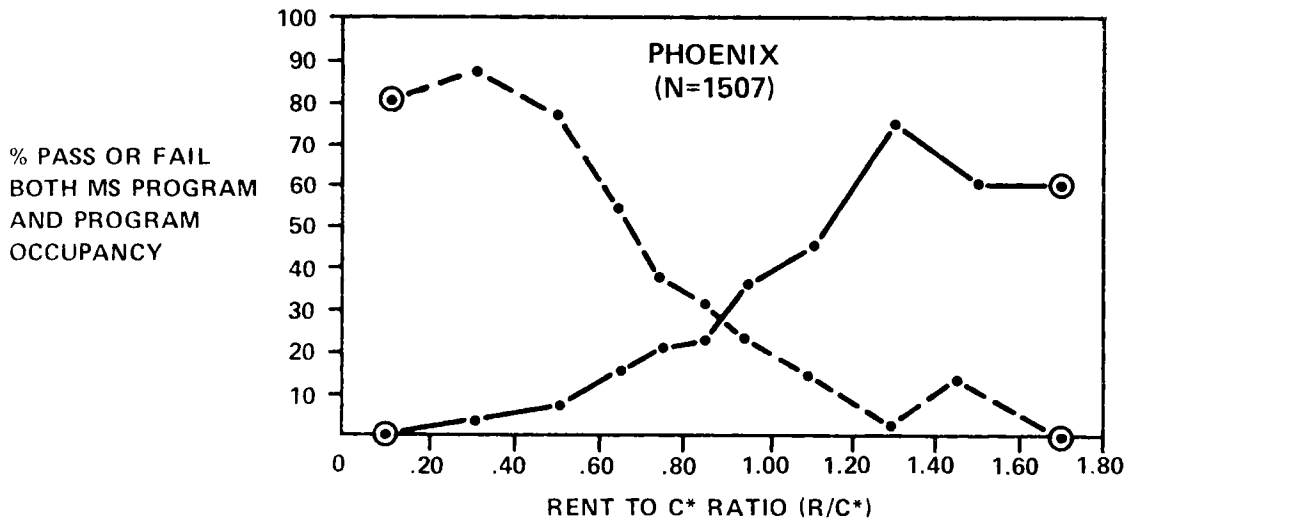
Standards and Occupancy Result	Mean Value of R/C* Modal[1]	Standard Deviation	Sample Size	Percent of Total Sample
Pass Standards, Pass Occupancy	.962	.276	325	21.6%
Pass Standards, Fail Occupancy	.847	.263	125	8.3
Fail Standards, Pass Occupancy	.809	.235	322	21.4
Fail Standards, Fail Occupancy	.586	.212	735	48.8
Entire Sample	.736	.283	1507	100.0%

Data Source: Baseline Interview and Initial Housing Evaluation Form

[1]The F statistic from the analysis of variance is 217.3, significant at the .001 level.

FIGURE 4.6.8

MS PROGRAM AND PROGRAM OCCUPANCY: PERCENT OF HOUSEHOLDS PASSING BOTH AND FAILING BOTH BY RENT TO C* RATIO



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

Again, the distribution over R/C* values for those failing both standards and occupancy emphasizes the wide variation in rents at which quality and space are available. As in Pittsburgh, at about .9C*, the chances of passing and failing are equal.

Sections 4.6.2 and 4.6.3 have introduced in a preliminary fashion several of the topics to be pursued in future analysis of rent and housing quality--variation in the price quality relationship by demographic groups and the distribution of standard housing relative to Minimum Rent levels. As mentioned in 4.6.2, a major source of variation in housing prices for given quality and space is due to differences among housing submarkets. Without some analysis of location and neighborhood attributes it is not known what these components contribute. Many locational characteristics may be equally as desirable from a policy point of view of dwelling unit quality and space standards.

Similarly, variation in the price/quality relationship may be due to numerous differences in tenure conditions, such as the length of tenure, the presence of the landlord, or the existence of a lease. Further analytical efforts will take a broad set of factors into account through estimation of an hedonic index of housing quality. Several variables affecting the price and quality relationship are particularly important for refining the analysis of Minimum Rent and Minimum Standards earmarking. Tradeoffs between dwelling unit quality and neighborhood attributes may take place, for example. In addition, since many participants must move to seek earmark compliance, the analysis must consider price differences between housing occupied for some time and newly located rental units.

4.6.4 Length of Tenure

The results of a very preliminary analysis of the differences in mean rent to C* ratios by differences in length of tenure

are presented below in Table 4.6.7. The sample represents only those units which meet both standards and occupancy criteria. The hypothesis that the rent level for units occupied more recently is higher than for those occupied for a longer time period is borne out in Pittsburgh but less so in Phoenix. In Pittsburgh, the mean value of R/C* for participants who have occupied their units one year or less (R/C* = 1.059) is significantly different from the mean for tenure of greater than one year (R/C* = .973). In Phoenix, only the length of tenure variable based on greater than or less than three years shows much variation, but the result is significant only at the .10 level.

Refinement of the tenure variable, as well as consideration of other aspects of the housing bundle, are the subjects of future analysis and are integrally related to analysis of residential mobility and quality upgrading by demographic groups.

TABLE 4.6.7

MEAN RENT TO C* RATIOS FOR MINIMUM STANDARD HOUSING BY LENGTH OF TENURE

PITTSBURGH

Length of Tenure	Mean Value of R/C* Modal	Standard Deviation	Sample Size	F Statistic
One Year or Less	1.059	.250	100	F = 8.16 Significant at .005
Over One Year	.973	.250	222	
Three Years or Less	1.021	.253	204	F = 3.68 Significant at .053
Over Three Years	.965	.250	118	

PHOENIX

Length of Tenure	Mean Value of R/C* Modal	Standard Deviation	Sample Size	F Statistic
One Year or Less	.979	.273	203	F = 1.525 Significant at .215
Over One Year	.940	.276	121	
Three Years or Less	.974	.272	279	F = 2.67 Significant at .099
Over Three Years	.902	.287	45	

5.0 LOCATION

This section focuses on the location of households at the time of the Baseline interview and on the previous mobility, search behavior, and preference to move of households enrolled in the experiment. Section 5.1 summarizes the response measures of concern to the overall analysis of location. Section 5.2 discusses the initial geographic distributions of households in Phoenix and Pittsburgh. Section 5.3 describes participants' previous mobility, experiences with search, and preferences to move with reference to major demographic variables and background factors which may influence migration decisions during the course of the experiment.

5.1 BACKGROUND OF THE ANALYSIS OF LOCATION

The description of households' initial positions should be understood within the context of the overall analysis of location. The following discussion identifies the principal research issues toward which the overall analysis is oriented.

5.1.1 Response Measures

The analysis of location has two major themes. The first theme focuses on the dynamics of housing and neighborhood choice. Here the analysis seeks to describe and explain the decision processes by which households arrive at particular destinations during the course of the Experiment. The principal response measures are those of mobility and search behavior. It is hypothesized that the choices which households make in deciding whether or not to move, and how they go about looking for housing will be a function of (a) the experimental treatments which may provide opportunities or constraints to migration; (b) particular household situations (e.g., demographic characteristics, availability of transportation, degree of satisfaction with neighborhood and housing etc.), and (c) alternative residential locations.

The second major theme of the analysis of location focuses on the results of locational choices with respect to changes in the spatial distribution of households, in neighborhood characteristics and in accessibility to work, shopping, places of recreation and the like. The major neighborhood outcome on which this report focuses is spatial distributions in terms of patterns of segregation and concentration.

5.1.2 Principal Concerns

The principal concerns of Section 5.2 are the descriptions of geographic locations of enrolled households at the Baseline Interview. The spatial distributions of households prior to enrollment are the key reference points against which future patterns of migration during the program will be measured and analyzed. In addition they provide important evidence with respect to:

- Potential spatial biases in rates of participation;
- Initial differences between locations of controls and experimental households;
- Initial patterns of concentration and segregation of policy relevant subgroups - principally racial minorities and low income households.

The principal concerns of Section 5.3 are:

- To describe households' previous mobility, housing search and preferences to move, so that changes in patterns which occur as a result of the experiment may be distinguished;
- To describe the differences between demographic subgroups of the population with respect to mobility and search so that interactions between experimental treatments and background factors during the program may be controlled for.

Previous research indicates that a number of relationships between demographic variables and mobility and search are

to be expected (e.g., the reduced mobility and limited search of elderly households). Where appropriate, the observations reported here are described with reference to those expectations.

5.2 SPATIAL DISTRIBUTIONS OF ENROLLED HOUSEHOLDS

This section addresses the question of where households enrolled in the experiment were living at the time of the Baseline Interview. The geographic distribution of households is important as it relates to:

- Housing, neighborhood and accessibility outcomes among different groups of the experimental population;
- Patterns of segregation and concentration among different subgroups--particularly minorities and low-income households;
- Comparisons between housing allowance participants and participants in other federally subsidized housing programs.

Household locations prior to enrolling in the experiment provide the basic reference points against which future migration patterns during the program may be measured and analyzed. Comparisons among different groups of households along both program dimensions (e.g., experimentals and controls) and along non-program dimensions (e.g., demographic characteristics) provide essential information as to whether or not different groups were starting from the same types of neighborhoods. Since households will be living in different kinds of neighborhoods, moves between areas may show marked shifts in neighborhood characteristics.

This section is organized around two basic comparisons:

- Comparisons between experimental households and control households.
- Comparisons among major racial or ethnic groups (whites and blacks in Pittsburgh; and non-minority whites, blacks, and Spanish-Americans in Phoenix)

These comparisons are presented in the 12 maps at the end of this section (five for Pittsburgh and seven for Phoenix). Household locations depicted on these maps were drawn by computer and were generated from the geo-coded coordinates of the Baseline address (see Appendix II). [1]

5.2.1 Locations of Enrolled Households

In general, the maps of Pittsburgh and Phoenix show striking differences with respect to the overall distribution of households in the two areas. (See Map 1 for Pittsburgh and Phoenix). In Pittsburgh, the relationship of topographical features (rivers and hills) to household locations is strong. The Allegheny, Monongahela, and Ohio Rivers provide major boundaries along which urbanization generally, and participant locations specifically, are clustered. These rivers may provide major barriers to patterns of migration, since households rarely cross the rivers when they move. [2]

In Phoenix, topography plays only a minor role, the major divisions being the Salt River and South Mountain Park to the south of the city. Clustering of households is much less prevalent overall, with households locations generally more dispersed

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[1] Not all locations of households are drawn on these maps. In both sites initial computer "matches" of Baseline addresses to geo-codes were possible in about 90 percent of the cases. Many of the unmatched addresses will be geo-coded in the future by making coordinate assignments by hand, or by clarifying original address information. The missing values should not bias locational patterns with one (minor) exception. In Phoenix, geo-coding of addresses in some outlying towns had not been completed in time for this report. Only 59 enrolled households were in these areas as discussed in Appendix II.

[2] Reports from observers on site, including the Pittsburgh Urban League and HUD area office.

throughout the urbanized area. The absence of strong clusters of households in Phoenix mirrors the distribution of the population generally. Phoenix is much more spread out than Pittsburgh.

Table 5.2.1 summarizes the distribution of enrolled households with respect to central-city and suburban locations, and compares these figures with their respective proportions for the estimated 1970 Census eligible population,[1] and the actual 1970 total population of Allegheny and Maricopa Counties.

TABLE 5.2.1

DISTRIBUTION OF ENROLLED HOUSEHOLDS BY CENTRAL CITY AND SUBURBAN LOCATIONS AND COMPARISON WITH 1970 CENSUS ELIGIBLE AND 1970 ACTUAL POPULATIONS

	ENROLLED HOUSEHOLDS		ESTIMATED 1970 CENSUS ELIGIBLE POP.		1970 TOTAL POPULATION (ACTUAL)	
	#	%	#	%	#	%
PITTSBURGH (Allegheny Co.)						
- Central City	961	54.6	36,700	58.2	520,117	32.4
- Suburbs	799	45.4	26,400	41.8	1,084,899	67.6
PHOENIX (Maricopa Co.)						
- Central City	1408	76.5	37,900	77.5	518,466	60.1
- Suburbs	432	23.5	48,900	22.5	449,049	39.9

Data Sources: Baseline Address and 1970 Census of Housing, Metropolitan Housing Characteristics Reports HC (2)-166/168

This distribution is important for two reasons. First, it provides an estimate of the representativeness of the enrolled sample with respect to the geographic distribution of the total eligible population in the two sites. In Pittsburgh about 55 percent of the enrolled households were living in the city

[1] These figures were derived by summing the total number of renter households by household size within the maximum permissible income ranges for each household size, taking into account the proportion of one-person households who were elderly.

itself, with the remaining 45 percent living in the outlying areas of Allegheny County. This breakdown is compared with approximately 58 percent of the estimated 1970 census eligible population who were living in Pittsburgh, versus 42 percent who lived outside the city.

In Phoenix 76 percent of the enrolled households were living within the city limits, and 24 percent outside. This is compared with 77 percent and 23 percent, respectively, for the estimated census eligible population. For both Phoenix and Pittsburgh it appears that the geographic distribution of the experimental sample approximates that of the eligible population overall.

Second, the spatial distribution of enrolled households at the baseline interview is important for future analyses of migration patterns. The principal questions involved are (1) whether or not a housing allowance enables minority households living in central city ghettos to gain access to suburban opportunities (eg. jobs, schools, and housing) and (2) whether or not a housing allowance program may induce migration of households away from the inner city, thereby affecting vacancy rates and/or rates of abandonment of central city housing.

The significance of this pattern with respect to race is discussed below in section 5.2.3.

In the city of Pittsburgh, the largest clusters of households are found in the neighborhoods around Allegheny Center; south of the Monongahela River around Mt. Oliver; in a band along Baum Boulevard from East Liberty out toward Homewood, Brushton and Wilkinsburg; and in the Hazelwood neighborhood along the Monongahela River. Outside the city, the largest clusters of households are found in:

- Wilkinsburg, Homestead, Braddock, Duquesne, McKeesport (east and south of the city);
- McKees Rocks, Belleview, Coraopolis, Sewickly (west of Pittsburgh along the Ohio River);

- Millvale, Sharpsburgh, Oakmont, Springdale and Tarentum (northeast along the Allegheny River);

- Along the southern border of Pittsburgh, near Dortmont and Baldwin.

The significance of this pattern with respect to race is discussed below in Section 5.2.3.

In Phoenix, while households tend to be more spread out, certain geographic clusters stand out.

- The largest proportion of households are clustered around the downtown area between McDowell and Van Buren and south of Van Buren.

- Outside of the downtown area, households appear to be living most frequently in Glendale (northwest), Mesa (east), along Central Avenue in the north (Sunny Slope).

- Not shown on the map are smaller groups of households living in the northwest part of the urbanized area; including Youngstown, Peoria, and Surprise.

5.2.2 Comparison between Experimental and Control Households

Since control households were only offered a nominal payment, one might expect some difference between the locations of experimental and control households. This would occur if, for example, control households in outlying areas or in "better" neighborhoods, were less willing to participate in the program than other controls in different neighborhoods and than experimental families in the same neighborhood.

Based on comparisons of Maps 2 and 3 for Pittsburgh and for Phoenix no such differences are apparent. Almost identical clustering patterns show up on the two maps. The one exception to this general observation might be the slightly higher number of experimental households (relative to controls) on the west side of Phoenix in the Maryvale area. However, the difference is not a sharp one. For the most part, experimentals and controls appear to come from the same locations.

5.2.3 Comparison of Enrolled Households by Race/Ethnicity

Maps 4 and 5 compare the distributions of non-minority white and and black participant households in Phoenix and Pittsburgh. These are perhaps the most illuminating of the maps. The shaded areas show census tract racial distributions of the total population. The spatial distributions of enrolled households by race give a much sharper picture of housing segregation than tract percentages.

In Allegheny County, most black participants live in the central city. (See Map 5.) Within Pittsburgh, black participants tend to be clustered on "The Hill" near the central business district, on the near west side around Allegheny Center, on the south side near Mt. Oliver, and on the east side in the Homewood-Brushton area. Further, the locations of black participants tend to conform fairly closely to census tracts having greater than 25 percent black population (see shaded areas on maps) defined by 1970 Census.

White participants in Pittsburgh tend to be more spread out. (See Map 4.) The tendency toward clustering is less pronounced and a far greater proportion of whites live outside the central city. With the exception of one area in Allegheny county (McKeesport), the locations of enrolled black and white households do not overlap. They may be close, but on the scale used in the maps, non-overlapping suggests a sharp separation along racial lines. Even within the central city, the boundaries separating black from white participants are fairly clear. For example, a very strong cluster of black households is found north of Penn Avenue in the Homewood-Wilkinsburg area. Whites in the same vicinity (i.e., Wilkinsburg) tend to live south of the Penn Avenue boundary. Concomitantly, racially mixed neighborhoods are very rare for this sample. McKeesport is one of the few exceptions.

In Phoenix, a similar pattern of racial separation emerges (see Maps 4-7 - Phoenix). Black participants are clustered immediately to the east and southwest of the central business

district, and south of the Salt River (Map 5). Only a few black participants were living outside of this area--almost all of them in Mesa. The locations of black households in the enrolled sample conforms rather closely to concentrations of the black population generally as shown in the 1970 Census (shaded areas). It should be noted that the shaded areas describe only the relative racial concentration in each tract, and not absolute numbers of households.

As is the case with Pittsburgh, relatively few white participants in Phoenix (Map 4) were living in the same neighborhood as black participants. Even in the downtown area, in South Phoenix, and in Mesa, the separation between blacks and whites is clear. Whites are spread throughout the urban area, with the exception of the northeast quadrant above Thomas Road and east of 16th Street where there are no enrolled households at all.

Map 7 for Phoenix shows the spatial distribution of Spanish-American households. The comparison between Maps 6 and 7 suggests, first of all, that non-minority white participants are much more likely to live north of the central business district (CBD) than Spanish Americans, with the exception of Glendale in the northwest quadrant of the city. However, relative to black participants, non-minority whites and Spanish Americans are much more likely to be living in the same neighborhoods. This is particularly true just north of the CBD, in Glendale, in Mesa and in South Phoenix.

Compared to the Spanish population as a whole (see shaded areas on Maps 6 and 7), Spanish American participants tend to be living in tracts greater than 15 percent Spanish. The exceptions to this general pattern are those Spanish American households living north of McDowell Road. Again, it is noted that the shading describes relative concentrations of Spanish

speaking households only. Thus, the few Spanish American households in the predominantly Spanish areas west of Phoenix reflects the low population density in these areas.

5.2.4 Summary

Based on the maps of household locations, two observations may be made. first, there appears to be very little difference between the locations of experimental households and those of controls. The absence of a strong spatial bias with respect to the baseline locations of the two groups suggests that valid comparisons between them can be made with confidence in the future.

Second, it is clear that patterns of racial segregation are relatively strong in both sites. Blacks and whites in Pittsburgh and Phoenix are not living in the same neighborhoods. In Phoenix, while Spanish Americans tend to be living in areas of relatively high concentrations of Spanish population generally, the mixture of Spanish Americans and non-minority whites is much greater than that of blacks and whites.

5.3 MOBILITY, SEARCH, AND MOVING PREFERENCES

This section has three objectives:

- To provide a preliminary description of household mobility prior to enrollment in the experiment;
- To describe the search patterns of recent movers (those who had moved since 1970) and the frequency of discrimination encountered in search;
- To describe households' expressed preferences to move or not to move, given a hypothetical increase of $50 in their rent-paying ability.

These three types of descriptions provide historical context for locational responses during the program. Comparison of mobility and search behavior prior to the program among

different types of households will facilitate isolation of these background factors from program effects later on during the experiment.

The basic questions addressed in this section are:

- Who moves? That is, what are the principal background factors associated with residential mobility in the sample population?
- How do they move? How did different kinds of households go about looking for housing, how much did they look and how frequently was discrimination encountered?
- Who wants to move? Which households would like to move given additional resources for rent? How do they differ from those preferring to stay where they are?

5.3.1 Principal Relationships

The following discussion summarizes the principal relationships observed between the response measures identified above and the background factors (independent variables) of concern to this analysis. The relationships are, of course, tentative. As discussed below, they may reflect associated demographic variables, or they may be influenced by differential rates of mobility between local and long-distance movers. It should also be noted that moving behavior may not be associated so much with demographic characteristics observed after the move as with a change in demographic characteristics--for example, at the time of a move household type may have changed from single to married or a new job may have changed both income level and major source.

- Race. In both Pittsburgh and Phoenix blacks moved less frequently in the past than whites. Blacks who had moved tended to have looked at fewer places, but to have spent more time looking. They were more dependent on word-of mouth sources of information than whites, and reported discrimination more frequently. Despite lower previous mobility, they had a relatively high preference to move from their baseline address. These facts could be associated with racial discrimination which reduces the number

of suitable units, makes moving more difficult and leaves its victims dissatisfied with the housing they do find.

Spanish American and Indian households in Phoenix were also less likely to have moved in the past relative to non-minority whites, but were on the average more mobile than blacks. They, too, spent more time looking than non-minority whites. Spanish Americans were more reliant on friends and relatives and less reliant on real estate agencies for information about available housing. Indians tended to have encountered racial discrimination as frequently as blacks, while Spanish Americans reported discrimination slightly more frequently than non-minority whites. Spanish and Indian racial groups preferred to move from their baseline address about as frequently as blacks.

- Income. Previous mobility shows some tendency to increase with income. Sources of information in search do differ by income group. Higher income households use newspapers more and word-of-mouth sources less than lower income households. Higher income households appear to have a greater preference to leave their present dwelling unit than those with lower incomes.

- Sources of Income. Households whose major source of income was welfare appear to have moved more frequently in the past than those with other sources of income. They also tend to spend more time looking for housing.

- Age of Head. Age of head of households shows a strong and consistent relationship with previous mobility, search and preference to move. The elderly tend to be the least mobile and to have the lowest preference to move from their baseline address. Households with heads under 30, on the other hand, tend to be the most mobile and have the highest preference to move in the future. Elderly households tend to spend the most amount of time looking and are more reliant on word-of-mouth sources of information. Households with heads under 30 encounter age discrimination more frequently than any other age group.

- Sex of Head. Female-headed households appear to be less mobile than male-headed households, but the relationship is not very strong. They do spend more time looking for housing.

- Size of Households. The relationship between mobility and household size is not a clear one, although mobility for single person households (mostly elderly) and households with more than six people is much lower than that for households with two to six members. Larger households tend to spend more time looking for housing.

- Type of Household. Households with children tend to have been more mobile in the past than those without children. Of all types of discrimination asked about on the Baseline questionnaire discrimination against children was the most frequently encountered.

- Satisfaction with Housing and Neighborhood. The Relationship between previous mobility and satisfaction with current housing and neighborhoods is not clear. However, as expected, those households who were least satisfied with their baseline residence on these two scores had the highest preference to move in the future.

5.3.2 Pre-Enrollment Mobility

There are two baseline measures of pre-enrollment mobility against which it will be possible to estimate the impacts of housing allowances on household mobility and migration. The first is the number of moves a household had made during the three years prior to the program. The second is the length of time any member of a particular household had lived at the baseline address. The two baseline questions were:

"How many times have you yourself moved in the last three years--since (MONTH) 1970?"

"How long have you (or the other members of your household) lived here, in this (house/apartment)?"

Unless otherwise noted, the following discussion of previous mobility refers to the number of moves since 1970. (Analysis of length of stay is complicated by extreme values for those who have lived in the same place for many years.)

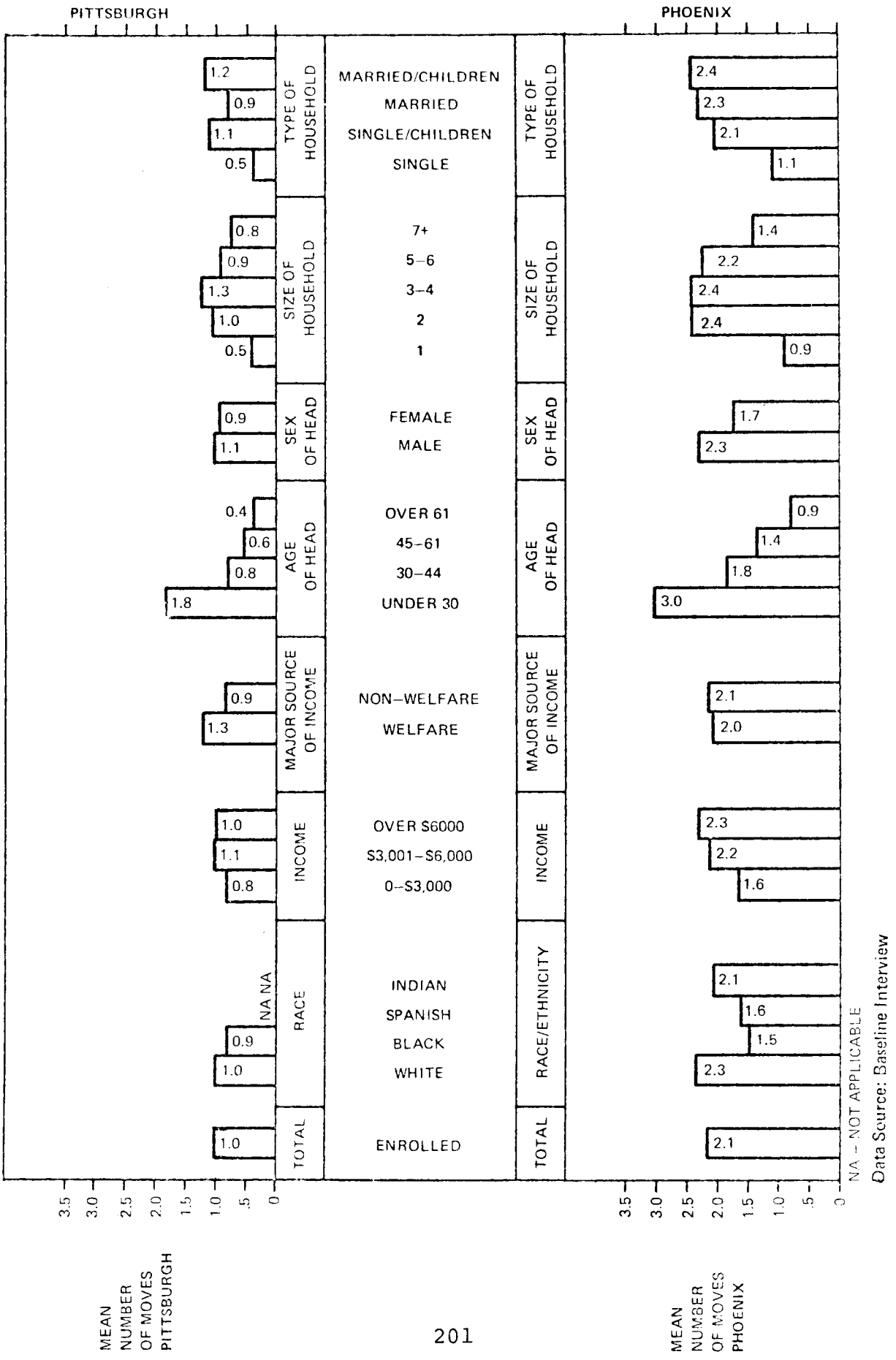
Figure 5.3.1 presents summary information on mean number of moves in each site by major demographic group. It is clear that the rates of mobility for households in Pittsburgh and Phoenix are very different. In Pittsburgh participants averaged only one move between 1970 and 1973. In Phoenix the average household moved more than two times in the same time period. This is consistent with the relatively rapid growth of Phoenix and the substantial seasonal fluctuation in the Phoenix housing market due to winter vacationers.

Before discussing the comparison of mobility among demographic groups, two comments are in order. First, almost all of the differences in Pittsburgh and many of those in Phoenix are statistically significant. (Since the distribution of number of moves is bounded below by zero, the higher mean in Phoenix tends to increase the variance.) As usual in simple demographic comparisons, this should not be taken too seriously. The sample size is large. The confounding of different demographic effects may be substantial (as in age and type of household). The purpose of this section is to identify major patterns for further exploration in terms of either the initial position of participants or assertions in the existing literature on mobility.

Second, the mobility data reported here does not distinguish between local and long-distance moves. To the extent that the mix of inter- and intra-metropolitan migration is different for different demographic sub-groups, then the following

FIGURE: 5.3.1

MEAN NUMBER OF MOVES SINCE 1970 FOR DEMOGRAPHIC GROUPS



NA – NOT APPLICABLE

Data Source: Baseline Interview

observations on mobility and search may be somewhat biased.[1] Later analysis will seek to isolate these different kinds of moves.

In comparing rates of mobility among different demographic subgroups, a number of patterns emerge which are worth noting. With respect to race, black household in this sample tend to have been relatively less mobile than whites in this sample. This pattern is stronger in Phoenix than in Pittsburgh. It tends to contradict previous findings that non-white households are more mobile than whites,[2] but may be associated with the fact that the data are for enrolled households (with an income cutoff) not for a sample of the entire population.

The differences observed here should be related to the observation reported below that blacks who have moved recently tend to have looked at fewer units than whites, but to have spent more time

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[1]The 1970 Census (4th Count) provides the following information on local vs. long-distance migration of persons 5 years old or over in Pittsburgh and Phoenix between 1965 and 1970.

Residence in 1965	Pittsburgh	Phoenix
-% in same house (stayers)	65.6	40.0
-% in different house, same SMSA (local moves)	24.2	26.1
-% in different house different SMSA (long-distance moves)	6.8	25.7

Source: U.S. Department of Commerce, Bureau of the Census, Census Tracts, Reports PHC (1)-160, PHC (1)-162. Table 2.

It should be noted that these figures combine homeowners as well as renters.

[2]See Edgar Butler, F. Stuart Chapin, et al., Moving Behavior and Residential Choice - A National Survey, Washington, D.C.; Highway Research Board 1969, p. 51.

looking (see Section 5.3.3 below). The suggestion is that blacks may have fewer housing options due to discrimination in the housing market and therefore may move less frequently.[1] However, it is also acknowledged that some of the differences between blacks and whites with respect to mobility and search behavior might be explained by differences between rates of local and long-distance mobility for the two groups. According to the 1970 Census, among families with 1969 incomes of less than $6000, black families in Phoenix and Pittsburgh have higher local mobility rates than whites, but lower long-distance rates. See Table 5.3.1.

TABLE 5.3.1

PROPORTION OF FAMILIES MOVING AT LEAST ONCE BETWEEN 1965 AND 1970 PITTSBURGH AND PHOENIX

	Local Mobility	Long-Distance Mobility	Total
Pittsburgh:			
All Families	28.6	5.0	33.6
Black Families	40.4	4.0	44.4
Phoenix:			
All Families	28.4	23.7	52.1
Black Families	34.4	11.8	46.2

Source: 1970 Census of Population and Housing

These differences are consistent with gross differences in the two sites--the Phoenix area is growing in population while the Pittsburgh area is more stable. Thus, a higher local mobility of black families in Phoenix and Pittsburgh may be disguised by a higher rate of long-distance mobility for whites. This potential bias may be offset by the fact that Census data reports

[1] See Jay Siegel, "Intra-Metropolitan Migration of White and Minority Group Households," Stanford University, Dept. of Economics, Stanford, California, May 1970, Mimeo. p. 76ff.

only the proportion of families (or individuals) who have moved "at least once" between 1965 and 1970. The Baseline information reported here refers to the average number of moves per household. To the extent that proportionately more white households than black households are repeated movers, the difference in findings may be explained. Until household mobility is disaggregated by previous residence, no conclusive explanation for this difference can be offered.

With respect to household size there is a dramatic increase in mobility and a concomitant decrease in length of residence between one- and two-person households. However, due to eligibility requirements all 1-person households are either elderly or disabled and, as noted below, the elderly are the least mobile of any age group. Butler has noted that when age of head is controlled for, the influence of household size on prospective residential mobility is not significant.[1] Similarly, Long finds only limited support for the hypothesis that the probability of local mobility increases with family size.[2] The increase noted here for families with up to four persons, may be largely due to age and life-cycle factors rather than to household size.

The pattern with respect to age of head of household is the strongest of all the demographic groups. Households with younger heads (under 30) move much more frequently than those with older heads. The low moving rates for the elderly are not unexpected--elderly households face relatively stable situations and may have greater difficulty in searching for new units. The very large difference for those under 30 may reflect life cycle effects, and recent changes of status (e.g. jobs or military service).

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[1] Butler, et al., op. cit., p. 59.

[2] Larry H. Long, "The Difference of Number and Ages of Children on Residential Mobility." Demography. Vol. 9, No. 3, August, 1972, p. 375.

Rates of residential mobility have been shown to be highly correlated with life-cycle demographic variables which usually combine age of head, marital status, familism (i.e., extended or nuclear), and presence and age of children.[1] Generally it has been found that:

- Among married households, moves occur most frequently in the years immediately following household formation when children are young (under six).
- Nuclear families are more mobile than extended families:
- Married couples are more mobile than households with single heads.

If moving is largely generated by changes in situation (income, children, marriage), then the high mobility of the under 30 households may reflect their relatively high rate of change of situation. A similar life cycle pattern is apparent in the differences of mobility by type of household.

For the purpose of this report, household type, expressed in terms of marital status and presence of children, is examined as a surrogate for a more extensive description of a household's position in the life cycle. In both Pittsburgh and Phoenix, single households (mostly elderly) and households without children have been the least mobile (0.46 and 1.06 moves, respectively). Married heads with children have been the most mobile. To the extent that this reflects the recent arrival of children, it confirms the idea of life-cycle effects due to relatively high concentrations of change in situation at certain key points in the life-cycle. The importance of household type in explaining local mobility warrants greater elaboration to include age of head and age of oldest child as well as marital status.

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[1] See, for example: Peter Rossi, Why Families Move, New York; The Free Press, 1955, and Larry Long, op. cit., p. 372 ff.

5.3.3 Search

The analysis of location is concerned not only with the results of participants' locational choices, but also with the process by which households arrive at particular destinations (or decide not to move). Presumably, outcomes with respect to housing quality, neighborhood and accessibility will be affected by the ways in which people go about looking for housing. Frustration in search may lead to decisions not to move or to withdraw from the program.

As is the case with mobility, search behavior during the allowance program will be affected by a number of background factors (e.g., race, income, age, degree of satisfaction with housing and neighborhood, etc.) and also by the households' previous search patterns. So that the relative impact of program variables on search behavior may be properly assessed, it is important to know how households went about looking for housing on their last move -- prior to enrollment in the experiment. In addition, the analysis of search may help to identify groups of households for whom non-financial aid in search may be necessary in order for them to take full advantage of their housing opportunities.

For the present purposes, previous search patterns are characterized in terms of the following:

- The extent of search (i.e., number of units looked at and amount of time spent looking);
- The sources of information consulted;
- Whether or not different types of discrimination in search were encountered.

Extent of Search

It has been found previously that the decision-making process associated with residential migration is usually brief: few alternatives are explored, and friends and relatives provide the principal sources of information with respect to

prospective housing.[1] This characterization tends to be supported by the evidence available from the Baseline Interview with respect to both the number of places looked at and the principal sources of information upon which households relied (see below). Households who had moved in the last three years were asked:

> How many other places did you or other members of your household look at before you choose this one?

Table 5.3.2 shows that, on the average, households looked only at two or three other places. Fully 45 percent in Phoenix and 47 percent in Pittsburgh looked at no other dwelling units apart from the one to which they moved. On the other hand, less than one out of five households (14 percent in Pittsburgh and 19 percent in Phoenix) looked at more than six units.

Morrison's observation that decisions to move reflect a general lack of deliberation tends to break down in terms of the amount of time households spent looking for housing. The Baseline question was:

> From the time you first started looking, how long did it take you to find this place?

For those households in Pittsburgh who moved within the three-year period preceding the Baseline Interview, the average time spent looking was about three months (95 days). (See Figure 5.3.2). Similar households in Phoenix spent about a third as much time (33 days) on the average. A separate analysis of households' search time shows that in Pittsburgh about 12 percent of the households found their houses or apartments within one month, while approximately 33 percent of the households in Phoenix found housing within this time period. The difference between the two sites is striking and

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[1] See Peter Morrison, "Population Movements and the Shape of Urban Growth: Implications for Public Policy," The Rand Corporation, WN-7497-ICPG, February 1972. See also, John B. Lansing and Eva Mueller, The Geographic Mobility of Labor (Ann Arbor: Survey Research Center, Institute for Social Research, 1967)

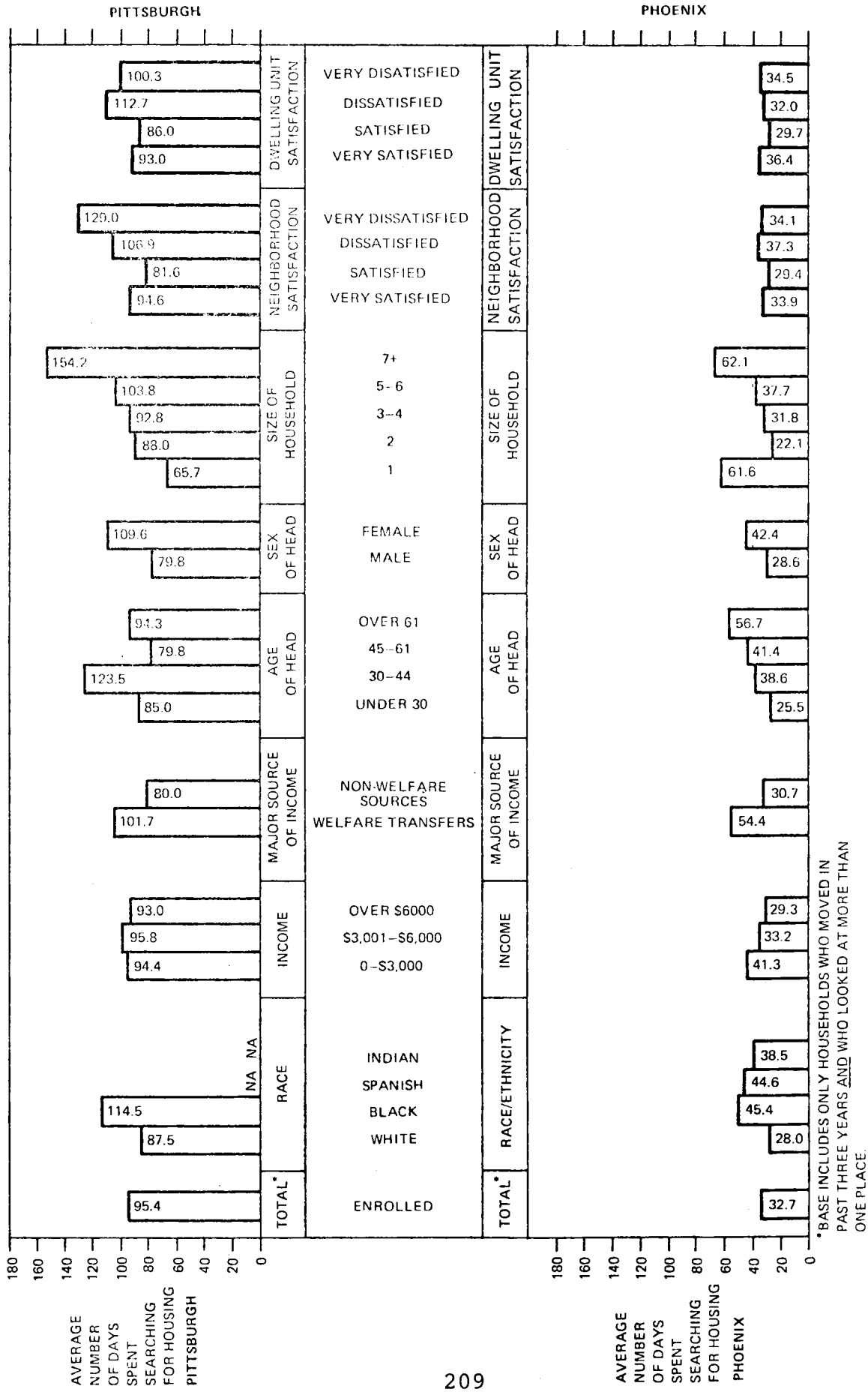
TABLE 5.3.2

NUMBER OF PLACES LOOKED AT BY SITE

	Pittsburgh		Phoenix	
Number of Places	Number	Percent	Number	Percent
No Other Places	441	47.0	654	45.2
1	75	8.0	94	6.5
2	75	8.0	87	6.0
3	83	8.8	94	6.5
4	46	4.9	71	4.9
5	37	3.9	93	6.4
6	46	4.9	66	4.6
7 or more	131	14.0	279	19.3
Total	938	100.0	1447	100.0
Mean Number of Places	2.2		2.5	

FIGURE: 5.3.2

NUMBER OF DAYS SPENT SEARCHING FOR HOUSING
PRIOR TO LAST MOVE FOR DEMOGRAPHIC GROUPS



*BASE INCLUDES ONLY HOUSEHOLDS WHO MOVED IN PAST THREE YEARS AND WHO LOOKED AT MORE THAN ONE PLACE

NA – NOT APPLICABLE

Data Source: Baseline Interview

probably reflects both differences in household mobility and differences in the characteristics of the two housing markets. In comparing search time among the different demographic groups, a number of interesting differences are apparent (see Figure 5.3.2).

- Non-minority whites spend significantly less time looking than other racial or ethnic groups.
- In Pittsburgh little difference in search time is noted between households in different income groups. In Phoenix, however, there is a slight negative correlation between search time and income.
- In both sites there appears to be a consistent positive correlation between household size and days spent searching. (The exception to this general pattern is one-person households in Phoenix, for reasons not known; it may be an artifact of the categories chosen.)
- Search times appear to be longer for older heads of households in Phoenix, but have no clear pattern in Pittsburgh.
- In both sites, female-headed households spent significantly more time looking for housing than male-headed ones.
- In both Phoenix and Pittsburgh, households whose major source of income was welfare spent more time looking than non-welfare households. This was true among both male-headed and female-headed households.
- The only clear association between housing satisfaction and search time is that those in Pittsburgh who spent the longest times looking were least satisfied with their neighborhood.

While it cannot be stated that the amount of time spent searching is directly related to the ease with which households are able to obtain satisfactory housing, it is important to note that households who are members of minority groups and who encounter discrimination in search (see discussion below on previous experience with discrimination in search), spend the most time looking for housing. This observation appears to be true for female-headed households and households dependent on welfare as well as for racial or ethnic minorities. It must be tempered, however, by an awareness that the extent of search may also depend on whether the move is local or

long-distance. Long-distance moves to unfamiliar locations may not permit the luxury of extneded search times. To the extent tha blacks are more frequently local movers than whites, they may be able to spend more time looking.

Sources of Information in Pre-Enrollment Search

On the Baseline questionnaire, households were asked how they first found out that the apartment (or house) they were living in was available for rent. The interest in sources of information is threefold, involving the urgency with which housing is sought, housing and neighborhoods considered, and attainment of preferences. First, the way in which people go about finding housing will presumably be influenced by the relative urgency with which they desire to move. At the same time, the sources of information about available housing may affect the amount of time spent looking.

Second, types of information sources may show a consistent relationship with housing and neighborhood outcomes. On the one hand, for some groups of households--particularly minority groups--certain types of sources may exhibit a locational bias in the sense that the geographic extent of search, hence locational outcomes, may be limited to certain parts of the city. Such biases may be intentional (e.g., racial discrimination by real estate agencies) or unintentional (e.g., the friends and relatives who provide information only live in, and have knowledge of, certain neighborhoods). On the other hand, certain sources of information consulted by households may provide better assistance or more information, such that measurable differences with respect to housing and neighborhood quality obtained may be observed among the different sources used.

Third, it might be expected that the degree of satisfaction that households obtain in moving to new housing or new neighborhoods will be related to the type of information sources which they used. That is, certain sources may prove to be consistently more efficient in assisting households to find housing and neighborhoods that fulfill their needs and expectations.

As is the case with mobility and preference to move, it is important to establish the degree to which households in the program used the various information sources in looking for housing prior to enrollment in the program. By doing so, program effects on search can be distinguished more clearly, and shifts in search characteristics among different households may be more precisely evaluated.

Morrison has noted that migration decisions and search patterns are characterized by a heavy reliance on friends or relatives for information.[1] His assertions in this regard are borne out by the evidence reported here (see Figure 5.3.3). Overall the most frequently used source of information in search was that of friends and relatives. Over half of the households in Pittsburgh and nearly two out of five in Phoenix said they first found out about the house they were occupying from friends and relatives.

With regard to the second most frequently mentioned source of information, participants in the two cities differed markedly. In Pittsburgh 21.9 per cent mentioned newspapers as their source of information. However, in Phoenix vacancy signs were slightly more often mentioned (23.1 per cent) than newspapers (21.5 per cent). Only 4.1 percent of households in Pittsburgh mentioned vacancy signs. The difference may be attributable, in part, to the higher mobility of Phoenix population in terms of car ownership, to different advertising practices, to climate differences, to higher rates of inter-metropolitan migration and/or to a more dynamic and flexible real estate market (higher vacancy rates and higher turnover). Under these conditions, Phoenix households searching for housing may have a greater chance of finding vacant units for rent by driving around neighborhoods than their counterparts in Pittsburgh.

Real estate agencies were relatively infrequently mentioned as principal sources of information in either city.

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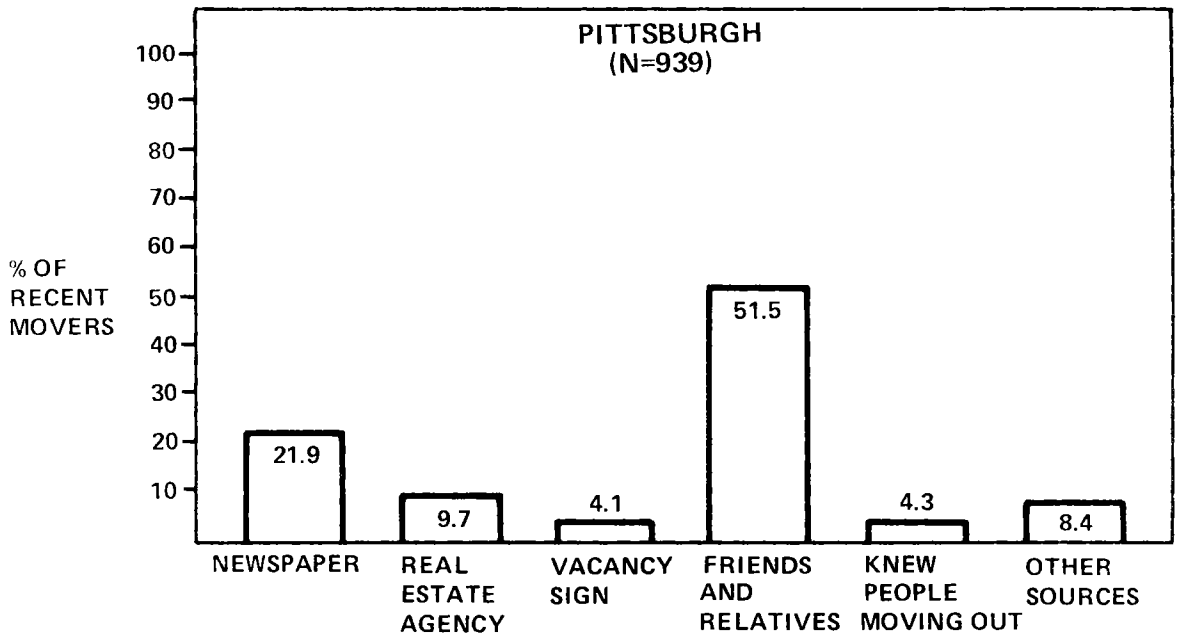
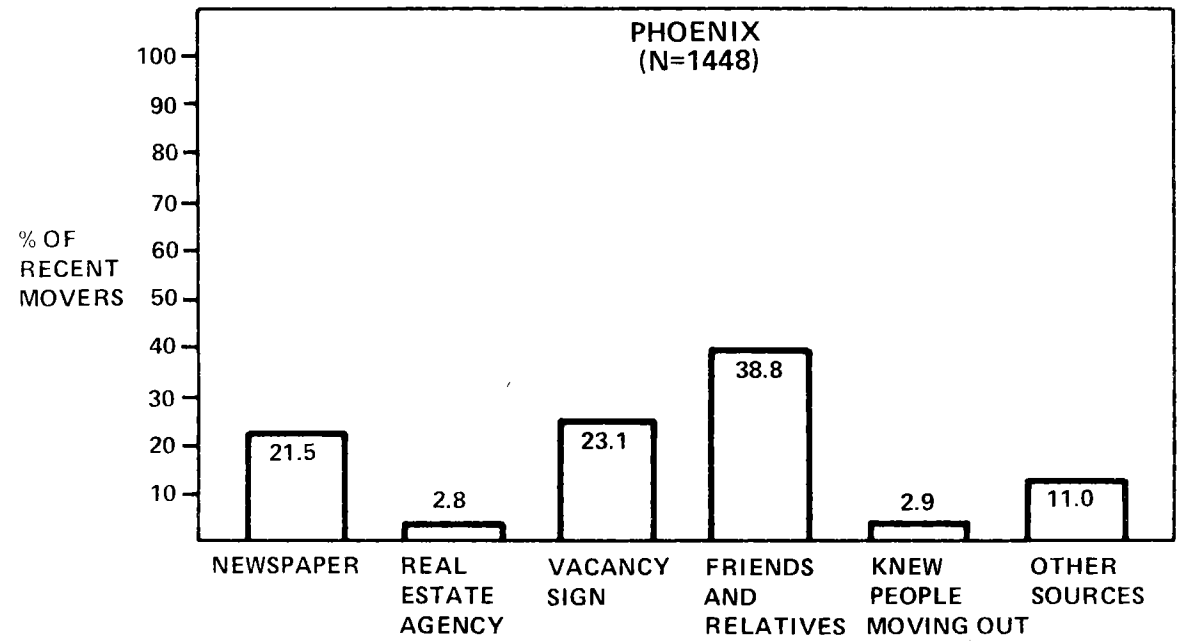
[1] Morrison, op. cit., p. 45ff.

FIGURE 5.3.3
PRIMARY SOURCES OF INFORMATION USED BY RECENT MOVERS[1]





[1] BASE = HOUSEHOLDS MOVING IN LAST THREE YEARS

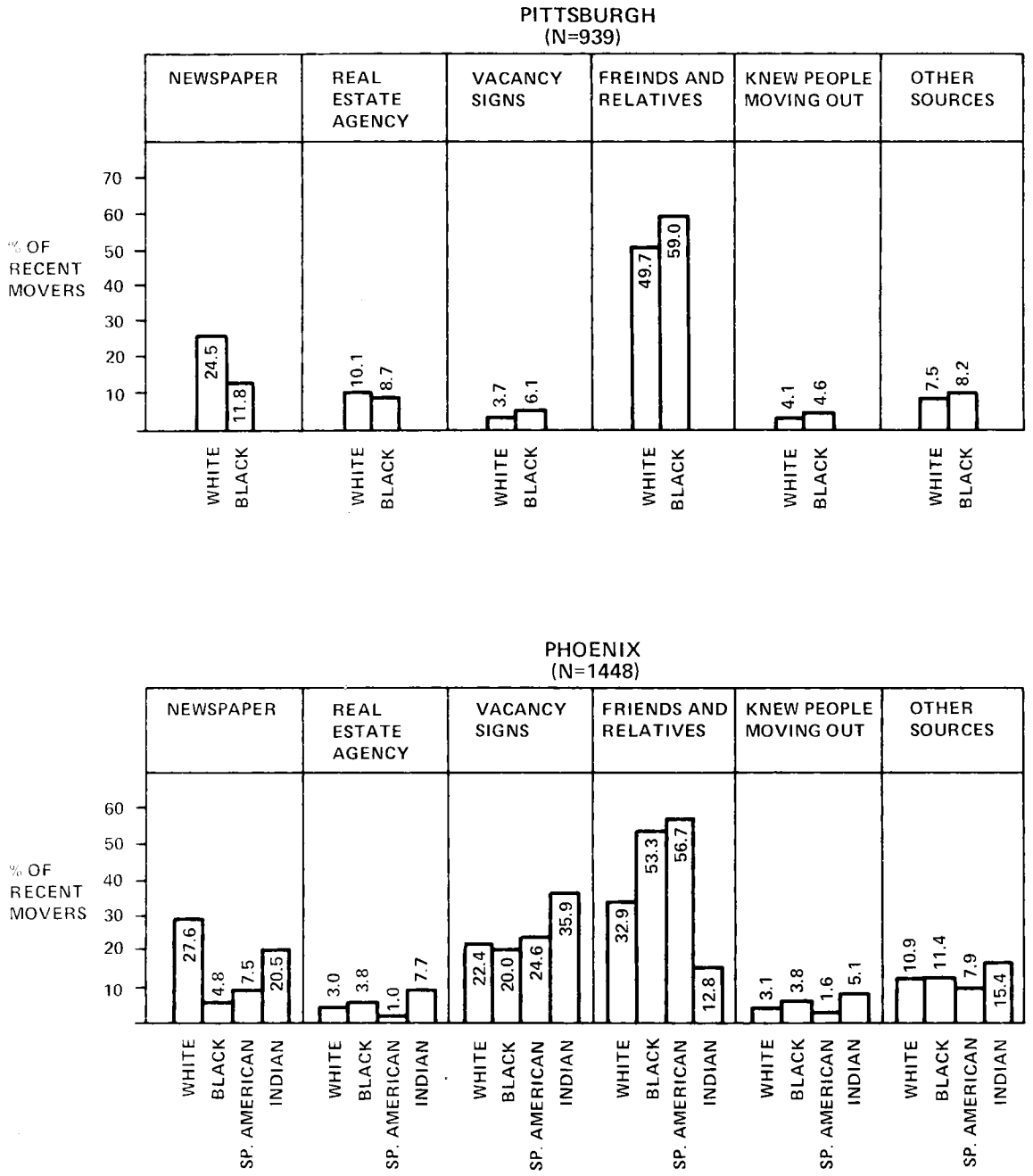
DATA SOURCE: BASELINE INTERVIEWS

Comparison of information sources among different household groups reveals several patterns worth noting. Figure 5.3.4 shows the distribution of source of information by race or ethnicity. The predominance of friends and relatives is still strong among all groups. However, non-minority whites in both sites are less likely to use this source than blacks or Spanish Americans. On the other hand, non-minority whites mentioned newspapers as the principal source more frequently than the other groups.

With respect to income differences, utilization of newspapers increases strongly with income, while that of friends and relatives decreases (see Figure 5.3.5). In Phoenix little difference is noted in the frequency with which real estate agencies are mentioned as sources. In Pittsburgh, however, the above-$6000 income group appears to use these sources more often than those households with incomes below $6000. The relatively low proportion of households who mentioned real estate agencies overall may suggest that agencies tend to be used as sources of information in housing submarkets which support rent levels higher than those being paid by households in this sample.

Differences between age groups with respect to sources of information may be distinguished in both sites (see Figure 5.3.6). Elderly heads of household tend to rely more on friends and relatives than non-elderly heads. Alternatively, they are less likely to seek out vacancy signs, or consult newspaper listings than households with younger heads. The differences among the four age groups are more accentuated in Phoenix than in Pittsburgh.

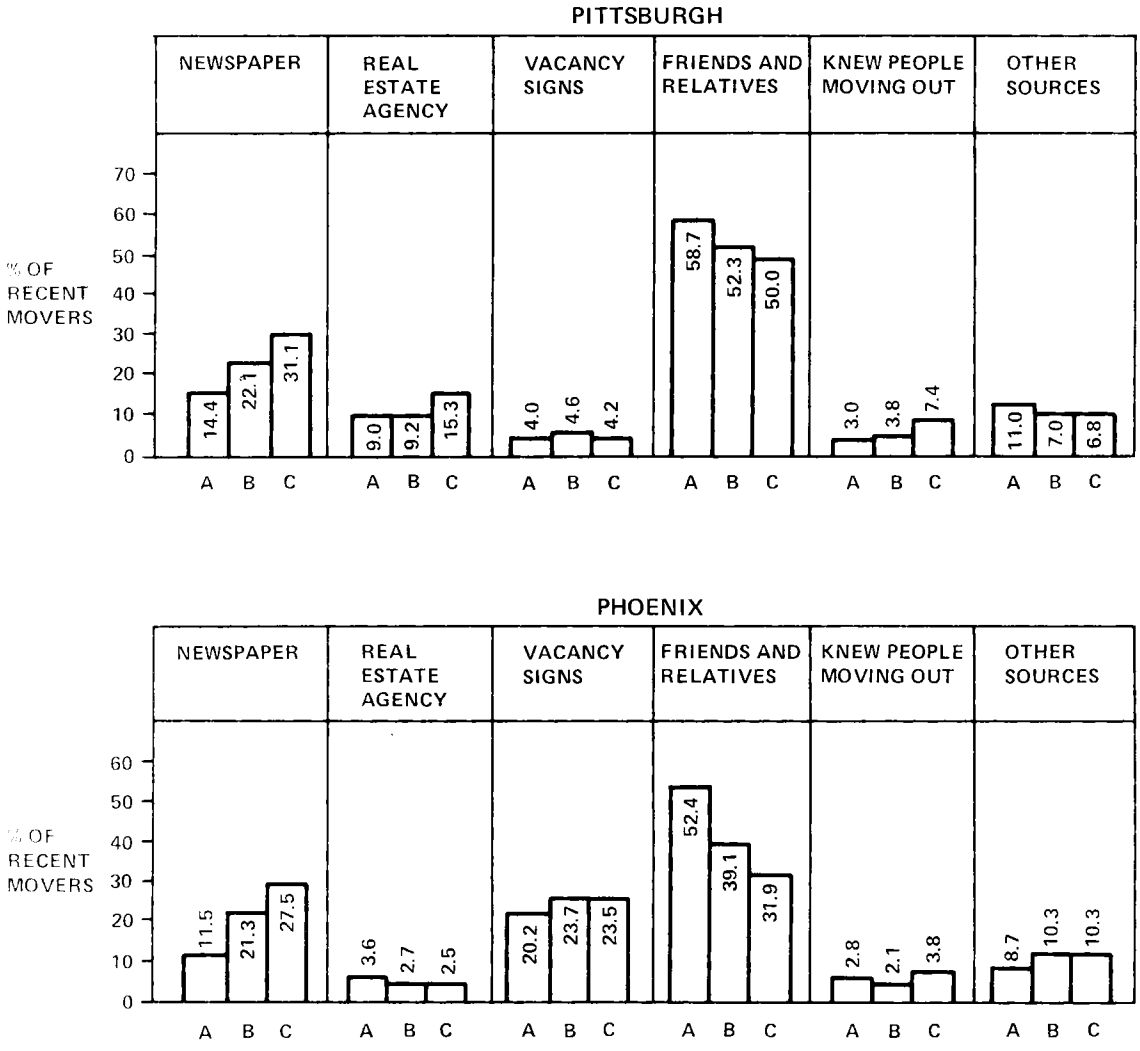
FIGURE 5.3.4
PRIMARY SOURCES OF INFORMATION BY RACE



BASE = HOUSEHOLDS MOVING IN LAST THREE YEARS

SOURCE: BASELINE INTERVIEW

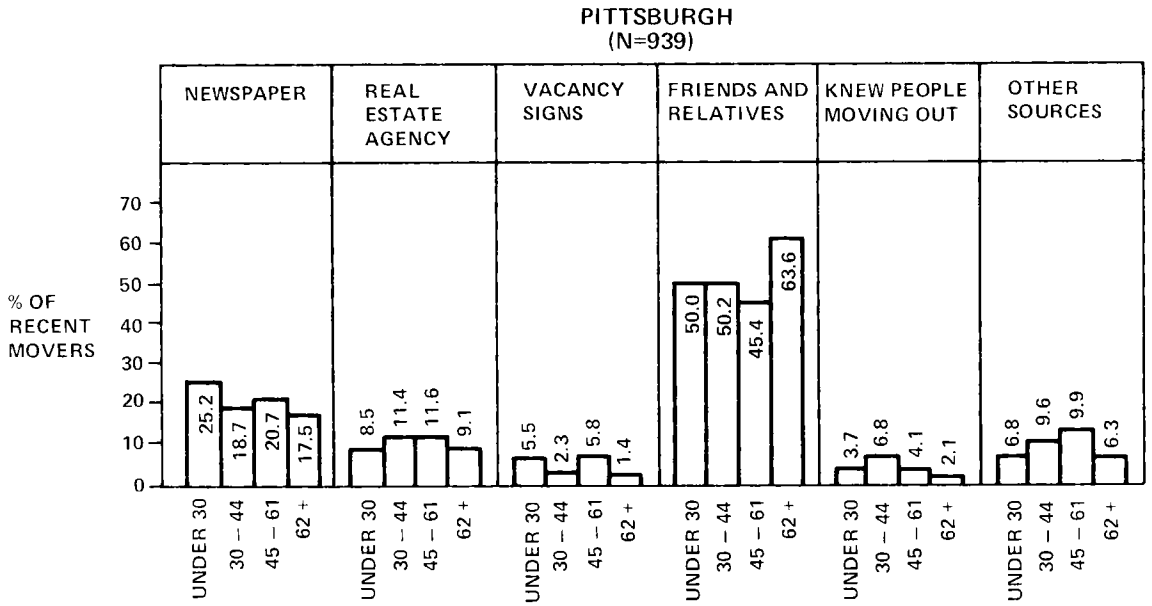
FIGURE 5.3.5
PRIMARY SOURCES OF INFORMATION BY INCOME[1]

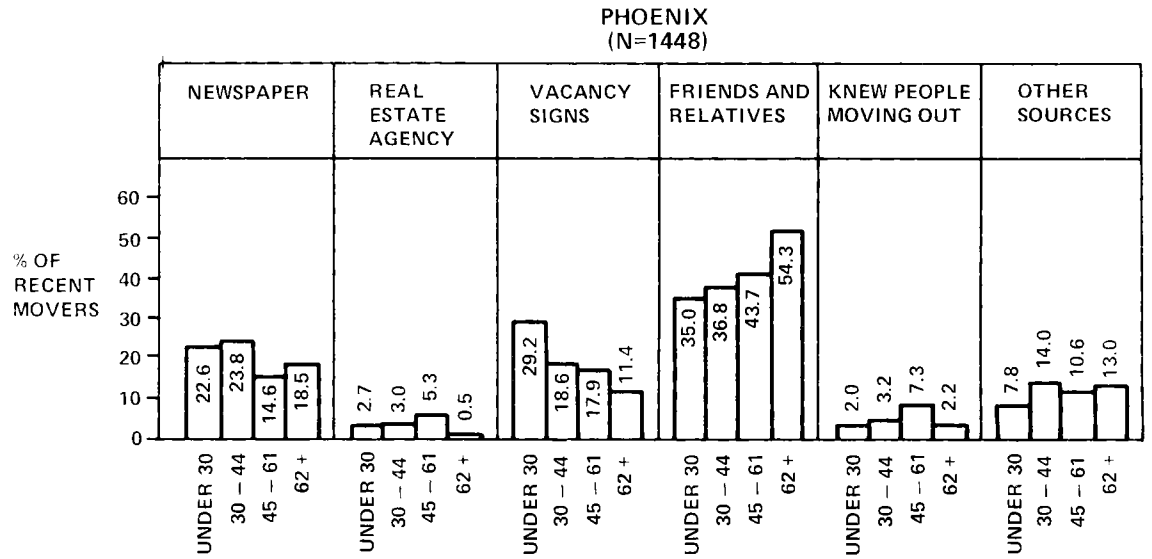


[1]THE BASELINE INTERVIEW QUESTION ON SOURCES OF INFORMATION FOR FINDING A NEW PLACE TO MOVE TO WAS ASKED ONLY TO THOSE HOUSEHOLDS THAT MOVED IN THE LAST THREE YEARS

KEY
A = $0–3000
B = $3001–6000
C = $6001+

FIGURE 5.3.6
PRIMARY SOURCES OF INFORMATION BY AGE OF HEAD





BASE = HOUSEHOLDS MOVING IN LAST THREE YEARS

SOURCE: BASELINE INTERVIEW

Previous Experience with Discrimination in Search

Relatively few households said that they had encountered discrimination while looking for housing prior to their most recent move. During the Baseline Interview households were asked:

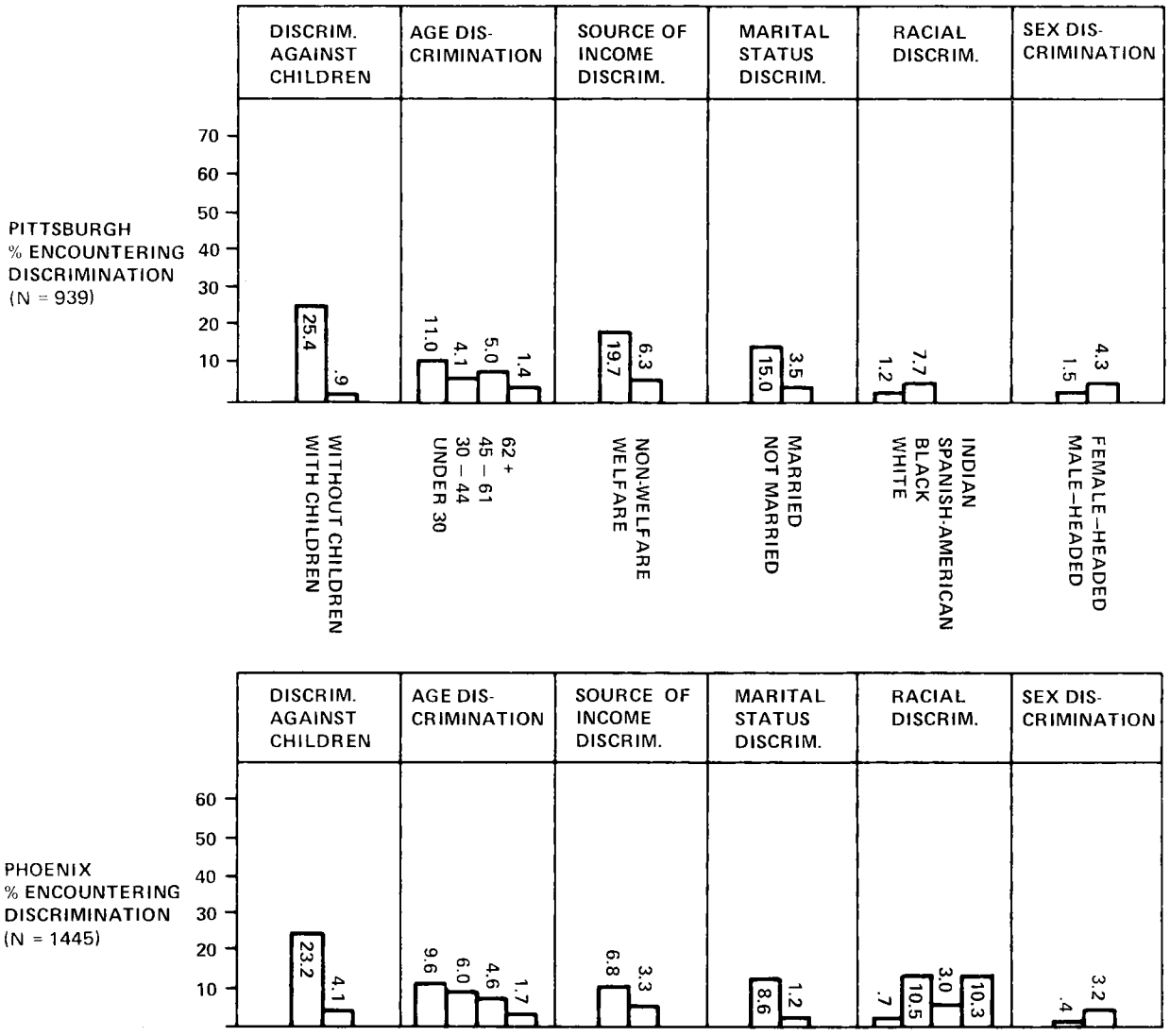
> In looking for this (house/apartment) did you experience any discrmination from landlords, superintendents, or other people who rent apartments because of your or anyone in your household's ...Age?...Sex?...Marital Status? ...Race?...Source of Income?...Children?

The following discussion examines the frequency of perceived discrimination by type of discrimination and by those household characteristics to which the discrimination applies. It should be noted that particular households may have encountered more than one form of discrimination. Such multiple complaints are not identified here. Similarly, the frequency of complaints with respect to particular forms of discrimination have not been related to other demographic variables. For example, it may be that complaints about sex discrimination are higher among black females then white females, or higher among welfare recipients than non-welfare recipients. It is often held that discrimination against children (not illegal) is often used as a pretext for racial discrimination.

The findings presented here by type of discrimination are ordered according to the overall frequency of responses for both sites (see Figure 5.3.7). It should be noted that the responses reported here refer only to participant perceptions of discrimination and not necessarily to actual occurrences in either of the two sites.

By far the most common form of discrimination in both Pittsburgh and Phoenix was that against households with children. Age was the second most frequently encountered type of discrimination, ranking third in Pittsburgh and second in

FIGURE 5.3.7
PERCENT OF HOUSEHOLDS WHICH ENCOUNTERED DISCRIMINATION
IN LOOKING FOR A PLACE TO LIVE[1] BY TYPE OF DISCRIMINATION



[1]THE BASELINE INTERVIEW QUESTION REGARDING DISCRIMINATION WAS ASKED ONLY OF HOUSEHOLDS THAT HAD MOVED IN THE PAST THREE YEARS

Phoenix. The direction of association between frequency of complaints and age of head was what one would normally expect. In both Phoenix and Pittsburgh the highest proportion of "yes" responses was encountered in the "under 29" age group (11.0 and 9.6 percent, respectively), while the lowest number of "yes" responses was recorded among the elderly (1.4 and 1.7 percent, respectively). The high proportion of complaints of age discrimination among young heads of households may be related to the presence of young children in the household.

Discrimination against source of income was third overall in relative frequency of occurrence, ranking second in Pittsburgh and fourth in Phoenix. Comparing the frequency of complaints by welfare status, more welfare households mentioned this form of discrimination than non-welfare households. Note that of the households answering this question there were proportionately more on welfare in Pittsburgh (38.6 percent) than in Phoenix (9.6 percent). This reflects the larger number of welfare households in Pittsburgh and suggests that welfare status may be a more salient issue in Pittsburgh than in Phoenix. The association between welfare as a major source of income and perceived discrimination of this kind is significant in Pittsburgh, but not significant in Phoenix (based on a chi square test). It is not clear, however, to what extent this type of discrimination (not illegal) may be used to mask others (e.g., race or sex).

Of the single heads of household in both sites, about one out of ten (9.6 percent) said they had been discriminated against on the basis of their marital status. The relative frequency of this complaint was higher in Pittsburgh (15 percent) than in Phoenix (8.6 percent).

Of the three major racial groups in Phoenix and two in Pittsburgh, blacks reported encountering racial discrimination most frequently. (7.7 percent in Pittsburgh and 10.5 percent in Phoenix.) Indians in Phoenix were the next most

frequent complainants (10.3 percent) although this proportion may be distorted by the relatively few observations. Only nine of the 304 Spanish American households in Phoenix (three percent) reported racial discrimination. (Perceptions of discrimination because of ethnicity will be analyzed in future reports). For both sites about one percent of the white households reported any form of racial discrimination.

Sex discrimination was the most infrequently reported type of discrimination encountered in both sites (about three percent). Sex discrimination was more common in Phoenix than Pittsburgh, and was more than three times as frequent among female-headed households than male-headed ones.

The generally low incidence of "encountered discrimination" is somewhat at variance with the evidence presented in Sections 4.0 and 6.0 which suggests that housing outcomes are dramatically different among racial groups, controlling for a large number of variables. Such a discrepancy may be attributable to a failure of racial minority group members to search for housing in areas where they are likely to experience discrimination -- a result which accords well with the "market separation" theories of discrimination. (See the discussion in Section 4.6).

5.3.4 Preference to Move

Data used in this section derives from a single Baseline interview question asking participants, "If you had $50 more to spend on rent every month would you prefer to move from this (house/apartment) or have the landlord improve this (house/apartment) for a higher rent?"

This question was intended to assess prospective mobility among participants if they were to receive a particular subsidy amount. Studies of prospective residential mobility have varied in their emphases, variously stressing: (1) a structural or demand perspective which relates the preference to move to socio-economic

and demographic characteristics of housing consumers,[1] (2) an environmental or supply perspective which looks to the quality of housing in which the individual lives[2] and (3) a socio-psychological perspective which relates mobility preferences to attitude and degree of satisfaction of consumers.[3] This analysis is based mainly on the first (demand) perspective. A very preliminary look is taken at the supply side by examining the relation of mobility preferences to housing satisfaction. Preference to move is also related to recent mobility and length of residence.

In general, the proportion of households expressing a preference to move was highest among black households, households at the higher as opposed to lower end of the income spectrum, younger households, male-headed households, households which had moved more than once in the last three years, and households living in their current residence less than five years.

From the supply side those households least satisfied with their dwelling units and neighborhoods had the highest preference to move.[4] The proportion of households preferring to move was

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[1]G.R. Leslie, and A.H. Richardson, "Life Cycle, Career Pattern and Decision to Move." American Sociological Review, 26 (Dec. 1961), p. 898.

[2]Edgar Butler, et al., Moving Behavior and Residential Choice, National Cooperative Highway Research Program Report #81, 1969, and Peter Rossi, Why Families Move, Glencoe, Illinois, Free Press, 1955; organized their studies to cover all three types of relationships including substantial discussion of the relation of environmental conditions to the preference and decision to move.

[3]G. Sabagh, M.D. Van Arsdol, and E.W. Butler, The Restless Metropolis, Ronald Press, (1969).

[4]This statement is merely a preliminary look at the bivariate relationship of satisfaction to the preference to move and is not intended as a final specification of the role of satisfaction in the dynamic of housing choice. We recognize that satisfaction has been variously defined in previous studies. (For example, Alden Speare, Jr. in "Residential Satisfaction as an Intervening Variable in Residential Mobility," Demography, (May 1974), formulates the decision to move using satisfaction as an intervening variable.) As we move in later reports to a specification of the dynamics of housing choice we hope to address this issue.

higher among those households dissatisfied with both their neighborhoods and their dwelling units than for those dissatisfied with either individually.

The proportion of households preferring to move also exhibits a fairly strong positive relationship to basic residential quality as measured by the various minimum standard levels.

Race of Head of Household

Several studies of residential mobility (in particular Butler) have found a greater proportion of black households intending to move than whites.

As can be seen in Figures 5.3.8 and 5.3.9, a significantly greater proportion of black participants at both sites prefer to move than do whites. Proportionately more blacks than whites also prefer to upgrade their dwelling units while fewer prefer to continue on where they are with no improvements. The differences are not large, however.

Income

Residential mobility studies have generally shown lower income households to be more mobile on an intra-urban scale than households at higher incomes, with the reverse holding true of inter-urban migration. In cases where distance of move is not distinguished income has generally been found to be unrelated to mobility.

Based on these considerations and on the essentially low income status of our entire sample, income was hypothesized to have no effect. The data provide a few surprises. Substantial differences are evident in proportion of households preferring to move between those below the poverty line and those above it. Of households below the poverty level 48% in Pittsburgh and 54% in Phoenix preferred to move compared to 59% and 62% of households with incomes above the poverty level.

FIGURE 5.3.8

PERCENT OF HOUSEHOLDS PREFERRING TO MOVE, UPGRADE OR CONTINUE BY DEMOGRAPHIC GROUPS IN PITTSBURGH

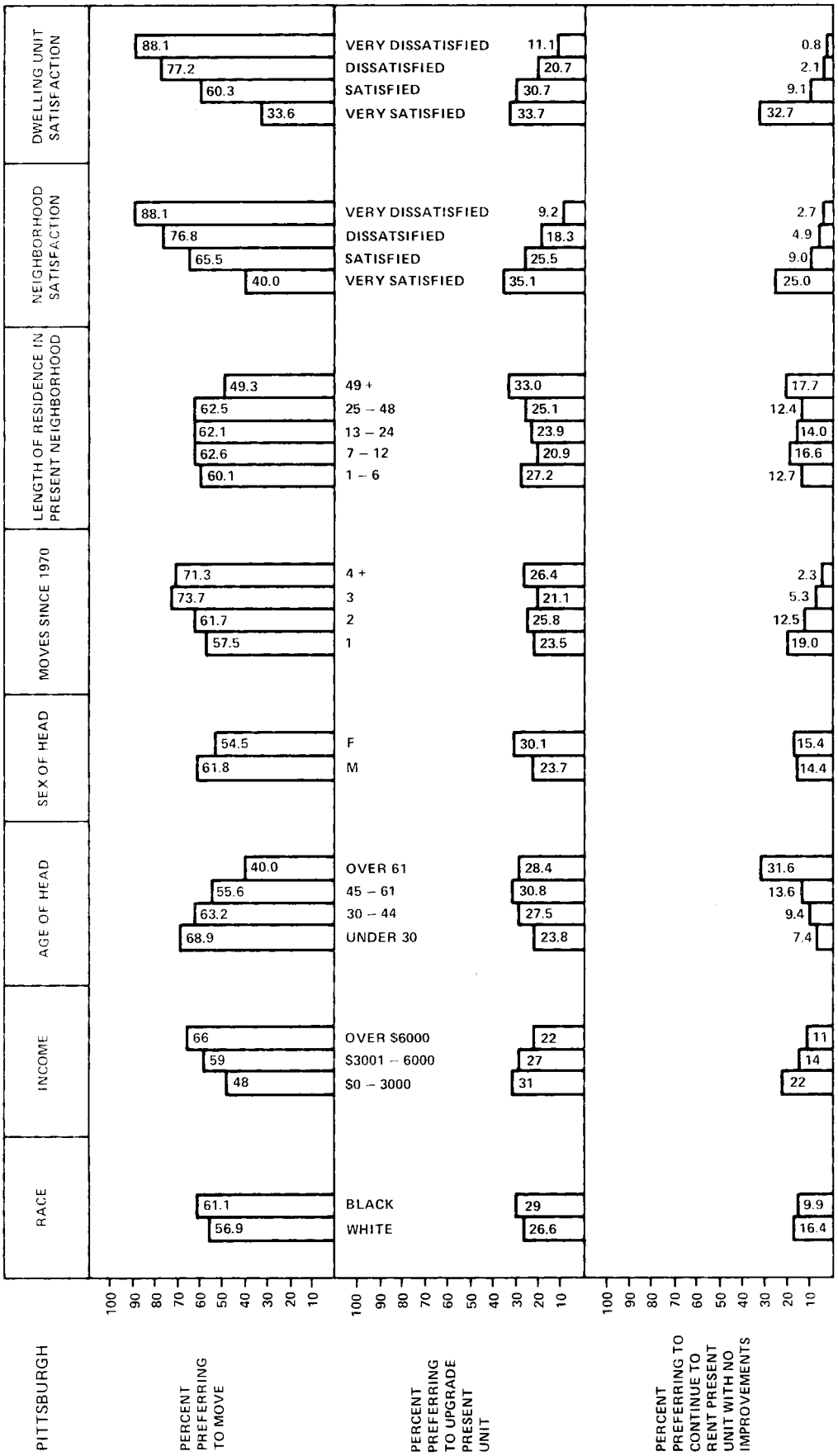
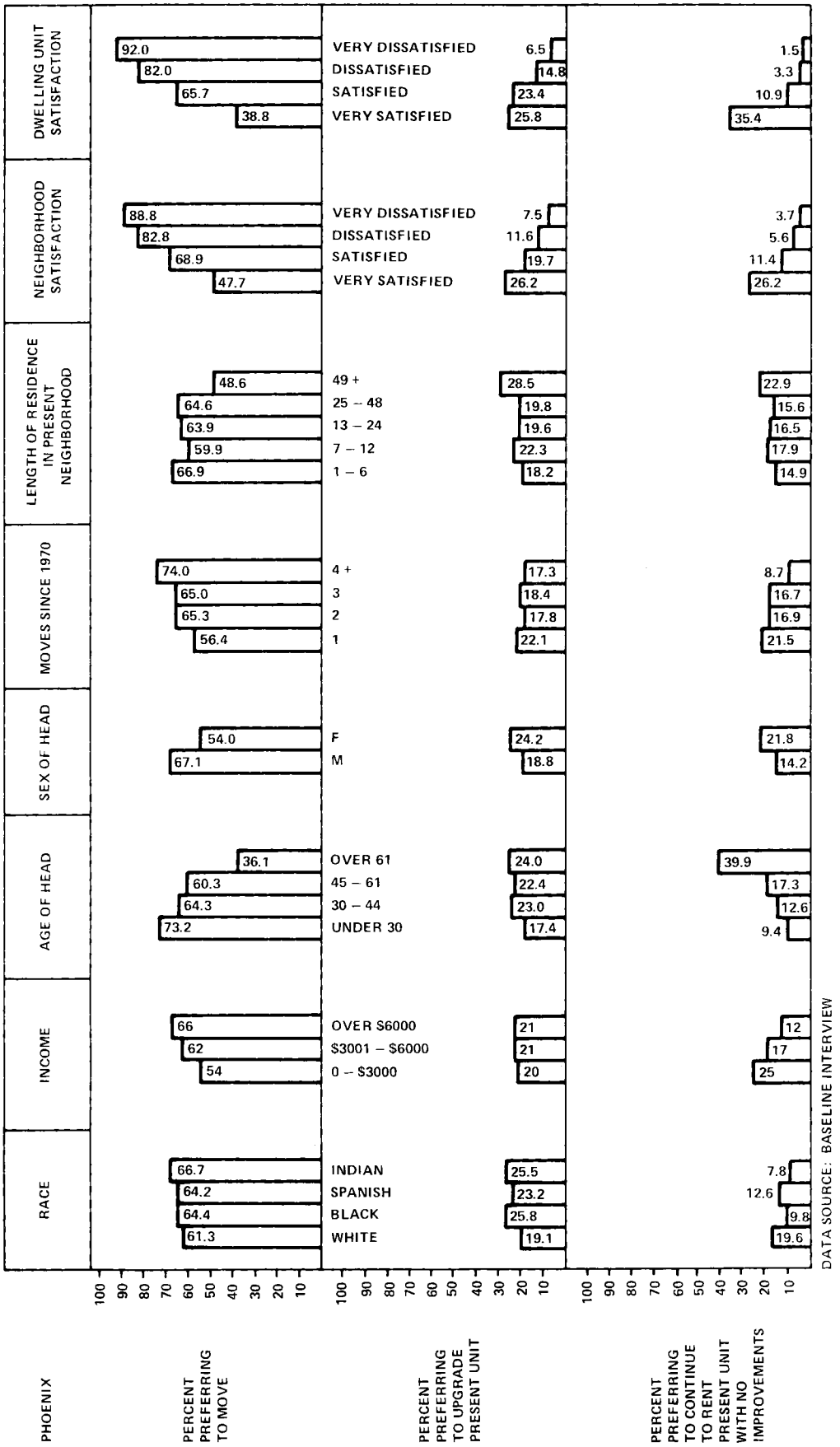


FIGURE 5.3.9
PERCENT OF HOUSEHOLDS PREFERRING TO MOVE, UPGRADE OR CONTINUE BY DEMOGRAPHIC GROUPS IN PHOENIX



Age of Head of Household

As was noted above with respect to previous mobility, age of head has been found by several researchers[1] to be inversely related to residential movement. This finding may be attributed to greater mobility constraints among the elderly, and to greater job and family stability among middle-aged households. Such results show up very strongly in our data as well. Preference to move declines sharply with age at both sites. Preference to improve displays no such clear cut relation, the main pattern being that very young households are substantially less likely than older households to prefer to improve. The proportion of households preferring to continue on where they are with no improvement is positively related to age.

Sex of Head of Household

With respect to sex of head of household Morrison found male-headed households to be more mobile than female-headed ones. With these considerations in mind it was hypothesized that more male-headed households would prefer to move than female headed ones. These expectations were borne out in fact. As Figures 5.3.8 and 5.3.9 show, a higher proportion of males than females at both sites express a preference to move. More female-headed households prefer to upgrade or continue on with no improvement. The findings here reinforce the observations noted above with regard to previous mobility, where male-headed households tended to have moved more frequently in the past than female-headed households.

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[1] Edgar Butler, et al. Moving Behavior and Residential Choice, National Cooperative Highway Research Program Report #81, 1969. Peter Morrison, Population Movements and the Shape of Urban Growth: Implications for Public Policy, The Rand Corporation, 1972.

Previous Mobility

Studies of residential mobility generally suggest that a small segment of the total population are repeated movers and have high mobility rates, while the bulk of the population is far less mobile. Accordingly it was hypothesized in this study that preference to move would be positively related to the number of moves in the last three years. Such a pattern emerged clearly at both sites. Preference to upgrade showed no clear relation to the number of recent moves. Preference to continue on without improvements showed a fairly strong negative relation to the number of recent moves.

Length of Residence

The effects of past mobility were examined more closely by looking at the relation of mobility preferences to length of residence. The clearest difference was evident between households who have lived at their current residence less than four years and those who have lived there more than four. Among the longer tenure group the proportion preferring to move drops sharply. Among households living in their current residences less than four years, those who had moved within the last year were slightly less likely at both sites to prefer another move than were those households who had moved one to four years ago.

In terms of preference to improve, again the greatest difference was between the households living at their current address more than, as opposed to less than, four years. At both sites the above 4-year group was substantially more likely to stay and improve than were other households. Among the less-than-four-year residents no clear pattern emerged. In Pittsburgh households moving to their baseline address within the last six months were slightly more likely to prefer to upgrade.

Among those preferring to stay with no improvement the only difference that emerged was that households who moved more than four years ago were substantially more likely to prefer no improvement than other households.

Dwelling Unit and Neighborhood Satisfaction

Dwelling and neighborhood satisfaction were hypothesized to be negatively related to the preference to move.[1] In fact, both variables showed strong and consistently negative relations to the preference to move. The preference to stay and improve showed a strong positive relation to satisfaction. Those satisfied with their housing were much more likely to prefer to upgrade than others. Finally, the preference to continue on with no improvement also showed a strong positive relation to satisfaction.

The relationships described above between satisfaction and preference to move, to upgrade, and to continue with no improvement are even stronger when dwelling unit and neighborhood satisfaction are examined together. Of those households very satisfied with both dwelling unit and neighborhood slightly more than one out of four (26.5 percent in Pittsburgh and 32.3 percent in Phoenix) preferred to move. Of those very dissatisfied with both housing and neighborhood almost all (97.5 percent in Pittsburgh and 93.0 percent in Phoenix) preferred to move (see Table 5.3.3).

Residential Quality

Preference to move from the current unit was hypothesized to be negatively related to basic residential quality as measured by "program minimum standards" (MS). The rationale was that MS is related to housing quality and contributes significantly to an individual's evaluation of his housing and thereby contributes to his desire to remain in that housing. In fact, the

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[1] See Alden Speare, "Residential Satisfaction as an Intervening Variable in Residential Mobility", Demography, (May 1974).

TABLE 5.3.3

PERCENT OF HOUSEHOLDS PREFERRING TO MOVE WHICH EXPRESSED DIFFERENT LEVELS OF DWELLING UNIT AND NEIGHBORHOOD SATISFACTION

Dwelling Unit Satisfaction	Neighborhood Satisfaction			
	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Pittsburgh (N=1663[1])				
Very Satisfied	26.5%	42.6%	46.8%	75.0%
Somewhat Satisfied	46.6	64.1	78.3	78.0
Somewhat Dissatisfied	68.3	73.6	87.5	90.0
Very Dissatisfied	70.7	90.1	90.9	97.5
Phoenix (N=1722[1])				
Very Satisfied	32.3%	52.2%	52.0%	78.3%
Somewhat Satisfied	59.0	66.0	79.2	80.6
Somewhat Dissatisfied	71.3	81.7	89.3	100.0
Very Dissatisfied	90.9	88.7	97.3	93.0

Data Source: Baseline Interview

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[1]Households are included in this analysis only if they replied that they would move, upgrade or continue with no improvements to the Baseline question: "If you had $50 more to spend on rent every month, would you move from this apartment or have the landlord improve this apartment for a higher rent?"

proportion of households preferring to move tends to decrease with increasing level of housing quality (see Table 5.3.4). The proportion of households preferring to upgrade shows a very slight decline at both sites as more stringent quality levels are attained. Most striking is the substantial increase in the proportion of households preferring to stay where they are (without improvements) as housing quality increases.

TABLE 5.3.4

PROPORTION OF HOUSEHOLDS PREFERRING TO MOVE, IMPROVE OR CONTINUE AT PRESENT RESIDENCE FOR EACH LEVEL OF HOUSING STANDARDS ACHIEVED

LEVEL OF HOUSING QUALITY	PITTSBURGH			PHOENIX		
	Move	Improve	Continue	Move	Improve	Continue
High	50.3%	24.9%	18.6%	52.9%	16.9%	22.0%
MS Program	51.1	26.9	17.4	56.0	17.0	18.4
Medium	55.9	24.0	15.0	52.1	21.2	20.8
Low	54.2	25.2	14.8	61.3	18.8	16.0
Fail All Criteria	57.8	28.7	9.8	60.8	22.1	11.7

Note: Rows do not add to 100% since "other" options are not reported here.

In the Baseline Interview households who indicated a preference to upgrade were asked:

> "What would you have the landlord improve for a higher rent every month?"

Households who indicated a preference to move were asked:

> "With $50 more to spend on rent every month, what would you most like to have in another (house/apartment)?"

Among those households preferring to upgrade the most frequently mentioned improvements were inside repairs, repairs to windows and insulation, repairs to the dwelling unit exterior, and repairs to the plumbing system. (See Table 5.3.5).

TABLE 5.3.5

PREFERRRED IMPROVEMENTS FOR HOUSEHOLDS PREFERRING TO UPGRADE

Household Upgrade Preference	N	Households Mentioning Item As % of All Households Preferring to Upgrade
Inside repairs	319	58.7
Repair windows, insulation	144	26.5
Make outside repairs or improvements	146	26.3
Repair, add, replace, improve plumbing system	109	20.0
More rooms	97	17.8
Repair, add, replace, improve heating system	76	13.9
More storage	57	10.4
Other improvements to yard area	51	9.3
Repair, add, replace, improve electrical system	50	9.2
Repair, add, replace, improve cooling system	43	7.9
Provide or repair appliances	39	7.1
Modernize	36	6.6
Plant greenery	31	5.7
Larger rooms	30	5.5
Better furniture	26	4.7
Provide parking	20	3.6
Major remodelling, different layout	27	4.9
Minor repairs or improvements to interior	15	2.7
More yard space	11	2.0
Maintenance services	11	2.0
Minor repairs to electrical or plumbing	10	1.8
Exterminate rats and roaches	8	1.4

Households preferring to move most frequently indicated a preference for more rooms, basic appliances, more yard space, larger rooms, more storage, a dwelling unit clean and in good repair, and adequate heating and cooling systems. (see Table 5.3.6.)

These dwelling unit preferences indicated by those households desiring to move basically parallel Rossi's[1] and Butler's[2] findings as to why households actually move. In essence, both authors point to sources of dwelling unit satisfaction which the resident has no power to affect and/or which would be difficult to affect in a patchwork sort of way (i.e., more rooms, adequate heating system, more storage space, more yard space.) Butler has also pointed out a trend evolving over the last ten years of movers generally listing adequate basic appliances as an important aspect of a new dwelling for movers.

Previous and Prospective Mobility

The comparison of preference to move with previous mobility rates suggests that except for recent movers, those households who have moved frequently in the past have high preferences to move in the future. One major exception is black households. A greater proportion of black households than white households expressed a preference to move. When actual mobility rates are examined, however, black participants are found to have lower rates of mobility over the last three years than whites. One might hypothesize, based on this finding, that blacks who are more dissatisfied with their housing than whites are more likely to want to move, but that market discrimination impedes search (witness longer search times of black households) and results in lower actual mobility rates among blacks than whites.

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[1]Peter H. Rossi, Why Families Move Glencoe, Illinois; The Free Press, 1955.

[2]Edgar Butler, et al., Moving Behavior and Residential Choice, Highway Research Board Publications, 1969.

TABLE 5.3.6

DWELLING UNIT PREFERENCE OF HOUSEHOLDS PREFERRING TO MOVE

Household Upgrade Preference	N	Households Mentioning Item As % of All Households Preferring to Upgrade
More rooms	842	53.6
Appliances	363	23.1
More yard space	355	22.6
Larger rooms	341	21.7
Storage space	292	18.6
Dwelling unit clean and in good repair	290	18.4
Cooling system	218	13.8
Heating system	184	11.7
Furniture, drapes	181	11.5
Other improvements to yard area	173	11.0
Parking	164	10.4
Plumbing system	131	8.3
Modern (bath, kitchen)	115	7.3
Layout	111	7.0
Privacy	94	5.9
Responses referring to neighborhood	83	5.2
Windows, insulation	73	4.6
More space	68	4.3
Electrical system	55	3.5
Garden, trees, etc.	52	3.3
Other specified responses	24	1.5
Smaller rooms	23	1.4
Security	19	1.2
Exterminate rats, roaches	19	1.2
Outside dwelling in good repair	18	1.1

Household Characteristics and Preference to Stay in Current Neighborhood

Households indicating a preference to move were asked, "With the $50.00 more to spend on rent every month, would you stay in this neighborhood or not?"

At both sites households most frequently indicating a preference to stay in their present neighborhoods were: low income households, older households, female-headed households, and those most satisfied with their current neighborhoods (see Figure 5.3.10). No clear pattern emerged for race and length of residence. The significance of the relationships displayed by those variables is indicated by the table below (Table 5.3.7).

TABLE 5.3.7

HOUSEHOLD CHARACTERISTICS AND PREFERENCE TO STAY IN CURRENT NEIGHBORHOOD

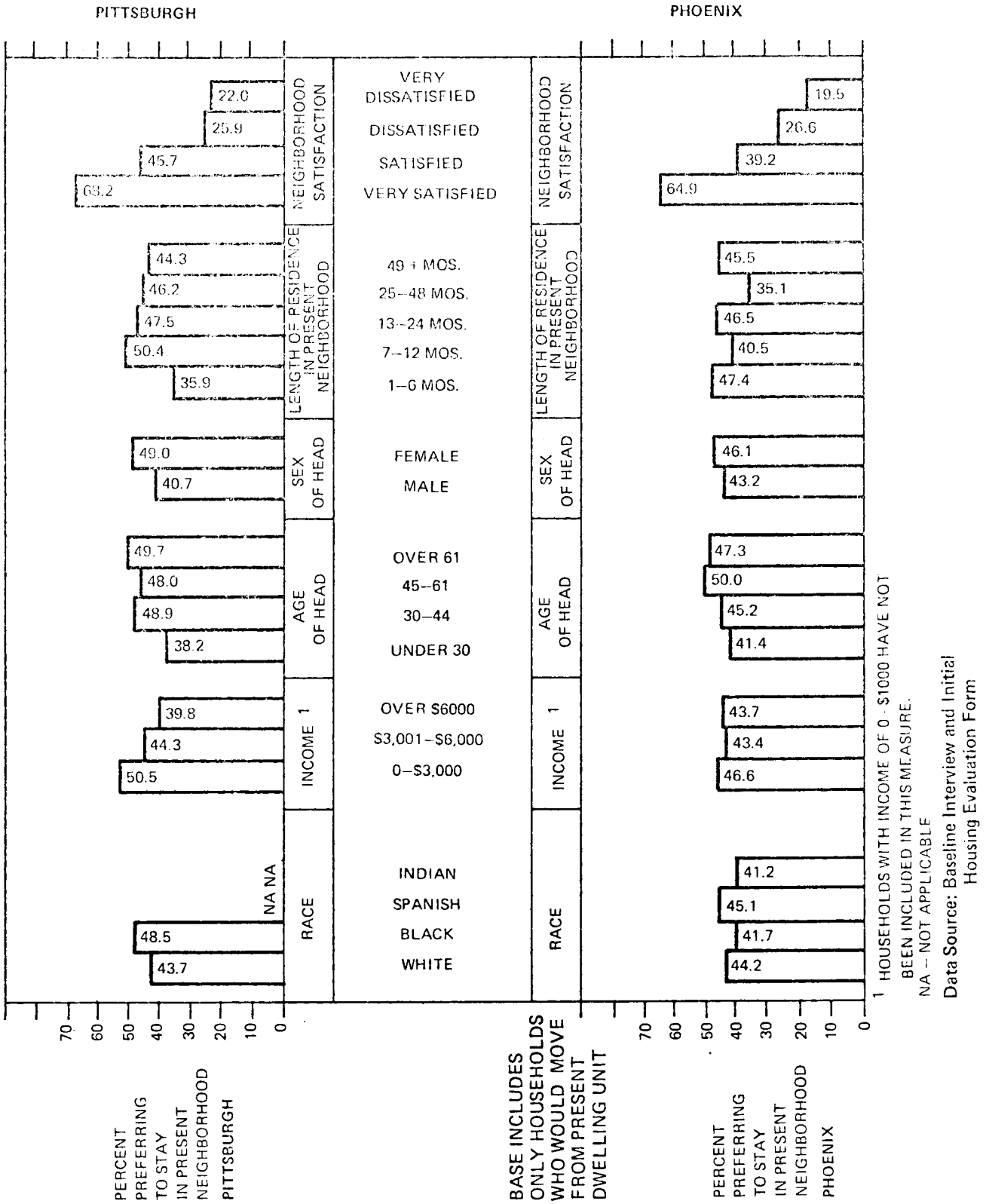
HOUSEHOLD CHARACTERISTIC	PITTSBURGH			PHOENIX		
	χ^2	df	Significance	χ^2	df	Significance
INCOME	4.989	2	(.086)	0.5725	2	(.750)
AGE OF HEAD OF HOUSEHOLD	10.118	3	(.017)*	3.799	3	(.284)
SEX OF HEAD OF HOUSEHOLD	6.055	1	(.013)*	.625	1	(.429)
RACE	1.611	2	(.466)	.501	4	(.973)
NEIGHBORHOOD SATISFACTION	120.021	3	(.000)*	118.448	3	(.000)*
LENGTH OF RESIDENCE	7.467	4	(.113)	7.837	4	(.097)

*Significant at the .05 level

In Pittsburgh, income in general relates negatively to the preference to stay in present neighborhood.

FIGURE: 5.3.10

HOUSEHOLD CHARACTERISTICS AND PREFERENCE TO STAY IN PRESENT NEIGHBORHOOD



1 HOUSEHOLDS WITH INCOME OF 0 - $1000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.
NA – NOT APPLICABLE

Data Source: Baseline Interview and Initial Housing Evaluation Form

Households whose head is less than 30 years old indicated a preference to stay in their neighborhoods least frequently of all household types. Among households in the other age groups no clear pattern is apparent.

Female-headed households preferred to stay in their present neighborhoods more frequently than males. This finding is consistent with the generally greater geographic mobility of male-headed households.[1]

Neighborhood satisfaction displayed the strongest association with the preference to stay in present neighborhood of any of the variables. The proportion of households preferring to stay drops sharply at both sites for those less satisfied with their neighborhoods.

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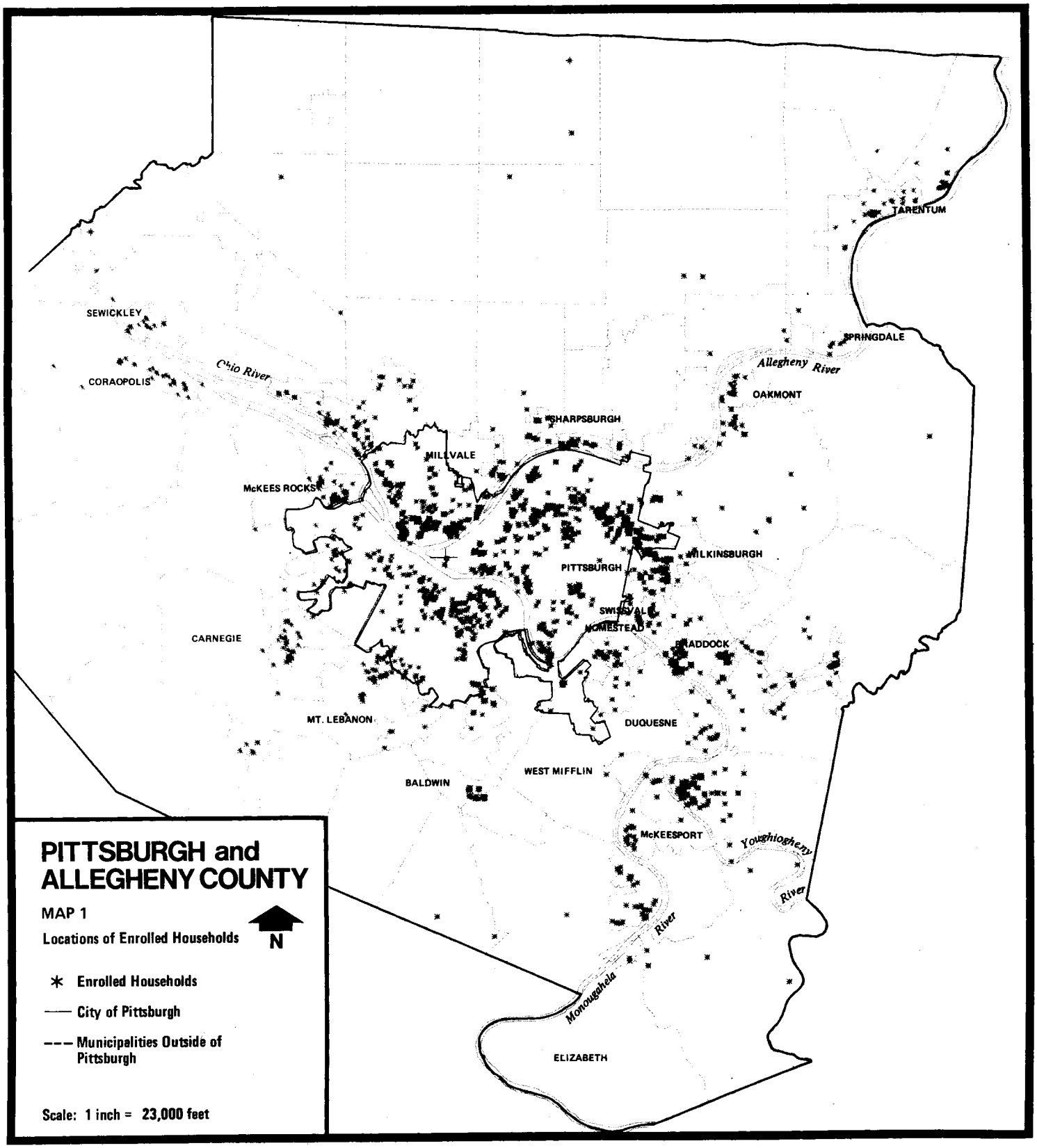
[1]Peter Morrison, Population Movements and the Shape of Urban Growth, Rand Corporation, 1972.

MAP 1

PITTSBURGH AND PHOENIX

LOCATIONS OF ENROLLED HOUSEHOLDS



PITTSBURGH and ALLEGHENY COUNTY

MAP 1

Locations of Enrolled Households

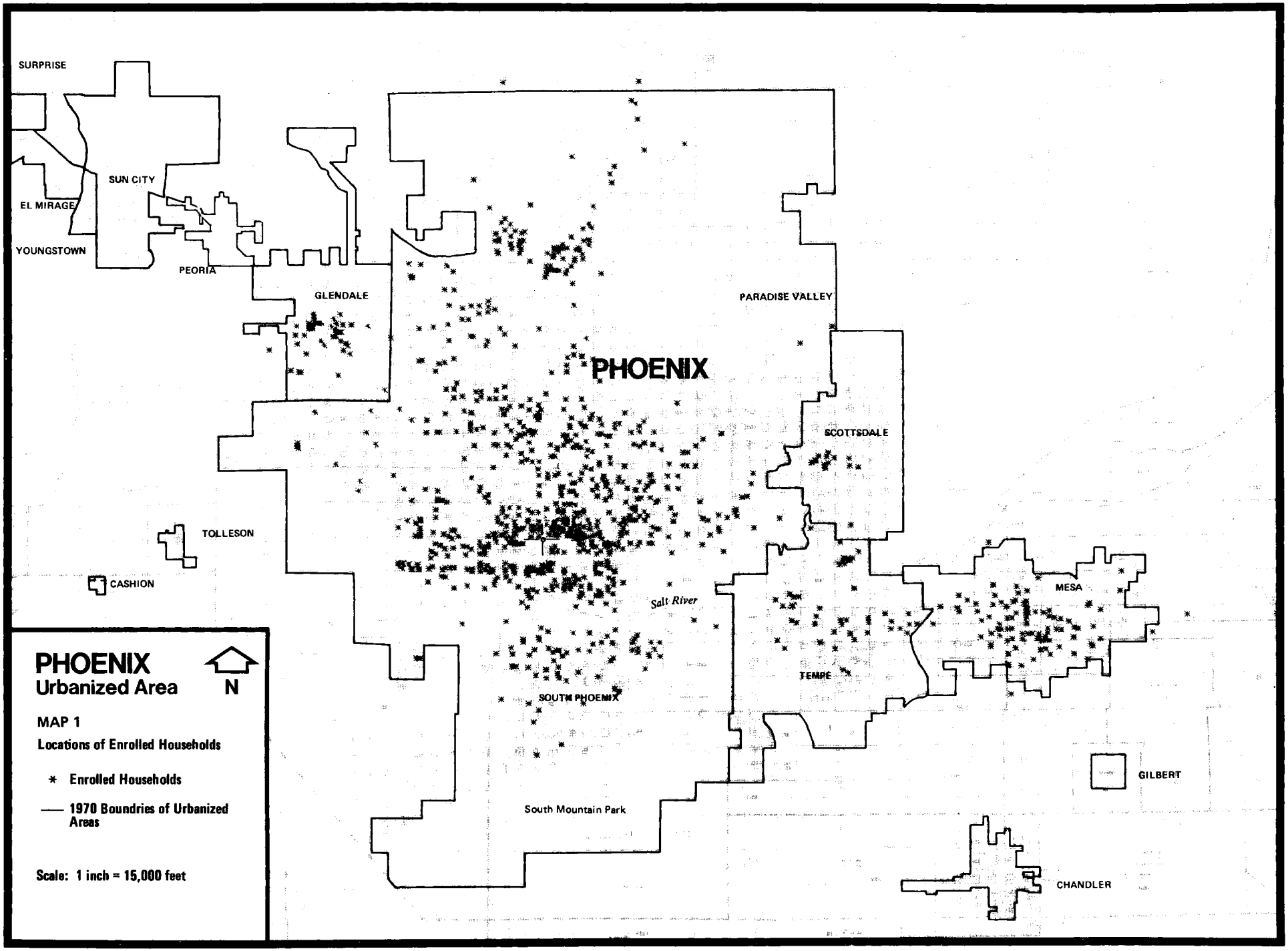
N

* Enrolled Households

—— City of Pittsburgh

--- Municipalities Outside of Pittsburgh

Scale: 1 inch = 23,000 feet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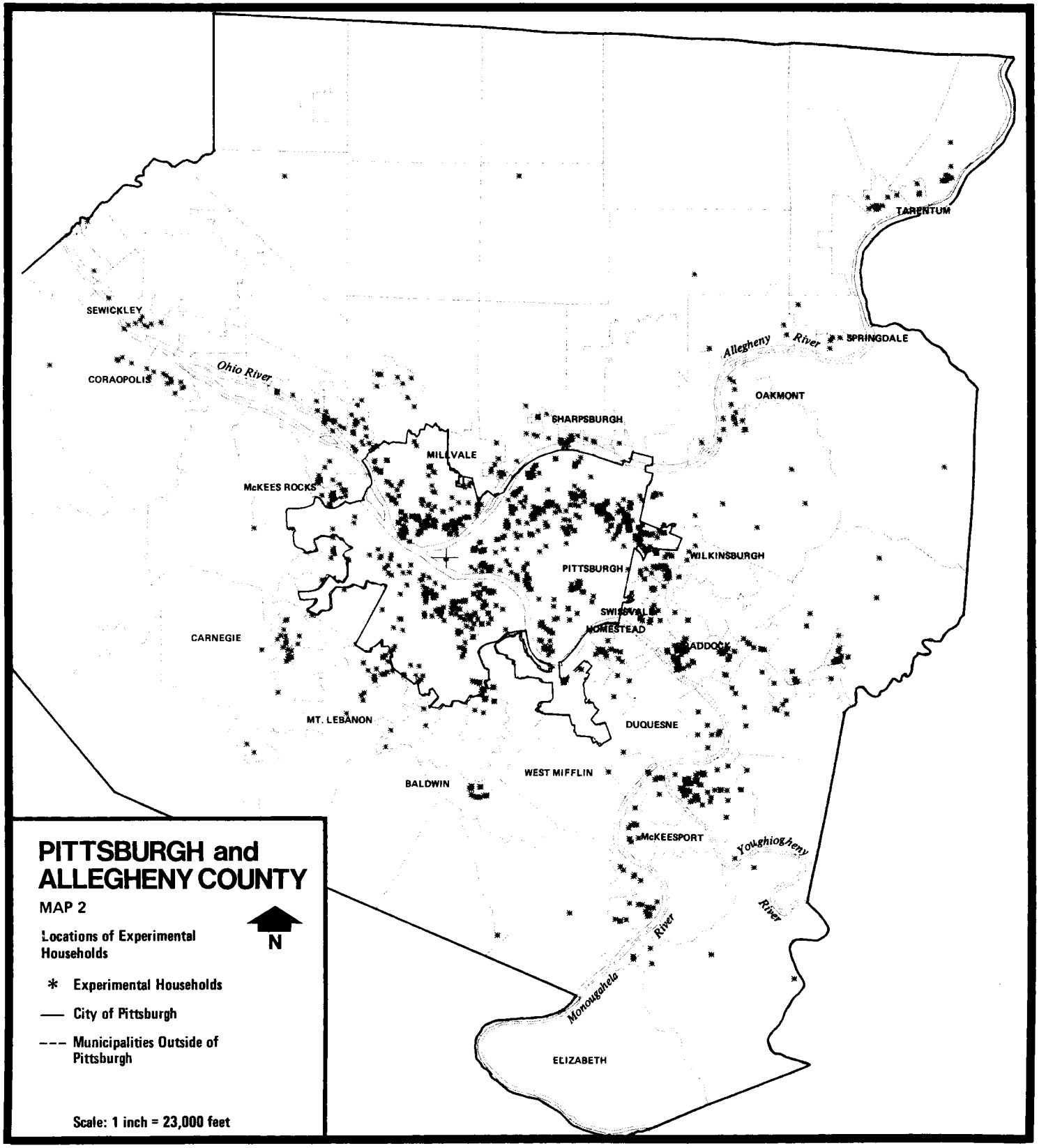
EL MIRAGE
YOUNGSTOWN
PEORIA
GLENDALE
PARADISE VALLEY
PHOENIX
SCOTTSDALE
TOLLESON
CASHION
Salt River
MESA
TEMPE
SOUTH PHOENIX
GILBERT
South Mountain Park
CHANDLER
PHOENIX
Urbanized Area
N
MAP 1
Locations of Enrolled Households
* Enrolled Households
— 1970 Boundries of Urbanized Areas
Scale: 1 inch = 15,000 feet

PITTSBURGH

MAPS 2 and 3

COMPARISON OF LOCATIONS

OF EXPERIMENTAL AND CONTROL HOUSEHOLDS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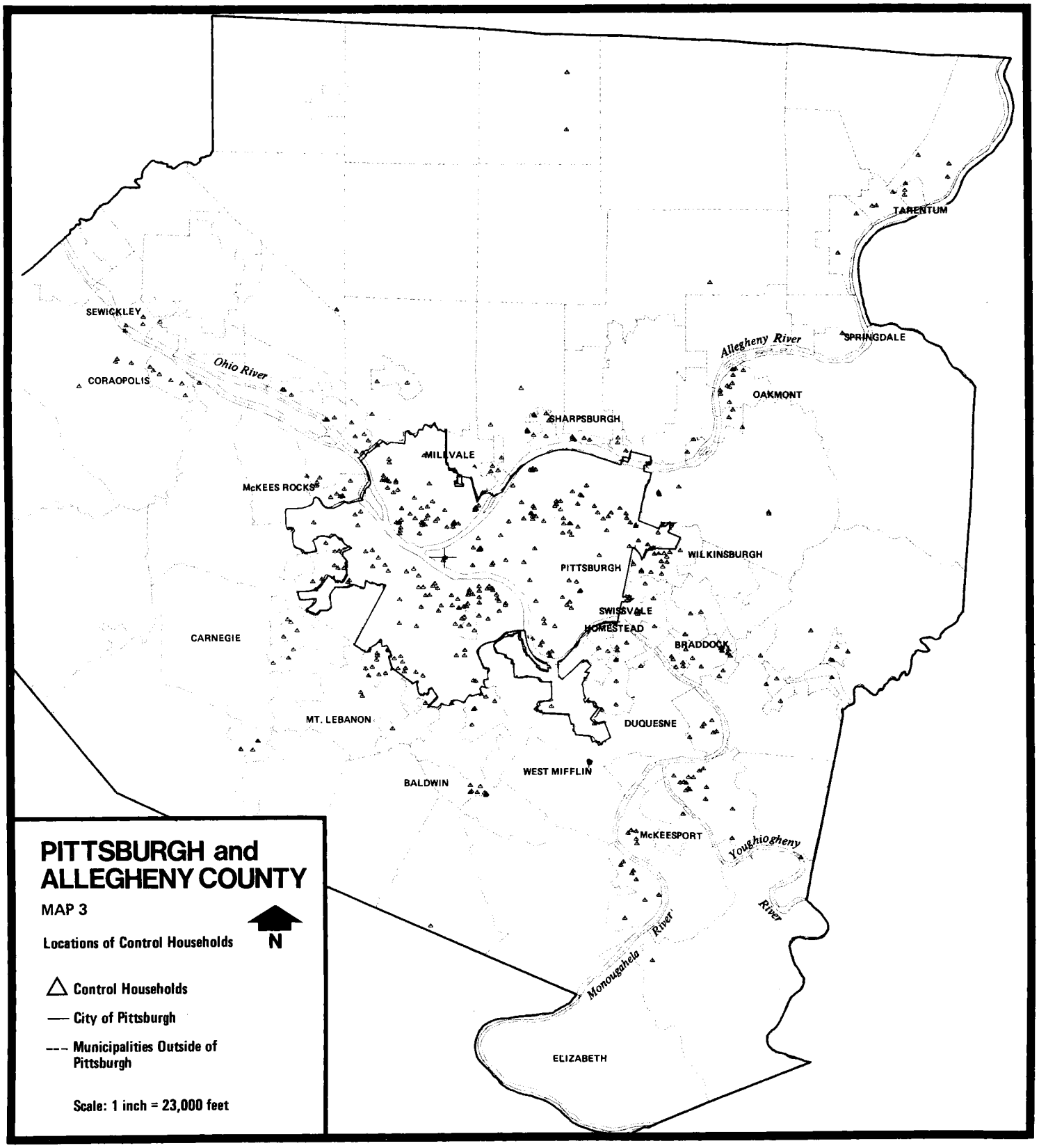
Allegheny River
SPRINGDALE
Ohio River
CORAOPOLIS
OAKMONT
SHARPSBURGH
MILLVALE
McKEES ROCKS
WILKINSBURGH
PITTSBURGH
SWISSVALE
HOMESTEAD
CARNEGIE
BRADDOCK
MT. LEBANON
DUQUESNE
WEST MIFFLIN
BALDWIN
McKEESPORT
Youghiogheny River
Monongahela River
ELIZABETH
PITTSBURGH and ALLEGHENY COUNTY
MAP 2
N
Locations of Experimental Households
* Experimental Households
City of Pittsburgh
Municipalities Outside of Pittsburgh
Scale: 1 inch = 23,000 feet



PITTSBURGH and ALLEGHENY COUNTY

MAP 3

Locations of Control Households

N

△ Control Households

— City of Pittsburgh

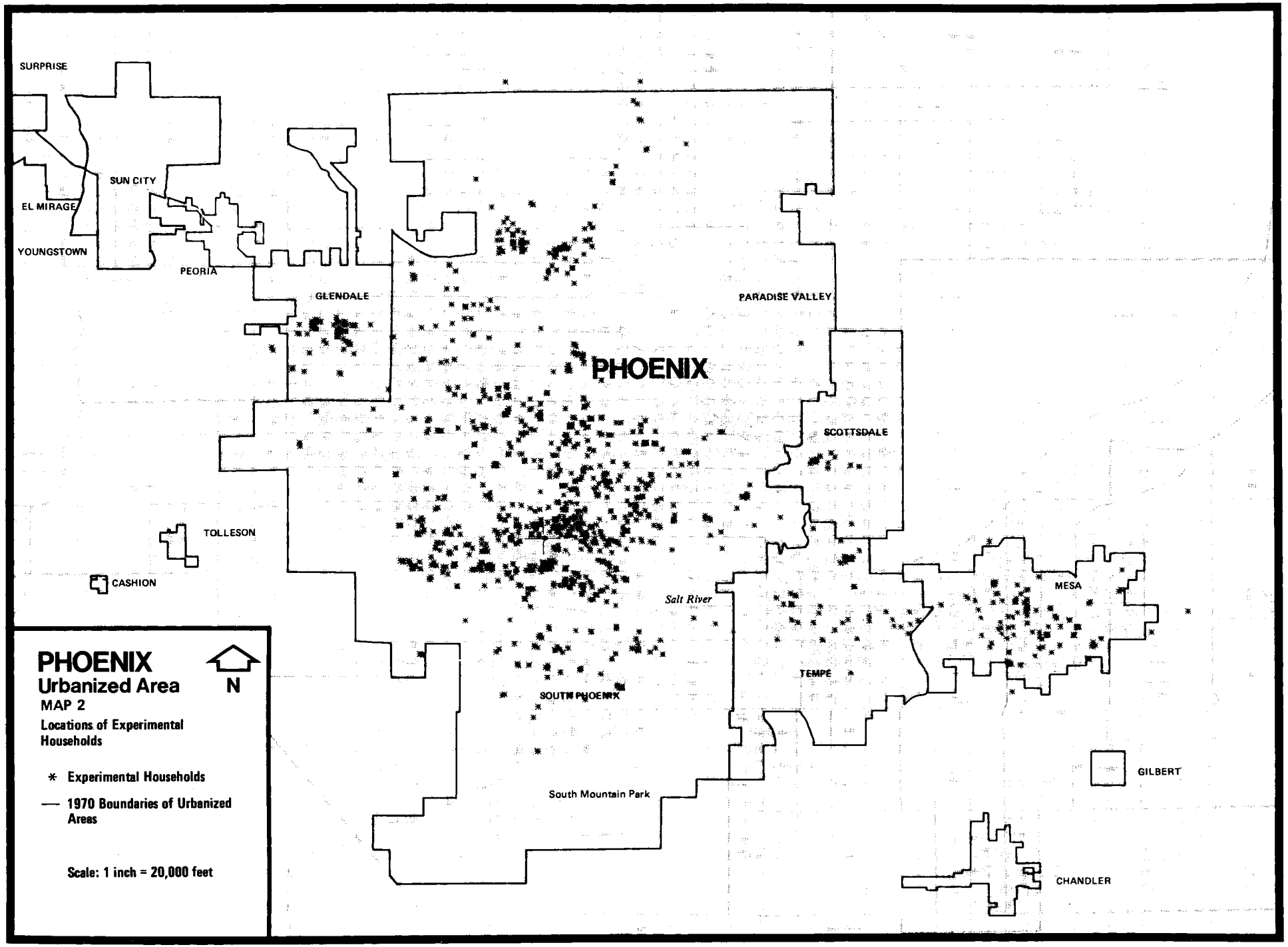
--- Municipalities Outside of Pittsburgh

Scale: 1 inch = 23,000 feet

PHOENIX

MAPS 2 and 3

COMPARISON OF LOCATIONS
OF EXPERIMENTAL AND CONTROL HOUSEHOLDS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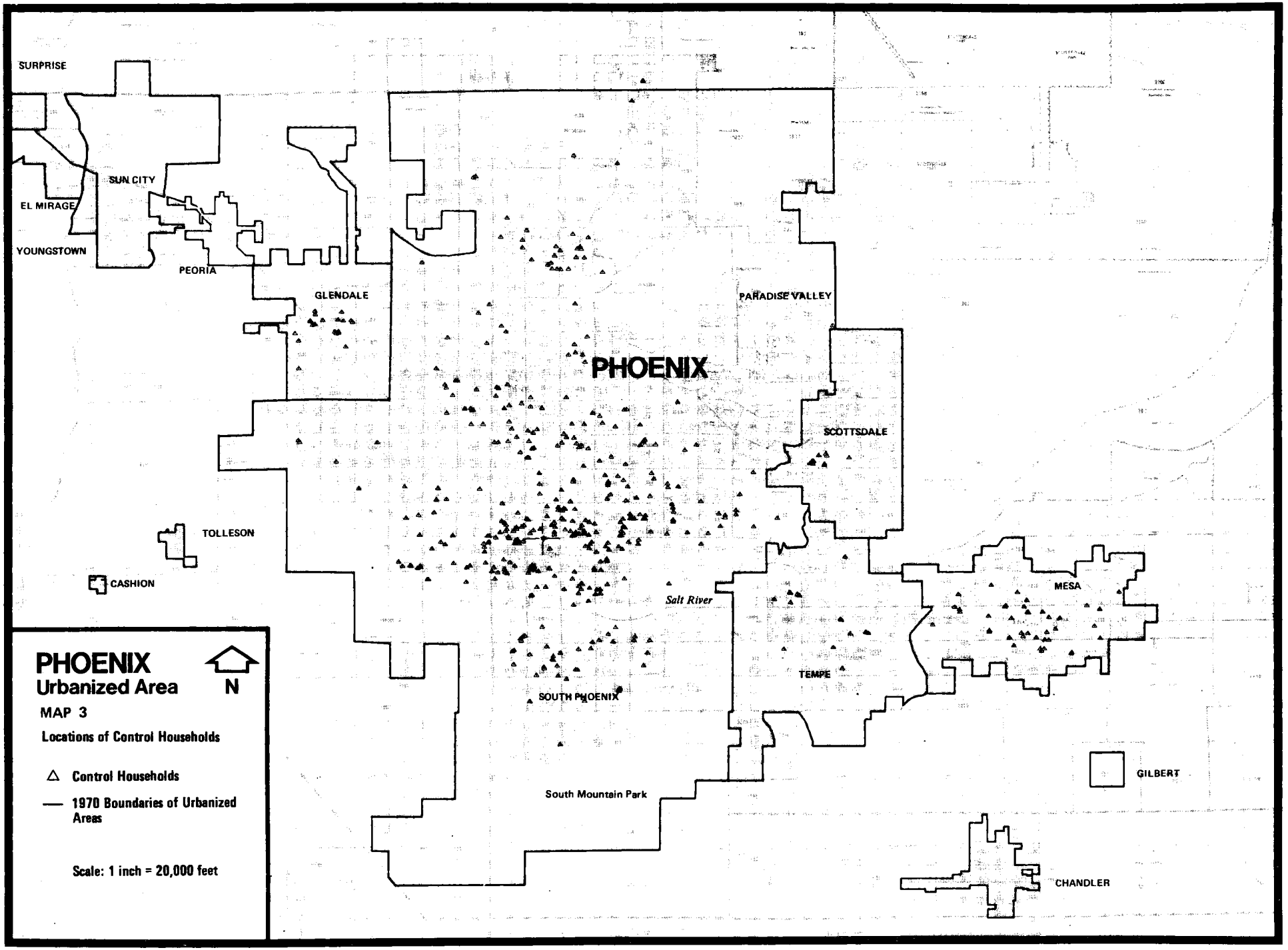
EL MIRAGE
YOUNGSTOWN
PEORIA
GLENDALE
PARADISE VALLEY
PHOENIX
SCOTTSDALE
TOLLESON
CASHION
Salt River
MESA
TEMPE
SOUTH PHOENIX
GILBERT
South Mountain Park
CHANDLER
PHOENIX
Urbanized Area
N
MAP 2
Locations of Experimental Households
* Experimental Households
— 1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet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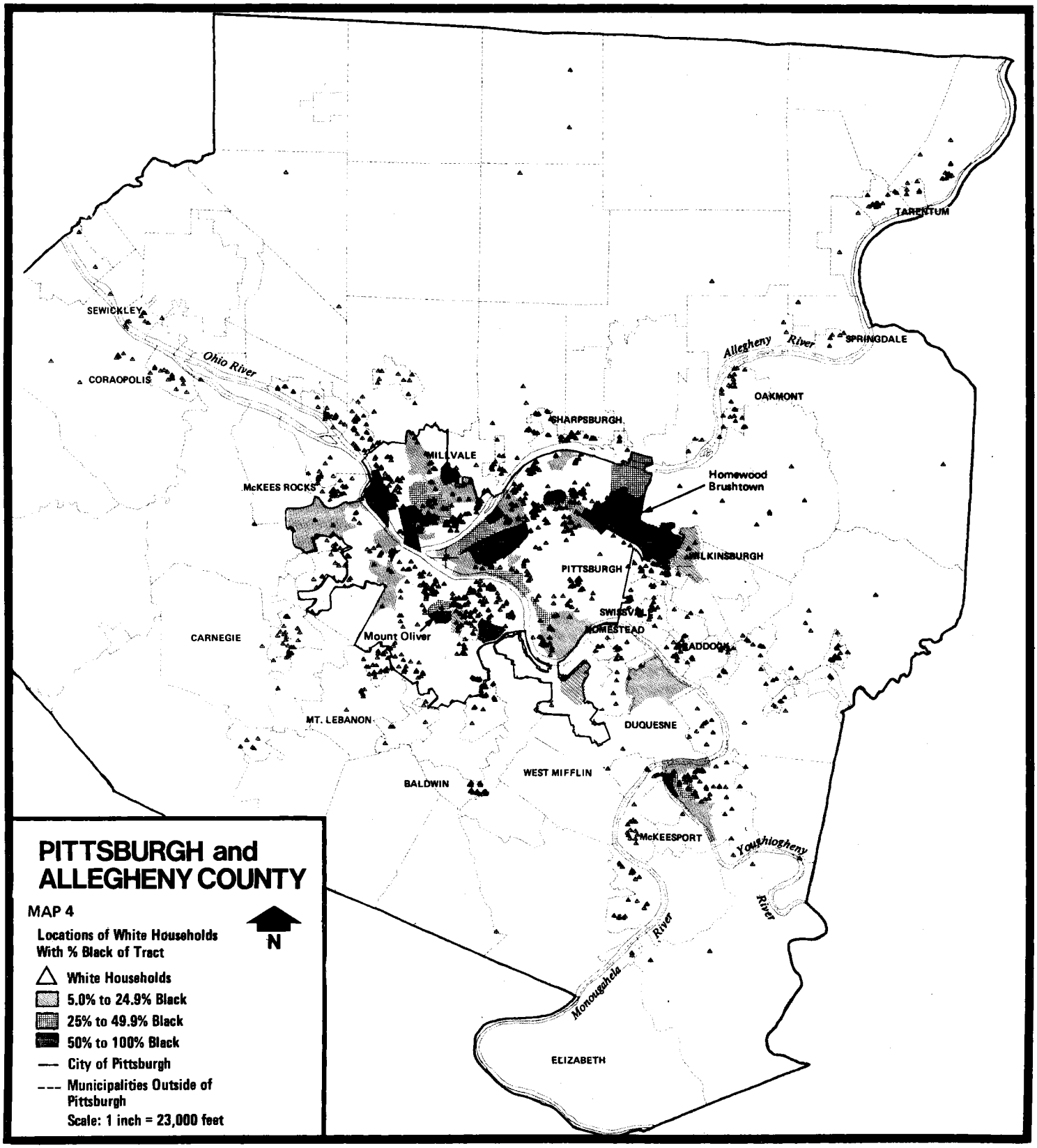
PARADISE VALLEY
PHOENIX
SCOTTSDALE
TOLLESON
CASHION
Salt River
MESA
TEMPE
SOUTH PHOENIX
South Mountain Park
GILBERT
CHANDLER
PHOENIX
Urbanized Area
N
MAP 3
Locations of Control Households
Control Households
1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet

PITTSBURGH

MAPS 4 and 5

COMPARISON OF LOCATIONS
OF WHITE AND BLACK HOUSEHOLDS



PITTSBURGH and ALLEGHENY COUNTY

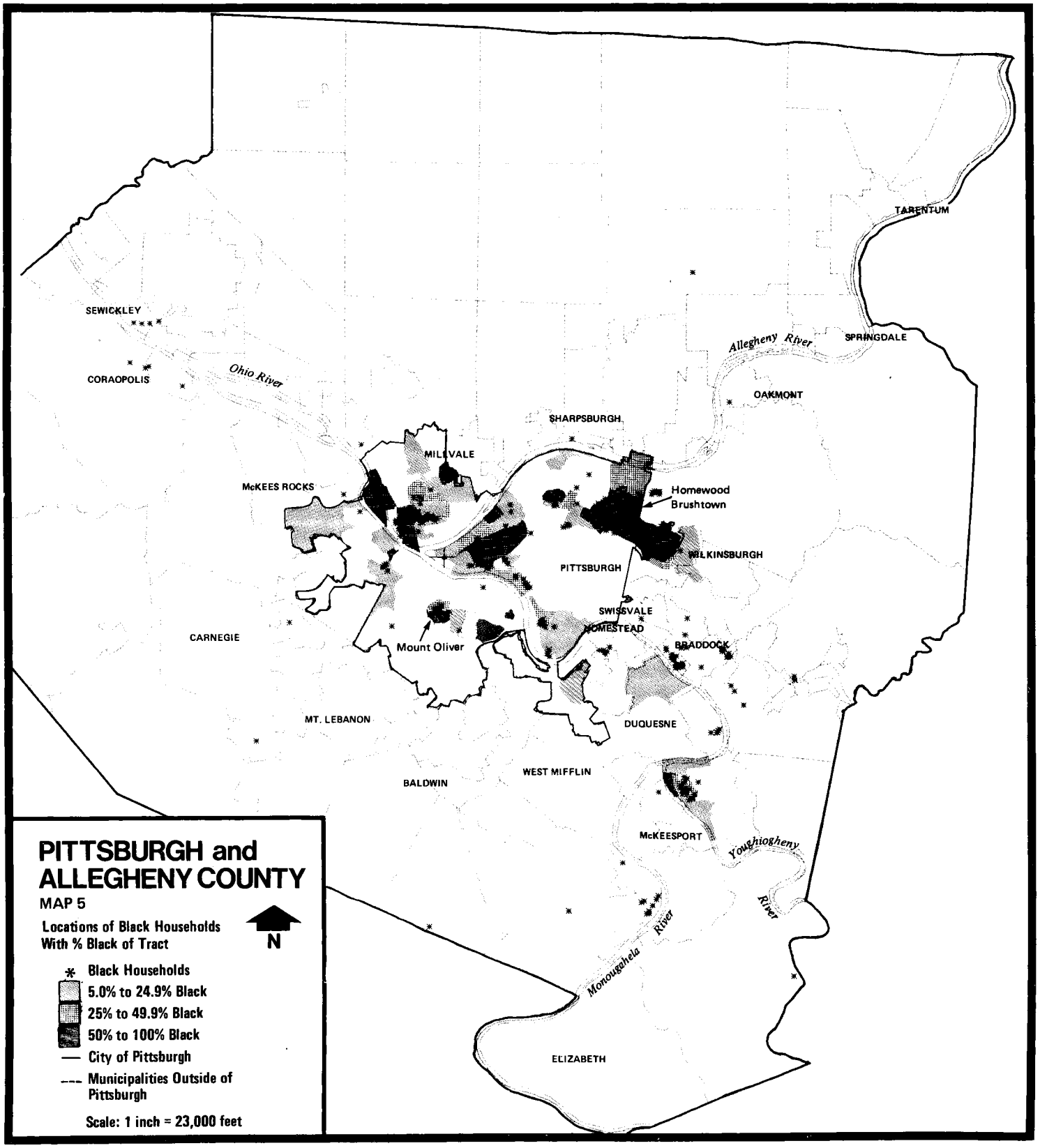
MAP 4

N

Locations of White Households With % Black of Tract

- White Households
- 5.0% to 24.9% Black
- 25% to 49.9% Black
- 50% to 100% Black
- City of Pittsburgh
- Municipalities Outside of Pittsburgh

Scale: 1 inch = 23,000 feet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CORAOPOLIS
Ohio River
OAKMONT
SHARPSBURGH
MILLVALE
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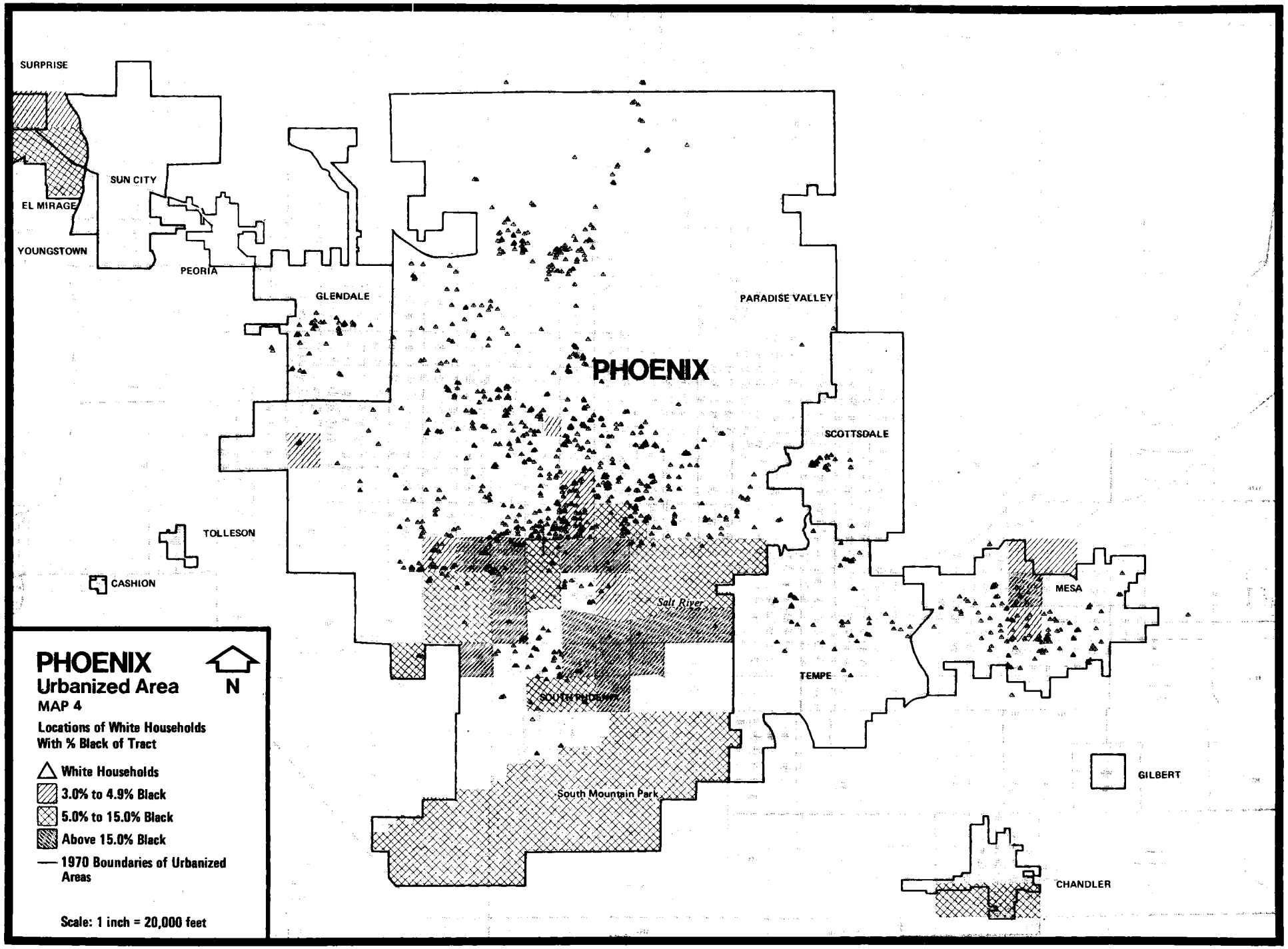
Homewood
Brushtown
WILKINSBURGH
PITTSBURGH
SWISSVALE
HOMESTEAD
CARNEGIE
Mount Oliver
BRADDOCK
MT. LEBANON
DUQUESNE
WEST MIFFLIN
BALDWIN
McKEESPORT
Youghiogheny
River
Monongahela
River
ELIZABETH
PITTSBURGH and
ALLEGHENY COUNTY
MAP 5
Locations of Black Households
With % Black of Tract
N
Black Households
5.0% to 24.9% Black
25% to 49.9% Black
50% to 100% Black
City of Pittsburgh
Municipalities Outside of
Pittsburgh
Scale: 1 inch = 23,000 feet

PHOENIX

MAPS 4 and 5

COMPARISON OF LOCATIONS
OF WHITE AND BLACK HOUSEHOLDS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PEORIA
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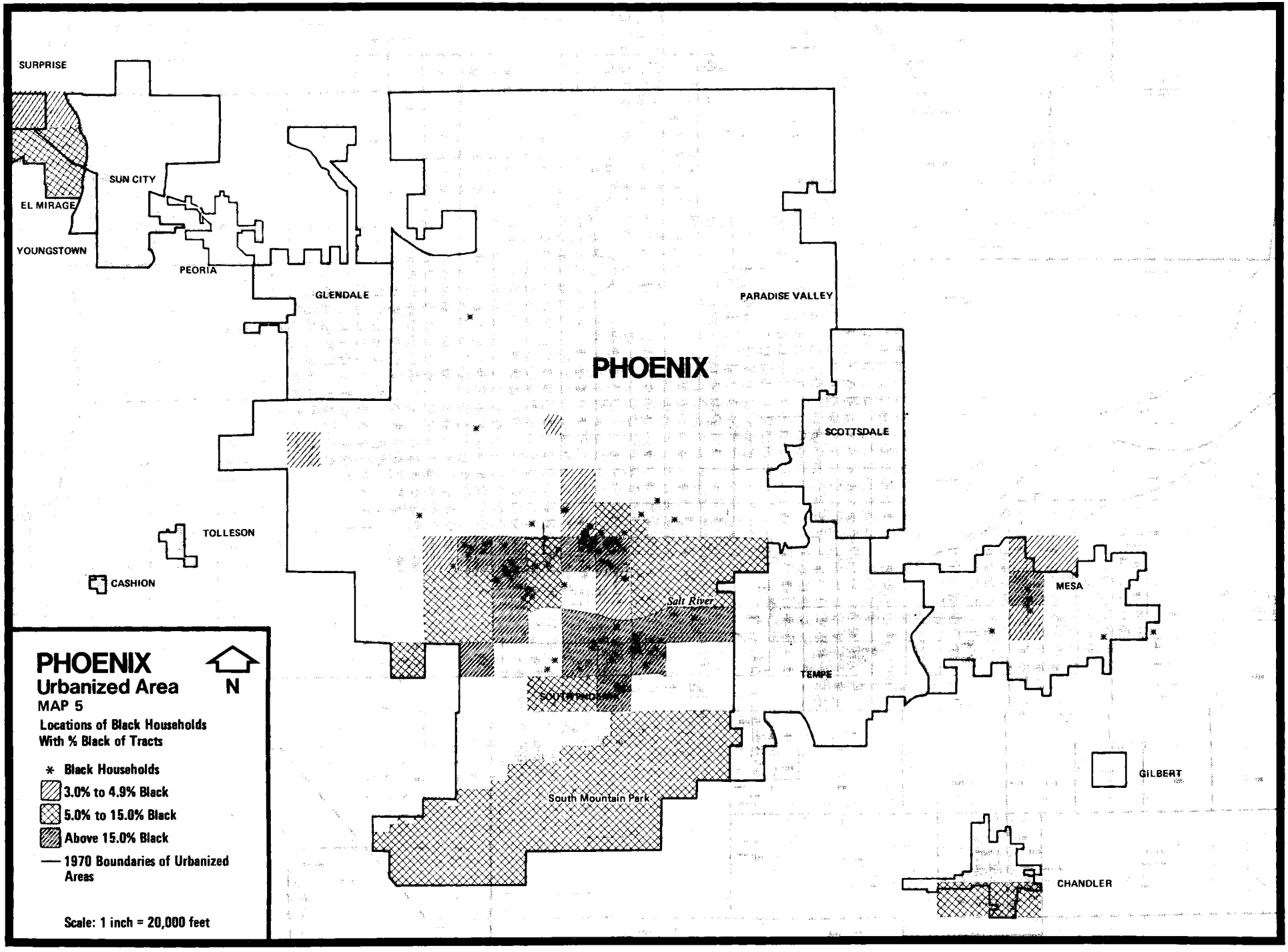
PHOENIX
SCOTTSDALE
TOLLESON
CASHION
Salt River
MESA
TEMPE
SOUTH PHOENIX
South Mountain Park
GILBERT
CHANDLER
PHOENIX
Urbanized Area
MAP 4
N
Locations of White Households
With % Black of Tract
White Households
3.0% to 4.9% Black
5.0% to 15.0% Black
Above 15.0% Black
1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet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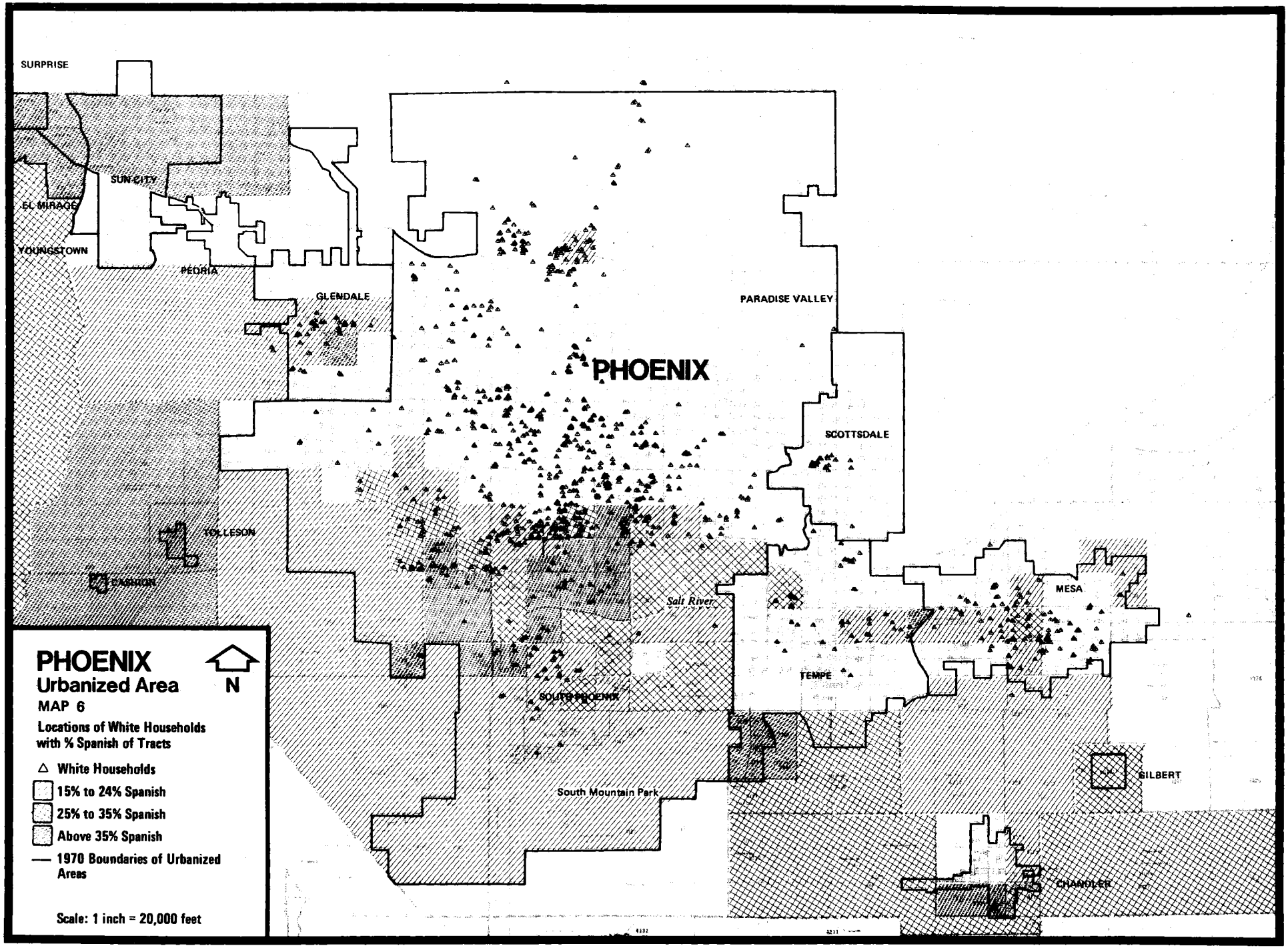
PARADISE VALLEY
PHOENIX
SCOTTSDALE
TOLLESON
CASHION
Salt River
MESA
TEMPE
SOUTH TEMPE
South Mountain Park
GILBERT
CHANDLER
PHOENIX
Urbanized Area
N
MAP 5
Locations of Black Households
With % Black of Tracts
* Black Households
3.0% to 4.9% Black
5.0% to 15.0% Black
Above 15.0% Black
1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet

PHOENIX

MAPS 6 and 7

COMPARISON OF WHITE
AND SPANISH-AMERICAN HOUSEHOLDS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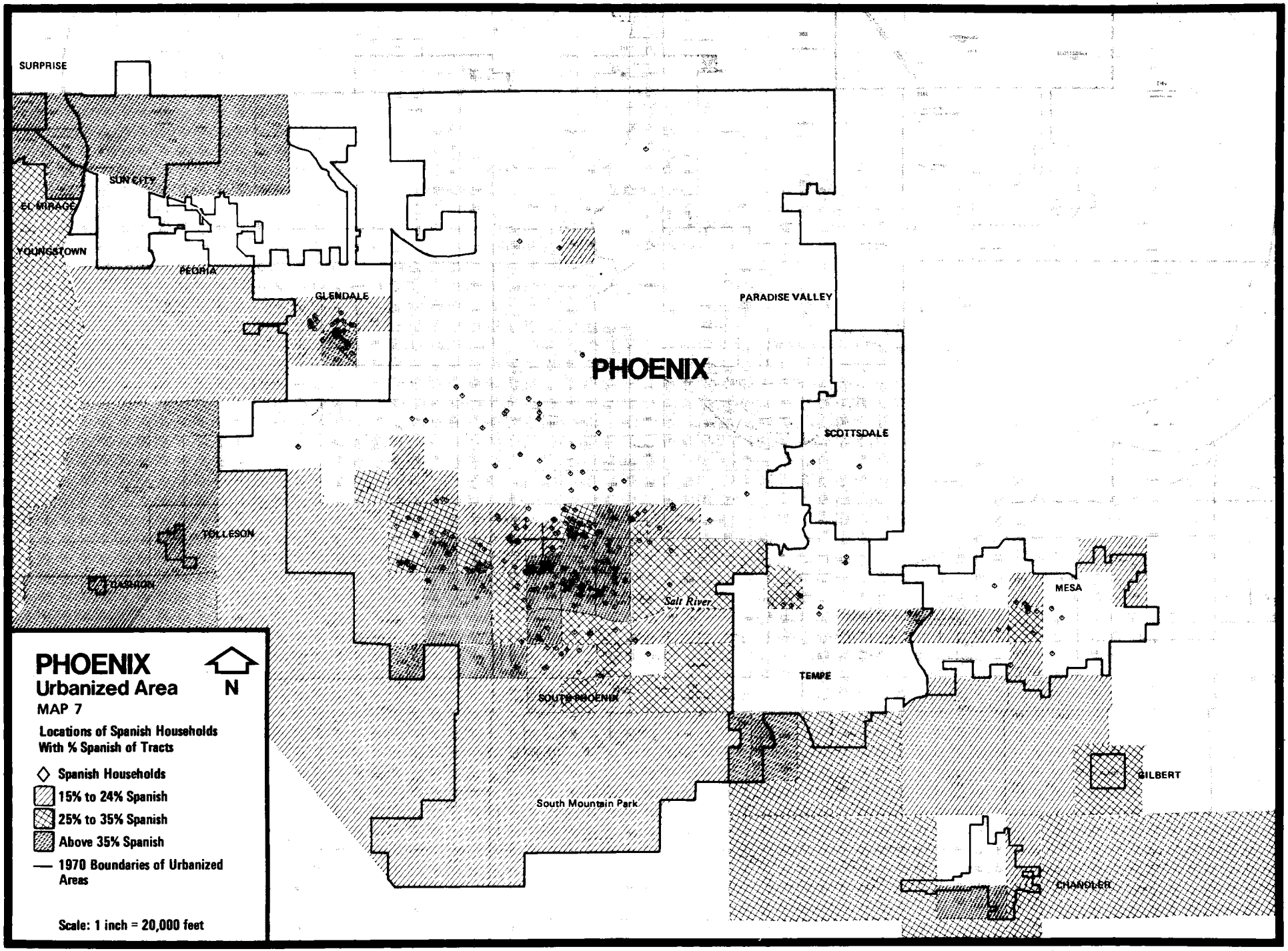
EL MIRAGE
YOUNGSTOWN
PEORIA
GLENDALE
PARADISE VALLEY
PHOENIX
SCOTTSDALE
YOLLESON
LAVEEN
Salt River
MESA
TEMPE
SOUTH PHOENIX
South Mountain Park
GILBERT
CHANDLER
PHOENIX
Urbanized Area
N
MAP 6
Locations of White Households with % Spanish of Tracts
White Households
15% to 24% Spanish
25% to 35% Spanish
Above 35% Spanish
1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet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PHOENIX
SCOTTSDALE
TOLLESON
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Salt River
MESA
TEMPE
SOUTH PHOENIX
South Mountain Park
GILBERT
CHANDLER
PHOENIX
Urbanized Area
N
MAP 7
Locations of Spanish Households
With % Spanish of Tracts
Spanish Households
15% to 24% Spanish
25% to 35% Spanish
Above 35% Spanish
1970 Boundaries of Urbanized Areas
Scale: 1 inch = 20,000 feet

6.0 HOUSING SATISFACTION

This section presents a tentative analysis of the relation between two measures of satisfaction (for dwelling units and for neighborhoods) and variables describing housing outcomes such as rental expenditures, rent burden, quality, and crowding. The analysis is intended mainly to explore the potential usefulness of the interview questions on housing satisfaction that have been used in the Demand Experiment.

6.1 ROLE OF SATISFACTION MEASURES

Housing programs are often compared on the basis of effects on rent burden, housing quality, overcrowding and discrimination. It would be helpful for the development of housing assistance policy if housing satisfaction measures provided an assessment of the worth to the recipient of alternative objective program outcomes. Measures of housing satisfaction can provide a secondary measure for assessing housing and locational outcomes during the experiment.

It could be argued that to assess satisfaction with housing a full range of housing attributes should be considered, including a number of dwelling unit, neighborhood, accessibility and public service characteristics, and satisfaction measured relative to each.[1] While it is true that a number

[1]This latter approach is similar to that taken in analyzing alternative transportation modes within cities where different modal attributes such as comfort, speed and reliability have been found to have different implicit worth to different population groups. As a result of attitudinal studies, not only have modal attributes (in particular, "reliability") been identified as generally important, but as differentially important to different groups. See D. T. Hartgen and G. H. Tanner, "Mode Choice and Attitudes: A Literature Review," Mimeographed, Albany, New York: New York State Department of Transportation, 1970, and Charles River Associates, "A Disaggregated Model of Urban Travel Demand", Cambridge, Massachusetts, March, 1972.

of housing elements may contribute to housing satisfaction, the approach taken here is to relate overall satisfaction to housing elements of presumed policy interest, rather than to attempt fine distinctions among contributing influences, or to arrive at overall satisfaction by summation.

The decision to concentrate initial efforts on extensive analysis of the two general satisfaction questions rather than on construction of scales from individual component ratings, has been useful. The analysis sheds considerable light on the interpretation of the satisfaction items and suggests that they may provide reasonable overall indicators.

In addition, comparisons between demographic groups of level of expressed satisfaction with present housing offer some confirming evidence of experience with discrimination in the housing market and may identify groups with the greatest possibilities for improvements in perceived well-being as a consequence of a housing allowance.

6.1.1 Underlying Assumptions

To develop at least some primitive guides for assessing differences in expressed housing satisfaction for different demographic groups some assumptions are made about the relationship of housing circumstances to housing satisfaction.

As used in this analysis, satisfaction is essentially relativistic nature. Satisfaction is assumed to be not so much a function of what individuals have as of their ability to achieve that to which they aspire. "Satisfactions and frustrations depend jointly on objective reality on one side and aspirations and expectations on the other."[1] The relativistic nature of

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[1] A., Campbell, and P. Converse, The Human Meaning of Social Change, New York; The Russell Sage Foundation, 1972.

satisfaction introduces numerous complications in terms of assessing participant welfare. In essence differences in achievement and differences in aspiration cannot be identified separately as sources of differences in satisfaction. Decreased satisfaction may reflect worsened conditions or increased aspirations. (Hence the frequent observation that revolution follows improved conditions.) Apparently similar levels of satisfaction between groups may mask large differences in aspirations and achievements. For purposes of initial analysis, however, this section essentially assumes similar aspirations and treats satisfaction as a rating of achievement alone. In this approach, satisfaction with housing is assumed largely to reflect the absolute level of housing achieved, the financial burden involved, and a sense of equity (a reasonable congruence of achievement and financial burden in terms of some reference group).

In this framework, then, one might expect to find the following types of relationships:

1. Those households living in dwellings that pass minimum standards of residential quality will be more satisfied than those who do not.

2. Those households able (both financially and through available supply) and willing to pay high rents rather than low rents are more likely to have achieved their housing aspirations and to be satisfied.

3. Those groups paying such a large proportion of income on housing that it precludes aspiration fulfillment in areas other than housing (i.e., food, recreation, etc.) will be less satisfied with their housing than other households.

4. Those households belonging to socio-economic or demographic groups to whom the absolute supply of housing available is limited, or for whom the price per unit of quality is inflated due to systematic discrimination in the housing market will be less satisfied than other households.

    - If there is systematic market discrimination against black households, households with children, female-headed households and

households on welfare, these groups will be more dissatisfied with their dwelling units and neighborhoods than other households.

- Large households would be expected to be less satisfied due to the limited supply and the expense of units large enough to accomodate them.

- Young households would also be expected to be dissatisfied due to possible discrimination in the housing market on the basis of age and/or presence of children often coupled with need for more space as the family grows.

In examining the relation of household characteristics to housing satisfaction, it should be obvious that differences in satisfaction between two groups may be a function of the combination of other demographic characteristics associated with those groups.

6.1.2 Use of the Satisfaction Measure

In the analysis that follows housing satisfaction is measured using two questions asked of participants at the Baseline Interview:

> "In general, how satisfied or dissatisfied are you with this neighborhood as a place to live -- would you say very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied?"

and

> "In general, how satisfied are you with the (house/apartment) you now live in -- would you say very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied?"

Responses were rated on a four-point scale ranging from very

satisfied (1) to very dissatisfied (4).[1] The neighborhood question leads off the sequence with whatever response bias that positioning entails.

The basic population analyzed in this section consists of all enrolled participants. Attitudinal responses were collected from a single member of each household, and that individual is taken as representing the household.

6.1.3 Workability of the Housing Satisfaction Measures

Interview questions used in the Housing Allowance Demand Experiment are not extensive enough to enable formal validation (either external or internal) of the housing satisfaction items. It is, however, still useful to address the question of whether the satisfaction measures do in fact measure what they purport to measure.

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[1] In discussing the relation of housing satisfaction to housing quality and to rent, the scale was collapsed to a dichotomy. This decision was made for two reasons. First, a primary concern of the housing allowance program is whether minimum standards earmarking and rent subsidy relate to some fundamental level of housing satisfaction. This general question suggests the handling of satisfaction as a dichotomy. Secondly, use of satisfaction as a dichotomy produces cell sizes adequate for two-way stratifications by various demographic and housing variables.

When attention turns to the bivariate relation of housing satisfaction to household characteristics and to specification of differences in satisfaction between pairs of demographic groups, the sharper distinctions offered by the entire four-point scale were deemed preferable and were used.

The approach taken in this paper is a comparison of the distribution of responses on the satisfaction items to response distributions obtained by comparable studies. Comparison to similar studies suggests that we do in fact have a measure which is valid in an informal sense, and workable. It further suggests an ability to relate analytic findings to previous work in the field. The distribution of responses over the entire scale showed no substantial difference from the distribution obtained on similar items in comparable studies.[1] As has generally been the case in studies of dwelling unit and neighborhood satisfaction, respondents to the Baseline Interview were more often satisfied than not (see Table 6.1.1).

Preliminary observations on the relation between housing satisfaction and housing quality, or rent, or demographic characteristics are presented in the sections following.

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[1] See for example: John B. Lansing, Planned Residential Environments, a report prepared for the U.S. Department of Transportation, Bureau of Public Roads, 1970, Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, p. 106; Edgar Butler, et al., Moving Behavior and Residential Choice, National Cooperative Highway Research Program Report #81, 1969, p. 19; John B. Lansing, Residential Location and Urban Mobility: The Second Wave of Interviews, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1966, p. 48; Robert L. Wilson, "Livability of the City: Attitudes and Urban Development", Chapter II in Urban Growth Dynamics, F. Stuart Chapin, Jr. and Shirley F. Weiss (eds.) New York; Wiley and Sons, 1962, p. 371.

TABLE 6.1.1

PERCENT OF HOUSEHOLDS EXPRESSING

VARIOUS LEVELS OF SATISFACTION

Type of Site	Dwelling Unit Satisfaction		Neighborhood Satisfaction	
Level of Satisfaction	Pittsburgh	Phoenix	Pittsburgh	Phoenix
Very Satisfied	36.5%	35.9%	45.9%	46.9%
Somewhat Satisfied	32.4%	36.0%	30.3%	33.4%
Somewhat Dissatisfied	16.5%	17.1%	13.0%	12.2%
Very Dissatisfied	14.5%	11.0%	10.8%	7.4%
Total	100.0%(1760)	100.0%(1838)	100.0%(1757)	
Median Score	1.917	1.893	1.634	1.592

Data Source: Baseline Interview

6.2 HOUSING SATISFACTION AND HOUSING QUALITY

One measure of housing outcomes that is likely to be strongly related to satisfaction is housing quality. Section 4.4 describes a continuum of housing quality measures consisting of four sets of progressively more stringent requirements. To the extent that these levels correspond to (or highly correlate with other housing qualities that correspond to) households' own concerns with housing, levels of expressed satisfaction should increase with the attainment of higher quality levels.

Data collected from the participant population suggest a positive relation between satisfaction and housing quality (see Figure 6.2.1). Households were grouped according to the highest quality level which they passed. Groupings were then compared in terms of the percentage of households expressing satisfaction with their dwelling units at each quality level. The results show that the proportion of households satisfied with their dwelling units rises substantially with progressively more stringent quality levels. Dwelling unit satisfaction correlated (τ_c)[1].13 with level of basic housing quality in Pittsburgh and .18 in Phoenix. It is, of course, improper to infer a causal relation between quality and satisfaction, since many other elements contributing to housing satisfaction may correlate with quality.

If, as indicated in Section 4.0, black households have a greater difficulty obtaining housing of basic quality than white households, it would be conjectured that basic housing quality would be more strongly related to dwelling unit satisfaction among blacks than among whites. The implication here is that white households who do not pass MS make that choice while blacks may be forced into that position. The population was disaggregated by race to test this hypothesis.

At every quality level black households are less satisfied than whites. However, the relation between satisfaction and quality was stronger for blacks than for whites. In Pittsburgh, basic housing quality showed an association (τ_c) of .24 with

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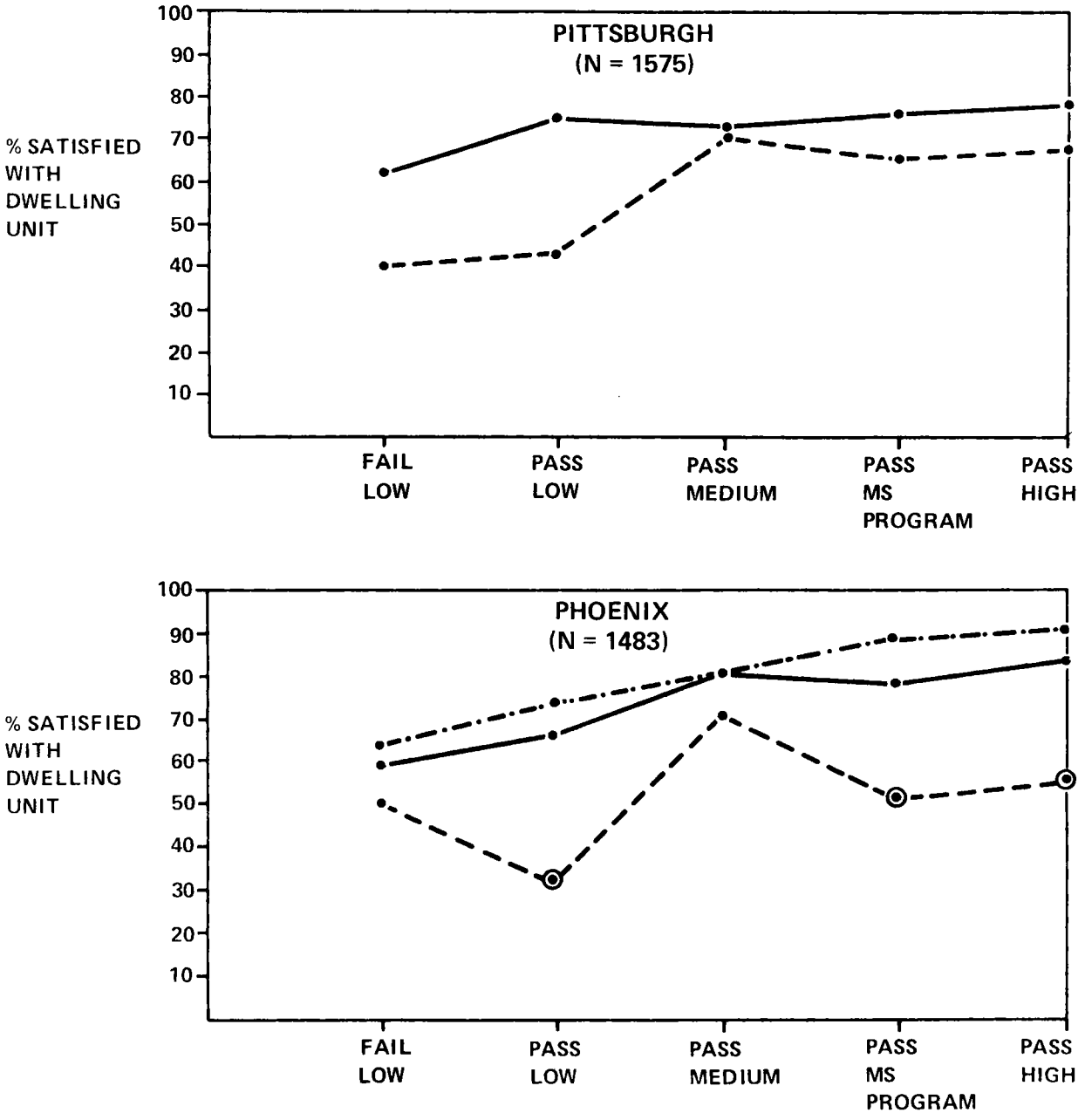
[1]Kendall's tau$_c$ (τ_c) is a bivariate rank-order correlation coefficient for tests for consistency in an individual's rank over two variables by assessing the extent to which the number of observations falling above and below that individual's rank is equal for both variables being tested. Of the tau statistics, τ_c is recommended for use with tables having unequal numbers of rows and columns.

FIGURE 6.2.1

DWELLING UNIT SATISFACTION[1] FOR HOUSEHOLDS
PASSING DIFFERENT HOUSING QUALITY LEVELS BY RACE/ETHNICITY



DATA SOURCE: BASELINE INTERVIEW AND INITIAL HOUSING EVALUATION FORM

[1]"SATISFIED" MEANS "VERY SATISFIED" OR "SOMEWHAT SATISFIED"

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- ⊙ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

dwelling unit satisfaction for black households and an association (τ_c) of .06 for white households.[1] Both correlations were significant at the .05 level or better but the association for whites appears to be due mostly to the low level at "fail low." (See Figure 6.2.1 for a graphic presentation.) In Phoenix, the sample size for black households precluded such computations.

The relation of dwelling unit satisfaction to overcrowding follows a pattern similar to that of basic housing quality. Overcrowding shows a strong negative relation to dwelling unit satisfaction. (See Figure 6.2.2.) Once again black households are consistently less satisfied at every level of the crowding measure.

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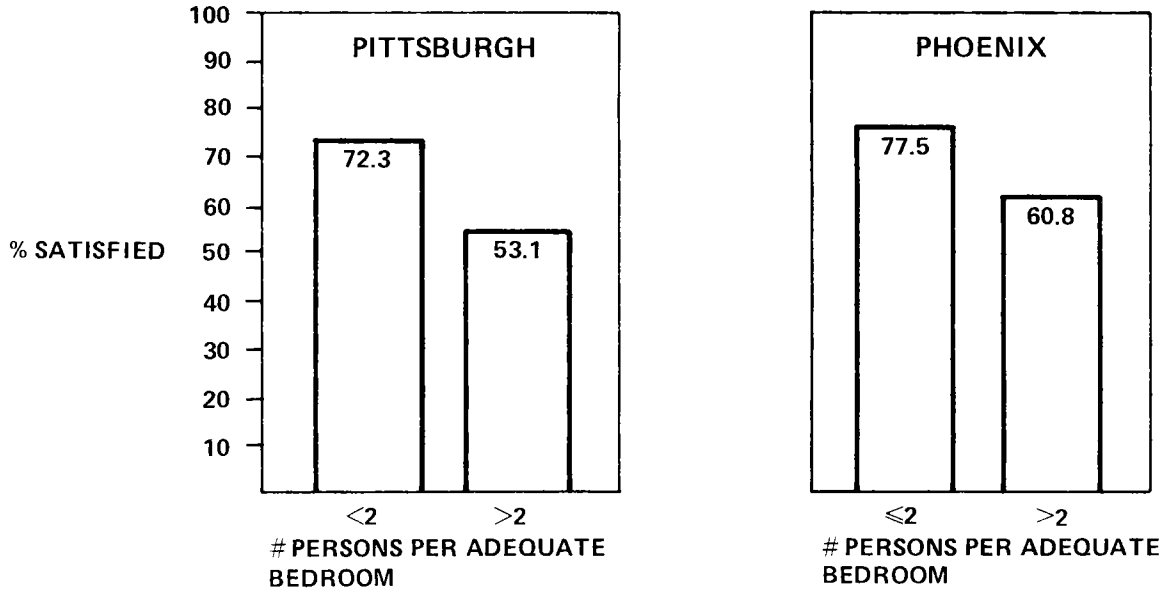
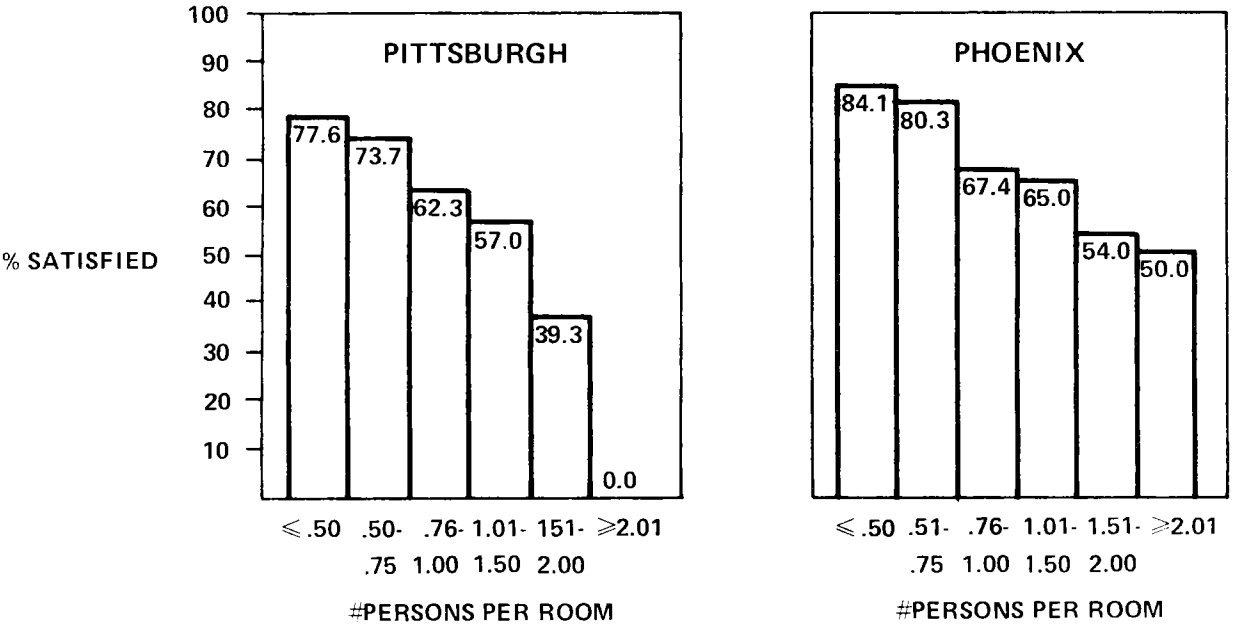
[1]The magnitude of the τ_c statistic will be slightly influenced by the sensitivity of the statistic to differences in the marginal distributions of the two samples. It is felt that this problem with the use of τ_c is a substantially lesser one than would be encountered in the use of any of the other statistics potentially applicable in this case.

FIGURE 6.2.2
DWELLING UNIT SATISFACTION AND OCCUPANCY STANDARDS

PROGRAM OCCUPANCY STANDARDS



CENSUS OCCUPANCY STANDARDS



DATA SOURCE: BASELINE INTERVIEW

6.3 HOUSING SATISFACTION AND RENT

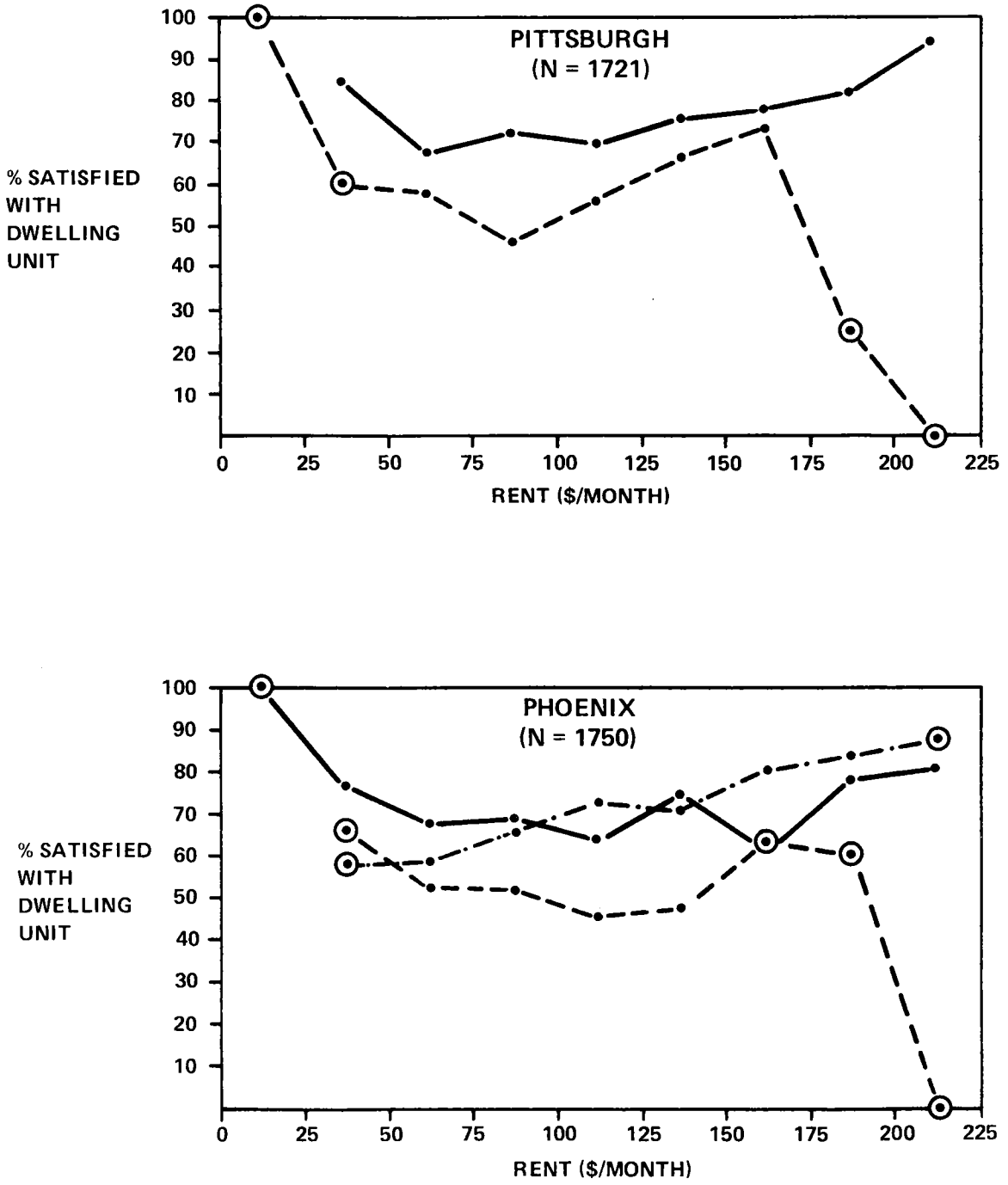
Analysis of the data indicats a very weak positive relationship between housing satisfaction and rent expenditure, in the form of both rent and rent burden. Summary results of the relation of adjusted contract rent and rent burden to dwelling unit and neighborhood satisfaction are presented in Figures 6.3.1 through 6.3.4.

Although the results are not presented graphically in this report, households were disaggregated by income level and the relationship of housing satisfaction to rent burden was re-examined. A positive relation of housing satisfaction to rent burden was found to persist over all income levels. Within the higher income groups the proportion of households with extremely high rent burdens was, of course, lower.

With regard to race/ethnicity, at every level of rent and rent burden at both sites, black households are substantially less satisfied than non-minority white households or Spanish-American households in Phoenix. Differences between blacks and whites were greater with respect to dwelling unit than neighborhood satisfaction.

FIGURE 6.3.1

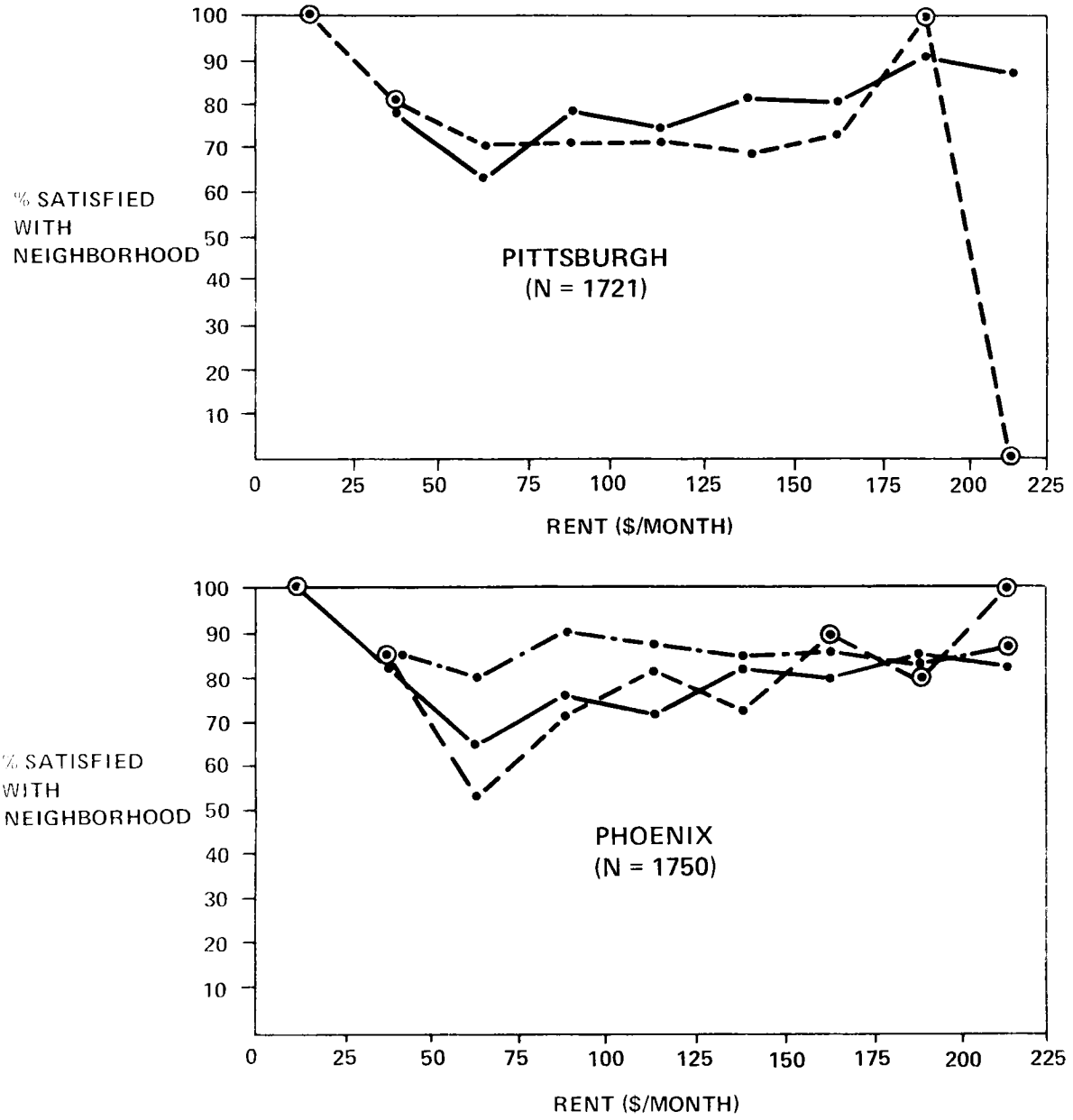
DWELLING UNIT SATISFACTION[1] BY RENT BY RACE/ETHNICITY



DATA SOURCE: BASELINE INTERVIEW

[1]"SATISFIED" MEANS "VERY SATISFIED" OR "SOMEWHAT SATISFIED"

FIGURE 6.3.2
NEIGHBORHOOD SATISFACTION[1] BY RENT BY RACE/ETHNICITY

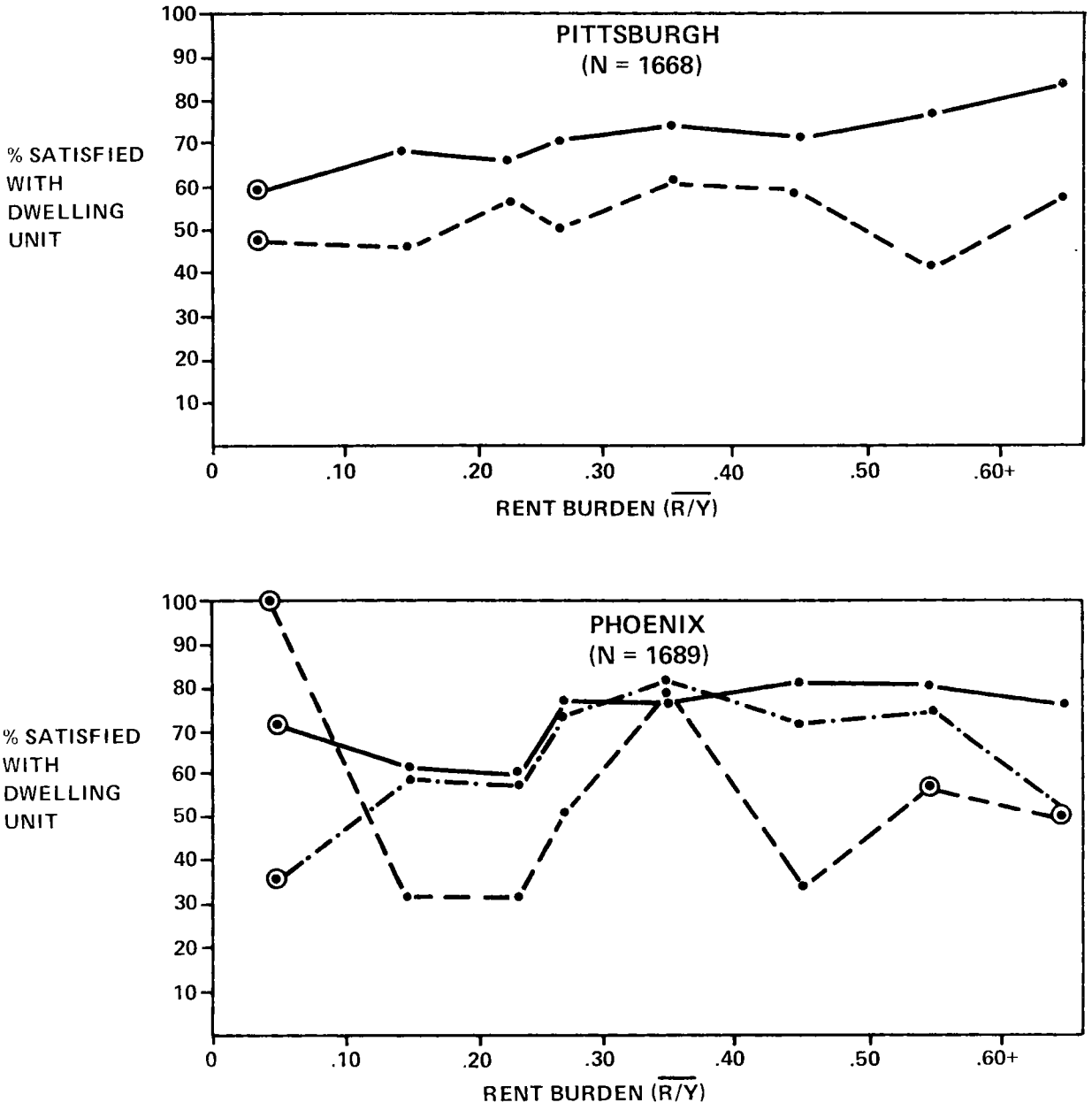


DATA SOURCE: BASELINE INTERVIEW

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- ◉ BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

[1]"SATISFIED" MEANS "VERY SATISFIED" OR "SOMEWHAT SATISFIED"

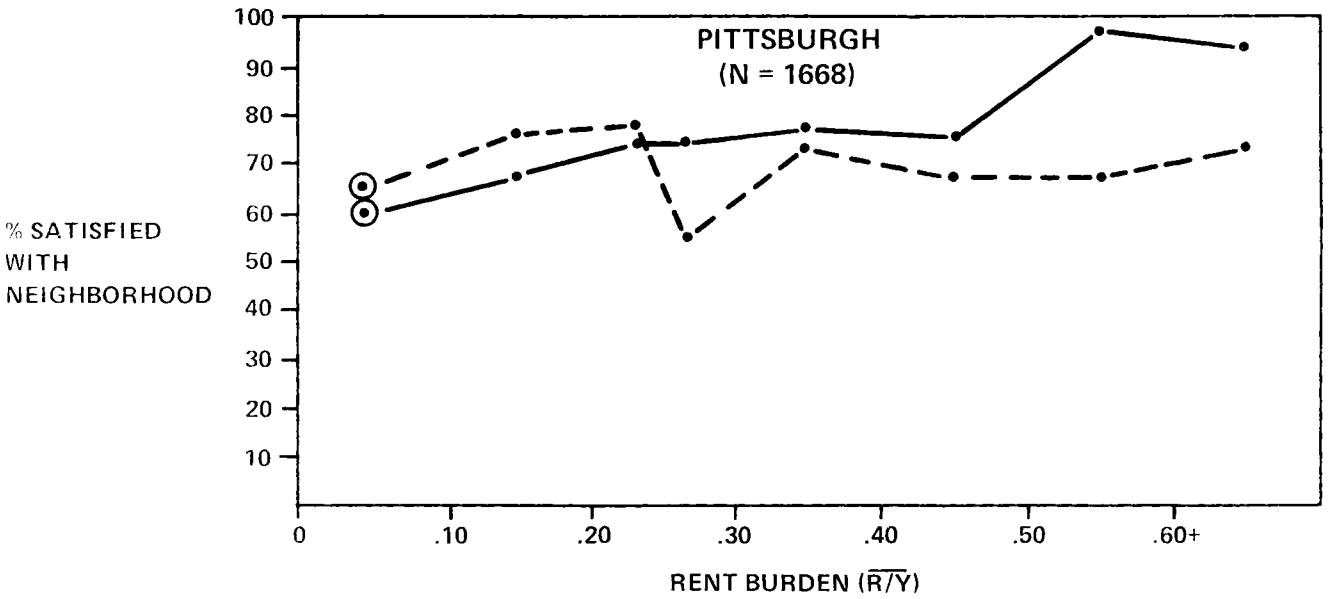
FIGURE 6.3.3
DWELLING UNIT SATISFACTION[1] BY RENT BURDEN BY RACE/ETHNICITY

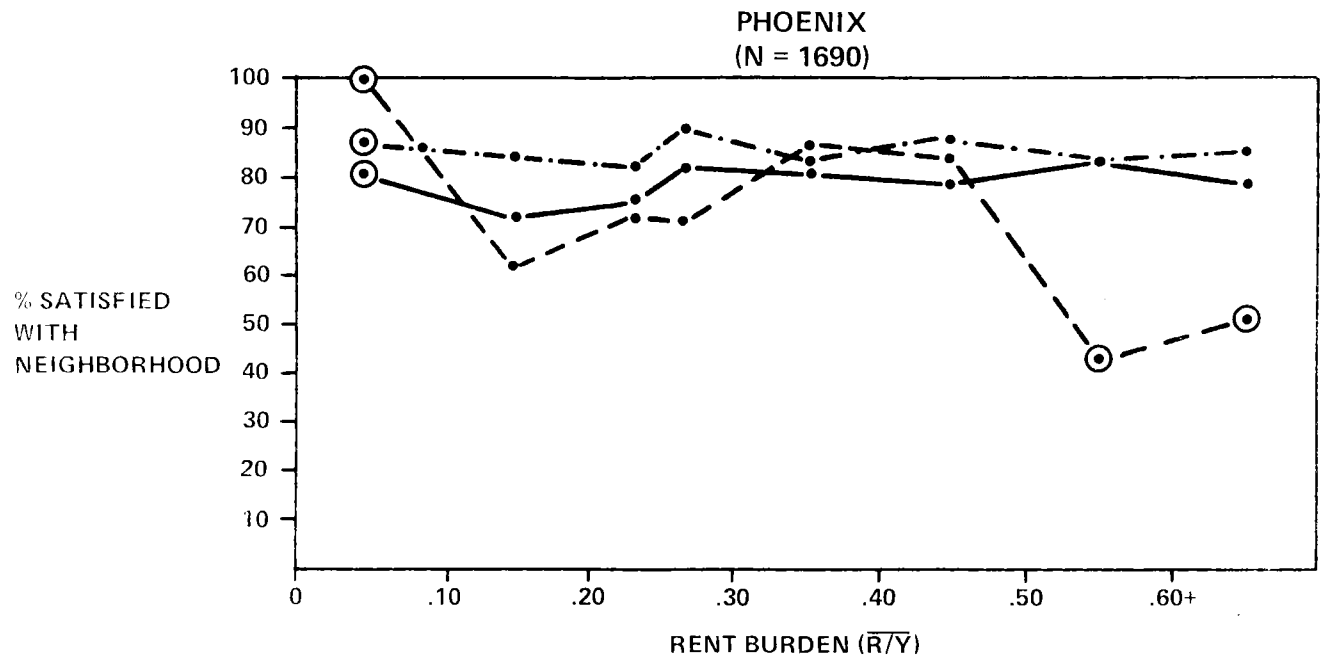


DATA SOURCE: BASELINE INTERVIEW

[1]"SATISFIED" MEANS "VERY SATISFIED" OR "SOMEWHAT SATISFIED"

FIGURE 6.3.4
NEIGHBORHOOD SATISFACTION[1] BY RENT BURDEN BY RACE/ETHNICITY





DATA SOURCE: BASELINE INTERVIEW

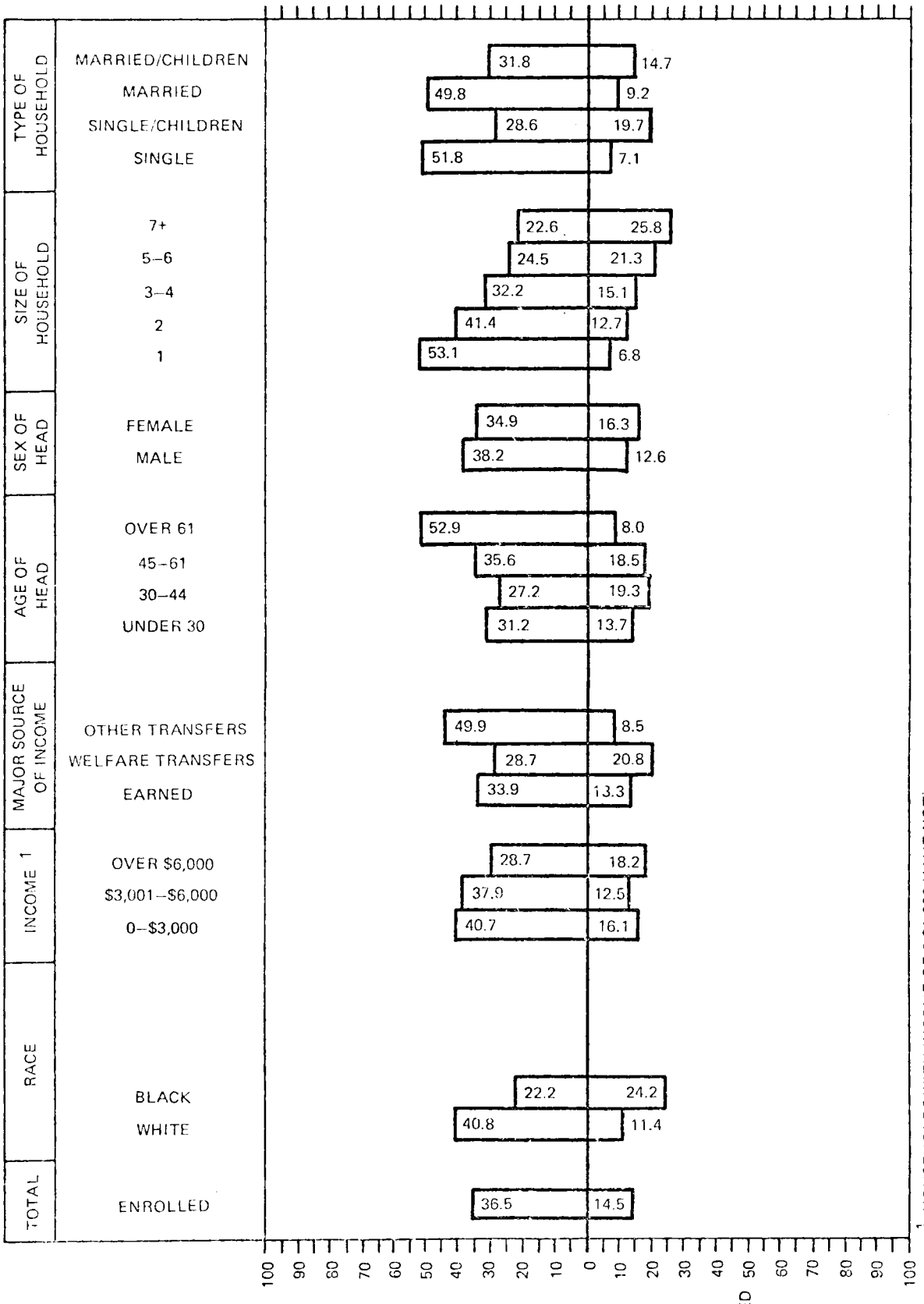
[1] "SATISFIED" MEANS "VERY SATISFIED" OR "SOMEWHAT SATISFIED"

KEY
- WHITE
- BLACK
- SPANISH AMERICAN
- BASE ON WHICH PERCENTAGE IS CALCULATED IS LESS THAN 15

6.4 HOUSING SATISFACTION AND HOUSEHOLD CHARACTERISTICS

This section considers socio-economic and demographic characteristics of households which, by virtue of their interaction with the supply characteristics of the housing market, may (1) impede a household's access to housing of basic quality or to housing generally desirable for other reasons, (2) limit the price range within which households can find housing or (3) inflate the cost per unit of quality to a particular household. Figures 6.4.1 through 6.4.4 present bivariate relationships between housing satisfaction and a series of household characteristics on the basis of which discrimination or unusual limitations of supply may occur. They also examine the relation of income to housing satisfaction. Since so many joint dependencies may occur, little note is taken of any but the strongest associations between demographic characteristics and housing satisfaction.

FIGURE: 6.4.1
DWELLING UNIT SATISFACTION FOR DEMOGRAPHIC GROUPS IN PITTSBURGH

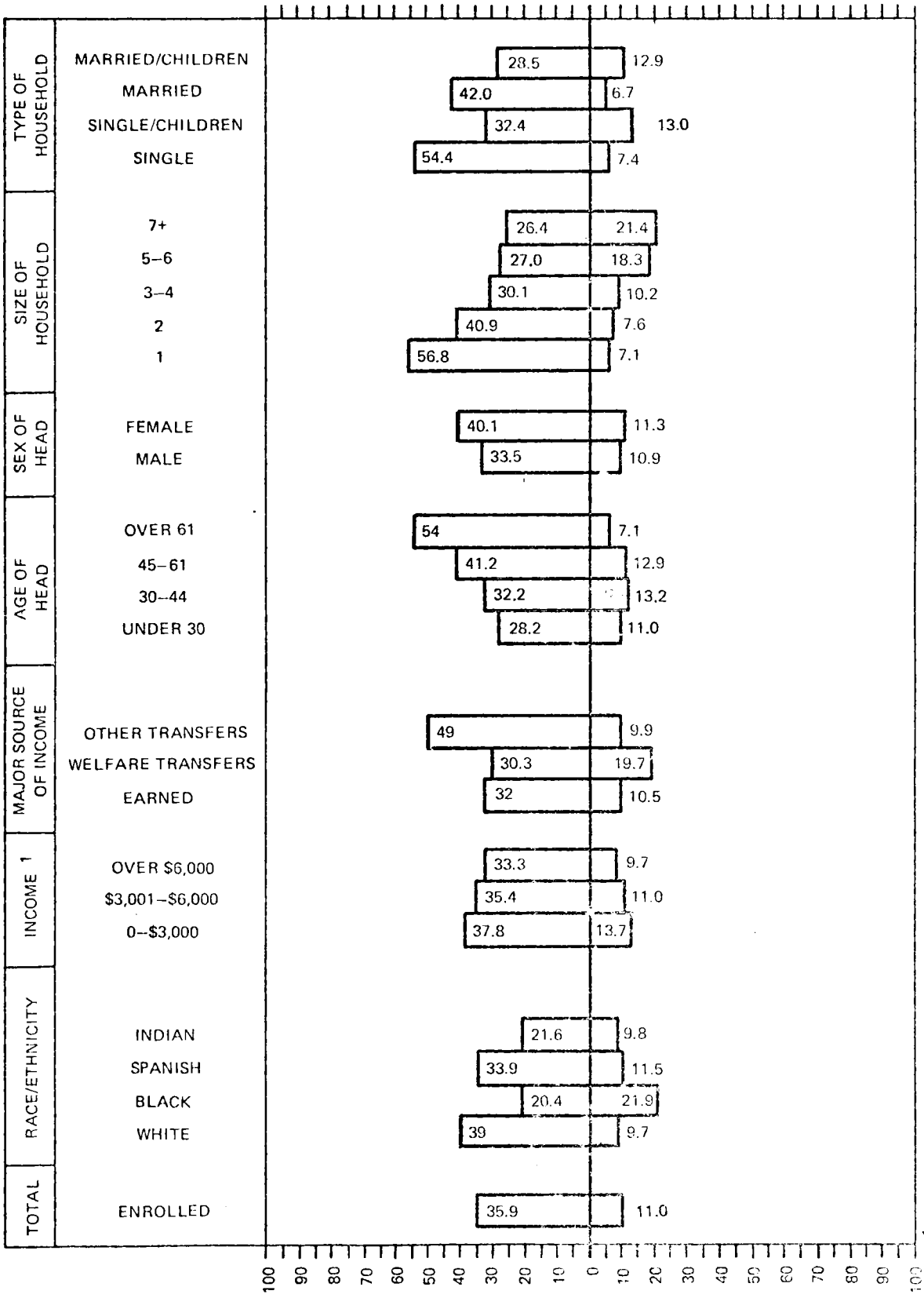


1 HOUSEHOLDS WITH INCOME OF 0-$1,000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.

Data Source: Baseline Interview

FIGURE: 6.4.2

DWELLING UNIT SATISFACTION FOR DEMOGRAPHIC GROUPS IN PHOENIX



[1] HOUSEHOLDS WITH INCOME OF 0 - $1000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.

Data Source: Baseline Interview

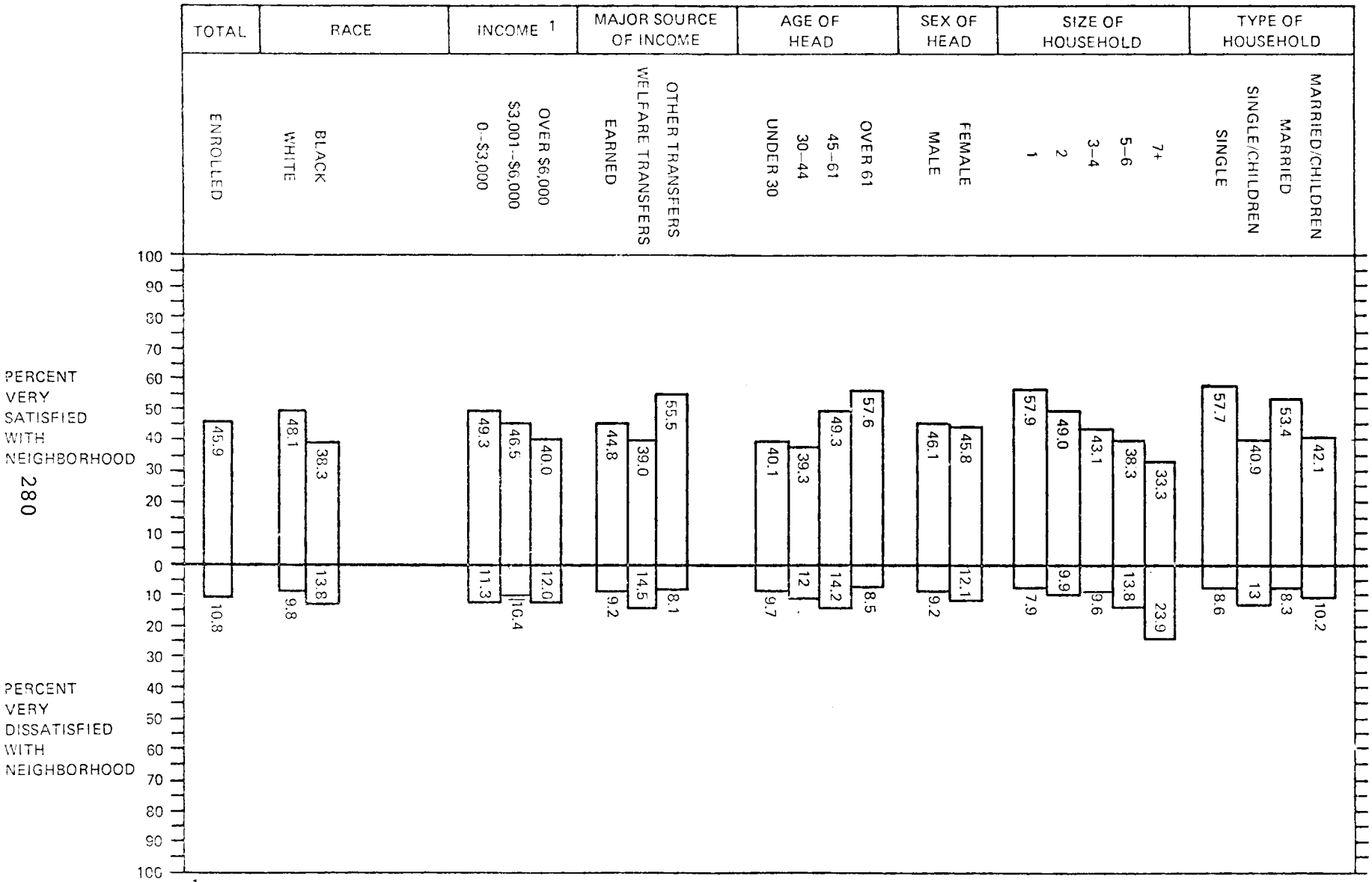
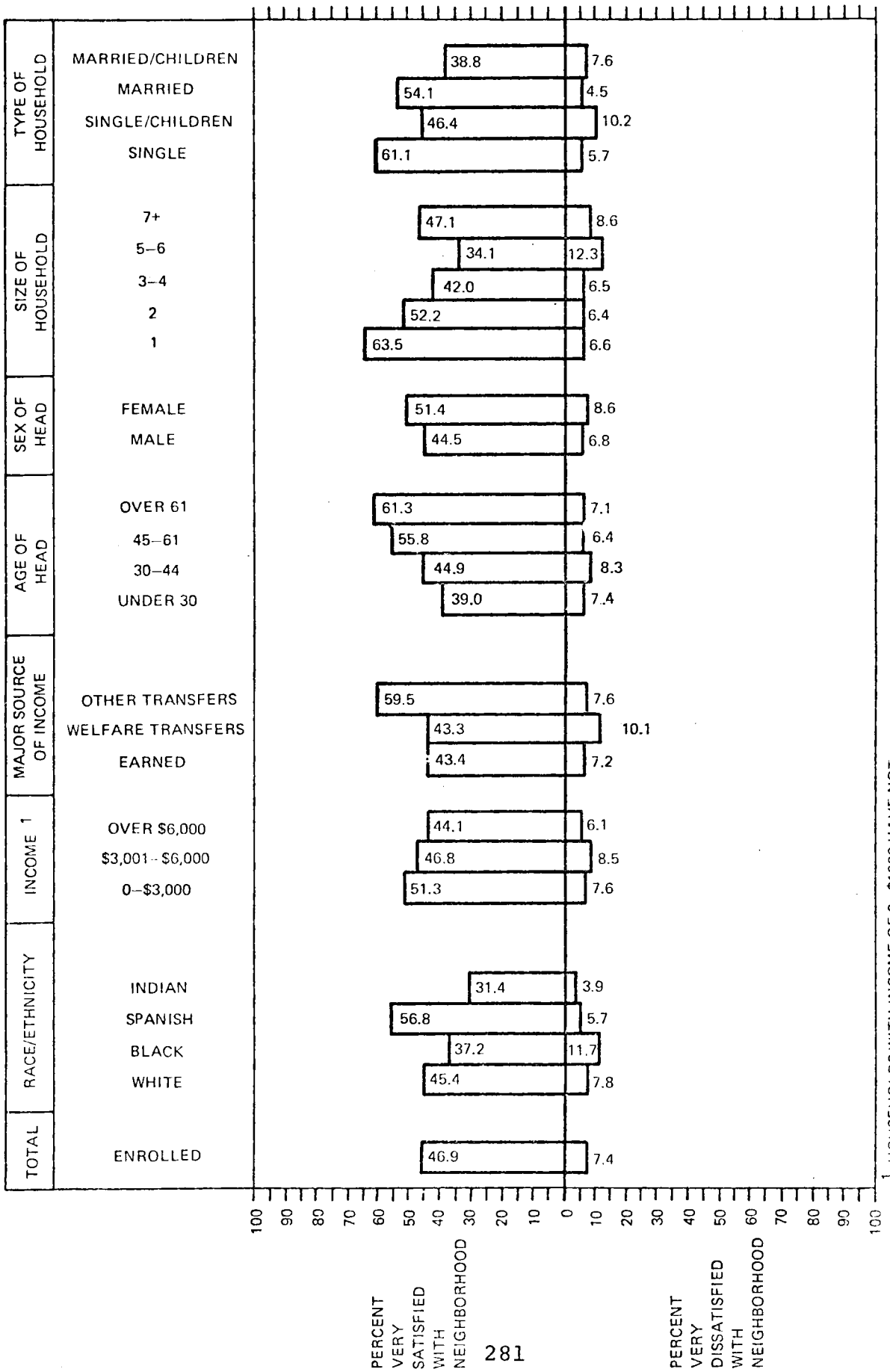


FIGURE 6.4.3
NEIGHBORHOOD SATISFACTION FOR DEMOGRAPHIC GROUPS IN PITTSBURGH

[1] HOUSEHOLDS WITH INCOME OF 0-- $1000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.

Data Source: Baseline Interview

FIGURE: 6.4.4
NEIGHBORHOOD SATISFACTION FOR DEMOGRAPHIC GROUPS IN PHOENIX



[1] HOUSEHOLDS WITH INCOME OF 0 - $1000 HAVE NOT BEEN INCLUDED IN THIS MEASURE.

Data Source: Baseline Interview

Patterns observed with respect to dwelling unit satisfaction and neighborhood satisfaction are similar. The relationships between demographic characteristics and expressed neighborhood satisfaction are generally not as strong as in the case of dwelling unit satisfaction. The most frequent expressions of dissatisfaction at both sites come from black households, large (greater than five member) households, families on welfare, single-headed families with children and younger households. Groups consistently more satisfied with housing appear to be the elderly and those with "other transfer" income (such as Social Security and pensions), smaller households, and those without children. (All of these characteristics are strongly associated with being elderly.)

6.4.1 Race

It was anticipated that minority status would be negatively related to both dwelling unit and neighborhood satisfaction because of assumed limitations on the supply of housing available to minority groups. In fact, in both Pittsburgh and Phoenix dwelling unit satisfaction relates significantly to race. At both sites blacks are least satisfied with their dwelling units and whites most satisfied among racial/ethnic groups. Stratification by income showed that these differences between blacks and whites with respect to dwelling unit and neighborhood satisfaction exist at virtually every level of income.

6.4.2 Income and Income Source

Although no strong relationship of income to housing satisfaction is found, source of income does appear to matter. If persons on welfare and other income conditioned transfers are subject to discrimination in the marketplace, then the housing stock to which they have access at reasonable prices may be

limited--resulting in a negative relationship between welfare status and dwelling unit satisfaction. Such a relationship does obtain in the data.

Similar results occur with respect to neighborhood satisfaction. In Pittsburgh and Phoenix families receiving income conditioned transfers are the major income source group least satisfied with their neighborhoods.

6.4.3 Age of Head

Age was expected to exhibit a positive relation to dwelling unit and neighborhood satisfaction. It was expected that younger households in a fairly strong economic position with high aspirations and generally experiencing the most rapid growth in family size of any age group would be least satisfied with their housing. The elderly were expected to be moderately satisfied, a product of relatively lower aspirations regarding housing.

The relationship turned out to be generally as anticipated for both dwelling unit and neighborhood satisfaction. Younger households in the child-rearing stage of the life cycle were among the least satisfied with dwelling unit and neighborhood at both sites. A somewhat surprising finding was the fact that at both sites the elderly households were the most satisfied age group. In Section 5.0 elderly households were shown to have lived longer at the Baseline address than other types of households. Thus housing satisfaction for the elderly may derive in part from a sense of familiarity with their house and neighborhood.

6.4.4 Size of Household

Household size shows the expected negative relation to dwelling unit satisfaction, presumably due to the limited supply of spacious units to accomodate large households. Such an effect is heightened by the fact that the elderly, who are on the whole a particularly well-satisfied group, constitute a substantial portion of the smallest households in the sample.

Stratification of these household size groupings by income reveals that the difference in satisfaction with family size occurs across the entire income spectrum.

6.4.5 Family Type

Family type was expected to influence satisfaction in that families with children, in particular single heads of household with children, may face relatively restricted housing market opportunities. Both groups also have housing needs (e.g., first floor, yard, etc.) which may be hard to satisfy in the lowest rent areas. In fact single-headed households with children were least satisfied with their housing. Married couples with children were close behind in level of dissatisfaction.

6.5 CONCLUSION

Based on the foregoing analysis, the measures of satisfaction utilized in this study have been found to exhibit both workability and validity in the informal sense of comparability to distribution of responses found in similar studies. The satisfaction measures behave in a reasonable way when related to demographic variables and to specific housing outcomes.

Based on this measure of satisfaction, observations have been made about the nature of participant housing satisfaction. Basic housing quality and absence of crowding have been shown to relate positively to dwelling unit satisfaction. Housing quality relates to satisfaction more strongly for black households, for whom there appear to be restrictions on housing opportunities (see Section 4.0).

Rent expenditures also relate positively to dwelling unit and neighborhood satisfaction over all levels of income and within all racial/ethnic groups. However, at every rent level black households are less satisfied with their housing than white households. These findings basically support the conclusions of the housing consumption analysis in that black households are more satisfied at higher rent levels than low rent levels, but appear to be impeded from attaining housing of comparable quality to whites at any rent level.

In the total population, rent burden relates positively to dwelling unit and neighborhood satisfaction. This relation persists at all income levels. Black households are less satisfied than white households at every level of rent burden.

Further evidence exists of the inability of certain groups to attain satisfactory housing in the market, based on an analysis of differences in satisfaction expressed by various demographic groups. Households expected to face relatively restricted housing opportunities did, in fact, report lower satisfaction than other households.

Based on the seeming "reasonableness" of the satisfaction measures used here, it may be fruitful as a next step to relate measured satisfaction of various demographic groups to more specific housing attributes in order better to assess the unique preferences of various groups and the impact of those preferences on housing demand and locational choice.

APPENDIX I: SUMMARY OF THE DEMAND EXPERIMENT

This appendix has two parts. The first summarizes the purpose and general structure of the Demand Experiment. The second presents a brief overview of the experimental design.

1.0 STRUCTURE OF THE EXPERIMENT

The Demand Experiment is one of three experiments being conducted by HUD as part of the Experimental Housing Allowance Program.[1] The purpose of these experiments is to test the concept of housing allowances. Under a housing allowance program, money (the allowance) is given directly to individual families in need rather than channeled indirectly through public or private suppliers of housing. The allowance is earmarked for housing by requiring that families occupy units which meet certain standards or by relating the amount of the allowance to the amount of rent paid. Under a housing allowance program, the initiative in using the allowance and the burden of meeting earmarking requirements are placed with the individual family rather than with developers, landlords, or the government.

The desirability, feasibility, and appropriate structure for an allowance program are not established. An allowance program could be less expensive than other kinds of housing programs because it allows full utilization of the entire stock of existing sound housing; the allowance is not necessarily tied to new construction or other special classes of units. Likewise, an allowance program may be more equitable. The allowance can be adjusted rapidly to changes in income without forcing the family to change units. Recipient families may, if they desire, use

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[1] The other two experiments are the Supply Experiment and the Administrative Agency Experiment.

their own resources (either pay higher rent or search more carefully) to obtain better housing than is required by the program. The allowance allows families considerable choice in determining the exact housing they want once program standards are met--for example, where they want to live (near schools, near work, near friends or relatives), the size of rooms (such as a larger living room and smaller bedroom), and so forth.

Finally, an allowance program could be less costly to administer. Program standards need not cover every detail of participant housing. The burden of specifying and administering details which are not essential to the government is shifted from program administrators to participants and the private market. Because the program is less visible (the action in the housing market rests with individual families and can be dispersed over the entire market), there may be less pressure focused on the agency.

These potential advantages are not proven. Critics of an allowance approach have suggested that poor families may lack the experience and knowledge of the private market to use allowances effectively, that special groups such as the elderly will not be effectively served without direct intervention to change the supply of housing to meet their needs, that administrative costs could snowball, and that increasing the demand for housing without directly constructing new units will result in a substantial inflation of housing costs.

Further, the concept of allowances is general. There is a wide range of possible allowance formulas, earmarking requirements, non-financial support (e.g., counseling), and administrative practices which could substantially affect both the costs and impact of an allowance program.

The Demand Experiment addresses these issues of feasibility, desirability, and appropriate structure in terms of how individuals (as opposed to the market or administering agencies) react to various allowance formulas and earmarkings. Specifically, the experiment is designed around six policy questions:

1. Participation:

Who participates in a housing allowance program? How does the form of allowance affect the extent of participation for various households?

2. Housing Improvements:

Do households receiving housing allowances in fact improve the quality of their housing? At what cost? How do households receiving a housing allowance seek to improve their housing--by moving, by rehabilitation? With what success?

3. Locational Choice:

For those participants who move, how do the locational choices of allowance recipients compare with existing residential patterns? Are there non-financial barriers to effective use of a housing allowance?

4. Administrative Issues:

What are the administrative issues and associated costs involved in the implementation of an allowance program?

5. Form of Allowance:

How do different forms of a housing allowance compare in terms of participation, housing quality achieved, locational choice, cost (including administrative costs) and equity?

6. Comparison with Other Programs:

How do housing allowances compare with existing housing programs and with income maintenance in terms of participation, housing quality achieved, locational choice, costs (including administrative costs) and equity?

The issues involved include willingness to participate, success in meeting earmarking, quality of housing achieved, locational choice, relative costs of various allowance formulas, relative equity of different formulas, and effect on work or family size.

The experiment is being conducted in two sites--Allegheny County, Pennsylvania (Pittsburgh) and Maricopa County, Arizona (Phoenix). Each site tests a total of seventeen variations on three basic allowance program payment formulas/earmarking combinations (in addition to control groups). These seventeen variations allow some major candidate formulas to be tested directly. More important, they allow estimation of key responses in terms of basic program parameters such as the level of allowances, the level and type of earmarking, the minimum fraction of its own income which the family must contribute toward housing, and the way in which allowances vary with family size, income, and rent. These response estimates can then be used to address the policy questions not just for the programs directly tested but for a much larger set of candidate programs. (Indeed, some of the programs used in the experiment are included only for the purpose of allowing clear estimation; they would not be candidates for a national program without some change.)

Information on participating households is collected from a variety of sources. The major ones are:

- Baseline Interviews conducted by an independent survey operation before households are offered enrollment
- Initial Household Report Forms and Monthly Household Report Forms completed during and after enrollment to provide operating and analytic data on household size and income and on expenditures for housing
- Housing Evaluation Forms completed by site evaluators at least once each year for every dwelling unit occupied by participants to provide information on the quality of participant housing
- Periodic Interviews conducted approximately six, twelve, and twenty-four months after enrollment by an independent survey operation.

The sources of data and analysis plans are described more fully in Section 2.0 below.

The experimental programs in the Demand Experiment continue for three years after enrollment is complete. At the end of that time, eligible and interested allowance families will be aided in entering other housing programs, especially the Section 23 Leased Housing Program. Analysis will be based on data from the first two years of participation.[1] As indicated above, the analysis first concentrates on estimating key responses and then applies these to the policy questions.

[1]The experimental programs are continued for one year beyond the cutoff for analysis in order to avoid confusing participant reactions to the ongoing experiment with their adjustments to the phase-out of the experimental offers.

2.0 SUMMARY OF THE EXPERIMENTAL DESIGN

The Demand Experiment is designed to test policy-relevant responses of individual recipients (or classes of recipients) to various forms of direct cash assistance for housing.[1]

The analysis approach for the Demand Experiment can be described in terms of independent variables, experimental treatments, and key responses or outcomes. These factors are identified as follows:

- Independent Variables
  - Demographic Characteristics of the eligible population
  - Site variables
  - Attitudes and preferences of recipients
- Experimental Treatments
  - Formulas: Housing Gap
Percent of Rent
  - Earmarking: Minimum Standards
Minimum Rent
  - Non-financial support: Housing Information and Equal Opportunity services
- Key Responses
  - Participation
  - Housing expenditures and consumption, including maintenance and upgrading
  - Housing search, mobility and locational patterns
  - Preferences and satisfaction

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[1]The basic design and analysis approach, as approved by the HUD Office of Policy Development and Research, is presented in Experimental Design and Analysis Plan of the Demand Experiment (AAI Report 73-38), 16 March 1973 (Revised 31 August 1973), and in Summary Evaluation Design (June, 1973). Details of the operating rules of the Demand Experiment are contained in the Site Operating Procedures Handbook, 2 April 1973 (updated periodically).

- Related Responses
  - Side Effects (Household formation, work effort, non-housing consumption)
  - Errors and abuses.

The basic analytic approach is to analyze responses in terms of independent variables and experimental treatments. These analyses of responses are then used to address six policy questions for the Demand Experiment listed in Section 1.0.

Payment Formulas--Housing Gap and Percent of Rent

Under the Housing Gap formula, payments made to families constitute the difference between a basic payment level, C*, and some reasonable fraction of family income. That is, the payment formula is

$$S = C^* - bY$$

where S is the allowance amount, C* is the basic payment level, "b" is the rate at which the allowance is reduced as income increases, and Y is the net family income. In the Demand Experiment, C* is related to the estimated cost of modest existing standard housing in each site and varies by household size. The term "C* Modal" refers to the C* schedule approved by HUD based upon the estimates of Housing Cost Panels in the Demand Experiment cities, Pittsburgh and Phoenix. Other values of C* used in the experiment are percentage adjustments from C* Modal.

Earmarking constraints specify the minimum housing that the family must consume in order to receive full payments; the constraints make the payment specifically cash assistance for housing rather than an unconstrained income maintenance payment.

Under the Percent of Rent formula, the payment represents a percentage of the family's rent. Thus, the subsidy is determined by

$$S = aR$$

where "R" is rent and "a" is the fraction of rent paid by the allowance. The value of "a" is constant once a family has been enrolled.[1] Since a Percent of Rent payment reduces the relative price of housing, such a payment may be considered self-earmarking. (A family's subsidy is proportional to the rent it pays.)

Earmarking Constraints--Minimum Standards and Minimum Rent

Minimum Standards (MS) - Under Minimum Standards earmarking, participants are required to occupy dwellings meeting certain standards as a condition of full payment. Participants already living in housing meeting standards are not required to spend more on housing. They are allowed to apply the payment to reduce their rent burden.

Minimum Rent (MR) - If housing quality were broadly defined to include all residential services, and if rent levels were highly correlated with the level of services, then a straightforward and relatively inexpensive form of constraint would be to require that recipients spend some minimum amount on rent.

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[1]Five values of "a" are used in the Demand Experiment. Once a family is assigned its "a" value, the value generally stays constant. This is to aid experimental analysis. In a national Percent of Rent program, "a" would probably vary with income and/or rent. Even in the experiment, if a family's income rises beyond a certain point the percentage allowance rate, "a", drops rapidly to zero. Similarly, the payment under Percent of Rent cannot exceed C* modal (the maximum payment under the modal Housing Gap plan); this effectively limits the rent subsidized to rents less than C*/a.

Minimum Rent earmarking is considered as an alternative to Minimum Standards in the Demand Experiment so that differences in response and cost may be observed and the relative merits of the two earmarking methods assessed. Although the design of the experiment uses a fixed minimum rent for each household size, a program for direct cash assistance could employ more flexible versions. Such versions could, for example, combine features of the Percent of Rent formula with the Minimum Rent requirement.

Non-Financial Support

This variable is a general term for the non-financial services provided in the Demand Experiment, including Equal Opportunity support and the dissemination of housing information. The design does not test any variation in the non-financial services offered. (For comparison purposes, however, some of the control families are offered housing information and some are not.)

Housing Gap Design (HG)

The Housing Gap design is shown in the table below. Arabic numerals are used to identify each plan (treatment). Thus treatment cell number 6 is 0.8C*, MR = 0.7C*, b = .25.

HOUSING GAP TREATMENT (S = C* - bY)

CORE DESIGN:

Earmark Requirement \ Payment Parameters	C* = 1.2C*M b = 0.25	C* = C*M b = 0.25	C* = 0.8C*M b = 0.25
MS	#1	#2	#3
MR = 0.7C*M	#4	#5	#6
MR = 0.9C*M	#7	#8	#9

SPECIAL POINTS: "b" Variation

#10 C*M, b = .15, MS

#11 C*M, b = .35, MS

Unconstrained Housing Gap

#12 C*M, b = .25, no earmark (Unconstrained)

SYMBOLS:

b = Rate at which allowance decreases as income increases

C*M = Modal payment standard (varied by family size)

MR = Minimum Rent earmarking

MS = Minimum Standards earmarking

For purposes of determination of initial eligibility, income limits for cells 1, 2, 4, 5, 7, 8, 10 and 12 were set at "modal" income limits, $Y_{modal} = \frac{C*M - \$10}{.25}$ (per month). (A monthly payment of $10 per month was approved by HUD as the minimum monthly payment.) Cells 3, 6, and 9 had more restrictive eligibility income limits governed by $Y = \frac{0.8C*M - \$10}{.25}$ (per month). Similarly, the limits for cell 11 were set by $Y = \frac{C*M - \$10}{.35}$ (per month).

Within the Housing Gap design, responses can be estimated for a policy space of presumed interest. The mean effects of subsidy level and of earmarking can be estimated for all of the major responses. In addition, interactions between subsidy and earmarking can be assessed. Responses to variations in the allowance/income schedule (changes in "b") can be estimated for the basic combination of Minimum Standards earmarking and C*.

Percent of Rent Design (PR)

The Percent of Rent design is shown below:[1]

PERCENT OF RENT TREATMENT (S = aR)

TREATMENT CELL	13	14-16	17-19	20-22	23
Value of "a"	.6	.5	.4	.3	.2

A demand function for housing will be estimated primarily from the Percent of Rent observations but will be supplemented by some Housing Gap observations (those for which earmarking is not binding). This demand function should provide a powerful policy tool for analysis of alternative forms and parameter levels for a possible housing allowance program.

[1]Percent of Rent households had to meet the same modal income eligibility requirements as Housing Gap households. In addition, an income cutoff for cells #13 and #23 was imposed so that households assigned to cell #13 were in approximately the lowest third of the income range, while for cell #23 assigned households were in approximately the upper two thirds of the income range. Designation of multiple cells for other "a" levels is retained to show this distinction. Thus households in cells 14, 15, and 16 are grouped as the a = .5 cell in the design, showing that assignments to this treatment included all income groups.

Control Groups (CN)

Control groups are necessary in order to establish a reference level on responses, given that a number of uncontrolled factors may induce changes in family behavior at a given site. Two basic types of control groups are used:

1. Control Groups with Housing Information Service (Cell 24).

   A sample of families drawn from the eligible population receive only a minimal fee ($10 per month). In exchange for this fee, they are required to report all of the data required of families receiving subsidies, including household composition and income and to permit periodic housing evaluations. Control families are paid an additional $25 fee for each of three completed periodic interviews.

   In analysis it will be important to separate the effects of payment and earmarking from information effects. Thus, one control group is offered the same special housing information following enrollment as the groups receiving subsidies. As compensation for attending the information sessions, families in this control group are offered $10 for each session they attend.

2. Basic Control Group (Cell 25).

   This control group is like that in Cell 24 except that households are not offered special housing information.

Sample Allocation

Analysis of the impact of the housing allowance will be based on the first two years of experimental data. Thus, the key sample size in the Demand Experiment is at the end of the first two years. The allocation of sample to design points concentrates on this two-year sample and takes into account statistical properties of the design, balancing policy interests and experimental costs.

Reaching the two-year targets depends upon appropriate estimates of the sample attrition between enrollment and the two-year

point. Attrition estimates were made based upon the most recent information from the following sources:

- Kansas City, Missouri, Model Cities Housing Allowance Program
- Wilmington, Delaware, Model Cities Housing Allowance Program
- New Jersey Income Maintenance Experiment
- Gary, Indiana, Income Maintenance Experiment

Program differences, particularly in the area of earmarking, require that considerable caution be taken in transferring these results to the various plans in the Demand Experiment.

The sample size targets at the end of two years, the attrition estimates, and the derived enrollment targets are shown in Table I.1 below. A discussion of the enrollment process and of the numbers of households actually enrolled can be found in the Second Annual Report of the Demand Experiment.

TABLE I.1: ENROLLMENT TARGETS BY TREATMENT CELL

TREATMENT CELL	MNEMONIC LABEL [1]	TWO-YEAR SAMPLE TARGET	ESTIMATED TWO-YEAR ATTRITION	ENROLLMENT TARGET
1	HGMS,C*H	30		45
2	HGMS,C*M	45		68
3	HGMS,C*L	45		68
4	HGMRL,C*H	30		45
5	HGMRL,C*M	45		68
6	HGMRL,C*L	45	0.34	68
7	HGMRH,C*H	30		45
8	HGMRH,C*M	45		68
9	HGMRH,C*L	45		68
10	HGMS,C*M,b.15	45		68
11	HGMS,C*M,b.35	50		75
12	HGUNC	45		68
TOTAL HOUSING GAP		500		755
13	PRA.6,YL	32		44
14-16	PRA.5	95		123
17-19	PRA.4	95	0.23	123
20-22	PRA.3	95		123
23	PRA.2,YH	63		79
TOTAL PERCENT OF RENT		380		492
24	CNWI	170	0.34	258
25	CNNI	170		258
TOTAL CONTROLS		340		516
TOTAL EXPERIMENTALS AND CONTROLS		1,220		1,763

[1] Symbols used are:

HG=Housing Gap Payment Formula, S=C*-bY
PR=Percent of Rent Payment Formula, S=aR
MRL=Lower Minimum Rent Earmark at 0.7C*M
MRH=Higher Minimum Rent Earmark at 0.9C*M
UNC=Unconstrained
C*H=Higher C* level at 1.2C*M
C*M=Modal C*, HUD-approved payment standard (varies by family size)
C*L=Lower C* level at 0.8C*M
b.15=Benefit reduction rate (with income) of 0.15
b.35=Benefit reduction rate of 0.35 (other HG cells have b=0.25)
A.6="a" value in payment formula of 0.6
YL=Lower income range
YH=Higher income range
CN=Control households
WI=Offered Housing Information Program (HIP)
NI=Not offered HIP

APPENDIX II: DATA USED IN THIS REPORT

1.0 INTRODUCTION

Data for this report are drawn primarily from the Baseline Interview and the initial Housing Evaluation Form. These and other data sources used in this paper are summarized in Section 2.0 of this Appendix.

When multiple data sources are required, as in assessing rent levels for a given level of housing quality, the number of households included for a particular type of analysis varies according to the coverage of the data sources used. These varying data bases are described below in Section 3.0. Another reason for variation in the number of households is the number of missing values for variables included in the analysis. The missing values for the major variables are summarized in Section 4.0.

Section 5.0 describes the geo-coding process and Section 6.0 describes the method for estimating the cost of standard housing.

2.0 KEY DATA SOURCES

2.1 BASELINE INTERVIEW

This survey instrument was used to obtain data on households before they were offered enrollment in the program and before any effects of the experiment occurred.

Data were collected in the following general categories: housing expenditures and consumption; location and housing search; preferences and satisfaction; maintenance and upgrading; household enumeration; household assets, income and expenses; and participation in other government programs.

Baseline Interviews began in April, 1973, and were completed in December, 1973.

2.2 EXIT INTERVIEW (NON-PARTICIPANTS)

This survey instrument was used to identify factors leading to non-participation in the program. Exit Interviews were attampted with all non-control households in selected subsamples with an enrollment outcome of "turndown." (Subsamples of households to be contacted for enrollment were drawn before the names were sent to the site offices.) Areas covered in the instrument include: reasons for not enrolling, expectations about program requirements, understanding of the program, and participation in other government programs.

Exit Interviews were conducted February - April, 1974.

2.3 HOUSING EVALUATION FORM (HEF)

This form is used by housing evaluators at each site to evaluate program participants' housing. The evaluations are performed for all participants when they enroll in the program (initial HEF), and annually or whenever they move. The form gathers information on the dwelling unit interior, the building exterior, and the neighborhood (block face). Information on the form is used to determine whether a unit meets the program standardness requirements as well as to assess its quality. For some items such as plumbing facilities, only presence and workability are noted. For others, such as floor surface and window condition, a four-point quality scale is used.

Initial HEFs began in April, 1973 and were completed in March, 1974. However, housing evaluations continue to be performed as households move and as the annual re-evaluation cycle begins.

2.4 HOUSEHOLD EVENT LIST

The Household Event List is used to record key program events, such as date of first full payment, for each household selected to participate in the Demand Experiment. From this information, sequential case histories can be defined on all households from the point at which a name was sent to site for enrollment.

3.0 DATA BASES

The data bases used are summarized in the following table and discussed below.

TABLE II.1

SUMMARY OF DATA BASES

	Number of Households		
	Pittsburgh	Phoenix	Total
Baseline Informed Enrollment Decision			
• Total	2,482	2,196	4,678
• Experimentals Only	1,646	1,493	3,139
• Total with Subsidy Estimate	2,211	2,054	4,265
• Experimentals Only	1,466	1,390	2,856
Baseline Enrolled	1,760	1,840	3,600
Initial HEF Enrolled	1,729	1,736	3,465
(Initial HEF Enrolled Failing Minimum Standard Program	1,268	1,214	2,482)[1]
Baseline/Initial HEF Match	1,589	1,534	3,123
Exit Interview	156	161	317

3.1 BASELINE INFORMED ENROLLMENT DECISION

This includes all enrolled households. It also includes households (identified in the Household Event List) who did not accept the enrollment offer if the household is income eligible on the basis of Baseline data. These two populations combined are used to analyze the factors associated with the decision to enroll.

[1] This data base was used to make the additional runs on MS element failures reported in Section 4.0 (see Tables 4.4.2 and 4.4.4) after the original HEF data analysis had been completed. The original data base (1215 in Pittsburgh and 1210 in Phoenix failing MS Program) was used for all other results in Section 4.0; no other re-runs were made.

3.2 BASELINE ENROLLED

This is the basic group for analysis that requires Baseline data only, such as analysis of housing expenditures. Analyses using income, in particular, are subject to a reduction in the number of cases because of missing values (see Section 4.0).

3.3 INITIAL HEF ENROLLED

This is the basic group for analysis of housing quality and standardness apart from other variables. The coverage is less than for the Baseline enrolled because 31 initial HEFs in Pittsburgh and 104 in Phoenix had not been posted to the data base by the April 1, 1974 cut-off date for this report.

3.4 BASELINE/INITIAL HEF MATCH

This includes all households that have an initial HEF at the Baseline address. It excludes those households that moved between the time of the Baseline Interview and the initial housing evaluation as well as the households whose HEF had not been posted to the data base before the cut-off date. This data base is used for analysis combining housing quality (or standardness) with rent, income, or demographics.

3.5 EXIT INTERVIEW (NON-PARTICIPANTS)

This group was selected from the population of turn-downs and is used in the analysis of participation.

4.0 MISSING VALUES

The number of households with missing values for key variables are summarized on the table below . The numbers in the table are based on the total enrolled population. The reasons for missing values are discussed following the table.

TABLE II.2
MISSING VALUES FOR VARIABLES

	Number of Enrolled Households		
	Pittsburgh	Phoenix	Total
Income NIA, Net Income for Analysis, NIE,Net Income for Eligibility, CINC, Census Income, Major Source of Income, and Fraction Major Source of Income			
Missing Values	47	60	107
NIA (Net Income for Analysis) = 0	10	6	16
Rent			
ACRA 1	20	26	46
ACRA 2	6	0	6
ACRA 3	14	8	22
ACRA 4	6	0	6
ACRA 5	41	74	115
Demographics			
CHHSX (Census-defined sex of head)	1	0	1
CHHAG (Age of head)	2	1	3
RACE (Race)	1	0	1
HHSIZ (Household size)	1	0	1
HHTYP (Household type)	1	0	1

Data Source: Baseline Interview

4.1 INCOME

Certain households have no income variables because of insufficient data in the Baseline Interview. Income variables are not computed for households in which the head or spouse had a "don't know, refused, or not reported" answer for any of the major income components, such as wages and salaries and transfers.

4.2 RENT

As discussed in Appendix IV certain "special case" households are excluded for particular rent variables and the six households in Pittsburgh with "no rent" data are excluded for all rent variables.

4.3 DEMOGRAPHICS

There were only seven cases where it was not possible to derive the demographic variables. These are listed on the chart above.

5.0 GEO-CODING

For the purpose of drawing the maps contained in this report, and for future analyses of neighborhood outcomes, accessibility, and dispersion, migration patterns and the like, it was essential that all household addresses beginning with the Baseline Interview be geo-coded to provide three types of information for each address:

- X and Y state plane coordinates expressed in feet;
- 1970 Census tract and block in which the dwelling unit was located; and
- Distance of the unit from the central business district (CBD), expressed in feet.

Two local subcontractors were selected to perform this task: the Arizona Regional Medical Program of the University of Arizona in Tucson and the Southwestern Pennsylvania Regional Planning Commission in Pittsburgh.

It is anticipated that during the course of the experiment over 10,000 addresses in each site will be geo-coded.

5.1 GEO-CODING ACCURACY

As was expected, not all addresses can be assigned state plane coordinates. "Matches" between household addresses supplied and geo-coded addresses in the subcontractors' data bases have been made by computer in approximately 90-95 percent of the cases. In both Phoenix and Pittsburgh, where the computer cannot match addresses with geo-codes, matching is done by hand. This second-stage process usually reduces the number of non-matched addresses by half. The remaining unmatched addresses are returned to Cambridge and/or to the Phoenix/Pittsburgh site offices for clarification of initial address information and for further attempts to assign geo-codes.

In Pittsburgh, where a more complete geographic base file is available, no locational bias is presumed in the remaining missing geo-codes. Rather, "misses" are usually the result of incorrectly specified zip codes, misspelled street names or improper number fields.

In Phoenix, there is some locational bias due to the fact that outlying towns (e.g., Surprise, Tolleson, Chandler) had never been geo-coded. However, as addresses of households in these locations are supplied, the contractor's data base is being updated.

The following table shows the number and percent of the total enrolled sample in Phoenix living in outlying areas where X and Y coordinates could not be provided for the maps in this report.

TABLE II.3

HOUSEHOLD LOCATIONS NOT GEO-CODED

Towns	Number of Enrolled Households	Percent of Enrolled Sample
Apache Junction	1	0.1
Chandler	1	0.1
Cashion	1	0.1
Cave Creek/Carefree	1	0.1
El Mirage	12	0.7
Goodyear	1	0.1
Surprise	21	1.1
Tolleson	21	1.1
	59	3.2

Data Source: Baseline Interview

5.2 ADDRESS MATCHING

For future analysis it is essential to know whether a household's address on a particular instrument is the same or different from its address on another instrument. For example, a Periodic Interview address must be matched with an HEF address so that participants' responses to questions about their housing can be matched with housing evaluation items. The key to this matching process is the X and Y coordinates of the addresses in question, the census tract and block numbers, and the "processed" address matched in the geographic base file. The last item is necessary since some households may move to a new address within the same block -- a move which will not involve a change in the X and Y coordinates.

6.0 ESTIMATING HOUSING COST STANDARDS

6.1 OVERVIEW

Payment levels in the Demand Experiment are based on the site-specific parameter C* which is related to local housing costs. The method for estimating this parameter consists of systematically organizing, developing and refining the judgment of a panel of qualified real estate, property management, public agency, and other community experts (The Housing Cost Panel) until a stable estimate of housing costs is established for each size of housing unit.[1] The panel is provided the following definitions and asked to estimate rental housing costs based upon them.

- Cost of Standard Housing

  The cost standard of adequate housing is defined as a level of rent at which housing units meeting specified standards in a modest neighborhood could be obtained within a reasonable period of search (e.g., 60 days). Most households should be able to obtain adequate standard housing in a modest neighborhood at that rent. This rent level is a function of the housing unit size, condition, availability, and location --factors which must be taken into account in determining specific rent levels.

- Standard Housing

  Standard housing is defined by the following criteria:

  - No part of the unit is in need of significant repair.
  - There is complete and effective electric service, heating, lighting, plumbing, and an adequate water supply consisting of hot and cold running water in both the bath and the kitchen.
  - Complete kitchen and bathroom facilities are provided for the sole use of the occupants of the unit.
  - There are adequate exits and the unit has adequate fire protection devices and construction.

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[1] See Site Operating Procedures Handbook Section 13 for a more detailed description of this process.

- The unit has reasonable access to public transportation, utilities and other services.

If a local housing code exists, it is taken as a more precise definition of the requirements for standard housing. Otherwise, the American Public Health Association - Public Health Service Recommended Housing Maintenance and Occupancy Ordinance is used.

- Neighborhood

  Neighborhood is defined as a group of contiguous blocks of similar quality characteristics containing housing of similar fair market rental values.

- Modest Neighborhood

  This is defined as a neighborhood that offers adequate standard housing in decent and safe surroundings, has reasonable public facilities, contains little or no substandard housing, has ready access to employment opportunities, and is not significantly worse than the community at large in such matters as crime, air pollution, and other environmental considerations.

- Rent

  For the purpose of establishing cost standards, rent is defined as the typical contract rent of a given unfurnished housing unit of a given unit size in a particular neighborhood. Contract rent refers to the amount paid by a tenant to the owner in return for shelter and any utility or service costs assumed by the owner. Utility costs must be estimated separately to allow calculation of a uniform definition of gross rent.

  The omission or inclusion of a stove or refrigerator in the unit is ignored in estimating contract rent.

Estimates in each neighborhood are weighted by the number of rental units in that neighborhood and an average established for each unit size in the metropolitan area.

6.2 VALUES OF C* FOR THE EXPERIMENT

The following table lists the C* values selected by HUD based on the estimates of the 1972-73 Housing Cost Panels in Pittsburgh and Phoenix.

TABLE II. 4

SUMMARY 1972-1973 C* SELECTED BY HUD

Number of Bedrooms	Household Size	Phoenix (per month)	Pittsburgh
0 (Efficiency)	1	$125	$105
1	2	155	120
2	3,4	180	140
3	5,6	220	160
4	7 or more	265	190

APPENDIX III: INCOME DEFINITIONS

1.0 INTRODUCTION

The measurement of household income is necessary for both operational and analytical purposes. Operationally, household net disposable income is a variable used both in the initial determination of eligibility and in the monthly determination of level of subsidy. The definition of income for purposes of eligibility and payments is essentially the same. Analytically, household income is used as a descriptor of the sample and as a predictor of behavior. Four distinct analytical income variables have been defined: analytical net disposable income, Census income, major source of income, and fraction major source of income.

2.0 NET INCOME FOR ELIGIBILITY (NIE)

At the time of the enrollment interview, each household was asked to complete an Initial Household Report Form which collected detailed information on the household's income and expenses for the twelve months preceding the interview. From these data, household eligibility net disposable income (NIE) was calculated by adding earned, transfer, and other income for each household member 18 years of age or over and by subtracting taxes, work-conditioned expenses (such as child care expenses), alimony paid, and major medical expenses. For a more detailed explanation of the components included in NIE, refer to Table III.1, "Components Included in the Income Variables". If NIE was equal to or less than the income cutoff for the appropriate treatment cell, an enrollment offer was made to the household.

In the analysis presented in the Participation section of this report, NIE has been calculated using data from the Baseline Interview. Households which refused to participate in the program early during the Enrollment Interview never completed an Initial Household Report Form. Thus, NIE, calculated from Baseline data, has been used to predict which of these "turndown" households would probably have been over income. All households determined to be potentially over income have been excluded from the sample of Turndowns analyzed in the Participation section.

TABLE III.1 COMPONENTS INCLUDED IN THE INCOME VARIABLES

Components \ Variables	Net Income Eligibility (NIE)	Net Income Analytical (NIA)	Gross Income-- Census (CINC)
I. Gross Income:			
A. Earned (ERN)			
1. Wages and Salaries	X	X	X
2. Net Business Income	X	X	X
B. Income Conditioned Transfers (WELTR)			
1. Aid for Dependent Children	X	X	X
2. General Assistance	X	X	X
3. Other Welfare	X	X	X
4. Food Stamps Subsidy	-	X*	-
C. Other Transfers (OTHTR)			
1. Supplemental Security Income (Old Age Assistance, Aid to the Blind, Aid to the Disabled)	X	X	X
2. Social Security	X	X	X
3. Unemployment Compensation	X	X	X
4. Workmen's Compensation	X	X	X
5. Government Pensions	X	X	X
6. Private Pensions	X	X	X
7. Veterans Pensions	X	X	X
D. Other Income (RESID)			
1. Education Grants	X	X	X
2. Regular Cash Payments	X	X	X
3. Other Regular Income	X	X	X
4. Alimony Received	X	X	X
5. Asset Income	X*	X	X
6. In-Kind Income from Work-in-Lieu of Rent	-	X*	-
7. Income from Roomers and Boarders	-	-	X
II. Gross Expenses			
A. Taxes			
1. Federal Tax Withheld	X*	X*	-
2. State Tax Withheld	X*	X*	-
3. FICA Tax Withheld	X*	X*	-
B. Work-Conditioned Expense			
1. Child Care Expenses	X	-	-
2. Care of Sick at Home	X	-	-
3. Work Related Expense	X*	-	-
C. Other Expenses			
1. Alimony Paid Out	X	X	-
2. Major Medical Expense	X	-	-

*The amounts of these income and expense items are derived using data reported by the household. All other amounts are included in the income variables exactly as reported by the household.

3.0 NET INCOME FOR ANALYSIS (NIA)

The analytical net disposable income variable (NIA) is the major income variable which has been used throughout all sections of this report. NIA is one of the demographic variables used to describe the enrolled population; it is the denominator in the housing burden measure (ratio of rent to income); and it is one of the independent variables used in the preliminary expenditure function. NIA is an estimate of the annual net income received by all household members of age 18 or over; it is the sum of earned, transfer, and other income net of taxes and alimony paid. For a more detailed explanation of the components included in NIA, refer to Table III.1, "Components Included in the Income Variables."

The components included in the analytical and eligibility definitions of income differ as a result of the differing uses of these variables. The eligibility definition of income has to be easily and accurately measurable. Since most households do not know exactly what income they have earned from assets on an annual basis except at the end of each calendar year, income is imputed to assets by formulas in deriving NIE. Non-money incomes such as Food Stam subsidies and rent reduction due to working for the landlord are not included in NIE; these non-money incomes cannot be measured as easily or as accurately as cash receipts. (The analytical definition of income includes the net value of Food Stamps based on the participant's estimate of their value in food and the cost of the Food Stamps. Income from work in lieu of rent is based on the participant's estimate of reduction in rent due to working for the landlord.)

The eligibility definition of income also has to be as equitable as possible with respect to demographically different

households which receive income from a variety of different sources. One dollar of wages and salaries may not yield disposable income comparable to one dollar of transfer income, since there may be transportation costs, work clothing costs, child care costs, and other work-related expenses associated with the income from wages and salaries. Approximate allowances are made in NIE for work-conditioned expenses so that households with income from wages and salaries will receive subsidies based on their real needs and consistent with the subsidies received by other enrolled households. Extraordinary medical expenses are also allowed as a deduction. Allowing for these types of expenses is typical of the measurement of income in most federally subsidized housing programs.

In contrast, the analytical definition of income need not make approximate allowances to equate households of differing circumstances. Demographic differences between households, such as differences in source of income, can be controlled for directly.

The primary consideration in defining analytical income is to estimate as closely as possible the number of dollars which each enrolled household has available for consumption. Food stamps and work-in-lieu of rent make available for consumption dollars which would ordinarily have been spent on food and rent; thus, these non-money incomes are included in the definition of analytical income. Taxes and alimony paid are expenses which must be paid at specified rates. However, child care, clothing, transportation, and other work-related expenses can be purchased in varying amounts at varying prices by all households; such purchases may include a large component of optional consumption.

Child care services can be obtained in both Phoenix and Pittsburgh at widely varying rates[1]. Work clothing expenses will vary depending on a person's tastes as well as on the type of work being performed. Transportation costs will vary depending on the variety of modes of transportation available, the mode chosen, and the relative locations chosen for work and housing. Medical services can also be obtained at widely varying rates. Each household must make consumption decisions about each of these types of expenses; for example, a household could choose to trade off less child care services for more housing.

Analytical net income attempts to measure the number of dollars available for any type of consumption, rather than the number of dollars remaining after "necessary consumption expenditures", such as food, child care expenses for a single working parent, or medical expenses. Therefore, the only deductions included in NIA are taxes and alimony payments.

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[1] See "Site Specific Information--Pittsburgh", Abt Associates, April, 1973, and
"Site Specific Information--Phoenix", Abt Associates, March, 1973.

4.0 CENSUS INCOME (CINC)

In order to be able to compare the enrolled population with the Census eligible population, a Census income variable is computed using Baseline income data for each enrolled household. This variable is derived as similarly as possible to the Census Bureau definition of income. Basically, CINC is an annual gross income measure obtained by summing the money income of all household members of age 18 or over. (The Census Bureau definition includes income of all household members of age 14 or over.)

Although the components included in CINC and the Census Bureau income measure are basically similar, differing interview questions and methods of collection may cause these two measures to differ. For a more detailed indication of the components included in CINC, see Table III.1. CINC is used in the Sample Description and in the Location Analysis sections of this report.

5.0 MAJOR SOURCE OF INCOME (MAJ) AND FRACTION MAJOR SOURCE OF INCOME (FMAJ)

An hypothesis which has been developed but not extensively tested suggests that marginal propensities to consume differ for different types of income. In addition, stigmas may be attached to certain sources of income so that discrimination may be correlated with sources of income such as welfare. Also, source of income seems to be highly correlated with various other demographic characteristics. Therefore, major source of income has been used as one of the primary demographic variables in the description of the enrolled population. It has also been used in the preliminary expenditure function as one of the independent variables.

Gross income as defined for the analytical net disposable income variable (NIA) has been divided into four categories: Earned Income, Income Conditioned Transfers, Other Transfers, and Other Income. The major source variable indicates which one of these categories accounts for the largest proportion of the household's gross income. Earned Income (ERN) includes both wages and salaries and net business income. Income-Conditioned Transfers (WELTR) includes welfare grants and Food Stamp subsidies. Other Transfers (OTHTR) includes Social Security, Supplemental Security Income, Unemployment Compensation, Workmen's Compensation, and pension income. Other Income (RESID) consists of all other types of income included in NIA: education grants, alimony received, asset income, any other regular money income, and in-kind income from work-in-lieu of rent. Refer to Table III.1 for further explanation of the specific types of income included in each of the major source categories.

Several criteria were used in developing the major source categories. Earned Income is cash received in return for work. Income Conditioned Transfers are cash and non-cash grants which vary inversely with total household income; e.g., AFDC eligibility and payment criteria are a function of total family income. Other Transfers are payments which are made to specific individuals, are less tied to current income, and tend to be sources of income for elderly persons. Most types of income included in Other Transfers (except SSI) are also in some way related to having worked. Other Income is a residual category which does not include cash received from wages or public transfers.

Income Conditioned Transfers also have the distinguishing characteristic that the eligibility requirements and benefits associated with these programs vary widely depending on the geographic location of the program. For example, the Aid for Dependent Children program in Arizona has stricter eligibility requirements and pays a smaller percent of calculated need than the Aid for Dependent Children program in Pennsylvania. It is not surprising that 33.4 percent of the housing allowance households in Pittsburgh have Income Conditioned Transfers as their major source of income in contrast to 10 percent in Phoenix. In addition, behavior of the households receiving this type of income may differ in Phoenix and Pittsburgh due to the differing eligibility requirements and benefits.

In order to maximize the variation in the source of income categories and in order to limit the number of categories in which each household will be included, the incidence of overlapping benefit has been considered in the income source classifications. For example, a national study of public income transfer programs found that 53 percent of AFDC reci-

pients also receive Food Stamps and 51 percent of Food Stamp recipients also receive AFDC payments.[1] This is one of the reasons AFDC and Food Stamp subsidies have been included in the same source of income category. Similarly, Social Security and/or SSI and/or retirement and/or pension benefits are often received as multiple benefits by one household. Because the classification of income sources has been based partially on the incidence of overlapping benefits, a significant degree of correlation is expected between major source of income and other demographic variables such as age. For example, Supplemental Security Income (Aid to the Blind, Aid to the Disabled, and Old Age Assistance) is often received by households which also receive Social Security and both are received primarily by elderly individuals.

Fraction Major Source of Income (FMAJ) is the ratio of the income received from the major source to gross income as defined for NIA. This fraction can vary from .26 to 1.00. Technically, a household's income could be distributed evenly amongst the four categories (i.e., FMAJ = .25), in which case there would be no major source of income. If a household receives income from only one of the source categories, FMAJ will equal 1.00.

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[1] See "Public Income Transfer Programs: The Incidence of Multiple Benefits and the Issues Raised by their Receipt", Studies in Public Welfare, Joint Economic Committee, December, 1973.

APPENDIX IV: RENT DEFINITIONS

1.0 INTRODUCTION

Analysis of participant expenditures on housing takes two basically different approaches:

- How much do participant households spend on rent?
- How much does it cost to rent a dwelling unit with particular characteristics?

These differences in approach require variations in the analytical definition of rent. For example, reduction in rent for roomer and boarder contribution is appropriate for the first approach but not the second.

The basic rent definition and its variations are discussed in the following section.

2.0 ADJUSTED CONTRACT RENT FOR ANALYSIS (ACRA)

2.1 BASIC DEFINITION OF ACRA

The basic definition of ACRA is monthly payment for an unfurnished dwelling unit including basic utilities. Since ACRA refers to shelter costs borne by the participant household, it is adjusted for roomer and boarder contribution. The adjustments made in deriving ACRA are summarized below:

- Contract Rent

  Contract rent is adjusted to a monthly amount to provide a common rental period.

- Utilities Adjustment

  Adjustments are made via site-specific tables for electricity, gas, heat, water, garbage and trash if not included in contract rent. No adjustment is made for any other utilities or services, such as parking.

- Furnishings Adjustment

  For furnished units, a deduction for the cost of furnishings is made. The schedule for this deduction is discussed in a separate section below.

- Roomers and Boarders Adjustment

  Roomer and boarder contribution is deducted from adjusted rent. The contribution is calculated net of the cost of board. (No adjustment is made to income.)

2.2 VARIATIONS OF ACRA

Five variations of ACRA are used depending on the adjustments made and the inclusion or exclusion of certain special cases that present problems in defining ACRA, such as no cash renters or households that have a reduction in rent because of working for the landlord. (The special cases and adjustments are listed in Table IV.1.) The variations of ACRA are summarized in Table IV.2.

TABLE IV.1: SUMMARY OF SPECIAL CASES AND ADJUSTMENTS

	Pittsburgh		Phoenix	
	Number	Percent	Number	Percent
No rent data	6	.3%	0	0%
Work for landlord				
Reduction in rent	36	.2	80	4.3
Reduction but don't know amount	6	.3	18	1.0
No cash renters				
Work for landlord	2	.1	3	.2
Related to landlord	6	.3	1	0
Other	0	0	4	.2
Roomers and boarders	21	1.2	48	2.6

Note: The entries in this table are not additive, because the categories are not mutually exclusive.

TABLE IV.2:. DEFINITIONS OF ADJUSTED CONTRACT RENT FOR ANALYSIS

ACRONYM	COVERAGE	ADJUSTMENTS	COMMENTS ON USE
ACRA1	Exclude: • "No rent" data cases • No cash renters • Work in lieu of rent but don't know reduction.	1. Utilities, Furnishings, Roomers and Boarders 2. Special Case Adjustment for Work in Lieu of Rent.	ACRA1 is the rent variable most consistent with all decisions made on adjustments. Used for analysis of Baseline position and for change analysis between Baseline and Periodics. Suitable for analysis of expenditure level and burden.
ACRA2	Exclude: • "No rent" data cases	1. Utilities, Furnishings, Roomers and Boarders. 2. All special cases are adjusted.	Special case of ACRA1 when rent statistics for entire sample except "no rent" data cases are desired.
ACRA3	Exclude: • "No rent" data cases • No cash renters	1. Utilities, Furnishings, Roomers and Boarders 2. No adjustments made for special cases.	Consistent with definition of rent available from program operating forms. Provides a consistent variable for detailed change analysis.
ACRA4	Exclude: • "No rent" data cases	1. Utilities, Furnishings, Roomers and Boarders 2. No adjustments made for special cases.	Special case of ACRA3. Includes all households except "no rent" data cases and may be defined as adjusted rent as reported.
ACRA5	Exclude: • "No rent" data cases • No cash renters • Work in lieu of rent but don't know reduction • Roomer/Boarder households	1. Utilities and Furnishings 2. Adjustment for work in lieu of rent.	Special case for analysis of rent burden. Same as ACRA1 except excludes roomer and boarder households. Suitable for analysis with dwelling unit characteristics.

3.0 THE FURNISHINGS ADJUSTMENT

A rental market for furnished apartments is especially important in Phoenix. Of the enrolled households (using Baseline data) 38.5 percent rent furnished dwellings in Phoenix while only 6.2 percent rent furnished dwellings in Pittsburgh.

Since the analytical definition of rent is the basic cost of an unfurnished unit, it is desirable to derive an appropriate furnishings adjustment so that the sample does not have to be stratified for rent analysis according to the furnished or unfurnished criteria. Two ways of making this adjustment are discussed below.

3.1 PROGRAM ADJUSTMENT

The table below is currently used to make the furnishings adjustment for the program definition of rent. This table was adapted from tables developed by the Phase I contractor (Stanford Research Institute). The adjustment depends on the number of furnished rooms, which is indicated on the monthly Household Report Form.

TABLE IV·3: MONTHLY FURNISHINGS ADJUSTMENT

Number of Furnished Rooms	Pittsburgh	Threshold Gross Rent	Phoenix	Threshold Gross Rent
1	$12, 15[1]	$ 96	$12, 15[1]	$112
2	24, 30	120	24, 30	148
3	36, 45	148	32, 40	176
4	48, 60	172	44, 55	220
5 or more	60, 75	212	56, 70	268

[1] If gross rent is below the threshold amount, the lower value is used for adjustment; otherwise the higher figure is used.

3.2 ANALYTICAL ADJUSTMENT

Using the program schedule for furnishings adjustments seems to cause excessive deductions from rent, especially at low rent levels and/or larger unit sizes. Therefore, a revised adjustment formula is being used for analysis. The revision makes the furnishings adjustment equal to a percent of actual rent.

The analytical adjustment formula was developed from the 1974 Phoenix Housing Cost Panel's estimates of the additional cost of furnishings for units of varying sizes. (The Pittsburgh panel's estimates were not used because they seem to be of very poor quality.)

The mean of the estimated furnishings increment divided by the panel's estimated rental cost was 13 percent. The analytical furnishings adjustment is, therefore, expressed as:

$$\text{(ACR) Adjusted Contract Rent} = (\text{Contract Rent} + \text{Utilities Adjustment}) - .13\ (\text{ACR})$$

or, solving for ACR:

$$\text{ACR (adjusted for furnishings)} = \frac{1}{1.13}\left(\begin{matrix}\text{Contract Rent} \\ + \text{ Utilities}\end{matrix}\right)$$

(The adjustment is not varied according to number of rooms or number of furnished rooms as it is assumed that the rent would reflect such.)

APPENDIX V: HOUSING AND OCCUPANCY MEASURES

1.0 INTRODUCTION

This appendix discusses the housing and occupancy measures used in the analysis. The discussion is organized as follows. Section 2.0 discusses the derivation of the program Minimum Standard (MS Program) for housing quality with special attention to the relationship of MS Program to the APHA code. In Section 3.0, each component in the program standard is described. Three alternative quality levels are then defined--Low, Medium, and High. All four definitions are used in the analysis. They provide nested sets of requirements, that is, they have the property that all dwelling units which pass a given level pass the lower levels. In order of increasing stringency of requirement, the four levels are order as follows--Low, Medium, MS Program, and High.

Section 4.0 defines the program occupancy standard and an alternative to this standard.

Section 5.0 briefly discusses the administration of the Minimum Standard earmark which includes both MS Program as the housing quality standard and the program occupancy requirement. Section 6.0 describes the modifications made to MS Program which were made on the basis of early results. Finally, additional measures of housing quality derived from information in the Baseline Interview are discussed in Section 7.0.

2.0 DEVELOPMENT OF MINIMUM STANDARDS

2.1 GENERAL DESCRIPTION

There being no specific, generally accepted definition of standard housing, the program definition of minimum standards, which includes housing and occupancy standards, was not predetermined and thus had to be developed.

The APHA-PHS Recommended Housing Maintenance and Occupancy Ordinance (revised 1971) code and the Urban Institute's modification of it[1] served as the basic model for defining the standards. The table following this section shows the relationship between this model and the program definition. A detailed description of the components of the program definition is included in the next section.

The definition of minimum standards selected for the program differs somewhat from the definition of standard housing given to the panel of experts on housing costs when they were requested to make C* estimates (see Appendix II). The major difference is that the definition for the housing cost panel specifies that the housing be in a "modest neighborhood." This definition of standard housing, already in use for the housing cost panels in both the Administrative Agency Experiment and in the Demand Experiment, was deemed infeasible for a program to administer objectively insofar as any modest neighborhood requirement was concerned. It becomes a matter of experimental interest then, to examine the characteristics of the actual neighborhoods in which households locate housing satisfying the housing standards imposed under minimum standards earmarking.

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[1] Urban Institute Working Paper 205-8, April 28, 1972.

2.2 RELATIONSHIP BETWEEN APHA CODE AND MINIMUM STANDARD PROGRAM DEFINITION

Table V.1 compares the elements of the APHA Code, the Urban Institute's modification, and Minimum Standards Program definition (MSP). An element is indicated as comparable if the general meaning is similar, even though it may not be treated identically by all three.

TABLE V.1

POTENTIAL ELEMENTS FOR HOUSING STANDARDS

Element	APHA[1] Code	APHA/Code Modified By UI[2]	Minimum Standards Program Definition
Occupancy			
Space per Occupant			
Total space	X	X	(3)
Max # persons per room or per bedroom	X	X	X
Interior Structure			
Closet space	X	X	(1)
Exits	X	X	X[3]
Walls and Ceilings	X	X	X
Ceiling Height	X	X	X
Floors	X	X	X
Stairways	X	X	(1)
Ext. doors, skylights	X	X	(4)
Windows	X	X	Included under Ventilation
Heating, Electricity, Ventilation			
Electrical outlets	X	X	X
Heating	X	X	X
Venting (of heating)	X	X	X
Ventilation (windows)	X	X	X
Other Structural Requirements			
Handrails	X	X	(1)
Rat proofing	X	X	(3)
Screens on low windows	X		(3) (1)
Rat proofing, ext. doors, openings	X		(3)
Concrete basement floor	X		(3)
Rat proof basement walls	X		(3)
Outside Conditions			
Trash and refuse	X	X	(1)

Continued

TABLE V.1 (continued)

Element	APHA[1] Code	APHA/Code Modified By UI[2]	Minimum Standards Program Definition
Exterior			
Fences	X		(2)
Accessory structures	X		(2)
Foundation	X		(3)
Roof structure	X		X
Stairs/Porches	X		(1)
Plumbing & Installation	X		Plumbing facilities rated instead of installation
Chimneys and flues	X		(1)
Fire proof const. (local ordinance)	X		(3)
Wall structure			X
Wall surfaces			X
Kitchen			
Stove	X	X	X
Refrigerator	X	X	X
Sink w/hot & cold water	X	X	X[4]
Counter & Cabinets	X	X	(1)
Complete kitchen facilities			X
Ceiling or wall-type light fixture	X		X
Bathroom			
Flush toilet	X	X	X
Bathroom sink	X	X	X
Shower/tub	X	X	X
Ventilation	X	X	X
Bathroom door	X	X	(4)
Drug storage facility	X	X	(1)
Ceiling or wall-type light fixture	X	X	X

Key

Reasons for not including element in Minimum Standards Program Definition:

(1) Too stringent
(2) Too infrequent
(3) Too complicated or time consuming to evaluate
(4) Subsumed by other measure

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[1]American Public Health Association

[2]Urban Institute

[3]Revised effective November, 1973.

[4]Removed as requirement effective November, 1973.

3.0 DESCRIPTION OF HOUSING MEASURES

The housing measures used in this analysis are MS Program, which is the program definition of Minimum Standards used as the earmark constraint in Minimum Standards treatment cells, and three quality levels--Low, Medium, and High, which are variations of the program definition.

3.1 MINIMUM STANDARDS PROGRAM DEFINITION

Table V.2 lists the components in the program definition of minimum standards. The requirements are grouped into 15 components made up of related items.

These components may be used to analyze the requirements that cause a dwelling unit to fail the program definition.

To allow a more general analysis, the 15 components are combined into four component groups: Basic Systems, Exterior, Interior and Other Program. These component groups, presented in Table V.3, are also used in defining the alternative housing quality levels discussed in Section 3.2 below.

It should be moted that occupancy measures are separate from the housing measures and are not part of the levels. However, the program housing standards for light-ventilation, ceiling height and electrical are applied to bedrooms in determining the number of adequate bedrooms for the program occupancy standard as explained in Section 4.0 below.

TABLE V.2 COMPONENTS OF MINIMUM STANDARDS
(Program Definition)

1. COMPLETE PLUMBING

Private toilet facilities, a shower or tub with hot and cold running water, and a washbasin with hot and cold running water will be present and in working condition.

2. COMPLETE KITCHEN FACILITIES

A cooking stove or range, refrigerator, and kitchen sink with hot and cold running water will be present and in working condition.

3. LIVING ROOM, BATHROOM, KITCHEN PRESENCE

A living room, bathroom, and kitchen will be present. (This represents the dwelling unit "core," which corresponds to an efficiency unit.)

4. LIGHT FIXTURES

A ceiling or wall-type fixture will be present and working in the bathroom and kitchen.

5. ELECTRICAL

At least one electric outlet will be present and operable in the living room and kitchen. A working wall switch, pull-chain-light switch or additional electrical outlet will be present in the living room.[1]

6. HEATING EQUIPMENT

Units with no heating equipment; with unvented room heaters which burn gas, oil, or kerosene; or which are heated mainly with portable electric room heaters will be unacceptable.

7. ADEQUATE EXITS

There will be at least two exits from the dwelling unit leading to safe and open space at ground level. (For multi-family building only.)

(continued)

Effective November, 1973 , (retroactive to program inception) this requirement was modified to permit override on case-by-case basis where it appears that fire safety is met despite lack of a second exit.

8. ROOM STRUCTURE

Ceiling structure or wall structure for all rooms must not be in condition requiring replacement (such as with severe bulging or leaning).

9. ROOM SURFACE

Ceiling surface or wall surface for all rooms must not be in condition requiring replacement (such as with surface material loose, containing large holes, or severely damaged).

10. CEILING HEIGHT

For living room, bathroom, and kitchen the ceiling must be 7 feet (or higher) in at least one-half of the room area.[1]

11. FLOOR STRUCTURE

Floor structure for all rooms must not be in condition requiring replacement (such as with severe buckling or noticeable movement under walking stress).

12. FLOOR SURFACE

Floor surface for all rooms must not be in condition requiring replacement (such as with large holes or missing parts).

13. ROOF STRUCTURE

The roof structure must be firm.

14. EXTERIOR WALLS

The exterior wall structure or exterior wall surface must not need replacement. (For structure this would include such conditions as severe leaning, buckling or sagging and for surface conditions such as excessive cracks or holes.)

15. LIGHT-VENTILATION

The unit will have a 10 percent ratio of window area/floor area and at least one openable window in the living room, bathroom and kitchen or the equivalent in the case of properly vented kitchens and/or bathrooms. [1]

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[1] This housing standard is applied to bedrooms in determining the number of adequate bedrooms for the program occupancy standard. See 4.0, below.

3.2 ALTERNATIVE QUALITY LEVELS

The alternative quality levels are defined using the component groupings for Minimum Standard Program definition as shown in Table V.3 and variations of these component groupings as defined in Table V.4. The levels are summarized below.

- The Low quality level represents a basic level of standardness. It includes the following components, which are a sub-set of the program definition: complete plumbing; complete kitchen facilities; heating equipment; living room, bathroom, and kitchen presence; roof structure; and exterior walls.

- The Medium quality level includes the above components as well as introducing standards for light and ventilation (although less stringent than those included in MS Program), electrical, light fixtures and adequate exits.

- The High quality level represents the highest level of quality combining the components of MS Program with several additional components or component groupings: window condition core, interior high, and exterior high.

It should be noted that the component groupings (from Table V.3 and V.4) are used as building blocks in defining all of the housing measures, from Low to High. At each level, as requirements are added, the standards become more restrictive. Table V.5 outlines the relationships among the levels.

TABLE V.3

DERIVED GROUPINGS FOR COMPONENTS OF
MINIMUM STANDARDS PROGRAM DEFINITION

Component Group	Definition of Group	
Basic Systems	Pass:	Complete Plumbing
		Complete Kitchen Facilities
		Heating Equipment
		Living Room, Bathroom, Kitchen Presence
Exterior	Pass:	Roof Structure
		Exterior Walls
Interior	Pass:	Room Structure
		Room Surface
		Floor Structure
		Floor Surface
Other Program	Pass:	Light-Ventilation
		Electrical
		Light Fixtures
		Ceiling Height
		Adequate Exits (multi-family buildings only)

TABLE V.4

ADDITIONAL DERIVED GROUPINGS OF COMPONENTS
FOR OTHER HOUSING QUALITY LEVELS

Component Group	Definition of Group
Other Medium	Pass: Light-Ventilation Medium (This is the same as Light-Ventilation except that it ignores the requirement for 10% ratio of window area/ floor area.) Electrical Light Fixtures Adequate Exits
Other High	Pass: Light-Ventilation Electrical Light Fixtures Adequate Exits Ceiling Height Window Condition Core (This requires that the windows in the living room, bathroom, and kitchen not need replacement or repair.)
Interior High	The ceiling structure, wall structure, ceiling surface, wall surface, floor structure, and floor surface for all rooms must not need replacement or repair. ("Repair" includes conditions such as heavily worn or damaged surfaces; or for structure such conditions as noticeable leaning or sag.)
Exterior High	The roof structure must be firm and in addition, the exterior wall structure and, exterior wall surface must not need replacement or repair as defined above.

TABLE V.5

COMPONENTS OF HOUSING QUAILTY LEVELS

Component Group	Housing Quality Levels			
	Low	Medium	MS Program	High
Basic Systems	✓	✓	✓	✓
(Complete Plumbing; Complete Kitchen Facilities; Heating Equipment; and Living Room, Bathroom, Kitchen Presence)				
Exterior				
Exterior (Roof Structure and Exterior Walls)	✓	✓	✓	X
Exterior High (Roof Structure and a more stringent requirement for Condition of Exterior Walls)	-	-	-	✓
Other				
Other Medium (The same as Other Program below except that the Light-Ventilation requirement is less stringent)	-	✓	X	X
Other Program (Light-Ventilation, Electrical, Light Fixtures, Ceiling Height, and Adequate Exits)	-	-	✓	X
Other High (The same as Other Program above with an additional requirement for Window Condition)	-	-	-	✓
Interior				
Interior (Room Structure, Room Surface, Floor Structure and Floor Surface)	-	-	✓	X
Interior High (Same as Interior above except that the requirement is more stringent)	-	-	-	✓

The HEF must "Pass" for each component with "✓" in order to "Pass" for that definition.

✓ = "Pass" for this component group.

X = Not included in definition but "pass" for that component group because its requirements are subsumed in a more stringent definition of that component group.

\- = Not included in definition.

3.3 INITIAL HOUSING STATUS

Since the quality levels and program definition build on each other, it is possible to use one code to describe a household's initial status in relation to all four definitions. The codes used for Initial Housing Status are as follows:

Code	Definition
1	Pass High (i.e., pass all)
2	Pass MS Program (fail High, pass Low, and Medium)
3	Pass Medium (fail MS Program and High, pass Low)
4	Pass Low only (fail Medium, MS Program, High)
5	Fail Low (i.e., fail all)

4.0 DESCRIPTION OF OCCUPANCY STANDARDS

In addition to the housing standards described on the preceding pages, occupancy standards are used to define the maximum size of household for which a specific unit provides standard housing. The occupancy standards may be based on the number of adequate bedrooms, the number of bedrooms regardless of condition, or the number of rooms. Standards using these measures are discussed below.

4.1 PROGRAM OCCUPANCY STANDARDS

The program occupancy standard requires that there be at least one "adequate bedroom" for every two persons in the household, regardless of age. (A studio or efficiency apartment is counted as a bedroom for occupancy standards.) An "adequate bedroom" is a room which can be completely closed off from other rooms and which meets the following program housing standards: ceiling height, light ventilation, and electrical. In addition, the room must meet the housing standards for the condition of room structure, room surface, floor structure, and floor surface.

Roomers and boarders are added to household size when determining whether a household meets occupancy standards, because all of the rooms in the dwelling unit are taken into account.

4.2 ALTERNATIVE OCCUPANCY STANDARDS

There are occupancy standards other than the program definition which are useful for analysis. To analyze and understand the impact of a standard based on number of adequate bedrooms, it is necessary to look at an alternative based on number of bedrooms. This standard is the same as the program definition except that the housing standards used to define adequate bedrooms are ignored. As above, a bedroom is defined as a room which can be completely closed off. The other alternative occupancy standard selected is a Census-type measure based

on persons per room (not including bath). Since this is a simple way of looking at overcrowding, and a convention commonly used with Census data, it is useful as a comparison to the program occupancy standard, which is more complex.

5.0 ADMINISTRATION OF THE PROGRAM STANDARDS

The program housing standards and the program occupancy standards make up two distinct parts of the housing evaluation process as described below.

5.1 HOUSING STANDARDS

First, the core of the dwelling unit (living room, bathroom and kitchen) must meet the standards for electrical, light-ventilation, ceiling height, and light fixtures (bathroom and kitchen only). Certain facilities must be present, such as plumbing, kitchen facilities, and heating equipment. The roof and exterior walls must meet requirements. In addition, all rooms in the unit must meet the surface and structure requirements for ceilings, walls, and floors.

5.2 OCCUPANCY STANDARD

After the unit is evaluated on housing standards, the occupancy standard criteria (which is based on persons per adequate bedroom) are applied. To be considered an adequate bedroom, a room must be completely closed off from other rooms and must meet the following housing standards in addition to those applied to all rooms as noted above: ceiling height, light-ventilation, and electrical.

6.0 MODIFICATION OF MINIMUM STANDARDS (PROGRAM DEFINITION)

As a result of early sample analysis the program definition of Minimum Standards was modified. The two modifications and impact on analysis are discussed below.

6.1 REQUIREMENTS MODIFIED

Kitchen Counterspace and Shelving

The original program definition of Minimum Standards included the requirement that the kitchen have at least four square feet of counterspace and at least ten square feet of kitchen shelving (cabinets or pantry). The requirement was from the general APHA guidelines and the Urban Institute's modification.

Although the requirement seemed basic, early analysis revealed that it caused disproportionately high incidence of failure in relation to other requirements considered even more important as indicators of housing standardness.

Early Pittsburgh data showed that 22 of 182 units evaluated or 12.1 percent failed on counterspace alone. Since the requirement seemed so restrictive, in that it would fail units completely adequate in more important areas, it was dropped from the Minimum Standards definition.

Adequate Exits

The program definition of Minimum Standards originally required that for multi-family buildings there be at least two exits from the dwelling unit leading to safe and open space at ground level. This

was a simplification of the APHA guideline for egress. Early site field reports indicated that strict interpretation of this requirement could result in Minimum Standards failure for newly constructed apartments in Phoenix and converted older buildings in Pittsburgh, though both types are locally code approved. Early Pittsburgh data showed that nine of 49 multi-family units evaluated (from 182 total evaluations) or 18.4 percent failed this requirement.

Despite the high incidence of failure, this requirement seemed too important for safety to drop altogether. Instead, the requirement was modified to allow an override, upon examination of the building by the Housing Supervisor, of the two-exit criterion in cases where there exist "safe conditions consistent with local practice." A building constructed of fire safety materials is an example of a case where the override is applicable. The change was effective November, 1973, retroactive to the start of the program.

6.2 Analysis Impact of Modifications

The modifications were made effective November, 1973, retroactive to the beginning of the program. This meant that Minimum Standards earmarked cases already evaluated had to be reviewed since the changes could affect their status in the program. The result of this review for Minimum Standard households already in process is described below. Fortunately, neither an extensive review nor many payment changes were required, since only 25 percent of the participants in Pittsburgh and 9 percent in Phoenix were fully enrolled when the modifications were made.

Kitchen Counters and Shelves

There were only two households under Minimum Standards earmarking (one in Pittsburgh and one in Phoenix) that changed from minimum payment status to full payment status as a result of the change in the requirement. However, 35 households in Pittsburgh (and none

in Phoenix) that failed because of this requirement as well as other requirements were sent letters informing them of the changes in requirements. They continued in minimum payment status. All other Minimum Standards households previously evaluated were sent a letter notifying them of a change in requirements to guide their future housing choices.

Exits

Two households in Pittsburgh changed from minimum payments status to full payment status when their dwelling units were re-evaluated under the revised exits criteria because that had been the sole reason for not meeting Minimum Standards.

Households that failed for other reasons in addition to the exit requirement were also re-evaluated. Fortunately, none of those under Minimum Standards earmarking were affected by the re-evaluation.

7.0 HOUSING QUALITY MEASURES FROM THE BASELINE INTERVIEW

Housing quality data gathered on the Baseline Interview provide another means of describing participants' housing. Using Baseline Interview items similar to those included in the Census and the Annual Housing Survey (which is being conducted in SMSAs throughout the country including Pittsburgh and Phoenix) will allow comparisons with other population groups.

7.1 DEFINITIONS OF THE MEASURES

The housing quality measures taken from the Baseline Interview are grouped into the components defined below and used to specify three levels of housing quality High, Medium, and Low (see Table V.6).

The components used to define the levels are the following:

- Basic Systems (BBA). This variable, similar to Basic Systems defined from the HEF, uses some Census-comparable questions about complete plumbing and kitchen facilities, which are often used to define "inadequate" housing. A unit fails this variable if any of the following conditions apply: no piped water, no electricity, not complete plumbing, shared plumbing, not complete kitchen facilities, shared kitchen, or no heating system.

- Working Condition (BWC). A unit fails this variable if either the flush toilet or heating system are in poor working condition or not working at all (based on workability questions comparable to those used on the Annual Housing Survey).

- Miscellaenous (BMISC). A unit fails this variable if roof, ceilings, or walls leak or if electric fuses blew three or more times in past three months (based on questions comparable to those in the Annual Housing Survey).

TABLE V.6

COMPONENTS OF BASELINE HOUSING QUALITY LEVELS

Components	Baseline Housing Quality Levels		
	Low	Medium	High
Basic Systems	X	X	X
Working Condition	-	X	X
BMISC	-	-	X

A unit must "Pass" each component with an "X" in order to "pass" for that definition.

X = Included, must pass

- = Not included in definition

7.2 OUTCOMES USING THE MEASURES

For households enrolled in the Demand Experiment the percent of households failing each housing quality component are indicated below.

TABLE V.7

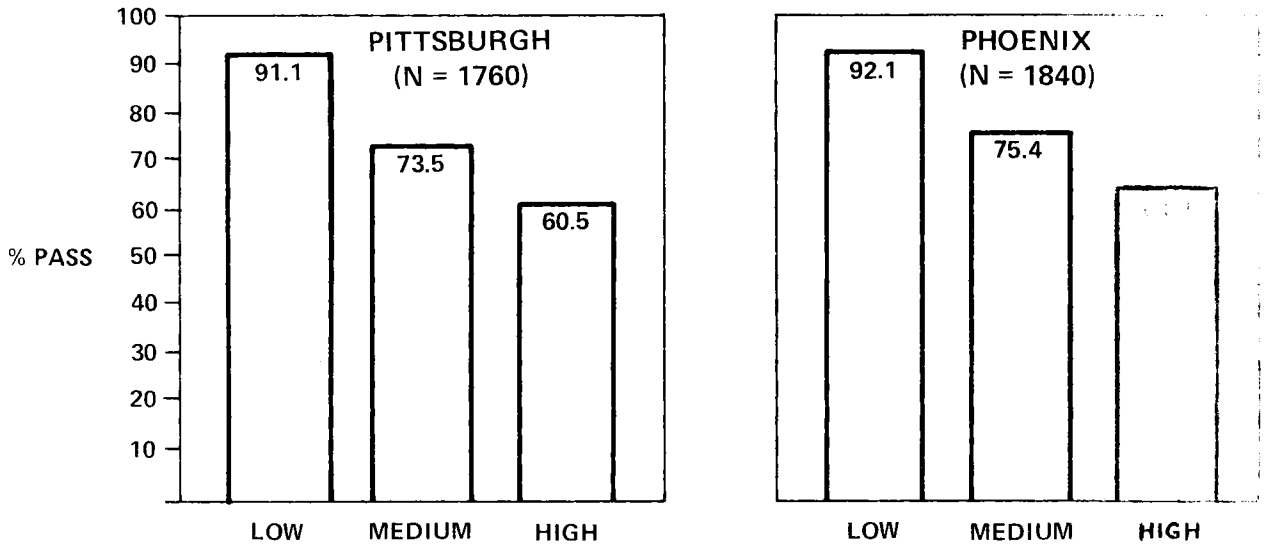
PERCENT OF HOUSEHOLDS FAILING COMPONENTS

Component	Pittsburgh (N = 1760)	Phoenix (N = 1840)
Basic Systems	9%	8%
Working Condition	19	18
Miscellaneous	23	21

The percent of households meeting each level is shown in Figure V.1. The failure rate on Basic Systems may be compared with the percent of "physically inadequate" housing units as identified in the Joint Center's America's Housing Needs.[1]

[1]The Joint Center for Urban Studies of MIT and Harvard University, America's Housing Needs: 1970 to 1980, December, 1973.

FIGURE V.1
PERCENT OF HOUSEHOLDS PASSING DIFFERENT
BASELINE HOUSING QUALITY LEVELS



DATA SOURCE: BASELINE INTERVIEW

The study identified 11.2 percent of Pittsburgh SMSA housing units as "physically inadequate" compared to 9 percent of enrolled households failing Basic and 4.3 percent of Phoenix SMSA housing units compared to 8 percent of enrolled households failing Basic. The Joint Center's definition of physically inadequate differs from Basic in that the former includes a measure of "dilapidated condition," a different measure for heating system, and did not include kitchen facilities and electricity. Furthermore, it is for all the housing stock in the SMSA in contrast with the housing of enrolled households (a low income population).

The Baseline housing quality levels may be compared with the HEF housing quality levels which are shown in Figure 4.4.1, Section 4. As is shown, the Baseline levels are not as stringent as the HEF levels. At the highest Baseline level 60.5 percent of the enrolled households in Pittsburgh and 64 percent in Phoenix pass, while at High (HEF) only 12.7 percent and 20.1 percent pass. However, the percentage of households passing Medium (HEF), 61.6 percent and 63.2 percent, is close to that at Baseline High.

APPENDIX VI: DEMOGRAPHIC VARIABLES

Variable Definitions and Classifications

1. Race/Ethnicity - Categories used in this report for each site are:

Pittsburgh

White
Black
Other (includes Spanish-American, Oriental, Indian, other)

Phoenix

White
Black
Spanish-American
Indian
Other (includes Oriental, other)

Classifications are based on interviewer observations of Demand Experiment respondent. If the respondent is observed as being Spanish-American, the race/ethnicity designation is Spanish-American rather than white, black or Indian.

For purposes of comparing Demand Experiment interview data to data generated from Census Public Use Sample tapes, Oriental households are identified separately so that the categories used are:

White
Black
Spanish-American
Indian
Oriental
Other

Experiment and Census race/ethnicity data are not completely comparable. Census designation of Spanish-American is based on Spanish surnames in Maricopa County and on persons of Puerto Rican birth or parentage in Allegheny County.

2. Income - Several income concepts are presented in Section 2.0.

- Adjusted income - is typically used in presentations of the income characteristics of the enrolled sample. Certain deductions, such as imputed taxes, child care and work-related expenses, alimony, and sick care are deducted from gross income to arrive at adjusted income. Classification is usually based on $1,000 intervals.

- Gross income - is used when comparing the characteristics of the enrolled sample to the Census eligible population. The intervals used are: $0-1999, $2000-2999, $3000-4999, $5000-6999, $7000-9999, $10,000-14,999, $15,000.

3. Major Sources of Income - Identifies the source (from categories below) representing the major fraction of total household income. Categories are:

Earned Income
Income Conditioned Transfer Income
(principally welfare)
Other Transfer (principally Social Security,
Supplemental Security Income, and Pensions)
Residual (principally income from assets,
alimony, or child support)

Major source of Income can be developed only from Baseline or Periodic Interview data. A comparable Screening Interview or Census variable is not available.

4. Age of Head of Household - Is the age of the head of household using Census convention.

Program age classification:

Less than 30 years of age
(Use of age 30 as a dividing point provides age classes in the enrolled sample of more equivalent size than age 25)

30-44

45-61

62 and over (Program rules limit eligibility of single-person households to those who are 62 or over or handicapped).

For purposes of comparing interview data from the Experiment with data generated from Public Use Sample tapes, the following classifications typical of Census tables is used:

Less than 25 years of age

25-44

45-64

65 and over

5. Sex of Head of Household - The Census convention is used. To establish the Census designated head of household, the sex and relationship of each household member to respondent designated head is checked. Unless the household

has a single female head, it is classified as having a male head of household. This may differ from the designation of head by the Screener or Baseline respondent.

6. Household Size - Two household size definitions are used:

- Program Household Size - Excludes roomers and boarders, guests and friends from count of household members. This definition is consistent with program rules and is used in describing the characteristics of the enrolled sample.

- Census Household Size - Includes all persons living in the dwelling unit. This definition is used with interview data only for comparisons with the Census Public Use Sample.

The categories used for presenting both definitions correspond to program occupancy standards--two persons per bedroom. Thus the categories of household size used are:

1 person
2 persons
3-4 persons
5-6 persons
7+ persons

7. Household Composition - Identifies the structure of the household based on the relationships of household members to the head. Two classifications are developed from interview data.

Basic Classification:

One-person household
Single head with children; no relatives
Single head with children and relatives
Single head with no children; relatives present
Married couple; no children, no relatives
Married couple with children; no relatives
Married couple with children and relatives
Married couple with no children, but with relatives

Abbreviated Classification(collapses the eight basic categories into four):

Single person
Single head with children
Married couple with children
Households with no children

This variable is developed from interview data. No comparable Census variable is available.

APPENDIX VII: HOUSEHOLD CHARACTERISTICS FOR THE EXPENDITURE FUNCTION

This Appendix presents the definitions of the dummy variables (Z_i) used in Section 4.3.

- Class and Education

White Collar	= 1 if head of household is a white-collar worker
	= 0 if otherwise
Grammar School	= 1 if head of household has less than or equal to eight grades of schooling
	= 0 if otherwise
Some High School	= 1 if head of household has completed some high school but does not have a diploma
	= 0 if otherwise
College	= 1 if head of household has completed college
	= 0 if otherwise

- Labor Force Attachment

More than One Employed	= 1 if more than one household member is employed
	= 0 if otherwise
None Employed	= 1 if no one in the household is employed
	= 0 if otherwise

- Household Size

One	= 1 if number of household members is one
	= 0 if otherwise
Two	= 1 if number of household members is two
	= 0 if otherwise

Five or Six	= 1	if number of household members is five or six
	= 0	if otherwise
Seven or More	= 1	if number of household members is seven or more
	= 0	if otherwise

- Household Composition

Young Children	=	number of children who are less than five
Older Children	=	number of children who are between five and 18 years old

- Household Type

Single with Relatives	= 1	if head of household is single without children with relatives and possibly other unrelated individuals
	= 0	if otherwise
Married Couple	= 1	if married couple have no children and may be living with other unrelated adults
	= 0	if otherwise
Extended Family	= 1	if married couple with children are living with other relatives and possibly other unrelated adults
	= 0	if otherwise
Extended Couple	= 1	if married couple without children are living with relatives and possibly with other unrelated adults
	= 0	if otherwise

- Other Demographic Characteristics

Non-white	= 1	if household is non-white in Pittsburgh and if household is non-white and not Spanish in Phoenix
	= 0	if otherwise
Spanish	= 1	if household head is Spanish in Phoenix
	= 0	if otherwise

Female Head	= 1 if household head is female
	= 0 if otherwise
Age 30-44	= 1 if household head is 30 through 44 years old
	= 0 if otherwise
Age 45-61	= 1 if household head is 45 through 61 years old
	= 0 if otherwise
Age 62 and Over	= 1 if householdhead is at least 62 years old
	= 0 if otherwise
Demographic Interaction	= 1 if household head is non-white and single with children and has welfare as major source of income or in equations for one racial group if household head is single with children and has welfare as major source of income
	= 0 if otherwise

- Moving Status

Mover	= 1 if household moved within the last year
	= 0 if otherwise

The omitted categories for each set of dummy variables are given below:

Education - High school diploma or some college

Labor Force Attachment - Exactly one employed household member

Household Size - Three or four

Household Type - Single head (with or without children or relatives)

Race - White

Age - Under 30

The effect of membership in any of the omitted categories is included in the constant term of estimated regressions.