Housing Allowance Demand Experiment

Mobility in the Housing Allowance Demand Experiment

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MOBILITY IN THE HOUSING ALLOWANCE DEMAND EXPERIMENT

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ABSTRACT

This report analyzes the residential mobility of households enrolled in the Housing Allowance Demand Experiment. Four stages of the mobility process are considered--becoming dissatisfied with current housing or neighborhood, planning to move, searching for new housing, and then actually moving.

The effects of the demographic characteristics, housing situations, and attitudes of households entering the program are analyzed at each stage of the mobility process. The effect of the experiment on the probability of moving is estimated. Finally, problems encountered by households that searched are examined to see if program actions could have made moving easier for participants.

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SUMMARY

This report is one of a series of technical reports on the results of programs tested in the Housing Allowance Demand Experiment. The Demand Experiment is one of three experiments being conducted by the Department of Housing and Urban Development as a part of the Experimental Housing Allowance Program (EHAP). These experiments, authorized by Congress in the Housing Act of 1970, are designed to test the concept of direct cash assistance to low-income households to enable them to live in suitable housing. The focus of the Demand Experiment is on how low-income renter households use allowances. The Demand Experiment was conducted in Allegheny County, Pennsylvania (Pittsburgh) and Maricopa County, Arizona (Phoenix). It tested a variety of allowance plans involving approximately 1,200 Experimental households and 500 Control households at each site. Each household enrolled in the experiment was offered allowance payments for three years. Analysis is based on data from the first two years.

This report concerns residential mobility during the experiment. Moving is a key behavior in a housing allowance program, because it can determine whether households participate and whether they use the allowance to obtain better housing or neighborhoods. If households must satisfy housing requirements to qualify for the allowance, then households that do not initially meet these requirements must move to participate (unless they can upgrade their current units). On the other hand, households may, of their own volition, use the allowance payment to move to better housing or neighborhoods. If the allowance offer induces households to move, then it may accelerate housing and neighborhood change among participants. If the allowance does not induce households to move, then housing and neighborhood change will occur at a rate set by the normal mobility of participants. Although a move may be necessary if households are to participate or obtain better housing and neighborhoods, moving does not guarantee these results. Other Demand Experiment reports analyze whether households that moved were able to participate and whether they improved their housing and neighborhoods.

The different types of housing allowance plans tested in the Demand Experiment offered somewhat different incentives for households to move. Under a Housing Gap allowance plan, eligible households received allowance payments designed

to make up the gap between the cost of modest, existing, standard housing and the fraction of its income that a household might reasonably be expected to devote to housing. Households received allowance payments only if their housing met program housing requirements. Housing Gap households that did not meet the requirements when they entered the program had an incentive to move to a new unit that complied with the requirements in order to start receiving payments (unless they could upgrade their current unit so that it would meet requirements).

Housing Gap households that already met requirements did not have to move in order to receive payments. If these households desired to use the additional income provided by the allowance to obtain better housing, they also had an incentive to move. On the other hand, for some of these households the allowance may have provided the money needed to allow them to remain in their original unit and thus have kept them from moving to a worse unit rather than leading them to move to a better unit.

Under a Percent of Rent formula, households received a rebate equal to a fixed fraction of their monthly rent. The rebates tested in the Demand Experiment ranged from 20 percent to 60 percent of monthly rent. Like the Housing Gap households that already met requirements, Percent of Rent households received payments immediately. Thus some may have been led to move to a better unit and some kept from moving to a worse unit.

Because of the key role of mobility in housing and neighborhood improvement and in program participation, it is important to learn what factors, other than the impact of the allowance offer, influenced households in their decision to move. If some households were less likely to move than others, then they may have been less likely to participate or to obtain better housing or neighborhoods. It is especially important to know if households did not move because of difficulties that might have been alleviated by program assistance, such as information about the housing market, help with childcare or transportation, or equal opportunity support.

Analysis of mobility during the Demand Experiment concentrated on whether the allowance offer affected mobility, whether some groups of households were less likely to move than others, and whether any program actions might have made it easier for households to move. The findings are summarized below.

1. Even without the allowance offer, it appears that most low-income renter households in both sites would move over the course of several years. However, a substantial minority normally would not move for long periods. These households might have to change their normal mobility patterns in order to make full use of a housing allowance.

   In Pittsburgh, 43 percent of the households enrolled in the experiment had moved at least once in the two years before the experiment began. In Phoenix, 71 percent had moved at least once in those two years. On the other hand, a substantial 22 percent of households in Phoenix and 30 percent in Pittsburgh had been living in the same place for five years or more when they entered the experiment. Although mobility rates of Demand Experiment households in Pittsburgh and Phoenix were quite different, they appear to be fairly typical of the mobility rates of low-income renters in the Northeast and the West.

2. Allowance offers did lead to some increase in mobility at both sites. It still appears, however, that the pace at which households move to better housing or neighborhoods is largely determined by their normal mobility patterns.

   There was a significant overall difference of about 7 percentage points in the mobility rates of Experimental and Control households. The estimated difference was larger (10 percentage points) in Phoenix than in Pittsburgh (5 percentage points), but not significantly so.

   The effect of the experiment on mobility was similar for households in the Percent of Rent treatment group (7 percentage points for the combined sites) and households in the Housing Gap treatment group that were living in units which did not meet the program's housing requirements at the time they enrolled (10 percentage points). For households in the Housing Gap group that already met the requirements when they enrolled, there was no significant overall effect.

3. Although most households moved readily, there were some groups of households that were much less likely to move than others. In particular,

older households had substantially lower mobility before the experiment began. The allowance offer did not change this pattern.

Age had a significant, negative relationship to the probability of moving at both sites. Logit analysis indicates that the probability of moving declines by about 5 percentage points with a decade of age.

4. Although no less likely to move, minority households were less likely to remain in the program after they moved in Pittsburgh, but not in Phoenix.

Evidence from the Demand Experiment indicates that black households in Pittsburgh had been at a disadvantage in the housing market before the experiment began. Black households had been in their units longer and were more dissatisfied at enrollment than white households. It appears that black households did not move at a lower rate than other households during the experiment in Pittsburgh, but that black households that moved left the program at a higher rate. Thus, the population of households still active at the end of the experiment contained a lower proportion of black than of white movers.

Spanish American households in Phoenix did not have a lower probability of moving during the experiment than other households, although they had a history of lower mobility before the experiment began. The experiment had more effect for Spanish American households than for other households and it appears to have raised their moving rate to equal that of other participants.

5. Households in housing that was crowded or without basic facilities at the beginning of the experiment were more likely to move than other households.

Households living in units that lacked basic facilities or did not have enough rooms had a significantly higher probability of moving than other households at both sites. Controlling for the effect of other factors, crowded households had a probability of moving that was 9 percentage points higher than that of other households in

Pittsburgh and 7 percentage points higher in Phoenix. Living in a unit without basic facilities increased the probability of moving 8 percentage points in Pittsburgh and 5 in Phoenix.

6. Possibilities for intervening to increase mobility among searchers appear limited. The most promising possibility is the provision of information on availability of units to households looking for unusually large units and to households searching outside their own neighborhoods. Larger allowance offers may also have some effect.

   Search problems do not appear to have kept many households from moving. Most households that searched for new housing had moved or were still searching at the end of two years. Households that reported search problems (such as discrimination) worked harder in order to find new units. Although problems of this type did not keep searchers from moving, they may have delayed the process. Households that looked for larger units or for housing outside their original neighborhoods were less likely to move than other searchers.

   Households that reported financial problems were also less likely to move. The frequency with which searchers reported financial difficulties does not appear to have been related to amount of their payment. However, there is some evidence that larger allowance payments led to high mobility rates for Percent of Rent households in Phoenix and for Housing Gap households that did not already meet requirements in Pittsburgh. (Larger payments appear to reduce mobility rates for Housing Gap households that already met requirements in Pittsburgh.)

Source of Statements

The sources of summary statements are indicated below.

1. For mobility prior to the experiment, see Figure 3-1 and the discussion which accompanies it. For a discussion of mobility rates of low income renters by geographic region, see Appendix X.

2. For experimental effects among households active after two years, controlling for the influence of other factors, see Figures 4-1, 4-2, and 4-3 in Chapter 4. Figure 4-5, showing the effect of the payment amount, most strongly suggests the negative effect in Pittsburgh for Housing Gap households that already met requirements at enrollment. Table 6-1 and Appendix XI present results which combine the two sites. For results that control for the effect of attrition, see Tables IV-1, IV-3, and IV-19 in Appendix IV. Note that when terminees are included in the sample in Phoenix the experimental effect for Housing Gap households that met requirements at enrollment increases to 0.28 and the effect for households that did not meet requirements decreases to 0.03.

3. See Table 6-2 in Chapter 6, which summarizes findings on the effect of age.

4. See Table 3-2 in Chapter 3 for results on dissatisfaction and Table 6-2 in Chapter 6, which summarizes findings for minority households. Appendix IV gives results for minority households which control for the effect of attrition.

5. See Table 6-3 in Chapter 6, which summarizes the effect of housing conditions.

6. See Figure 5-1 and the accompanying discussion for the conclusion that most searchers moved or continued to search. See Tables 5-3 and 5-4 for the effect of search problems on whether households moved and the number of units that were seen by movers. See Figures 4-4 and 4-5 for the estimated effects of payment amounts.

CHAPTER 1
INTRODUCTION

This is one of a series of technical reports on the Housing Allowance Demand Experiment. The Demand Experiment was designed to provide information on how low-income households use housing allowance payments. Evaluation is based on two years of observation at two sites; Pittsburgh (Allegheny County), Pennsylvania and Phoenix (Maricopa County), Arizona. The experiment offered allowance payments to approximately 1,200 households selected at random in each area. Several different allowance plans were tested involving different payment formulas and housing requirements. In addition, a control group of approximately 500 households was maintained at each site. This report discusses the residential mobility rate observed for households in the Demand Experiment and the impact of the experiment on whether these households sought and moved to new housing.[1]

Mobility is an important issue in a housing allowance program because of its key role in housing and neighborhood change. Although a household can improve its unit by upgrading, substantial changes often involve moving. Further, moving is the only way for households to change their neighborhoods. Thus the effect of the allowance offer on mobility helps to determine whether households obtain better housing or better neighborhoods as a result of the allowance. If the allowance offer can induce households to move, then it can induce or accelerate housing and neighborhood change. If the allowance does not induce households to move, then it can have an effect only for those households that would move anyway. In this case, housing and neighborhood changes occur at a pace set by normal mobility rates.

In addition, mobility was specifically linked to qualification for payments in several of the allowance plans tested in the experiment. In these plans, households were required to live in housing meeting certain requirements

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[1] This report builds on the results of a preliminary analysis of mobility during the first year of the experiment, as reported in Weinberg et al. (1977).

before they could receive an allowance payment. Households living in units that did not meet these requirements had to meet the requirements by upgrading their current unit or by moving to a new unit in order to participate.

Because of its role in housing and neighborhood improvement, as well as in participation in the experiment, mobility has a potential impact on the success of the housing allowance in providing equal opportunities for all eligible households. If some groups of eligible households are less willing or less able to move, then these households may show less housing improvement or be less likely to participate than more mobile households. Such differences in mobility are especially important if they result from difficulties or obstacles to moving that a housing allowance program might alleviate by such actions as supplying information about the housing market, assisting with childcare or transportation, or providing equal opportunity support.[1]

The primary question addressed in this report is whether the Housing Allowance Demand Experiment had any effect on households' mobility. Control households give an indication of what mobility rates would have been without the program. Although the various allowance plans tested offered different incentives to move, one might expect overall mobility to be higher for Experimental households than for Control households. Table 1-1 shows that although this was the case at both sites, the difference was significant only in Phoenix. Sixty-two percent of the Experimental households in Phoenix moved during the experiment, compared to 53 percent of Control households. In Pittsburgh, 38 percent of Experimental and 35 percent of Control households moved. An examination of the experiment's effect on mobility cannot stop with a simple comparison of Experimental and Control households, however. Each type of allowance plan tested must be analyzed individually, as each provided somewhat different incentives for households to move.

Two different types of plans were tested in the Demand Experiment--Percent of Rent plans and Housing Gap plans.[2] The Percent of Rent plans gave each

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[1]The mobility of black households in Pittsburgh is addressed in a separate technical report. See Vidal (1978).

[2]See Appendix I for a more detailed discussion of the design of the experiment.

Table 1-1

TWO-YEAR SEARCHING AND MOVING RATES FOR
EXPERIMENTAL AND CONTROL HOUSEHOLDS
(Sample Size in Parentheses)

	PERCENTAGE SEARCHING	PERCENTAGE OF SEARCHERS MOVING	OVERALL PERCENTAGE MOVING
	PITTSBURGH		
Experimental households	59% (912)	64% (536)	38% (912)
Control households	57 (318)	62 (182)	35 (318)
	PHOENIX		
Experimental households	71 (718)	87** (508)	62** (718)
Control households	68 (280)	78 (189)	53 (280)

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

** Chi-square test for the difference between Experimental and Control households significant at the 0.01 level.

participating household a rebate on rent equal to a fixed proportion of its monthly rent, varying from 20 to 60 percent for the different plans. Housing Gap plans used a different payment formula. In these plans, the monthly payment was intended to make up the gap between the cost of modest standard housing and the fraction of a household's income that might reasonably go for rent. Households were required to live in housing that met certain housing requirements in order to receive payments.[1] Households' incentives to move were quite different, depending on their allowance plan and, for Housing Gap households, on whether they were living in units that met the housing requirements when they entered the program.

For Percent of Rent households, the allowance essentially reduced the cost of housing by the amount of the rebate. Households could use the rebate to help pay for their current unit or to allow them to afford a better unit. Housing Gap households whose units met requirements when they enrolled also began to receive payments immediately. The increase in money available for rent may have motivated these households to move to a new unit, but the new unit had to meet the requirements if they were to continue to receive payments. Housing Gap households that did not meet the requirements initially were in a very different situation. They did not become full participants and receive allowance payments (other than a monthly $10 payment for filling out reporting forms) until their housing met the requirements. Some households were able to do this by upgrading their units. However, most households had to move in order to take advantage of the allowance offer.[2]

The allowance may also have induced some households to stay rather than to move. For households in the Percent of Rent plans and households already meeting requirements in the Housing Gap plans, the allowance payment could have allowed them to remain in a unit that they could no longer have afforded

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[1] Requirements were of two types. The first type required that the household live in a unit which passed a housing standard. The second required that the household spend at least a certain amount for rent each month. For purposes of comparison, there was also a small group of households in an "Unconstrained" plan. These households received payments according to the Housing Gap payment formula but were not asked to meet any housing requirements.

[2] Many households were living in units with such basic deficiencies that they probably could not have been upgraded to meet requirements. See Budding (1978).

without assistance. In addition, if Housing Gap households that already met requirements found it difficult to find other units that also met the requirements, the allowance may have led them to stay in their original units. Thus, the mobility observed among allowance recipients may reflect the net results of offsetting incentives to move.

Many factors besides the housing allowance offer are likely to have influenced a household's decision to move during the experiment. Chapter 2 summarizes the factors that other studies have found to be related to mobility and proposes a model of households' mobility during the Demand Experiment.

In Chapter 3, the model of Chapter 2 is used to analyze the mobility history of households before they entered the Demand Experiment, as well as their satisfaction with their housing and plans for changing it when they entered the program, and their mobility during the experiment. Groups of households that were less likely to move than others are identified.

Chapter 4 analyzes the effect of the allowance offer on the probability of moving during the experiment, using the model of Chapters 2 and 3 to control for nonexperimental factors. The effect of the experiment on mobility is analyzed in detail for the various allowance plans and, for Housing Gap households, by whether they met the housing requirements of the program at the time they enrolled.

Chapter 5 considers two stages at which the experiment may have affected mobility--the decision to search for new housing and the decision to move to one of the units found. Chapter 5 also examines the search process to see if some households had more difficulties in searching for a new unit than others. Chapter 6 summarizes the effect of the experiment and the effect of other factors on mobility.

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CHAPTER 2

A MODEL OF MOBILITY IN THE DEMAND EXPERIMENT

A model of households' mobility during the Demand Experiment is presented in this chapter. This model separates the moving process into several stages, and it proposes a number of factors, in addition to the effect of the experiment, that may have influenced households' choices at each stage. Understanding how factors outside the experiment affected mobility is useful for several reasons. Most obviously, if Experimental and Control households differ in certain demographic or other characteristics, then these differences must be taken into account before the experiment's effect can be properly evaluated. Even if Experimental and Control households have the same general characteristics, including these characteristics in a model may improve the precision of estimates of the experiment's effect. Also, it may be informative to assess the magnitude of experimental effects relative to the effects of other factors. Finally, understanding nonexperimental factors influencing mobility is useful in assessing possible actions or policies other programs might use to increase households' response by affecting mobility.

Residential mobility is a complex phenomenon which has been studied from different perspectives in a variety of disciplines. Although some factors, such as age, consistently have been found to be related to mobility, explanations of why they are important have varied. The first section of this chapter summarizes the variables that have been found to recur in mobility studies.[1] The second section then presents a fairly eclectic model of mobility and discusses various reasons why the factors it includes are expected to influence mobility. The third section explains the strategy of the analysis, and the fourth discusses definition and measurement of variables.

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[1] For a review and synthesis of the literature on intra-urban mobility, see Quigley and Weinberg (1977) and Appendix III of Weinberg et al. (1977). For a comprehensive review of literature on migration see Ritchey (1976).

2.1 FACTORS PREVIOUSLY FOUND TO BE RELATED TO MOBILITY

Table 2-1 summarizes those factors found to recur in mobility studies for which measures are available in the Demand Experiment.[1] These variables have been divided into four groups: life cycle factors, housing and neighborhood factors, social bonds, and other household characteristics.[2] Each category describes a set of variables having theoretical or empirical support. The table also indicates the usual direction of their relationship to mobility.

The importance of life cycle stages and changes in life cycle has been documented repeatedly in mobility research. Age of household head has been found to be negatively related to moving. Although marital status and number of children have been found to relate to mobility, the direction of those relationships is not consistent. The presence of children, for example, has been found to increase mobility in some studies and to retard it in others. However, changes in either marital status or number of children consistently have been found to be positively related to moving.

Among housing and neighborhood factors, households living in poor housing have been found to be more likely to move than those in better housing, as might be expected. Mobility has been found to be positively related to crowding and negatively related to unit and neighborhood quality.

Social bonds have been found to decrease mobility. Households with ties to family or friends have been found to be less mobile than those without such ties. Long-term residents are also less likely to move than recent movers.

Other characteristics of a household have been found to affect mobility, but the relationships are not always consistent. Although the sex and race of the household head have been related to mobility in some studies, there is no clear agreement on the direction of the relationship. Prior mobility consistently has been found to be positively related to mobility--that is, households that have moved frequently in the past continue to do so.

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[1] See Appendix II for specific references.

[2] Dissatisfaction with unit or neighborhood and moving plans have also been found to be related to mobility. These factors are discussed later as stages of the process by which households move.

Table 2-1

FACTORS PREVIOUSLY FOUND TO BE RELATED TO MOBILITY
FOR WHICH MEASURES ARE AVAILABLE IN THE DEMAND EXPERIMENT

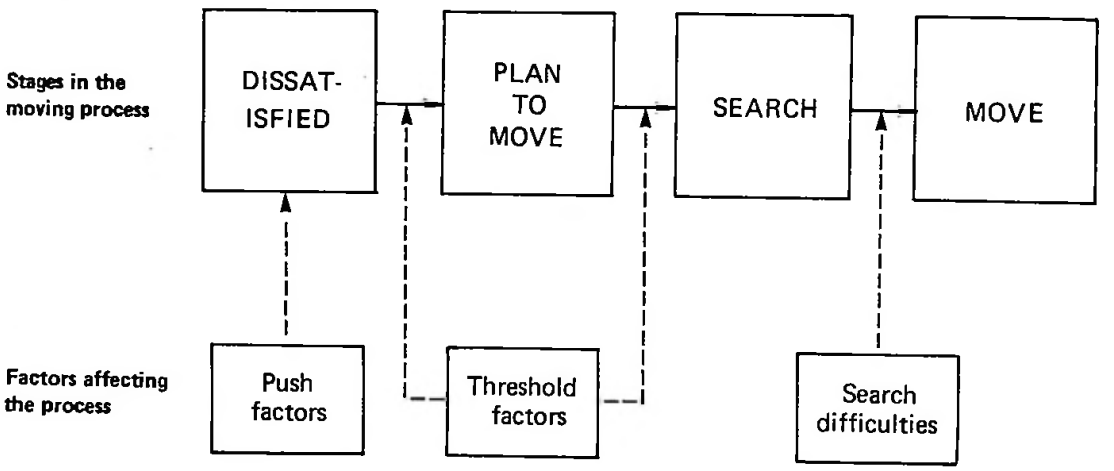
TYPE OF VARIABLE	FACTORS RELATED TO MOBILITY (Usual direction of relationship)
Life cycle factors	Age of head (-) Marital status of head (?) Changes in marital status of head (+) Number of children (?) Changes in the number of children (+)
Housing and neighborhood factors	Crowding and household density (+) Unit quality (-) Neighborhood quality (-)
Social bonds	Ties to family, friends, community (-) Duration of residence (-)
Other household characteristics	Sex of head (?) Prior mobility (+) Race of head (?) Education of head (+) Income (+) Occupation of head (+)

Indicators of socioeconomic status, such as income, education, and occupation, have been related to mobility in a number of studies, with households having a relatively high socioeconomic status being more mobile than those with a lower status.

2.2 A MOBILITY MODEL

The conceptual scheme used to analyze the mobility of households in the Demand Experiment is based on an early suggestion by Rossi (1955) as well as more recent work by Speare (1974) and Bach and Smith (1977). As shown in Figure 2-1, the model distinguishes four stages in the moving process: dissatisfaction, plans to move, searching for new housing, and moving.

Figure 2-1
MODEL OF MOBILITY



In this model, a certain level of dissatisfaction is necessary before a household will consider a move. Once this threshold has been reached, the household will translate its desire to move into an intention or plan leading to subsequent mobility. Thus, in the Demand Experiment, it is expected that dissatisfaction in a household would lead to plans to move, which in turn

would lead the household to search and finally to move. This relationship is not expected to be perfect, however. For one thing, the threshold at which dissatisfaction is translated into moving plans, or plans are translated into action, may vary from one household to the next. For instance, a household with a strong attachment to its neighborhood or a household that has found searching difficult in the past may put up with a level of dissatisfaction that would spur another household to move.[1] Second, some households move because they are forced to (because of demolition or fire, for example), even if they are satisfied with their current housing.[2] Also, a household with no intention of moving may decide to move if it happens to come across an exceptional bargain.[3]

In addition, dissatisfaction--measured by responses to survey questions--is not a perfect indication of the feelings on which households base their decisions. A household's level of dissatisfaction with its unit or neighborhood may vary from day to day (depending, for example, on how well the heat has been working or how many robberies have occurred in the neighborhood recently), so that a single survey response may not accurately reflect the long-term feelings on which the household is likely to base its actions. The same argument applies to moving plans: not all households will decide to follow through on the plans they indicated when they were interviewed.

How Nonexperimental Factors Might Influence Mobility

The process by which all these factors enter the proposed model of mobility cannot be determined from previous studies. Most investigations have not attempted to deal simultaneously with all these variables, and different studies have suggested different explanations for the effects of the same

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[1] Note that in this conceptualization of the moving process, a household's satisfaction with its unit is defined relative to the available alternatives. Thus a household's financial resources and the available alternative housing help to determine its satisfaction.

[2] During the experiment, 9 percent of households in Pittsburgh and 8 percent of those in Phoenix reported being forced to leave their homes because they were evicted, the unit was taken over for urban renewal or highway construction, the unit was condemned, or it was destroyed by fire or flood.

[3] For further discussion of "windfall" moves see Vidal (1978).

variable. For example, it is clear that a household's mobility decreases with the age of the household head. Migration studies that use a labor-mobility or human-capital approach often explain this relationship in terms of cost, suggesting that the costs of moving increase with age, since an individual's financial and subjective investments in a particular location increase over time. In contrast to this view, mobility studies that emphasize the importance of life cycle factors suggest that age is an indication of life cycle state rather than a direct influence on mobility. Under this reasoning, households move to adjust to life cycle changes, such as getting married, having children, or having children leave home. Elderly households are less likely to experience these life cycle changes, so they have less reason to move.

This report considers three different ways in which the variables usually found to affect mobility can exert an influence (see Figure 2-1). They may act as push factors which create dissatisfaction; they may change the threshold at which a household plans to move or searches for housing; or they may affect the search.

Push factors lead a household to be dissatisfied with its unit or neighborhood: in particular, crowded or unsatisfactory housing conditions, a change in number of children, or a change in marital status might be expected to make a household dissatisfied with its current housing. It is also possible that households that have had difficulty in the past in obtaining desirable housing because of disadvantage in the housing market--such as minority households or those with low incomes--might be more likely than others to be dissatisfied.

A given level of dissatisfaction will not always have the same effect. Other factors may affect the threshold at which a household's dissatisfaction is translated into moving plans, or the threshold at which moving plans are translated into searching, by acting as deterrents to moving. Households with strong social bonds in a particular location may be relatively unlikely to plan to move or to search even if they are dissatisfied. Factors that increase the expected difficulty or the psychic or financial costs of moving might also make a household less likely to act on dissatisfaction. Age of household head, number of children, and whether the household is headed by a single person or a couple might contribute to the expected difficulty of moving. It is possible that discrimination or limited opportunities for

minority households would cause them to be more reluctant than others to attempt to move. By this logic, households with strong social ties, elderly households, minority households, households with a large number of children, and households headed by a single individual would be expected to be less likely to plan to move than other households at the same level of dissatisfaction, and less likely actually to move once they planned to do so. Previous mobility gives an indication of how a given household has translated dissatisfaction into action in the past. Recent movers, having shown that they are willing to move, might be expected to be more likely to act on dissatisfaction than households that have lived in the same place for a long time.

Finally, nonexperimental factors may affect mobility by increasing the difficulty of finding a unit once a household decides to move and begins to search. Households that find it hard to go out and look at units or to find an appropriate unit might be expected to be less likely to move than other searchers. All of the variables mentioned above as relating to the expected difficulty of moving--age of household head, minority status, number of children, and marital status of head--may also contribute to the actual difficulties a household encounters once it decides to search.

How the Housing Allowance Might Influence Mobility

In addition to the variables discussed above, the housing allowance offer made to households in the Demand Experiment is expected to have influenced their mobility during the experiment. As was discussed in Chapter 1, the experiment offered two different types of incentive for households to move: increased income that could be spent for housing, and, for Housing Gap households that did not initially meet the experiment's housing requirements, an incentive to move to a new unit in order to qualify for payments.

The housing allowance offer may have had an effect at any point in the mobility process. First, the extra money available for rent may have caused households to become dissatisfied with the housing in which they were living when they entered the experiment, since they now had the money to afford better units.[1] Second, the experiment may have increased the probability

[1] In economic terms, the allowance would induce a disequilibrium for some households.

that households already dissatisfied or planning to move would act on their dissatisfaction or plans. Finally, the extra money may have made the search for housing easier for households, since they could afford a wider range of housing than would have been possible without the allowance.

Analyzing the moving process stage by stage indicates at what points the experiment influenced households' behavior; it also suggests where a similar program might find a potential for affecting mobility. If almost all dissatisfied households made plans to move and then searched for new housing, then not much information is gained by analyzing each of these stages separately; the initial momentum of its own dissatisfaction would appear to be all the incentive needed to carry a household through the entire process. On the other hand, if a number of households were dissatisfied but did not decide to move, or planned to move but did not search, then there is a possibility that some of these households might take advantage of the allowance in order to move.

Similarly, if most searchers moved, then distinguishing searching and moving as two stages does not contribute much information. On the other hand, if some households searched but did not move because of problems they encountered, then it is possible that some sort of program assistance during the search process might have led households to take greater advantage of the allowance offer. This possibility will be examined further in Chapter 5.

2.3 ANALYSIS STRATEGY

The model described above is more complicated empirically than the simple schematic of Figure 2-1 might indicate. Formally, Figure 2-1 could be summarized by asserting that a household moves if its dissatisfaction (D) is greater than threshold factors (T) and search difficulties (S)--that is,

$$(1) \qquad \pi_i = \text{Prob}\ (D_i > T_i + S_i)$$

where

π_i = probability that the i^{th} household moves

D_i = dissatisfaction of i^{th} household

T_i = threshold factors for the i^{th} household, and

S_i = search difficulties for the i^{th} household.

A complete theoretical development of Equation (1) requires that constructs be developed to measure D_i, T_i, and S_i in comparable units. This is possible in theory. Economics, for example, provides a formal basis for expressing the incentive to move (the push factors leading to dissatisfaction) in dollar terms directly comparable to the financial costs of search and moving.[1] Actual monetization of the incentive to move, however, requires prior knowledge of the household's demand function for housing and other goods (the way in which its expenditures on housing and other goods vary with its income and market prices) and involves its expected length of stay in a new unit, as well as expectations as to future income, prices, and needs.

Moreover, many of the presumed threshold factors and search difficulties are not financial. Households may be attached to their neighborhood and unit both for more or less objectively ascertainable reasons such as the efficiency gained from acquaintance with transportation routes, service locations, and so forth, and for more subjective attachments arising from sentimental associations with particular events, the ties of friendships, and the comforts of familiarity. While such psychological factors can (in economic theory at least) be monetized, in practice, no theoretical construct has been devised to do so.[2]

Such measurement issues are not the only problems in developing a complete theoretical specification based on the schematic of Figure 2-1. As commented earlier, some moves are forced by fire, demolition, or eviction. Some may occur not because the household sets out to find another unit but, for example, because friends or relatives tell them of an exceptional bargain. Furthermore, the steps indicated in Figure 2-1 take time. Observed connections between, for example, crowding and subsequent mobility may be attenuated either because the analysis does not allow enough time for the moving response to occur or because other variables or indeed the extent of household crowding change before a move occurs.

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[1] The dollar value of a move in economic theory is the maximum amount that a household could pay for moving and still be as well off in its new (optimal) unit as it would be if it did not move. For a preliminary analysis of mobility in the Demand Experiment using this approach, see Friedman and Weinberg (1978), Appendix VII.

[2] Thus in practice, the monetary equivalent would be inferred from the observed effects of psychologically related variables on mobility.

This is not to say that attempts to develop and estimate a completely specified theoretical model would not be useful. Given the theoretical difficulties involved, however, the specific objectives of this report seemed better addressed by a more frankly empirical approach.

The Central purpose of this report is to determine the effect, if any, of the experimental allowance programs on household mobility. For this purpose, control and experimental comparisons provide direct estimates of the effect, and other variables act as covariates. Potential covariates were selected based on available data and the results of previous research. These were then tested, where possible, by seeing whether they had affected mobility prior to the experiment and therefore were likely to continue to be important during the experiment.

In addition to estimating the effect of the experimental programs, there is also some interest in determining whether various demographic groups, such as minorities or the elderly, seem to be especially unlikely to move and thus less likely to change their housing in response to an allowance. Again, the first approach taken is to test variables for these groups directly, rather than attempting to explore the way in which demographic variables relate to intermediate constructs such as search or moving costs.

While this sort of admittedly ad hoc and empirical approach may yield good estimates of experimental effects and demographic differences (and better estimates than a poorly developed theoretical model), it does not offer much insight into the process by which households come to move. It is unclear, for example, whether elderly households move less often because they tend to have formed more attachments to their unit and neighborhood, find the process of learning a new neighborhood more difficult, find search more difficult, or are less likely to experience changes in household size, income, or job location that would make a move desirable. This means that the sort of direct analysis described above offers relatively little insight into the extent to which a program could influence mobility apart from the incentives directly tested by the experiment.

Some attempt to develop such insights has been made by analyzing not only mobility but the intermediate steps of being dissatisfied, planning to move, and searching.

First to be examined are the factors related to households' dissatisfaction with their units and neighborhoods at the time they enrolled. Dissatisfaction is estimated as a function of the factors shown in Table 2-1.[1] Next, households' moving plans at enrollment are estimated as a function of dissatisfaction as well as the factors in Table 2-1. It is expected that dissatisfaction will have a strong relationship to moving plans, but other factors are included because they may affect the threshold at which a household translates dissatisfaction into a plan to move.[2] Similarly, moving plans at enrollment are expected to show a strong relationship to mobility during the experiment, but other factors are also expected to affect the probability of a household's actually moving. The probability of moving during the experiment is estimated as a function of dissatisfaction, moving plans, and the factors shown in Table 2-1.

Estimating satisfaction, moving plans and actual mobility as three separate stages is useful for several reasons. First, variables such as satisfaction and moving plans may have such a powerful effect on mobility that they obscure the effects of other variables of interest in a multivariate analysis. For example, if all dissatisfied households move, and minority households are more likely than nonminority households to be dissatisfied, then including dissatisfaction in an equation estimating the probability of moving may obscure the effect of minority status. For this reason, it might be desirable to exclude dissatisfaction from the equation. On the other hand, in developing an equation to control for other factors in assessing experimental effects, it is desirable to include variables such as dissatisfaction, that have a strong relationship to mobility. Estimating the probability of being dissatisfied and the probability of planning to move in separate analysis stages allows an assessment of any patterns which may be obscured by their inclusion in a final equation for the probability of moving.

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[1] Changes in number of children and changes in marital status are not included because these variables are measured over the duration of the experiment and are not available for households at the time they enrolled.

[2] As previously mentioned, the experiment also could have affected a household's dissatisfaction or moving plans. However, these variables were measured at the Baseline Interview, before households learned about the allowance offer. (Respondents were told that they were participating in a housing survey.) Any effect of the experiment on satisfaction or plans should have occurred after the information was collected.

It is also important to learn at what stage various factors affect mobility in order to assess how program changes might affect mobility rates. If almost all dissatisfied households moved then there would be little reason to expect that program changes would affect mobility unless they affected satisfaction levels. On the other hand, if some groups of households were dissatisfied or planned to move but did not actually move, then there is a possibility that some type of program assistance in searching for or moving to units might have allowed these households to move in order to take full advantage of the allowance offer.

It should be recognized at the onset, however, that the intermediate stages may not be clearly separated from each other. Thus, for example, households that expect to have difficulties in finding a unit may be less likely to begin search or to plan to move in the first place. They may also, given their perception of the lack of readily available alternatives, be more satisfied with their unit than they would be if they thought that searching would be easy.

To answer the central question--whether the experiment had an effect on mobility--the analysis compares the probability of moving for different groups of Experimental households to that of Control households, taking the influence of other factors into account. The stage or stages in the model at which experimental effects occurred is also of interest. After testing for overall experimental effects on mobility, the analysis breaks mobility into two stages--the probability of searching for new housing and the probability of searchers' moving--and tests for an experimental effect at each stage.

Throughout the report, results are presented separately for Pittsburgh and Phoenix. Mobility levels were so much higher in Phoenix than in Pittsburgh that it seemed worthwhile to examine demographic patterns separately to see if demographic effects might account for this difference. It also seemed likely that responses to the experiment would vary because of the large differences in normal mobility. In fact, despite the difference in overall mobility levels, demographic and experimental effects were quite similar at the two sites. Although site differences are sometimes suggestive, they are not significant; results could be pooled for Pittsburgh and Phoenix without significant loss of explanatory power. Similarities in results for the two sites are pointed out in the discussions which follow, and Chapter 6 presents the combined site results to provide a convenient summary.

2.4 DEFINITION AND MEASUREMENT OF VARIABLES

Information on all the factors shown in Table 2-1 is available for households in the Demand Experiment. Table 2-2 shows how the variables measuring these factors have been defined and gives summary statistics for each variable.[1] Almost all the information is taken from two sources: the Baseline Interview, which was conducted before eligible households were told about the experiment and asked if they wanted to enroll, and the Initial Household Report Form, which collected the information necessary to enroll households in the experiment a month or two after their Baseline Interviews.

Life cycle factors have been defined using data on households at the time they entered the program. Data on marital status and number of children were collected again at the end of two years; this information can be used to identify households that changed in either of these respects.

Among housing factors, information is available on crowding as well as on unit quality. Crowding has been measured by the perceptions of the household rather than by a quantitative measure such as persons per room.[2] Perceived crowding is indicated by response to a Baseline Interview question that asked whether the household had enough rooms in its unit. Unit quality is based on an evaluation of a household's residence conducted at the time it enrolled. Households living in units lacking basic facilities are considered to have been in poor housing.[3] Some information on the neighborhood characteristics of Demand Experiment households is available, but preliminary analysis did not show that these measures had a relationship to mobility, once other factors were considered, and they have not been included in the final analysis.[4]

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[1] More detailed definitions are given in Appendix III.

[2] Both were tested and perceived crowding showed a stronger relationship to mobility.

[3] The housing quality measure used requires that a unit have complete plumbing and kitchen facilities, some type of heating equipment, and a roof and exterior structure with no sign of sagging or buckling. This housing measure is considerably less stringent than the physical standard some Housing Gap (Minimum Standards) households were required to meet in order to qualify for payments.

[4] Analysis of neighborhood quality concentrated on the characteristics of neighborhoods as they were perceived by households that lived there. Although several perceived quality components had a bivariate relationship to mobility in the expected direction, only one--positive feelings toward neighbors--retained its significance when other factors were taken into account. The measure of positive feelings towards neighbors has been included in the model as a measure of social bonds to the neighborhood.

Table 2-2

DEFINITIONS AND DESCRIPTIVE STATISTICS
FOR VARIABLES USED IN THE ANALYSIS

VARIABLE	DEFINITION	RANGE		DISTRIBUTION (valid cases)		SOURCE
		Pittsburgh	Phoenix	Pittsburgh	Phoenix	
Moving Behavior						
Move	1 = Moved during the two years of the experiment 0 = Did not move	0-1	0-1	Moved.....37% Did not move.63% (1,230)[a]	Moved.....59% Did not move.41% (998)[a]	Initial Household Report Form, Baseline and Periodic Interviews
Search	1 = Searched during the two years of the experiment 0 = Did not search	0-1	0-1	Searched.....58% Did not search.....42% (1,230)[a]	Searched.....70% Did not search.....30% (998)[a]	Initial Household Report Form, Baseline and Periodic Interviews
Life Cycle Factors						
Age of household head	Continuous (in decades)	1.8-9.0	1.8-9.0	Mean = 4.42 s.d. = 1.89 (1,601)[b]	Mean = 3.98 s.d. = 1.85 (1,734)[b]	Initial Household Report Form
Number of children	Continuous	0-8	0-8	Mean = 1.47 s.d. = 1.58 (1,601)[b]	Mean = 1.50 s.d. = 1.65 (1,731)[b]	Initial Household Report Form
Change in number of children	1 = Number of children changed during two years of experiment 0 = No change occurred	0-1	0-1	Change.....21% No change....79% (1,239)[a]	Change.....26% No change....74% (999)[a]	Household Report Forms
Change in marital status	1 = Marital status not the same at enrollment and at the end of two years 0 = Marital status the same at enrollment and at the end of two years	0-1	0-1	Change..... 8% No change....92% (1,239)[a]	Change.....11% No change....89% (1,001)[a]	Household Report Forms

Table 2-2 (continued)

VARIABLE	DEFINITION	RANGE		DISTRIBUTION (valid cases)		SOURCE
		Pitts-burgh	Phoenix	Pittsburgh	Phoenix	
Other Household Characteristics						
Female head of household	1 = Head of household is female 0 = Head of household is male	0-1	0-1	Female.....55% Male.....45% (1,601)[b]	Female.....36% Male.....64% (1,734)[b]	Initial Household Report Form
Black head of household	1 = Head of household is black 0 = Head of household is not black	0-1	0-1	Black.....23% White.....77% (1,603)[b]	Black..... 7% White.....93% (1,734)[b]	Baseline Interview
Spanish American head of household	1 = Head of household is Spanish American 0 = Head of household is not Spanish American	0-1	0-1	Not applicable	Spanish American.....24% Not Spanish American..76% (1,734)[b]	Baseline Interview
Years of education of household head	Continuous	0-20	0-20	Mean = 10.24 s.d. = 2.70 (1,569)[b]	Mean = 10.01 s.d. = 3.66 (1,701)[b]	Baseline Interview
Per capita income	Net income divided by household size--continuous (in thousands)	0.28-6.68	0.20-6.24	Mean = 1.62 s.d. = 0.80 (1,559)[b]	Mean = 1.81 s.d. = 0.94 (1,709)[b]	Initial Household Report Form
Number of moves in three years prior to the experiment	Continuous	0-7	0-7	Mean = 1.00 s.d. = 1.25 (1,601)[b]	Mean = 2.11 s.d. = 1.86 (1,729)[b]	Baseline Interview
Housing and Neighborhood Factors						
Perceived crowding	1 = Respondent said that enrollment unit did not have enough rooms 0 = Respondent said that enrollment unit had enough rooms	0-1	0-1	Crowded.....23% Not crowded.....77% (1,602)[b]	Crowded.....32% Not crowded..68% (1,731)[b]	Baseline Interview
Living in a unit with basic facilities	1 = Unit has basic facilities 0 = Unit does not have basic facilities	0-1	0-1	Has facilities...79% Does not...21% (1,588)[b]	Has facilities...71% Does not...29% (1,698)[b]	Initial Housing Evaluation Form

Table 2-2 (continued)

VARIABLE	DEFINITION	RANGE		DISTRIBUTION (valid cases)		SOURCE
		Pittsburgh	Phoenix	Pittsburgh	Phoenix	
Social Bonds						
Positive feelings toward neighbors	Index derived from several related questions (see Appendix III). Ranges from 1 (least positive feelings) to 6 (most positive feelings).	1-6	1-6	Mean = 3.82 s.d. = 1.72 (1,603)[b]	Mean = 3.20 s.d. = 1.66 (1,734)[b]	Baseline Interview
Length of residence in unit at enrollment	Continuous (in years)	0.0-56.3	0.0-34.7	Mean = 4.6 s.d. = 6.2 (1,598)[b]	Mean = 2.1 s.d. = 3.3 (1,721)[b]	Baseline Interview
Dissatisfaction	1 = Dissatisfied with unit or neighborhood at enrollment 0 = Satisfied with both unit and neighborhood	0-1	0-1	Dissatisfied..42% Satisfied...58% (1,600)[b]	Dissatisfied..38% Satisfied...62% (1,732)[b]	Baseline Interview
Predisposition to Move	1 = Would move with $50 increase in money available for rent 0 = Would upgrade or stay without upgrading	0-1	0-1	Would move...58% Would not move.....42% (1,514)[b]	Would move...63% Would not move.....37% (1,611)[b]	Baseline Interview
Program Factors						
Experimental household	1 = Member of any of the experimental treatment groups 0 = Control household	0-1	0-1	Experimental..73% Control.....27% (1,603)[b]	Experimental..70% Control.....30% (1,734)[b]	Treatment group assignment
Calculated payment amount at enrollment	Amount of subsidy for which household qualified at enrollment	10-140	10-221	Mean = 48 s.d. = 25 (1,147)[c]	Mean = 64 s.d. = 35 (1,206)[c]	Initial Household Report Form

[a]SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

[b]SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

[c]SAMPLE: Experimental households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

Two measures are available of households' social bonds to the neighborhoods they lived in when they enrolled. First, an index has been developed that combines several questions about feelings towards neighbors; the more positive feelings a household has, the higher its rating on the index.[1] Second, the length of time a household had been living in its unit when it entered the program also gives an indication of attachment to the neighborhood. Households that had been living in the same unit for a long time were likely to have stronger ties to the location than households that had recently moved.[2]

All the other household characteristics listed in Table 2-1 have been included in the analysis except occupation of head of household. Information on occupation was not relevant to a large part of the Demand Experiment sample, as many households were not working during the experiment. Those who were working did not vary a great deal in occupational level, and preliminary analysis did not indicate that this factor was important.

In addition to the division of households into an Experimental group and a Control group, a number of other experimental variables are important to the analysis. Experimental households can be separated into those in the Percent of Rent payment plans and those in the Housing Gap plans. Housing Gap households can be further divided according to whether they met the experiment's housing requirements for their group when they enrolled. All these experimental variables are expected to have affected mobility during the experiment.

Information is available on each stage of the mobility process--dissatisfaction, plans to move, search, and move. Households were asked about their satisfaction with their units and their neighborhoods at the Baseline Interview. At the same time, they were asked whether they would move if they had $50 more to spend on rent every month. Responses to this question cannot be strictly interpreted as moving plans because the question was qualified by the mention of an increase in money available for rent.

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[1] The interview questions used are indicated in Appendix III.

[2] Recent work on the Demand Experiment also has indicated that long-term residents enjoy better "deals" on their units, that is, higher quality for rent paid, than recent movers. See Merrill (1977).

However, responses do give some indication of a household's predisposition toward moving at the time it entered the program.

Variables that measure behavior over time--such as whether a household searched for a new unit or moved during the experiment--present a special problem. Not all households enrolled in the experiment remained active over its entire two-year duration. The mobility of households that left the program is not always known. For this reason, the major sample used for the analysis of mobility during the experiment is the sample of households that remained active for the whole period.[1] To guard against the possibility that using this reduced sample introduces a bias, additional analysis has been performed for the sample of all enrolled households using whatever information is available about the mobility of households that terminated.[2]

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[1] Households that bought their own homes and those living in subsidized housing are excluded. Households that moved between administration of the Baseline Interview and the Initial Household Report Form are also excluded. Much of the analysis relates information from one of these sources to information from the other. For example, dissatisfaction, recorded at the time of the Baseline Interview, is related to dwelling unit quality, evaluated using the Housing Evaluation Form completed along with the Initial Household Report Form. If the household moved during this period, the two instruments refer to two different dwelling units and the information cannot be related.

[2] See Appendix IV.

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CHAPTER 3

ESTIMATION OF THE MOBILITY MODEL

This chapter estimates the mobility model presented in Chapter 2. All of the factors that influenced the mobility of Demand Experiment households are identified, other than the effect of the allowance offer. The effect of the allowance, controlling for the influence of these other factors, is analyzed in Chapter 4.

Because mobility has a key role in determining response to the experiment, it is important to assess whether some groups of households were less likely to move than others. If a move is necessary for a household to meet housing requirements or improve its housing in general, then households that are less likely to move may be less likely to participate or less likely to use the allowance to obtain better housing.

The chapter first examines the mobility of households before the experiment began. The factors that influenced mobility prior to the experiment are likely to continue to do so unless the allowance offer changed their impact. Also, examining pre-experimental mobility expands the time horizon of the analysis and may reveal the long-term influence of factors not apparent during the two-year duration of the experiment.

Next, each stage of the mobility model is estimated to determine the important factors at each point. First, dissatisfaction with unit or neighborhood at enrollment is estimated as a function of the demographic and housing factors discussed in Chapter 2. Next, predisposition to move at enrollment is estimated as a function of these same factors, controlling for the effect of dissatisfaction. Finally, the probability of moving during the experiment is estimated as a function of demographic and housing factors, controlling for dissatisfaction and predisposition to move.

Analysis of each stage of the model is useful in determining whether households did not move during the experiment because they were unwilling to move, or because they were unable to move. This distinction is important in assessing whether program actions might affect mobility. If there are no effective barriers to mobility, so that almost all of the households that are dissatisfied plan to move and carry out their plans, then there

is little evidence that program changes could influence mobility. Households will move, and take advantage of the allowance offer, at a rate set by their own feelings about their housing. On the other hand, if some of the households that are dissatisfied or plan to move do not move, this suggests the presence of obstacles to mobility that a program might try to help households overcome. Analysis of the factors that affected mobility at each stage of the model can indicate which groups of households might have needed program assistance in order to take full advantage of the housing allowance.

3.1 MOBILITY HISTORY OF HOUSEHOLDS IN THE EXPERIMENT

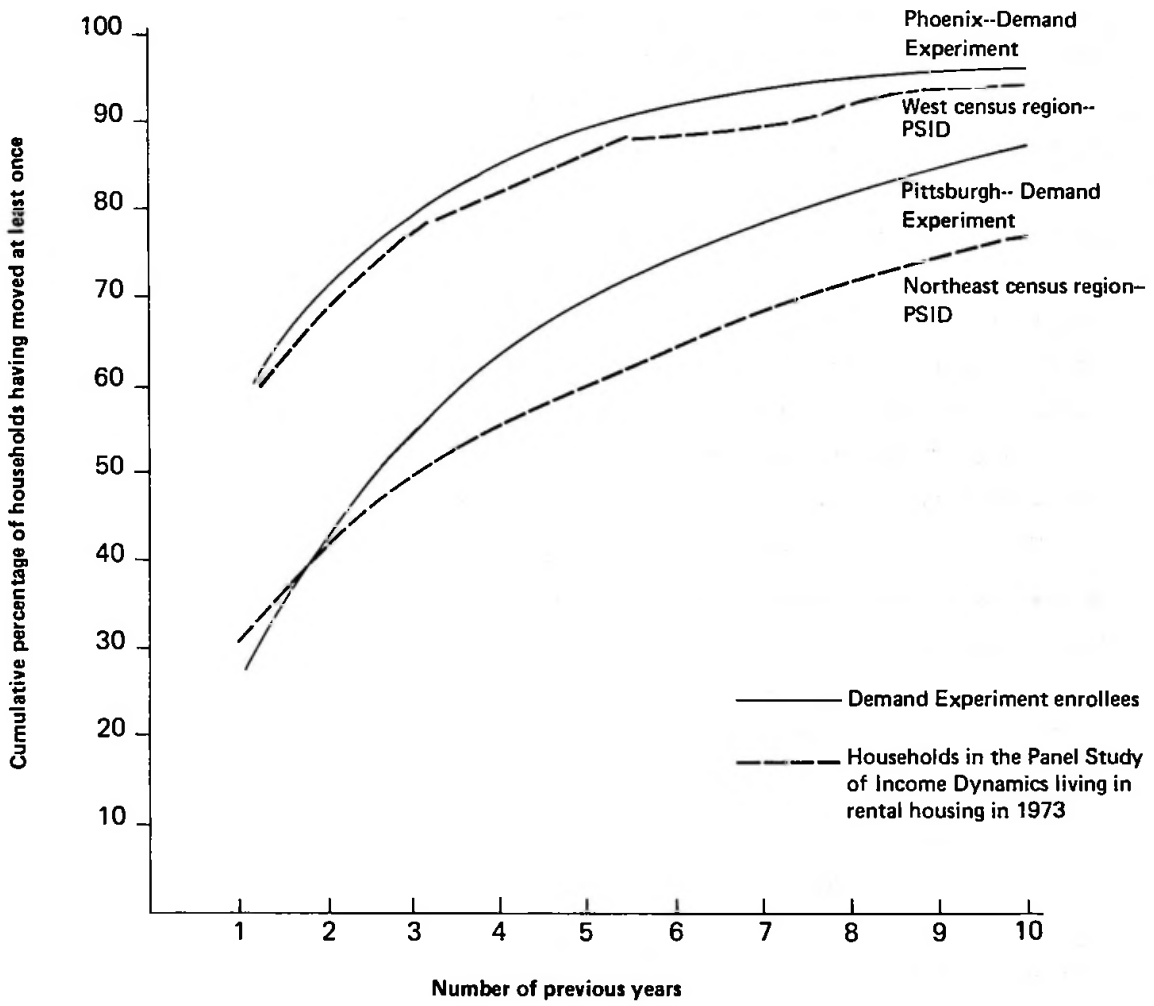
The mobility history of households in the Demand Experiment before they enrolled is useful as an indication of "normal" mobility among low-income renters. If normal mobility is low, this might limit the rate at which households in the experiment improve their housing or meet the requirements for receiving payments. Pre-experimental mobility also shows moving rates over a much longer period than the two-year duration of the experiment. Thus, households' mobility patterns before the experiment indicate the moving rates that might be expected over time in the absence of a housing allowance program.

Two types of information are available on the mobility history of households in the Demand Experiment. First, when they enrolled in the program, households were asked how long they had been living in their house or apartment. Second, they were asked how many times they had moved in the three years preceding the experiment. These two questions identify both long-term stayers and households that had moved several times just before the experiment.

An overview of the mobility of households for 10 years before the Demand Experiment can be developed from their responses to the question "How long have you lived here, in this house/apartment?" asked at enrollment. From this information the number of households that had moved at least once during a given number of years prior to the experiment can be derived. For example, all households that had been living in their units five years or less are counted as having moved at least once in the five years before the experiment. Figure 3-1 shows the cumulative proportion of households that had moved at least once over the 10 years preceding the experiment. Almost all households at both sites had moved at least once during 10 years. Particularly striking in Figure 3-1 is the difference in the pre-experimental mobility of households

Figure 3-1

CUMULATIVE PERCENTAGE OF HOUSEHOLDS HAVING MOVED AT LEAST ONCE DURING THE TEN PREVIOUS YEARS --DEMAND EXPERIMENT ENROLLEES AND HOUSEHOLDS IN THE PANEL STUDY OF INCOME DYNAMICS (PSID)



DEMAND EXPERIMENT SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial Household Report Form and Baseline Interview.

MICHIGAN PANEL STUDY OF INCOME DYNAMICS SAMPLE: Households in the 1973 sample living in rental housing in 1973 (weighted).

in Phoenix and Pittsburgh. Forty-three percent of the households in Pittsburgh had moved in the two years before the experiment, compared to 71 percent in Phoenix. Seventy percent of households in Pittsburgh had moved at least once in the five years prior to the experiment, compared to 88 percent in Phoenix.

It is interesting to compare the mobility history of households enrolled in the Demand Experiment with that of other renter households in the same geographic area. For purposes of comparison, Figure 3-1 shows the mobility of households in the Michigan Panel Study of Income Dynamics (PSID) for a period of ten years previous to 1973. Results are shown for renter households in the Northeast census region (containing Pittsburgh) and the West census region (containing Phoenix). A comparison of the mobility history of enrollees in the Demand Experiment with that of households in the PSID sample shows that Demand households were not atypical of other households in their region. In Phoenix, results are nearly identical for Demand and PSID households. In Pittsburgh, results over the two most recent years are similar for both groups, but Demand Experiment enrollees have a history of somewhat greater mobility over the entire ten-year period.

There are several possible reasons why Demand Experiment enrollees in Phoenix had a history of greater mobility than enrollees in Pittsburgh. First, the difference reflects the overall difference between the two regions as shown by the PSID sample; mobility was generally higher in the West than in the Northeast. Second, rental housing may have been more plentiful in Phoenix than in Pittsburgh.[1]

More generally, higher mobility among renters is associated with a greater turnover in rental units even if these units are never vacant. Also, many Phoenix residents had recently moved to the city, so the population as a

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[1]Vacancy rates in Phoenix appear to have increased at approximately the time that the experiment began. In 1970 the census rental unit vacancy rate was 6 percent in Allegheny County (Pittsburgh) and 7 percent in Maricopa County (Phoenix)(see Abt Associates, 1974). By 1974, rental vacancy rates were reported at 14.4 percent in Phoenix and 5.1 percent in Pittsburgh (U.S. Department of Commerce, 1976). However, differences in vacancy rates do not account for differences in mobility at the two sites. The Census of Housing shows that 57 percent of the households occupying rental units in Phoenix (Maricopa County) in 1970 had moved into their units in the previous year, compared to 30 percent in Pittsburgh (Allegheny County), even though the difference in vacancy rates at the two sites in 1970 was only one percentage point.

whole would be expected to be more mobile than the population of Pittsburgh.[1] Differences in the normal mobility of households in Pittsburgh and Phoenix should be kept in mind in an analysis of experimental effects. At a site where it was easier or more usual to move, the incentives offered by the experiment might be expected to have had a greater effect.[2]

Some groups of households are expected to have been more mobile prior to the program than others. The variables found to be important in other studies, as discussed in Chapter 2, are likely to have influenced households' mobility before the experiment. Of those variables, only life cycle factors and other household characteristics appear likely to have been stable enough over time for data collected at enrollment to be meaningfully related to mobility prior to the experiment.[3] Life cycle factors include age of household head and number of children. Other household characteristics include the sex[4] and race of the household head and the household's socioeconomic status, as indicated by income and the educational level of the head of the household. Based on previous studies, age would be expected to have a negative relationship to prior mobility and education and income to have a positive one. The expected direction of the relationships of number of children and sex and race of household head to mobility is not clear.

Mobility before the experiment was measured by the length of time (in months) that a household had been living in the same unit when it enrolled in the

[1] According to census figures, the population of Allegheny County (Pittsburgh) suffered a net loss of 1 percent between 1960 and 1970. In that decade, the population of Maricopa County (Phoenix) showed an increase of 46 percent, of which 18 percent was natural increase and 28 percent was due to net immigration. See Abt Associates (1974).

[2] A more extensive discussion of site differences in mobility is given in Appendix XI.

[3] Although life cycle and other household characteristics were measured at enrollment, many of them would be expected to have been constant over several years prior to the experiment or to have changed for only a few households. Unit and neighborhood characteristics and social bonds, in contrast, are not likely to have remained constant for a substantial period prior to the experiment.

[4] Sex and marital status of household head are almost identical variables in the Demand Experiment. Households headed by a couple were defined to have a male head, following census convention. Single heads of households were almost always female in the experiment. Sex of household head rather than marital status has been included in the analysis but the two variables are so similar that results can be interpreted as applying to either group.

experiment. Although length of time between moves would be a more precise measure, length of tenure should give some indication of which households moved frequently prior to the experiment and which ones seldom moved. Life cycle factors and other characteristics measured at enrollment might have changed recently for some households, but the information collected about them is still a good indication of which population groups were least mobile before the experiment.

Table 3-1 shows the results of a multiple regression relating the length of time a household had lived in its unit at enrollment to life cycle factors and other household characteristics. The most important variable at both sites was age. Length of residence had a strong positive relationship to age, indicating that older households were less mobile than younger ones before the experiment. Black households in Pittsburgh and Spanish American households in Phoenix also were significantly less mobile than other households prior to the experiment. In addition, households headed by women had lived in their units significantly longer than those headed by men in Phoenix, but not in Pittsburgh. Number of children does not show a significant relationship to prior mobility. Surprisingly, neither does income or education, despite their importance in other studies.[1]

Over a period of five years or so, moving does not in itself appear to be a substantial obstacle to households that wish to take advantage of a housing allowance program to change their housing. Most households move in any case in the course of that many years. Some households do not, however; in particular, it appears that older households, minority households, and possibly households with female heads are relatively less likely to move in the normal course of events. It is possible that moving might act as a barrier to taking full advantage of an allowance offer for these households.

3.2 SATISFACTION AMONG HOUSEHOLDS ENTERING THE PROGRAM

The mobility model in Chapter 2 suggests that a household's dissatisfaction with its unit or neighborhood is the first stage in a move. Previous studies do not provide much guidance on how different variables could be expected to

[1] The unimportance of these variables may be due to lack of variation. Because households were eligible to participate in the experiment only if they were within relatively low income limits, the range of income and education observed is not large.

Table 3-1

RELATIONSHIP OF LENGTH OF TENURE AT ENROLLMENT
(IN MONTHS) TO LIFE CYCLE FACTORS AND OTHER HOUSEHOLD CHARACTERISTICS

INDEPENDENT VARIABLE	PITTSBURGH			PHOENIX		
	COEFFICIENT	BETA[a]	t-STATISTIC	COEFFICIENT	BETA[a]	t-STATISTIC
Constant	-25.338	NA	NA	-13.236	NA	NA
Life Cycle Factors						
Age of household head (in decades)	16.156	0.416	12.67**	9.159	0.424	15.09**
Number of children	0.425	0.009	0.29	0.839	0.035	1.20
Other Household Characteristics						
Female head of household	-1.489	-0.010	0.41	3.657	0.044	1.83†
Black head of household	8.154	0.047	1.89†	5.998	0.038	1.60
Spanish American head of household	NA	NA	NA	8.893	0.095	3.60**
Years of education of household head	1.012	0.038	1.34	-0.198	-0.018	0.63
Per capita income of household (in thousands)	-1.007	-0.011	0.35	0.040	0.001	0.03
F Statistic for Equation (Significance)		43.00**			51.58**	
Sample Size		1,462			1,516	
Mean of Dependent Variable		57.02			27.20	
Adjusted R^2		0.147			0.189	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial Household Report Form, Baseline Interview, and payments file.

a. The betas shown are standardized regression coefficients, that is, the regression coefficients when both the dependent and independent variables are standardized to have unit variance. These standardized coefficients may be used to compare the relative effects of independent variables measured in different units.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

influence satisfaction, but a number of factors seem likely to have an impact. First, living in a poor unit or in crowded conditions seems likely to make a household dissatisfied. Social ties to the community might be expected to increase a household's likelihood of satisfaction.

No clear relationship between dissatisfaction and age, race, sex of household head, income, or education has been found in other studies. These factors may contribute indirectly to dissatisfaction by affecting how successful the household has been in obtaining satisfactory housing in the past. If households that face disadvantages in the housing market (such as black or Spanish American households, households headed by women, and lower-income households) have had trouble finding satisfactory places to live in the past then they could be expected to have been dissatisfied with their housing at the time they entered the experiment. On the other hand, they may have responded to their difficulties by lowering their expectations.

Prior mobility and length of residence are expected to have a complex relationship to satisfaction. One way to look at prior mobility is as an indication of a household's willingness to respond to dissatisfaction by moving. Thus households that have not moved in many years may be satisfied, or they may be unwilling to move even if they are not.

Table 3-2 presents the results of estimating dissatisfaction at enrollment as a function of the variables found to affect mobility, as discussed in Chapter 2. The dependent variable is a household's dissatisfaction with either its unit or its neighborhood before it entered the program. Forty-one percent of the enrollees in Pittsburgh and 34 percent in Phoenix expressed some dissatisfaction with their units or their neighborhoods or both. Becuase of the dichotomous nature of the dependent variable (dissatisfied with either unit or neighborhood or satisfied with both), the estimation method used is logit analysis.[1] Table 3-2 presents the coefficient estimates for each independent variable, as well as the t-statistic associated with each coefficient. The partial derivative shown represents the change in the probability of being dissatisfied, given a unit change in an independent variable.[2]

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[1] Logit analysis is generally considered more appropriate in such a situation than Ordinary Least Squares. See Appendix V for a discussion of how to interpret logit results.

[2] This derivative is evaluated at the mean of the other independent variables. See Appendix V.

Table 3-2

LOGIT ESTIMATION OF DISSATISFACTION WITH UNIT OR NEIGHBORHOOD AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.518	1.28	NA	-0.085	-0.23	NA
Life Cycle Factors						
Age of household head (in decades)	-0.070	-1.68†	-0.017	-0.111	-2.89**	-0.025
Number of children	0.056	1.42	0.014	0.038	1.13	0.009
Other Household Characteristics						
Female head of household	0.173	1.72†	0.042	0.063	0.55	0.014
Black head of household	0.275	2.43*	0.067	0.542	2.51*	0.122
Spanish American head of household	NA	NA	NA	-0.385	-2.90**	-0.087
Years of education of household head	0.009	0.39	0.002	0.012	0.66	0.003
Per capita income of household (in thousands)	-0.170	-1.94†	-0.041	-0.189	-2.53*	-0.043
Number of moves in three years prior to the experiment	-0.092	-1.94†	-0.022	0.039	1.11	0.009
Housing and Neighborhood Factors						
Perceived crowding	1.153	9.68**	0.279	1.057	9.40**	0.239
Living in a unit with basic facilities	-0.592	-4.51**	-0.143	-0.429	-3.61**	-0.097
Social Bonds						
Positive feelings toward neighbors	-0.108	-3.42**	-0.026	-0.088	-3.28**	-0.020
Length of residence in enrollment unit (in years)	0.016	1.67†	0.004	0.089	4.91**	0.020
Likelihood Ratio (Significance)		180.14**			188.27**	
Sample Size		1444			1480	
Mean of Dependent Variable		0.412			0.345	
Coefficient of Determination		0.092			0.099	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial Household Report Form, initial Housing Evaluation Form, Baseline Interview, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independant variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

The factors related to households' dissatisfaction with their housing when they entered the experiment proved quite similar at the two sites. Both perceived crowding and unit quality had the expected relationship to satisfaction. Perceived crowding had a large, positive relationship to dissatisfaction at both sites.[1] Households in units with basic facilities were less likely to express dissatisfaction than those in units without these facilities.[2] Households' positive feelings toward neighbors had a positive relationship to their satisfaction with their housing at both sites.

Older households were significantly[3] more satisfied with their housing and neighborhoods than younger households. It is not clear why this should be so, but this finding is consistent with the lower mobility rates observed for elderly households in other studies. The elderly may be more satisfied because they are in somewhat better housing, or they may have more social ties in their communities because they have lived there longer, but these factors are controlled for by the other variables in the equation.[4]

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[1]The following convention has been used in discussions of the magnitude of the effects of the independent variables on the probability of moving. For dichotomous variables, variables with a partial derivative of 0.01 to 0.05 are referred to as having a "small" effect, those from 0.05 to 0.15 are referred to as having a "moderate" effect, and those greater than 0.15 are referred to as having a "large" effect. For continuous variables, the problem is more complex since these variables are measured on different scales. For continuous variables, a range has been calculated, from plus two to minus two standard deviations from the mean of the variable. This range is then multiplied by the partial derivative (change in the probability of moving given a change of one unit in the independent variable) to give an indication of the effect of the variable, across its usual range, on the probability of moving. (See Appendix VI for the ranges used for continuous variables.) Effects for continuous variables are then classified as "small," "moderate" or "large" in the same way as for dichotomous variables.

[2]The finding that poor housing conditions have a strong relationship to dissatisfaction is particularly interesting in that it supports the validity of the facilities judged to be basic. These requirements were much less stringent than those that Housing Gap Minimum Standards households were required to meet in order to receive payments; see Appendix III.

[3]The test level for significance used in the report is 0.10. All significance levels are based on two-tailed tests.

[4]It is possible that the elderly lowered their expectations in order to be satisfied with a situation they could not easily change. This is an alternative explanation for many of the results on dissatisfaction--rather than dissatisfaction's leading households to make a change, inability to change led them to decide they were satisfied. It is not possible to distinguish these two hypotheses by testing; the analysis assumes that dissatisfaction led to change, rather than vice versa.

Most of the factors expected to have affected a household's success in finding suitable housing in the past show the predicted relationship to present dissatisfaction. Black households were significantly less likely to be satisfied than white households at both sites. Households with the lowest per capita incomes were significantly less satisfied than others at both sites. Households headed by women were more likely to be dissatisfied than other households, but this result was significant only in Pittsburgh.[1] Although Spanish American households in Phoenix were expected to be more dissatisfied because of their presumed disadvantage in the housing market, the opposite result was found; these households were significantly less likely than others to be dissatisfied. Number of children and education did not have a significant relationship to dissatisfaction at either site.

Length of residence had a significant positive relationship to dissatisfaction at both sites; long-term residents were more likely to be dissatisfied than households that had moved recently. Households that had remained in their units for a long period thus do not appear to have done so because they were more satisfied than other households.

The only significant relationship that was not in the same direction at the two sites involves the number of times a household moved in the three years prior to the experiment. In Pittsburgh, households that had been more mobile before the experiment were more likely to be satisfied than other households. In Phoenix, the variable has the opposite sign but is not significant. These findings are consistent with the interpretation suggested earlier that the number of times a household moved before the experiment indicates its willingness to move in response to dissatisfaction. High prior mobility means a household is unlikely to remain in a situation with which it is dissatisfied; hence the negative sign in Pittsburgh. In Phoenix, although there are a few long-term residents, most households move readily, so that once length of tenure is controlled for, prior mobility bears little relationship to dissatisfaction.

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[1] Note that members of this group, in addition to being single household heads, were also much more likely to be receiving some form of public assistance than other households.

3.3 PREDISPOSITION TO MOVE AMONG HOUSEHOLDS ENTERING THE PROGRAM

The mobility model in Chapter 2 suggests that moving plans are an intervening step between dissatisfaction and actual mobility. Not all dissatisfied households will plan to move, nor will all satisfied households plan to stay, but the relationship between dissatisfaction and moving plans is expected to be a strong one. Other independent variables may affect it by changing the threshold at which dissatisfaction is translated into a plan to move.

The information available on the moving plans of enrollees in the Demand Experiment is more correctly interpreted as indicating predisposition to move than actual plans. Because the question asked whether respondents would move if they had $50 more per month to spend on rent, responses give an indication of a household's interest in moving but cannot be strictly interpreted as moving plans.

There are several reasons why a household might be less predisposed to move, even after dissatisfaction is taken into account. First, some households may expect the process of searching and moving to be especially difficult. The elderly, for example, as well as households with a number of children, or those with single (female) or minority heads might find the prospect of moving more demanding than do other households. Elderly persons may have disabilities which make the process more difficult. Households with children face childcare problems, which are particularly acute if the household has a single head. Also, the presence of school age children may pose the additional problem of transferring the children to another school. Black or Spanish American households might be reluctant to consider a move because they expect to encounter discrimination, or because they feel that patterns of residential segregation may make it difficult for them to find a satisfactory unit.

On the other hand, households may be less predisposed to move because of attachment to their surroundings. Households with positive feelings toward their neighbors and households that have been living in the same unit for a long period might be less predisposed to move for this reason, even after dissatisfaction is taken into account. Long-term residents may feel attached to a location even though they are not completely satisfied with it; the psychic costs of changing a situation which has been stable for a long period may be high. Also, there is evidence that households that have remained in their units for a long period are receiving a discount in rent,

that is, paying less for the same facilities, than households that have recently moved (Merrill, 1977).[1] These psychic or financial costs of moving may make these households less likely to consider a move even if dissatisfied. Positive feelings toward neighbors may operate in the same way as length of residence, that is, they may increase the psychic costs of moving, making the household less predisposed to move.

Table 3-3 presents the results of a logit estimation of predisposition to move among enrollees, including their dissatisfaction with their units and neighborhoods at enrollment as well as the other independent variables found to be related to mobility in other studies. Although dissatisfaction is the strongest predictor of predisposition to move, a number of other variables were found to have an effect in addition to the effect of dissatisfaction.[2]

Table 3-3 shows that many, but not all, of the independent variables had the expected relationship to predisposition to move. Among the factors which might raise the expected difficulty of moving, age of household head, number of children and sex of household head had significant relationships in the expected directions at both sites. Contrary to expectation, black households and Spanish American households were no less predisposed to move than other households at either site.

Households with positive feelings toward their neighbors were significantly less predisposed to move at both sites. Length of residence in enrollment unit had a significant, negative relationship to predisposition to move in Pittsburgh, but not in Phoenix.

Perceived crowding had a significant, positive relationship to predisposition to move at both sites. Crowding appears not only to have made households more likely to be dissatisfied, but also to have made them more likely to consider changing their housing even after dissatisfaction is taken into account.

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[1] This discount was found to be greater in Phoenix than in Pittsburgh.

[2] The equation was also estimated without dissatisfaction, to see if the effects of some of the other independent variables which might have been acting through dissatisfaction would increase in importance. This did occur for some variables, notably Spanish American head of household and per capita income in Phoenix. See Table VII-2 in Appendix VII.

Table 3-3

LOGIT ESTIMATION OF PREDISPOSITION TO MOVE AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	1.523	3.52**	NA	2.085	5.26**	NA
Life Cycle Factors						
Age of household head (in decades)	-0.223	-5.03**	-0.055	-0.256	-6.44**	-0.061
Number of children	-0.096	-2.46*	-0.024	-0.154	-4.16**	-0.037
Other Household Characteristics						
Female head of household	-0.327	-2.88**	-0.080	-0.402	-4.16**	-0.096
Black head of household	-0.162	-1.26	-0.040	-0.134	-0.60	-0.032
Spanish American head of household	NA	NA	NA	-0.109	-0.73	-0.026
Years of education of household head	-0.007	-0.28	-0.002	-0.032	-1.68†	-0.008
Per capita income of household (in thousands)	-0.017	-0.21	-0.004	-0.057	-1.44	-0.013
Number of moves in three years prior to the experiment	-0.011	-0.21	-0.003	-0.012	-0.44	-0.003
Housing and Neighborhood Factors						
Perceived crowding	0.997	8.27**	0.244	1.026	7.06**	0.244
Living in a unit with basic facilities	0.071	0.52	0.017	-0.008	-0.05	-0.002
Social Bonds						
Positive feelings toward neighbors	-0.128	-4.75**	-0.031	-0.134	-3.91**	-0.032
Length of residence in enrollment unit (in years)	-0.024	-2.23*	-0.006	-0.006	-0.33	-0.001
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	1.509	13.60**	0.369	1.439	11.48**	0.343
Likelihood Ratio (Significance)		317.11**			305.57**	
Sample Size		1363			1369	
Mean of Dependent Variable		0.573			0.609	
Coefficient of Determination		0.170			0.167	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial Household Report Form, Initial Housing Evaluation Form, Baseline Interview, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

It is important to distinguish predisposition to move from dissatisfaction, since not all dissatisfied households will be predisposed to move. There is a possibility that program actions or policies might be important at this stage; some households may be reluctant to consider a move, even if they are dissatisfied, because they expect to encounter difficulties in moving. These difficulties might be ones that could be alleviated by program assistance. In the case of long-term residents and households with attachments to their neighbors, it does not seem likely that program assistance would make these households more likely to consider moving. For older households, households with female heads and households with a number of children, there is a possibility that some type of program assistance with locating a new unit and moving might make these households more likely to consider changing their housing situation if they were dissatisfied with it.

3.4 MOBILITY DURING THE EXPERIMENT

In the model discussed in Chapter 2, the actual move made by a household is the final stage of a process which starts with dissatisfaction, progresses to moving plans, and finally leads the household to move. This section analyzes the final stage of this process and identifies the factors, other than the allowance offer, which were related to whether a household moved during the two years of the Demand Experiment.[1] Although dissatisfaction and predisposition to move, measured at enrollment, are expected to have a strong relationship to whether a move occurred during the experiment, a number of other factors may have an additional effect at this final stage.

Assessing the effect of variables other than the allowance offer on mobility during the experiment is important because a household's willingness or ability to move plays a key part in whether it will be able to take advantage of an allowance offer. If some groups of households are less willing or able to move than others, then they may be less likely to use the allowance to improve their housing or neighborhoods or less likely to participate at all if they have to meet housing requirements in order to do so. Evidence on mobility prior to the experiment showed that certain population subgroups --notably, older and minority households--had a history of lower mobility.

[1] This discussion combines search and moving--two conceptually different stages. They are analyzed separately in Chapter 5, which considers the role of search difficulties in success in moving.

Other groups were less predisposed to move, even after satisfaction with unit and neighborhood was taken into account. Households in these groups represent a special concern, since they may be less likely to take advantage of the allowance offer than other, more mobile, households.

The Effect of Attrition

Measuring mobility over the two years of the experiment introduces a new problem--not all of the households enrolled remained active over the entire two year duration of the experiment. Attrition was particularly high in Phoenix, where 42 percent of the enrollees left the program before the end of two years; the attrition rate in Pittsburgh was 23 percent. Attrition and mobility were not independent phenomena; households that moved had a higher probability of dropping out of the experiment than households that did not move. The effect of attrition over time is thus to bias mobility rates downward, since more mobile households were more likely to leave the program.

Among households that remained active in the program throughout the two years, 37 percent in Pittsburgh and 59 percent in Phoenix moved to new housing. These mobility rates appear to be lower than those reported prior to the experiment. Forty-three percent of the households enrolled in Pittsburgh and 71 percent in Phoenix reported that they had moved at least once in the two years prior to the experiment (see Section 3.1). This apparent difference is due to the effect of attrition, however. If terminees are included in the sample (terminees known to have moved are counted as movers), mobility rates over two years are 42 percent in Pittsburgh and 69 percent in Phoenix, quite similar to the pre-experiment rates reported by enrollees.

Although attrition biases mobility rates downward over time, the sample of households that remained active has been used for the analysis of mobility during the experiment because information is not always available about the mobility of households that terminated.[1] However, a parallel analysis has been conducted on the sample of all enrollees, using whatever information is available about whether terminees moved. This analysis is reported in Appendix IV and any results that differ for the two samples are noted in footnotes throughout the text.

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[1] An additional reason to use the sample of households that remained active over two years is that it is difficult to interpret experimental effects on mobility for households that had left the program. See Chapter 4.

Nonexperimental Factors Affecting the Probability of Moving

Table 3-4 presents the results of estimating the probability that a household moved at least once during the experiment.[1] In addition to the variables which have already been discussed in relationship to dissatisfaction and predisposition to move, two variables have been added to capture the effects of changes in household characteristics over the two years of the experiment--change in number of children and change in marital status.[2] A variable distinguishing Experimental and Control households has also been included in the equation shown in Table 3-4. Although the effect of the experiment is not discussed until Chapter 4, it is necessary to control for experimental status when analyzing the influence of other factors on mobility.

Two general conclusions can be drawn from Table 3-4 about the factors, other than the allowance offer, that affected mobility during the experiment. First, the important factors were quite similar in Pittsburgh and Phoenix. Although mobility rates were much higher in Phoenix than in Pittsburgh, the same model appears to have been appropriate for both sites. In fact, tests showed that it is possible to pool results for the two sites without a significant loss of explanatory power, despite some small differences in demographic effects. Complete results for the pooled site equation are given in Appendix XI, and major findings are summarized in Chapter 6.

The second major conclusion to be drawn from Table 3-4 is that a number of factors have a direct effect on the probability of moving in addition to the effects of dissatisfaction and predisposition to move. In theory, variables might influence mobility directly, or indirectly, through their effects on dissatisfaction and moving plans. Variables that have only an indirect influence should not be significant when dissatisfaction and predisposition are included in the equation. Table 3-4 indicates that a number of factors have a significant relationship to mobility during the experiment even when dissatisfaction and predisposition to move are taken into account. These factors may affect dissatisfaction and predisposition to move, but this is

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[1] Note that households with missing values on any vairable are excluded. See Tables VII-14 and VII-15 in Appendix VII for the means, standard deviations and intercorrelations of the variables in the analysis using the reduced sample.

[2] Income or job changes also seem likely to influence mobility, but preliminary analysis did not indicate that they were important factors for Demand Experiment participants.

Table 3-4

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	0.022	0.04	NA	0.076	0.69	NA
Life Cycle Factors						
Age of household head (in decades)	-0.230	-4.33**	-0.053	-0.239	-6.09**	-0.059
Number of children	-0.036	-0.76	-0.008	-0.015	-0.35	-0.004
Change in number of children	0.141	1.02	0.032	0.296	1.72†	0.073
Change in marital status	0.947	3.94**	0.218	0.800	3.22**	0.196
Other Household Characteristics						
Female head of household	0.301	2.41*	0.069	0.436	3.28**	0.107
Black head of household	-0.369	-2.61**	-0.085	0.494	1.88†	0.121
Spanish American head of household	NA	NA	NA	0.003	0.02	0.000
Years of education of household head	-0.038	-1.29	-0.009	0.001	0.03	0.000
Per capita income of household (in thousands)	0.126	1.12	0.029	0.102	1.10	0.025
Number of moves in three years prior to the experiment	0.253	4.39**	0.058	0.409	7.89**	0.100
Housing and Neighborhood Factors						
Perceived crowding	0.386	2.55*	0.089	0.273	1.87†	0.067
Living in a unit with basic facilities	-0.325	-2.68**	-0.075	-0.212	-1.77†	-0.052
Social Bonds						
Positive feelings toward neighbors	-0.065	-2.08*	-0.015	-0.126	-4.08**	-0.031
Length of residence in enrollment unit (in years)	-0.051	-4.27**	-0.012	-0.029	-1.14	-0.007
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.423	3.15**	0.097	0.135	0.91	0.033
Predisposition to Move						
Would move with an increase in money available for rent	0.726	4.92**	0.167	0.604	5.34**	0.148
Program Factors						
Experimental household	0.224	1.56	0.052	0.391	3.07**	0.096
Likelihood Ratio (Significance)		209.13**			221.45**	
Sample Size		1037			795	
Mean of Dependent Variable		0.359			0.572	
Coefficient of Determination		0.154			0.204	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

not the only source of their effect on mobility.[1] Figures 3-2 through 3-5 display the effects of nonexperimental factors on mobility. Factors having significant logit coefficients at both sites are plotted. However, for simplicity, the graphs are based on simple cross-tabulations, rather than on the logit coefficients.

Among life cycle factors, both age and change in marital status have large and significant effects at both sites. These relationships are illustrated in Figure 3-2. Households with older heads are less likely to move than those with younger heads. It is interesting to note that age has an effect at each stage of the mobility process--older households were more satisfied, less predisposed to move and less likely to move. Households in which the head experienced a change in marital status were more likely to move than other households at both sites.[2] Change in number of children has a significant, positive effect in Phoenix, but not in Pittsburgh.[3]

Other household characteristics which influenced the probability of moving during the experiment were sex of household head, race of household head, and number of moves in the three years prior to the experiment (see Figure 3-3). Households headed by women were significantly more likely to move at both sites.[4] This result is somewhat surprising, since these households were

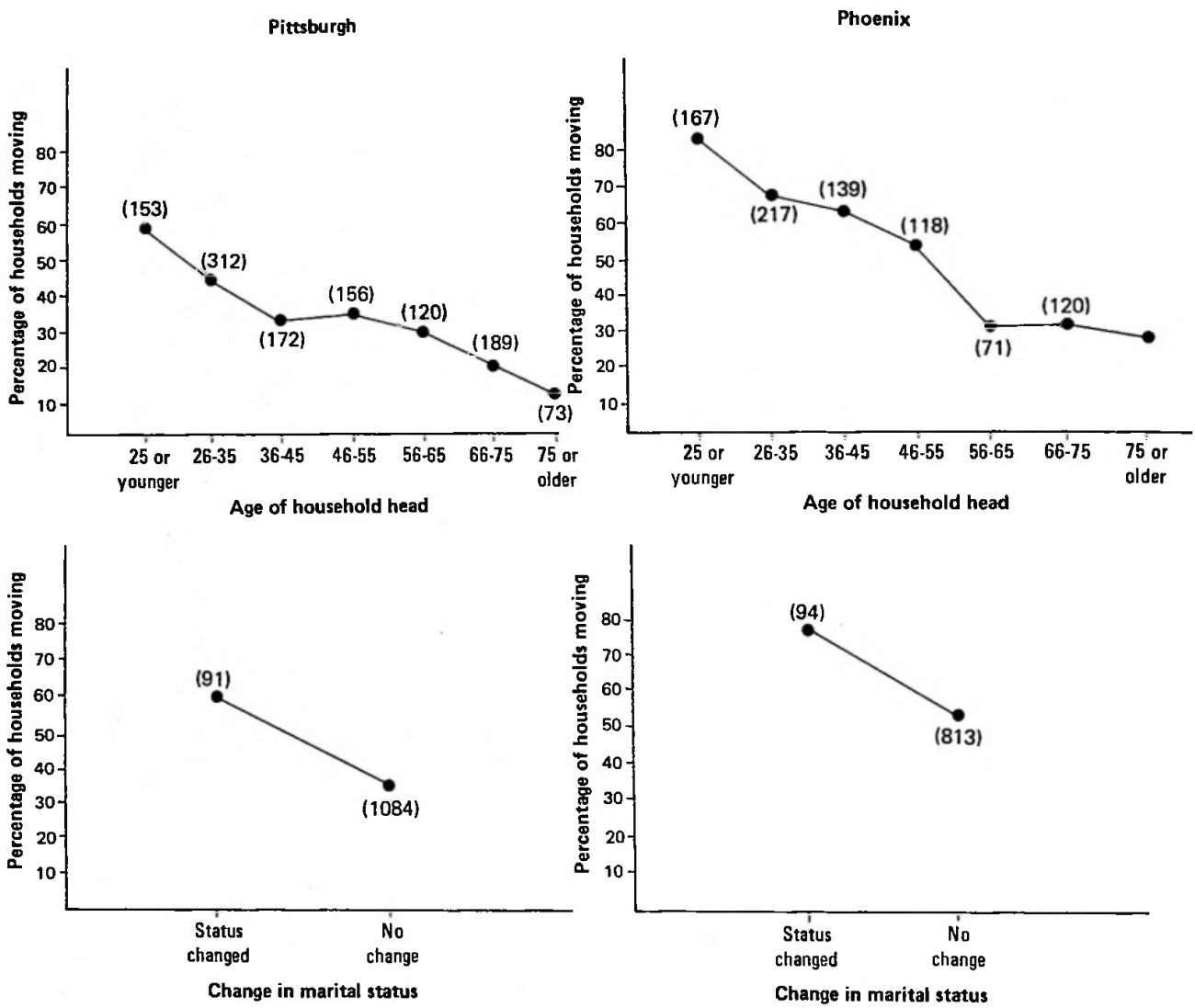
[1]This conclusion is most clearly established by a comparison of the effect of other factors in an equation which includes dissatisfaction and plans and one which does not. Results for the equation in Table 3-4 may be compared to results in Table VII-3, Appendix VII, for an equation which excludes dissatisfaction and predisposition to move. There is little difference in effects of the other independent variables in the two equations, indicating that these variables act independently of dissatisfaction and predisposition.

[2]Changes in marital status were most frequently separations rather than marriages. Since one of the parties involved must move, by definition, in a household formation or a separation, it seemed possible that including a group of households with a probability of moving that was nearly one in the equation might bias the estimates of the effects of the other variables. However, when the equation was estimated excluding households that experienced marital changes, the effects of the other independent variables did not change.

[3]Changes in number of children were predominantly decreases in Pittsburgh and increases in Phoenix. Increases in the number of children led to a greater increase in the probability of moving than did decreases at both sites, so it is not surprising that change in number of children had a significant effect in Phoenix but not in Pittsburgh.

[4]When terminees are included in the estimation, the effect of sex of head of household remains significant in Phoenix but not in Pittsburgh. This effect thus appears to be stronger in Phoenix than in Pittsburgh; see Appendix IV.

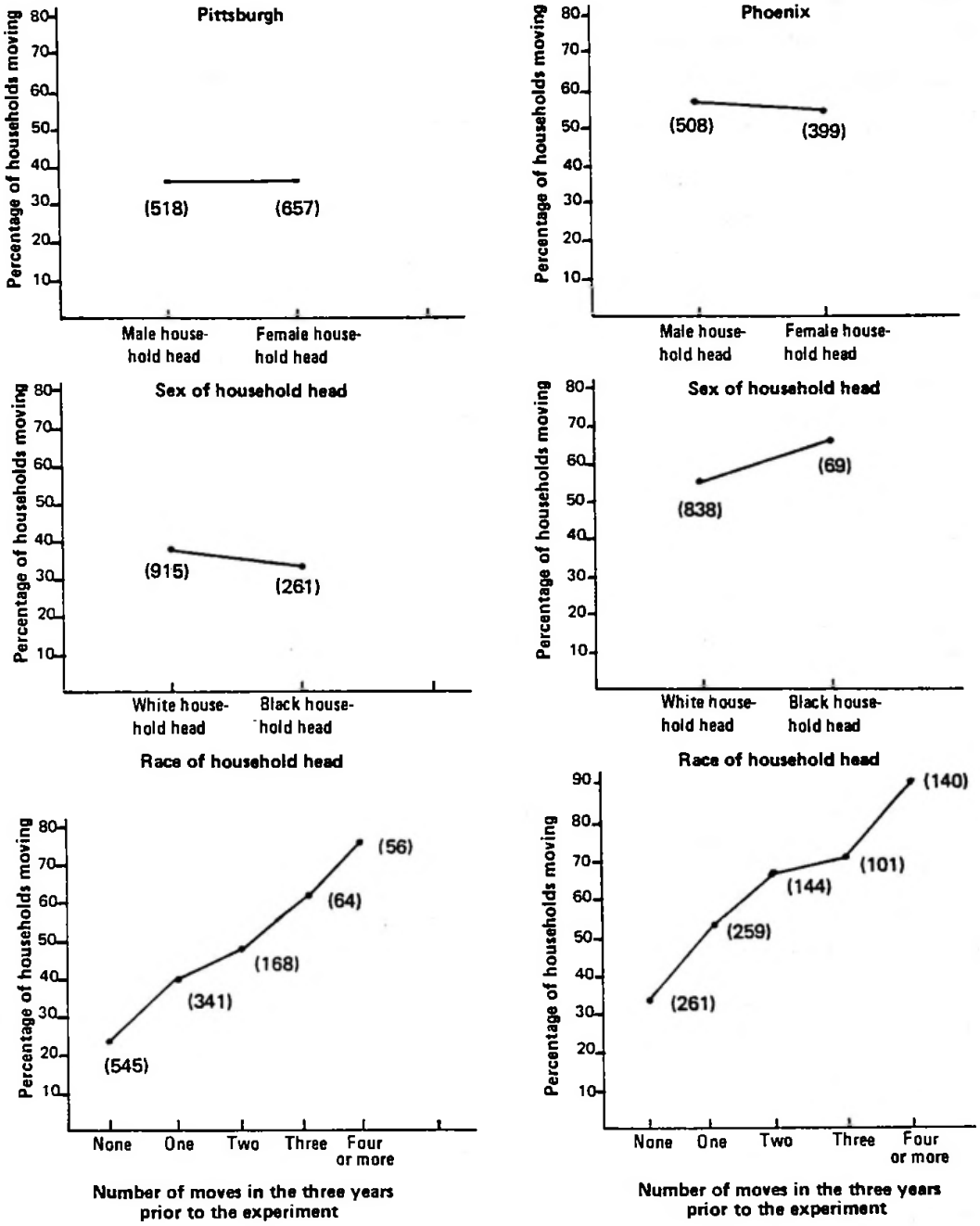
Figure 3-2
THE PERCENTAGE OF HOUSEHOLDS THAT MOVED DURING THE EXPERIMENT BY AGE AND CHANGE IN MARITAL STATUS OF HOUSEHOLD HEAD



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Figure 3-3
THE PERCENTAGE OF HOUSEHOLDS THAT MOVED DURING THE EXPERIMENT BY SEX AND RACE OF HOUSEHOLD HEAD AND NUMBER OF MOVES IN THE THREE YEARS PRIOR TO THE EXPERIMENT



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

significantly less predisposed to move at enrollment than were other households. Whatever factors made female household heads less willing to consider moving might also be expected to make them less likely to move after dissatisfaction and predisposition are taken into account but this was not the case.[1] However, Figure 3-3 shows that sex of household head did not have a bivariate relationship to mobility at either site. It is significant only when other factors are controlled for in the logit equation.

The effect of race shows puzzling differences at the two sites. Previous analysis showed that black households were more likely to be dissatisfied at both sites but no more likely to be predisposed to move, controlling for dissatisfaction. In Pittsburgh, black households were significantly less likely to move during the experiment when dissatisfaction and predisposition to move are taken into account.[2] This is consistent with the finding that black households in Pittsburgh were less mobile prior to the experiment. In Phoenix the opposite pattern occurs; black households had a significantly higher probability of moving.

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[1] One possible explanation is that this group, although less likely to plan to move, was more likely to follow through on its plans than other households. Analysis does not support this hypothesis, however: female-headed households that were predisposed to move were no more likely to move than households headed by males that were predisposed to move.

It also seemed possible that some of these households found themselves in situations in which they had to move, although they had not intended to do so. Relevant interview data do not support this second hypothesis, either. Households that moved were asked if they had been forced to do so because their unit had been condemned, because of natural disasters such as fire or flood or because they had been evicted. Ninety-six households in Pittsburgh and 67 in Phoenix indicated that they had been forced to move. When the equation was estimated excluding these households, sex of household head remained a significant factor. The only major difference in the effect of the independent variables when forced movers were excluded was that living in a unit that did not have basic facilities became a much less important factor. It seems likely that many of the households in the poorest units were those that were forced to move. See Table VII-4 in Appendix VII for results that exclude forced movers.

[2] This effect is not significant in a bivariate relationship in Pittsburgh, however. Also, when the equation is estimated on all enrollees, including households that terminated, the negative effect for black households is not significant. This suggests that attrition was not independent of race in Pittsburgh, and that part of the apparent negative effect of race on mobility in the two-year sample may be due to attrition, that is, black households that moved were more likely to leave the program than white households that moved.

Number of moves in the three years prior to the experiment had a significant, positive relationship to the probability of moving at both sites, as shown in Figure 3-3. It is interesting to note that this variable had little effect on dissatisfaction or predisposition to move, but a significant effect on the probability of moving. Experience with the housing market may make it easier for households to move; recent movers are likely to have more information on the types of units available and know more about how to search.

Although Spanish American households had a history of lower mobility prior to the experiment, they were no less likely to move during the experiment than other households. Neither income nor education had a significant effect on the probability of moving at either site. The unimportance of income and education in explaining mobility is surprising, given their importance in other studies. Because the Demand Experiment sample is limited to low-income households, the range of income and eduation observed is relatively small, which may account for their lack of significance.

Both of the housing factors in the equation had the expected relationship to the probability of moving--households living in units which lacked basic facilities[1] and households that felt their unit did not have enough rooms were significantly more likely to move than other households at both sites (see Figure 3-4).[2] It is interesting to note that the effect of these variables is not just to make households more dissatisfied, but also to make households more likely to move even after dissatisfaction is taken into account.[3]

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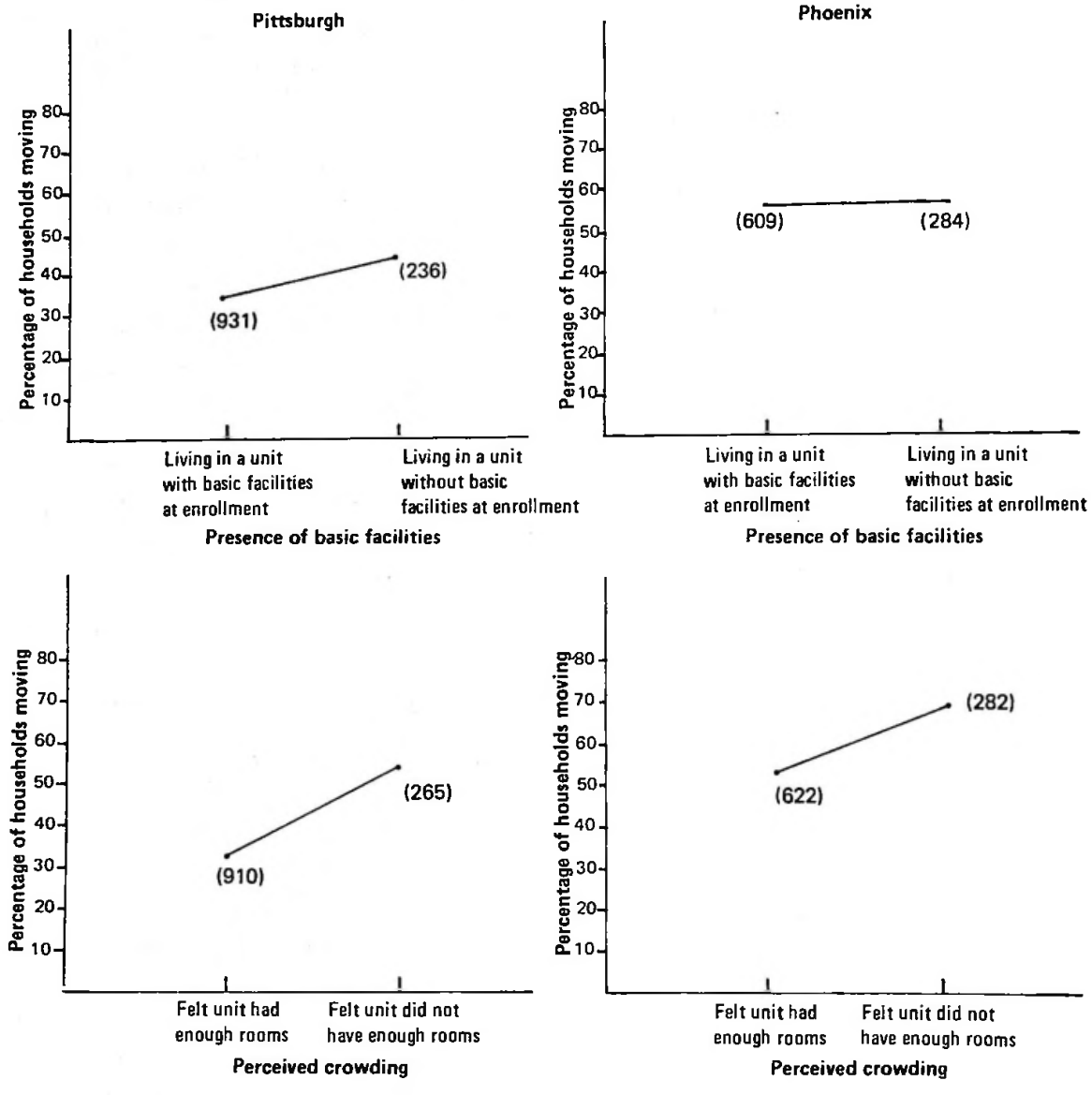
[1] In order to qualify for payments, households in one of the experimental groups were required to meet a physical standard more stringent than the criterion of basic facilities used here. This provided an added incentive for households that did not meet this standard to move, and households that did not have basic facilities by definition did not meet the standard. However, households not having basic facilities were more likely to move than those that had such facilities, whether or not they were in the treatment group which had a housing requirement. The effect of this variable therefore does not appear to be entirely an experimental effect.

[2] Lack of basic facilities does not have a bivariate relationship to the probability of moving in Phoenix, however, See Figure 3-4. See Table VII-16 in Appendix VII for a presentation of mobility rates by household characteristics for households that did and did not have basic facilities in their units at enrollment.

[3] Note that some of the households in units lacking basic facilities appear to have moved because they were forced to do so. The variable is not significant in an equation which excludes forced movers. See Table VII-4 in Appendix VII.

Figure 3-4
THE PERCENTAGE OF HOUSEHOLDS THAT MOVED DURING THE EXPERIMENT BY THE PRESENCE OF BASIC FACILITIES AND PERCEIVED CROWDING IN THE ENROLLMENT UNIT



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligiblity limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

As expected, social bonds act to decrease the probability of moving. Households with positive feelings toward their neighbors were significantly less likely to move at both sites (see Figure 3-5). Length of residence in enrollment unit had a significant negative effect on the probability of moving in Pittsburgh, but not in Phoenix.

It was expected that both dissatisfaction and predisposition to move at enrollment would show significant relationships to the probability of moving during the experiment. Dissatisfaction shows the expected relationship in Pittsburgh, but not in Phoenix.[1] Predisposition to move had a large, significant relationship to the probability of moving at both sites. Households that indicated that they would move if they had $50 more available for rent each month were more likely to move than households that indicated that they would not move with such an increase.

3.5 SUMMARY OF THE EFFECT OF NONEXPERIMENTAL FACTORS ON MOBILITY

Mobility rates among households in the Demand Experiment before and during the experiment indicate that most households move fairly frequently. About 40 percent of households in Pittsburgh and 70 percent in Phoenix might be expected to move at least once during a two-year period, if market conditions did not change radically. However, some groups of households were less likely to move than others and these patterns were quite similar at the two sites. In particular, older households were a substantially less mobile group than younger households. Older households had a history of lower mobility before the experiment; they were more satisfied, less predisposed to move and less likely to actually move during the experiment. This finding indicates that older households are a group of some concern in a housing allowance program, since they may be less likely to take full advantage of the allowance offer to move to better housing or a better neighborhood. They may also be less likely to participate if they have to move in order to meet housing requirements.

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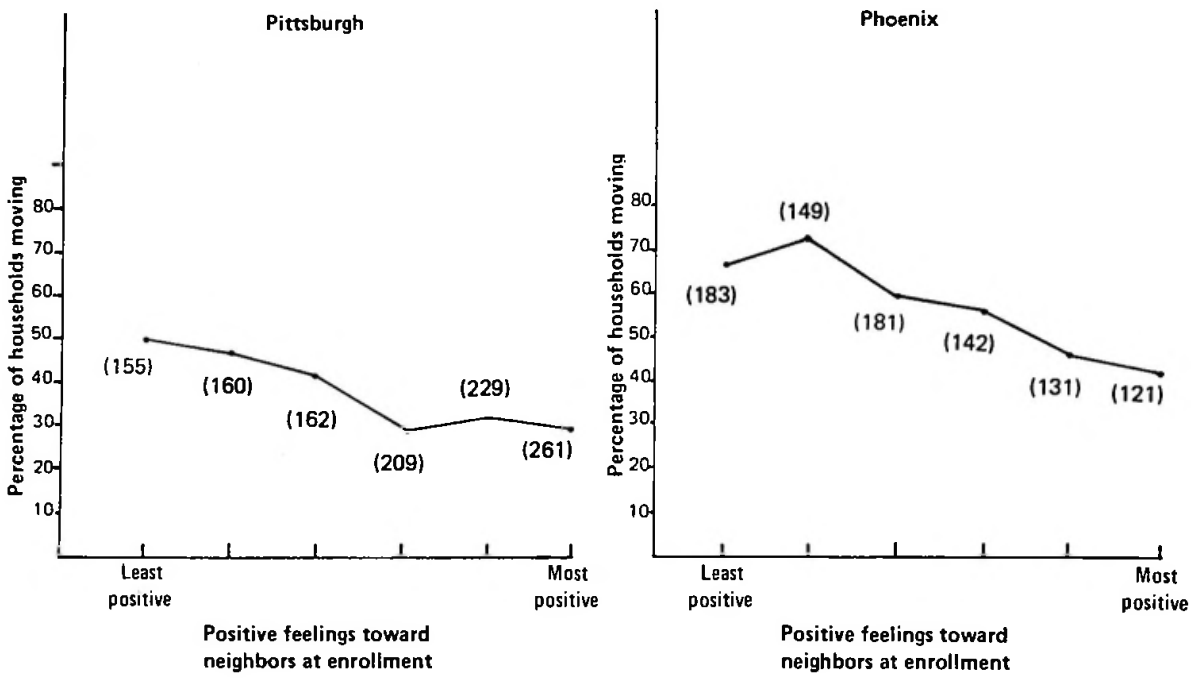
[1] Further analysis indicates that the lack of significance of dissatisfaction in Phoenix is because of the large number of households at that site that were satisfied at enrollment but moved during the course of the experiment. Mobility was higher in Phoenix and dissatisfaction at enrollment becomes an increasingly poor predictor over time. Findings for mobility during the first year of the experiment show that satisfaction at enrollment was an equally good predictor of moving during the first year at both sites. See Weinberg et al. (1977).

Figure 3-5
THE PERCENTAGE OF HOUSEHOLDS THAT MOVED DURING THE EXPERIMENT BY POSITIVE FEELINGS TOWARD NEIGHBORS AT ENROLLMENT



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligiblity limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

The mobility of minority households during the experiment is also of concern, since they were in poorer housing than nonminority households when they entered the experiment and had a history of lower mobility.[1] In Pittsburgh, it appears that black households did not move at a lower rate than other households during the experiment, but that black households that moved left the program at a higher rate. Thus, the population of households still active at the end of the experiment contained a lower proportion of black than of white movers. This pattern is important because it means that even if black households move, they may not remain in the program long enough to take full advantage of the allowance offer. Spanish American households in Phoenix did not have a lower probability of moving than other households.

Although households headed by women were more reluctant to consider a move, they did not move at a lower rate than other households during the experiment. Thus households with female heads do not appear to have been at a disadvantage. Similarly, households with a number of children were less predisposed to move, but no less likely to actually move than other households.

It appears that households in poorer housing conditions are more likely to move. Although households might improve their housing through upgrading, a higher mobility rate among households in poorer housing could contribute to a program goal of housing improvement. Households living in units which lacked basic facilities and households that felt their units were crowded were more likely to be dissatisfied and more likely to move than other households.

Other factors that decreased mobility appear to have done so by acting as deterrents to moving rather than as obstacles to households that wanted to move. Households with attachments to their neighbors were less likely to move than other households at both sites. In Pittsburgh long-term residents were less likely to move than other households.

One purpose of estimating dissatisfaction, predisposition to move and moving as separate stages in the mobility process was to detect the effects of any variables which might act through dissatisfaction and predisposition to move.

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[1] See Abt Associates Inc. (1975).

It seemed posisble that including dissatisfaction and predisposition in the final equation for the probability of moving might obscure the effects of variables that were important at earlier stages. This concern proved to be unnecessary. Most of the variables affecting mobility had a consistent effect at each stage of the model, and including dissatisfaction and predisposition to move in the equation for the probability of moving did not alter the effects of other variables. This final equation provides a plausible set of predictors which can be used to control for nonexperimental factors in the analysis of experimental effects which follows.

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_____, Working Paper on Early Findings, Cambridge, Mass., January 1975.

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U.S. Department of Commerce, Current Housing Reports, Series H-170-74-13, Washington, D.C., September 1976.

CHAPTER 4

THE EFFECT OF THE EXPERIMENT ON MOBILITY

It was expected that Experimental households would be significantly more likely to move during the Demand Experiment than Control households because of the housing allowance offer. In a simple bivariate comparison, this was the case in Phoenix, but not in Pittsburgh (see Table 1-1). During the two years of the experiment, 38 percent of the Experimental households that had remained active in Pittsburgh moved to new housing, compared to 35 percent of Control households. In Phoenix, 62 percent of Experimental households moved, compared to 53 percent of Control households. This chapter analyzes differences in the mobility of Experimental and Control households in more detail, using the multivariate model developed in Chapters 2 and 3 to control for the influence of other factors on mobility. Results are presented separately for Pittsburgh and Phoenix throughout the chapter. However, it is possible to estimate experimental effects using a pooled sample. Results of joint site estimations are presented in Appendix XI and are discussed in the summary of this chapter and in Chapter 6.

The sample used in the analysis of experimental effects on mobility is the sample of households that remained active throughout the experiment.[1] However, it appears that households in the Control group that moved were more likely to drop out than movers in the Experimental group. Over time, Experimental households thus could appear to be a more mobile group than Control households simply because Control households that moved left the program at a higher rate. To guard against the possibility that the experimental effects reported in this chapter are the result of differences in attrition rather than differences in mobility, a parallel analysis has been conducted on the total enrollee sample using whatever information is available on the mobility of terminees. This analysis is reported in Appendix IV and is cited in footnotes throughout the chapter.

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[1] There are two major advantages to using this sample, rather than the sample which includes enrollees that later terminated. First, the mobility of households that terminated is not always known. Second the interpretation of experimental effects for households that did not remain in the experiment is unclear.

4.1 THE OVERALL EFFECT OF THE EXPERIMENT

Figure 4-1 shows the estimated overall effect of the experiment on mobility, controlling for the effect of other factors. These figures are based on the partial derivative of a dummy variable which distinguishes households in any of the Experimental allowance plans from Control households in an equation which includes all of the independent variables analyzed in Chapter 3. (See Table 3-4 for the complete equation.)

The experiment had a significant positive effect on mobility in Phoenix. The partial derivative indicates an increase of 0.10 in the probability of moving if a household was in one of the Experimental allowance plans rather than in the Control group. The effect of the experiment in Pittsburgh was positive but smaller, and the coefficient is not significant. The partial derivative is 0.05.[1]

The partial derivatives of the experimental variables in the logit equation are quite similar to the estimates of experimental effects from the simple bivariate comparison of the mobility rates of Experimental and Control households. A simple comparison yields a difference of 0.09 between Experimental and Control households in Phoenix, compared to the partial derivative of 0.10. The comparable numbers in Pittsburgh are 0.03 and 0.05.[2]

There was a possibility that the allowance offer might have changed the effect of the variables usually related to mobility, that is, the experiment might have had more effect for some groups of participants than for others. In general, this was not the case. The factors that influenced mobility, as discussed in Section 3.4, had approximately the same effect for Experimental and Control households.[3] There were several notable

[1] Analysis of the entire enrollee sample including terminees indicates a significant experimental effect of 0.08 in Phoenix and a nonsignificant effect of 0.02 in Pittsburgh; see Table IV-7 in Appendix IV.

[2] This is not unexpected. Except for a few plans in which income limits were lower than the usual limits, households were randomly assigned to various Experimental and Control plans. Thus, apart from possible differences associated with differential acceptance or attrition, the factors included in Table 3-4 should generally be independent of Experimental/Control assignments.

[3] The interaction of the overall effect of the experiment with other variables is analyzed in Appendix VIII. Although interactions between other factors and the effect of the experiment for each treatment group were not tested, demographic effects generally appear to be similar when the probability of moving is estimated separately for different treatment groups. These results may be found in Appendix VII.

Figure 4-1

THE EFFECT OF THE EXPERIMENT ON MOBILITY
(PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS
OF THE PROBABILITY OF MOVING)

PITTSBURGH	PHOENIX
ALL EXPERIMENTAL AND CONTROL HOUSEHOLDS	ALL EXPERIMENTAL AND CONTROL HOUSEHOLDS
Partial derivative of experimental variable.....0.052	Partial derivative of experimental variable.....0.096
t-statistic.....1.56	t-statistic.....3.07**
767 Experimental households	567 Experimental households
270 Control households	228 Control households

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

NOTE: See Table 3-4 in Chapter 3 for complete logit results.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

exceptions, however. In Pittsburgh the experiment had more effect for households living in units that lacked basic facilities at the time they enrolled. It also had a greater effect for households that were predisposed to move at enrollment. In Phoenix, the experiment had a greater effect for Spanish American households than for other households. Spanish American households in Phoenix had a history of lower mobility before the experiment began, but showed no difference in their probability of moving during the experiment. The larger experimental effect for this group appears to have raised their mobility rate so that it was equal to that of other households in Phoenix.[1]

4.2 MOBILITY BY TREATMENT GROUP

Experimental households were more likely to move than Control households in Phoenix, but not in Pittsburgh. An examination of the effects of the experiment on mobility cannot stop with a simple comparison of Experimental and Control households, however. The amount of the subsidy offered to Experimental households varied widely as did the form of the subsidy and the requirements for receiving payments. This section and the sections that follow examine the effect of different allowance offers on the mobility of Experimental households.

The group analyzed as "Experimental households" in the previous section combines households in a number of different allowance plans or treatment groups.[2] The nature of the allowance offer varied for different treatment groups within the experiment; not all Experimental households had an equal incentive to move. It is quite possible, therefore, that the experiment may have affected the mobility of households in some allowance plans, but not in others.

For households in the Percent of Rent group, the major incentive to move was the extra money available through the allowance, which made it possible for them to afford better housing. These households were reimbursed

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[1] Several other factors were also found to have an interaction with the effect of the experiment. See Appendix VIII.

[2] See Appendix I for a detailed description of the allowance plans.

for a fixed proportion of their rent each month. Households in this group might be expected to take advantage of this reduction in the cost of their housing to move to a better unit than the one they were living in when they entered the program. Alternatively, however, the allowance may have allowed some families whose financial circumstances had changed to remain in units they could not have continued to afford without the allowance. Thus it is possible that the experiment could have induced some households to move and others to stay, thereby having no net effect on mobility.

The Housing Gap treatment group offered a somewhat different set of incentives for moving. The allowance payment for this group was calculated as the gap between a fixed proportion of the household's income and the estimated cost of a modest standard unit for a household of that size. Housing Gap households were required to live in units that met a minimum physical standard or to pay a certain minimum rent before they could receive payments. Housing Gap households whose units met these requirements when they enrolled in the experiment faced a contradictory set of incentives to move, similar to those of Percent of Rent households. With extra money available for rent, some of them now had the option of moving to better housing. For others, the allowance may have made it possible to stay in units they could not have continued to afford otherwise. In addition, Housing Gap households that already met requirements may have felt that they risked losing the payment altogether if they moved to units that did not meet the program's standards. Although a household could find out if a new unit would meet requirements before it moved, this concern may have acted as a deterrent to moving for some households.

Households in the Housing Gap group that did not meet the housing requirements at enrollment are of special interest because the incentive structure of the experiment worked in only one direction for them. It gave them an incentive to move in order to receive payments, and no incentive to stay where they were unless they felt they could meet the requirements by upgrading their units. The effect of the experiment therefore should be easiest to detect for this group.

The third major group of Experimental households is the Unconstrained group. The allowance payment for this group was calculated in exactly the same way as for the Housing Gap group, but these households were not required to

meet any standards or rent requirements. They were therefore subject to essentially the same set of incentives as Percent of Rent households. Unlike the Percent of Rent group, however, the amount of their allowance payment did not change if they moved to a unit with a higher or lower rent.

The incentives to move created by the allowance offer thus depend on treatment group, and, for Housing Gap households, on whether their units met the experiment's requirements at the time they enrolled. Figure 4-2 shows the estimated experimental effect on mobility for each treatment group. The statistics shown are derived from logit estimation of a series of equations for the probability of moving, one for each treatment group. Each logit analysis includes all the independent variables in the model. However, Figure 4-2 shows only the results for the variable indicating experimental effect, that is, the variable showing the contrast in mobility between households in a particular treatment group and Control households.[1]

These results do not indicate that the allowance offer had a very different effect on the mobility of different treatment groups. Effects for Percent of Rent and Housing Gap households in Pittsburgh are both of the magnitude of approximately 0.05, although the Housing Gap result is not significant.[2] Effects for these two groups in Phoenix are about 0.10, and both are significant.[3] There was a significant experimental effect for Unconstrained households in Pittsburgh of 0.11, somewhat higher than effects for the other two groups. In Phoenix, the effect for Unconstrained households was 0.12, similar to effects for Housing Gap and Percent of Rent households, and it was not significant.

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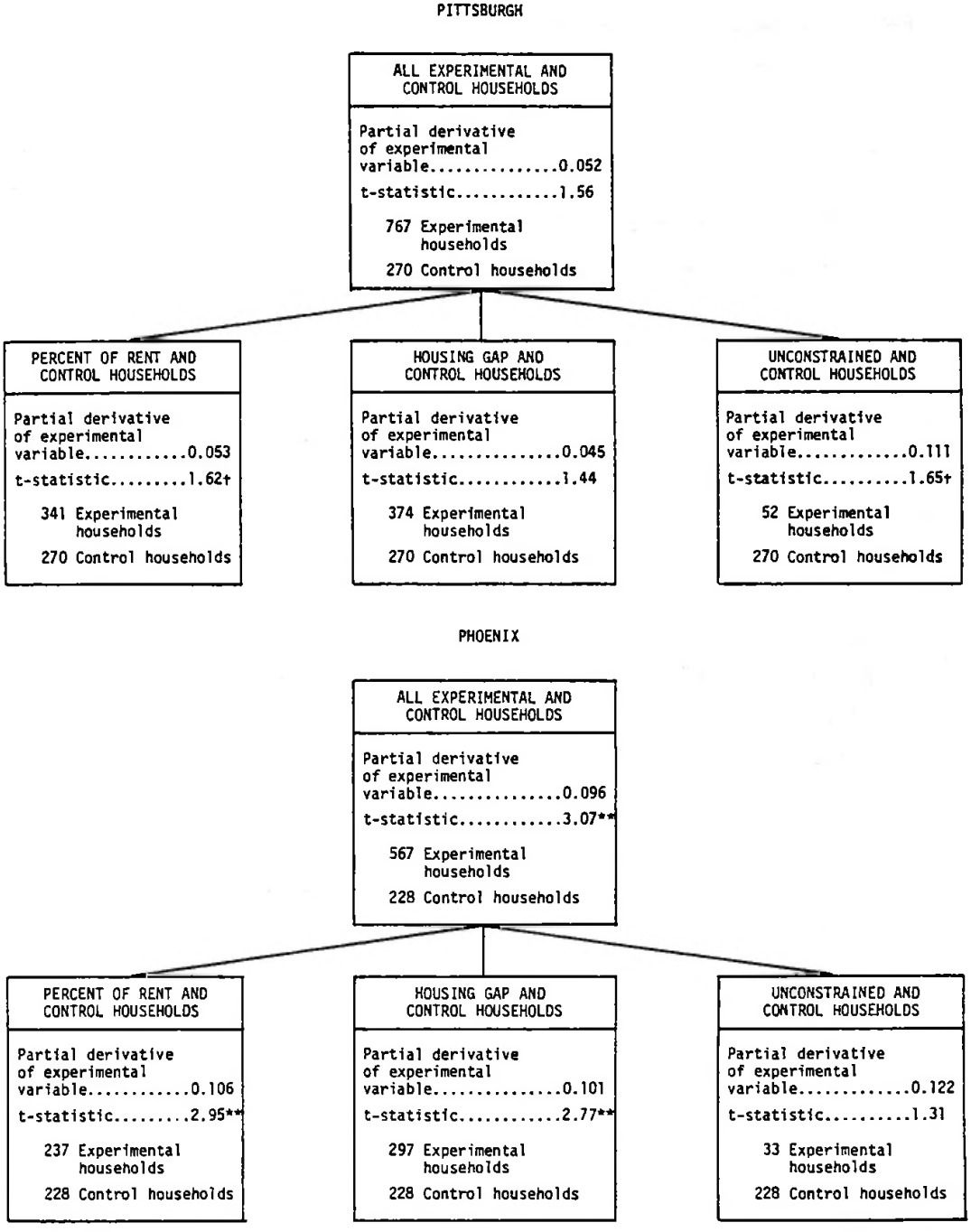
[1] Results for the other independent variables appear to be similar to those shown in Table 3-4. Complete results are given in Tables VII-5, VII-6, and VII-7 in Appendix VII. All the equations use the same set of independent variables.

[2] When terminees are included in the sample, experimental effects are not significant for any of the treatment groups in Pittsburgh. This suggests that attrition may contribute to the effects observed for households active after two years. See Appendix IV.

[3] When terminees are included in the sample in Phoenix experimental effects for Percent of Rent and Housing Gap households remain significant. The estimated effect for Percent of Rent households is 0.09; for Housing Gap the figure is 0.08. See Tables IV-9 and IV-10 in Appendix IV.

Figure 4-2

THE EFFECT OF THE EXPERIMENT ON MOBILITY BY TREATMENT GROUP
(PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS OF THE PROBABILITY OF MOVING)



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

NOTE: See Tables VII-5, VII-6, and VII-7 in Appendix VII for complete logit results.

\+ t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Analysis of mobility by treatment group must take several other factors into account, however. As was discussed above, there are essentially two ways the experiment could motivate participants to move--by offering those households whose units did not meet requirements the incentive of payments if they found better housing, and by offering those already receiving payments increased money for rent. In the first case, a household's incentive to move depended on whether its unit met requirements at enrollment; in the second, incentive varied with the amount of the allowance payment. The following section analyzes the effect of housing requirements on the mobility of Housing Gap households. Section 4.4 discusses the effect of the amount of the payment.

4.3 THE EFFECT OF HOUSING REQUIREMENTS FOR HOUSING GAP HOUSEHOLDS

As has been discussed, Housing Gap households whose units did not initially meet requirements had a clear incentive to move during the experiment: unless they moved or upgraded their units to comply with the requirements, they could not receive allowance payments. For households that met the requirements at the time they enrolled, the incentive to move is not clear. Some might prefer to remain where they were; others might choose to move to new units. Any who moved ran a risk that their new units would not meet requirements.

The Effect of Meeting Requirements

To determine the effect of the experiment on the mobility of households that met requirements at enrollment and those that did not, it is necessary to compare their behavior to that of appropriate Control households. Households that did not meet requirements at enrollment could be expected to be more likely than others to move,regardless of the effect of the experiment, simply because of the poor quality of their housing.[1] For this reason, it is necessary to divide the Control group too into those households that met requirements and those that did not.[2]

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[1]Also, housing quality may be correlated with other factors that affect mobility.

[2]Note that the Housing Gap treatment group contains three different subgroups--the Minimum Standards group, the Minimum Rent Low group, and the
(footnote continued on next page)

Figure 4-3 shows the effect of the experiment on the mobility of Housing Gap households grouped by whether they met requirements at enrollment. The experimental effects on mobility shown in the figure are based on a logit analysis of the probability of moving which includes the full set of independent variables indicated by the model.[1] One logit contrasts Housing Gap households meeting requirements with Control households meeting requirements; another contrasts Housing Gap households not meeting the particular requirements of their treatment group with Controls not meeting those requirements.

Whether a household's dwelling unit complied with requirements at enrollment made a difference in the effect of the experiment in Pittsburgh, but not in Phoenix. In Pittsburgh, households that did not meet requirements were significantly more likely to move than Control households, whereas there was no significant difference in probability of moving between Control and Experimental households that met requirements. This suggests that there was an experimental effect for households that did not meet requirements, but not for households that did. A t-test of the difference in the experimental effect for these two groups confirms this impression; in Pittsburgh, the experimental effect was significantly greater for the group that did not meet requirements.[2]

(footnote continued from previous page)
Minimum Rent High group. Each of these groups was required to meet a different housing requirement to receive a payment. The three groups have been analyzed separately in Appendix IX. Results do not reveal a consistent pattern in the effects of the different requirements, so Housing Gap households have been analyzed as a group. To form a Control group appropriate for comparison to Housing Gap households as a whole, the Control group was randomly partitioned into three subgroups, corresponding in proportions to the Minimum Standards, Minimum Rent Low, and Minimum Rent High households in the Housing Gap group. Control households could then be divided according to whether they were in compliance at enrollment with the requirements of the subgroup to which they were randomly assigned.

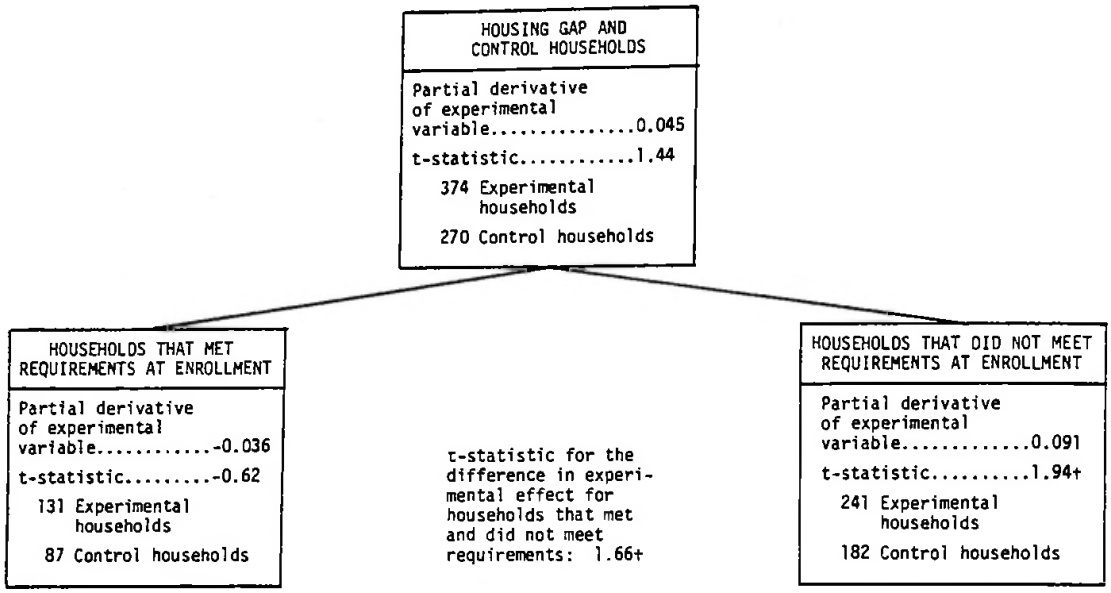
[1] See Tables VII-8 and VII-9 in Appendix VII for full results.

[2] Analysis of the sample that includes terminees confirms this pattern in Pittsburgh. For this group, there was a significant negative experimental effect on mobility for households that met the requirements and a significant positive effect for households that did not. A t-test shows that the effect of the experiment was significantly different for the two groups (see Tables IV-12, IV-13, and IV-14 in Appendix IV).

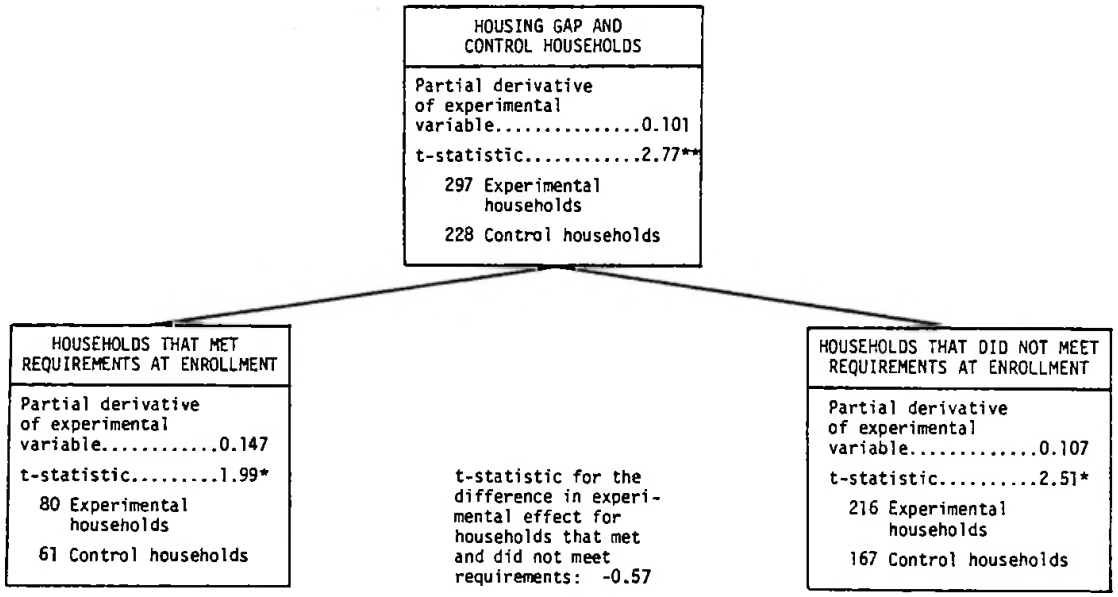
Figure 4-3

THE EFFECT OF COMPLIANCE WITH REQUIREMENTS AT ENROLLMENT
ON THE MOBILITY OF HOUSING GAP HOUSEHOLDS
(PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS OF THE PROBABILITY OF MOVING)

PITTSBURGH



PHOENIX



SAMPLE: Housing Gap and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

NOTE: Information is missing on whether some households met requirements. See Tables VII-8 and VII-9 in Appendix VII for complete logit results.

+ t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

The pattern was different in Phoenix; there was a significant experimental effect on the mobility of households that met requirements as well as a significant effect on the mobility of households that did not meet the requirements. The experimental effect was not significantly different for the two groups.[1]

4.4 THE EFFECT OF PAYMENT AMOUNT ON MOBILITY

One more factor must be taken into account in considering the incentive to move offered by the allowance--the amount of the allowance payment. It is possible, for example, that the allowance offer did not affect the mobility of some households because they were eligible only for small benefits. The expected impact of the amount of the payment on the mobility of Experimental households is quite different for Percent of Rent and Housing Gap households.[2] For the Percent of Rent group, the subsidy amount was tied to the amount of rent households were paying, so it might either increase or decrease if they moved to a new unit. For Housing Gap households, the payment depended on whether they met the requirements of their treatment group at enrollment. Households that met requirements were given the full amount to which they were entitled as soon as they enrolled. Moving would not change the amount of a household's subsidy unless its new unit did not meet requirements. Households not meeting the requirements received a payment of $10 per month until their units did meet requirements, when they began to receive full benefits. Presumably, then, the subsidy amount that

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[1] Patterns are somewhat similar for the sample that includes terminees in Phoenix. Experimental effects were positive for households that met requirements and for those that did not. However, they were significant only for the group that met requirements. A t-test shows that the effect of the experiment on mobility was significantly greater for households that met requirements than for households that did not. These results seem paradoxical; there is no apparent reason why the incentive to move offered by the experiment should have been greater for households that met requirements. At best, they suggest that meeting requirements was irrelevant to the mobility of Housing Gap households in Phoenix.

[2] Households in the Unconstrained group might be expected to differ somewhat from households in the Percent of Rent or Housing Gap groups. However, this group is too small to permit an analysis of the effect of subsidy amount.

might influence these households was their potential subsidy, that is, the amount they would receive if they met the housing requirements.

The effect of the subsidy amount cannot logically be analyzed for all Experimental households as a group, since the incentives it offered for moving are expected to differ for each treatment group. Three major groups thus have been analyzed separately: Percent of Rent households, Housing Gap households that met requirements at enrollment, and Housing Gap households that did not meet requirements at enrollment.

For the Percent of Rent group, rents were subsidized at several different levels; some households were paid for as much as 60 percent of their rent, while others received as little as 20 percent.[1] The amount of any one household's payment depended on both the rent paid by the household and the proportion of that rent subsidized by the program. A payment of $50 per month, for example, could be a 20 percent subsidy of a unit renting for $250 per month or a 50 percent subsidy of a $100 unit.

There are two ways of looking at a given household's benefits under the Percent of Rent plan: in terms of dollar amount or in terms of the percentage of the household's rent that was subsidized. Probably the best indication of a household's perception of its subsidy amount is the dollar value of the checks it received. The amount of money they actually were receiving might be expected to be more real to households and to have had more influence on their actions than the potential indicated by the coefficient used in their payment formula.[2]

Figure 4-4 shows the results of a logit analysis of the probability of moving for Percent of Rent households, including monthly payment amount at enrollment in the equation.[3] Other independent variables are those included in the earlier analysis of the overall probability of moving for all households. Partial derivatives and t-statistics are shown only for the variable measuring payment level.[4] Results show that payment amount has a positive

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[1] See Appendix I for a more detailed discussion of payment formulas.

[2] For a somewhat different analysis of incentive to move for Percent of Rent households see Friedman and Weinberg (1978).

[3] Note that analysis in this section includes only Experimental households. Because subsidy amount is not relevant to Control households, they are excluded.

[4] Complete results are shown in Table VII-11 in Appendix VII.

Figure 4-4

THE EFFECT OF PAYMENT AMOUNT ON THE MOBILITY OF PERCENT OF RENT HOUSEHOLDS (PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS OF THE PROBABILITY OF MOVING)

PITTSBURGH	PHOENIX
PERCENT OF RENT HOUSEHOLDS	PERCENT OF RENT HOUSEHOLDS
Partial derivative of payment amount.....0.001	Partial derivative of payment amount.....0.004
t-statistic.....0.66	t-statistic.....2.36*
341 Experimental households	237 Experimental households

SAMPLE: Percent of Rent households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

NOTE: See Table VII-11 in Appendix VII for complete logit results.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

relationship to the probability of moving which is significant in Phoenix, but not in Pittsburgh.[1] Subsidy amount thus does appear to have provided an incentive to move for households in the Percent of Rent group in Phoenix.[2]

Housing Gap households that met requirements at enrollment are the only group for which the incentive to move might have decreased with an increase in allowance amount. If these households felt they might lose their subsidies by moving to new units (which might not meet requirements), they might be expected to be less likely to move as the amount of the subsidy increased. Figure 4-5 shows that in Pittsburgh the allowance amount was significantly and negatively related to the probability of moving for these households: households that met requirements were less likely to move as the amount of their subsidy increased. Payment amount had no relationship to the probability of moving for households that met requirements in Phoenix.[3]

The potential amount of their subsidy was expected to have a positive effect on the mobility of Housing Gap households that did not meet requirements at

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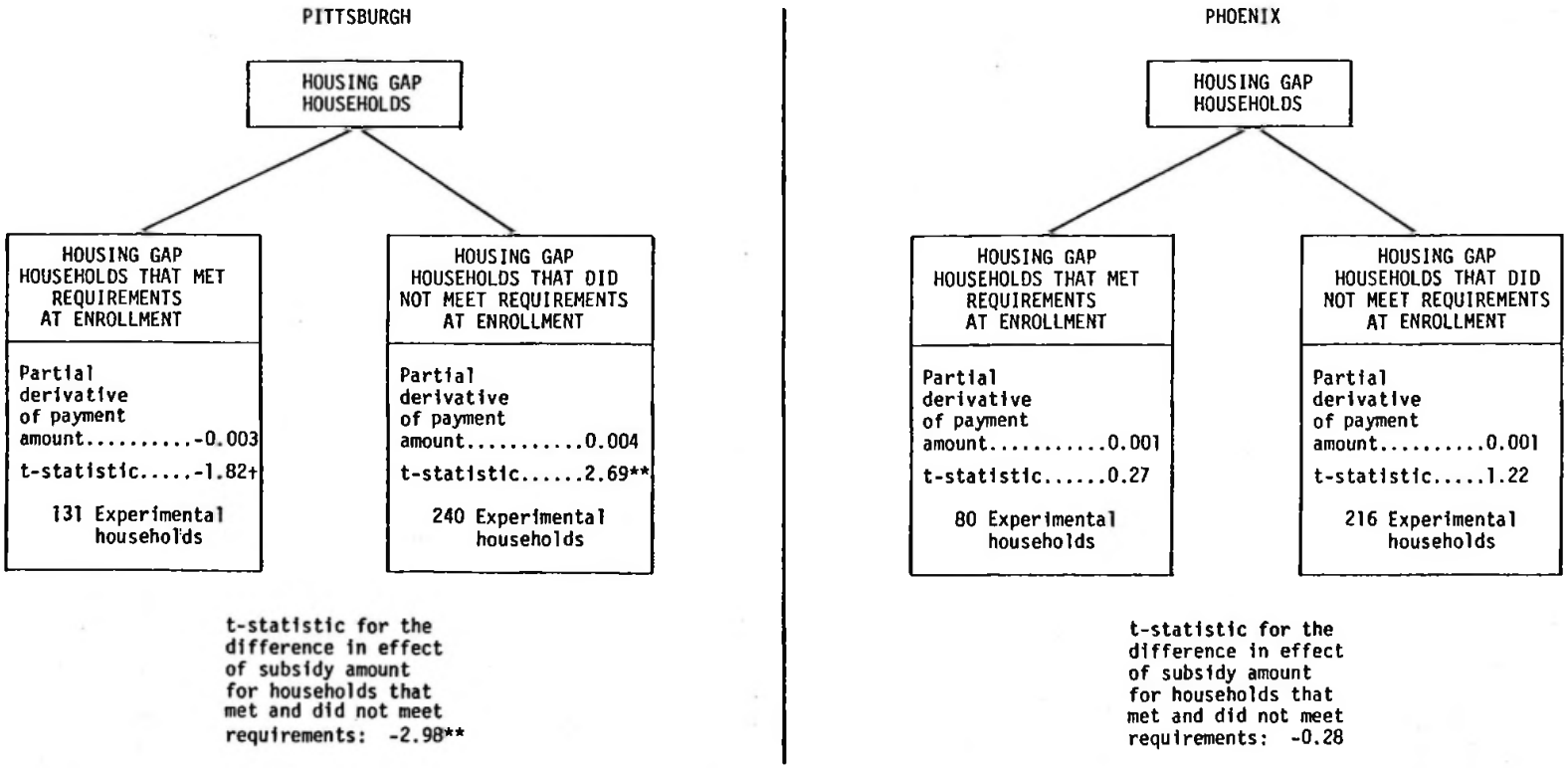
[1]The equation also was tested using the percentage of rent subsidized as a measure of benefit level. If households were randomly assigned to subsidy levels within the Percent of Rent group, this approach should be equivalent to using amount of subsidy. However, income was not randomized for households at two of the subsidy levels, so the alternative approach has been tested. Results are very similar to those reported in Figure 4-4. The percentage of rent subsidized had a significant positive effect on the probability of moving for Percent of Rent households in Phoenix, but not in Pittsburgh. The magnitude of the effect also appears similar under the two approaches, if the coefficient of percentage of rent subsidized is scaled to a dollar value by dividing it by a typical initial rent. (See Table VII-10 in Appendix VII for this equation.)

[2]Analysis of the sample that includes terminees confirms this pattern. Payment amount at enrollment had a significant, positive relationship to the probability of moving for Percent of Rent households in Phoenix, but not in Pittsburgh. See Table IV-15 in Appendix IV.

[3]Payment amount was, by definition, correlated with income in the experiment and it seemed possible that subsidy amount might have an effect in Phoenix if this correlation were removed. The equation was estimated using two parameters from the payment formula--C, the basic payment level, and "b," the rate at which the allowance decreased as income increased. Neither of these factors is correlated with income. (See Appendix I.) Neither factor had a significant effect on mobility in Phoenix for households that met requirements or those that did not. In Pittsburgh, C had a significant negative relationship to moving for households that met requirements and "b" had a significant negative relationship (subsidy decreased as "b" increased, all else equal) to mobility for households that did not meet requirements.

Figure 4-5

THE EFFECT OF PAYMENT AMOUNT ON THE MOBILITY OF
HOUSING GAP HOUSEHOLDS BY COMPLIANCE WITH REQUIREMENTS AT ENROLLMENT
(PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS OF THE PROBABILITY OF MOVING)



SAMPLE: Housing Gap households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

NOTE: Information is missing on whether some households met requirements. See Tables VII-12 and VII-13 in Appendix VII for complete logit results.

† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

enrollment. Those households might be expected to exert more effort to receive payments if the amount of money involved was relatively large. Figure 4-5 bears out this expectation. Potential payment amount had a significant positive relationship to mobility for households in Pittsburgh not meeting requirements and a positive but not significant relationship in Phoenix. A t-statistic for the difference in the effect of subsidy amount for households that met requirements and those that did not confirms the impression that the effect was different in Pittsburgh but not in Phoenix. In Pittsburgh, the amount of the subsidy had a negative effect for households that met requirements and a positive effect for households that did not. In Phoenix, subsidy amount had little effect for either group.[1]

In summary, the effect of subsidy amount on mobility varied by treatment group. For Housing Gap households, it also differed depending on whether or not their units complied with requirements at enrollment. For Percent of Rent households, subsidy amount and percentage of rent subsidized had an effect only in Phoenix. For the Housing Gap group in Pittsburgh the hypothesis of different incentives is confirmed: Payment amount had opposite effects for households meeting and not meeting requirements at enrollment. For households in Pittsburgh that met requirements, payment amount shows a negative relationship to mobility. For households that did not meet requirements, the incentive to move increased as the amount of the potential payment increased.

4.5 SUMMARY OF EXPERIMENTAL EFFECTS

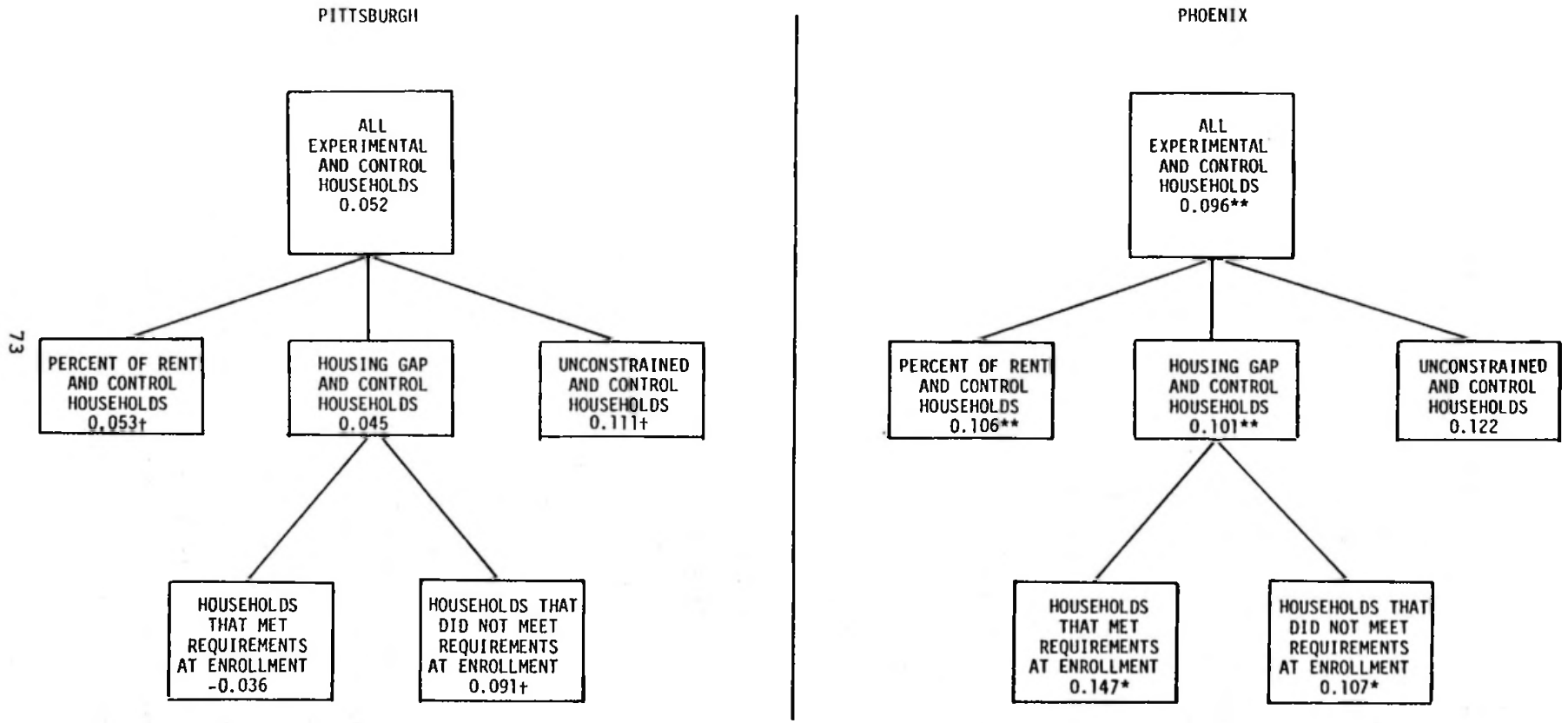
The preceding sections have examined the effect of the Demand Experiment on mobility, disaggregating by those factors in the experiment that are likely to have influenced households' incentives to move. Figure 4-6 summarizes the experimental effects that have been found.

The experiment had a greater effect on mobility in Phoenix than in Pittsburgh. In Phoenix, the experiment's overall effect on mobility was significant. Experimental households had a probability of moving that was about 0.10 higher than Control households; this effect did not vary much across

[1] Analysis of the sample that includes terminees confirms this pattern (see Tables IV-16, IV-17, and IV-18 in Appendix IV).

Figure 4-6

OVERVIEW OF EXPERIMENTAL EFFECTS
(PARTIAL DERIVATIVES FROM LOGIT ESTIMATIONS OF THE PROBABILITY
OF MOVING BY TREATMENT GROUP AND COMPLIANCE WITH REQUIREMENTS AT ENROLLMENT)



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

treatment groups, nor, for Housing Gap households, by payment level or by whether they met requirements at enrollment.

In Pittsburgh, the effects of the experiment were more complex. There was no significant overall effect, though there was some effect for Percent of Rent households. For Housing Gap households, the effect of the experiment varied according to whether they met housing requirements and also by subsidy amount. The incentive to move offered by the experiment was greater for Housing Gap households that did not meet requirements than for those that did. For households that did not initially meet requirements, incentive increased as the amount of their potential payment increased. For households that met requirements, the incentive to move apparently decreased with an increase in subsidy amount.

Mobility prior to the experiment as well as the behavior of Control households suggests that households in Phoenix move more frequently as a matter of course than households in Pittsburgh. At a site where it was easier or more usual to move, the same set of incentives would be expected to have a greater effect. The higher general rate of mobility in Phoenix appears to have caused the incentives to move offered by the experiment to have a larger and more general effect.

These apparent differences in experimental effects in the two sites are not, however, statistically significant. As a further test of differences in the effect of the experiment on mobility in Pittsburgh and Phoenix, mobility equations for each treatment group were estimated pooling observations for the two sites. A chi-square test was then used to determine whether a single joint-site equation explains significantly less of the variation in mobility than two separate equations for the two sites. Interestingly, significance tests fail to distinguish two separate equations from a pooled equation for any of the groups shown in Figure 4-6 (see Appendix XI). Although experimental effects differ somewhat at the two sites, it is possible to pool observations without significant loss of explanatory power.

For both sites, then, the effect of the experimental offers on mobility may seem relatively small. Estimated effects are always less than 11 percentage points in Pittsburgh and 13 percentage points in Phoenix. Given the Control mobility rates of 35 and 53 percent, respectively, for these two sites, this suggests that no allowance offer induced more than 17 percent of the house-

holds that would not have moved in Pittsburgh and 26 percent of those in Phoenix to move. Yet Housing Gap households that did not meet requirements at enrollment were, on average, offered payments at enrollment of almost 70 dollars per month in Pittsburgh and 90 dollars per month in Phoenix if they would move to a unit that did meet requirements (or arrange to upgrade their current unit). Similarly, Percent of Rent households were essentially offered the opportunity to rent any unit in the two sites at from 80 to 40 percent of its actual cost, depending on the Percent of Rent plan in which they were enrolled.

In fact, some preliminary work by Weinberg, Friedman, and Mayo (Friedman and Weinberg, 1978, Appendix VII) analyzing the moving incentive for Percent of Rent households suggests that these incentives may be smaller than they seem. In economic theory, the moving incentive associated with the Percent of Rent offers arises from the household's desire to take advantage of the offer to purchase more expensive housing. This can in theory be quantified in terms of the maximum amount that the household could pay for moving and still be as well off after the move as before. Based on the responses of households that did move, Weinberg et al. finds that the moving incentive for Percent of Rent offers had a mean value of about 4 dollars per month in Pittsburgh and 6 dollars per month in Phoenix. These are well under the values calculated for pre-existing incentives or the mean values of normal out-of-pocket moving costs.

REFERENCES

Friedman, Joseph and Daniel H. Weinberg, The Demand for Rental Housing: Evidence From a Percent of Rent Housing Allowance, Cambridge, Mass., Abt Associates Inc., September 1978 (revised June 1980).

CHAPTER 5

UNDERSTANDING THE SEARCH PROCESS

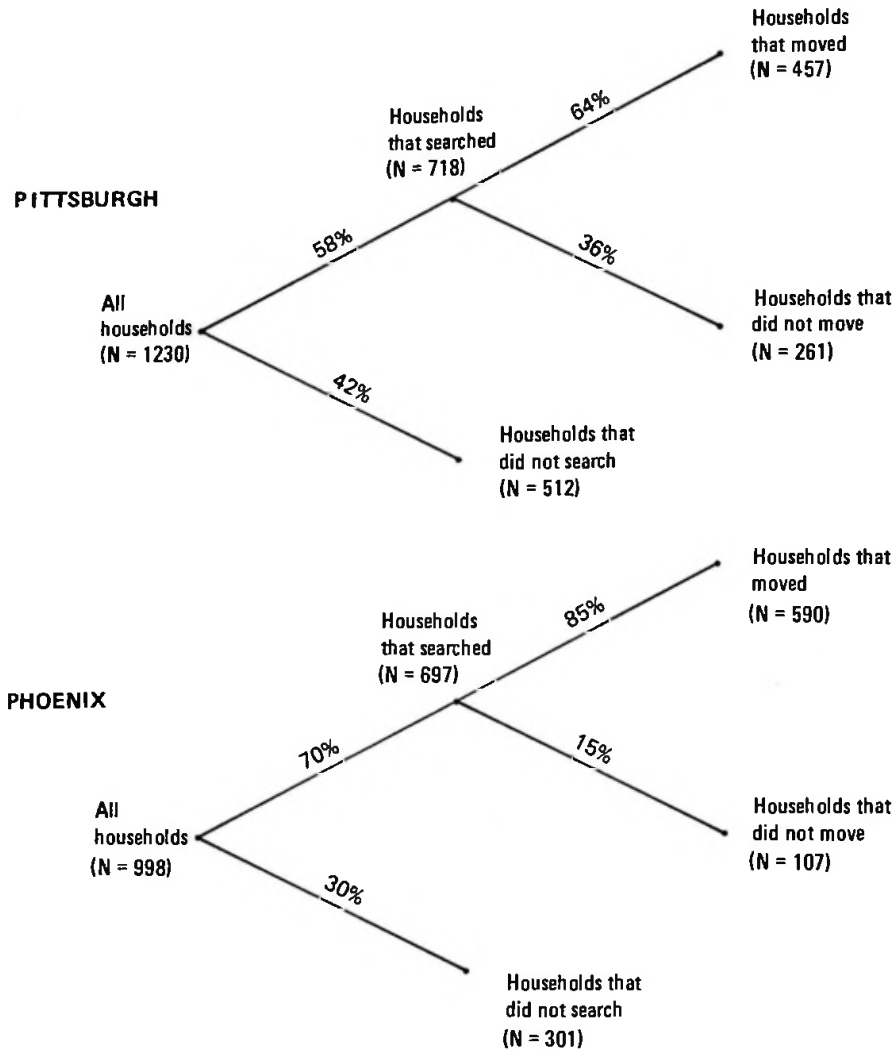
Once a household is dissatisfied and plans to move, two stages still remain in the moving process: the household must first search for new housing and then find an appropriate unit and decide to move. The factors related to mobility that were explored in Chapter 3 may influence mobility at either or both of these points--the decision to search or the decision of searchers to move.

Separating these two stages of moving provides additional information on how the experiment affected mobility. This information is particularly useful in assessing the possibilities for affecting response to a similar program. If the households that did not search for new housing chose this course because they were satisfied with their current housing and uninterested in changing it, then it does not seem likely (or desirable) that a housing allowance program could change this behavior. If the households that searched for new housing decided not to move because their original unit was preferable to others they saw, it also seems unlikely that a program could have much effect for these households. On the other hand, if searchers encountered difficulties that caused them to stop looking before they found a new unit, it is possible that some sort of program assistance during the search process might lead to higher moving rates, and, possibly, to greater housing improvement.

Figure 5-1 shows an overview of the search process in Pittsburgh and Phoenix. Search rates were somewhat higher in Phoenix than in Pittsburgh: 70 percent of Phoenix households searched for new housing during the experiment, compared to 58 percent in Pittsburgh. There was a much larger difference in the percentage of searchers that moved at the two sites; 85 percent of households that searched for new housing in Phoenix moved, compared to 64 percent in Pittsburgh.

Searchers that had not moved by the end of the experiment were asked if they were still actively searching or had abandoned their search. The evidence indicates that once households began to search, they continued to do so until they found units, even though this might take some time. Some households said that they had gotten discouraged and had stopped searching, but their discouragement appears to have been only temporary. Of households

Figure 5-1
OVERVIEW OF THE SEARCH PROCESS



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

that searched for housing during the first year of the experiment and did not move, 12 percent in Pittsburgh and 33 percent in Phoenix indicated that they had stopped searching. However, 61 percent of the households in Pittsburgh that said they were no longer searching at the end of the first year reported some searching during the second year of the experiment. In Phoenix, the proportion was even greater; 75 percent of households that said they had stopped at the end of a year searched during the following year. It appears that few households, once they had started to search, abandoned the process for long.

For the most part, households that did not move were those that did not search. A large proportion of the households that searched during the experiment had moved or were still searching when the experiment ended. This does not mean they encountered no problems during their search, but it does indicate that the problems they had did not cause a large number of households to abandon the search process without moving.

Still, even if search problems were not insurmountable, they may have been important if they seriously delayed households' finding units. If there were a time limit on meeting housing requirements, for example, as there was in the housing allowance program conducted in the Administrative Agency Experiment, then households having trouble finding new units could be unable to move in time to participate, even if they did eventually move. Also, because a household's eligibility may change over time, delays could mean that by the time it eventually moves it is no longer within program income limits.

5.1 THE PROBABILITY OF SEARCHING

Table 5-1 shows that almost all the factors related to the probability of moving during the experiment (see Table 3-4) began by influencing the probability of searching. Patterns in Pittsburgh and Pheonix were similar. At both sites, Experimental households were significantly more likely to search for new housing than Control households. The partial derivative indicates that experimental effects on search were similar at the two sites, with Experimental households' probability of searching about 0.06 higher than that of Control households.

Table 5-1

LOGIT ESTIMATION OF THE PROBABILITY OF SEARCHING

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.252	0.46	NA	0.822	1.39	NA
Life Cycle Factors						
Age of household head (in decades)	-0.241	-4.34**	-0.058	-0.289	-4.98**	-0.062
Number of children	-0.016	-0.29	-0.004	0.049	0.88	0.010
Change in number of children	0.451	2.97**	0.109	0.324	2.02*	0.070
Change in marital status	0.758	2.90**	0.183	0.336	1.34	0.072
Other Household Characteristics						
Female head of household	0.275	2.29*	0.067	0.220	1.60	0.047
Black head of household	-0.182	-1.33	-0.044	0.607	1.82+	0.130
Spanish American head of household	NA	NA	NA	-0.288	-1.45	-0.062
Years of education of household head	0.009	0.33	0.002	0.052	1.99*	0.011
Per capita income of household (in thousands)	0.053	0.50	0.013	0.067	0.64	0.014
Number of moves in three years prior to the experiment	0.330	4.79**	0.080	0.280	4.28**	0.060
Housing and Neighborhood Factors						
Perceived crowding	0.824	4.95**	0.200	0.225	1.35	0.048
Living in a unit with basic facilities	-0.300	-1.76+	-0.073	-0.436	-3.10**	-0.094
Social Bonds						
Positive feelings toward neighbors	-0.090	-3.30**	-0.022	-0.108	-3.10**	-0.023
Length of residence in enrollment unit (in years)	-0.017	-1.41	-0.004	-0.037	-1.54	-0.008
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.611	4.48**	0.148	0.372	2.07*	0.080
Predisposition to Move						
Would move with an increase in money available for rent	1.137	7.97**	0.275	0.882	5.75**	0.189
Program Factors						
Experimental household	0.230	2.09*	0.056	0.281	2.25*	0.060
Likelihood Ratio (Significance)		324.19**			228.66**	
Sample Size		1037			795	
Mean of Dependent Variable		0.588			0.688	
Coefficient of Determination		0.231			0.232	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

\+ t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Factors Related to the Probability of Searching

Among life cycle factors, age had a large negative relationship to the probability that a household would search.[1] Number of children in the household had little effect; but households in which the number of children increased or decreased were significantly more likely to search than households in which the number of children did not change. Change in marital status had a large, significant relationship to the probability of searching in Pittsburgh, but, contrary to expectations, it did not have a significant effect in Phoenix.

The effects of other household characteristics on the probability of searching are somewhat inconsistent at the two sites. The clearest pattern is that number of moves in the three years before the experiment had a large positive relationship to the probability of searching which was significant in both Phoenix and Pittsburgh. Households headed by women were somewhat more likely to search than other households, but this difference was significant only in Pittsburgh. Although the educational level of the head of the household did not have an overall effect on mobility, it did have a significant positive effect on the probability of searching in Phoenix. Income had no relationship to the probability of searching at either site. Black households in Pittsburgh and Spanish American households in Phoenix were not significantly less likely to search than nonminority households.

Housing and neighborhood factors show the expected relationship to probability of searching. Households that felt their units were crowded were more likely to search, although this difference was significant only in Pittsburgh. Households living in units that lacked basic facilities were significantly more likely to search at both sites. Social ties to the community, as measured by positive feelings toward neighbors, decreased the probability of searching.

Both dissatisfaction and predisposition to move at enrollment had a significant relationship to the probability of searching. Households dissatisfied with either their units or their neighborhoods and households that indicated they would move if they had more money for rent were more likely to search

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[1] The method used to compare the magnitude of effects for continuous variables is discussed in Appendix VI.

than other households. The effect of moving plans was larger than the effect of dissatisfaction.

The variation in moving observed in the experiment appears to originate in variations in the probability of searching. The direction of the relationships, as well as the significance levels of coefficients, are generally similar for the probability of searching and the probability of moving. The explanatory power of the logit equations, as indicated by the coefficient of determination, is somewhat higher for the probability of searching than for the probability of moving.

Reasons For Not Searching

Households that did not search for new housing during the experiment were asked on three occasions why they had not done so--first in the Periodic Interview conducted six months after the household had enrolled, again at the end of one year, and a final time at the end of two years. The interview question was: "Here is a list of possible reasons why people might not want to look for another house or apartment. Were any of these reasons important in your decision not to look for another place?" (Respondents could give more than one reason.) The number of interviews in which a respondent gave a particular reason should indicate the continuing importance of that reason to the respondent. An individual who gave the same reason three times seems likely to have felt more strongly than someone who gave that reason only once.

The reasons nonsearchers gave for their inactivity fall into three major categories: attachment to dwelling unit, attachment to the neighborhood, and amount of payment. Households citing attachment to their units indicated that they did not feel they would find other units they liked as much as their current ones. Neighborhood attachment includes responses indicating that some feature of the neighborhood was desirable, such as proximity to schools, work, relatives or friends, or generally indicating that the respondent did not want to leave the neighborhood. Payment amount applies only to Experimental households and indicates that the respondent felt the allowance payment was too small to allow him or her to get another house or apartment.[1]

[1] Respondents also could indicate other reasons for not searching, such as moving expenses would be too high, a lease prevented their moving, they didn't want to have to sign a lease, or they expected some sort of discrimination. These reasons were given much less frequently than the others.

Figure 5-2 shows the number of interviews in which each of these three reasons was cited by households that did not search at all over the two years of the experiment. Some households never mentioned a particular reason for not searching; others mentioned it in all three interviews. Patterns are very similar in Pittsburgh and Phoenix. Neighborhood attachment was the reason most frequently given: over one-third of respondents mentioned some aspect of their neighborhood they found desirable in all three Periodic Interviews.[1] Only approximately 10 percent failed to name some form of neighborhood attachment at least once. Unit attachment also was frequently mentioned. Approximately half the respondents gave this reason in two or more interviews. Insufficient allowance payment was much less frequently given as a reason for not searching. Less than half the respondents in both Pittsburgh and Phoenix gave this reason in any of the three interviews.

These results do not give much insight into why households that did not search felt attached to their units or neighborhoods, but they do suggest that nonsearchers generally were satisfied with their housing situations. Figure 5-3 confirms this impression: households that did not search were, for the most part, satisfied with their housing situations throughout the experiment. Among households that did not search at all during the two years of the experiment, 72 percent in Pittsburgh and 73 percent in Phoenix indicated at each of three Periodic Interviews that they were satisfied with both their units and their neighborhoods. Among households that moved or that searched without moving, satisfaction levels were much lower. Only 32 percent of those households in Pittsburgh and 43 percent in Phoenix said they were satisfied with both unit and neighborhood each time they were interviewed.

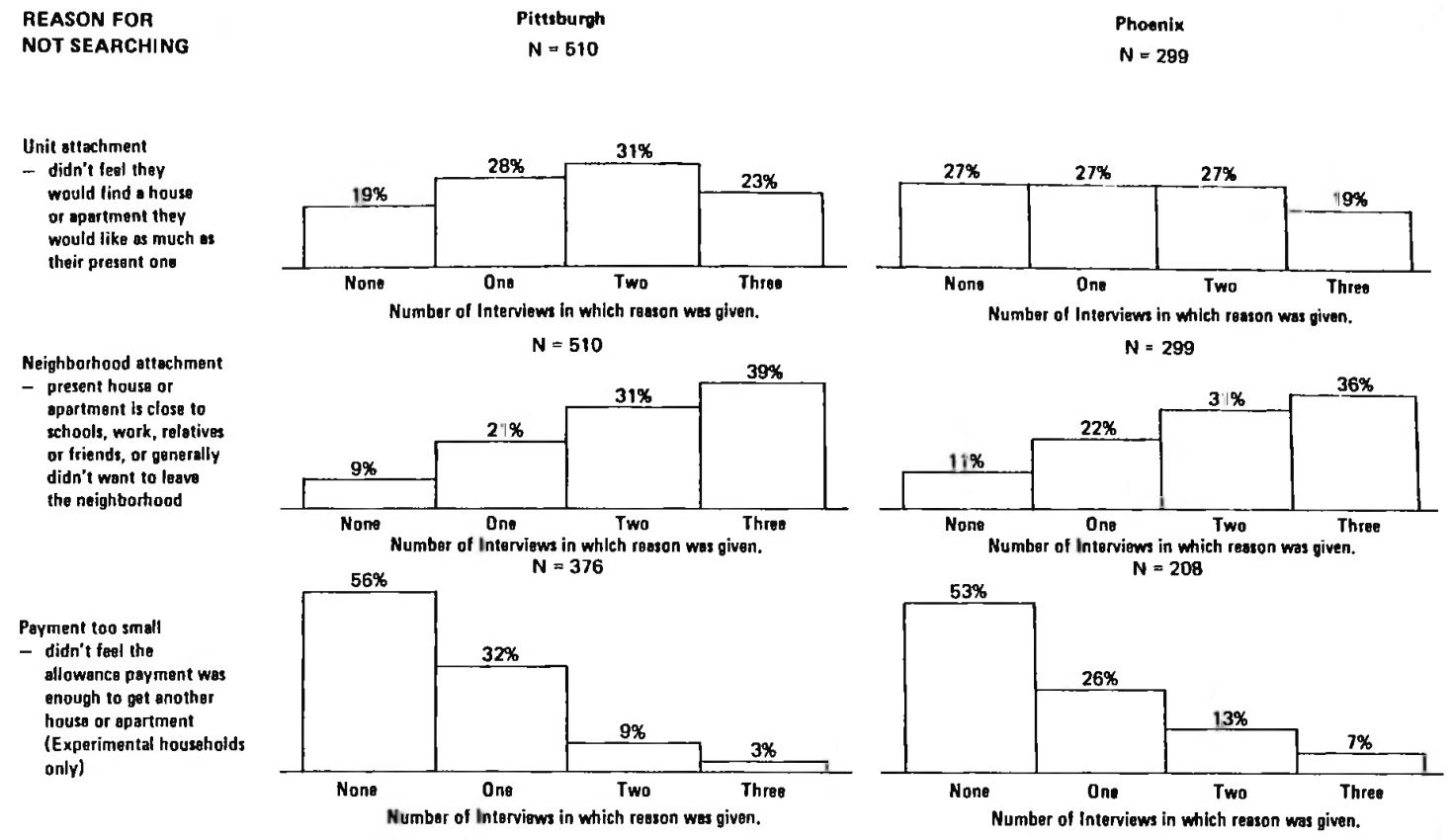
5.2 THE PROBABILITY OF MOVING AMONG SEARCHERS

Most of the households that searched for new housing during the experiment did move, and those that did not generally were still searching at the end of the experiment. However, an analysis of the probability of moving among searchers is useful because it identifies those factors that delayed moving within the experimental period. Searchers that had not found a unit by the end of the experiment, even if they eventually moved, were not able to take full advantage of the allowance offer.

[1] Note that this reason combines five items dealing with desirable aspects of the neighborhood, so it is not surprising that it occurs with higher frequency than other reasons based on a single item.

Figure 5-2

NUMBER OF PERIODIC INTERVIEWS IN WHICH EACH OF THREE MAJOR REASONS FOR NOT SEARCHING WERE GIVEN

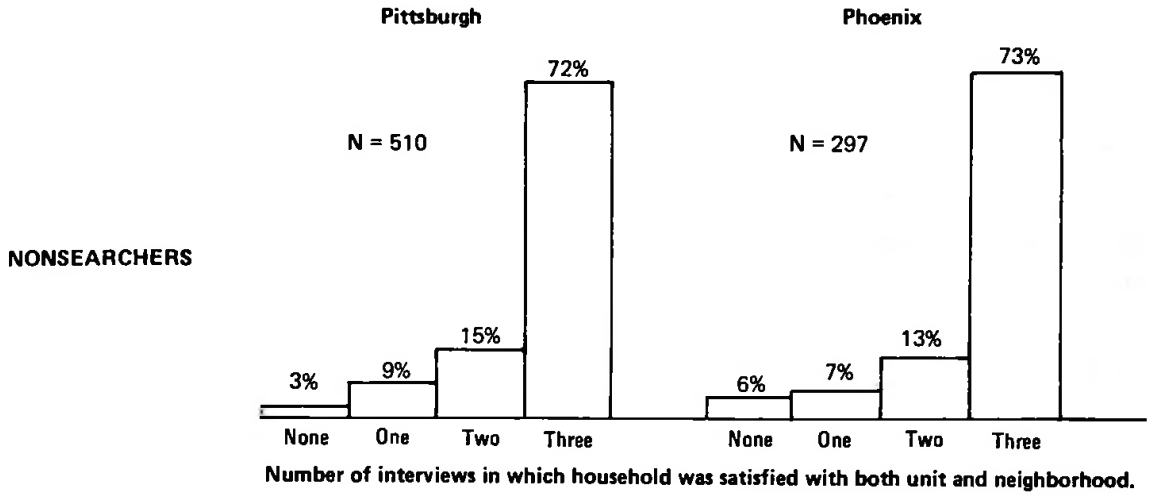


SAMPLE: Experimental and Control households that did not search for new housing and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Periodic Interviews, and payments file.

Figure 5-3

NUMBER OF PERIODIC INTERVIEWS IN WHICH HOUSEHOLD WAS SATISFIED WITH BOTH UNIT AND NEIGHBORHOOD FOR NONSEARCHERS AND SEARCHERS



SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Periodic Interviews, and payments file.

The factors that explained variation in dissatisfaction, moving plans, and search do not work as well in explaining searchers' probability of moving. Table 5-2 shows the results of a logit equation estimating that probability. Few variables show a strong relationship, and the explanatory power of the equations is smaller than it was for either the probability of searching or the probability of moving.

Factors Related to the Probability of Moving Among Searchers

Most variables in the model did not affect searchers' probability of moving. Variables that did have an effect, race and mobility history, seem likely to be related to households' knowledge about or access to the housing market. In Pittsburgh, black searchers were significantly less likely to move than white searchers. Black searchers in Pittsburgh appear to have been less successful in obtaining information about housing through informal sources such as friends or relatives; they also may have been handicapped by discrimination in their housing search.[1]

Searchers that had moved several times in the three years prior to the experiment were significantly more likely to move at both sites than those that had not. Length of tenure had a further effect in Pittsburgh; long-term stayers that searched were less likely to move than households that had moved more recently. Households with recent experience in the housing market, particularly if it was extensive, might be more likely to know where units in their price range were available and to be more knowledgeable about information sources. They may also have begun their search with more realistic expectations.

Among the variables that might have affected households' motivation to move, change in marital status is the only one that proved significant. Households that were highly motivated might be expected to work harder to find a new unit and to be more likely to move. Not surprisingly, this was true for households in which the marital status of the head changed. However, other variables that might influence level of motivation, such as dissatisfaction, predisposition to move, crowding, unit quality, or attachment to neighbors, had no effect on the likelihood of searchers' moving.

[1] See Vidal (1978). Although the role of discrimination in the housing search of black households is difficult to establish, it seems likely to have had an effect.

Table 5-2

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING AMONG SEARCHERS

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	1.183	1.76†	NA	1.072	1.30	NA
Life Cycle Factors						
Age of household head (in decades)	-0.110	-1.66†	-0.026	-0.043	-0.55	-0.006
Number of children	-0.032	-0.56	-0.008	-0.048	-0.73	-0.007
Change in number of children	-0.109	-0.69	-0.026	0.054	0.22	0.008
Change in marital status	0.834	3.09**	0.199	1.351	2.70**	0.189
Other Household Characteristics						
Female head of household	0.218	1.51	0.052	0.626	3.27**	0.088
Black head of household	-0.365	-2.05*	-0.087	0.346	0.89	0.048
Spanish American head of household	NA	NA	NA	0.232	0.86	0.032
Years of education of household head	-0.058	-1.59	-0.014	-0.083	-2.08*	-0.012
Per capita income of household (in thousands)	0.176	1.20	0.042	0.125	0.77	0.018
Number of moves in three years prior to the experiment	0.187	3.16**	0.045	0.539	4.95**	0.075
Housing and Neighborhood Factors						
Perceived crowding	0.065	0.36	0.015	0.078	0.39	0.011
Living in a unit with basic facilities	-0.220	-1.25	-0.052	0.138	0.61	0.019
Social Bonds						
Positive feelings toward neighbors	-0.190	-0.58	-0.005	-0.089	-1.45	-0.012
Length of residence in enrollment unit (in years)	-0.049	-3.32**	-0.012	-0.011	-0.29	-0.002
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.143	1.02	0.034	-0.273	-1.46	-0.038
Predisposition to Move						
Would move with an increase in money available for rent	0.014	0.12	0.003	0.078	0.45	0.011
Program Factors						
Experimental household	0.170	1.08	0.041	0.538	2.78**	0.075
Likelihood Ratio (Significance)		44.44**			66.88**	
Sample Size		610			547	
Mean of Dependent Variable		0.610			0.832	
Coefficient of Determination		0.054			0.135	

SAMPLE: Experimental and Control households that searched for new housing and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

It seems reasonable that the allowance offer would have an effect at this stage. Experimental households had more money available to spend on rent and thus might be more likely than other households to find suitable units for rent they could afford to pay. The experiment did have a positive effect on the mobility of searchers in Phoenix, but not in Pittsburgh.

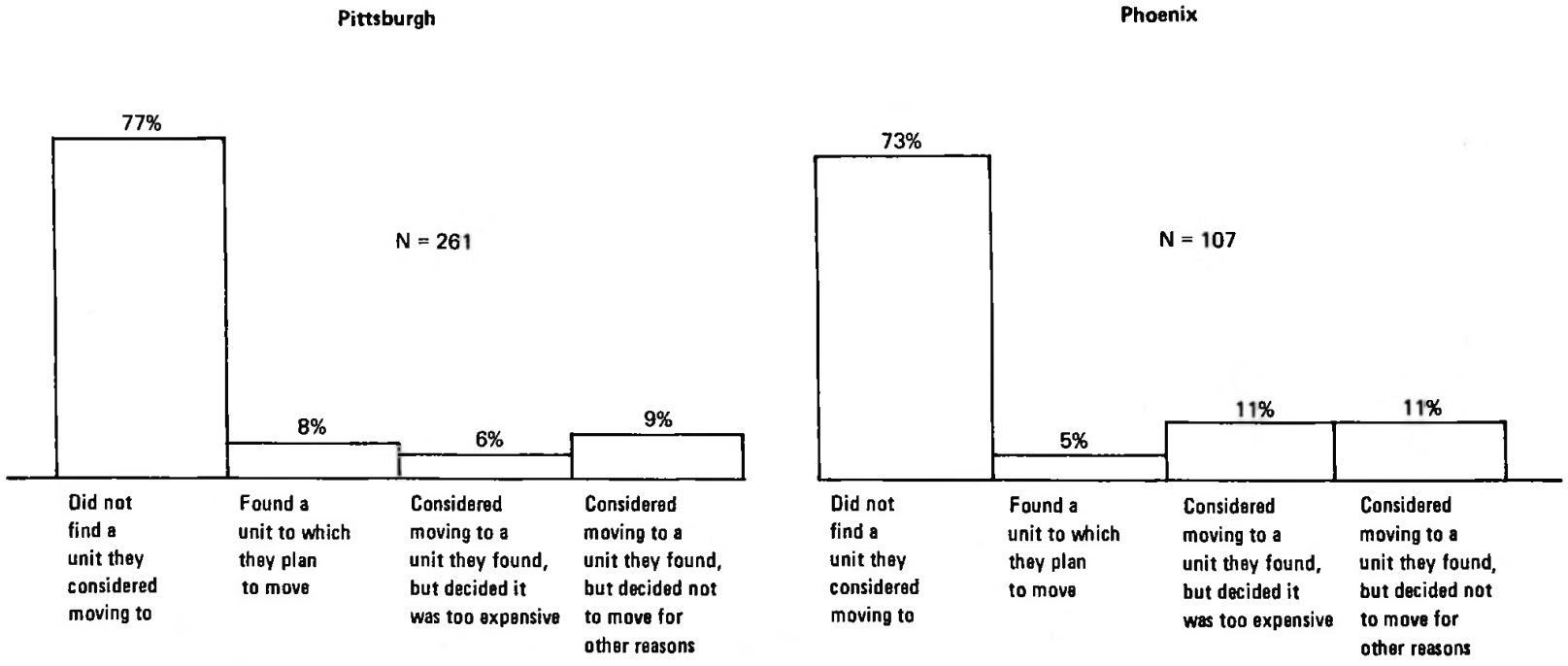
The only other variables that had an effect on searchers' probability of moving were sex and years of education of household head; both were significant in Phoenix. There, households headed by women were more likely to move than those headed by men, and the probability of a household's moving was negatively related to its head's years of education. It is not clear how either of these variables influenced the search process. In both cases, the expected relationship would be in the opposite direction. Searchers with more education would be expected to make more effective use of information sources and to be more, rather than less, likely to move. Female-headed households might be more likely than households with male heads to encounter search difficulties, such as discrimination, particularly since they were also much more likely to be receiving some form of public assistance. However, it appears that although female household heads were reluctant to consider moving and may have expected searching to be difficult, they actually did not encounter major problems in moving once they decided to search.

Reasons Given By Searchers For Not Moving

Households that searched but did not move were asked to explain their decision. Respondents were asked first if they had found any units to which they had considered moving, and, if they indicated that they had considered one or more units, why they had not moved. Results are not very informative. Figure 5-4 shows that approximately three-quarters of the searchers that did not move at both sites simply indicated that they had found no units to which they had considered moving. A small proportion said they planned to move to units they had found. Among those respondents that had considered moving but did not plan to move, the single explanation most often given was that the household had decided the unit it was considering was too expensive.[1]

[1]The "other reasons" category shown in Figure 5-4 combines a number of infrequently cited reasons, such as dwelling unit or neighborhood inadequacies, inconvenient location, or problems with moving.

Figure 5-4
REASONS FOR NOT MOVING GIVEN BY HOUSEHOLDS THAT SEARCHED BUT DID NOT MOVE



SAMPLE: Experimental and Control households active at two years after enrollment that searched but did not move, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Periodic Interviews, and payments file.

5.3 SEARCH EFFORT AND SEARCH DIFFICULTIES

Households that ran into problems during the search process might be expected to have put more effort into their search, and it may have taken them longer to find units. Even though the majority of households that began to search continued to do so until they moved, factors that delayed households' finding new units may show a negative relationship to the probability of moving within the duration of the experiment.

Extensive information is available on the types of unit and neighborhood households were searching for and the problems they encountered during search. However, only four factors were found to have a significant relationship to the probability of moving (see Table 5-3). Two of these factors are related to the type of unit for which the household was searching. Households indicating they were looking for houses were significantly less likely to move at both sites than those looking for apartments. Also, the probability of moving decreased as the number of bedrooms desired by a household increased--larger units appear to have been harder to find.

Another important factor concerned the search strategy of the household. Households that searched outside their own neighborhoods were less likely to move than households that restricted their search to the neighborhoods in which they were living. It seems reasonable that searchers would find it more difficult to find units outside the areas with which they were familiar. It is also possible that households searched outside their original neighborhoods because they could find nothing inside, so the variable indicates general difficulty in finding a unit. Finally, households that reported financial problems were much less likely to move than households that did not report such problems.[1]

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[1] Analysis indicates that the financial problems reported by these households had little to do with the size of their allowance offers. Control households and Housing Gap households that did not meet housing requirements and thus were receiving minimum payments were slightly more likely to report such problems than households receiving full payments. However, the average allowance amount among Experimental households reporting financial problems was $50 in Pittsburgh and $66 in Phoenix, and the average payment amount for households not reporting financial problems was $49 in Pittsburgh and $66 in Phoenix. Thus the financial problems reported seem not to have been related to the allowance offer.

Table 5-3

FACTORS AFFECTING THE PROBABILITY OF MOVING AMONG SEARCHERS

	PITTSBURGH		PHOENIX	
	NUMBER	PERCENTAGE MOVING	NUMBER	PERCENTAGE MOVING
Type of unit desired				
House	415	61%*	419	80%**
Apartment	265	69	241	92
Number of bedrooms desired				
Zero or one	111	80**	113	88**
Two	281	65	293	92
Three	255	60	224	78
Four or more	55	56	62	74
Searched outside of neighborhood				
Yes	402	58**	360	80**
No	274	73	300	90
Financial problems				
Yes	130	32**	96	59**
No	572	73	596	89

SAMPLE: Experimental and Control households that searched for new housing and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

† Chi-square statistic significant at the 0.10 level.

* Chi-square statistic significant at the 0.05 level.

** Chi-square statistic significant at the 0.01 level.

Search Effort Among Households That Moved

Although most search difficulties did not prevent households from moving, those households reporting problems did work harder in order to move. The causal direction of the relationship between number of units seen and problems experienced is not clear. It seems reasonable that a household experiencing problems would have to try harder and look at more units before finding one to which it could move. An alternative explanation, however, is that a household conducting an extensive search and visiting a large number of units was more likely to encounter problems such as landlord objections or discrimination.

The number of units seen by a household has been used as a measure of search effort, and it is positively related to a number of factors that would be expected to make search more difficult. Table 5-4 reports the average number of units seen by movers, stratified by the factors that may have caused the process of finding a unit to be more difficult.

In Pittsburgh, households looking for houses and those looking for larger units put more effort into their search in order to be able to move than those seeking smaller units. The relationship between effort and type of unit does not hold in Phoenix, probably reflecting the greater availability of single-family houses for rent there. Also, movers in Phoenix did not look at significantly more places if they were searching for larger units.

Households that wanted to leave their neighborhoods looked at significantly more units at both sites than those who wanted to stay. Having a specific neighborhood in mind made the search process somewhat easier for movers in Pittsburgh, but not in Phoenix. The difference in the average number of units seen by households that searched outside their neighborhoods and those that did not is particularly striking at both sites. Households searching outside saw an average of 10.2 units in Pittsburgh and 12.1 in Phoenix. Households that confined their search to their own neighborhoods averaged 3.5 units in Pittsburgh and 3.9 in Phoenix.

Movers that reported problems in searching looked at more units than those that did not. Relatively few households reported difficulty with landlords objecting to program requirements. Households that reported having diffi-

Table 5-4

AVERAGE NUMBER OF PLACES SEEN BEFORE MOVING
BY SEARCH OBJECTIVES AND PROBLEMS ENCOUNTERED

	PITTSBURGH		PHOENIX	
	NUMBER OF MOVERS IN GROUP	AVERAGE NUMBER OF PLACES SEEN	NUMBER OF MOVERS IN GROUP	AVERAGE NUMBER OF PLACES SEEN
Search Objectives				
Type of unit desired				
House	252	8.4**	337	6.4
Apartment	183	5.3	221	6.3
Number of bedrooms desired[a]				
Zero or one	69	2.9**	73	5.7
Two	184	6.4	270	6.1
Three	153	9.4	175	6.7
Four or more	29	8.6	40	6.9
Wanted to leave neighborhood				
Yes	203	9.2**	294	7.2*
No	230	5.3	263	5.3
Had a specific neighborhood in mind[b]				
Yes	111	7.8	144	7.7
No	91	10.9	148	6.8
Searched outside of neighborhood				
Yes	234	10.2**	289	12.1**
No	199	3.5	269	3.9
Problems Encountered				
Problem with landlord objection to program requirements				
Yes	11	7.7	19	9.9†
No	424	7.1	539	6.2
Problem with discrimination				
Yes	66	12.7**	33	11.2**
No	369	6.1	525	6.0
Financial problems				
Yes	42	10.9*	57	10.9**
No	393	6.7	501	5.8
Problem knowing where to look				
Yes	119	8.2	98	9.7**
No	316	6.7	460	5.6

SAMPLE: Experimental and Control households that moved to new housing and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

a. Significance level based on analysis of variance rather than on a t-statistic.
b. Asked only of households that wanted to leave their neighborhood.
† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

culty finding a place to live because they had problems with discrimination[1] looked at an average of 11 to 13 units and those that did not at approximately 6. Households reporting financial problems in finding a unit looked at significantly more units on the average (10.9 in Pittsburgh and 10.9 in Phoenix) than households without such problems (6.7 in Pittsburgh and 5.8 in Phoenix). Problems in knowing where to look led movers to see a significantly larger number of units in Phoenix, but not in Pittsburgh.

Most search difficulties did not lower moving rates among households experiencing them. Only households searching for houses or larger units, households searching outside their neighborhoods, and households reporting financial problems were less likely to move than other households. However, households experiencing difficulties did work harder in order to move. The number of units a household saw before moving was positively related to almost all the factors that might be expected to make finding a unit more difficult.

Potential Program Assistance

These results seem to confirm that even though households may overcome search difficulties by exerting more effort, the problems they encounter do cause delays in moving. Thus it does seem likely that assistance from a housing program during search might ameliorate these difficulties and reduce the amount of effort and time households must spend to find a new unit. Evidence from another housing allowance experiment indicates that certain types of agency services may in fact make it easier for households to move. In the Administrative Agency Experiment, enrollees were required to find suitable housing within 90 days of enrollment in order to qualify for payments. At agencies operating in tight housing markets, the provision of services which responded to households' needs--such as transportation, assistance in locating appropriate units that were reasonably priced, help in negotiations with landlords about lease agreements and repairs, and legal advice--made a significant difference in whether households that attempted to move ever qualified

[1] This question asked specifically about discrimination problems which caused searchers to have trouble finding a place to live. Searchers were also asked more generally if they encountered any type of discrimination while searching and what type of discrimination was encountered. Most households that reported encountering some type of discrimination indicated that it was discimination against households with children, not racial discrimination. See Vidal (1978).

for allowance payments.[1] More formal services, designed to provide households with basic information about housing and the program, were not significantly related to movers' success in becoming recipients. This is consistent with findings in the Demand Experiment, where attendance at formal Housing Information Program sessions was not found to affect searchers moved during the experiment.[2]

Reasons Households Stopped Searching

Households that said they had become discouraged and stopped searching were asked why they had stopped. Although most of these households probably had not stopped searching permanently and resumed their search at some later time, the reasons they gave for stopping their search are a good indication of the factors they found particularly discouraging, which might have caused delays in moving.

Table 5-5 shows that of the households that said they had stopped searching, only 18 percent in Pittsburgh and 14 percent in Phoenix indicated that the difficulty of getting out and looking was an important reason for stopping. The most common reason given for stopping search at both sites was households' inability to find anything in their price range. This reason was given by 76 percent of the respondents in Pittsburgh and 66 percent in Phoenix.[3] Approximately half the respondents at both sites said that they had stopped searching simply because they got discouraged. These responses are not very informative. The most interesting result was that 43 percent of Pittsburgh respondents said that nothing was available, compared to only 14 percent of respondents in Phoenix. This indicates the difference in the housing market at the two sites; rental housing was much more available in Phoenix.

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[1] See Holshouser (1977).

[2] A variable indicating attendance at these sessions was not significant in a logit equation estimating the probability of moving among searchers. This confirms the findings for the first year reported in Weinberg, et al. (1977).

[3] The frequency with which households cited this reason has little relationship to the amount of their allowance payment. Control households and Housing Gap households not meeting requirements were no more likely to say they had trouble finding units in their price range than other households. Average payment amounts among Experimental households that cited this reason were not lower than among other households.

Table 5-5

REASONS GIVEN BY HOUSEHOLDS
THAT HAD STOPPED SEARCHING

REASON FOR STOPPING SEARCH	PITTSBURGH (N = 51)[a] NUMBER GIVING REASON[b]	PITTSBURGH (N = 51)[a] PERCENTAGE GIVING REASON	PHOENIX (N = 35)[a] NUMBER GIVING REASON[b]	PHOENIX (N = 35)[a] PERCENTAGE GIVING REASON
Got discouraged	25	49%	16	46%
Couldn't find anything in price range	39	76	23	66
Found it difficult to get out and look	9	18	5	14
Were discriminated against	4	8	0	0
Couldn't find anything available	22	43	5	14
Personal reasons	6	12	7	20

SAMPLE: Experimental and Control households that said they had stopped searching and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

a. The question was asked only of households that said they had stopped searching.

b. A household could give more than one reason.

REFERENCES

Holshouser, William, Jr., Supportive Services in a Housing Allowance Program, Cambridge, Mass., Abt Associates Inc., 1977.

Vidal, Avis, The Search Behavior of Black Households in Pittsburgh in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., July 1978 (revised June 1980).

Weinberg, Daniel H., Reilly Atkinson, Avis Vidal, James Wallace, and Glen Weisbrod, Locational Choice, Part I: Search and Mobility in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., August 1977.

CHAPTER 6

SUMMARY

The housing allowance offered to households in the Demand Experiment did increase mobility during the first two years after enrollment, but only moderately. There was a striking difference in overall levels of mobility in Pittsburgh and Phoenix during the two years of the experiment, but the pattern of experimental and demographic effects on mobility was often similar at the two sites.

Mobility rates in Pittsburgh and Phoenix during the experiment were very different. Both Experimental and Control households in Phoenix moved at a rate much higher than that of either group in Pittsburgh. However, this difference appears to reflect regional differences between the Northeast and the West. The mobility rates observed for Demand Experiment households in Pittsburgh and Phoenix appear to be fairly typical of the mobility rates of low-income renters in the two regions.

In spite of the large differences in overall mobility rates between the two sites, the pattern of experimental effects is fairly similar. Although there are sometimes suggestive differences, tests showed that it was possible to pool results for the two sites without significant loss of explanatory power if a term were included for the difference in overall mobility rates between the sites. Table 6-1 shows the experimental effect for each of the different treatment groups in the experiment. The overall effect of the offer was to increase the probability of moving among experimental households by about 0.05 in Pittsburgh, 0.10 in Phoenix, and 0.07 for the two sites combined. In terms of the major experimental groups, the combined site analysis estimates significant effects on the mobility of households in the Percent of Rent group and households in the Housing Gap group that were living in units which did not meet the housing requirements at the time they enrolled. In contrast, the estimated effect for Housing Gap households that already met the requirements at enrollment was smaller and insignificant.

These results are fairly consistent across sites, except for the mobility of Housing Gap households that already met the housing requirements. The experimental offer had a significant positive effect for this group in Phoenix, but an insignificant (and negative) effect in Pittsburgh.

Table 6-1

SUMMARY OF EXPERIMENTAL EFFECTS

	PITTSBURGH	PHOENIX	COMBINED SITES
All Experimental Households			
Experimental effect	0.05	0.10	0.07
t-statistic	1.56	3.07**	3.27**
Percent of Rent Households			
Experimental effect	0.05	0.11	0.07
t-statistic	1.62†	2.95**	2.93**
Housing Gap Households That Met Requirements at Enrollment			
Experimental effect	-0.04	0.15	0.03
t-statistic	-0.62	1.99*	0.55
Housing Gap Households That Did Not Meet Requirements at Enrollment			
Experimental effect	0.09	0.11	0.10
t-statistic	1.94†	2.51*	3.12**

DATA SOURCES: Figures 4-1, 4-2, and 4-3 in Chapter 4, Tables XI-2, XI-4, XI-6 and XI-7 in Appendix XI.

NOTE: Experimental effect estimates are based on partial derivatives of the logit coefficients of dummy variables which contrast the mobility of Experimental and Control households.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

The experimental effects discussed above are based on households that remained active in the experiment for two years and may be biased by the effect of attrition. Households that moved were more likely to drop out of the program than households that did not. Control households were more likely to drop out than Experimental households. Thus estimated moving rates over two years may tend to underestimate overall mobility and overestimate the difference between Experimental and Control households. However, analyses based on all enrolled households, reported in Appendix IV, show a pattern of experimental effects very similar to those based on households that remained active.

Mobility among Experimental and Control households was affected by similar factors at both sites. In general, the allowance offer did not alter these differences in mobility. Age of household head had a particularly large and consistent effect. Older households were likely to have been in their units longer at the time they enrolled in the experiment, and they were much less likely to move over the two years of observation (see Table 6-2).

The predominant minority group in Pittsburgh were black households; in Phoenix, Spanish American households. Effects for minority households were different at the two sites. In Pittsburgh, black households were likely to have been in their units longer when they enrolled in the experiment. Among households that remained active throughout the experiment, black households were less likely than others to move. Unlike the pattern of experimental effects, this estimated racial difference does appear to be in part due to attrition; black households do not prove to be less likely to move if households that left the program are included in the analysis (see Appendix IV). Black households still benefited less from the allowance offer than others, however, since movers that left the program cannot be considered to have taken full advantage of it.

Spanish American households in Phoenix were less mobile prior to the experiment than other households (see Table 6-2). However, the experiment had a greater effect for Spanish American households in Phoenix than for other households, so their mobility during the experiment did not differ significantly from that of other households.

Households living in inadequate or crowded housing when they entered the experiment were more likely to move than households in better housing situa-

Table 6-2

SUMMARY OF THE EFFECT OF AGE AND MINORITY STATUS ON MOBILITY

	PITTSBURGH			PHOENIX			COMBINED SITES
	EFFECT ON LENGTH OF TENURE AT ENROLLMENT (months)	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT	INTERACTION WITH EXPERIMENTAL EFFECT	EFFECT ON LENGTH OF TENURE AT ENROLLMENT (months)	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT	INTERACTION WITH EXPERIMENTAL EFFECT	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT
Age of Household Head (decades)							
Effect	16.2	-0.05	None	9.2	-0.06	None	-0.06
t-statistic	12.67**	-4.33**		15.09**	-6.09**		-6.17**
Minority Status							
Black (in Pittsburgh)							
Effect	8.2	-0.08	None				-0.04
t-statistic	1.89†	-2.61**					-1.27
Spanish American (in Phoenix)							
Effect				8.9	0.00	Significant	-0.03
t-statistic				3.60**	0.02	and positive	-0.89

DATA SOURCES: Tables 3-1 and 3-4 in Chapter 3, Tables VIII-1 and VIII-2 in Appendix VIII, Table XI-2 in Appendix XI.

NOTE: Effects of variables are based on regression coefficients for length of tenure and on partial derivatives of logit coefficients for the probability of moving.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.01 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

tions at both sites (see Table 6-3). Households that felt their units were crowded had a probability of moving that was 0.08 higher than that of households that did not feel they were crowded. Households living in units which lacked basic facilities had a probability of moving that was higher than that of other households by 0.07. In Pittsburgh, the experiment had a greater effect for households living in units that lacked basic facilities than for households in more adequate housing.

A number of other variables affected probability of moving during the experiment at both sites. Households with positive feelings toward their neighbors were less likely to move than those without such feelings. Households that had been more mobile than others prior to the experiment continued to have a higher moving rate. Households headed by women were more likely to move than otherwise comparable households. A change in the marital status of the household head also increased probability of moving.

These factors influenced mobility in four ways. Some factors, particularly crowding and unit quality, seem to have made households more likely to be dissatisfied with their housing at the time they enrolled in the program. Other factors, such as age and positive feelings toward neighbors, made them less predisposed to move, taking dissatisfaction into account. A number of factors influenced the probability that a household actually would search for a new unit, over and above their influence on dissatisfaction or predisposition to move. However, once a household began to search, few of its demographic characteristics, attitudes, or plans affected its probability of moving.

Although the allowance offer did have an effect on mobility, it was a moderate effect, and many households did not alter their normal mobility patterns. If the goal of a housing allowance program is to encourage or allow households to use the allowance to move to improved housing, then it appears this goal generally will be achieved at a pace set largely by normal mobility rates. Moving rates prior to the experiment suggest that although some households moved frequently, others were stable and did not move for long periods. Forty-three percent of the Pittsburgh households had moved at least once in the two years before the experiment, but 30 percent had been in their units five years or more when they enrolled. Mobility was higher in Phoenix: 71 percent of households there had moved at least once in two years, and only 12 percent had lived in the same unit five years or more when they enrolled. The elderly are

Table 6-3

SUMMARY OF THE EFFECT OF CROWDING AND PRESENCE OF BASIC FACILITIES ON MOBILITY

	PITTSBURGH		PHOENIX		COMBINED SITES
	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT	INTERACTION WITH EXPERIMENTAL EFFECT	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT	INTERACTION WITH EXPERIMENTAL EFFECT	EFFECT ON PROBABILITY OF MOVING DURING THE EXPERIMENT
Perceived Crowding					
Effect	0.09	None	0.07	None	0.08
t-statistic	2.55*		1.87†		2.89**
Living in Unit With Basic Facilities					
Effect	-0.08	Significant	-0.05	None	-0.07
t-statistic	-2.68**	and negative	-1.77†		-2.84**

DATA SOURCES: Table 3-4 in Chapter 3, Table IV-7 in Appendix IV, Tables VIII-1 and VIII-2 in Appendix VIII, Table XI-2 in Appendix XI.

NOTE: Effects of variables are based on partial derivatives of logit coefficients.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

the major demographic group that had substantially lower mobility at both sites.

The Demand Experiment offers some evidence on whether mobility represented an obstacle to households' taking full advantage of a housing allowance, and whether it might be possible for a similar program to make it easier for households to move. Households that did not search for new units during the experiment usually indicated that they were satisfied where they were. A program similar to the Demand Experiment seems unlikely to affect the mobility of many of these households. Most households that did search for new housing had moved or were still searching at the end of the experiment. There is no evidence of a large group of frustrated searchers who tried to move and failed.

Several factors appear to have made it more difficult for searchers to move, even if they did not prevent them from moving. Such obstacles can be important, particularly if a program has a time limit for meeting housing requirements. Even in programs without a time limit, search difficulties that delay moving are likely to delay response to an allowance offer.

There is little evidence that the difficulty of going out and looking at units kept searchers from moving. Therefore, providing services such as transportation or child care probably would be unlikely to have much effect on mobility. Where difficulties did arise was in the search process itself. Households that wanted to leave their neighborhoods and those that searched outside the neighborhoods where they were living at enrollment had to look at more units before finding ones to which they could move than those who wanted to stay in their own neighborhoods. Households looking for large units also had to search harder. It is possible that if a housing allowance program could keep a file of available large units, or provide current information on the availability of units in various neighborhoods, it could make the search process easier and faster for these households. Only a few households reported problems with landlords' objections to the program and discrimination. A higher level of search effort was reported by the searchers that did experience such problems, however.

One alternative for increasing mobility among searchers that did not move in the experiment would be to increase their allowance payments. Financial problems often were cited by searchers, and households reporting such problems were less likely to move than other households. The lack of available units in their price range was the reason most frequently given by households

that said they had stopped searching. Households reporting financial difficulties were not receiving lower payments than other households, so it is not certain to what extent increasing their payments would have increased their mobility. However, the probability of moving increased with subsidy amount for several treatment groups, so it is possible that larger allowance payments could increase mobility. For example, according to the logit estimation of the effect of subsidy amount for Percent of Rent households in Phoenix, an increase of approximately $25 per month could have increased moving rates by 10 percentage points.[1]

[1]Note that this estimate varies over a possible range determined by its standard error.

APPENDIX I

DESIGN OF THE DEMAND EXPERIMENT

This appendix presents a brief overview of the Demand Experiment's purpose, data collection procedures, experimental design, and sample allocation.

I.1 PURPOSE OF THE DEMAND EXPERIMENT

The Demand Experiment is one of three experiments established by the U.S. Department of Housing and Urban Development (HUD) as part of the Experimental Housing Allowance Program.[1] The purpose of these experiments is to test and refine the concept of housing allowances.

Under a housing allowance program, money is given directly to individual low-income households to assist them in obtaining adequate housing. The allowance may be linked to housing either by making the amount of the allowance depend on the amount of rent paid or by requiring that households meet certain housing requirements in order to receive the allowance payment. The initiative in using the allowance and the burden of meeting housing requirements are therefore placed upon households rather than upon developers, landlords, or the government.

The housing allowance experiments are intended to assess the desirability, feasibility, and appropriate structure of a housing allowance program. Housing allowances could be less expensive than some other kinds of housing programs. Allowances permit fuller utilization of existing sound housing because they are not tied to new construction. Housing allowances may also be more equitable. The amount of the allowance can be adjusted to changes in income without forcing the household to change units. Households may also, if they desire, use their own resources (either by paying higher rent or by searching carefully) to obtain better housing than is required to qualify for the allowance. As long as program requirements are met, housing allowances offer households considerable choice in selecting housing most appropriate to their needs--for example, where they live (opportunity to locate near schools, near work, near friends

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[1] The other two experiments are the Housing Allowance Supply Experiment and the Administrative Agency Experiment.

or relatives, or to break out of racial and socioeconomic segregation) or the type of unit they live in (single-family or multifamily). Finally, housing allowances may be less costly to administer. Program requirements need not involve every detail of participant housing. The burden of obtaining housing that meets essential requirements is shifted from program administrators to participants.

These potential advantages have not gone unquestioned. Critics of the housing allowance concept have suggested that low-income households may lack the expertise necessary to make effective use of allowances; that the increased supply of housing needed for special groups such as the elderly will not be provided without direct intervention; and that an increase in the demand for housing without direct support for the construction of new units could lead to a substantial inflation of housing costs.[1]

If housing allowances prove desirable, they could be implemented through a wide range of possible allowance formulas, housing requirements, nonfinancial support (such as counseling), and administrative practices. The choice of program structure could substantially affect both the program's costs and impact.

The Demand Experiment addresses issues of feasibility, desirability, and appropriate structure by measuring how individual households (as opposed to the housing market or administrative agencies) react to various allowance formulas and housing standards requirements. The analysis and reports are designed to answer six policy questions:

1. Participation

   Who participates in a housing allowance program? How does the form of the allowance affect the extent of participation for various households?

2. Housing Improvements

   Do households that receive housing allowances improve the quality of their housing? At what cost? How do households

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[1] The issue of inflation is being addressed directly as part of the Housing Allowance Supply Experiment.

that receive a housing allowance seek to improve their housing--by moving, by rehabilitation? With what success?

3. Locational Choice

For participants who move, how does their locational choice compare with existing residential patterns? Are there non-financial barriers to the effective use of a housing allowance?

4. Administrative Issues

What administrative issues and costs are involved in the implementation of a housing allowance program?

5. Form of Allowance

How do the different forms of housing allowance compare in terms of participation, housing quality achieved, locational choice, costs (including administrative costs), and equity?

6. Comparison with Other Programs

How do housing allowances compare with other housing programs and with income maintenance in terms of participation, housing quality achieved, locational choice, costs (including administrative costs), and equity?

The Demand Experiment tests alternative housing allowance programs to provide information on these policy issues. While the experiment is focused on household behavior, it also offers data on program administration to supplement information gained through the Administrative Agency Experiment. Finally, the Demand Experiment gathers direct information on participants and housing conditions for a sample of households in conventional HUD-assisted housing programs at the two experimental sites for comparison with allowance recipients.

I.2 DATA COLLECTION

The Demand Experiment was conducted at two sites--Allegheny County, Pennsylvania (Pittsburgh), and Maricopa County, Arizona (Phoenix). HUD selected these two sites from among 31 Standard Metropolitan Statistical Areas (SMSAs) on the basis of their growth rates, rental

vacancy rates, degree of racial concentration and housing costs. Pittsburgh and Phoenix were chosen to provide contrasts between an older, more slowly growing Eastern metropolitan area and a newer, relatively rapidly growing Western metropolitan area. In addition, Pittsburgh has a substantial black minority and Phoenix a substantial Spanish American minority population.

Most of the information on participating households was collected from:

Baseline Interviews, conducted by an independent survey operation before households were offered enrollment;

Initial Household Report Forms and monthly Household Report Forms, completed by participating households during and after enrollment, which provided operating and analytic data on household size and income and on housing expenditures.

Supplements to the Household Report Forms, completed annually by participating households after enrollment, which provide data on assets, income from assets, actual taxes paid, income from self-employment, and extraordinary medical expenses;

Payments and status data on each household maintained by the site offices;

Housing Evaluation Forms, completed by site office evaluators at least once each year for every dwelling unit occupied by participants, which provide information on housing quality;

Periodic Interviews, conducted approximately six, twelve, and twenty-four months after enrollment by an independent survey operation; and

Exit Interviews, conducted by an independent survey operation for a sample of households that declined the enrollment offer or dropped out of the program.

Surveys and housing evaluations were also administered to a sample of participants in other housing programs: Public Housing, Section 23/8 Leased Housing, and Section 236 Interest Subsidy Housing.

Since households were enrolled throughout the first ten months of operations, the operational phase of the experiment extended over nearly four years in total. Analysis will be based on data collected from households during their first two years after enrollment in the experiment. The experimental programs were continued for a third year

in order to avoid confusion between participants' reactions to the experimental offers and their adjustment to the phaseout of the experiment. During their last year in the experiment eligible and interested households were aided in entering other housing programs.

I.3 ALLOWANCE PLANS USED IN THE DEMAND EXPERIMENT

The Demand Experiment tested a number of combinations of payment formulas and housing requirements and several variations within each of these combinations. These variations allow some possible program designs to be tested directly. More importantly, they allow estimation of key responses such as participation rates and changes in participant housing in terms of basic program parameters such as the level of allowances; the level and type of housing requirements; the minimum fraction of its own income that a household can be expected to contribute toward housing; and the way in which allowances vary with household income and rent. These response estimates can be used to address the policy questions for a larger set of candidate program plans, beyond the plans directly tested.[1]

Payment Formulas

Two payment formulas were used in the Demand Experiment--Housing Gap and Percent of Rent.

Under the Housing Gap formula, payments to households constitute the difference between a basic payment level, C, and some reasonable fraction of family income. The payment formula is:

$$P = C - bY$$

where P is the payment amount, C is the basic payment level, "b" is the rate at which the allowance is reduced as income increases, and Y is

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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 Abt Associates Inc., Experimental Design and Analysis Plan of the Demand Experiment, Cambridge, Mass., August 1973, and in Abt Associates Inc., Summary Evaluation Design, Cambridge, Mass., June 1973. Details of the operating rules of the Demand Experiment are contained in Abt Associates Inc., Site Operating Procedures Handbook, Cambridge, Mass., April 1973.

the net family income.[1] The basic payment level, C, varies with household size, and is proportional to C*, the estimated cost of modest existing standard housing at each site.[2] Thus, payment under the Housing Gap formula can be interpreted as making up the difference between the cost of decent housing and the amount of its own income that a household should be expected to pay for housing.[3]

Under the Percent of Rent formula, the payment is a percentage of the household's rent. The payment formula is:

$$P = aR$$

where R is rent and "a" is the fraction of rent paid by the allowance. In the Demand Experiment the value of "a" remained constant once a household had been enrolled.[4]

Housing Requirements

The Percent of Rent payment formula is tied directly to rent: a household's allowance payment is proportional to the total rent. Under the Housing Gap formula, however, specific housing requirements are needed to tie the allowance to housing. Two types of housing requirement were used: Minimum Standards and Minimum Rent.

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[1] In addition, whatever the payment calculated by the formula, the actual payment cannot exceed the rent paid.

[2] The housing cost parameter, C*, was established from estimates given by a panel of qualified housing experts in Pittsburgh and Phoenix. For more detailed discussion regarding the derivation of C*, refer to Abt Associates Inc., Working Paper on Early Findings, Cambridge, Mass., January 1975, Appendix II.

[3] As long as their housing met certain requirements (discussed below), Housing Gap households could spend more or less than C* for housing, as they desired, and hence contribute more or less than "b" of their own income. This is in contrast to other housing programs, such as Section 8 (Existing).

[4] Five values of "a" were used in the Demand Experiment. Once a family had been assigned its "a" value, the value generally stayed constant in order 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 rose beyond a certain point, the value of "a" dropped rapidly to zero. Similarly, the payment under Percent of Rent could not exceed C* (the maximum payment under the modal Housing Gap plan), which effectively limited the rents subsidized to less than C*/a.

Under the Minimum Standards requirement, participants received the allowance payment only if they occupied dwellings that met certain physical and occupancy standards. Participants occupying units that did not meet these standards either had to move or arrange to improve their current units to meet the standards. Participants already living in housing that met standards could use the allowance to pay for better housing or to reduce their rent burden (the fraction of income spent on rent) in their present units.

If housing quality is broadly defined to include all residential services, and if rent levels are highly correlated with the level of services, then a straightforward housing requirement (one that is relatively inexpensive to administer) would be that recipients spend some minimum amount on rent. Minimum Rent was considered as an alternative to Minimum Standards in the Demand Experiment, in order to observe differences in response and cost and to assess the relative merits of the two types of requirements. Although the design of the experiment used a fixed minimum rent for each household size, a direct cash assistance program could employ more flexible structures. For example, some features of the Percent of Rent formula could be combined with the Minimum Rent requirement. Instead of receiving a zero allowance if their rent is less than the Minimum Rent, households might be paid a fraction of their allowance depending on the fraction of Minimum Rent paid.

Allowance Plans Tested

The three combinations of payment formulas and housing requirements used in the Demand Experiment were Housing Gap Minimum Standards, Housing Gap Minimum Rent, and Percent of Rent. A total of 17 allowance plans were tested.

The twelve Housing Gap allowance plans are shown in Table I-1. The first nine plans include three variations in the basic payment level, C (1.2C*, C*, and 0.8C*) and three variations in housing requirements (Minimum Standards, Minimum Rent Low (0.7C*), and Minimum Rent High (0.9C*)). The value of "b"--the rate at which the allowance is reduced as income increases--is 0.25 for each of these plans. The next two

plans have the same level of C (C*) and use the Minimum Standards Housing Requirement, but use different values of "b". In the tenth plan the value of "b" is 0.15, and in the eleventh plan, 0.35. Finally, the twelfth plan is unconstrained, that is, it has no housing requirement. This unconstrained plan allows a direct comparison with a general income-transfer program.

Eligible households that did not meet the housing requirement were still able to enroll. They received full payments whenever they met the requirements during the three years of the experiment. Even before meeting the housing requirements, such households received a cooperation payment of $10 per month as long as they completed all reporting and interview requirements.

Within the Housing Gap design, the average effects of changes in the allowance level or housing requirements can be estimated for all the major responses. In addition, interactions between the allowance level and the housing requirement can be assessed. Responses to variations in the allowance/income schedule (changes in "b") can be estimated for the basic combination of the Minimum Standards housing requirement and payments level of C*.

The Percent of Rent allowance plans consist of five variations in "a" (the proportion of rent paid to the household), as shown in Table I-1.[1] A demand function for housing is estimated primarily from the Percent of Rent observations. Demand functions describe the way in which the amount people will spend on housing is related to their income, the relative price of housing and other goods, and various demographic characteristics. Such functions may be used to simulate response to a variety of possible rent subsidy programs not directly tested within the Demand Experiment. Together with estimates of supply response, they may also be used to simulate the change in market prices and housing expenditures over time due to shifts in housing demand or costs.

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[1] Designation of multiple plans for the same "a" value reflects an early assignment convention and does not indicate that the households in these plans were treated differently for either payment purposes or analysis.

Table I-1
ALLOWANCE PLANS TESTED

HOUSING GAP: ($P = C - bY$, where C is a multiple of C^*)

b VALUE	C LEVEL	HOUSING REQUIREMENTS			
		Minimum Standards	Minimum Rent Low = $0.7C^*$	Minimum Rent High = $0.9C^*$	No Requirement
b = 0.15	C^*	Plan 10			
b = 0.25	$1.2C^*$	Plan 1	Plan 4	Plan 7	
	C^*	Plan 2	Plan 5	Plan 8	Plan 12
	$0.8C^*$	Plan 3	Plan 6	Plan 9	
b = 0.35	C^*	Plan 11			

Symbols: b = Rate at which the allowance decreases as the income increases.
C^* = Basic payment level (varied by family size and also by site).

PERCENT OF RENT ($P = aR$) :

a = 0.6	a = 0.5	a = 0.4	a = 0.3	a = 0.2
Plan 13	Plans 14 - 16	Plans 17 - 19	Plans 20 - 22	Plan 23

CONTROLS:

With Housing Information	Without Housing Information
Plan 24	Plan 25

Control Groups

In addition to the various allowance plans, control groups were necessary in order to establish a reference level for responses, since a number of uncontrolled factors could also induce changes in family behavior during the course of the experiment. Control households received a cooperation payment of $10 per month. They reported the same information as families that received allowance payments, including household composition and income; they permitted housing evaluations; and they completed the Baseline Interview and the three Periodic Interviews. (Control families were paid an additional $25 fee for each Periodic Interview.)

Two control groups were used in the Demand Experiment. Members of one group (Plan 24) were offered a Housing Information Program when they joined the experiment and were paid $10 for each of five sessions attended. (This program was also offered to households enrolled in the experimental allowance plans but they were not paid for their attendance.) The other control group (Plan 25) was not offered the Housing Information Program.

All the households in the various allowance plans had to meet a basic income eligibility requirement. This limit was approximately the income level at which the household would receive no payment under the Housing Gap formula:

$$\text{Income Eligibility Limit} = \frac{C^*}{0.25}$$

In addition, households in plans with lower payment levels (Plans 3, 6, 9 and 11) had to have incomes low enough at enrollment to receive payment under these plans. Finally, only households with incomes in the lower third of the eligible population were eligible for enrollment in Plan 13, and only those in the upper two-thirds were eligible for Plan 23.

I.4 FINAL SAMPLE

Final analysis of the impact of the housing allowance will be based on the first two years of experimental data. Thus, the key sample size

for this report and the other reports in this series is the number of households in the experiment at the end of the first two years. The two-year sample size is shown in Table I-2, and comprises households that were still active, in the sense that they were continuing to fulfill reporting requirements. The sample size for a particular analysis may be smaller. For example, analysis of the mobility of searchers is based on the sample of households that either searched for housing or moved during their participation in the program. The primary analysis of housing expenditures uses only those households that met the applicable housing requirements during their first year of enrollment.

Table I-2

SAMPLE SIZE AFTER TWO YEARS

HOUSING GAP: (P = C - bY, where C is a multiple of C*)

b VALUE	C LEVEL	HOUSING REQUIREMENTS			
		Minimum Standards	Minimum Rent Low = 0.7C*	Minimum Rent High = 0.9C*	No Requirement
b = 0.15	C*	Plan 10 PIT = 45 PHX = 36			
b = 0.25	1.2C*	Plan 1 PIT = 33 PHX = 30	Plan 4 PIT = 34 PHX = 24	Plan 7 PIT = 30 PHX = 30	
	C*	Plan 2 PIT = 42 PHX = 35	Plan 5 PIT = 50 PHX = 39	Plan 8 PIT = 44 PHX = 44	Plan 12 PIT = 63 PHX = 40
	0.8C*	Plan 3 PIT = 43 PHX = 39	Plan 6 PIT = 44 PHX = 35	Plan 9 PIT = 43 PHX = 35	
b = 0.35	C*	Plan 11 PIT = 41 PHX = 34			

Total Housing Gap: 512 households in Pittsburgh, 421 households in Phoenix.

Symbols: **b** = Rate at which the allowance decreases as the income increases.
C* = Basic payment level (varied by family size and also by site).

PERCENT OF RENT (P = aR) :

a = 0.6	a = 0.5	a = 0.4	a = 0.3	a = 0.2
Plan 13 PIT = 28 PHX = 21	Plans 14 - 16 PIT = 109 PHX = 81	Plans 17 - 19 PIT = 113 PHX = 66	Plans 20 - 22 PIT = 92 PHX = 84	Plan 23 PIT = 65 PHX = 46

Total Percent of Rent: 407 households in Pittsburgh, 298 households in Phoenix.

CONTROLS:

With Housing Information	Without Housing Information
Plan 24 PIT = 159 PHX = 137	Plan 25 PIT = 162 PHX = 145

Total Controls: 321 households in Pittsburgh, 282 households in Phoenix.

NOTE: This sample includes households that were active, although not necessarily receiving payments, after two years of enrollment: households whose enrollment income was above the eligibility limits or that moved into subsidized housing or their own homes are excluded. While data on the excluded households may be useful for special analyses, particular analyses may also require the use of a still more restricted sample than the one shown here.

APPENDIX II

LITERATURE REFERENCES FOR VARIABLES USED IN THE REPORT

The variables analyzed in this report have been found to be of recurring importance in other studies of mobility. The discussion in this appendix cites a number of studies which have included variables of the four types analyzed--life cycle factors, housing and neighborhood factors, social bonds, and other household characteristics.

Life Cycle Factors

The importance of life cycle stages and changes in the life cycle has been found repeatedly in mobility research ranging from Thomas' Research Memorandum on Migration Differentials published in 1938, to time series data collected in the Current Population Survey. Bogue (1969) calculated the median age of mobile persons as 22.9 years during 1964-1965, but noted that the median can be misleading; mobility rates were high during the entire young adult years of 18 to 34. Speare et al. (1974) point out that age does not explain mobility since it merely denotes a physiological process. Rather, the relationship between age and mobility must be understood through its connection with other social characteristics and processes.

Marital formation or dissolution and the presence or absence of children are key variables in the relationship of life cycle and mobility. Studies by Simmons (1968), Lansing and Kish (1957), Speare (1970), Chevan (1971), and Long (1972) all demonstrate the importance of life cycle factors for mobility. Several of these factors, however, appear to exert contradictory pressures on mobility. For example, the number and ages of children have been found to retard mobility both within and between counties (Long, 1972). On the other hand, Chevan (1971) found that, controlling for marital duration, the birth of children was associated with higher rates of moving.

The most extensive recent application of the life cycle approach is that of Speare et al. (1974). Using data gathered from retrospective residence histories obtained from interviews with residents in Rhode Island during 1967 and 1968, this study examined the influence of life cycle factors along with five other categories of variables. The overall percentage of variance explained was modest.

Housing and Neighborhood Factors

A number of housing and neighborhood factors have been demonstrated to influence mobility. Rossi (1955) found that complaints about space considerations in the housing unit were prominently mentioned and played an important part in mobility intentions. He points out that subjective perceptions of crowding are better predictors of mobility intentions than objective measures such as persons-per-room (1955, pp. 77-80). However, Chevan (1971) found that household density, measured by persons-per-room, was significantly related to moving behavior. Comparing couples that had moved during a three-year period with couples that did not move during that period, he found that movers "had higher initial densities, would have had substantially higher densities had they not moved, but had terminal (after move) densities" similar to those of nonmovers (1971, p. 451).

Just as crowding in an individual household influences mobility, density of population in a neighborhood has been related to mobility (Moore, 1971; Lansing and Hendricks, 1967). Lansing and Hendricks examined how neighborhood density interacts with perceived crowding and found consistent relationships which could act as stimuli to mobility. In addition to density, locational characteristics such as access to work, shopping facilities, schools, and suburban locations have been studied in relation to mobility (Rossi, 1955; Lansing and Mueller, 1964; Speare et al., 1974; DeJong, 1977).

Social Bonds

Social bonds refer to those ties with family, friends, and community which influence the decision to move. Ritchey (1976, p. 389) states that "the presence of relatives and friends is a valued aspect of life that constrains migration." As noted earlier, Long (1972) has demonstrated that the presence of school age children acts to deter mobility. Similarly, duration of residence (Morrison, 1967; Land, 1969; Speare, 1970; Bach and Smith, 1977); social and locality participation (Sabagh et al., 1969; Firey, 1947), and community and residential satisfaction (Bach and Smith, 1977; Speare, 1974) have been tied to mobility. Most of these factors express the degree to which the household is integrated into the local community. As Lansing and Mueller (1967, p. 150) state, "preferences about location are strongly influenced by family ties and ties to friends."

Other Household Characteristics

Other household characteristics provide information on the background and socialization of the household members. Prominent among these characteristics are age, sex, race or ethnicity, and socioeconomic status. Differentials in mobility by these characteristics have been noted from the earliest studies (Ravenstein, 1885; 1889) to the present day (Lee, 1966; Bogue, 1969; Ritchey, 1976). Bogue (1969) reports differences in both migration and residential mobility by race, a finding supported by the Current Population Survey (U.S. Bureau of the Census, 1967) and studies by Biggar (1971) and Deskins (1972). Differentials by various socioeconomic factors--education, occupation, income--are also well established (Suval and Hamilton, 1965; Lee, 1966; Lansing and Mueller, 1967; Bogue, 1968; Long, 1973).

One additional factor which should be considered is prior mobility experience, or what Speare et al. (1974) term "mobility potential." This follows from several studies which indicate that much mobility is accounted for by the behavior of repeat movers (Goldstein, 1964; Bogue, 1969; Van Arsdol et al., 1968). Exactly how this prior experience operates is unclear. Van Arsdol et al. (1968) suggest that repeat movers are more familiar with factors which aid or hinder mobility and are thus more likely to move. Another possibility is that frequent movers are not as tightly integrated into their communities. Regardless of the process through which prior mobility experience operates, empirical work consistently finds a significant effect of prior moves.

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APPENDIX III

VARIABLE DEFINITIONS AND SAMPLE DESCRIPTION

This appendix focuses on definitions of the variables and the two major samples used in the analysis. Six categories of variables are discussed: dependent variables (dissatisfaction, predisposition to move, search, and move), life cycle factors, other household characteristics, housing and neighborhood factors, social bonds and program factors.

III.1 DEPENDENT VARIABLES

Four different dependent variables are used at each of the four stages of the mobility model: dissatisfaction, predisposition to move, search, and move.

Dissatisfaction

In the Baseline Interview (questions 1 and 2), households were asked about satisfaction with their present unit and neighborhood. Both are measured on a four point scale:

Very Satisfied

Somewhat Satisfied

Somewhat Dissatisfied

Very Dissatisfied.

Households in the first two categories were grouped together as being satisfied, and households in the last two categories as being dissatisfied. Households were further categorized by whether they were dissatisfied with either their unit or their neighborhood at enrollment or satisfied with both. This latter categorization maximizes the size of the dissatisfied group. It was chosen because satisfaction levels were high and an inclusive definition was necessary if the dissatisfied group was to be large enough for analysis.

Predisposition to Move

Households responding to the Baseline Interview were asked which of five actions they would take if they had $50 more to spend on rent every month:

Move from this unit

Have landlord improve this unit

Would continue to rent this unit, no improvements necessary

Would try to buy this unit

Other.

Households giving the first response were categorized as "predisposed to move." Households giving the second and third responses were categorized as "predisposed to stay." Other households were not categorized on this variable. (Very few households indicated that they would want to buy the unit. The most common "other" response was that the household would consider none of the above alternatives.)

Move

Determination of a move during the two years of the experiment was based on comparison of the addresses at which the Initial Household Report Form and the First, Second and Third Periodic Interviews were given.[1] Households residing at a different address at any one of the interviews were counted as having moved (regardless of their response to interview questions on moving).

Search

To determine the search activity of a particular household over the whole two years, information from the First, Second and Third Periodic Interviews was combined. If a move (as defined above) took place during the two years of the experiment or if the household reported that it searched for alternative housing in either the First, Second or Third Periodic Interviews, then the

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[1]The First, Second and Third Periodic Interviews were conducted after approximately six months, one year and two years, respectively, of program participation. The Initial Household Report Form was completed as part of the enrollment process.

household was classified as a searcher; if it did not move or report that it searched, then the household was considered not to have searched.

Households were asked if they had searched for new housing at each of the three Periodic Interviews. Households reporting that they had searched were asked about the problems they experienced during their search as well as the number of units they had actually visited. Because a household might have moved more than once during the experiment, and might have searched during the periods preceding several of the Periodic Interviews, a decision was necessary as to which search information was to be included in the analysis. Descriptions of problems reported during search were obtained from the Periodic Interview following the household's last completed move (if the household was classified as a mover) or from the last Interview when the household reported searching (if it was classified as having searched but not moved). The number of units searchers reported having seen at each Periodic Interview when they said they had searched have been added together to obtain the total number of units seen during the household's entire search effort. For households that did not move, information from all Periodic Interviews when search was reported has been included in the total. For households that moved only once, information from all interviews preceding the move as well as from the interview at which the move was reported has been included. For households that completed two or more moves, the number of units seen refers to search that occurred before the last move but after any earlier moves.

Because information on the search process itself was available only for households reporting that they had searched, there was no information on characteristics of the search process for those households that moved between interviews but did not say that they had searched or otherwise did not answer Periodic Interview questions about search behavior.

III.2 LIFE CYCLE FACTORS

Age of Head of Household

Age at the time of enrollment is derived from the date of birth of the person determined to be the head of household according to census definitions.

Number of Children

Number of children is defined as the number of children under 18 years of age who are related to the head of the household (including stepchildren and foster children). Young children listed as cousins, grandchildren, etc. are not included.

Change in Number of Children

This variable was derived by comparing the number of children of the head of household reported at enrollment with the number reported at the end of two years. The variable has two values. One indicates the presence of a change, whether it was positive or negative; the other indicates no change.

Change in Marital Status

Households were classified as married if both a household head and a spouse were present. The variable was derived by comparing marital status at enrollment with marital status at the end of two years. If the status was the same (married at both times or unmarried at both times) the household was included in one category. All households that were not classified the same way at both times were included in the other category.

III.3 OTHER HOUSEHOLD CHARACTERISTICS

Sex of Head of Household

To determine sex of the head of household, the census convention is used. Under this convention, all households that contain both a head of household and a spouse are classified as having a male head of household. Therefore, unless the household has a single female head, it is classified as having a male head of household.

Race/Ethnicity

The following categories of racial or ethnic identification have been used in this report:

Pittsburgh: white, black

Phoenix: white, black, Spanish American

Race determination is based on interviewer observations of Baseline Interview respondents. There were relatively few American Indians, Orientals, and other nonwhites in the sample. Households were designated as Spanish American in Phoenix based on their surname according to census conventions.

Years of Education of Household Head

This variable is measured as the number of years of school completed by the census head of household.

Per Capita Income

The income variable used in this report is an analytic definition of household income, which measures disposable income. The definition of income, referred to as "Net Income for Analysis," is an estimate of the annual income received by all household members 18 years of age or older. It is the sum of earned income and other income, net of taxes and alimony paid. Table III-1 shows how this definition of income compares with the definition used in determining eligibility in the experiment and the definition used by the census. Per capita income is computed as Net Income for Analysis divided by the size of the household (the household size definition used simulates that of the census).

Number of Moves in Three Years Prior to the Experiment

The variable is equal to the number of moves a household reported making in the three years before the Baseline Interview (Question 83).

III.4 HOUSING AND NEIGHBORHOOD FACTORS

Perceived Crowding

The variable is based on Question 66 of the Baseline Interview: "Does this (house/apartment) have enough rooms to meet your household's needs?" Households reporting that their unit did not have enough rooms were classified as perceiving their unit to be crowded.

Table III-1

COMPONENTS INCLUDED IN THE DEFINITION OF NET INCOME FOR ANALYSIS AND COMPARISON WITH CENSUS AND PROGRAM ELIGIBILITY DEFINITIONS

COMPONENTS	NET INCOME FOR ELIGIBILITY	NET INCOME FOR ANALYSIS	CENSUS (GROSS INCOME)
I. GROSS INCOME			
A. Earned Income			
1. Wages and Salaries	X	X	X
2. Net Business Income	X	X	X
B. Income-Conditioned Transfers			
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			
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			
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. Income from Roomers and Boarders	-	-	-
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 Expenses			
1. Child Care Expenses	X	-	-
2. Care of Sick at Home	X	-	-
3. Work Related Expenses	X*	-	-
C. Other Expenses			
1. Alimony Paid Out	X	X	-
2. Major Medical Expenses	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.

Basic Facilities of Unit

This variable is based on the Housing Evaluation Form completed for each household at enrollment. In order to be considered as having basic facilities, a unit must have the following characteristics:

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 must 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 must be present and in working condition.

3. LIVING ROOM, BATHROOM, KITCHEN PRESENCE

   A living room, bathroom, and kitchen must be present. (This represents the dwelling unit "core," which corresponds to an efficiency unit.)

4 HEATING EQUIPMENT

   The unit must have acceptable heating equipment. Units with unvented room heaters which burn gas, oil, or kerosene; or which are heated mainly with portable electric room heaters are not considered to have acceptable heating equipment.

5. ROOF STRUCTURE

   The roof structure must be firm.

6. 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 it would include conditions such as excessive cracks or holes.)

III.5 SOCIAL BONDS

Positive Feelings Towards Neighbors

This variable is an index which combines responses to the following six questions asked at the Baseline Interview:

How many of your neighbors do you know well enough to stop and talk with--none, some, most, or all of them? (Question 70A)

In general, how friendly do you find most of the people in this neighborhood--would you say they are friendly, neither friendly nor unfriendly, or are they unfriendly? (Question 70B)

How important is it to you to live in the same neighborhood as your relatives--is it very important, fairly important, or not important? (Question 71A)

How many of your relatives now live in this neighborhood--would you say none, some, or many? (Question 71B)

How important is it to you to have neighbors of the same general background as yourself--is it very important, fairly important, or not important? (Question 72)

How many of your neighbors have the same general background as yourself--would you say none, some, or many? (Question 73).

Standardized scores were computed for four questions (70A, 70B, 71B and 73) by subtracting each score from the mean response and dividing by the standard deviation. Answers to questions 71B and 73 were weighted by the importance of the issue to the household, as indicated by responses to questions 71A and 72. Standardized scores on the four questions were summed for each household and the total scores were categorized from one to six in such a way that the population was relatively evenly distributed across categories.[1] Values for the variable range from one (least positive feelings about neighbors) to six (most positive feelings about neighbors).

Length of Residence in Enrollment Unit

This variable reflects the responses given to Question 85 asked at the Baseline Interview: "How long have you lived here, in this (house/apartment)? Response was measured in months but has been converted to years for some of the analysis.

[1] For a more detailed explanation of the creation of the index see Phipps and Napior (forthcoming).

III.6 PROGRAM FACTORS

Payment Amount

Payment amount is calculated from data collected at enrollment, according to the payment formula for the treatment group to which a household was assigned. This variable represents the payment to which an eligible household was entitled if all program requirements were met. For Housing Gap households that had not met requirements, it provides a measure of the full amount of the payment the household could receive once the requirements were met.

Minimum Standards Requirement

The Minimum Standards requirement for Housing Gap households has two separate components--a series of physical requirements for the dwelling unit and an occupancy standard. Physical requirements were developed from elements of the American Public Health Association/Public Health Service, Recommended Housing Maintenance and Occupancy Ordinance (revised 1971). The requirements, listed below, were grouped into 15 components made up of related items.

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 must 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 must be present and in working condition.

3. LIVING ROOM, BATHROOM, KITCHEN PRESENCE

   A living room, bathroom, and kitchen must be present. (This represents the dwelling unit "core," which corresponds to an efficiency unit.)

4. LIGHT FIXTURES

   A ceiling or wall-type fixture must be present and working in the bathroom and kitchen.

5. ELECTRICAL

   At least one electric outlet must be present and operable in both the living room and kitchen. A working wall switch, pull-chain

light switch, or additional electrical outlet must 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 must be at least two exits from the dwelling unit leading to safe and open space at ground level (for multifamily building only). 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 severe buckling or leaning).

9. ROOM SURFACE

Ceiling surface or wall surface for all rooms must not be in condition requiring replacement (such as surface material that is loose, containing large holes, or severely damaged).

10 CEILING HEIGHT

Living room, bathroom, and kitchen ceilings 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 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 large holes or missing parts).

13. ROOF STRUCTURE

The roof structure must be firm.

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[1]This housing standard is applied to bedrooms in determining the number of adequate bedrooms for the program occupancy standard.

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 must have a 10 percent ratio of window area to 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]

The occupancy requirement sets a maximum of two persons for every adequate bedroom, regardless of age. An adequate bedroom is a room that can be completely closed off from other rooms and meets the program housing standards of ceiling height, light/ventilation, and electrical service. In addition, the room must meet the housing standards for the condition of room structure, room surface, floor structure, and floor surface. If the dwelling unit contains four or more adequate bedrooms, it is judged to meet occupancy standards. A studio or efficiency apartment is counted as a bedroom.

Roomers and boarders are added to household size when determining whether a household meets occupancy standards, as all the rooms in the dwelling unit are taken into account.

III.7 SAMPLES USED IN ANALYSIS

The two major samples used in this report--one of enrollees and one of households active at the end of two years--are discussed below.

The Enrollee Sample

The enrollee sample is used in the analysis of prior mobility, dissatisfaction, predisposition to move and attrition. The sample includes all households enrolled in the experiment with the exception of households living in their own homes or in subsidized housing (at enrollment), and those with enrollment

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[1] This housing standard is applied to bedrooms in determining the number of adequate bedrooms for the program occupancy standard.

incomes over the eligibility limits.[1] For the analysis of prior mobility, dissatisfaction and predisposition to move, households that moved between the Baseline Interview and enrollment are also excluded, because it is not possible to match the survey responses of these households to information on the characteristics of their dwelling units at enrollment. These sample sizes are shown in Table III-2.

Households Active After Two Years

Analysis of mobility uses the sample of households active[2] at the end of two years, excluding households living in their own homes or in subsidized housing, households with enrollment incomes over the eligibility limits and households that moved between the Baseline Interview and enrollment. For specific analyses, information is missing for some independent variables, so sample sizes will not always be equal. The numbers presented in Table III-2 give upper bounds on the sample sizes.

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[1] During the enrollment process, two months were allowed after completion of the Initial Household Report Form to obtain third-party verification of participant-declared income. Because the timing of subsequent analytic reports rested on the date at which enrollment was completed for all households, an accelerated enrollment process was adopted in January 1974. Under this process, households were enrolled, if necessary, without prior verification if their Initial Household Report Form income was less than $500 above the eligibility limit. Some of the households enrolled were later determined to have incomes over the eligibility limits upon completion of verification.

[2] "Active" refers to those households that continued to reside in the program area and to fulfill reporting requirements. Note that the sample of "active" Experimental households includes Housing Gap households that were not in compliance with housing requirements and were therefore not receiving full payments, but continued to fulfill reporting requirements and receive $10 per month.

[3] Note that households that were composed of a single, nonelderly person at enrollment have been excluded from all logit analysis of households active after two years, and from the analysis of search effort and search problems in Chapter 5. Such households ordinarily were not eligible for the program, but an exception was made for handicapped persons. Among households active in the experiment at the end of two years, there were two such households in Pittsburgh and two in Phoenix.

Table III-2

MAJOR SAMPLES USED IN ANALYSIS

	PITTSBURGH			PHOENIX		
	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS
Enrollees						
All enrolled households	1,760	1,248	512	1,841	1,275	566
Excluding households living in their own homes or in subsidized housing and those with enrollment incomes over the eligibility limits	1,603	1,172	431	1,734	1,213	521
Also excluding households that moved between the Baseline Interview and enrollment	1,535	1,117	418	1,581	1,093	488
Households Active at the End of Two Years						
All households active at two years excluding households living in their own homes or in subsidized housing and those with enrollment incomes over the eligibility limits	1,240	919	321	1,001	719	282
Also excluding households that moved between the Baseline Interview and enrollment	1,184	874	310	910	645	265

DATA SOURCES: Initial and monthly Household Report Forms, Baseline Interview, and payments file.

REFERENCES

Phipps, Antony and David Napior, Subjective Assessment of Neighborhoods in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., June 1980.

APPENDIX IV

ATTRITION AND MOBILITY

Not all of the households that enrolled in the Demand Experiment remained active throughout the two years of the experiment. Table IV-1 shows the proportion of households enrolled in the experiment that were inactive at the end of the first year, and the proportion that were inactive at the end of the second year.[1]

Two major patterns are apparent in Table IV-1. First, attrition was much higher in Phoenix than in Pittsburgh. Twenty-eight percent of the households that were once active in Phoenix had become inactive by the end of one year, while only 13 percent had done so in Pittsburgh. By the end of the second year, 42 percent had become inactive in Phoenix, and 23 percent in Pittsburgh.

Table IV-1 also shows that attrition was somewhat higher for Control households than for Experimental households at both sites. In Pittsburgh 15 percent of the Control households were inactive by the end of the first year, compared to 13 percent of the Experimental households. In Phoenix, 31 percent of the Control households were inactive at one year, compared to 27 percent of the Experimental households. By the end of the second year, the pattern is more pronounced. In Pittsburgh, 26 percent of the Control households and 22 percent of Experimental households were inactive. In Phoenix, 46 percent of the Control households and 41 percent of the Experimental households were inactive.

That attrition would be higher for Control households than for Experimental households seems quite reasonable. Control households received only a $10 monthly payment for fulfilling reporting requirements, with no possibility of receiving a larger payment. Differences in attrition for Experimental and Control households might have been expected to be even larger than

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[1]The sample of enrolled households used in this appendix excludes households living in their own homes or in subsidized housing and those over the income limits (see Appendix III). Households that had become inactive could become active again if they returned to the program area and once again began to fulfill reporting requirements. This, however, was not a common occurrence.

Table IV-1

PERCENTAGE OF HOUSEHOLDS INACTIVE
AT THE END OF ONE AND TWO YEARS

	PITTSBURGH			PHOENIX		
	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS
Number of households enrolled	1,603	1,172	431	1,734	1,213	521
Number of households still active at the end of one year	1,391	1,023	368	1,251	890	361
Number of households still active at the end of two years	1,240	919	321	1,001	719	282
Percentage of enrolled households that had become inactive by the end of one year	13%	13%	15%	28%	27%	31%†
Percentage of households active at one year that became inactive by the end of two years	11	10	13	20	19	22
Percentage of enrolled households that had become inactive by the end of two years	23	22	26†	42	41	46†

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms and payments file.

† Difference in proportions for Experimental and Control households significant at the 0.10 level (two-tailed).

* Difference in proportions for Experimental and Control households significant at the 0.05 level (two-tailed).

** Difference in proportions for Experimental and Control households significant at the 0.01 level (two-tailed).

those observed. Likewise, it is not surprising that Phoenix, with its much higher mobility rates, appears to be more volatile with respect to attrition as well.

Two types of information are available about mobility among households that became inactive. First, many of the households that later terminated moved while they were still active in the program. Second, termination was frequently associated with a move. Some households left the program because they moved out of the program area, moved into subsidized housing or simply because they failed to re-establish contact after a move. It is therefore known that these households moved. For households that did not move while they were active in the program and terminated for reasons not associated with moving (such as refusal to cooperate with interviews), subsequent mobility behavior is unknown. Most of the analysis that follows classifies these households as nonmovers since they had not moved during the observation period.

The relationship of attrition, mobility, and the effect of the experiment is a troublesome issue. It seems unlikely that the three phenomena are independent in all cases, although they may not be related for some households.[1] The way in which mobility and attrition are related and the implications of their relationship for the estimation of experimental effects is not certain. At one extreme, attrition and mobility may be related, but the relationship may have nothing to do with the experiment. For example, if a household leaves the program because of a decision to move and take a job in another area, the decision may not be affected by receipt of the allowance. On the other hand, the relationship between mobility and attrition may be quite different for Experimental and Control households. Control households may leave the experiment because of a move to subsidized housing, for example, while Experimental households need not make such a move because of the allowance. If the relationship between mobility and attrition is the same for Experimental and Control households, then failure to take attrition into account should not bias estimates of experimental effects. And, similarly, if households that move and leave the program have not been affected by the allowance offer, then there is no reason to include them in a calculation

[1] More precisely, if mobility among some households that leave the program is homogeneous with respect to variables relevant in the experiment, these cases do not bias the analysis.

of experimental effects. If, on the other hand, attrition and mobility have a different relationship for Experimental and Control households, then analysis of experimental effects on mobility must adjust for the effects of attrition.

Information on the mobility of households that became inactive may be used to separate all enrollees into movers and nonmovers.[1] Attrition rates may then be calculated separately for movers and nonmovers in order to examine the relationship between mobility and attrition.

Table IV-2 shows the attrition rates for households known to have moved during the experiment and the rates for households assumed not to have moved. As expected, attrition is much higher among households that moved than among those that did not move. Thirty-two percent of the households that moved in Pittsburgh had become inactive by the end of the experiment, compared to 17 percent of those that did not move. In Phoenix, 52 percent of the households that moved had become inactive, compared to 24 percent of those that did not move.

Attrition rates for Control households were higher than those of Experimental households but the difference is significant only for households that moved. In Pittsburgh, Control movers had an attrition rate of 37 percent while Experimental movers had a rate of 30 percent. Experimental nonmovers had a rate of 16 percent while Control nonmovers had a rate of 18 percent. In Phoenix, the attrition rate for Control movers was 58 percent and for Experimental movers, 50 percent. The attrition rate for Experimental nonmovers was 24 percent and 25 percent for Control nonmovers.[2]

These figures suggest that attrition may introduce two types of bias into an analyis of mobility among households that remained active. First, it may bias mobility rates downward over time, since the more mobile households left the experiment at a higher rate. Second, any downward bias is greater for

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[1] Note that the nonmover category includes those terminees not known to have moved. This assumption is discussed further below.

[2] Some of the households classified as nonmovers that terminated may have moved. However, since attrition rates for nonmovers are quite similar for Experimental and Control households, this error is not likely to affect comparisons, though it could still bias the calculation of overall mobility rates.

Table IV-2

ATTRITION RATES OVER TWO YEARS FOR EXPERIMENTAL AND CONTROL HOUSEHOLDS BY MOVING BEHAVIOR

	PITTSBURGH			PHOENIX		
	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS
Households That Moved at Least Once						
Attrition rate	32% (660)	30% (483)	37%† (177)	52% (1,184)	50% (842)	58%** (342)
Households That Did Not Move[a]						
Attrition rate	17 (925)	16 (675)	18 (250)	24 (540)	24 (364)	25 (176)

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

a. Note that terminees not known to have moved are included in this group.

† Difference in proportions for Experimental and Control households significant at the 0.10 level (two-tailed).

* Difference in proportions for Experimental and Control households significant at the 0.05 level (two-tailed).

** Difference in proportions for Experimental and Control households significant at the 0.01 level (two-tailed).

Control households than for Experimental households. Control movers had a higher attrition rate than Experimental movers, while there was little difference in attrition for Control and Experimental nonmovers. Over time, Control households might appear to be less mobile, compared to Experimental households, only because of the effect of these differences. These two types of potential bias are examined in more detail in the following sections.

Mobility Including Terminees

One way to correct for the bias that attrition may introduce in the analysis of mobility is to include terminees in the sample of households analyzed. Although mobility information is less complete and reliable for these households than for households that remained active (and mobility that is linked to attrition may not be relevant in calculating program effects), including terminees in the sample should help to correct for any possible bias caused by attrition.

Table IV-3 shows two calculations of mobility rates during the first year of the experiment and mobility rates over two years. The first rate is based on the sample of households that were active throughout the period. The second uses the sample of all enrollees, including those that had become inactive. Terminees known to have moved are counted as movers. Those not known to have moved are considered nonmovers.[1]

As expected, including terminees in the sample increases mobility rates. For households in Pittsburgh, including terminees increases the two-year mobility rate from 37 to 42 percent. In Phoenix, the rate for all households is increased from 59 to 69 percent.

Moving rates over two years that include terminees are quite similar to the mobility rates observed for households before the experiment began. In Pittsburgh, 43 percent of the enrollees had moved at least once in the two years prior to the experiment (see Figure 3-1). Table IV-3 shows that 42 percent of these households moved at least once during the two years of the experiment. In Phoenix, 71 percent of enrollees had moved in the two years prior to the experiment and 69 percent moved during the experiment.

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[1] See Table IV-8 for an analysis which does not make this assumption.

Table IV-3

MOBILITY RATES OVER ONE AND TWO YEARS FOR
ALL ENROLLEES AND FOR HOUSEHOLDS THAT REMAINED ACTIVE

	PITTSBURGH			PHOENIX		
	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS	ALL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS
Mobility in the First Year						
Mobility rate during the first year for households that were active at the end of the year[a]	26% (1,375)	27% (1,011)	24% (3,641)	48% (1,242)	49% (884)	47% (358)
Mobility rate during the first year for all enrollees	29 (1,587)	30 (1,160)	28 (427)	57 (1,724)	57 (1,206)	56 (518)
Mobility Over Two Years						
Mobility rate during two years for households that were active at the end of two years	37 (1,230)	38 (912)	35 (318)	59 (998)	62 (718)	53** (280)
Mobility rate during two years for all enrollees	42 (1,592)	42 (1,164)	42 (428)	69 (1,730)	70 (1,211)	66 (519)

SAMPLE: Experimental and Control households enrolled and those active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

a. These percentages differ slightly from those reported in Weinberg et al. (1977) because they do not exclude households below a low-income eligibility limit.

† Difference in proportions for Experimental and Control households significant at the 0.10 level (two-tailed).

* Difference in proportions for Experimental and Control households significant at the 0.05 level (two-tailed).

** Difference in proportions for Experimental and Control households significant at the 0.01 level (two-tailed).

Table IV-3 also indicates that attrition may inflate differences in the mobility of Experimental and Control households, and that the effect increases over time, as would be expected. At the end of the first year, the difference between Experimental and Control mobility for all enrollees is 2 percentage points in Pittsburgh and 1 percentage point in Phoenix (see Table IV-4). Using the sample of households active at one year, the differences increase to 3 percentage points in Pittsburgh and 2 in Phoenix. By the end of the second year, there is no difference between the mobility of Experimental and Control households using all enrollees in Pittsburgh. In Phoenix, there is a difference of 4 percentage points for all enrollees. Using the sample of households active after two years increases these differences to 3 percentage points in Pittsburgh and 9 in Phoenix.

The increase in experimental effects between the end of the first and the end of the second year for all enrollees in Phoenix suggests that the experiment must have had an effect during the second year for households that did not move during the first year. Table IV-5 confirms this impression. Mobility rates were nearly equal in Phoenix for all enrollees during the first year. In the second year, Experimental households that had not moved during the first year had a higher probability of moving than Control households that had not moved during the first year (13 percent of the Experimental households moved in the second year but not the first, compared to 10 percent of the Control households). This difference in mobility during the second year raises the two-year difference between Experimental and Control households to 4 percentage points--70 versus 66 percent. In Pittsburgh, however, the opposite effect occurs. There is a small difference during the first year, but Control households that had not moved in the first year had a higher moving rate than Experimental households in the second year, so that the overall two-year rate is identical for Experimental and Control households.

It is difficult to know how to interpret this difference in behavior during the second year. There appears to have been some delayed response to the allowance offer in Phoenix. Perhaps households waited to make sure that the allowance was going to continue for some time. In Pittsburgh, if households were going to respond they did so right away.

Using the full enrollee sample reduces the apparent effect of the experiment at both sites. There is still a difference in the mobility of Control and

Table IV-4

DIFFERENCE IN MOBILITY RATES OF EXPERIMENTAL AND CONTROL HOUSEHOLDS OVER TWO YEARS
(Based on Table IV-3)

	PITTSBURGH DIFFERENCE IN MOBILITY RATES OF EXPERIMENTAL AND CONTROL HOUSEHOLDS	PHOENIX DIFFERENCE IN MOBILITY RATES OF EXPERIMENTAL AND CONTROL HOUSEHOLDS
Mobility in the First Year		
Households active at the end of one year	0.03	0.02
All enrollees	0.02	0.01
Mobility Over Two Years		
Households active at the end of two years	0.03	0.09**
All enrollees	0.00	0.04

DATA SOURCE: Table IV-3

† Difference in proportions for Experimental and Control households significant at the 0.10 level (two-tailed).

* Difference in proportions for Experimental and Control households significant at the 0.05 level (two-tailed).

** Difference in proportions for Experimental and Control households significant at the 0.01 level (two-tailed).

Table IV-5

MOBILITY RATES DURING THE SECOND YEAR FOR HOUSEHOLDS
THAT DID NOT MOVE DURING THE FIRST YEAR--ALL ENROLLEES

	PITTSBURGH		PHOENIX	
	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS	EXPERIMENTAL HOUSEHOLDS	CONTROL HOUSEHOLDS
Mobility rate during the first year for all enrollees	30% (1,160)	28% (427)	57% (1,206)	56% (518)
Addition to the mobility rate from households that moved during during the second year but not during the first	12 (1,160)	14 (427)	13 (1,206)	10 (518)
Mobility rate during two years for all enrollees	42 (1,160)	42 (427)	70 (1,206)	66 (518)

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Experimental households in Phoenix but it is not significant in a bivariate test. It is not clear, however, that it is appropriate to include terminees in an estimate of experimental effects on mobility. A move which took a household out of the program area, for example, cannot really be considered a response to the experiment. It is possible that the only effect of adding terminees to the sample is to include a group of households whose moves are irrelevant to an analysis of experimental effects. If households that terminated had no response to the experiment, then even if there was an experimental effect for households that remained active, adding terminees to the sample will "dilute" that effect by reducing its magnitude.

If the proportion of enrolled Experimental households that remain active is ρ, and if terminees behave like Control households, the estimated effect for all enrollees, $\hat{\beta}$, is:

$$E(\hat{\beta}) = \rho\beta_E + (1-\rho)\cdot(\beta_t) = \rho\beta_E ,$$

where β_E is the true effect, under the extreme assumption that β_t equals zero, that is, the experiment had no effect for terminees.

Thus, a case can be made, that for each experimental group for which an effect is estimated, the true effect can be computed as:

$$\hat{\beta} = \frac{N_i}{N_{Ai}} \hat{\beta}_i$$

where

$\hat{\beta}_i$ = the estimated effect for the i^{th} experimental group using all enrollees

N_i = the total number of enrolled households in the i^{th} experimental group

N_{Ai} = the total number of active households (at the end of two years) in the i^{th} experimental group.

This gives an idea of how much of the loss of effect using all enrollees instead of all actives could be due to dilution.

If the differences in mobility rates for Experimental and Control households shown in Table IV-4 are adjusted for the possible effects of dilution, the possible experimental effect in Phoenix increases to 0.07, as shown in Table IV-6. This begins to approach the estimated effect of 0.09 based only on households that remained active. Thus, in the extreme case of there being no experimental effect on the mobility of households that terminated,

Table IV-6

EFFECT OF THE EXPERIMENT FOR ALL ENROLLEES,
ADJUSTING FOR THE POSSIBLE EFFECT OF DILUTION

	PITTSBURGH	PHOENIX
Households Active at the End of Two Years		
Difference in mobility rates over two years for Experimental and Control households	0.03	0.09
All Enrollees		
Differences in mobility rates over two years for Experimental and Control households	0.00	0.04
Adjustment factor for effect of dilution = Total number of Experimental households enrolled / Total number of Experimental households active after two years	$\frac{1,172}{919} = 1.28$	$\frac{1,213}{719} = 1.69$
Difference in mobility rates adjusted for the possible effect of dilution	0.00	0.07

DATA SOURCES: Tables IV-1 and IV-4.

the estimated experimental effect could be reduced from 0.07 to 0.04 by including terminees in the sample. Because it is not possible to determine to what extent the mobility of households that terminated was affected by the allowance offer, the analysis that follows will show both the adjusted and unadjusted experimental effects for the sample of all enrollees.

Experimental Effects When Terminees Are Included

It is possible to test the effect of the experiment on mobility for the sample that includes terminees in the same way as the effect was tested for the sample including active households. A logit equation has been estimated for the probability of moving, including the same set of independent variables that were included in the analysis of active households, as well as a dummy variable contrasting Experimental and Control households (see Chapter 3). The sample includes all terminees, as well as households that remained active. The dependent variable is the probability of moving, where terminees known to have moved are counted as movers, and those not known to have moved are considered nonmovers.

Table IV-7 shows the results of this logit estimation. In general, results are similar to the results using the sample of households active at the end of the experiment. The partial derivative of the experimental variable shows an insignificant experimental effect of 0.023 in Pittsburgh and a significant effect of 0.078 in Phoenix.[1]

Demographic effects on the probability of moving are similar for all enrollees and households active after two years, with several notable exceptions. First, the variables indicating black and female household heads become insignificant in Pittsburgh when terminees are added to the sample. Also, perceived crowding has less effect with the larger sample.

In the case of black households and crowded households in Pittsburgh, this change in effect appears to result from the interaction of the variables, attrition and mobility. The attrition rate of black movers in Pittsburgh

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[1]Note that the partial derivatives have been adjusted for the effects of dilution (see previous discussion). The unadjusted partial derivatives are also shown in Table IV-7. In terms of statistical testing, there is no change since, if $\hat{\beta}_i$ is inflated, its error of estimate must be inflated by the same number. The available test is the test for the significance of $\hat{\beta}_i$.

Table IV-7

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.889	1.92†	0.215	1.101	2.53*	0.241
Life Cycle Factors						
Age of household head (in decades)	-0.277	-6.32**	-0.067	-0.274	-6.57**	-0.060
Number of children	-0.045	-1.11	-0.011	-0.072	-1.68†	-0.016
Other Household Characteristics						
Female head of household	0.172	1.49	0.042	0.195	1.85†	0.043
Black head of household	-0.007	-0.06	-0.002	0.587	2.63**	0.128
Spanish American head of household	NA	NA	NA	0.034	0.24	0.008
Years of education of household head	-0.039	-1.61	-0.009	0.014	0.73	0.003
Per capita income of household (in thousands)	0.073	0.76	0.018	0.013	0.16	0.003
Number of moves in three years prior to the experiment	0.228	4.43**	0.055	0.383	7.53**	0.084
Housing and Neighborhood Factors						
Perceived crowding	0.172	1.45	0.042	0.214	1.57	0.047
Living in a unit with basic facilities	-0.308	-2.74**	-0.075	-0.239	-2.59**	-0.052
Social Bonds						
Positive feelings toward neighbors	-0.069	-2.81**	-0.017	-0.089	-2.86**	-0.019
Length of residence in enrollment unit (in years)	-0.048	-4.04**	-0.012	-0.062	-2.77**	-0.014
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.289	2.64**	0.070	0.322	2.42*	0.071
Predisposition to Move						
Would move with an increase in money available for rent	0.754	6.53**	0.183	0.470	4.28**	0.103
Program Factors						
Experimental household	0.076	0.71 (adjusted)	0.018 0.023	0.215	2.30* (adjusted)	0.047 0.078
Likelihood Ratio (Significance)		257.56**			339.48**	
Sample Size		1357			1366	
Mean of Dependent Variable		0.413			0.676	
Coefficient of Determination		0.140			0.197	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

was 0.42, compared to 0.28 for white movers. For nonmovers, the attrition rates were 0.18 for white nonmovers and 0.15 for black nonmovers. Thus black households appear to have a lower probability of moving than white households when the sample of active households is used because so many of the black households that moved left the program.

A similar pattern occurs in Pittsburgh for households that perceived their unit as crowded. Crowded households that moved left the program at a lower rate than uncrowded households that moved, while there was not much difference in attrition rates for crowded and uncrowded households that did not move. Use of the sample of active households therefore inflates the apparent effect of crowding on mobility in Pittsburgh. However, the change in the effect of sex of household head when terminees are added to the sample in Pittsburgh does not appear to result from interactions between attrition and mobility.

In Phoenix, length of residence in the enrollment unit increases in effect for the sample including all enrollees, and dissatisfaction at enrollment becomes a more important variable. These changes do not appear to result from interactions between the variables, mobility and attrition.

It is possible that terminees not known to have moved were movers, rather than nonmovers. Table IV-8 shows the results of a logit estimation of the probability of moving under this alternative assumption. Results indicate whether estimates of experimental and demographic effects are sensitive to the assumptions made about the mobility of terminees not known to have moved.

Results for experimental effects under this assumption are not very different from those in Table IV-7. Several of the demographic variables shift somewhat. In Pittsburgh, the effect of being a black head of household becomes larger, although it is still not significant, and in Phoenix, dissatisfaction with unit or neighborhood becomes insignificant.

These results indicate that although some demographic effects are sensitive to the assumptions made about the behavior of terminees, the estimates of experimental effects are not. In the remaining analyses, estimates of experimental effects by treatment group for the sample including terminees have been made under the assumption that terminees not known to have moved were nonmovers.

Table IV-8

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES--ALL TERMINEES ASSUMED TO HAVE MOVED

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.777	1.79†	0.194	1.992	4.28**	0.373
Life Cycle Factors						
Age of household head (in decades)	-0.173	-4.24**	-0.043	-0.306	-7.07**	-0.057
Number of children	-0.039	-1.06	-0.010	-0.028	-0.66	-0.005
Other Household Characteristics						
Female head of household	0.026	0.29	0.006	-0.087	-0.81	-0.016
Black head of household	-0.163	-1.41	-0.041	0.288	1.21	0.054
Spanish American head of household	NA	NA	NA	-0.302	-2.04*	-0.057
Years of education of household head	-0.018	-0.78	-0.004	-0.009	-0.42	-0.002
Per capita income of household (in thousands)	0.103	1.27	0.026	0.160	1.98*	0.030
Number of moves in three years prior to the experiment	0.194	3.99**	0.049	0.369	6.28**	0.069
Housing and Neighborhood Factors						
Perceived crowding	0.244	2.16*	0.061	0.143	1.15	0.027
Living in a unit with basic facilities	-0.349	-2.76**	-0.087	-0.380	-2.96**	-0.071
Social Bonds						
Positive feelings toward neighbors	-0.046	-2.25*	-0.011	-0.084	-2.80**	-0.016
Length of residence in enrollment unit (in years)	-0.039	-4.39**	-0.010	-0.050	-2.39*	-0.010
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.236	2.07*	0.059	0.068	0.45	0.013
Predisposition to Move						
Would move with an increase in money available for rent	0.580	5.66**	0.145	0.461	3.35**	0.086
Program Factors						
Experimental household	0.092	0.88 (adjusted)	0.023 0.030	0.225	2.05* (adjusted)	0.042 0.070
Likelihood Ratio (Significnace)		170.02**			283.43**	
Sample Size		1357			1366	
Mean of Dependent Variable		0.509			0.750	
Coefficient of Determination		0.090			0.185	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Experimental Effects by Treatment Group

To insure that the experimental effects presented in this report for households active at the end of the experiment do not result from attrition alone, the logit equations that contrast various treatment groups with Control households have also been estimated for the sample of all enrollees, including households that later terminated.

Tables IV-9, IV-10, and IV-11 show the results of three logit equations which contrast Percent of Rent, Housing Gap, and Unconstrained households with Control households at each site. In Pittsburgh none of the experimental effects are significant for the sample including all enrollees. The analysis of households that remained active indicated experimental effects significant at the 0.10 level for Percent of Rent and Unconstrained households. In Phoenix, the results (when all enrollees are included) indicate that the experiment had a significant effect on mobility for Percent of Rent and Housing Gap households, but not for Unconstrained households. These results parallel those for households active after two years.

Experimental Effects by Compliance with Requirements at Enrollment for Housing Gap Households

Tables IV-12 and IV-13 contrast the mobility of Housing Gap and Control households, controlling for whether or not they met the housing requirements of their treatment group at enrollment. Table IV-12 contrasts Experimental and Control households that met the requirements; Table IV-13 presents results for households that did not meet requirements. Table IV-14 presents t-tests for the difference in the experimental effect for households that met requirements and those that did not.

In Pittsburgh, the experiment had a significant, negative effect on the mobility of households that met requirements and a significant, positive effect on those that did not. The t-test indicates that the difference in the two effects is significant. These findings are similar to results for the sample of active households; the only difference is that when using active households the negative effect of the experiment on households that met requirements was smaller and not significant.

In Phoenix, results for all enrollees differ somewhat from results for active households. Table IV-12 and IV-13 show that the experiment had a significant effect for households in Phoenix that met requirements, but the effect for

Table IV-9

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES--PERCENT OF RENT AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	0.761	1.24	0.185	1.365	2.35*	0.301
Life Cycle Factors						
Age of household head (in decades)	-0.271	-4.70	-0.066	-0.270	-4.64**	-0.060
Number of children	-0.063	-1.06	-0.015	-0.105	-2.02*	-0.023
Other Household Characteristics						
Female head of household	0.139	1.09	0.034	0.340	2.17*	0.075
Black head of household	-0.071	-0.45	-0.017	0.408	1.48	0.090
Spanish American head of household	NA	NA	NA	-0.250	-1.26	-0.055
Years of education of household head	-0.050	-1.52	-0.012	0.014	0.55	0.003
Per capita income of household (in thousands)	-0.016	-0.13	-0.004	-0.072	-1.29	-0.016
Number of moves in three years prior to the experiment	0.428	5.55**	0.104	0.359	5.17**	0.079
Housing and Neighborhood Factors						
Perceived crowding	0.226	1.38	0.055	0.245	1.44	0.054
Living in a unit with basic facilities	-0.253	-1.59	-0.062	-0.330	-1.78†	-0.073
Social Bonds						
Positive feelings toward neighbors	-0.031	-0.89	-0.008	-0.065	-1.95†	-0.014
Length of residence in enrollment unit (in years)	-0.027	-1.52	-0.006	-0.093	-2.84**	-0.020
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.271	1.80†	0.066	0.410	2.34*	0.090
Predisposition to Move						
Would move with an increase in money available for rent	0.666	4.01**	0.162	0.512	3.20**	0.113
Program Factors						
Experimental Household (Percent of Rent)	0.100	0.87 (adjusted)	0.024 0.029	0.260	2.30* (adjusted)	0.057 0.089
Likelihood Ratio (Significance)		162.32**			195.53**	
Sample Size		786			794	
Mean of Dependent Variable		0.417			0.671	
Coefficient of Determination		0.152			0.194	

SAMPLE: Percent of Rent and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

Table IV-10

PROBABILITY OF MOVING INCLUDING TERMINEES--HOUSING GAP AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE
Constant	0.935	1.62	0.226	0.848	1.60	0.188
Life Cycle Factors						
Age of household head (in decades)	-0.287	-5.17**	-0.069	-0.264	-5.23**	-0.058
Number of children	-0.066	-1.37	-0.016	-0.086	-1.67†	-0.019
Other Household Characteristics						
Female head of household	0.163	1.42	0.039	0.146	1.19	0.032
Black head of household	0.038	0.24	0.009	1.208	4.15**	0.267
Spanish American head of household	NA	NA	NA	0.173	1.01	0.038
Years of education of household head	-0.014	-0.44	-0.003	0.026	1.14	0.006
Per capita income of household (in thousands)	0.008	0.06	0.002	-0.017	-0.17	-0.004
Number of moves in three years prior to the experiment	0.192	3.15**	0.046	0.379	6.66**	0.084
Housing and Neighborhood Factors						
Perceived crowding	0.068	0.47	0.016	0.263	1.48	0.058
Living in a unit with basic facilities	-0.205	-1.29	-0.050	-0.117	-1.05	-0.026
Social Bonds						
Positive feelings toward neighbors	-0.091	-2.45*	-0.022	-0.072	-1.75†	-0.016
Length of residence in enrollment unit (in years)	-0.052	-3.53**	-0.013	-0.086	-3.10**	-0.019
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.216	1.48	0.052	0.244	1.54	0.054
Predisposition to Move						
Would move with an increase in money available for rent	0.715	4.97**	0.173	0.555	4.36**	0.123
Program Factors						
Experimental household (Housing Gap)	0.042	0.38 (adjusted)	0.010 0.014	0.219	2.18* (adjusted)	0.048 0.083
Likelihood Ratio (Significance)		163.31**			251.77**	
Sample Size		876			937	
Mean of Dependent Variable		0.412			0.669	
Coefficient of Determination		0.138			0.212	

SAMPLE: Housing Gap and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-11

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES—
UNCONSTRAINED AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	0.712	0.80	0.174	0.945	1.19	0.211
Life Cycle Factors						
Age of household head (in decades)	-0.282	-3.54**	-0.069	-0.213	-2.90**	-0.048
Number of children	-0.124	-1.38	-0.030	-0.121	-1.63	-0.027
Other Household Characteristics						
Female head of household	0.191	1.24	0.047	0.283	1.51	0.063
Black head of household	0.081	0.37	0.020	1.104	2.90**	0.247
Spanish American head of household	NA	NA	NA	-0.435	-1.68†	-0.097
Years of education of household head	0.012	0.23	0.003	0.023	0.63	0.005
Per capita income of household (in thousands)	-0.371	-1.88†	-0.091	-0.042	-0.35	-0.009
Number of moves in three years prior to the experiment	0.529	5.25**	0.130	0.417	4.58**	0.093
Housing and Neighborhood Factors						
Perceived crowding	-0.093	-0.38	-0.023	0.393	1.50	0.088
Living in a unit with basic facilities	0.068	0.38	0.017	-0.436	-1.87†	-0.098
Social Bonds						
Positive feelings toward neighbors	-0.077	-1.42	-0.019	-0.106	-2.27*	-0.024
Length of residence in enrollment unit (in years)	-0.011	-0.44	-0.003	-0.109	-2.70**	-0.024
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.217	1.04	0.053	0.228	0.99	0.051
Predisposition to Move						
Would move with an increase in money available for rent	0.536	2.43*	0.131	0.971	4.58**	0.217
Program Factors						
Experimental household (Unconstrained)	0.197	0.75 (adjusted)	0.048 0.058	0.128	0.45 (adjusted)	0.029 0.050
Likelihood Ratio (Significance)		109.95**			141.16**	
Sample Size		431			479	
Mean of Dependant Variable		0.429			0.662	
Coefficient of Determination		0.187			0.230	

SAMPLE: Unconstrained and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independnet variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-12

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES--HOUSING GAP AND CONTROL HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	2.028	1.85†	0.491	-1.614	-1.16	-0.353
Life Cycle Factors						
Age of household head (in decades)	-0.282	-2.94**	-0.068	-0.334	-3.25**	-0.073
Number of children	-0.238	-2.02*	-0.058	-0.140	-1.07	-0.031
Other Household Characteristics						
Female head of household	-0.024	-0.10	-0.006	0.556	1.73†	0.122
Black head of household	0.324	1.01	0.078	—	—	—
Spanish American head of household	NA	NA	NA	-0.365	-0.80	-0.080
Years of education of household head	0.014	0.27	0.003	0.152	2.49*	0.033
Per capita income of household (in thousands)	-0.123	-0.77	-0.030	0.100	0.62	0.022
Number of moves in three years prior to the experiment	0.162	1.28	0.039	0.452	3.16**	0.099
Housing and Neighborhood Factors						
Perceived crowding	-0.242	-0.72	-0.059	0.783	2.25*	0.171
Living in a unit with basic facilities	-0.757	-1.50	-0.183	0.525	1.14	0.115
Social Bonds						
Positive feelings toward neighbors	-0.097	-1.82†	-0.023	-0.150	-1.52	-0.033
Length of residence in enrollment unit (in years)	-0.037	-1.27	-0.009	-0.288	-2.37*	-0.063
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.137	0.59	0.033	0.744	2.05*	0.163
Predisposition to Move						
Would move with an increase in money available for rent	0.843	3.39**	0.204	0.887	2.91**	0.194
Program Factors						
Experimental household (Housing Gap)	-0.439	-2.04* (adjusted)	-0.106 -0.134	0.704	2.56* (adjusted)	0.154 0.283
Likelihood Ratio (Significance)		61.42**			111.64**	
Sample Size		296			266	
Mean of Dependent Variable		0.412			0.677	
Coefficient of Determination		0.153			0.333	

SAMPLE: Housing Gap and Control households enrolled that met requirements at enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated) at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-13

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES--HOUSING GAP AND CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.918	1.24	0.223	1.122	1.83†	0.249
Life Cycle Factors						
Age of household head (in decades)	-0.298	-4.38**	-0.072	-0.248	-4.00**	-0.055
Number of children	-0.018	-0.29	-0.004	-0.066	-1.20	-0.014
Other Household Characteristics						
Female head of household	0.315	2.28*	0.076	0.092	0.62	0.020
Black head of household	-0.129	-0.64	-0.031	1.000	3.00**	0.222
Spanish American head of household	NA	NA	NA	0.145	0.76	0.032
Years of education of household head	-0.048	-1.14	-0.012	0.007	0.28	0.002
Per capita income of household (in thousands)	0.050	0.28	0.012	-0.017	-0.15	-0.004
Number of moves in three years prior to the experiment	0.194	2.58**	0.047	0.359	5.66**	0.080
Housing and Neighborhood Factors						
Perceived crowding	0.213	1.17	0.052	0.144	0.92	0.032
Living in a unit with basic facilities	-0.164	-1.18	-0.040	-0.022	-0.18	-0.005
Social Bonds						
Positive feelings toward neighbors	-0.089	-2.05*	-0.022	-0.056	-1.19	-0.012
Length of residence in enrollment unit (in years)	-0.067	-3.57**	-0.016	-0.082	-2.82**	-0.018
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.278	1.76†	0.068	0.150	0.85	0.033
Predisposition to Move						
Would move with an increase in money available for rent	0.669	3.60**	0.162	0.464	3.12**	0.103
Program Factors						
Experimental household (Housing Gap)	0.304	1.82† (adjusted)	0.074 0.105	0.086	0.66 (adjusted)	0.019 0.032
Likelihood Ratio (Significance)		115.34**			159.51**	
Sample Size		577			670	
Mean of Dependent Variable		0.414			0.667	
Coefficient of Determination		0.147			0.187	

SAMPLE: Housing Gap and Control households enrolled that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-14

t-TESTS FOR DIFFERENCE IN EXPERIMENTAL EFFECT FOR HOUSING GAP HOUSEHOLDS BY WHETHER THEY MET REQUIREMENTS AT ENROLLMENT

	PITTSBURGH	PHOENIX
Difference between logit coefficient of experimental variable for households that met requirements at enrollment and those that did not	0.742	-0.618
t-test for the significance of the difference	2.73**	-2.03*

DATA SOURCES: Tables IV-12 and IV-13

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

households that did not meet requirements was not significant. The t-test shows that the difference in effect for the two groups is significant, that is, the experimental effect was greater for households that met requirements. This finding is counterintuitive, since the incentive to move would be expected to be greater for households that did not meet the requirements. For active households, there was no significant difference in the experimental effect for households that met requirements and those that did not.

Effect of Payment Amount

Tables IV-15, IV-16, and IV-17 show the effect of payment amount for Experimental households, using the sample including all enrollees. Percent of Rent households, Housing Gap households that met requirements, and Housing Gap households that did not meet requirements are analyzed separately.

Table IV-15 shows that, for Percent of Rent households, the payment amount had a significant, positive relationship to the probability of moving in Phoenix, but not in Pittsburgh. This is the same result obtained from the sample using active households.

For Housing Gap households in Pittsburgh, the effect of the subsidy was different, depending on whether or not the household met requirements at enrollment. For households that met requirements, the subsidy had a significant, negative effect. For households that did not meet requirements, the effect of the subsidy was significant and positive. The t-test shown in Table IV-18 confirms that the effect of the subsidy was significantly different for the two groups. This is the same pattern that was found for active households.

In Phoenix, the subsidy amount did not have a significant effect on Housing Gap households, whether or not they met requirements. The same result is found when the sample of active households is used.

In summary, the role of attrition, while altering the magnitude of estimated effects somewhat, does not change the basic pattern of effects reported for households that remained active in the experiment. Table IV-19 shows the estimated experimental effects for all enrollees and for households that remained active. In Pittsburgh, the major differences are for Percent of Rent and Unconstrained households; the experimental effect is significant for active households but not for all enrollees.

Table IV-15

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES--THE EFFECT OF PAYMENT AMOUNT FOR PERCENT OF RENT HOUSEHOLDS

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	1.150	1.38	0.278	1.516	1.75†	0.325
Life Cycle Factors						
Age of household head (in decades)	-0.258	-3.23**	-0.062	-0.330	-4.39**	-0.071
Number of children	0.014	0.18	0.003	-0.116	-1.50	-0.025
Other Household Characteristics						
Female head of household	0.184	0.94	0.044	0.267	1.18	0.057
Black head of household	-0.225	-1.00	-0.054	-0.216	-0.53	-0.046
Spanish American head of household	NA	NA	NA	-0.194	-0.66	-0.042
Years of education of household head	-0.106	-2.42*	-0.026	-0.026	-0.64	-0.005
Per capita income of household (in thousands)	0.196	1.35	0.048	0.023	0.20	0.005
Number of moves in three years prior to the experiment	0.318	3.44**	0.077	0.363	3.56**	0.078
Housing and Neighborhood Factors						
Perceived crowding	0.460	2.02*	0.111	0.176	0.70	0.038
Living in a unit with basic facilities	-0.482	-2.04*	-0.117	-0.578	-2.42*	-0.124
Social Bonds						
Positive feelings toward neighbors	0.011	0.24	0.003	-0.067	-1.34	-0.014
Length of residence in enrollment unit (in years)	-0.051	-3.07**	-0.012	-0.012	-0.23	-0.003
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.483	2.48*	0.117	0.640	2.34*	0.137
Predisposition to Move						
Would move with an increase in money available for rent	0.904	3.83**	0.219	0.124	0.50	0.027
Program Factors						
Calculated payment amount at enrollment	-0.007	-1.30	-0.002	0.018	3.11**	0.004
Likelihood Ratio (Significance)		90.48**			90.98**	
Sample Size		417			372	
Mean of Dependent Variable		0.410			0.688	
Coefficient of Determination		0.160			0.197	

SAMPLE: Percent of Rent households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, give a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-16

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES—THE EFFECT OF PAYMENT AMOUNT FOR HOUSING GAP HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	2.190	1.50	0.507	-2.694	-1.34	-0.567
Life Cycle Factors						
Age of household head (in decades)	-0.256	-1.84†	-0.059	-0.361	-2.68**	-0.076
Number of children	-0.225	-1.38	-0.052	0.022	0.12	0.005
Other Household Characteristics						
Female head of household	0.164	0.51	0.038	0.492	1.20	0.104
Black head of household	0.259	0.58	0.060	7.628	2.55*	1.606
Spanish American head of household	NA	NA	NA	0.569	0.86	0.120
Years of education of household head	0.007	0.11	0.002	0.201	2.10*	0.042
Per capita income of household (in thousands)	-0.095	-0.42	-0.022	0.473	1.39	0.100
Number of moves in three years prior to the experiment	-0.220	-1.24	-0.051	0.388	1.99*	0.082
Housing and Neighborhood Factors						
Perceived crowding	-0.322	-0.63	-0.074	0.831	1.79†	0.175
Living in a unit with basic facilities	-0.512	-1.05	-0.119	0.886	1.15	0.186
Social Bonds						
Positive feelings toward neighbors	-0.115	-1.42	-0.027	-0.142	-1.25	-0.030
Length of residence in enrollment unit (in years)	-0.102	-2.32*	-0.024	-0.251	-1.78†	-0.053
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	-0.145	-0.43	-0.033	0.186	0.37	0.039
Predisposition to Move						
Would move with an increase in money available for rent	1.380	3.82**	0.319	0.576	1.26	0.121
Program Factors						
Calculated payment amount at enrollment	-0.011	-1.68†	-0.002	0.003	0.61	0.001
Likelihood Ratio (Significance)		38.02**			60.00**	
Sample Size		165			146	
Mean of Dependent Variable		0.364			0.699	
Coefficient of Determination		0.176			0.336	

SAMPLE: Housing Gap households enrolled that met requirements at enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-17

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING TERMINEES—THE EFFECT OF PAYMENT AMOUNT FOR HOUSING GAP HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.148	0.15	0.036	0.998	1.12	0.220
Life Cycle Factors						
Age of household head (in decades)	-0.298	-3.08**	-0.073	-0.262	-3.12**	-0.058
Number of children	0.020	0.29	0.005	-0.043	-0.61	-0.009
Other Household Characteristics						
Female head of household	0.203	0.87	0.050	-0.147	-0.63	-0.032
Black head of household	-0.168	-0.70	-0.041	0.867	1.93†	0.191
Spanish American head of household	NA	NA	NA	0.571	1.96*	0.126
Years of education of household head	-0.029	-0.56	-0.007	0.015	0.44	0.003
Per capita income of household (in thousands)	0.559	2.20*	0.137	0.052	0.26	0.012
Number of moves in three years prior to the experiment	-0.034	-0.35	-0.008	0.368	4.26**	0.081
Housing and Neighborhood Factors						
Perceived crowding	0.465	1.78†	0.114	0.025	0.12	0.006
Living in a unit with basic facilities	-0.421	-2.37*	-0.103	-0.025	-0.13	-0.006
Social Bonds						
Positive feelings toward neighbors	-0.113	-1.98*	-0.028	-0.105	-1.74†	-0.023
Length of residence in enrollment unit (in years)	-0.091	-3.51**	-0.022	-0.046	-1.35	-0.010
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.480	2.10*	0.117	0.273	1.30	0.060
Predisposition to Move						
Would move with an increase in money available for rent	0.631	2.56*	0.154	0.241	1.03	0.053
Program Factors						
Calculated payment amount at enrollment	0.012	2.60**	0.003	0.002	0.62	0.001
Likelihood Ratio (Significance)		74.66**			90.08**	
Sample Size		340			367	
Mean of Dependent Variable		0.424			0.673	
Coefficient of Determination		0.161			0.194	

SAMPLE: Housing Gap and Control households enrolled that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-18

t-TESTS FOR DIFFERENCE IN THE EFFECT OF PAYMENT AMOUNT FOR HOUSING GAP HOUSEHOLDS BY WHETHER THEY MET REQUIREMENTS AT ENROLLMENT

	PITTSBURGH	PHOENIX
Difference between logit coefficient of calculated payment amount at enrollment for households that met requirements at enrollment and those that did not	0.022	0.001
t-test for the significance of the difference	2.88**	0.14

DATA SOURCES: Tables IV-16 and IV-17.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IV-19

SUMMARY OF EXPERIMENTAL EFFECTS FOR
ALL ENROLLEES AND HOUSEHOLDS THAT REMAINED ACTIVE

	PITTSBURGH			PHOENIX		
	ALL ENROLLEES		HOUSEHOLDS THAT REMAINED ACTIVE	ALL ENROLLEES		HOUSEHOLDS THAT REMAINED ACTIVE
	UNADJUSTED	ADJUSTED		UNADJUSTED	ADJUSTED	
All Experimental Households						
Partial derivative	0.018	0.023	0.052	0.047	0.078	0.096
t-statistic	0.71		1.56	2.30*		3.07**
All Experimental Households (assuming that all terminees moved)						
Partial derivative	0.023	0.030	--	0.042	0.070	--
t-statistic	0.88			2.05*		
Percent of Rent Households						
Partial derivative	0.024	0.029	0.053	0.057	0.089	0.106
t-statistic	0.87		1.62†	2.30*		2.95**
Unconstrained Households						
Partial derivative	0.048	0.058	0.111	0.029	0.050	0.122
t-statistic	0.75		1.65†	0.45		1.31
Housing Gap Households That Met Requirements at Enrollment						
Partial derivative	-0.106	-0.134	-0.036	0.154	0.283	0.128
t-statistic	-2.04*		-0.062	2.56*		1.37
Housing Gap Households That Did Not Meet Requirements at Enrollment						
Partial derivative	0.074	0.105	0.091	0.019	0.032	0.107
t-statistic	1.82†		1.94†	0.66		2.51*

DATA SOURCES: Tables IV-7, IV-8, IV-9, IV-11, IV-12, and IV-13, in Appendix IV; Figures 4-1, 4-2, and 4-3 in Chapter 4.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

In Phoenix, the major difference between experimental effects for all enrollees and for households that remained active occurs in the Housing Gap group. The experimental effect is greater for households that met requirements and smaller for those that did not meet them if the sample of all enrollees is used.

REFERENCES

Weinberg, Daniel H., Reilly Atkinson, Avis Vidal, James Wallace, and Glen Weisbrod, Locational Choice, Part I: Search and Mobility in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., August 1977.

APPENDIX V

COMPARISON OF MOBILITY IN THE DEMAND AND ADMINISTRATIVE AGENCY EXPERIMENTS

Participants in the Demand Experiment were selected at random and then approached with an offer of participation. In contrast, participants in more conventional programs must make an effort to apply, and it seems probable that they would be more interested in changing their housing situation than those approached in the Demand Experiment.

The extent to which enrollees in the Demand Experiment were atypical of enrollees in a more conventional program may be tested by comparing their mobility to that of enrollees in the Administrative Agency Experiment (AAE). The AAE was designed to test different ways of administering a housing allowance program and was similar in many respects to the Demand Experiment. One of the ways in which it differed, however, was the way in which households were enrolled. The AAE used outreach strategies more typical of other housing programs, such as radio, newspaper and television announcements and contacts with local social service agencies. Households applied for the AAE in much the same way that they would apply for a conventional housing program. It seems possible that mobility among AAE enrollees might be different from those among enrollees in the Demand Experiment because of self selection during the application process. It may be that only those households that were interested in moving bothered to apply.

In addition, the AAE differed from the Demand Experiment in the time limits imposed for meeting housing requirements. Enrollees in the AAE were required to find units that met the requirements of the program within three months after enrollment. In the Demand Experiment, enrollees most comparable to enrollees in the Administrative Agency Experiment are Housing Gap households that were required to meet a Minimum Standard or a Minimum Rent requirement before they could receive an allowance payment. Unlike the AAE, the Demand Experiment placed no time limit on compliance with the requirements and households could begin to receive payments at any time. AAE enrollees would thus be expected to have a higher mobility rate than Housing Gap enrollees during the first few months after enrollment because of their effort to meet the housing requirements within the time limit.

Table V-1 shows the mobility rates observed in the AAE among households that met the housing requirements and became recipients during the three-month time limit. No information is available about the mobility of AAE enrollees that did not become recipients. Among AAE households that met requirements and became recipients, 45 percent moved to new units during the three months following enrollment. The percentage of recipients that moved ranged from 24 to 61 percent across the eight AAE sites. In the Demand Experiment, Housing Gap households are the group that are most comparable to AAE enrollees. Among Housing Gap households that had met requirements and were receiving allowance payments six months after enrollment, 24 percent in Pittsburgh and 52 percent in Phoenix had moved to new units. These percentages are within the range of those observed in the AAE.

These limited comparisons suggest that the mobility of enrollees in the Demand Experiment did not differ substantially from that of households recruited through more usual means in the AAE. They also indicate that, while moving was a primary means of satisfying housing requirements in both the Demand Experiment and the AAE, the finite action period in the AAE may not have greatly accelerated moving rates. This reinforces the finding in the main body of this report that the housing allowance altered normal mobility patterns only slightly.

Table V-1

MOBILITY RATES OF RECIPIENTS IN THE
ADMINISTRATIVE AGENCY AND DEMAND EXPERIMENTS

ADMINISTRATIVE AGENCY EXPERIMENT	NUMBER OF ALLOWANCE RECIPEINTS AT THREE MONTHS AFTER ENROLLMENT	PERCENTAGE THAT MOVED IN THE THREE MONTHS FOLLOWING ENROLLMENT
Total	5,756	45%
By site:		
Salem	948	53
Springfield	851	45
Peoria	935	40
San Bernardino	822	46
Bismarck	430	24
Jacksonville	339	61
Durham	516	47
Tulsa	915	44

DEMAND EXPERIMENT	NUMBER OF HOUSING GAP ALLOWANCE RECIPIENTS AT SIX MONTHS AFTER ENROLLMENT	PERCENTAGE THAT MOVED IN THE SIX MONTHS FOLLOWING ENROLLMENT
Pittsburgh	233	24%
Phoenix	247	52

AAE SAMPLE: Housing allowance recipients.

AAE DATA SOURCE: Abt Associates Inc., Third Annual Report of the Administrative Agency Experiment Evaluation, Cambridge, Mass., April 1976, p. 149.

DEMAND EXPERIMENT SAMPLE: Housing Gap households receiving full payments six months after enrollment.

DEMAND EXPERIMENT DATA SOURCE: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

REFERENCES

Abt Associates Inc., Third Annual Report of the Administrative Agency Experiment Evaluation, Cambridge, Mass., April 1976, p. 149.

APPENDIX VI

INTERPRETATION OF LOGIT RESULTS[1]

The logistic model is of the form[2]

$$\pi(x) = [1 + \exp(-x'\beta)]^{-1} \quad (1)$$

where

$\pi(x)$ = the probability that the dependent variable equals one, given x

x = a vector of independent variables

β = a vector of unknown coefficients.

Empirical estimation produces estimates of β, as well as estimates of the variance-covariance matrix of the estimators. The estimates of β are asymptotically normally distributed, so that the significance of the individual coefficients may be tested in terms of the usual t-statistic. In addition, the significance of the coefficients as a whole may be tested in terms of twice the change in log-likelihood, which has a chi-square distribution.[3]

The relative importance of the estimated logistic coefficients is not always immediately apparent. The coefficients themselves do not directly state the impact of the variable on the probability being investigated. What is of interest is the change in probability, but the change in probability implied by a given coefficient varies with the initial probability level. Thus a coefficient of 1.0 implies a 6 percentage point increase in probability at a base probability of 0.9 and a 23 percentage point increase at a base probability of 0.5. In this report, the change in probability implied by the logistic

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[1] Adapted from Kennedy et al. (1977).

[2] This model may seem complicated to readers not familiar with it. In fact, its intuitive basis is not dissimilar from that of regression, although the interpretation of results requires some additional manipulations, as indicated.

[3] The log of the square of the ratio of the likelihood achieved under the estimated model to the likelihood achieved under the constraint that some or all parameters are zero is asymptotically χ^2 with (k-1) degrees of freedom, where k is the number of coefficients (McFadden, 1974).

coefficient is evaluated at the mean probability for the population. Thus values indicate the impact of a unit increase in the relevant independent variable from the mean.[1]

In addition, the impact on probability is not evaluated exactly, but approximated in terms of the first derivative

$$(2) \qquad \frac{\Delta p}{\Delta x_i} \sim \frac{\partial p}{\partial x_i} = p(1 - p)\beta_i .$$

Table VI-1 shows the value of the actual change in probability and the first derivative approximation for various values of p and various levels of β_i. The first row shows the actual change in probability for a unit increase in x_i above the mean value of x_i. The second row shows the actual change in probability for a unit increase in x_i from half a unit below the mean to half a unit above the mean.[2] The third row shows the first derivative approximation. As the table shows, the approximation to a unit increase is good for logit coefficients of one or less, while the approximation to a unit change around the mean is reasonably good for all values in the table.

An additional problem in interpreting the partial derivatives involves comparison of the magnitude of the effects of continuous variables. These variables are measured on different scales, so that it is not possible to say which variable has a larger effect on the dependent variable without considering the usual range of the variable. The approach to the problem taken in this report has been to calculate a range for each continuous independent variable (equal to four times the standard deviation) and multiply it by the partial derivative in order to form an impression of the magnitude of the variable's effect across its usual range. All discussions of magnitude of effect for continuous variables in the text of this report are based on calculations of this nature. Table VI-2 gives the ranges used for these calculations. All variables for which the product of the partial derivative and the usual range was 0.15 or larger are discussed as having a "large" effect. Those from 0.05 to 0.15 are discussed as having a "moderate" effect and those from 0.00 to 0.05 are discussed as having a "small" effect.

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[1] It should be noted that this is not the same thing as evaluating at the constant term.

[2] This is especially appropriate for dummy variables with a mean of .5, for example.

Table VI-1

COMPARISON OF ACTUAL AND FIRST DERIVATIVE APPROXIMATION TO THE CHANGE IN PROBABILITY FOR A UNIT CHANGE IN AN INDEPENDENT VARIABLE UNDER VARIOUS VALUES OF THE LOGISTIC COEFFICIENT

β_1		VALUE OF PROBABILITY				
	P =	0.1	0.25	0.50	0.75	0.90
	$x_0'\beta$ =	-2.20	-1.10	0	1.10	2.20
.25	ΔP (increase)	.02	.05	.06	.04	.02
	ΔP (deviation)	.02	.05	.06	.05	.02
	$\partial P/\partial x$	.02	.05	.06	.05	.02
.50	ΔP (increase)	.05	.10	.12	.08	.04
	ΔP (deviation)	.05	.09	.12	.09	.05
	$\partial P/\partial x$	.05	.09	.13	.09	.05
.75	ΔP (increase)	.09	.16	.18	.11	.05
	ΔP (deviation)	.07	.14	.19	.14	.07
	$\partial P/\partial x$	.07	.14	.19	.14	.07
1.0	ΔP (increase)	.13	.23	.23	.14	.06
	ΔP (deviation)	.09	.19	.24	.19	.09
	$\partial P/\partial x$	.09	.19	.25	.19	.09
1.5	ΔP (increase)	.23	.35	.32	.18	.08
	ΔP (deviation)	.14	.28	.36	.28	.14
	$\partial P/\partial x$	.14	.28	.38	.28	.14
2.0	ΔP (increase)	.35	.46	.38	.21	.09
	ΔP (deviation)	.19	.37	.46	.37	.19
	$\partial P/\partial x$	.18	.38	.50	.38	.18

NOTE: ΔP (increase) = $P(x_0 + 1) - P(x_0)$

ΔP (deviation) = $P(x_0 + .5) - P(x_0 - .5)$

$p(x) = [1 + \exp(-x'\beta)]^{-1}$

Table VI-2

USUAL RANGE OF CONTINUOUS INDEPENDENT VARIABLES
(USED IN DISCUSSIONS OF THE MAGNITUDE OF EFFECTS)

INDEPENDENT VARIABLE	PITTSBURGH		PHOENIX	
	STANDARD DEVIATION OF VARIABLE (for enrollees)	USUAL RANGE (four times the standard deviation)	STANDARD DEVIATION OF VARIABLE (for enrollees)	USUAL RANGE (four times the standard deviation)
Age of household head (in decades)	1.89	7.56	1.85	7.40
Number of children	1.58	6.32	1.65	6.60
Years of education of household head	2.70	10.80	3.66	14.64
Per capita income (in thousands)	0.80	3.20	0.94	3.76
Number of moves in three years prior to the experiment	1.25	5.00	1.86	7.00[a]
Positive feelings toward neighbors	1.72	5.00[a]	1.66	5.00[a]
Length of residence in enrollment unit (in years)	6.20	24.80	3.30	13.20
Calculated payment amount at enrollment	25	100	35	140

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, and those living in their own homes or in subsidized housing.

DATA SOURCES: Initial Household Report Form, Baseline Interview, and payments file.

a. Four times the standard deviation exceeds the maximum range of the variable, so the maximum range is shown.

REFERENCES

Kennedy, Stephen D., T. Krishna Kumar, and Glen Weisbrod, Participation Under a Housing Gap Form of Housing Allowance, Cambridge, Mass., Abt Associates Inc., May 1977 (revised June 1980).

McFadden, D., "Conditional Logit Analysis of Qualitative Choice Behavior," in Frontiers in Econometric Research, New York, Academic Press, 1974.

APPENDIX VII

COMPLETE LOGIT RESULTS FOR FIGURES AND FOOTNOTES

Table VII-1

PERCENTAGE OF HOUSEHOLDS THAT MOVED BY TREATMENT GROUP, LIFE CYCLE FACTORS, OTHER HOUSEHOLD CHARACTERISTICS, HOUSING AND NEIGHBORHOOD FACTORS, SOCIAL BONDS, DISSATISFACTION, AND PREDISPOSITION TO MOVE

	PITTSBURGH				PHOENIX			
	NUMBER IN GROUP	PERCENTAGE THAT SEARCHED	PERCENTAGE OF SEARCHERS THAT MOVED	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT SEARCHED	PERCENTAGE OF SEARCHERS THAT MOVED	PERCENTAGE THAT MOVED
Experimental households	869	58%	63%	37%	644	68%	86%	59%
Control households	307	58	61	36	263	67	77	52
Percent of Rent households	377	56	64	36	268	69	84	58
Housing Gap households	432	60	61	37	339	68	87	59
Unconstrained households	60	58	71	42	37	65	88	57
Housing Gap households that met requirements	152	54	60	32	91	67	89	59
Housing Gap households that did not meet requirements	277	64	63	40	246	68	87	59
Life Cycle Factors								
Age of household head								
25 or younger	153	86	70	60	167	95	87	83
26-35	312	71	65	46	217	78	88	69
36-45	172	55	60	33	139	78	80	63
46-55	156	62	57	35	118	65	81	53
56-65	120	52	56	29	71	42	70	30
66-75	189	34	58	20	120	40	77	31
76 or older	73	21	60	12	75	31	87	27
Number of children								
none	413	39	61	24	340	52	83	43
one	306	68	69	47	210	75	87	65
two	194	69	55	38	144	79	85	67
three	126	71	61	43	90	77	83	63
four or more	136	70	62	43	121	80	77	62
Number of children changed	250	71	63	45	223	83	86	71
Number of children did not change	925	55	62	34	682	63	83	52
Marital status changed	91	78	76	59	94	84	94	77
Marital status did not change	1084	57	61	35	813	66	82	54
Other Household Characteristics								
Female head of household	657	59	63	37	399	64	86	55
Male head of household	518	58	61	36	508	71	82	58
Black head of household	261	60	57	34	69	80	82	65
Nonblack head of household	915	58	64	37	838	67	84	56
Spanish American head of household	NA	NA	NA	NA	251	67	85	57
Non-Spanish American head of household	NA	NA	NA	NA	656	68	83	57
Years of education of household head								
8 or less	301	44	63	28	333	58	83	48
9-11	376	65	66	43	205	72	83	60
12	378	62	58	36	224	75	85	64
more than 12	97	64	61	39	131	75	85	63
Per capita income of household								
$1,000 or less	233	67	60	40	206	76	82	62
1,001 - 1,500	410	66	63	41	190	73	83	61
1,501 - 2,000	212	54	65	35	194	68	83	57
2,001 - 2,500	137	45	67	30	128	61	86	52
2,501 - 3,000	76	45	50	22	79	65	88	57
3,001 or more	72	40	62	25	102	54	80	43

Table VII-1 (continued)

	NUMBER IN GROUP	PERCENTAGE THAT SEARCHED	PERCENTAGE OF SEARCHERS THAT MOVED	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT SEARCHED	PERCENTAGE OF SEARCHERS THAT MOVED	PERCENTAGE THAT SEARCHED
Number of moves in three years prior to the experiment								
None	545	47	50	24	261	48	68	33
One	341	60	67	40	259	65	82	53
Two	168	71	68	49	144	79	82	65
Three	64	77	76	58	101	77	90	69
Four or more	56	93	81	75	140	93	98	91
Housing and Neighborhood Factors								
Household felt their unit was crowded	265	82	64	52	282	81	85	68
Household did not feel their unit was crowded	910	52	62	32	622	62	83	51
Unit had basic facilities	931	56	62	35	609	67	84	56
Unit did not have basic facilities	236	66	63	42	284	69	81	56
Social Bonds								
Feelings toward neighbors								
Least positive	155	74	66	49	183	76	82	62
.	160	69	67	46	149	78	91	71
.	162	59	68	40	181	70	84	59
.	209	54	54	29	142	68	82	56
.	229	55	62	34	131	56	77	44
Most positive	261	49	60	30	121	51	81	41
Length of residence in enrollment unit								
Less than one year	96	68	72	49	170	79	93	73
One year	282	71	74	52	325	79	88	69
Two years	183	63	65	41	99	67	88	59
Three to five years	294	59	53	31	172	58	67	39
More than five years	318	41	51	21	134	42	71	30
Dissatisfaction								
Dissatisfied with unit or neighborhood at enrollment	476	74	62	46	335	80	82	65
Satisfied with both unit and neighborhood at enrollment	697	48	63	30	570	61	85	52
Predisposition to Move								
Would move with an increase in money available for rent	613	76	63	47	486	80	83	67
Would not move with an increase in money available for rent	495	39	60	24	358	53	84	44

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

Table VII-2

LOGIT ESTIMATION OF PREDISPOSITION
TO MOVE AT ENROLLMENT--EXCLUDING DISSATISFACTION

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	2.167	5 25**	0.530	2.526	6.69**	0.601
Life Cycle Factors						
Age of household head (in decades)	-0.214	-5.01**	-0.052	-0.265	-6.92**	-0.063
Number of children	-0.064	-1.48	-0.016	-0.134	-3.33**	-0.032
Other Household Characteristics						
Female head of household	-0.213	-1.98*	-0.052	-0.348	-3.63**	-0.083
Black head of household	-0.050	-0.040	-0.012	0.058	0.26	0.014
Spanish American head of household	NA	NA	NA	-0.193	-1.34	-0.046
Years of education of household head	-0.002	-0.10	-0.001	-0.024	-1.24	-0.006
Per capita income of household (in thousands)	-0.065	-0.74	-0.016	-0.108	-1.54	-0.026
Number of moves in three years prior to the experiment	-0.033	-0.74	-0.008	0.001	0.02	0.0001
Housing and Neighborhood Factors						
Perceived crowding	1.277	9.33**	0.312	1.241	9.75**	0.30
Living in a unit with basic facilities	-0.145	-1.11	-0.035	-0.122	-0.82	-0.029
Social Bonds						
Positive feelings toward neighbors	-0.154	-4.94**	-0.038	-0.150	-5.44**	-0.036
Length of residence in enrollment unit (in years)	-0.016	-1.96†	-0.004	0.020	1.09	0.005
Likelihood Ratio (Significance)		182.83**			201.40**	
Sample Size		1365			1371	
Mean of Dependent Variable		0.573			0.610	
Coefficient of Determination		0.098			0.110	

SAMPLE: Experimental and Control households enrolled, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial Household Report Form, Initial Housing Evaluation Form, Baseline Interview, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-3

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--EXCLUDING DISSATISFACTION AND PREDISPOSITION TO MOVE

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.837	1.66†	0.192	0.843	1.66†	0.207
Life Cycle Factors						
Age of household head (in decades)	-0.252	-5.13**	-0.058	-0.264	-5.14**	-0.065
Number of children	-0.005	-1.12	-0.011	-0.034	-0.61	-0.008
Change in number of children	0.134	0.95	0.031	0.335	1.95†	0.082
Change in marital status	0.908	3.87**	0.209	0.923	3.94**	0.227
Other Household Characteristics						
Female head of household	0.313	2.58**	0.072	0.404	2.88**	0.099
Black head of household	-0.330	-2.45*	-0.076	0.408	1.59	0.100
Spanish American head of household	NA	NA	NA	-0.079	-0.51	-0.020
Years of education of household head	-0.038	-1.35	-0.009	0.008	0.34	0.002
Per capita income of household (in thousands)	0.096	1.06	0.022	0.022	0.24	0.006
Number of moves in three years prior to the experiment	0.264	4.71**	0.061	0.384	7.12**	0.094
Housing and Neighborhood Factors						
Perceived crowding	0.705	4.94**	0.162	0.469	3.22**	0.115
Living in a unit with basic facilities	-0.338	-3.11**	-0.078	-0.249	-1.59	-0.061
Social Bonds						
Positive feelings toward neighbors	-0.095	-2.84**	-0.022	-0.159	-4.78**	-0.039
Length of residence in enrollment unit (in years)	-0.037	-3.02**	-0.008	-0.033	-1.42	-0.008
Program Factors						
Experimental household	0.172	1.26	0.040	0.341	2.65**	0.084
Likelihood Ratio (Significance)		176.24**			232.26**	
Sample Size		1103			856	
Mean of Dependent Variable		0.358			0.566	
Coefficient of Determination		0.122			0.198	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-4

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--EXCLUDING HOUSEHOLDS FORCED TO MOVE

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	-0.241	-0.40	-0.050	0.056	0.10	0.014
Life Cycle Factors						
Age of household head (in decades)	-0.260	-4.44**	-0.054	-0.263	-4.66**	-0.065
Number of children	-0.077	-1.35	-0.016	-0.040	-0.71	-0.010
Change in number of children	0.155	0.97	0.032	0.236	1.29	0.059
Change in marital status	0.849	3.04**	0.176	0.746	3.05**	0.186
Other Household Characteristics						
Female head of household	0.247	1.84†	0.051	0.445	3.18**	0.111
Black head of household	-0.333	-2.17*	-0.069	0.569	2.08*	0.142
Spanish American head of household	NA	NA	NA	0.057	0.30	0.014
Years of education of household head	-0.034	-1.06	-0.007	0.003	0.11	0.001
Per capita income of household (in thousands)	0.170	1.43	0.035	0.122	1.25	0.030
Number of moves in three years prior to the experiment	0.242	3.99**	0.050	0.413	6.72**	0.103
Housing and Neighborhood Factors						
Perceived crowding	0.524	3.07**	0.109	0.319	1.68†	0.079
Living in a unit with basic facilities	-0.094	-0.56	-0.019	-0.229	-1.29	-0.057
Social Bonds						
Positive feelings toward neighbors	-0.075	-2.22*	-0.016	-0.131	-3.98**	-0.033
Length of residence in enrollment unit (in years)	-0.057	-5.30**	-0.012	-0.030	-1.10	-0.007
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.321	2.13*	0.066	0.120	0.78	0.030
Predisposition to Move						
Would move with an increase in money available for rent	0.694	4.19**	0.144	0.594	4.67**	0.148
Program Factors						
Experimental household	0.217	1.42	0.045	0.344	2.74**	0.086
Likelihood Ratio (Significance)		174.41**			206.25**	
Sample Size		941			728	
Mean of Dependent Variable		0.293			0.533	
Coefficient of Determination		0.153			0.205	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those forced to move, those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-5

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--PERCENT OF RENT AND CONTROL HOUSEHOLDS (FIGURE 4-2)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	-0.016	-0.02	-0.004	0.753	0.99	0.186
Life Cycle Factors						
Age of household head (in decades)	-0.216	-3.12**	-0.050	-0.317	-4.25**	-0.078
Number of children	-0.086	-1.21	-0.020	-0.013	-0.20	-0.003
Change in number of children	-0.237	-1.35	-0.054	0.285	1.21	0.070
Change in marital status	1.215	3.81**	0.278	0.773	2.55*	0.191
Other Household Characteristics						
Female head of household	0.229	1.58	0.053	0.646	3.57**	0.160
Black head of household	-0.612	-3.19**	-0.140	0.358	1.14	0.089
Spanish American head of household	NA	NA	NA	-0.351	-1.55	-0.087
Years of education of household head	-0.046	-1.17	-0.011	-0.007	-0.20	-0.002
Per capita income of household (in thousands)	0.007	0.05	0.002	0.049	0.40	0.012
Number of moves in three years prior to the experiment	0.458	5.30**	0.105	0.326	3.54**	0.080
Housing and Neighborhood Factors						
Perceived crowding	0.627	3.08**	0.144	0.218	1.02	0.054
Living in a unit with basic facilities	-0.236	-1.13	-0.054	-0.330	-1.44	-0.082
Social Bonds						
Positive feelings toward neighbors	0.002	0.06	0.001	-0.101	-2.63**	-0.025
Length of residence in enrollment unit (in years)	-0.038	-2.03*	-0.089	-0.054	-1.30	-0.013
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.337	1.80†	0.077	0.187	0.94	0.046
Predisposition to Move						
Would move with an increase in money available for rent	0.555	2.91**	0.127	0.596	3.03**	0.147
Program Factors						
Experimental household (Percent of Rent)	0.231	1.62†	0.053	0.427	2.95**	0.106
Likelihood Ratio (Significance)		131.41**			131.69**	
Sample Size		611			465	
Mean of Dependent Variable		0.355			0.553	
Coefficient of Determination		0.165			0.206	

SAMPLE: Percent of Rent and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at teh 0.01 level (two-tailed).

Table VII-6

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--HOUSING GAP AND CONTROL HOUSEHOLDS (FIGURE 4-2)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.100	0.14	0.023	-0.690	-1.00	-0.170
Life Cycle Factors						
Age of household head (in decades)	-0.263	-3.85**	-0.060	-0.172	-2.62**	-0.042
Number of children	-0.054	-0.84	-0.012	-0.000	-0.00	-0.000
Change in number of children	0.421	2.37*	0.096	0.315	1.46	0.078
Change in marital status	0.452	1.53	0.103	1.276	4.56**	0.314
Other Household Characteristics						
Female head of household	0.229	1.63	0.052	0.390	2.36*	0.096
Black head of household	-0.177	-0.95	-0.040	1.229	3.54**	0.303
Spanish American head of household	NA	NA	NA	0.158	0.80	0.039
Years of education of household head	-0.025	-0.68	-0.006	0.008	0.25	0.002
Per capita income of household (in thousands)	0.097	0.63	0.022	0.109	0.94	0.027
Number of moves in three years prior to the experiment	0.233	3.30**	0.053	0.477	6.48**	0.117
Housing and Neighborhood Factors						
Perceived crowding	0.336	1.67†	0.077	0.336	1.76†	0.083
Living in a unit with basic facilities	0.161	-0.79	-0.037	-0.048	-0.36	-0.012
Social Bonds						
Positive feelings toward neighbors	-0.090	-1.96*	-0.020	-0.109	-2.48*	-0.027
Length of residence in enrollment unit (in years)	-0.054	-3.74**	-0.012	-0.055	-1.66	-0.013
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.383	2.22*	0.088	-0.038	-0.18	-0.009
Predisposition to Move						
Would move with an increase in money available for rent	0.721	3.88**	0.165	0.786	4.53**	0.194
Program Factors						
Experimental household (Housing Gap)	0.195	1.44	0.045	0.410	2.77**	0.101
Likelihood Ratio (Significance)		135.26**			170.81**	
Sample Size		644			525	
Mean of Dependent Variable		0.354			0.562	
Coefficient of Determination		0.162			0.237	

SAMPLE: Housing Gap and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-7

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING—UNCONSTRAINED AND CONTROL HOUSEHOLDS (FIGURE 4-2)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.130	0.12	0.030	-0.710	-0.64	-0.177
Life Cycle Factors						
Age of household head (in decades)	-0.212	-2.17*	-0.049	-0.168	-1.76†	-0.042
Number of children	-0.127	-1.26	-0.029	0.062	0.69	0.016
Change in number of children	0.383	1.53	0.088	0.379	1.32	0.094
Change in marital status	0.127	0.31	0.029	1.806	3.88**	0.450
Other Household Characteristics						
Female head of household	0.338	1.49	0.078	0.552	2.10*	0.138
Black head of household	-0.330	-1.08	-0.076	1.223	2.72**	0.305
Spanish American head of household	NA	NA	NA	-0.416	-1.34	-0.104
Years of education of household head	-0.025	-0.41	-0.006	-0.010	-0.20	-0.002
Per capita income of household (in thousands)	-0.448	-1.93†	-0.103	0.180	1.06	0.045
Number of moves in three years prior to the experiment	0.560	4.75**	0.129	0.549	4.15**	0.137
Housing and Neighborhood Factors						
Perceived crowding	0.239	0.80	0.055	0.266	0.95	0.066
Living in a unit with basic facilities	0.235	0.94	0.054	-0.326	-1.03	-0.081
Social Bonds						
Positive feelings toward neighbors	-0.059	-0.82	-0.013	-0.136	-1.83†	-0.034
Length of residence in enrollment unit (in years)	-0.018	-0.64	-0.004	-0.037	-0.79	-0.009
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.402	1.67†	0.092	-0.149	-0.54	-0.037
Predisposition to Move						
Would move with an increase in money available for rent	0.508	1.96†	0.117	1.059	4.16**	0.264
Program Factors						
Experimental household (Unconstrained)	0.481	1.65†	0.111	0.489	1.31	0.122
Likelihood Ratio (Significance)		82.04**			93.98**	
Sample Size		322			261	
Mean of Dependent Variable		0.357			0.525	
Coefficient of Determination		0.195			0.260	

SAMPLE: Unconstrained and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homesor in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-8

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING—HOUSING GAP AND CONTROL HOUSEHOLDS THAT MET HOUSING REQUIREMENTS AT ENROLLMENT (FIGURE 4-3)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	-1.042	-0.81	-0.225	-1.247	-0.63	NA
Life Cycle Factors						
Age of household head (in decades)	-0.139	-1.12	-0.030	0.254	-2.08*	-0.063
Number of children	-0.452	-2.57*	-0.098	-0.181	-0.86	-0.045
Change in number of children	0.511	1.56	0.110	0.883	1.94†	0.218
Change in marital status	0.949	1.54	0.205	1.115	1.50	0.278
Other Household Characteristics						
Female head of household	0.463	1.61	0.100	0.929	2.37*	0.230
Black head of household	-0.330	-0.76	-0.071	-	-	-
Spanish American head of household	NA	NA	NA	-0.175	-0.33	-0.043
Years of education of household head	0.114	1.59	0.025	0.104	1.18	0.026
Per capita income of household (in thousands)	-0.021	-0.10	-0.004	-0.008	-0.03	-0.002
Number of moves in three years prior to the experiment	0.154	1.05	0.033	0.389	2.34*	0.096
Housing and Neighborhood Factors						
Perceived crowding	0.196	0.51	0.042	1.447	2.33*	0.358
Living in a unit with basic facilities[b]	-0.657	-1.86†	-0.142	0.152	0.16	0.038
Social Bonds						
Positive feelings toward neighbors	-0.078	-0.95	-0.017	-0.213	-1.65†	-0.053
Length of residence in enrollment unit (in years)	-0.055	-1.41	-0.012	-0.083	-0.75	-0.021
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	-0.030	-0.10	-0.006	-1.145	-2.18*	-0.283
Predisposition to Move						
Would move with an increase in money available for rent	1.355	4.21**	0.293	1.035	3.10**	0.256
Program Factors						
Experimental household (Housing Gap)	-0.165	-0.62	-0.036	0.593	1.99*	0.147
Likelihood Ratio (Significance)		48.04**			53.35**	
Sample Size		218			141	
Mean of Dependent Variable		0.316			0.553	
Coefficient of Determination		0.176			0.275	

SAMPLE: Housing Gap and Control households that met housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

b. For this sample, this variable is relevant only for Minimum Rent households. There was a small group of Minimum Rent households living in units without basic facilities even though they had satisfied the Minimum Rent requirement.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-9

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--HOUSING GAP AND CONTROL HOUSEHOLDS THAT DID NOT MEET HOUSING REQUIREMENTS AT ENROLLMENT (FIGURE 4-3)

INDEPENDENT VARIABLE	PITTSBURGH			PHOENIX		
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	0.769	0.85	0.180	-0.518	-0.64	-0.127
Life Cycle Factors						
Age of household head (in decades)	-0.303	-3.44**	-0.071	-0.174	-2.11*	-0.043
Number of children	-0.016	-0.22	-0.004	0.024	0.36	0.006
Change in number of children	0.414	1.86†	0.097	0.158	0.68	0.039
Change in marital status	0.226	0.66	0.053	1.194	3.68**	0.293
Other Household Characteristics						
Female head of household	0.079	0.49	0.019	0.259	1.30	0.064
Black head of household	-0.152	-0.71	-0.036	1.012	2.74**	0.248
Spanish American head of household	NA	NA	NA	0.184	0.82	0.045
Years of education of household head	-0.065	-1.34	-0.015	-0.007	-0.19	-0.002
Per capita income of household (in thousands)	-0.007	-0.03	-0.002	0.164	1.05	0.040
Number of moves in three years prior to the experiment	0.272	3.10**	0.064	0.487	5.59**	0.120
Housing and Neighborhood Factors						
Perceived crowding	0.432	1.78†	0.101	0.114	0.57	0.028
Living in a unit with basic facilities[b]	0.020	0.09	0.005	-0.022	-0.12	-0.005
Social Bonds						
Positive feelings toward neighbors	-0.095	-1.54	-0.022	-0.113	1.98*	-0.028
Length of residence in enrollment unit (in years)	-0.065	-3.06**	-0.015	-0.059	-1.69†	-0.014
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.650	3.63**	0.152	0.259	1.22	0.064
Predisposition to Move						
Would move with an increase in money available for rent	0.346	1.54	0.081	0.670	2.82**	0.164
Program Factors						
Experimental household (Housing Gap)	0.388	1.94†	0.091	0.436	2.51*	0.107
Likelihood Ratio (Significance)		107.81**			125.45**	
Sample Size		423			383	
Mean of Dependent Variable		0.376			0.566	
Coefficient of Determination		0.192			0.239	

SAMPLE: Housing Gap and Control households that did not meet housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

b. Even though these households did not meet the Minimum Standards or the Minimum Rent requirement, they may have been living in a unit with basic facilities. The basic facilities measure is less stringent than the physical standard which Minimum Standards households were required to meet.

† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

Table VII-10

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING THE EFFECT OF PAYMENT AMOUNT--PERCENT OF RENT HOUSEHOLDS, USING PERCENT OF RENT SUBSIDIZED AS A MEASURE OF SUBSIDY

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	-0.005	-0.00	-0.001	1.071	0.93	0.259
Life Cycle Factors						
Age of household head (in decades)	-0.257	-2.62**	-0.059	-0.398	-3.95**	-0.096
Number of children	-0.040	-0.45	-0.009	-0.041	-0.50	-0.010
Change in number of children	-0.724	-2.47*	-0.167	0.254	0.80	0.062
Change in marital status	2.282	4.97**	0.526	-0.195	-0.45	-0.047
Other Household Characteristics						
Female head of household	0.250	1.25	0.058	0.478	1.80†	0.116
Black head of household	-0.823	-2.70**	-0.190	-0.575	-1.29	-0.139
Spanish American head of household	NA	NA	NA	-0.448	-1.35	-0.108
Years of education of household head	-0.080	-1.45	-0.018	-0.003	-0.07	-0.001
Per capita income of household (in thousands)	0.256	1.51	0.059	0.109	0.68	0.026
Number of moves in three years prior to the experiment	0.317	2.74**	0.073	0.295	2.29*	0.071
Housing and Neighborhood Factors						
Perceived crowding	0.883	3.03**	0.204	0.288	1.19	0.070
Living in a unit with basic facilities	-0.600	-2.03*	-0.138	-0.587	-1.66†	-0.142
Social Bonds						
Positive feelings toward neighbors	0.051	0.72	0.012	-0.130	-2.88**	-0.631
Length of residence in enrollment unit (in years)	-0.054	-1.94†	-0.012	0.022	0.35	0.005
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.538	2.20*	0.124	0.542	1.65†	0.131
Predisposition to Move						
Would move with an increase in money available for rent	0.606	2.77**	0.140	0.171	0.55	0.041
Program Factors						
Percentage of rent subsidized	1.126	1.27	0.260	2.353	2.34*	0.569
Likelihood Ratio (Significance)		88.39**			65.98**	
Sample Size		341			237	
Mean of Dependent Variable		0.361			0.591	
Coefficient of Determination		0.198			0.206	

SAMPLE: Percent of Rent households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-11

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING THE EFFECT OF PAYMENT AMOUNT--PERCENT OF RENT HOUSEHOLDS (FIGURE 4-4)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.364	0.36	0.084	1.568	1.49	0.379
Life Cycle Factors						
Age of household head (in decades)	-0.252	-2.54*	-0.058	-0.416	-4.20**	-0.101
Number of children	-0.048	-0.46	-0.011	-0.084	-0.88	-0.020
Change in number of children	-0.732	-2.54*	-0.169	0.239	0.77	0.058
Change in marital status	2.248	4.94**	0.518	-0.154	-0.36	-0.037
Other Household Characteristics						
Female head of household	0.264	1.35	0.061	0.525	1.97*	0.127
Black head of household	-0.845	-3.12**	-0.195	-0.492	-1.107	-0.119
Spanish American head of household	NA	NA	NA	-0.442	-1.39	-0.107
Years of education of household head	-0.081	-1.45	-0.019	-0.020	-0.40	-0.005
Per capita income of household (in thousands)	0.231	1.27	0.053	0.102	0.53	0.025
Number of moves in three years prior to the experiment	0.320	2.71**	0.074	0.281	2.30*	0.068
Housing and Neighborhood Factors						
Perceived crowding	0.858	2.91**	0.198	0.303	1.25	0.073
Living in a unit with basic facilities	-0.624	-2.18*	-0.144	-0.718	-2.52*	-0.174
Social Bonds						
Positive feelings toward neighbors	0.053	0.75	0.012	-0.106	-1.67†	-0.026
Length of residence in enrollment unit (in years)	-0.052	-1.88†	-0.012	0.028	0.48	0.007
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.519	2.14*	0.120	0.580	1.81†	0.140
Predisposition to Move						
Would move with an increase in money available for rent	0.651	3.52**	0.150	0.176	0.56	0.042
Program Factors						
Calculated payment amount at enrollment	0.003	0.66	0.001	0.015	2.36*	0.004
Likelihood Ratio (Significance)		87.54**			66.26**	
Sample Size		341			237	
Mean of Dependent Variable		0.361			0.591	
Coefficient of Determination		0.196			0.207	

SAMPLE: Percent of Rent households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

Table VII-12

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING THE EFFECT OF PAYMENT AMOUNT--
HOUSING GAP HOUSEHOLDS THAT MET HOUSING REQUIREMENTS AT ENROLLMENT (FIGURE4-5)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE [a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE [a]
Constant	1.616	0.85	0.333	-4.481	-1.56	-1.086
Life Cycle Factors						
Age of household head (in decades)	-0.474	-2.41**	-0.098	-0.239	-1.48	-0.058
Number of children	-0.560	-2.00	-0.115	0.102	0.35	0.025
Change in number of children	0.222	0.44	0.046	-0.023	-0.03	-0.006
Change in marital status	1.330	1.39	0.274	1.402	1.27	0.340
Other Household Characteristics						
Female head of household	1.304	2.38*	0.268	1.172	1.98*	0.284
Black head of household	0.460	0.83	0.095	9.761	2.71**	2.366
Spanish American head of household	NA	NA	NA	0.214	0.27	0.052
Years of education of household head	0.049	0.46	0.010	0.229	1.56	0.055
Per capita income of household (in thousands)	0.034	0.11	0.007	0.437	0.94	0.106
Number of moves in three years prior to the experiment	-0.184	-0.87	-0.038	0.513	2.13*	0.124
Housing and Neighborhood Factors						
Perceived crowding	0.043	0.07	0.009	1.563	1.79†	0.379
Living in a unit with basic facilities[b]	-1.291	-2.56**	-0.266	1.018	1.00	0.237
Social Bonds						
Positive feelings toward neighbors	-0.136	-1.98**	-0.028	-0.238	-1.61	-0.058
Length of residence in enrollment unit (in years)	-0.056	-1.09	-0.012	-0.209	-1.18	-0.051
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.025	0.06	0.005	-0.448	-0.58	-0.108
Predisposition to Move						
Would move with an increase in money available for rent	2.239	4.16**	0.461	0.772	1.30	0.187
Program Factors						
Calculated payment amount at enrollment	-0.016	-1.82†	-0.003	0.003	0.27	0.001
Likelihood Ratio (Significance)		49.83**			42.33**	
Sample Size		131			80	
Mean of Dependent Variable		0.290			0.588	
Coefficient of Determination		0.316			0.390	

SAMPLE: Housing Gap households that met housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

b. For this sample, this variable is relevant only for Minimum Rent households. There was a small group of Minimum Rent households living in units without basic facilities even though they had satisfied the Minimum Rent requirement.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-13

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING INCLUDING THE EFFECT OF PAYMENT AMOUNT--HOUSING GAP HOUSEHOLDS THAT DID NOT MEET HOUSING REQUIREMENTS AT ENROLLMENT (FIGURE 4-5)

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	-0.626	-0.52	-0.150	-0.658	-0.57	-0.157
Life Cycle Factors						
Age of household head (in decades)	-0.250	-2.15*	-0.060	-0.131	-1.24	-0.031
Number of children	0.074	0.86	0.018	-0.052	-0.58	-0.012
Change in number of children	0.669	2.19*	0.161	0.281	0.81	0.067
Change in marital status	0.610	1.34	0.146	0.659	1.44	0.157
Other Household Characteristics						
Female head of household	-0.052	-0.19	-0.012	-0.035	-0.15	-0.008
Black head of household	-0.142	-0.46	-0.034	0.607	1.06	0.145
Spanish American head of household	NA	NA	NA	0.593	1.63	0.141
Years of education of household head	-0.041	-0.63	-0.010	0.008	0.18	0.002
Per capita income of household (in thousands)	0.772	2.40*	0.185	0.244	1.00	0.058
Number of moves in three years prior to the experiment	-0.005	-0.04	-0.001	0.433	4.08**	0.103
Housing and Neighborhood Factors						
Perceived crowding	0.644	1.96*	0.154	0.204	0.76	0.049
Living in a unit with basic facilities[b]	-0.324	-1.07	-0.078	0.110	0.35	0.026
Social Bonds						
Positive feelings toward neighbors	-0.142	-1.77†	-0.034	-0.163	-2.86**	-0.039
Length of residence in enrollment unit (in years)	-0.104	-2.96**	-0.025	-0.028	-0.73	-0.007
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.886	3.15**	0.213	0.204	0.64	0.049
Predisposition to Move						
Would move with an increase in money available for rent	0.261	1.12	0.063	0.455	1.64	0.108
Program Factors						
Calculated payment amount at enrollment	0.015	2.69**	0.004	0.006	1.22	0.001
Likelihood Ratio (Significance)		68.46**			58.26**	
Sample Size		240			216	
Mean of Dependent Variable		0.400			0.606	
Coefficient of Determination		0.212			0.201	

SAMPLE: Housing Gap households that did not meet housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

b. Even though these households did not meet the Minimum Standards or the Minimum Rent requirement, they may have been living in a unit with basic facilities. The basic facilities measure is less stringent than the physical standard which Minimum Standards households were required to meet.

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VII-14

MEANS AND STANDARD DEVIATIONS OF VARIABLES USED IN THE LOGIT ANALYSIS OF THE PROBABILITY OF MOVING (TABLE 3-4)

	PITTSBURGH		PHOENIX	
	MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION
Moved during the two years of the experiment	0.36	0.48	0.57	0.50
Life Cycle Factors				
Age of household head (in decades)	4.48	1.82	4.37	1.91
Number of children	1.49	1.60	1.56	1.76
Change in number of children	0.21	0.41	0.25	0.43
Change in marital status	0.07	0.26	0.10	0.31
Other Household Characteristics				
Female head of household	0.56	0.50	0.44	0.50
Black head of household	0.22	0.42	0.08	0.27
Spanish American head of household	NA	NA	0.28	0.45
Years of education of household head	10.15	2.65	9.66	3.59
Per capita income of household (in thousands)	1.62	0.80	1.77	0.98
Number of moves in three years prior to the experiment	0.95	1.20	1.72	1.79
Housing and Neighborhood Factors				
Perceived crowding	0.23	0.42	0.32	0.47
Living in a unit with basic facilities	0.79	0.41	0.68	0.47
Social Bonds				
Positive feelings toward neighbors	3.85	1.72	3.26	1.68
Length of residence in enrollment unit (in years)	4.97	6.53	2.75	3.68
Dissatisfaction				
Dissatisfaction with unit or neighborhood at enrollment	0.43	0.50	0.38	0.48
Predisposition to Move				
Would move with an increase in money available for rent	0.56	0.50	0.57	0.49
Program Factors				
Experimental household	0.74	0.44	0.71	0.45
Number of cases	1,037		795	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

Table VII-15

CORRELATIONS OF VARIABLES USED IN THE LOGIT ANALYSIS OF THE PROBABILITY OF MOVING (TABLE 3-4)

PITTSBURGH (N=1037)

		A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.
A.	Moved during the two years of the experiment	1.000	-.279	.116	.084	.149	.006	-.041	NA	.086	-.118	.271	.161	-.067	-.138	-.213	.164	.255	.013
	Life Cycle Factors																		
B.	Age of household head (in decades)		1.000	-.502	-.225	-.102	.004	-.063	NA	-.450	.499	-.403	-.225	.002	.138	.379	-.114	-.234	.050
C.	Number of children			1.000	.259	.046	.035	.127	NA	.193	-.579	.054	.330	-.054	-.092	-.178	.169	.153	-.048
D.	Change in number of children				1.000	.051	-.006	.001	NA	.114	-.183	.089	.053	-.001	-.040	-.125	.003	.066	-.152
E.	Change in marital status					1.000	-.139	-.027	NA	.027	-.059	.091	.008	-.027	.022	-.047	.044	.088	-.016
	Other Household Characteristics																		
F.	Female head of household						1.000	.123	NA	-.021	-.022	-.077	-.018	-.010	-.010	.037	.031	-.167	.075
G.	Black head of household							1.000	NA	-.028	-.153	-.068	.116	-.138	.012	.038	.114	.011	.026
H.	Spanish American head of household								NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
I.	Years of education of household head									1.000	-.078	.191	.076	.158	-.036	-.140	.033	.080	-.075
J.	Per capita income of household (in thousands)										1.000	-.121	-.209	.118	.080	.179	-.148	-.133	-.028
K.	Number of moves in three years prior to the experiment											1.000	.028	.004	-.173	-.444	-.037	.096	-.020
	Housing and Neighborhood Factors																		
L.	Perceived crowding												1.000	-.114	-.103	-.035	.270	.266	-.066
M.	Living in a unit with basic facilities													1.000	-.024	.007	-.126	-.034	-.007
	Social Bonds																		
N.	Positive feelings toward neighbors														1.000	.160	-.109	-.162	.001
O.	Length of residence in enrollment unit (in years)															1.000	.020	-.124	.034
	Dissatisfaction																		
P.	Dissatisfaction with unit or neighborhood at enrollment																1.000	.369	-.010
	Predisposition to Move																		
Q.	Would move with an increase in money available for rent																	1.000	-.062
	Program Factors																		
R.	Experimental household																		1.000

Table VII-15 (continued)

PHOENIX (N=795)

		A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.
A.	Moved during the two years of the experiment	1.000	-.374	.122	.158	.137	-.026	.050	.013	.098	-.118	.367	.144	-.010	-.176	-.269	.133	.216	.076
	Life Cycle Factors																		
B.	Age of household head (in decades)		1.000	-.359	-.260	-.141	.171	-.023	-.167	-.253	.295	-.444	-.204	-.022	.157	.415	-.151	-.221	.055
C.	Number of children			1.000	.285	.019	-.015	.089	.302	-.163	-.589	-.003	.386	-.273	-.088	-.094	.208	.141	-.062
D.	Change in number of children				1.000	.062	-.088	.035	.111	-.011	-.238	.161	.076	-.104	-.058	-.138	.060	.098	-.031
E.	Change in marital status					1.000	-.148	-.056	-.030	.046	-.036	.097	.034	-.019	-.072	-.073	-.003	.086	-.020
	Other Household Characteristics																		
F.	Female head of household						1.000	.015	-.062	.023	.018	-.133	-.100	.017	.050	.074	-.027	-.120	.007
G.	Black head of household							1.000	-.185	-.055	-.138	-.073	.097	-.092	.010	.003	.132	.040	-.027
H.	Spanish American head of household								1.000	-.317	-.290	-.080	.118	-.305	.011	-.022	-.012	.023	.037
I.	Years of education of household head									1.000	.319	.163	-.084	.408	-.065	-.155	-.008	-.006	-.020
J.	Per capita income of household (in thousands)										1.000	-.054	-.300	.385	.096	.077	-.221	-.179	.002
K.	Number of moves in three years prior to the experiment											1.000	.065	.152	-.089	-.486	.030	.087	.101
	Housing and Neighborhood Factors																		
L.	Perceived crowding												1.000	-.184	-.051	-.014	.320	.274	.018
M.	Living in a unit with basic facilities													1.000	.044	-.186	-.161	-.090	.037
	Social Bonds														1.000	.137	-.137	-.168	-.005
N.	Positive feelings toward neighbors															1.000	.081	-.041	-.014
O.	Length of residence in enrollment unit (in years)																		
	Dissatisfaction																1.000	-.404	-.006
P.	Dissatisfaction with unit or neighborhood at enrollment																		
	Predisposition to Move																	1.000	-.029
Q.	Would move with an increase in money available for rent																		
	Program Factors																		1.000
R.	Experimental household																		

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

Table VII-16

PERCENTAGE OF HOUSEHOLDS THAT MOVED FOR HOUSEHOLDS THAT WERE OR WERE NOT LIVING IN UNITS WITH BASIC FACILITIES BY TREATMENT GROUP, LIFE CYCLE FACTORS, OTHER HOUSEHOLD CHARACTERISTICS, HOUSING AND NEIGHBORHOOD FACTORS, SOCIAL BONDS, DISSATISFACTION, AND PREDISPOSITION TO MOVE

	PITTSBURGH				PHOENIX			
	HOUSEHOLDS LIVING IN UNITS WITH BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITHOUT BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITH BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITHOUT BASIC FACILITIES	
	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED
Experimental households	689	35%	175	44%	440	58%	196	60%
Control households	242	35	61	34	169	52	88	48
Percent of Rent households	305	33	72	46	192	56	73	63
Housing Gap households	341	35	88	42	227	59	107	57
Unconstrained households	43	37	15	7	21	52	16	62
Life Cycle Factors								
Age of household head								
25 or younger	116	57	36	69	126	85	37	73
26-35	258	47	50	40	152	67	60	70
36-45	134	29	38	47	77	64	59	59
46-55	113	31	41	44	71	46	47	62
56-65	94	28	25	36	43	28	28	32
66-75	156	20	33	18	83	30	35	29
76 or older	60	10	12	17	57	23	18	39
Number of children								
none	332	22	79	30	253	42	85	46
one	256	45	50	60	157	67	48	56
two	149	34	42	45	97	68	45	64
three	93	40	31	48	54	57	32	69
four or more	101	47	33	30	48	69	72	57
Number of children changed	200	42	47	55	137	77	83	61
Number of children did not change	731	33	188	38	472	50	199	54
Marital status changed	69	59	21	57	60	83	32	69
Marital status did not change	862	33	214	40	549	53	252	54
Other Household Characteristics								
Female head of household	519	34	131	45	271	53	122	58
Male head of household	412	35	104	38	338	59	162	54
Black head of household	180	33	78	35	36	68	31	61
Nonblack head of household	751	35	158	45	573	55	253	55
Spanish American head of household	NA		NA		110	58	137	55
Non-Spanish American head of household	NA		NA		499	56	147	57
Years of education of household head								
8 or less	220	27	81	30	158	45	171	49
9-11	288	40	85	53	136	57	64	62
12	321	34	54	43	187	61	36	75
more than 12	85	38	9	44	118	62	10	70
Per capita income of household								
$1,000 or less	164	38	67	42	85	64	115	59
1,001 - 1,500	316	38	90	50	109	62	79	58
1,501 - 2,000	175	35	35	31	142	59	51	49
2,001 - 2,500	118	28	19	42	98	50	26	54
2,501 - 3,000	65	25	10	10	74	57	4	50
3,001 or more	62	24	10	30	95	43	7	43

Table VII-16 (continued)

	PITTSBURGH				PHOENIX			
	HOUSEHOLDS LIVING IN UNITS WITH BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITHOUT BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITH BASIC FACILITIES		HOUSEHOLDS LIVING IN UNITS WITHOUT BASIC FACILITIES	
	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED	NUMBER IN GROUP	PERCENTAGE THAT MOVED
Number of moves in three years prior to the experiment								
None	428	23	113	25	149	28	109	38
One	273	38	64	45	173	51	83	57
Two	133	45	35	63	100	64	41	66
Three	54	56	9	67	79	63	21	90
Four or more	41	71	15	87	107	92	29	86
Housing and Neighborhood Factors								
Household felt their unit was crowded	187	55	76	43	149	72	124	62
Household did not feel their unit was crowded	744	30	159	41	459	51	158	51
Social Bonds								
Feelings toward neighbors								
Least positive	128	47	27	59	121	61	59	63
.	124	41	34	62	92	72	54	69
.	131	37	29	52	136	60	45	58
.	160	27	46	33	88	58	52	52
.	187	33	41	34	97	40	32	50
Most positive	201	29	59	29	75	40	42	38
Length of residence in enrollment unit								
Less than one year	83	48	13	54	128	73	40	72
One year	217	50	62	60	232	68	85	68
Two years	148	36	34	59	63	54	35	66
Three to five years	236	30	56	36	113	36	58	43
More than five years	245	21	70	20	69	20	63	38
Dissatisfaction								
Dissatisfied with unit or neighborhood at enrollment	348	44	123	49	191	67	136	61
Satisfied with both unit and neighborhood at enrollment	581	29	112	33	417	51	147	52
Predisposition to Move								
Would move with an increase in money available for rent	477	46	132	52	301	68	172	63
Would not move with an increase in money available for rent	394	22	96	28	259	43	98	47

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

APPENDIX VIII

INTERACTIONS OF EXPERIMENTAL EFFECTS AND OTHER VARIABLES

One reason for specifying factors which are related to normal mobility is to determine if the effect of the experiment may have been different for groups having different mobility patterns. Households entered the Demand Experiment with different mobility histories, satisfaction levels and moving plans. Those factors would have led to certain "normal" mobility patterns for these households in the absence of the experiment. The experiment, however, may have changed these normal mobility patterns. For example, it may have accelerated moving among households that were dissatisfied with their housing and wanted to change it, while having little effect on households that were not initially interested in moving. Alternatively, the experiment may have decreased mobility among some households. Households that had previously moved out of necessity rather than choice--because they could not keep up their rent payments, for example--may have taken advantage of the experiment to remain in one place for a longer period of time.

This appendix describes the interaction of the effect of the experiment with the effects of other independent variables. It is not an extensive analysis, but it does indicate that the experiment had a greater effect for some groups of households than for others.

Interactions of the effect of the experiment with the effects of other variables were tested by a two-stage process. First, two separate equations were estimated for the probability of moving among Experimental households and the probability of moving among Control households, including all of the independent variables used in Chapter 3. *t*-tests were performed for the significance of differences in the effect of each independent variable for Experimental and Control households. For variables that showed a difference that was significant at at least the 0.20 level, an interaction term was computed equal to the value of the variable multiplied by the dummy variable which indicates whether a household was in the Control or the Experimental group.[1] These interaction terms were included in a logit, using the full

[1]The 0.20 level was used rather than a more usual 0.05 level to compensate for the conservative nature of the procedure. Separate t-tests are less likely to find an interaction effect significant than t-tests in a logit equation. Including all interactions significant at a 0.20 level insures that no interaction terms likely to be significant in the logit equation have been omitted.

set of independent variables, which was estimated on Experimental and Control households as a combined group.[1]

In Pittsburgh, this procedure identified six independent variables for which experimental effect interaction terms were included in the logit: number of moves in three years prior to the experiment, change in marital status, whether a unit has basic facilities, predisposition to move, length of residence in enrollment unit and per capita income. Results of the logit equation testing the significance of the interaction of these variables with the experimental effect are shown in Table VIII-1.

In Phoenix, only four variables were identified as having a possible interaction with the effect of the experiment: race and ethnicity of the head of household, predisposition to move, and length of residence in the enrollment unit. Table VIII-2 shows the results of a logit including interaction terms for these variables in Phoenix.

In Pittsburgh, all of the interaction terms tested were significant except the term for the interaction of the experimental effect and length of residence in the enrollment unit. In Phoenix, all of the interactions tested were significant with the exception of the interaction involving predisposition to move.

The significant interactions shown in Tables VIII-1 and VIII-2 can be seen more clearly from graphs that contrast the effect of the variable for Experimental and Control households.[2] The graph in Figure VIII-1 shows the effect of number of moves prior to the experiment for Pittsburgh Experimental and Control households. The sign of the interaction term in Table VIII-1 is negative, indicating that the effect of the experiment decreased as number

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[1]This procedure is conceptually (but not computationally) similar to estimating the logit with an experimental effect interaction term for each of the other independent variables. However, with a limited sample size and a large number of independent variables (many of which are dichotomous), individual cell sizes may become very small and results may be misleading. Therefore, only interaction terms for the selected variables have been included in the logit equations.

[2]The graphs are based on simple cross-tabulations of the variable with mobility for Experimental and Control households. They indicate the nature of the interaction found to be significant in the logit, however.

Table VIII-1

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING IN PITTSBURGH--INCLUDING TERMS FOR THE INTERACTION OF THE EFFECT OF THE EXPERIMENT WITH SELECTED VARIABLES

INDEPENDENT VARIABLE	COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.227	-1.16	NA
Life Cycle Factors			
Age of household head (in decades)	-0.253	-5.82**	-0.058
Number of children	-0.032	-0.73	-0.007
Change in number of children	0.143	0.99	0.033
Change in marital status	0.153	0.60	0.035
Other Household Characteristics			
Female head of household	0.348	2.66**	0.080
Black head of household	-0.342	-.2.40*	-0.079
Spanish American head of household	NA	NA	NA
Years of education of household head	-0.041	-1.95†	-0.009
Per capita income of household (in thousands)	-0.217	-1.79†	-0.050
Number of moves in three years prior to the experiment	0.705	5.78**	0.162
Housing and Neighborhood Factors			
Perceived crowding	0.386	2.77**	0.089
Living in a unit with basic facilities	0.376	1.35	0.086
Social Bonds			
Positive feelings toward neighbors	-0.058	-1.77†	-0.013
Length of residence in enrollment unit (in years)	-0.007	-0.21	-0.002
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.418	3.89**	0.096
Predisposition to Move			
Would move with an increase in money available for rent	0.310	3.01**	0.071
Program Factors			
Experimental household	0.625	2.27*	0.144
Interaction Terms			
Experimental effect and number of moves in three years prior to the experiment	-0.591	-4.20**	-0.136
Experimental effect and change in marital status	1.136	3.67**	0.261
Experimental effect and living in a unit with basic facilities	-0.936	-2.98**	-0.215
Experimental effect and predisposition to move	0.534	4.38**	0.123
Experimental effect and length of residence in enrollment unit	-0.004	-1.44	-0.001
Experimental effect and per capita income	0.460	3.50**	0.106
Likelihood Ratio (Significance)		234.72**	
Sample Size		1037	
Mean of Dependent Variable		0.359	
Coefficient of Determination		0.173	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table VIII-2

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING IN PHOENIX--INCLUDING TERMS FOR THE INTERACTION OF THE EFFECT OF THE EXPERIMENT WITH SELECTED VARIABLES

INDEPENDENT VARIABLE	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.265	0.44	NA
Life Cycle Factors			
Age of household head (in decades)	-0.250	-4.87**	-0.061
Number of children	-0.019	-0.43	-0.005
Change in number of children	0.263	1.66†	0.064
Change in marital status	0.769	3.31**	0.188
Other Household Characteristics			
Female head of household	0.421	2.92**	0.103
Black head of household	1.472	3.32**	0.360
Spanish American head of household	-0.369	-1.58	-0.090
Years of education of household head	-0.001	-0.06	-0.000
Per capita income of household (in thousands)	0.107	1.07	0.026
Number of moves in three years prior to the experiment	0.400	6.62**	0.098
Housing and Neighborhood Factors			
Perceived crowding	0.310	2.03*	0.076
Living in a unit with basic facilities	-0.225	-1.24	-0.055
Social Bonds			
Positive feelings toward neighbors	-0.136	-4.78**	-0.033
Length of residence in enrollment unit (in years)	-0.123	-2.37*	-0.030
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.170	0.99	0.042
Predisposition to Move			
Would move with an increase in money available for rent	0.909	3.16**	0.223
Program Factors			
Experimental household	0.335	1.08	0.082
Interaction Terms			
Experimental effect and black head of household	-1.364	-2.68**	-0.333
Experimental effect and Spanish American head of household	0.495	1.96†	0.121
Experimental effect and predisposition to move	-0.477	-1.44	-0.117
Experimental effect and length of residence in enrollment unit	0.010	2.13*	0.002
Likelihood Ratio (Significance)		232.14**	
Sample Size		795	
Mean of Dependent Variable		0.572	
Coefficient of Determination		0.214	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment income over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Intervi and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluat at the mean of all independent variables).

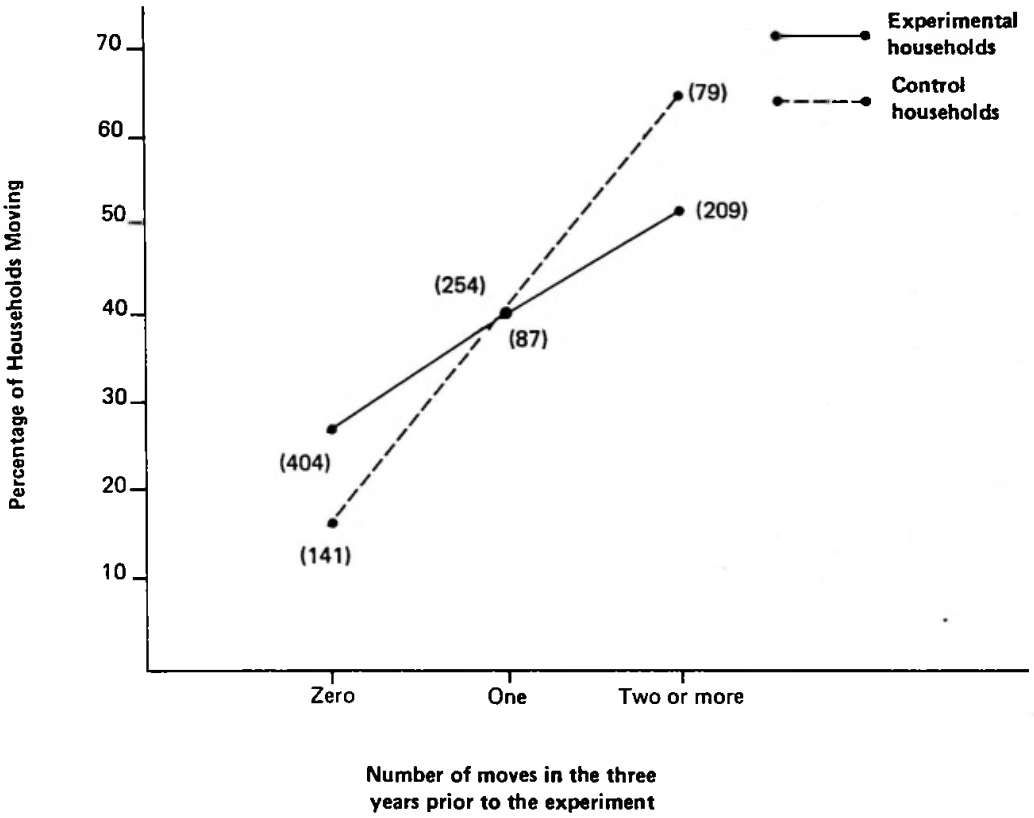
† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Figure VIII-1

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY NUMBER OF MOVES IN THE THREE YEARS PRIOR TO THE EXPERIMENT — PITTSBURGH



SAMPLE: Experimental and Control households in Pittsburgh active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

of prior moves increased. Figure VIII-1 shows that the experiment had two opposite effects, depending on how many times the household had moved in the prior three years. Experimental households that had not moved during the three years prior to the experiment were more likely to move than comparable Control households. Experimental households that had moved two times or more prior to the experiment were less likely to move than similar Control households. It is interesting to note that the number of moves in the three years prior to the experiment retains its significant positive overall effect on mobility in Pittsburgh (see Table VIII-1), even after the interaction term is included.

Figure VIII-2 shows that in Pittsburgh the effect of the experiment was greater for households that experienced a change in marital status than for households that did not. Alternatively, change in marital status had more effect on the mobility of Experimental households than on the mobility of Control households.

The experiment had a greater effect for households in Pittsburgh living in units that lacked basic facilities than for households living in better units, as illustrated in Figure VIII-3. Among households in units having these facilities, Control and Experimental households moved at the same rate. Among households in units which lacked facilities, Experimental households were more likely to move than were Control households. Once the interaction is included in the logit equation, the variable that indicates the overall effect for households in units lacking facilities is no longer significant. The major effect of this variable appears to be for Experimental households.[1]

Households that were predisposed to move at enrollment were more likely to move whether they were Experimental or Control households. Figure VIII-4 shows, however, that predisposition to move had more effect for Experimental households. It seems reasonable that the allowance offer would have increased the probability of moving among households indicating that they would move

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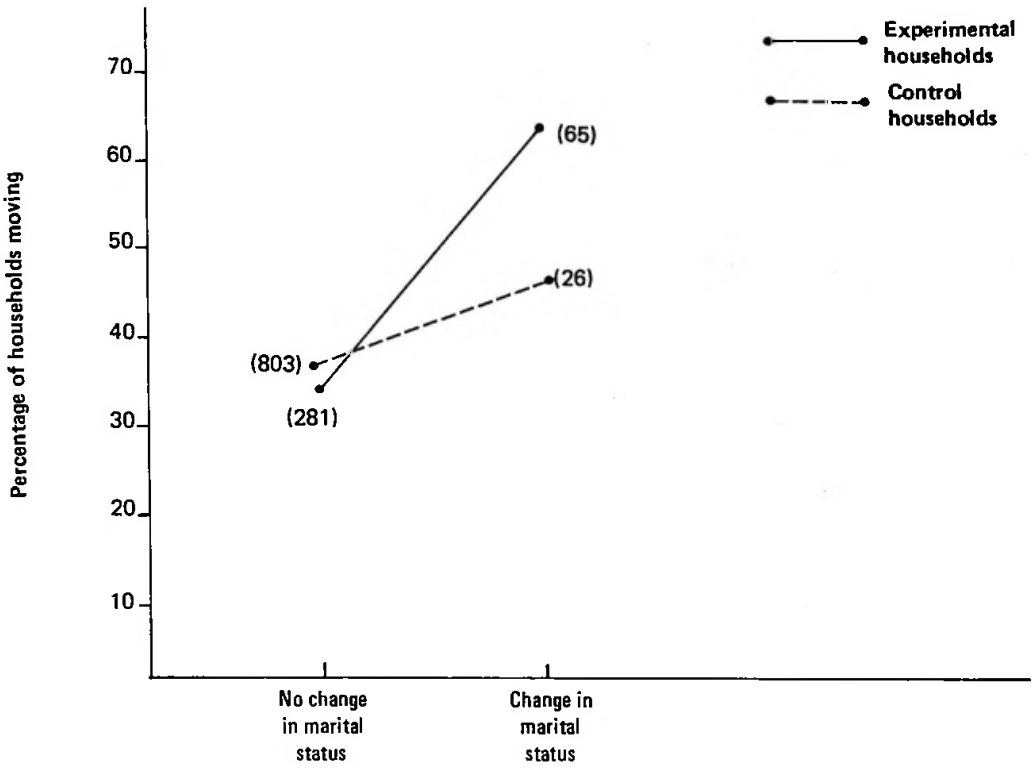
[1]Separate logit estimations of the probability of moving for Experimental and Control households confirm this observation. Lack of basic facilities had a significant effect for Percent of Rent households, which indicates that the interaction is not entirely a result of Housing Gap minimum requirements.

Figure VIII-2

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY CHANGE IN MARITAL STATUS -- -- PITTSBURGH

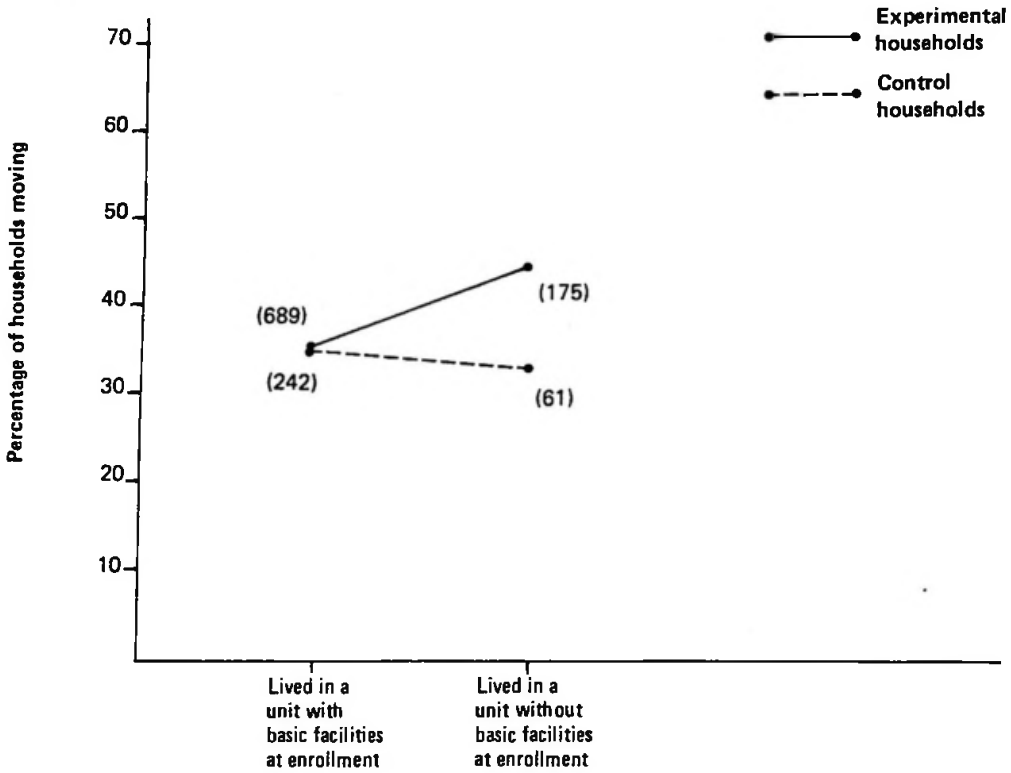


SAMPLE: Experimental and Control households in Pittsburgh active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Figure VIII-3

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY WHETHER HOUSEHOLD LIVED IN A UNIT WITH BASIC FACILITIES AT ENROLLMENT -- PITTSBURGH

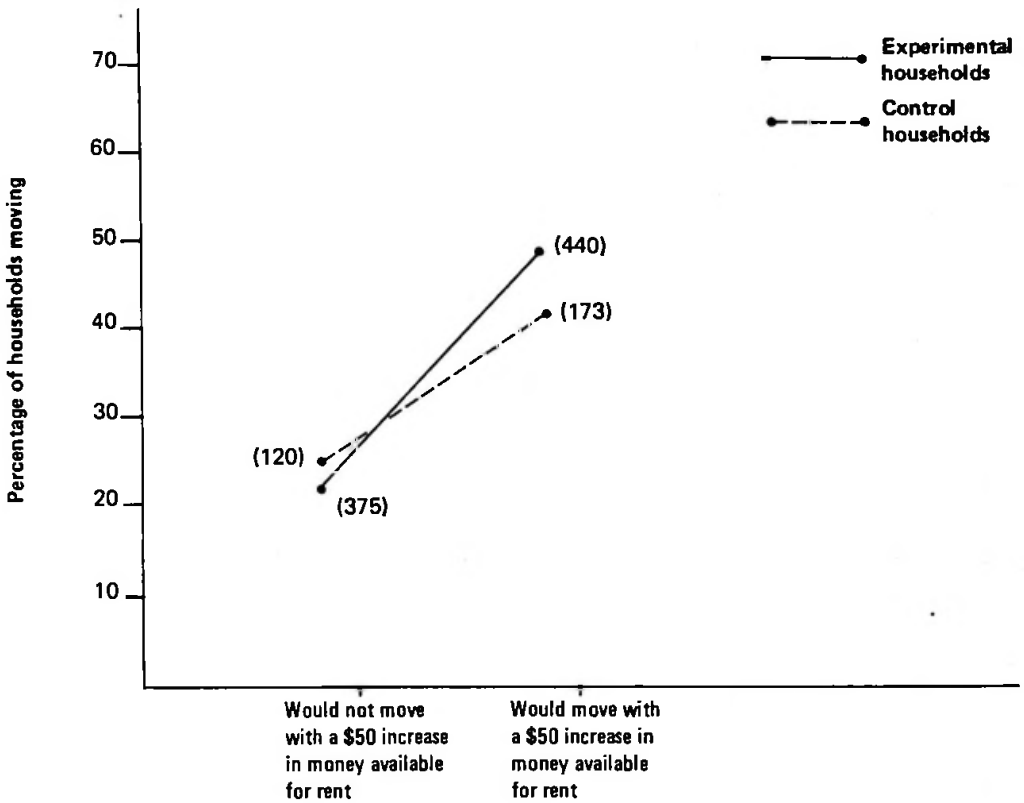


SAMPLE: Experimental and Control households in Pittsburgh active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Figure VIII-4

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY PREDISPOSITION TO MOVE AT ENROLLMENT -- PITTSBURGH



SAMPLE: Experimental and Control households in Pittsburgh active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

if they had more money available for rent, while not having much effect on households that were not interested in moving.

The term indicating the interaction of per capita income and the effect of the experiment has a positive coefficient (see Table VIII-1). Figure VIII-5 shows that the experimental effect increases as per capita income increases. Among households in the lowest per capita income category, Experimental households were less likely to move than Control households. In the higher per capita income categories, Experimental households were more likely to move. In general, income had a negative effect on the probability of moving. The variable indicating the main effect of per capita income is negative, and becomes significant after the interaction term is included in the equation.

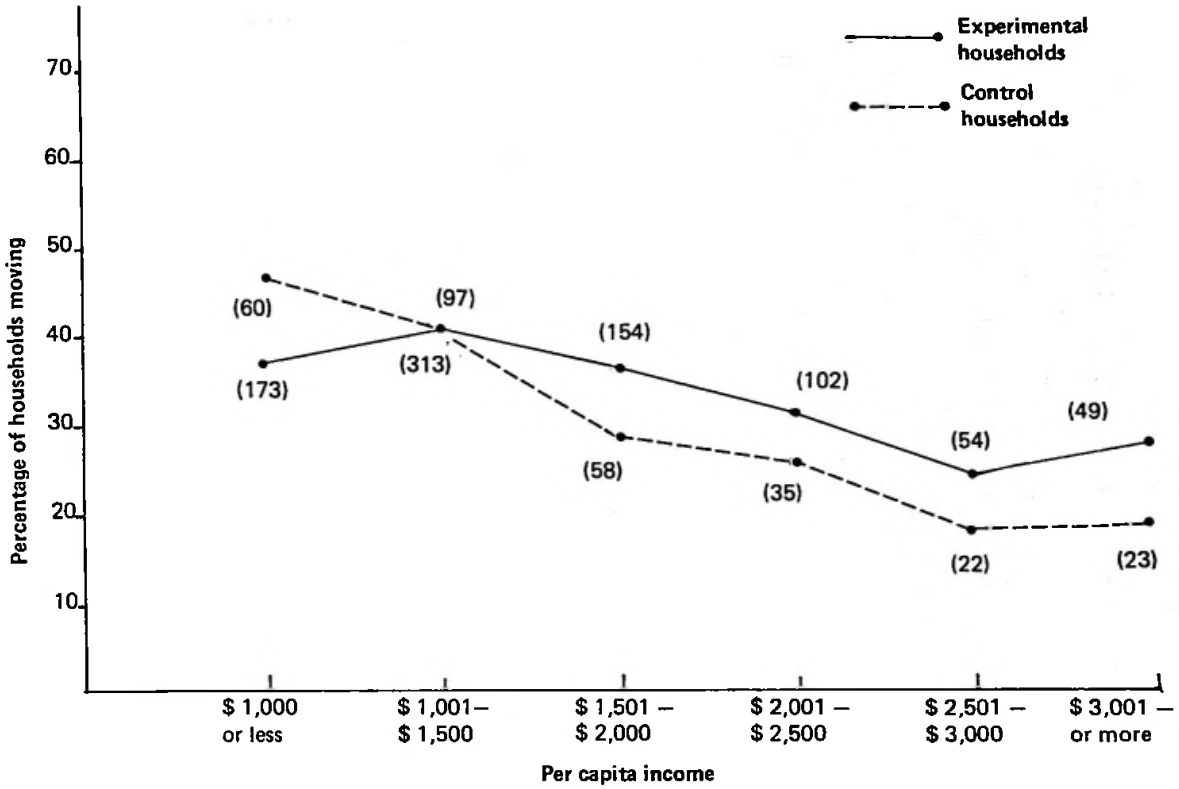
In Phoenix, three variables were found to have a significant interaction with the effect of the experiment: race and ethnicity of head of the household, and length of residence in the enrollment unit (see Table VIII-2).

Figure VIII-6 illustrates the difference in the experimental effect for black and white households in Phoenix. For white households, the effect of the experiment was positive; Experimental households had a higher probability of moving than Control households. For black households, the opposite pattern holds; Control households were more likely to move than Experimental households. Because black households were a small group in Phoenix, the overall effect of the experiment is positive.

Among Control households, those with Spanish American household heads were somewhat less likely to move than other households, as shown in Figure VIII-7. This relationship is reversed for Experimental households; those headed by Spanish Americans were slightly more likely to move. The experiment appears to have had a greater effect for Spanish American households in Phoenix than for other households.

Table VIII-2 shows that the interaction of length of residence in the enrollment unit and the effect of the experiment was positive in Phoenix, that is, the experiment had more effect for long-term residents than for recent movers. Figure VIII-8 illustrates this pattern. The experiment had a particularly large effect for households that had been living in their units more than five years at the time they became enrollees in the experiment.

Figure VIII-5
PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY PER CAPITA INCOME -- PITTSBURGH

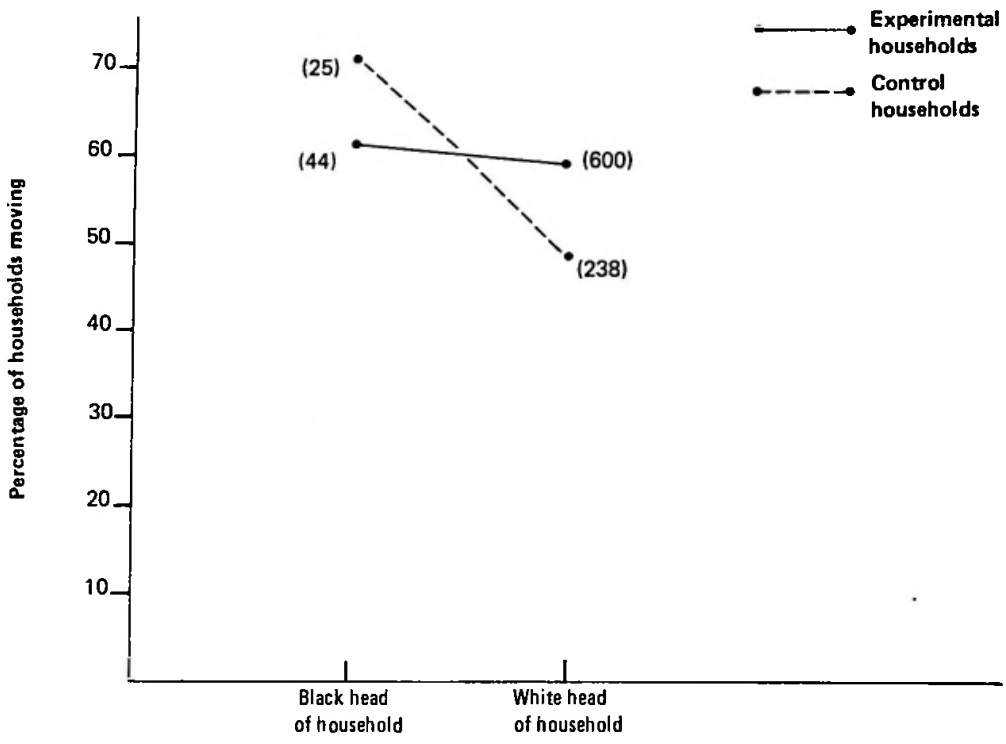


SAMPLE: Experimental and Control households in Pittsburgh active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Periodic Interviews, and payments file.

Figure VIII-6

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY RACE OF HOUSEHOLD HEAD -- PHOENIX

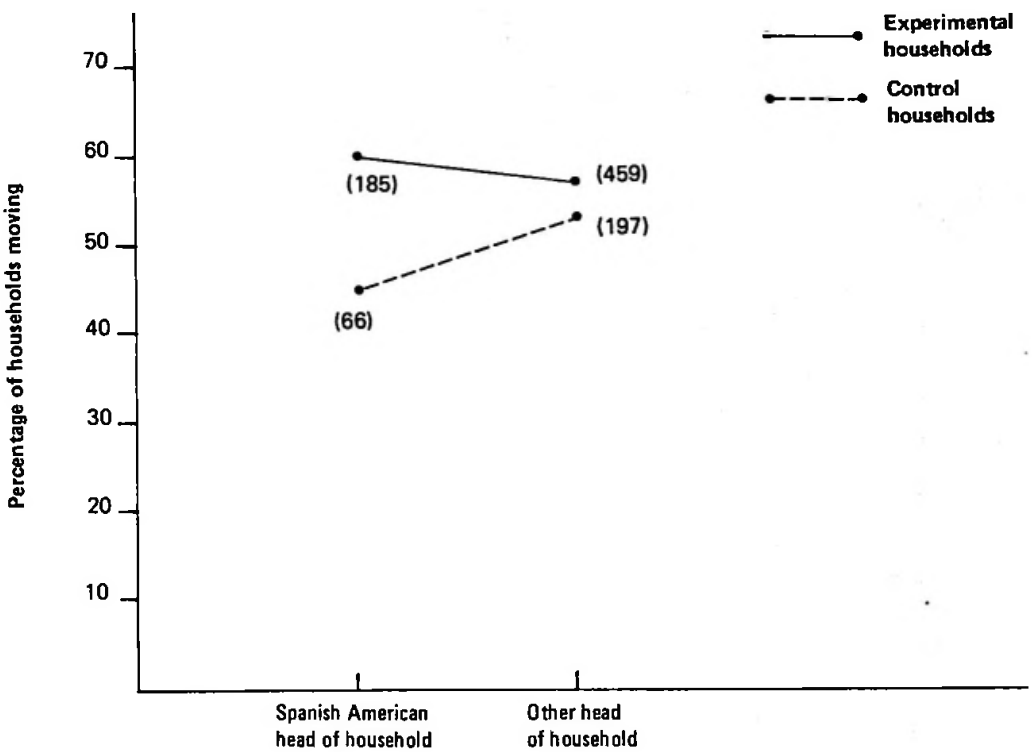


SAMPLE: Experimental and Control households in Phoenix active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Figure VIII-7

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY ETHNICITY OF HOUSEHOLD HEAD -- PHOENIX

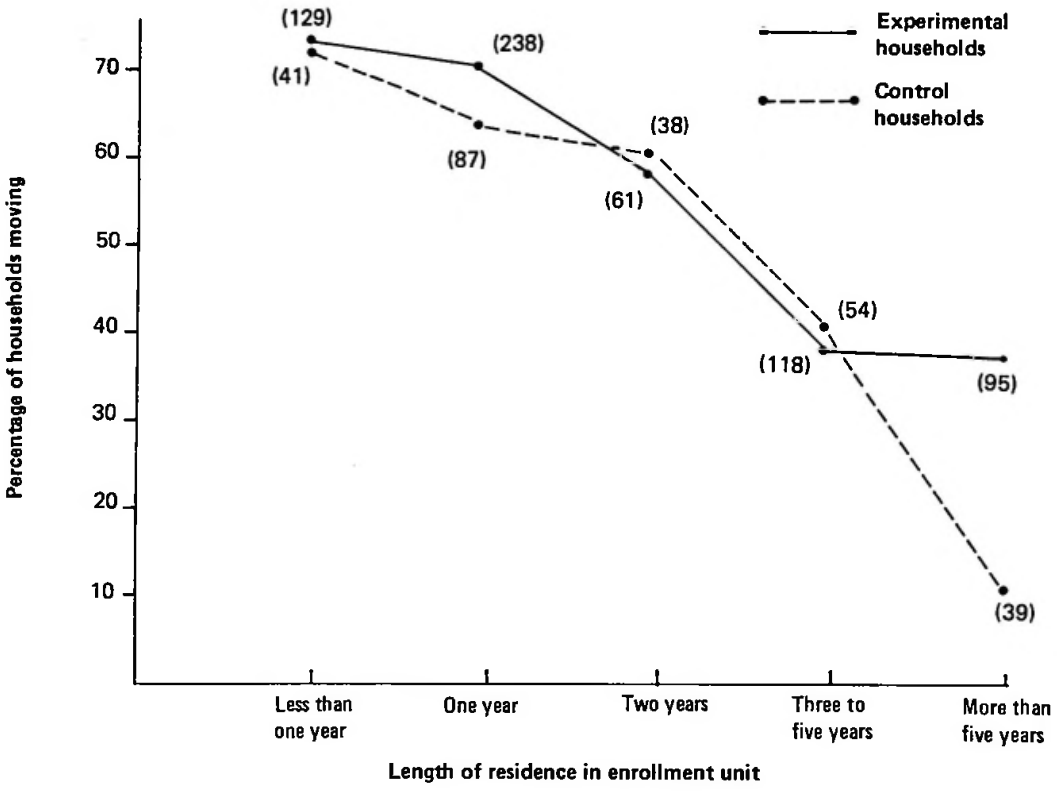


SAMPLE: Experimental and Control households in Phoenix active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

Figure VIII-8

PERCENTAGE OF EXPERIMENTAL AND CONTROL HOUSEHOLDS THAT MOVED, BY LENGTH OF RESIDENCE IN ENROLLMENT UNIT
– – PHOENIX



SAMPLE: Experimental and Control households in Phoenix active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

APPENDIX IX

THE EFFECT OF THE MINIMUM STANDARDS, MINIMUM RENT LOW AND MINIMUM RENT HIGH REQUIREMENTS

Requirements for Housing Gap households were of two forms--Minimum Standards and Minimum Rent. Minimum Standards households were required to live in units which passed physical and occupancy standards in order to receive an allowance payment. The physical standards included such characteristics of the unit as plumbing, window condition and condition of interior and exterior surfaces.[1]

Minimum Rent households were required to spend at least a certain amount per month for housing before they could receive a payment. The amount was set in terms of the estimated cost of modest, existing standard housing for a household of that size. Two Minimum Rent levels were tested--Minimum Rent Low (set at 70 percent of the estimated cost of a modest standard unit) and Minimum Rent High (set at 90 percent of the estimated cost of a modest standard unit).

In Pittsburgh the effect of the experiment was different for Housing Gap households depending on whether or not they met requirements at enrollment. As expected, the experiment motivated households that did not meet requirements to move, while it had, if anything, a negative effect on households that already met the requirements. In Phoenix, the effect of the experiment on mobility was not significantly different for households that met requirements and those that did not.

Experimental effects for each of the three different requirement groups may follow the same pattern as the overall results for Housing Gap households, or different requirements may have had different effects. There seems to be little reason to expect experimental effects to differ by type of requirement among households that met requirements at enrollment. For households that did not meet requirements at enrollment, the expectation would be that more stringent requirements would be less effective in motivating households to

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[1] See Appendix III for a detailed description.

move. If a household perceives that a requirement will be difficult to meet, then it is expected to be less motivated to attempt to meet it by moving.

Among the three requirements tested, Minimum Rent High is clearly a more stringent requirement than the Minimum Rent Low requirement. In general, the Minimum Standards requirement is more stringent than a similar Minimum Rent requirement. A Minimum Rent requirement allows the household to choose the details of its housing while a Minimum Standards requirement specifies that certain features must be present in the dwelling unit. Participation rates in the first year were found to decrease as the stringency of requirements increased for Housing Gap households. Participation was lower for Minimum Rent High households than for Minimum Rent Low households, and was lower under a Minimum Standards requirement than under a Minimum Rent requirement that required the same level of housing expenditures.[1]

A Minimum Rent requirement may also have been easier for households to understand. All that a household needed to do to comply with the requirement was to spend a certain amount each month.[2] In contrast, to comply with the Minimum Standards requirement, the household had to live in a unit which met a number of detailed physical requirements. Minimum Rent households not meeting requirements might be more likely to have grasped what was being asked of them and more likely to feel that they knew what to look for in a new unit.

In general, failure to meet the Minimum Rent requirement would be expected to provide a greater incentive to move than failure to meet the Minimum Standards requirement, because Minimum Rent was a less stringent requirement and more easily understood. Minimum Rent Low households that did not meet the requirements would be expected to have more incentive to move than Minimum Rent High households.

Table IX-1 summarizes differences in the effect of the experiment by type of requirement for households that met requirements and for those that did

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[1] See Kennedy, et al. (1977).

[2] However, compliance with the Minimum Rent requirement was based, not on out-of-pocket expenditures on rent, but on a figure which was adjusted to exclude utilities and furnishings. This adjustment may not have been completely understood by participants.

Table IX-1

DIFFERENCES IN EXPERIMENTAL EFFECTS FOR HOUSING GAP HOUSEHOLDS
BY WHETHER THEY MET REQUIREMENTS AT ENROLLMENT--STRATIFIED BY TYPE OF REQUIREMENT

	PITTSBURGH				PHOENIX			
	EXPERIMENTAL EFFECT--PARTIAL DERIVATIVE OF EXPERIMENTAL VARIABLE:		DIFFERENCE IN EXPERIMENTAL EFFECT	t-TEST FOR SIGNIFICANCE OF DIFFERENCE	EXPERIMENTAL EFFECT--PARTIAL DERIVATIVE OF EXPERIMENTAL VARIABLE:		DIFFERENCE IN EXPERIMENTAL EFFECT	t-TEST FOR SIGNIFICANCE OF DIFFERENCE
	DID NOT MEET REQUIREMENTS	MET REQUIREMENTS			DID NOT MEET REQUIREMENTS	MET REQUIREMENTS		
All Housing Gap Households	0.091†	-0.036	0.127	1.66†	0.107*	0.128	-0.021	-0.20
Minimum Standards Requirement	0.097*	-0.013	0.110	0.70	0.056	0.162	-0.106	-0.56
Minimum Rent Low Requirement	0.215*	-0.049	0.264	2.34**	0.198*	0.162	0.036	0.28
Minimum Rent High Requirement	0.014	-0.168	0.182	1.21	0.151*	0.282†	-0.131	-0.71

DATA SOURCES: Figure 4-3 in Chapter 4 and Tables IX-2 through IX-7 in Appendix IX.
† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

not. Tables IX-2 through IX-7 present the logit estimations on which Table IX-1 is based. For households that did not meet the requirements, the experimental effect was greatest, as expected, for Minimum Rent Low at both sites. Results are not consistent at the two sites for Minimum Rent High and Minimum Standards. Among households not meeting requirements in Pittsburgh, the experiment had less effect for Minimum Rent High than for Minimum Standards households. In Phoenix, the expected ranking occurs.

The experiment did not have a significant effect for households that met requirements in any of the three requirement groups in Pittsburgh, but the direction of the effect for all three groups is negative. In Phoenix, the experimental effect was positive and significant for Minimum Rent High households that met the requirements. The direction of the relationship is positive for the other two groups, but it is not significant.

Table IX-1 also shows whether the experiment had a significantly different effect on the mobility of households that met each of the requirements and those that did not. In Pittsburgh, the effect of the experiment was significantly different for Minimum Rent Low households, depending on whether or not they met requirements at enrollment. For Minimum Standards and Minimum Rent High households in Pittsburgh, the effect of the experiment was not significantly different for households that met and those that did not meet requirements. In Phoenix, there was no significant overall difference in the experimental effect for Housing Gap households that met the requirements and those that did not in any of the three requirement groups.

Table IX-2

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM STANDARDS AND CONTROL HOUSEHOLDS THAT DID NOT MEET THE MINIMUM STANDARDS REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.145	0.16	0.034	-0.226	-0.23	-0.056
Life Cycle Factors						
Age of household head (in decades)	-0.300	-3.25**	-0.071	-0.230	-2.45*	-0.057
Number of children	-0.29	-0.39	-0.007	-0.016	-0.19	-0.004
Change in number of children	0.204	0.83	0.048	0.284	1.18	0.071
Change in marital status	-0.210	-0.52	-0.050	1.464	3.70**	0.364
Other Household Characteristics						
Female head of household	0.191	1.07	0.045	0.525	2.18*	0.130
Black head of household	0.154	0.64	0.037	1.812	3.89**	0.450
Spanish American head of household	NA	NA	NA	0.092	0.33	0.023
Years of education of household head	-0.058	-1.10	-0.014	0.016	0.43	0.004
Per capita income of household (in thousands)	-0.086	-0.38	-0.020	0.169	1.01	0.042
Number of moves in three years prior to the experiment	0.321	3.40**	0.076	0.429	4.80**	0.106
Housing and Neighborhood Factors						
Perceived crowding	0.428	1.69†	0.102	0.286	1.05	0.071
Living in a unit with basic facilities	0.414	1.59	0.099	-0.098	-0.52	-0.024
Social Bonds						
Positive feelings toward neighbors	0.004	0.07	0.001	-0.194	-2.49*	-0.048
Length of residence in enrollment unit (in years)	-0.049	-2.16*	-0.012	-0.062	-1.56	-0.016
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.485	2.06*	0.115	-0.002	-0.01	-0.001
Predisposition to Move						
Would move with an increase in money available for rent	0.441	1.89†	0.105	0.854	3.50**	0.212
Program Factors						
Experimental Household (Minimum Standards)	0.408	1.99*	0.097	0.226	1.07	0.056
Likelihood Ratio (Significance)		79.41**			102.65**	
Sample Size		354			294	
Mean of Dependent Variable		0.390			0.541	
Coefficient of Determination		0.168			0.253	

SAMPLE: Minimum Standards and Control households that did not meet the Minimum Standards requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IX-3

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM RENT LOW AND CONTROL HOUSEHOLDS THAT DID NOT MEET THE MINIMUM RENT LOW REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	1.431	0.75	0.324	0.607	0.47	0.150
Life Cycle Factors						
Age of household head (in decades)	-0.561	-3.26**	-0.127	-0.314	-2.36*	-0.078
Number of children	-0.056	-0.39	-0.013	0.034	0.33	0.008
Change in number of children	0.129	0.30	0.029	0.039	0.12	0.010
Change in marital status	0.616	0.89	0.140	1.498	2.51*	0.369
Other Household Characteristics						
Female head of household	0.149	0.49	0.034	0.765	2.22*	0.189
Black head of household	-0.145	-0.38	-0.033	1.305	2.85**	0.322
Spanish American head of household	NA	NA	NA	-0.139	-0.40	-0.034
Years of education of household head	-0.177	-1.68†	-0.040	-0.092	-1.42	-0.022
Per capita income of household (in thousands)	0.360	1.10	0.082	0.106	0.44	0.026
Number of moves in three years prior to the experiment	0.717	2.87**	0.162	0.509	3.31**	0.126
Housing and Neighborhood Factors						
Perceived crowding	0.478	1.12	0.108	0.137	0.44	0.034
Living in a unit with basic facilities	0.087	0.21	0.020	-0.017	-0.06	-0.004
Social Bonds						
Positive feelings toward neighbors	-0.068	-0.65	-0.016	-0.048	-0.89	-0.012
Length of residence in enrollment unit (in years)	-0.025	-0.46	-0.006	-0.060	-1.07	-0.015
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.282	0.72	0.064	0.276	1.12	0.068
Predisposition to Move						
Would move with an increase in money available for rent	0.924	1.93†	0.209	0.671	2.05*	0.165
Program Factors						
Experimental household (Minimum Rent Low)	0.947	2.28*	0.215	0.805	2.29*	0.198
Likelihood Ratio (Significance		57.34**			64.67**	
Sample Size		150			172	
Mean of Dependent Variable		0.347			0.558	
Coefficient of Determination		0.296			0.274	

SAMPLE: Minimum Rent Low and Control households that did not meet the Minimum Rent Low requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Perioidic Interviews and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IX-4

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS THAT DID NOT MEET THE MINIMUM RENT HIGH REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE
Constant	2.685	1.92†	0.591	-1.510	-1.31	-0.372
Life Cycle Factors						
Age of household head (in decades)	-0.331	-2.72**	-0.073	-0.108	-1.00	-0.027
Number of children	-0.176	-1.67†	-0.039	0.124	1.38	0.030
Change in number of children	-0.532	1.83†	0.117	0.309	1.07	0.076
Change in marital status	0.486	1.15	0.107	1.761	3.55**	0.434
Other Household Characteristics						
Female head of household	-0.141	-0.48	-0.031	0.104	0.38	0.026
Black head of household	1.104	-3.27**	-0.243	0.781	1.72†	0.192
Spanish American head of household	NA	NA	NA	-0.210	-0.62	-0.052
Years of education of household head	-0.099	-1.30	-0.022	-0.005	-0.09	-0.001
Per capita income of household (in thousands)	-0.844	-2.23*	-0.0186	0.240	1.34	0.059
Number of moves in three years prior to the experiment	0.468	3.27**	0.103	0.664	6.07**	0.164
Housing and Neighborhood Factors						
Perceived crowding	0.458	1.42	0.101	-0.156	-0.56	-0.038
Living in a unit with basic facilities	-0.062	-0.20	-0.014	-0.442	-0.19	-0.011
Social Bonds						
Positive feelings toward neighbors	-0.162	-2.38*	-0.036	0.030	0.38	0.007
Length of residence in enrollment unit (in years)	-0.046	-0.98	-0.010	-0.113	-2.09*	-0.028
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.466	1.61	0.102	0.045	0.15	0.011
Predisposition to Move						
Would move with an increase in money available for rent	0.644	1.88†	0.142	1.022	3.37**	0.252
Program Factors						
Experimental household (Minimum Rent High)	0.062	0.21	0.014	0.612	2.32*	0.151
Likelihood Ratio (Significance)		86.59**			107.24**	
Sample Size		263			248	
Mean of Dependent Variable		0.327			0.560	
Coefficient of Determination		0.260			0.315	

SAMPLE: Minimum Rent High and Control households that did not meet the Minimum Rent High requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IX-5

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM STANDARDS AND CONTROL HOUSEHOLDS THAT MET THE MINIMUM STANDARDS REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH			PHOENIX		
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE
Constant	-0.963	-0.66	-0.176	-0.304	-0.18	-0.075
Life Cycle Factors						
Age of household head (in decades)	0.126	0.47	0.023	-0.298	-1.10	-0.074
Number of children	-1.174	-2.50*	-0.215	-0.001	-0.003	-0.0003
Change in number of children	0.695	0.95	0.127	0.334	0.39	0.082
Change in marital status	2.404	2.16*	0.440	1.171	1.11	0.289
Other Household Characteristics						
Female head of household	-0.176	-0.24	-0.032	1.197	1.57	0.296
Black head of household	0.962	1.06	0.176	1.513	1.31	0.374
Spanish American head of household	NA	NA	NA	-1.006	-0.88	-0.249
Years of education of household head	0.232	1.89†	0.042	0.246	1.57	0.061
Per capita income of household (in thousands)	-1.012	-1.60	-0.185	-0.507	-1.02	-0.125
Number of moves in three years prior to the experiment	-0.150	-0.39	-0.027	0.114	0.43	0.028
Housing and Neighborhood Factors						
Perceived crowding	0.362	0.33	0.066	2.090	1.92†	0.517
Living in a unit with basic facilities	0.182	0.12	0.033	-0.094	-0.05	-0.023
Social Bonds						
Positive feelings toward neighbors	0.019	0.10	0.003	-0.300	-1.24	-0.074
Length of residence in enrollment unit (in years)	-0.523	-2.83**	-0.096	-0.408	-2.01*	-0.101
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	-0.115	-0.15	-0.021	-1.289	-1.30	-0.319
Predisposition to Move						
Would move with an increase in money available for rent	1.799	2.68**	0.329	0.571	0.71	0.141
Program Factors						
Experimental household (Minimum Standards)	-0.069	-0.11	-0.013	0.657	0.88	0.162
Likelihood Ratio (Significance)		31.09*			38.89*	
Sample Size		87			67	
Mean of Dependent Variable		0.241			0.448	
Coefficient of Determination		0.323			0.422	

SAMPLE: Minimum Standards and Control households that met the Minimum Standards requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table IX-6

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM RENT LOW AND CONTROL HOUSEHOLDS THAT MET THE MINIMUM RENT LOW REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH			PHOENIX		
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE
Constant	-0.793	-0.63	-0.180	-3.193	-1.71†	-0.794
Life Cycle Factors						
Age of household head (in decades)	-0.174	-1.48	-0.039	-0.202	-1.48	-0.050
Number of children	-0.248	-1.77†	-0.056	-0.070	-0.38	-0.017
Change in number of children	0.223	0.70	0.050	0.752	1.58	0.187
Change in marital status	0.122	0.23	0.028	1.642	2.60**	0.408
Other Household Characteristics						
Female head of household	0.540	1.79†	0.122	1.078	2.72**	0.268
Black head of household	-0.400	-0.97	-0.090	—	—	—
Spanish American head of household	NA	NA	NA	-0.633	-1.35	-0.157
Years of education of household head	0.066	0.97	0.015	0.067	0.80	0.017
Per capita income of household (in thousands)	-0.178	-0.68	-0.040	0.388	1.66†	0.096
Number of moves in three years prior to the experiment	0.504	3.53**	0.114	0.844	3.76**	0.210
Housing and Neighborhood Factors						
Perceived crowding	-0.065	-0.17	-0.015	1.366	2.25*	0.340
Living in a unit with basic facilities	-0.446	-1.03	-0.101	0.387	0.91	0.097
Social Bonds						
Positive feelings toward neighbors	-0.039	-0.46	-0.009	-0.270	-2.03*	-0.067
Length of residence in enrollment unit (in years)	0.014	0.33	0.003	0.040	0.36	0.010
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.054	0.19	0.012	-0.915	-1.97*	-0.227
Predisposition to Move						
Would move with an increase in money available for rent	0.787	2.84**	0.178	1.129	2.62**	0.281
Program Factors						
Experimental household (Minimum Rent Low)	-0.216	-0.79	-0.049	0.650	1.51	0.162
Likelihood Ratio (Significance)		39.80**			52.50**	
Sample Size		225			132	
Mean of Dependent Variable		0.347			0.538	
Coefficient of Determination		0.137			0.288	

SAMPLE: Minimum Rent Low and Control households that met the Minimum Rent Low requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independant variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed.).

Table IX-7

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING--MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS THAT MET THE MINIMUM RENT HIGH REQUIREMENT AT ENROLLMENT

INDEPENDENT VARIABLE	PITTSBURGH COEFFICIENT	PITTSBURGH ASYMPTOTIC t-STATISTIC	PITTSBURGH PARTIAL DERIVATIVE[a]	PHOENIX COEFFICIENT	PHOENIX ASYMPTOTIC t-STATISTIC	PHOENIX PARTIAL DERIVATIVE[a]
Constant	0.578	0.25	0.139	-3.181	-1.34	-0.795
Life Cycle Factors						
Age of household head (in decades)	-0.438	-2.23*	-0.106	-0.207	-0.91	-0.052
Number of children	-0.234	-1.01	-0.056	-0.674	-1.51	-0.169
Change in number of children	1.196	2.02*	0.288	0.738	1.01	0.184
Change in marital status	-0.673	-0.59	-0.162	0.576	0.43	0.144
Other Household Characteristics						
Female head of household	0.388	0.99	0.093	2.000	2.78**	0.500
Black head of household	1.332	1.38	0.321	—	—	—
Spanish American head of household	NA	NA	NA	-0.473	-0.43	-0.118
Years of education of household head	0.009	0.09	0.002	0.278	2.34*	0.070
Per capita income of household (in thousands)	-0.096	-0.58	-0.023	-0.328	-0.76	-0.082
Number of moves in three years prior to the experiment	0.599	2.10*	0.144	0.561	1.94†	0.140
Housing and Neighborhood Factors						
Perceived crowding	0.418	0.66	0.101	1.752	1.75†	0.438
Living in a unit with basic facilities	0.019	0.01	0.004	—	—	—
Social Bonds						
Positive feelings toward neighbors	-0.073	-0.54	-0.018	-0.274	-1.29	-0.068
Length of residence in enrollment unit (in years)	0.040	0.72	0.010	0.037	0.25	0.009
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.660	1.22	0.159	-1.534	-1.49	-0.384
Predisposition to Move						
Would move with an increase in money available for rent	0.326	0.65	0.079	1.092	1.69†	0.273
Program Factors						
Experimental household (Minimum Rent High)	-0.697	-1.26	-0.168	1.127	1.72†	0.282
Likelihood Ratio (Significance)		35.58**			25.76*	
Sample Size		101			67	
Mean of Dependent Variable		0.406			0.507	
Coefficient of Determination		0.261			0.277	

SAMPLE: Minimum Rent High and Control households that met the Minimum Rent High requirement at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, Initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

REFERENCES

Kennedy, Stephen D., T. Krishna Kumar, and Glen Weisbrod, Participation Under a Housing Gap Form of Housing Allowance, Cambridge, Mass., Abt Associates Inc., May 1977 (revised June 1980).

APPENDIX X

MOBILITY RATES FOR A NATIONAL SAMPLE --THE MICHIGAN PANEL STUDY OF INCOME DYNAMICS

It is useful to analyze the mobility of households in the Demand Experiment in the context of national mobility rates to assess the extent to which Demand households were typical of other, similar, households. The national data base chosen for this comparison is the Michigan Panel Study of Income Dynamics (PSID). The sample for the PSID provides data designed to allow analysis of the behavior of low income households on a national level.

This appendix contains four tables based on mobility data from the PSID. Table X-1 shows mobility rates over one year and mobility rates over five years for the entire PSID sample, divided into homeowners and renters. The most striking result in the first table is the difference in the mobility of owners and renters. In 1968-1969, homeowners had a mobility rate of 6 percent, compared to 28 percent for renters.

Table X-2 shows mobility rates for 1968-1969 for homeowners and renters by a number of demographic characteristics. Results are shown for two groups: households that were below poverty level in 1968 and households that were below twice poverty level in 1968 (note that the second group includes households in the first group). In general, the mobility of the two groups appears fairly similar. In 1968-1969, 24 percent of the renters below poverty level moved, compared to 27 percent of the renters below twice poverty level. The variation in mobility by census region is particularly interesting. Renter households in the Western region had a much higher mobility rate than households in other parts of the country. Mobility rates of renter households below the poverty level in the Northeast and West census regions are quite similar to those observed for Demand Experiment households in Pittsburgh and Phoenix during the first year of the experiment. In the Northeast, 22 percent of the renter households below poverty moved, compared to 26 percent of Demand Experiment households in Pittsburgh. In the West, 42 percent of the renter households below poverty moved, compared to 48 percent of Demand households in Phoenix. Demand Experiment households thus appear fairly typical of other low-income renter households in their geographic area.

Table X-1

THE PERCENTAGE OF HOUSEHOLDS THAT MOVED
BETWEEN 1968 AND 1969 AND BETWEEN 1968 AND 1973, BY TENURE

	1968-1969		
	ALL HOUSEHOLDS	RENTERS IN 1968	HOMEOWNERS IN 1968
Number of households in group in 1968	5,272	2,352	2,920
Number of households that moved between 1968 and 1969	851	667	184
Percentage of households that moved between 1968 and 1969	16%	28%	6%

SAMPLE: Households in which the household head in 1968 or the spouse of the household head in 1968 remained in the household in 1969.
SOURCE: The Michigan Panel Study of Income Dynamics.

	1968-1973		
	ALL HOUSEHOLDS	RENTERS IN 1968	HOMEOWNERS IN 1968
Number of households in group in 1968	4,249	1,933	2,316
Number of households that moved between 1968 and 1973	1,979	1,377	602
Percentage of households that moved between 1968 and 1973	47%	71%	26%

SAMPLE: Households in which the household head in 1968 or the spouse of the household head in 1968 remained in the household in 1973.
SOURCE: The Michigan Panel Study of Income Dynamics.

Table X-2

THE PERCENTAGE OF HOUSEHOLDS THAT MOVED
BETWEEN 1968 AND 1969, BY TENURE AND POVERTY LEVEL IN 1968

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
All households	1082	265	24%	1897	511	27%	558	20	4%	1500	75	5%
Age of household head												
Less than 25	92	45	49	229	128	56	6	2	33	32	10	31
25-34	236	61	26	450	124	28	49	1	2	156	11	7
35-44	360	93	26	585	147	25	152	6	4	510	27	5
45-54	254	46	18	414	83	20	174	6	3	388	16	4
55-64	104	14	13	151	22	15	93	3	3	219	8	4
65 or older	32	6	19	64	7	11	84	2	2	194	3	2
Life cycle												
Young single	86	38	44	134	65	49	2	0	0	7	3	43
Young married, no children	17	8	47	60	37	62	2	0	0	11	1	9
Young married, with children	101	27	27	317	105	33	46	2	4	159	15	9
Older single	35	2	6	49	4	8	8	0	0	23	1	4
Older married, no children	37	6	16	77	10	13	50	2	4	182	9	5
Older married, with children	276	58	21	498	105	21	284	6	2	810	28	3
Separated or divorced, no children	48	8	17	94	22	23	12	3	25	24	6	25
Separated or divorced, with children	345	91	26	472	127	27	45	1	2	83	3	4
Widowed, no children	39	6	15	67	11	16	60	3	5	112	5	4
Widowed, with children	97	21	22	128	25	20	49	3	6	89	4	4
Race												
White households	209	71	34	613	222	36	249	11	4	973	62	6
Black households	819	178	22	1203	263	22	291	7	2	481	11	2
Other households	49	14	29	71	22	31	18	2	11	46	2	4

Table X-2 (continued)

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
Distance to nearest city of more than 50,000												
Less than 5 miles	402	105	26%	681	204	30%	86	5	6%	265	13	5%
5-49 miles	520	117	22	943	214	23	251	9	4	739	40	5
50 miles or more	145	42	29	251	92	37	218	6	3	484	22	5
Census region												
Northeast	127	28	22	288	66	23	31	0	0	179	10	6
North Central	191	55	29	385	121	31	114	6	5	377	18	5
South	601	114	19	931	203	22	365	12	3	747	41	5
West	163	68	42	293	121	41	48	2	4	197	6	3
Income (gross)												
Less than $2,000	300	73	24	311	73	23	178	9	5	190	12	6
$2,000-3,999	503	136	27	707	210	30	179	8	4	330	17	5
$4,000-5,999	212	44	21	493	131	27	151	3	2	389	15	4
$6,000-7,999	64	12	19	259	68	26	47	0	0	274	19	7
$8,000-9,999	3	0	0	78	18	23	3	0	0	180	6	3
$10,000 or more	--	--	--	49	11	22	--	--	--	137	6	4
Rent burden												
Less than .25	647	143	22	1337	347	26	--	--	--	--	--	--
.25 - .40	271	73	27	371	109	29	--	--	--	--	--	--
Greater than .41	139	40	29	157	44	28	--	--	--	--	--	--
Length of residence in unit in 1968												
1 year or less	313	128	41	632	261	41	71	3	4	194	17	9
2-5 years	386	95	25	688	187	27	103	5	5	293	28	10
6-10 years	239	29	12	360	42	12	116	5	4	360	16	4
More than 10 years	138	13	9	209	21	10	267	7	3	652	14	2

Table X-2 (continued)

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
Family size												
1	93	25	27%	190	61	32%	55	4	7%	111	11	10%
2	95	24	25	201	67	33	72	4	6	213	12	6
3	123	27	22	258	69	27	33	0	0	139	6	4
4	123	32	26	257	67	26	55	5	9	199	16	8
5	149	43	29	259	83	32	52	3	6	188	5	3
6	94	16	17	190	40	21	62	0	0	196	4	2
7	103	24	23	167	33	20	51	3	6	139	14	10
8	110	34	31	153	43	28	56	1	2	116	6	5
9 or more	192	40	21	222	48	22	122	0	0	199	1	1

SAMPLE: Households in which the household head in 1968 or the spouse of the household head in 1968 remained in the household in 1969.
SOURCE: The Michigan Panel Study of Income Dynamics.

Table X-3 is similar to Table X-2, but shows mobility rates over five years rather than over one year. Again mobility rates are fairly similar for households below poverty level and those below twice poverty level. Five-year mobility rates for renters are also higher in the Western census region than in other regions.

Table X-4 estimates the stability of tenure and poverty level classifications over time. For example, it shows the percentage of households classified as renters below poverty level in 1968 that remained in that category in 1973. Only about one-third to one-half of the households in the poverty level/tenure groups in 1968 remained in the same group in 1973. The table also shows that changes in income, which put the household above poverty level, were much more common than changes in tenure.

Using the PSID sample to analyze mobility over time raises several issues concerning sample selection, weighting and the classification of households by demographic characteristics. The remainder of this appendix describes in detail how these issues have been resolved in the tables presented.

The Sample

For an analysis of moving behavior over time, it is desirable to exclude households that were formed during the period under study, since these households will not have a complete, independent moving history for the period. Therefore, the PSID sample used includes only those households in which either the head or the spouse of the head in 1968 remained present in the household.[1] Households in which neither the original head nor the original head's spouse was present in the household in 1969 have been excluded from the analysis of moving rates between 1968 and 1969. Households in which neither the original head nor the original head's spouse was present in 1973 have been excluded from the analysis of moving rates between 1968 and 1973.

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[1] The PSID results presented in Figure 3-1 in the text use the entire 1973 sample rather than the restricted sample used in this appendix. Figure 3-1 shows the mobility history of a representative cross-section of households in 1973 so that it was not necessary to exclude newly formed households.

Table X-3

THE PERCENTAGE OF HOUSEHOLDS THAT MOVED
BETWEEN 1968 AND 1973, BY TENURE AND POVERTY LEVEL IN 1968

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
All households	830	579	70%	1511	1087	71%	422	92	22%	1164	269	23%
Age of household head												
Less than 25	89	80	90	225	209	93	4	3	75	31	21	68
25-34	201	161	80	404	336	83	40	17	42	137	60	44
35-44	251	174	69	427	281	66	108	28	26	363	75	21
45-54	179	106	59	297	168	57	118	20	17	271	51	19
55-64	82	43	52	122	68	56	76	17	22	183	37	20
65 or older	26	13	50	54	23	43	76	7	9	178	25	14
Life cycle												
Young single	77	64	83	124	105	85	2	2	100	7	5	71
Young married, no children	16	15	94	56	54	96	2	1	50	11	9	82
Young married, with children	88	79	90	299	266	89	35	16	46	139	62	45
Older single	26	16	62	36	21	58	8	1	12	19	2	11
Older married, no children	34	18	53	71	39	55	50	7	14	173	27	16
Older married, with children	185	120	65	356	219	62	190	40	21	567	114	20
Separated or divorced, no children	45	30	67	89	60	67	11	2	18	22	6	27
Separated or divorced, with children	260	188	72	356	253	71	36	8	22	63	14	22
Widowed, no children	33	13	39	60	24	40	56	8	14	103	20	19
Widowed, with children	65	36	55	83	46	55	32	7	22	61	10	16
Race												
White households	179	134	75	517	398	77	200	41	20	772	196	25
Black households	611	416	68	950	644	68	211	41	19	358	59	16
Other households	36	25	69	56	37	66	11	10	91	34	14	41

Table X-3 (continued)

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
Distance to nearest city of more than 50,000												
Less than 5 miles	322	229	71%	565	405	72%	65	17	26%	211	55	26%
5-49 miles	385	255	66	742	504	68	192	49	25	563	142	25
50 miles or more	115	89	77	209	169	81	163	25	15	381	70	18
Census region												
Northeast	108	68	63	241	149	62	23	3	13	137	28	20
North Central	153	118	77	315	243	77	86	23	27	290	76	26
South	439	283	64	733	498	68	277	51	18	583	128	22
West	130	110	85	242	197	81	36	15	42	154	37	24
Income (gross)												
Less than $2,000	259	177	68	270	183	68	160	28	18	172	32	19
$2,000-3,999	382	270	71	580	407	70	130	32	25	270	69	26
$4,000-5,999	147	107	73	390	294	75	106	22	21	309	69	22
$6,000-7,999	39	25	64	197	145	74	25	9	36	199	51	26
$8,000-9,999	3	0	0	64	38	59	1	0	0	130	28	22
$10,000 or more	--	--	--	30	20	67	--	--	--	84	20	24
Rent burden												
Less than .25	458	324	71	1042	749	72	--	--	--	--	--	--
.25 - .40	231	154	67	325	225	69	--	--	--	--	--	--
Greater than .41	119	83	70	136	93	68	--	--	--	--	--	--
Length of residence in unit in 1968												
1 year or less	239	202	85	515	437	85	48	16	33	146	57	39
2-5 years	311	220	71	572	422	74	74	16	22	223	68	30
6-10 years	185	106	57	288	156	54	87	23	26	274	67	24
More than 10 years	93	49	53	152	68	45	212	37	17	520	77	15

Table X-3 (continued)

HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved	Number in Group	Number That Moved	Percentage That Moved
Family size												
1	92	63	68%	188	132	70%	54	8	15%	108	25	23%
2	89	58	65	191	132	69	68	11	16	200	38	19
3	103	66	64	217	151	70	29	4	14	113	21	19
4	99	74	75	213	162	76	40	6	15	159	42	26
5	109	80	73	199	143	72	35	8	23	142	28	20
6	71	47	66	153	105	69	46	16	35	146	42	29
7	67	59	88	118	96	81	40	7	18	98	24	24
8	75	50	67	106	71	67	35	10	29	75	20	27
9 or more	125	82	66	146	95	65	75	22	29	123	29	24

SAMPLE: Households in which the household head in 1968 or the spouse of the household head in 1968 remained in the household in 1973.
SOURCE: The Michigan Panel Study of Income Dynamics.

Table X-4

CONSISTENCY OF TENURE AND POVERTY LEVEL CLASSIFICATIONS FROM 1968 to 1973

	RENTERS IN 1968						HOMEOWNERS IN 1968					
	HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW POVERTY LEVEL IN 1968			HOUSEHOLDS BELOW TWICE POVERTY LEVEL IN 1968		
	All Households	Households That Moved	Households That Did Not Move	All Households	Households That Moved	Households That Did Not Move	All Households	Households That Moved	Households That Did Not Move	All Households	Households That Moved	Households That Did Not Move
Number in group in 1968	808	559	249	1493	1052	441	414	87	327	1149	260	889
Number still in group in 1973	283	171	112	755	460	295	131	20	111	536	73	463
Percentage still in group in 1973	35%	31%	45%	51%	44%	67%	32%	23%	34%	47%	28%	52%
Number no longer in group in 1973	525	388	137	738	592	146	283	67	216	613	187	426
Number (percentage) no longer in group because of:												
tenure change only	61 (12%)	54 (14%)	7 (5%)	204 (28%)	178 (30%)	26 (18%)	9 (3%)	9 (13%)	0 (0%)	45 (7%)	37 (20%)	8 (2%)
income change only	342 (65%)	219 (56%)	123 (90%)	325 (44%)	217 (37%)	108 (74%)	253 (89%)	43 (64%)	210 (97%)	547 (89%)	131 (70%)	416 (98%)
change in both	122 (23%)	115 (29%)	7 (5%)	209 (28%)	197 (33%)	12 (8%)	21 (7%)	15 (22%)	6 (3%)	21 (3%)	19 (10%)	2 (0%)

SAMPLE: Households in which the household head in 1968 or the spouse of the household head in 1968 remained in the household in 1973.
SOURCE: The Michigan Panel Study of Income Dynamics.

Household Weights

The results presented in the tables are unweighted; that is, each household in the sample has been counted only once. The weighting factors derived by the Michigan Survey Research Center are designed to produce a sample that is representative of the U.S. population in a given year. It is not clear, however, that these weights are appropriate for use in the analysis of behavior over time, where households formed during the observation period are excluded from the analysis. Results have therefore been left unweighted.[1]

Poverty Level and the Effect of Inflation

Poverty level has been defined using the "Orshansky Ratio" derived by the Survey Research Center. This measure is the ratio of total family income to the annual family need standard (poverty line) developed by Orshansky, which varies by household size and by age and sex of family members, with an additional adjustment for diseconomies of small households and an adjustment for farmers. The 1968 standard was used by the Survey Research Center in all subsequent waves of the PSID, without an adjustment for the effects of inflation. No additional adjustment has been made in the figures presented in Table X-4, so that the figures would be expected to underestimate the number of households below the poverty level by 1973 because of the effect of inflation on family income.

Household Demographic Characteristics

All household demographic characteristics are based on data from the 1968 survey. Note that in the life cycle categories, "young" refers to those households in which the head is under 35. The income measure used is total family money income, including transfer income other than ADC and ADCU. Rent burden is calculated as the ratio of annual rent paid to annual income.

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[1] Household weights are used in Figure 3-1, which portray results at a cross section rather than changes over time.

APPENDIX XI
MOBILITY DIFFERENCES IN PITTSBURGH AND PHOENIX

One of the most striking facts about the mobility of households in the Demand Experiment was the difference between mobility rates at the two sites. Among households that were active in the experiment at the end of two years, 49 percent of those in Pittsburgh had moved during that period, compared to 69 percent of those in Phoenix.

The availability of rental housing, at least as reflected in rental vacancy rates, does not appear to explain site differences. In 1970, the vacancy rates in Phoenix (Maricopa County) was 7 percent, compared with 6 percent in Pittsburgh (Allegheny County). However, the Census of Housing shows that in 1970 57 percent of households occupying rental units in Phoenix had moved into their units in the previous year, compared with 30 percent in Pittsburgh. The small difference in vacancy rates cannot account for this large difference in mobility.

Differences in the characteristics of households in the experiment in Pittsburgh and Phoenix may have contributed to mobility differences at the two sites. The most striking difference in the two populations is their mobility history when they entered the experiment (see Table 2-2). Howeholds in Pittsburgh, on average, had been living in the same unit for a longer period that had households in Phoenix and had made fewer moves during the three years prior to the experiment. It seems possible that if households in Pittsburgh had been more similar to those in Phoenix when they entered the experiment, their mobility during the experiment would have been higher.

Table XI-1 shows the results of a rough test of this hypothesis.[1] The logit equation for the probability of moving shown in Table 3-4 may be used to calculate a predicted probability of moving for an "average" household at each site, that is, the mean values for each independent variable may be multiplied by the coefficient of the variable and these products may be summed and inserted in the logit equation.

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[1] This analysis was developed by staff members of the Division of Housing Research at the Deparment of Housing and Urban Development as part of their initial review of this report.

Table XI-1

PREDICTED PROBABILITY OF MOVING IN PITTSBURGH AND PHOENIX

POPULATION CHARACTERISTICS (means of independent variables)	BASED ON LOGIT COEFFICIENTS FOR PITTSBURGH	BASED ON LOGIT COEFFICIENTS FOR PHOENIX
Pittsburgh "average household"	.32	.49
Phoenix "average household"	.44	.60

SOURCE: Table 3-4, Table VII-14.

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the baseline interview and enrollment.

Table XI-1 shows that the predicted probability of moving when all independent variables are entered at their mean values was .32 in Pittsburgh and .60 in Phoenix.[1]

To test the role of household characteristics and mobility history in explaining differences in mobility at the two sites, two additional predicted probabilities are shown in Table XI-1. One shows the probability of moving for a household having the "average" characteristics and history of Pittsburgh households but translating those characteristics into action in the same way as Phoenix households. (This figure is derived using the mean values for all independent variables in Pittsburgh, but the logit coefficients estimated for those variables in Phoenix.) The predicted probability of moving for the "average" household in Pittsburgh increases from .32 to .49 if they are assumed to translate their characteristics into action in the same way as households in Phoenix. Similarly, if the "average" Phoenix household is assumed to turn its characteristics into mobility in the same way as Pittsburgh households, its predicted probability of moving drops from .60 to .44.

[1] These figures are based on the logit coefficients from Table 3-4 and the means for the reduced sample used in the logit analysis as shown in Table VII-14.

These results indicate that although differences in household characteristics and mobility history of households entering the experiment contribute to the mobility difference observed during the experiment, they do not explain it completely. There is something over and above these factors that leads to a higher mobility rate in Phoenix.

An additional test of the nature of the difference between mobility in Pittsburgh and Phoenix is possible using logit analysis. The equation for the probability of moving may be estimated for the two sites combined and results compared to those obtained from two separate estimations. Table XI-2 shows two different logit estimations of the probability of moving that combine observations from Pittsburgh and Phoenix in the same equation. The first does not include a dummy variable to differentiate the two sites; the second includes such a variable. These results may be compared to those in Table 3-4 which presents separate estimations for the two sites. In general, the effects observed for independent variables at the two sites were similar, and these patterns appear in the joint site equations. The second equation in Table XI-2 shows, as would be expected, that mobility was significantly higher in Phoenix than in Pittsburgh.

It is possible to test the appropriateness of pooling the two sites in a logit estimation. That is, the explanatory power of the two separate equations may be compared to that of the joint site equations, both with and without a dummy variable for site. Table XI-3 shows the results of such a test. First, the explanatory power of the two separate equations for Pittsburgh and Phoenix is compared to the pooled site equation without a dummy variable for site.[1] Results show that there is a significant difference between the two approaches; the two separate equations have significantly greater explanatory power than one equation which does not differentiate the two sites. However, if a dummy variable for site is included in the pooled equation, the difference between the joint site equation and two separate equations is not significant. This indicates that there is a significant difference in mobility at the two sites, but that the same model is appropriate for both sites. That is, there is no significant interaction between the independent variables in the model and site difference.

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[1] The test used is a likelihood ratio (chi-square) test.

Table XI-2

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING (SITES COMBINED)

INDEPENDENT VARIABLE	NOT INCLUDING A DUMMY VARIABLE FOR SITE			INCLUDING A DUMMY VARIABLE FOR SITE		
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.145	-0.39	NA	-0.269	-0.72	NA
Life Cycle Factors						
Age of household head (in decades)	-0.208	-5.75**	-0.051	-0.233	-6.17**	-0.058
Number of children	-0.019	-0.56	-0.005	-0.029	-0.81	-0.007
Change in number of children	0.207	1.97*	0.051	0.213	2.04*	0.053
Change in marital status	0.889	5.43**	0.220	0.869	5.12**	0.215
Other Household Characteristics						
Female head of household	0.309	3.46**	0.076	0.340	3.66**	0.084
Black head of household	-0.204	-1.70†	-0.050	-0.155	-1.27	-0.038
Spanish American head of household	0.269	1.90†	0.067	-0.131	-0.89	-0.032
Years of education of household head	-0.017	-0.88	-0.004	-0.019	-1.00	-0.005
Per capita income of household (in thousands)	0.183	2.71**	0.045	0.119	1.70	0.029
Number of moves in three years prior to the experiment	0.368	9.56**	0.091	0.331	8.97**	0.082
Housing and Neighborhood Factors						
Perceived crowding	0.386	3.15**	0.096	0.338	2.89**	0.084
Living in a unit with basic facilities	-0.320	-3.71**	-0.079	-0.267	-2.84**	-0.066
Social Bonds						
Positive feelings toward neighbors	-0.107	-5.09**	-0.027	-0.087	-4.37**	-0.021
Length of residence in enrollment unit (in years)	0.049	-3.79**	-0.012	0.043	-3.23**	0.011
Dissatisfaction						
Dissatisfaction with unit or neighborhood at enrollment	0.303	3.15**	0.075	0.328	3.33**	0.081
Predisposition to Move						
Would move with an increase in money available for rent	0.636	7.78**	0.158	0.658	8.11**	0.163
Program Factors						
Experimental household	0.264	2.81**	0.065	0.297	3.27**	0.073
Site						
Phoenix	-	-	-	0.649	8.47**	0.161
Likelihood Ratio (Significance)		474.16**			499.39**	
Sample Size		1832			1832	
Mean of Dependent Variable		0.451			0.451	
Coefficient of Determination		0.188			0.198	

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table XI-3

LIKELIHOOD RATIO (CHI-SQUARE) TEST OF SEPARATE AND POOLED LOGIT EQUATIONS FOR PITTSBURGH AND PHOENIX

	CHI-SQUARE STATISTIC
Separate equations compared to a pooled equation not including a dummy variable for site	39.71** (18 d.f.)
Separate equations compared to a pooled equation including a dummy variable for site	14.48 (17 d.f.)

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

† Chi-square statistic significant at the 0.10 level.
* Chi-square statistic significant at the 0.05 level.
** Chi-square statistic significant at the 0.01 level.

The possibility of pooling observations for the two sites was also tested for the different treatment groups and, for Housing Gap households, by whether they met housing requirements at enrollment. Tables XI-4 through XI-8 present the logit results pooling sites for each group. Table XI-9 shows the chi-square tests to determine whether the pooled equation for each group has significantly less explanatory power than two separate equations. In all cases, the two separate equations were not found to explain significantly more of the variation in the probability of moving than a single joint-site equation. Using the pooled equations, experimental effects were found to be significant for all treatment groups except Housing Gap households that met housing requirements at enrollment.

Differences in the mobility of Demand Experiment households in Pittsburgh and Phoenix do not appear to result completely from differences in the characteristics of mobility history of households when they entered the program and the same factors appear to have been associated with a higher probability of moving at both sites. Differences in the two sites appear to reflect regional differences in mobility. Analysis of a broad sample of low income renter households shows that the mobility rates observed for households in the experiment at the two sites were fairly typical of similar households in their geographical region (see Appendix X). Among renter households below poverty level in the Michigan

Table XI-4

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING
(SITES COMBINED)--PERCENT OF RENT AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.097	-0.19	NA
Life Cycle Factors			
Age of household head (in decades)	-0.248	-4.95**	-0.061
Number of children	-0.041	-0.86	-0.010
Change in number of children	0.001	0.01	0.000
Change in marital status	0.970	4.67**	0.239
Other Household Characteristics			
Female head of household	0.377	3.21**	0.093
Black head of household	-0.338	-2.14*	-0.083
Spanish American head of household	-0.361	-1.77+	-0.089
Years of education of household head	-0.023	-0.88	-0.006
Per capita income of household (in thousands)	0.033	0.34	0.008
Number of moves in three years prior to the experiment	0.396	6.57**	0.098
Housing and Neighborhood Factors			
Perceived crowding	0.396	2.66**	0.098
Living in a unit with basic facilities	-0.295	-1.77+	-0.073
Social Bonds			
Positive feelings toward neighbors	-0.043	-1.85+	-0.011
Length of residence in enrollment unit (in years)	-0.043	-2.28*	-0.011
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.301	2.50*	0.074
Predisposition to Move			
Would move with an increase in money available for rent	0.601	4.56**	0.148
Program Factors			
Experimental household	0.289	2.93**	0.071
Site			
Phoenix	0.651	5.59**	0.160
Likelihood Ratio (Significance)		288.86**	
Sample Size		1076	
Mean of Dependent Variable		0.441	
Coefficient of Determination		0.196	

SAMPLE: Percent of Rent and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

+ t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

Table XI-5

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING
(SITES COMBINED)--HOUSING GAP AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.514	-5.92**	NA
Life Cycle Factors			
Age of household head (in decades)	-0.217	-6.26**	-0.054
Number of children	-0.037	-1.01	-0.009
Change in number of children	0.372	2.92**	0.092
Change in marital status	0.763	3.66**	0.189
Other Household Characteristics			
Female head of household	0.284	2.50*	0.070
Black head of household	0.152	0.98	0.038
Spanish American head of household	-0.040	-0.24	-0.010
Years of education of household head	-0.011	-0.60	-0.003
Per capita income of household (in thousands)	0.101	1.14	0.025
Number of moves in three years prior to the experiment	0.355	8.81**	0.088
Housing and Neighborhood Factors			
Perceived crowding	0.327	2.59**	0.081
Living in a unit with basic facilities	0.095	-0.81	-0.023
Social Bonds			
Positive feelings toward neighbors	-0.098	-3.84**	-0.024
Length of residence in enrollment unit (in years)	-0.055	-3.34**	-0.014
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.227	1.72 †	0.056
Predisposition to Move			
Would move with an increase in money available for rent	0.718	6.49**	0.178
Program Factors			
Experimental household	0.282	3.33**	0.070
Site			
Phoenix	0.661	6.93**	0.164
Likelihood Ratio (Significance)		339.86**	
Sample Size		1169	
Mean of Dependent Variable		0.447	
Coefficient of Determination		0.211	

SAMPLE: Housing Gap and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table XI-6

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING (SITES COMBINED)--
HOUSING GAP AND CONTROL HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.961	-0.96	NA
Life Cycle Factors			
Age of household head (in decades)	0.193	-2.38*	-0.047
Number of children	-0.337	-2.96**	-0.082
Change in number of children	0.687	2.68**	0.166
Change in marital status	1.040	2.53*	0.251
Other Household Characteristics			
Female head of household	0.534	2.35*	0.129
Black head of household	0.180	0.50	0.044
Spanish American head of household	-0.005	-0.01	-0.001
Years of education of household head	0.068	1.34	0.016
Per capita income of household (in thousands)	0.005	0.04	0.001
Number of moves in three years prior to the experiment	0.307	3.00**	0.074
Housing and Neighborhood Factors			
Perceived crowding	0.711	2.37*	0.172
Living in a unit with basic facilities	-0.488	-1.32	-0.118
Social Bonds			
Positive feelings toward neighbors	-0.097	-1.49	-0.023
Length of residence in enrollment unit (in years)	-0.038	-1.05	-0.001
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	-0.391	-1.55	-0.095
Predisposition to Move			
Would move with an increase in money available for rent	0.114	5.12**	0.278
Program Factors			
Experimental household	0.120	0.55	0.029
Site			
Phoenix	0.619	2.71**	0.150
Likelihood Ratio (Significance)		106.80**	
Sample Size		359	
Mean of Dependent Variable		0.409	
Coefficient of Determination		0.220	

SAMPLE: Housing Gap and Control households that met housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table XI-7

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING (SITES COMBINED)--HOUSING GAP AND CONTROL HOUSEHOLDS THAT DID NOT MEET HOUSING REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLE	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.267	-0.46	NA
Life Cycle Factors			
Age of household head (in decades)	-0.229	-3.84**	-0.057
Number of children	0.-09	0.21	0.002
Change in number of children	0.255	1.67†	0.063
Change in marital status	0.683	2.95**	0.170
Other Household Characteristics			
Female head of household	0.182	1.59	0.045
Black head of household	0.177	1.00	0.044
Spanish American head of household	-0.081	-0.40	-0.020
Years of education of household head	-0.028	-1.02	-0.007
Per capita income of household (in thousand)	0.115	0.96	0.029
Number of moves in three years prior to the experiment	0.379	5.64**	0.094
Housing and Neighborhood Factors			
Perceived crowding	0.247	1.46	0.061
Living in a unit with basic facilities	0.016	0.11	0.004
Social Bonds			
Positive feelings toward neighbors	-0.110	-3.37**	-0.028
Length of residence in enrollment unit (in years)	-0.064	-2.89**	-0.016
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.486	3.79**	0.121
Predisposition to Move			
Would move with an increase in money available for rent	0.481	4.22**	0.120
Program Factors			
Experimental household	0.404	3.12**	0.101
Site			
Phoenix	0.618	4.63**	0.154
Likelihood Ratio (Significance)		251.02**	
Sample Size		806	
Mean of Dependent Variable		0.467	
Coefficient of Determination		0.225	

SAMPLE: Housing Gap and Control households that did not meet housing requirements at enrollment and were active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).

* t-statistic significant at the 0.05 level (two-tailed).

** t-statistic significant at the 0.01 level (two-tailed).

Table XI-8

LOGIT ESTIMATION OF THE PROBABILITY OF MOVING
(SITES COMBINED)--UNCONSTRAINED AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	COEFFICIENT	ASYMPTOTIC t-STATISTIC	PARTIAL DERIVATIVE[a]
Constant	-0.502	-0.68	NA
Life Cycle Factors			
Age of household head (in decades)	-0.196	-2.80**	-0.048
Number of children	-0.040	-0.60	-0.010
Change in number of children	0.404	2.17*	0.099
Change in marital status	0.793	2.82**	0.194
Other Household Characteristics			
Female head of household	0.433	2.85**	0.106
Black head of household	-0.058	0.26	0.014
Spanish American head of household	-0.566	-2.14*	-0.139
Years of education of household head	-0.026	-0.73	-0.006
Per capita income of household (in thousands)	-0.095	-0.69	-0.023
Number of moves in three years prior to the experiment	0.537	6.33**	0.132
Housing and Neighborhood Factors			
Perceived crowding	0.287	1.39	0.070
Living in a unit with basic facilities	-0.004	-0.03	-0.001
Social Bonds			
Positive feelings toward neighbors	-0.086	-1.56	-0.021
Length of residence in enrollment unit (in years)	0.030	-1.06	-0.001
Dissatisfaction			
Dissatisfaction with unit or neighborhood at enrollment	0.141	0.77	0.035
Predisposition to Move			
Would move with an increase in money available for rent	0.761	3.90**	0.187
Program Factors			
Experimental household	0.451	2.03*	0.111
Site			
Phoenix	0.680	4.47**	0.167
Likelihood Ratio (Significance)		175.73	
Sample Size		583	
Mean of Dependent Variable		0.432	
Coefficient of Determination		0.220	

SAMPLE: Unconstrained and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

a. The partial derivative represents the change in probability, given a unit change in the independent variable (evaluated at the mean of all independent variables).

† t-statistic significant at the 0.10 level (two-tailed).
* t-statistic significant at the 0.05 level (two-tailed).
** t-statistic significant at the 0.01 level (two-tailed).

Table XI-9

LIKELIHOOD RATIO (CHI-SQUARE) TEST OF
SEPARATE AND POOLED LOGIT EQUATIONS FOR
PITTSBURGH AND PHOENIX BY TREATMENT GROUP

	CHI-SQUARE STATISTIC
Separate equations compared to a pooled equation including a dummy variable for site:	
Percent of Rent and Control Households	16.17 (17 d.f.)
Housing Gap and Control Households	17.00 (17 d.f.)
Housing Gap and Control Households That Met Requirements at Enrollment	14.41 (17 d.f.)
Housing Gap and Control Households That Did Not Meet Requirements at Enrollment	11.77 (17 d.f.)
Unconstrained and Control Households	16.86 (17 d.f.)

SAMPLE: Experimental and Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits, those living in their own homes or in subsidized housing, and those that moved between the Baseline Interview and enrollment.

DATA SOURCES: Initial and monthly Household Report Forms, initial Housing Evaluation Form, Baseline and Periodic Interviews, and payments file.

Study of Income Dynamics, mobility rates in 1973 were 22 percent in the Northeast and 42 percent in the west. Thus there appears to be regional differences in normal mobility for low income renters, which are consistent with the differences observed for Demand Experiment households in Pittsburgh and Phoenix.

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