

Housing Allowance Demand Experiment

Housing Consumption Under a Constrained Income Transfer: Evidence from a Housing Gap Housing Allowance

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HOUSING CONSUMPTION UNDER A
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HOUSING ALLOWANCE

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ABSTRACT

This report analyzes the effect of the experimental Housing Gap housing allowances on the housing consumption of recipients. Several measures of housing consumption are examined: housing expenditures, housing services (measured by hedonic indices of real housing), the standardness of the dwelling unit, and other measures of physical adequacy. The effects of the allowances are measured as deviations from normal behavior estimated using Control households. Particular attention is paid to the possibility of bias due to self-selection.

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SUMMARY

This report is one of a series of technical reports on the final results of housing programs tested in the Housing Allowance Demand Experiment. The Demand Experiment, authorized by Congress in the Housing Act of 1970, was designed to test the concept of providing direct cash assistance to low-income households to enable them to rent suitable housing. The experiment focused on the ways low-income renter households use housing allowances. It tested a variety of allowance plans involving approximately 1,200 Experimental households (offered a housing allowance payment) and 500 Control households (offered only a token cooperation payment) at two sites: Allegheny County, Pennsylvania (Pittsburgh) and Maricopa County, Arizona (Phoenix), during 1973-1977. Each household enrolled in the experiment was offered allowance payments for three years. Analysis is based on data from the first two years.

The program discussed in this report is a Housing Gap form of housing allowance. Under a Housing Gap allowance, eligible households are assisted in obtaining decent housing by a payment designed to make up the gap between the cost of modest, existing, standard housing and the fraction of their incomes which households might reasonably be expected to devote to housing. Households receive allowance payments only if the housing that they rent meets particular housing requirements. Two kinds of housing requirements were tested in the Demand Experiment--Minimum Standards and Minimum Rent. Minimum Standards requirements specified minimum physical quality and occupancy (size) standards for the dwelling unit. Minimum Rent required recipients to spend at least a minimum amount for housing, but left the exact type of housing up to recipients. Two Minimum Rent levels were tested (Minimum Rent Low and Minimum Rent High). Further variations among these plans were created by varying the payment schedule within each type of housing requirement.

In addition to the Housing Gap plans, there was a special "Unconstrained" plan. Households in this plan received allowances according to the Housing Gap payment formula, but were not required to meet any housing requirements. The Unconstrained plan allows a direct comparison of the Housing Gap plans with a general income transfer program. Finally, a group of Control

households did not receive any housing allowance payment but received a \$10 monthly cooperation payment for providing the same information as Experimental households. These households can be used to estimate normal household behavior in the absence of a housing allowance.

The analysis presented in this report is focused on the effect of the allowance plans on several measures of recipients' housing consumption--housing expenditures, housing services (a measure of "real" housing derived using hedonic indices), measures of physical housing adequacy representing a range of policy-oriented standards, and the fraction of income devoted to rent ("rent burden").

The following major conclusions emerged from the analysis:

1. The housing allowance offers did induce households to meet the housing requirements more often than households normally would have in the absence of the experiment and more often than they would have under a general income transfer.

The Housing Gap programs tested in the Demand Experiment were successful in increasing the percentage of households that met each housing requirement at two years after enrollment. These were significantly above the level that would normally have occurred (represented by Control households) and above the level associated with a general income transfer (represented by Unconstrained households).

Percentage of Households in Each Treatment
Group Meeting Specified Requirement
Two Years After Enrollment

	<u>Housing Gap</u>	<u>Unconstrained</u>	<u>Control</u>
PITTSBURGH			
Minimum Standards requirements.....	45%	23%	28%
Minimum Rent Low requirements.....	85	76	75
Minimum Rent High requirements.....	52	48	44
PHOENIX			
Minimum Standards requirements.....	56	46	36
Minimum Rent Low requirements.....	77	67	51
Minimum Rent High requirements.....	50	41	33

2. Increases in the probability that a Housing Gap household would meet the program's minimum dwelling unit standards were larger than those that would occur under a similar general income transfer program when the minimum standards were explicitly required by the allowance offer, but not when a minimum rent level was required. Even the Minimum Standards allowance plan showed no substantial additional effect in comparison to a general income transfer on the proportion of households that met two alternative physical standards.

The effect of the Minimum Standards requirements was to induce some households to pass the particular standards required. The estimated increase in the percentage of households that met the Minimum Standards was statistically significant only for Minimum Standards households. Estimates for Minimum Rent and Unconstrained households were smaller and statistically insignificant.

Increase in the Probability of Meeting the
Minimum Standards Requirements at Two Years After
Enrollment Beyond That of Comparable Control Households
(Percentage Points)

<u>Treatment Group</u>	<u>Pittsburgh</u>	<u>Phoenix</u>
Minimum Standards	+20	+28
Minimum Rent Low	+ 4	+ 4
Minimum Rent High	- 1	+ 4
Unconstrained	+ 1	+ 8

Insofar as the experiment's minimum housing standards represent general public policy concerns about housing quality, this result is encouraging. Yet other measures of housing consumption (two alternative measures of housing adequacy closely related to the Minimum Standards, and the hedonic index measure of real housing services discussed below), failed to indicate significant differences in housing improvement between Minimum Standards and Unconstrained households.

Change in the Probability (Percentage Points)
of Living in Adequate Housing
at Two Years After Enrollment Beyond That
of Comparable Control Households

	<u>Minimally</u> <u>Adequate</u> <u>Housing</u>	<u>Clearly</u> <u>Inadequate</u> <u>Housing</u>
PITTSBURGH		
Minimum Standards households	+ 4%	- 2%
Unconstrained households	+ 8	- 3
PHOENIX		
Minimum Standards households	+11	-14
Unconstrained households	+10	-22

Housing allowances can be used to achieve specific housing improvements beyond those associated with a general income transfer. However, it appears that any particular housing goals desired by policymakers must be explicitly required of participants.

- The changes in housing expenditures induced by the Housing Gap plans were different from those obtained under a general income transfer only for allowance programs that imposed specific requirements on rent.

Only the Minimum Rent High plan led to statistically significant increases in rent beyond those of Unconstrained households. The changes in housing expenditures of recipients due to the allowance program were estimated to be:

<u>Treatment Group</u>	<u>Pittsburgh</u>	<u>Phoenix</u>
Minimum Standards	4.3%	16.2%
Minimum Rent Low	2.8	15.7
Minimum Rent High	8.5	28.4
Unconstrained	2.6	16.0

- The effect of the housing allowances on housing consumption beyond that of a similar general income transfer was thus closely tied to the housing requirement used--rent increases for Minimum Rent households and changes in meeting the physical standards for Minimum Standards households. In terms of changes in a general index of housing services (measured by an

hedonic index), however, the effect of each allowance program on recipients' housing was about the same as that of the Unconstrained plan.

Real housing services were measured using hedonic indices. These indices estimate the average market value of a household's dwelling unit. The increase in housing services above normal (that is, above the change measured for similar Control households) for recipients was estimated to be:

<u>Treatment Group</u>	<u>Pittsburgh</u>	<u>Phoenix</u>
Minimum Standards	3.1%	10.2%
Minimum Rent Low	0.0	11.0
Minimum Rent High	0.9	18.0
Unconstrained	3.4	12.6

Estimated effects on housing services in Pittsburgh were small and statistically insignificant. Estimated effects in Phoenix were larger and statistically significant for all groups. On the other hand, there was no significant difference between Housing Gap and Unconstrained households in either site (Minimum Rent High households in Phoenix did have a larger estimated increase in housing services than Unconstrained households but the difference was not statistically significant).

Response to the Housing Gap allowances was consistently larger in Phoenix than in Pittsburgh. This is only partially accounted for by differences in pre-enrollment housing conditions and in the payment levels used in the two sites. Thus it appears that housing changes resulting from either a housing allowance or a general income transfer may differ substantially from place to place.

5. Minimum Standards, Minimum Rent Low, and Unconstrained households all obtained increases in housing services only slightly less than their increases in housing expenditures. The Minimum Rent High plans, however, apparently induced households to overpay for their units (relative to the average market rent for units with similar characteristics). Thus the larger increases in expenditures obtained under a Minimum Rent High requirement were not matched by larger increases in services.

Minimum Rent households whose units met the Minimum Rent requirements were typically paying rents above the market average for housing comparable to the housing they obtained. Minimum Standards households, by contrast, were not paying significantly above the market average. The higher prices paid by Minimum Rent households were not entirely due to the housing allowance offers. To some extent they simply reflect the fact that households with high rents typically include both households in better than average housing and households that pay more than the average for the housing they obtain. Thus, for example, Minimum Rent Low recipients overpaid relative to the market average for their housing by the same amount as Control and Unconstrained households with rents high enough to meet the Minimum Rent Low requirement. On the other hand, it is clear that the Minimum Rent High plans also altered the normal relationship between rent and housing services, inducing households to select units that were significantly overpriced relative to those selected by similar Control or Unconstrained households.

6. On average, most of the payments under the Housing Gap or Unconstrained plans were not used for increased housing expenditures. As a result, all plans led to sharp reductions in rent burden (the fraction of income spent on rent).

At enrollment, recipients in each site were spending well over 30 percent and often over 40 percent of their income on rent. At the end of the second year, net median rent burdens of allowance recipients were reduced by approximately 15 percentage points, to about 25 percent of income or less (30 percent of income or less for Minimum Rent High households). This marked reduction came about because households devoted much less than one-half of the allowance payment to increased expenditure on housing, thus freeing income to be used for nonhousing needs. The somewhat higher rent burden for Minimum Rent High households reflects the fact that these households started with slightly higher rent burdens and devoted more of the allowance payment to increased expenditures than did any other group.

7. The housing requirements focus increases in housing expenditures and improvements in housing among households that did not already meet the requirements at enrollment.

To the extent that an allowance program's housing requirements adequately reflect public policy objectives with respect to adequate housing, there may be little interest in inducing households that already meet requirements to spend more on housing. In fact, the response to the allowance offer is concentrated among households that met their housing requirements only after enrollment. Households that already met their housing requirements at enrollment automatically qualified for allowance payments and used only a small portion of the allowance payment for increased housing expenditures and services. In contrast, households that only met their requirements after enrollment increased their housing expenditures and housing services substantially and devoted a much larger portion of the payment to increased expenditure.

8. The effect of the housing requirements in focusing housing change among households that were in the worst housing at enrollment (as defined by the housing requirements) is also apparent in demographic differences in response. Though small sample sizes preclude strong conclusions, participants from demographic groups in the worst housing appear to have made larger increases in their housing expenditures than other households.

Minority, nonelderly, and poverty households were in worse housing at enrollment than nonminority, elderly, and nonpoverty households, respectively. Where sample sizes permit comparison, minority, nonelderly, and poverty households all showed larger increases in expenditures across all three types of housing requirements, thus tending to equalize housing conditions among recipients.

9. It appears that the long-run impact of a permanent allowance program on participant expenditures or housing services would not be substantially larger than that estimated for the two years of the experiment.

Since a substantial fraction of enrolled households did not move during the two years of the experiment and others either already met the requirements at enrollment or were able to meet their requirements with only small changes in their units, the housing change induced by an allowance program might be expected to grow over time, as recipients have more time to move and adjust their housing. Indeed, recipients that did not move showed only small changes in either expenditures or services; estimated changes for these households were not significantly above normal, even for those that met their requirements only after enrollment. The responses of the recipient movers were a good deal larger than those for nonmovers.

At the same time, estimates for recipient movers were not substantially different from the estimates for all recipients, suggesting that the response to a long-term housing allowance program will not be appreciably larger than that observed during the two years of the experiment. This in part reflects the fact that the two-year estimates include the effects of additional moving induced by the experiment (this additional effect would disappear as the remaining households move).

The lack of any substantial increase in recipients' housing consumption responses over time is further confirmed by comparison of estimates responses for the first year and the first two years of the experiment and by other evidence that indicates there is no apparent effect of experimental duration on response.

SOURCES OF STATEMENTS

The sources of summary statements are listed below.

1. The data in the table come from Tables 2-1, 3-1, and 3-2. The confirmatory text on household probabilities is drawn from the evidence in Tables 2-2, 3-3, and 3-4.
2. The data on the probability of meeting the various standards indicated are summarized in Table 8-4 and are discussed in more detail in Sections 2.1, 3.1, and 3.2.
3. The data on expenditures are from Tables 5-1, 5-8, 5-10, and 5-11 and are discussed in Chapter 5.
4. The data in the table come from Tables 6-8 through 6-11. The comparison with Unconstrained households is based on Appendix Tables IX-42 through IX-44. Site differences are discussed in Chapter 5.
5. The computation of the relative overpayment of Housing Gap, Unconstrained, and Control households is carried out and discussed in Section 6.1.
6. Rent burdens are presented in Tables 2-7, 3-14, and 3-15 and are discussed in the accompanying text. The proportion of the allowance going to increased expenditures is presented in Tables 5-21 through 5-23 and Table 5-26.
7. The relative responses of households that met and did not meet the requirements at enrollment play a key role in the analysis and are discussed throughout Chapter 5.
8. Section 5.3 discusses demographic differences in response.
9. The role of mobility in establishing response is discussed in Chapter 7. The comparison with first-year results is made in Appendix XII. For a discussion of experimental duration and response to the Percent of Rent plans, see Joseph Friedman 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 1
INTRODUCTION

This is one of a series of final 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. The experiment offered monthly allowance payments to approximately 1,200 low-income households selected at random in each of two sites: Pittsburgh (Allegheny County), Pennsylvania and Phoenix (Maricopa County), Arizona. Several different allowance plans were tested, involving different payment formulas and housing requirements. In addition, a control group of approximately 500 low-income households was enrolled at each site. Households remained in the experiment and received payments for three years after they enrolled. The calendar period covered by the experiment was roughly from late 1973 to early 1977. Evaluation is based on the first two years of household observation.

There were four basic treatment plans under which households were enrolled: Housing Gap, Unconstrained, Percent of Rent, and Control.¹ Households in Housing Gap plans were offered payments designed to bridge the gap between the cost of modest, existing standard housing and a reasonable fraction of household income. The Housing Gap allowance payment was linked to participants' housing by housing requirements--households received an allowance only if they occupied a unit meeting the program's housing standards. The Unconstrained plan offered households a payment based on the same formula as in the Housing Gap plan but without a housing requirement. This plan resembled a general income support program, except that the payment amount was determined by need for housing expenses rather than need for all household expenses.

Percent of Rent plans offered households a rent rebate in the form of a cash payment equal to a fixed fraction of their monthly rent. Households in Percent of Rent plans had no housing requirements to meet. Their

¹See Appendix I for a detailed discussion of the design.

payment was tied directly to the amount spent for housing. Finally, the group of Control households did not receive any housing allowance payment but received a \$10 monthly cooperation payment for providing the same information as Experimental households. They served as a comparison group against which to estimate the effect of different allowance plans.

This report focuses mainly on the housing consumption of households in the Housing Gap housing allowance plans.¹ Housing Gap allowances get their name from the Housing Gap payment formula, which is designed to make up the gap between the cost of modest, existing standard housing and the fraction of income that a low-income household can reasonably be expected to spend on housing. The formula used was:

$$(1) \quad P = C - bY$$

where

P = the amount of the allowance payment

C = the basic payment schedule, varied by household size and site

b = the benefit reduction rate (the rate at which the allowance is reduced as income increases), and

Y = household income.

The Housing Gap allowance plans are "constrained" in the sense that payments were made only if the household met certain housing requirements, described further below.

The Demand Experiment was designed not only to evaluate the impact of a Housing Gap allowance program but also to evaluate a variety of possible alternative plans within such a program. The experiment included 11 different Housing Gap allowance plans, testing three levels for the basic payment schedules, three values for the benefit reduction rate, and two types of housing requirements--Minimum Standards and Minimum Rent. The three basic payment schedules tested were proportional to C*, the estimated cost of modest, existing, standard housing for various household

¹The housing response of Percent of Rent households is discussed in Friedman and Weinberg (1978).

sizes in each metropolitan area.¹ The value of the benefit reduction rate, b , varied around 0.25 (corresponding to typical payment formulas in conventionally subsidized housing). The Housing Gap plans are shown in Table 1-1.

Households under the "Minimum Standards" requirements had to occupy units that met certain physical quality standards for the dwelling unit and had a minimum number of physically adequate bedrooms per person in order to receive payments. This sort of requirement has been used in existing housing programs such as Section 23 and Section 8. Such physical housing requirements necessitate housing inspections, which are costly to the government and may impose inconvenience on both tenants and landlords. As a possible less costly alternative, a "Minimum Rent" requirement was tested. Minimum Rent plans required households to spend at least a certain minimum amount for housing in order to receive allowance payments. Two minimum rent levels were tested, $0.7C^*$ and $0.9C^*$ (where C^* was the estimated cost of standard housing, described above).

Several aspects of housing consumption have been analyzed in this report. The analysis of expenditures provides estimates of the extent to which payments under a constrained income maintenance program will be translated into increased spending for housing. This determines both the effect of the allowance payment on participant expenditure and also the proportion of household income spent on rent (known as rent burden).

Differences in housing expenditures are expected to reflect real differences in recipient housing as well. However, changes in housing expenditures may not always lead to real changes in housing. Most obviously, general inflation implies higher dollar expenditures without any change in the housing services provided by a dwelling unit.² Even apart from inflation, changes in expenditures may still not be reflected in real changes in participant housing. If allowance recipients are unable to act effectively in the private housing market or if they shop less carefully, then they might end up spending more for the same housing than they otherwise would.

¹ C^* varied by household size and site and was determined by a panel of experts.

² The changes in expenditures estimated here account for inflation, so that this poses no problem.

Table 1-1
HOUSING GAP ALLOWANCE PLANS

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 = $0.9C^*$
b = 0.15	C^*	Plan 10		
b = 0.25	$1.2C^*$	Plan 1	Plan 4	Plan 7
	C^*	Plan 2	Plan 5	Plan 8
	$0.8C^*$	Plan 3	Plan 6	Plan 9
b = 0.35	C^*	Plan 11		

Symbols b= Household contribution rate
 C^* = Basic payment level (varied by family size and also by site)

Hedonic indices address this problem by providing estimates of the normal market value of a unit in terms of its physical characteristics. Comparison of the hedonic value of a unit with the actual rent paid can be used to sort out the extent to which households are paying above- or below-average rents and thus provides estimates of the real change in participant housing.

Since the program was designed to assist households to obtain adequate housing, two other measures of housing quality were used to assess the program's effectiveness. The first measure is one implicit in the experimental design--the proportion of units passing the Minimum Standards requirement. While all recipients in the Minimum Standards plan must live in units meeting this requirement, it is important to know the extent to which Minimum Rent plans were an effective proxy for the Minimum Standards. One problem with the Minimum Standards requirement as a measure of housing quality is that it allows no room for ambiguity. Every unit was classified as either meeting or not meeting the requirement. As a result, units may have failed to meet the Minimum Standards requirement for relatively inconsequential reasons. Budding (1978) attempted to resolve this problem by developing a measure of housing adequacy using Demand Experiment data that admits the possibility of ambiguity. While housing classified as clearly inadequate using his measure still covers a wide range of conditions, the measure is designed to indicate the presence of one or more major defects.

Organization of the Report

The rest of Chapter 1 is divided into two parts: a preview of the content of the remainder of the report and a brief summary of results. The latter is included to provide guidance in understanding the various analyses undertaken in each chapter.

The next two chapters (Chapters 2 and 3) present a descriptive overview of changes in housing expenditures, in household rent burden, and in various measures of housing quality for Minimum Standards and Minimum Rent households, respectively. These descriptive tabulations use data on the Control households to make simple adjustments for factors unrelated to the experiment that may have contributed to changes in housing consumption.

The behavior of Control households is taken to represent the normal behavior that Housing Gap households would have exhibited in the absence of the Demand Experiment. Differences between the housing consumption of Housing Gap and Control households then provide estimates of the effects of the housing allowance.

Chapter 4 discusses some of the theoretical reasoning behind analysis of Housing Gap housing allowances and develops a more careful approach to estimating normal behavior that takes into account the effects of differences in Experimental and Control demographic characteristics. The results of this approach for housing expenditures are presented in Chapter 5.

The effect of the experiment is estimated in terms of the differences between actual and predicted housing expenditures as of two years after enrollment. The estimated effects are discussed first in terms of overall effects for the Minimum Standards groups of households and then in terms of the differences in effects for the Minimum Rent plans. Chapter 5 also examines demographic differences in response.

Chapter 6 analyzes housing services, as measured by an hedonic index estimating a unit's normal market rent, using the same framework used to analyze housing expenditures. The change in housing services is compared to that for expenditures and the extent to which allowance recipients paid more or less than average for the housing services they obtained is assessed.

Chapter 7 repeats the analyses of Chapters 5 and 6 taking into account the moving behavior of households. In that chapter, it is suggested that households that moved may be likely to reflect long-run response to the allowance offer. Finally, Chapter 8 examines some of the policy implications of the findings and discusses several remaining issues in the analysis.

Summary of Results

The detailed analysis of changes in the housing consumption of Housing Gap households presented in this report is necessarily long and complex. Several types of housing changes are examined separately for the three types of housing requirements and for the Unconstrained group. These are further analyzed across two sites and in terms of payment formula effects, mobility, and initial housing condition. Nevertheless, the basic pattern of results, presented

below, is reasonably straightforward and should be kept in mind as the later chapters provide detailed numerical estimates of the effects of Housing Gap housing allowances.

Comparison with Control households shows that participants in the various Housing Gap plans generally increased their housing expenditures by more than the changes that would normally have occurred in the absence of the Demand Experiment. These increases were much larger in Phoenix than in Pittsburgh. This difference between the two sites is only partly accounted for by differences in initial housing conditions, the size of the allowance payment, and by moving behavior. This site difference creates some problem in interpreting the results in terms of the levels of housing change that might be observed in a national housing allowance program. The pattern of results in the two sites is, however, very similar.

Overall, the different Housing Gap plans had modest effects on housing expenditures. Most of the allowance payment was not used for increased housing expenditures. Instead, the allowance was used to cover current expenses--in effect reducing the household's rent burden and increasing the income available for spending on nonhousing goods and services. This overall result, however, reflects two quite different response patterns that depend on whether or not households already met their requirements at enrollment. Households that met their housing requirements in their enrollment units (and therefore were automatically eligible for an allowance payment) had relatively small increases in expenditures above normal, devoting only a small fraction of the payment to increased expenditures. The group with the largest increase in expenditures and consequently the largest proportion of the allowance devoted to expenditures was households that met their housing requirements after enrollment. Even for them, though, less than half of the allowance payment went to housing, with the remainder devoted to reducing rent burdens to reasonable levels.

The key factor explaining this pattern is household participation in the different Housing Gap plans.¹ Most of the households that met their

¹See Kennedy et al. (1977) for a theoretical analysis of the participation decision and Kennedy and MacMillan (1979) for the empirical analysis.

requirements and were receiving allowance payments two years after enrollment were households that either met their requirements initially or would have met them normally in the two-year experimental period. These households were not required to change their housing consumption and could treat the allowance as additional income. In fact, households that met their requirements at enrollment showed only small increases generally consistent with prior estimates of the response of housing expenditures to changes in income.

Households that only met requirements after enrollment, on the other hand, showed a larger change in housing consumption, because some of these households were induced to change their housing consumption substantially in order to meet the housing requirements and receive an allowance payment (of course, some of these households would have met the requirements normally).

The housing requirements served to focus the housing changes induced by the allowance offers on the particular changes called for by the requirements. The largest changes in rent occurred for households in the Minimum Rent High plans--the group having to meet a relatively high rent requirement. Households in the remaining Housing Gap plans--Minimum Standards, Minimum Rent Low, and even Unconstrained--all had about the same overall change in expenditures. On the other hand, only the Minimum Standards plans showed a significant increase in the percentage of households that met the Minimum Standards. Neither the Minimum Rent requirements nor the Unconstrained payment induced any significant change in terms of Minimum Standards.

The way in which housing requirements focused housing changes was highly specific. Thus, for example, while Minimum Standards households met the Minimum Standards requirements more often than Unconstrained households, they showed no material difference in the proportion of households meeting two other possible physical standards (one much weaker and the other somewhat stronger than the Minimum Standards requirements). Likewise, a general measure of real housing change based on market values without reference to any policy standards (an hedonic index of housing services) showed no substantial difference between housing changes for Unconstrained and Minimum Standards households.

The same sort of focusing was apparent for the Minimum Rent requirements. Minimum Rent households showed no significant change in the probability of meeting Minimum Standards requirements and only marginal changes in the less stringent of the two alternative physical standards. Likewise, analysis of the market-based measure of housing change (the hedonic index of housing services) indicates that although the Minimum Rent High plans can induce large increases in expenditures, they do not induce as large increases in real housing--a part of the increase is dissipated in above-average rents for the housing actually obtained. This does not appear to reflect any general inability to negotiate the private housing market, but rather the specific incentives created by requiring households to meet a Minimum Rent requirement.

There is some evidence that Minimum Standards households that met requirements after enrollment in Phoenix also paid above-average rents for their units in order to meet the Minimum Standards requirements. Overall, however, both Minimum Standards and Unconstrained households in both sites appeared to be able to obtain their housing at close to market prices and thus to avoid any overpayment relative to the market average.

The net result of this market behavior is that each of the allowance programs in each site had about the same overall impact on housing services of participants as the Unconstrained plan. The housing allowance programs in contrast to the Unconstrained payments may have concentrated housing changes among households that started out in the worst housing. On the other hand, it appears that a housing allowance strategy would reach substantially fewer households than an unconstrained income transfer would. While participation is analyzed in more detail elsewhere (Kennedy and MacMillan, 1979), evidence presented here suggests that most participants are households that would have met the housing requirements in the absence of any allowance payment.

Most of the analyses in this report focus on the effects of alternative program on the housing of program recipients.¹ These comparisons are most relevant to comparisons of alternative limited entitlement programs, where

¹The exception is the discussion in Chapter 2 of program impact on the proportion of households in housing that meets various housing standards.

the total program size is set by available funds. They are emphasized here for the simple reason that all current housing programs in the United States are limited entitlement programs. The results also provide comparisons of impact per program dollar. It should be noted, however, that under universal entitlement programs, participation rates and hence total impact on all eligible households, would vary considerably. Kennedy and MacMillan (1979), for example, estimate that participation under a universal Housing Gap Minimum Standards plan like those tested in the Demand Experiment would be less than half that under a similar Unconstrained program. Thus, if as found in this report, the two programs have roughly the same impact on the housing expenditures of recipients, a universal entitlement Unconstrained program would have roughly twice the impact (and twice the costs) on the housing expenditures of eligible households as a Minimum Standards Housing Gap allowance, simply because it would have twice as many recipients.

These results are not materially changed if the analysis is confined to households that moved. Thus, despite the differences between the sites, there does appear to be a common pattern of results in terms of expenditure changes, housing standards, and changes in housing services for the various housing allowance plans in comparison to an unconstrained income transfer program.

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CHAPTER 2
OVERVIEW OF THE MINIMUM STANDARDS PLANS

This chapter describes, mainly in tabular form, the changes that occurred in housing expenditures, in housing services, and in other housing indicators during the two years of the Demand Experiment. It is intended to provide a context for the analysis of the effects of Housing Gap housing allowance plans and to summarize the major findings. In instances where the simple tabular analysis may be misleading, results from the more careful analysis of later chapters are also indicated.¹ Although all Housing Gap plans are discussed, the focus of this chapter is on households in the Minimum Standards plans. The Minimum Standards plans are similar to existing leased housing programs in that they also offer payments tied to housing by minimum dwelling unit standards. The Minimum Rent plans are discussed in Chapter 3, which also briefly summarizes the results of both chapters.

Section 2.1 focuses on the process of meeting the Minimum Standards requirement for Minimum Standards households and also examines a somewhat more general measure of housing adequacy. Changes in two continuous measures of housing consumption--housing expenditures and housing services--are discussed in Section 2.2. In addition, the section examines changes in rent burden and discusses the proportion of the allowance payment devoted to increased housing expenditures. Section 2.3 presents a brief summary.

2.1 MEETING THE HOUSING STANDARDS

The objectives of federal housing policy include reducing the incidence of substandard housing and overcrowding and alleviating excessive housing costs.² The Housing Gap form of housing allowance was designed to satisfy these goals. Enrolled households that met the income and household composition eligibility requirements received payments to help meet housing costs if their housing units met certain housing requirements. In the Minimum Standards plan, these requirements were defined in terms of the unit's physical characteristics

¹The analysis of Chapters 4 through 7 corrects for possible biases in the simple tabular comparisons performed in this chapter.

²See, for example, Congressional Budget Office (1978).

and persons per adequate bedroom. In Minimum Rent plans, the housing requirements were defined in terms of the unit's rent.

The housing requirements distinguish the Housing Gap allowance plans from general income maintenance schemes and tie the allowance payment to housing. Household income and composition determine who may enroll in the program, but only enrolled households that meet the housing requirements can receive allowance payments. Because the housing requirements determine which enrolled households can receive allowance payments, they play an important role in influencing household responses to the experimental program.

Households that already met the housing requirements at enrollment were not required to alter their housing in any way. In particular, they were not required to spend any part of their allowance payment on improvements to their housing. As long as they continued to meet the requirements, they could treat the allowance payment like any other income.¹ It seems reasonable to suppose, therefore, that such households would divide the housing allowance between housing and nonhousing expenditures in much the same way they would divide any other additional income. Empirical evidence on the way low-income households allocate additional income to housing expenditures suggests that in this case only a small proportion of the housing allowance would be used to increase housing consumption.²

Households that did not meet the requirements at enrollment faced a very different situation. These households could receive the allowance payment only after they modified their housing to meet the housing requirements.

¹Although the housing requirements did not require households that already met them to consume more housing, the requirements still acted as a lower bound. Households could not reduce their housing below required levels without losing their allowance payments. Thus, even for households that already met the requirements at enrollment, the requirements may have kept average housing expenditures above normal levels by discouraging some households from reducing their expenditures. (Program rules permitted allowance payments to continue to a recipient nonmover household whose unit no longer passed the housing requirement at an annual inspection. If the household moved, however, its new unit had to meet the Minimum Standards requirements in order for the household to continue to receive allowance payments.)

²In their analysis of household response to Percent of Rent housing allowances, Friedman and Weinberg (1978) estimated that a 10 percent increase in income would on average lead to an increase in housing expenditures of less than 4 percent. Moreover, such adjustments in housing expenditures typically occur only when households move.

The program did not dictate how households should modify their housing: they could arrange with their landlords to fix their enrollment units; they could fix their enrollment units themselves; or they could move to other units that passed the housing requirements. Households choosing to move or upgrade their units to meet the requirements would generally be expected to spend a larger part of their allowance payment on increased housing expenditures than households that already met the housing requirements at enrollment.^{1,2}

Figure 2-1 presents a schematic representation of the behavior of Minimum Standards and Control households over the course of the experiment. In both sites only about 20 percent of the enrolled households lived in units that met the Minimum Standards at enrollment. In both sites attrition of Minimum Standards households was larger for the group of households whose enrollment units did not meet the standards than for the group whose units did. No similar pattern is observed for Control households.

Almost 80 percent of the households remaining active in the experiment for the full two years lived in housing that did not meet the Minimum Standards at enrollment (78 percent in Pittsburgh and 80 percent in Phoenix).³ Nearly all households that met the Minimum Standards requirements in their enrollment units continued to do so over the course of the experiment (only 9 of 76 Minimum Standards households (12 percent) in the two sites that met

¹Households living in units that met the Minimum Standards at enrollment spent more on average for rent than did households that did not. Thus, moving from unacceptable units to standard units is likely to be associated with an increase in rent. There was, however, a wide range of rents for units that met the Minimum Standards (see Merrill et al., 1975, pp. 179 ff). Thus it was possible for an individual household that did not meet the Minimum Standards at enrollment to move into an acceptable unit with no increase in, or even a reduction in, rent.

²Households that chose to forego the allowance payment by continuing to live in unacceptable housing were nonparticipants and their housing response is not analyzed in this report. An analysis of the participation decision is presented in Kennedy and MacMillan (1979).

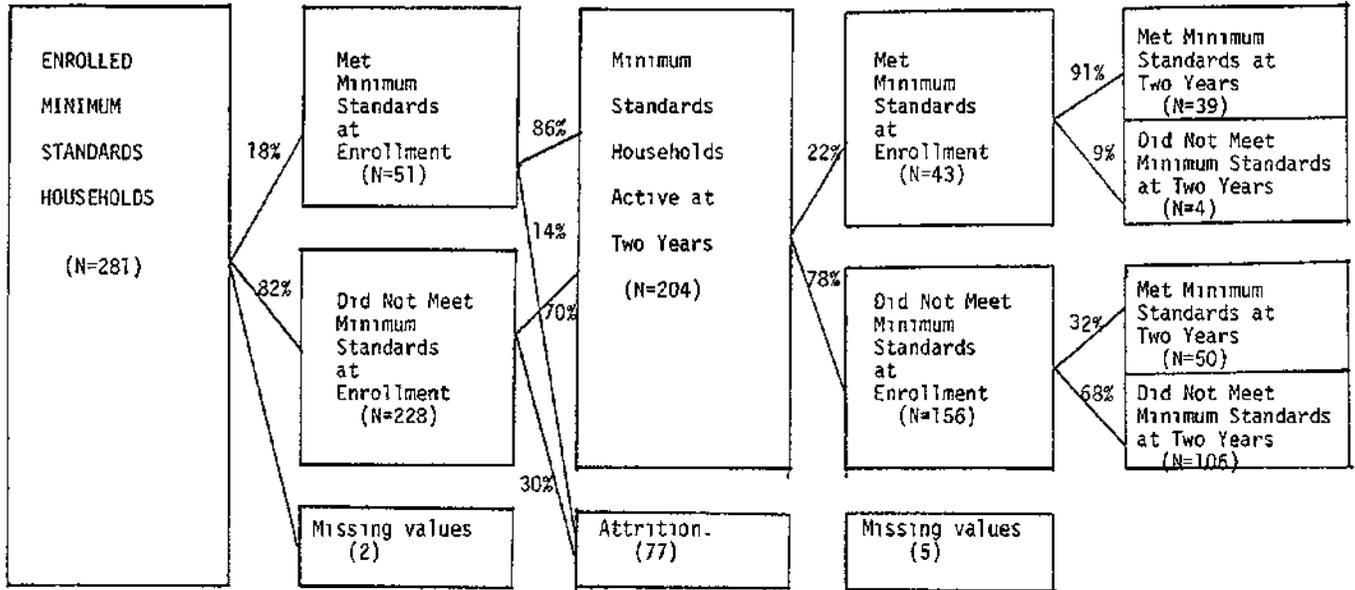
³Households are considered to meet Minimum Standards in a unit at any time period if they ever met the requirements in that unit. This mirrors the provision of a full allowance payment to households that met requirements at any time in a unit (see Appendix III for more details).

Figure 2-1

PARTICIPATION AND ATTRITION STATUS OF
MINIMUM STANDARDS AND CONTROL HOUSEHOLDS
BETWEEN ENROLLMENT AND TWO YEARS AFTER ENROLLMENT

PITTSBURGH

MINIMUM STANDARDS HOUSEHOLDS



CONTROL HOUSEHOLDS

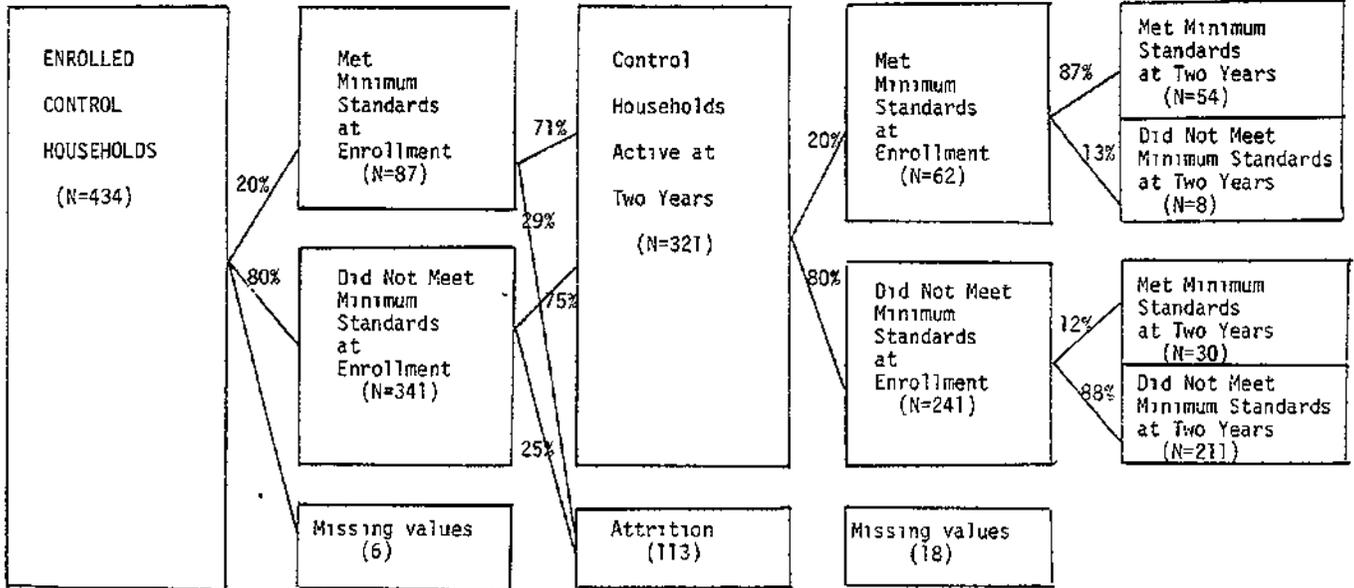
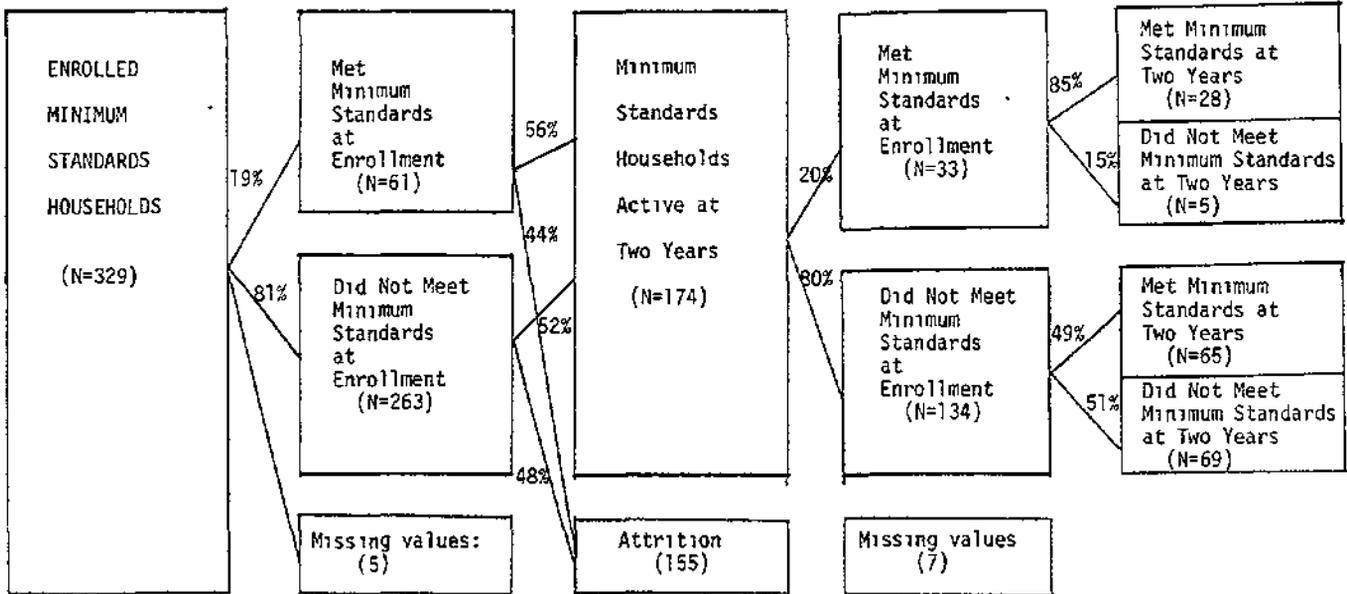


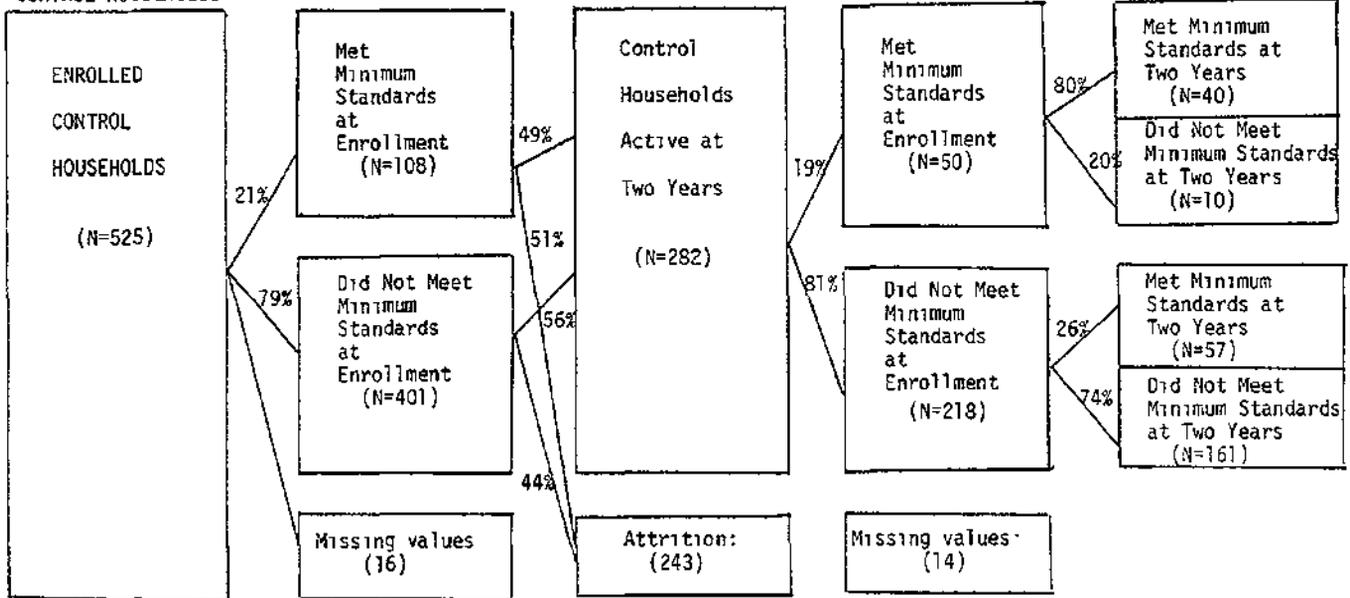
Figure 2-1 (continued)

PHOENIX

MINIMUM STANDARDS HOUSEHOLDS



CONTROL HOUSEHOLDS



SAMPLES: Enrolled Households--Enrolled Minimum Standards and Control households, excluding those with enrollment incomes over the eligibility limits. Households Active at Two Years--Minimum Standards 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 and payments file

NOTE: Households that remained in units that met requirements at any cross section were considered to have met requirements at two years after enrollment.

requirements at enrollment moved to a unit that did not meet the Minimum Standards at two years).¹

One indicator of program impact is the percentage of households that did not meet the Minimum Standards at enrollment but met them at two years after enrollment. Figure 2-1 shows that 32 percent of such (active) Minimum Standards households in Pittsburgh and 49 percent of the households in Phoenix improved their housing over the two years to meet the requirements. Not all of the increase in the number of households that met the housing requirements may be attributed to the incentive provided by the allowance offer, however. Examination of Control households' experience in meeting the Minimum Standards indicates that meeting the requirements is a normal phenomenon that would occur even without a program, although with different intensity.²

The proportion of active households that met the Minimum Standards is shown in the top portion of Table 2-1. The percentage of Minimum Standards households that met the standards more than doubled in Pittsburgh (a 107 percent increase) and almost tripled in Phoenix (a 181 percent increase) between enrollment and two years after enrollment. During the same period the percentage of Control households that met the standards increased by 35 percent in Pittsburgh and 94 percent in Phoenix.³

¹Comparison of the rates at which Minimum Standards and Control households that met requirements at enrollment continued to meet them at two years suggests that about 95 percent of the Experimental households would have continued to meet the requirements even in the absence of the experiment. Under the program rules, all households that met Minimum Standards in their enrollment units and stayed in those units were automatically considered to meet the Minimum Standards at two years. Even among such households that moved, however, a large fraction met the requirements in their two-year unit as well (60 percent in Pittsburgh, 71 percent in Phoenix; see Appendix Table IV-1).

²It should be emphasized that Control households were not told about the housing requirements and, of course, were not required to meet any. Control households received \$10 a month, plus occasional other modest payments, for providing the same information as Experimental households. Data on Control households give information on how the housing of nonrecipients changed during the experiment in response to such nonexperimental factors as inflation, other changes in local economic conditions, and normal changes in housing.

³Part of the increase over time in the proportion of households that met requirements, reflected in the figures for Control households, is due simply to accumulation--households that did not move from units that met the Minimum Standards are counted as continuing to meet the requirements even if their units no longer actually met the Minimum Standards.

Table 2-1

PERCENTAGE OF HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS
AT ENROLLMENT AND AT TWO YEARS AFTER ENROLLMENT

TREATMENT TYPE	PITTSBURGH			PHOENIX		
	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE
	At Enrollment	At Two Years		At Enrollment	At Two Years	
HOUSEHOLDS ACTIVE AT TWO YEARS						
Minimum Standards households	21.6%	44.7%	(199)	19.8%	55.7%	(167)
Unconstrained households	13.1	23.0	(61)	23.1	46.2	(39)
Control households	20.5	27.7	(303)	18.7	36.2	(268)
HOUSEHOLDS ACTIVE AT TWO YEARS AND THOSE THAT VOLUNTARILY DROPPED OUT						
Minimum Standards households ^a	18.5	37.4	(243)	20.2	41.2	(228)

SAMPLE: Minimum Standards, Unconstrained, 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 and payments file.

a. This is a special sample that includes Minimum Standards households that dropped out of the program for voluntary reasons. It is assumed here that these households maintained their enrollment housing requirement status.

There is reason to believe that these figures may overstate the program's impact, however. This would occur if attrition from the Control sample was unrelated to meeting the Minimum Standards, but attrition from the Experimental sample was mostly by households that did not meet the Minimum Standards at enrollment (this pattern is suggested by Figure 2-1). The housing requirements status at two years for households that left the program is unknown. However, a lower bound estimate of program impact can be obtained by making the extreme assumption that all Minimum Standards households that left the program voluntarily maintained their enrollment housing requirements status.¹ That is, all of the households that did not meet the Minimum Standards at enrollment are assumed to not have met the standards two years later. As shown in the last row of Table 2-1, the increases still remain sizeable: a 102 percent increase in Pittsburgh and a 104 percent increase in Phoenix. These figures indicate that increases in the percentage meeting requirements are indeed larger for the Experimental households than for Control households even under extreme assumptions about differential attrition for Experimental households.²

A second way of estimating the impact of the program is to examine its effect on the probability of an individual household meeting the requirements rather than by an examination of the overall rates of meeting. The change in the probability of meeting the Minimum Standards at two years for households not meeting them at enrollment was estimated using a logit function which relates the probability of meeting to household characteristics and program variables. This function, presented in Appendix Tables VII-1 and 2, was used to compute the probability of meeting the Minimum Standards for both a Control and an Experimental household (holding the household

¹Households left the program for many reasons. Reasons classified as voluntary were: cannot locate; periodic interview refused; housing evaluation refused; missing household report form; new household member refuses to comply with requirements; doesn't like program; personal reason; and reverification refused. Reasons classified as involuntary were: move out of county; ineligible household composition; residing in institution; household deceased; ineligible split; fraud; received ineligible relocation benefits; conflict of interest; moved into own home or subsidized housing; and unknown.

²Kennedy and MacMillan (1979) indicate that the effects of attrition on response are limited.

characteristics constant at the sample means). As above, two different samples were used to compute the probabilities--the sample of active households, and the sample of active households plus households voluntarily dropping out of the program (the latter giving a lower bound on the effect).

The comparisons of the probabilities based on the active sample for a typical household suggest that the program did have a sizeable effect on the probability of meeting the Minimum Standards (see Table 2-2). The probability of meeting requirements for Minimum Standards households is 20 percentage points higher in Pittsburgh and 28 percentage points higher in Phoenix than the probability for comparable Control households. The probabilities based on the expanded sample also indicate that Minimum Standards households have a larger probability of meeting requirements, although again the size of the effect is reduced when an extreme assumption about attrition is made.

The experience of households in the Unconstrained plan illustrates the effect of the allowance payment alone, without the imposition of housing requirements.¹ Examination of Table 2-2 indicates that the estimated probability of meeting Minimum Standards for the Unconstrained households was essentially the same as that of Control households in Pittsburgh but somewhat higher in Phoenix. However, this difference is not statistically significant (the logit coefficients for Unconstrained households were insignificant in both sites). In any case, the probability of meeting Minimum Standards for Unconstrained households was below even the lower bound estimate for the Minimum Standards households.

The Minimum Standards measure discussed above is but one measure of housing quality and a flawed one at best. Because the measure is dichotomous, no distinction is made between a dilapidated and deteriorating unit and one barely failing the standard, or between a unit just passing the standard

¹As explained in Chapter 1, these households received allowance payments computed by the payments formula used in the Housing Gap plans, but they did not have to meet any housing requirements. Thus, this plan is similar to income transfer plans considered in the various income maintenance experiments. Unconstrained households, like the Control households, were not told about the housing requirements and, of course, were not required to meet any.

Table 2-2

PROBABILITY OF MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT FOR HOUSEHOLDS THAT DID NOT MEET AT ENROLLMENT

TREATMENT TYPE	PITTSBURGH PROBABILITY	PHOENIX PROBABILITY
CONTROL HOUSEHOLDS	0.096	0.241
UNCONSTRAINED HOUSEHOLDS	0.106	0.325
MINIMUM STANDARDS HOUSEHOLDS		
Computed using active sample only	0.298 ^b	0.523 ^b
Computed using active sample plus voluntary dropouts ^a	0.229 ^b	0.370 ^b

SAMPLE: Minimum Standards, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Appendix Tables VII-1 and VII-2.

NOTE: These probabilities are evaluated at the means of the independent variables for the active sample using the appropriate coefficients from Appendix VII.

a. This is a special sample that includes Minimum Standards households that dropped out of the program for voluntary reasons. It is assumed that these households maintained their enrollment housing requirement status.

b. Logit coefficient significant at the 0.01 level.

and one of high quality. Budding (1978) has created another measure of housing adequacy in an attempt to resolve this problem, one also derived from the individual housing evaluations performed for each dwelling unit. This measure classifies units into one of three categories:

If there was clear evidence that a dwelling unit contained one or more serious housing deficiencies, the unit was classified as clearly inadequate.

If the unit passed every one of the indicators intended to measure serious housing deficiencies and received an overall evaluator rating consistent with such a classification, the unit was classified as at least minimally adequate.

Otherwise, the unit was classified as ambiguous.

Budding's measure was designed to reflect general policy concerns. It is intended to classify units as clearly inadequate if they have one or more serious deficiencies. An ambiguous category accounts for cases where either the exact nature or the importance of the deficiency are not clear. The dichotomies minimally adequate/not minimally adequate and clearly inadequate/not clearly inadequate thus provide a range of possible program standards. Because of the ambiguous category, Budding's measure will tend to understate to some unknown degree both the number of households in clearly inadequate housing and the number of households in at least minimally adequate housing.¹ The adequacy measure is related to the Minimum Standards in that few items used in the adequacy measure were not included in the Minimum Standards measure.

Table 2-3 shows the changes in housing adequacy over the two years of the experiment for Minimum Standards, Control, and Unconstrained households. As can be seen from the table, Minimum Standards falls in the upper end of

¹Further, the "clearly inadequate" category encompasses housing that ranges from dwelling units with multiple deficiencies to units with a single major defect. The "at least minimally adequate" category is subject to the limitations of the data base, and it seems likely that some of these units have serious housing problems that went unmeasured in the Demand Experiment. Finally, the "ambiguous" category undoubtedly contains both units that are properly classified as clearly inadequate and units that are properly considered at least minimally adequate. The ambiguous category exists because there was not sufficient information to make either classification.

Table 2-3
 CHANGES IN HOUSING ADEQUACY FOR MINIMUM STANDARDS, UNCONSTRAINED, AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years	CHANGE ^a	At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH							
ALL HOUSEHOLDS							
Minimum Standards households	25%	27%	+2	45%	36%	-9	(198)
Control households	29	25	-4	38	35	-3	(305)
Unconstrained households	18	31	+13	48	34	-14	(61)
DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	9	21	+12	57	43	-14	(155)
Control households	14	18	+4	47	40	-7	(243)
Unconstrained households	13	23	+10	55	40	-15	(53)
MET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	81	49	-32	2	12	+10	(43)
Control households	84	55	-29	2	15	+13	(62)
Unconstrained households	[50]	[88]	[+38]	[0]	[0]	[0]	(8)
PHOENIX							
ALL HOUSEHOLDS							
Minimum Standards households	34	45	+11	48	32	-16	(166)
Control households	34	37	+3	46	41	-5	(268)
Unconstrained households	26	44	+18	56	31	-25	(39)
DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	23	40	+17	59	39	-20	(133)
Control households	20	30	+10	56	50	-6	(218)
Unconstrained households	7	37	+20	73	37	-36	(30)
MET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	79	67	-12	3	3	0	(33)
Control households	94	68	-26	2	4	+2	(50)
Unconstrained households	[89]	[67]	[-22]	[0]	[11]	[+11]	(9)

SAMPLE Minimum Standards, Unconstrained, 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, Housing Evaluation Forms, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

a Percentage points

the range of standards implicit in Budding's measure. Because some of the indicators used in Minimum Standards were considered to be ambiguous with respect to the presence of serious housing problems, the clearly inadequate category, designed to be a conservative measure of inadequacy, "fails" only a fraction (55 percent) of all enrollment units that failed Minimum Standards at enrollment.¹ On the other hand, most units that passed Minimum Standards at enrollment, 85 percent, were defined as minimally adequate.²

The housing adequacy of Minimum Standards households' units improved over the two-year experimental period relative to Control households (measured either as an increase in the percentage minimally adequate or as a decrease in the percentage clearly inadequate). Comparison with Unconstrained households is difficult because of sample size problems, but they appear to improve their housing even more than do Minimum Standards households. The improvement in housing adequacy for Minimum Standards households relative to Control households is concentrated among households that did not meet their requirements at enrollment.

In comparing the relative success of the Minimum Standards and Unconstrained plans in increasing the proportion of households living in at least minimally adequate housing or decreasing the proportion of households living in clearly inadequate housing, it is important to realize that all Unconstrained households received an allowance payment while only the Minimum Standards households that met the requirements did so.³ Therefore, the fact that Unconstrained households as a group do as well or better than the group of all active Minimum Standards households (some of which did not receive any payment), is not evidence of ineffectiveness of the housing requirement for participants. Fewer households participate under a housing allowance

¹The Minimum Standards measure also fails units considered overcrowded (more than two persons per adequate bedroom), an indicator not included in Budding's physical adequacy measure. This percentage (and the one in the next sentence) refer to all enrollment units.

²In addition, 1 percent of all units passing Minimum Standards at enrollment were classified as clearly inadequate, due to the information on the presence of rats, poor window condition, and the overall dwelling unit rating by the evaluator.

³Appendix Table VI-10 presents a comparison of Minimum Standards and Unconstrained households that met at two years. This comparison is biased toward Minimum Standards households because of the close correlation between meeting the Minimum Standards and the adequacy measures.

program than under an unconstrained offer. Thus the approximately equal effects on housing adequacy found for all active households for the two types of programs reflect a larger effect on Minimum Standards participants than for Unconstrained participants offset by the lower participation rate among Minimum Standards households.

This is confirmed by logit estimates of the probability of living in minimally adequate housing and the probability of living in clearly inadequate housing, taking account of other possible effects on improvements in housing adequacy. Appendix Tables VII-9 and VII-13 present logit functions for the probabilities of a household living in minimally adequate or in clearly inadequate housing at two years. Table 2-4 presents the change in probabilities due to the housing allowances. Minimum Standards households that met their requirement at enrollment were just as likely as Control households that met Minimum Standards at enrollment to be living in minimally adequate or in clearly inadequate housing two years after enrollment. On the other hand, Phoenix Minimum Standards households that did not meet requirements at enrollment were significantly more likely than similar Control households to be living in minimally adequate housing at two years (at the 0.05 level) and were significantly less likely than similar Control households to be living in clearly inadequate housing (at the 0.01 level). No difference was found for these households in Pittsburgh.

Part of this effect was due simply to the allowance payment--Unconstrained households in Phoenix were significantly less likely than Control households to be living in clearly inadequate housing at two years as well and were somewhat more likely than Control households in both sites to be living in minimally adequate housing.

Overall, the estimated effects for Unconstrained households appear to be about the same in both sites and for both categories of housing adequacy as the effects for Minimum Standards households that did not meet requirements at enrollment. This suggests that the effect of the Minimum Standards requirements was very specific. In comparison with Unconstrained households, imposing Minimum Standards requirements only substantially increased the probability of meeting the explicitly imposed requirements; there is no significant difference even for the closely related alternatives defined by Budding's categories.

Table 2-4

EFFECT OF ALLOWANCE OFFER ON HOUSING ADEQUACY
FOR MINIMUM STANDARDS AND UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE POINT CHANGE IN PROBABILITY OF LIVING IN:	
	Minimally Adequate Housing at Two Years	Clearly Inadequate Housing at Two Years
PITTSBURGH		
ALL MINIMUM STANDARDS HOUSEHOLDS	+0.04	-0.02
Did not meet Minimum Standards at enrollment	+0.06	-0.004
Met Minimum Standards at enrollment	+0.01	-0.13
ALL UNCONSTRAINED HOUSEHOLDS	+0.08	-0.03
PHOENIX		
ALL MINIMUM STANDARDS HOUSEHOLDS	+0.11*	-0.14**
Did not meet Minimum Standards at enrollment	+0.13*	-0.18**
Met Minimum Standards at enrollment	-0.02	-0.01
ALL UNCONSTRAINED HOUSEHOLDS	+0.10	-0.22**

SAMPLE: Minimum Standards and Unconstrained 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: Appendix Tables VII-9 and VII-13.

NOTES: Significance indicated is of logit coefficient of contrast with similar Control households.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

2.2 CONTINUOUS MEASURES OF HOUSING CONSUMPTION

This section discusses changes in housing expenditures and in housing services, the latter measured as the estimated market value of the dwelling unit using an hedonic index.¹

Housing Expenditures

Section 2.1 indicated that about 95 percent of the households that met Minimum Standards at enrollment would normally have continued to meet them over the two years of the experiment. They did not have to alter their normal housing consumption pattern and could treat the allowance payment essentially like any other additional income.

The distinction between households that would normally meet the requirements and those induced to meet the requirements has important implications for the magnitude of the program-induced change in housing. It appears that, in addition to the households that already met the standards at enrollment, at least one-third of the households that only met the standards after enrollment would also have done so normally.² These households were in effect unconstrained by the allowance offer and would be likely to change their expenditures solely in response to the additional income they received from the allowance, while those induced to meet may have had to increase their housing expenditures more.

The allowance payment was on average a 20 percent increase in income for Minimum Standards households that met the Minimum Standards requirement in their enrollment and two-year units. Using the income elasticity estimated (for movers) by Friedman and Weinberg (1978) of 0.36, this suggests that the housing expenditures of these households would normally increase about 7

¹Throughout this report, housing expenditures are defined as the monthly rent paid for a unit, unfurnished, including utilities other than telephone. See Appendix III for more details.

²Using the probabilities of Table 2-2, between 32 and 42 percent of the Minimum Standards households in Pittsburgh and between 46 and 65 percent of the Minimum Standards households in Phoenix that met after enrollment would normally have done so. (These percentages are obtained by dividing the Control estimate by the Minimum Standards estimate.)

percent when they move.¹ (To the extent that not all households move, the overall average increase would be smaller.)

Housing Gap households that did not already meet the housing requirements at enrollment may be classified into two groups, according to the way they responded to the allowance offer. One is the group of households that never met the housing requirements. Households in this group did not receive any allowance payment and in that sense were not program participants. The other group is households that lived in units that met the housing requirements by two years after enrollment. This group would be expected to exhibit the largest change in housing expenditure. However, as discussed in Section 2.1, a substantial proportion of households not meeting the Minimum Standards at enrollment would have met the housing requirements by two years even without the allowance offer. Thus, this group contains households whose behavior should be similar to that of Housing Gap households that already met the requirements at enrollment (responding only to the additional allowance-provided income) along with households that were induced by the allowance offer to meet the requirements. The response of those households induced to meet requirements is likely to be larger than that implied by increased income alone, simply because they had to increase their expenditures by more than would normally have occurred simply to meet the requirements.²

The observed changes in housing expenditures between enrollment and two years after enrollment for Minimum Standards and Control households are summarized in Table 2-5.³ The percentage changes in rent for Control households that already met the housing requirements at enrollment and continued to meet them during the experiment suggest that in Pittsburgh normal, non-experimental rent increases amounted to 14 percent, while in Phoenix they

¹The income elasticity of housing expenditures is the percentage change in expenditures due to a 1 percent increase in income. The estimates reported in Friedman and Weinberg (1978) are based on Control and Percent of Rent movers. Their estimate of the income elasticity for all households is only slightly smaller than 0.36.

²As indicated earlier, the Minimum Standards could be met without increasing expenditures, though this was not as likely on average.

³The discussion of Unconstrained households is deferred to Chapter 5 due to small sample sizes. For their housing change and the changes of Housing Gap nonrecipients, see Appendix V.

Table 2-5

MEAN HOUSING EXPENDITURES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR MINIMUM STANDARDS AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING EXPENDITURES		CHANGE IN HOUSING EXPENDITURES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Minimum Standards households	\$119	\$142	\$23	24%	19%	(87)
Control households	132	154	22	17	17	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	114	142	28	31	25	(49)
Control households	127	155	27	23	21	(29)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	125	140	16	16	13	(38)
Control households	135	154	19	14	14	(54)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Minimum Standards households	135	170	34	35	25	(91)
Control households	144	168	24	23	17	(89)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	128	170	42	44	33	(64)
Control households	140	173	33	33	24	(50)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	150	166	16	13	11	(27)
Control households	150	163	13	12	9	(39)

SAMPLE Minimum Standards and Control households active and meeting requirements 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 and payments file.

amounted to 12 percent. These changes are not very different from the estimated two-year rates of inflation: 15 and 10 percent in Pittsburgh and Phoenix, respectively (see Merrill, 1977, p. 140). The percentage rent increases for Housing Gap households in the same category was only marginally higher--16 percent in Pittsburgh and 13 percent in Phoenix. The tabular comparison thus suggests that the experiment induced households that already met the requirements at enrollment to increase their housing expenditures by about 1 to 2 percentage points.¹ The analysis of later chapters shows similarly small (and statistically insignificant) effects of the experiment on the expenditures of households already meeting the Minimum Standards at enrollment. These rather small increases in expenditure for households that met requirements at enrollment imply that most of the allowance payment was used to increase nonhousing consumption and to reduce high rent burdens for this group.

The experimentally induced change in rent for Minimum Standards households that met the housing requirements only after enrollment cannot be estimated directly from the Control and Experimental changes shown in Table 2-5. Using those data directly would give an underestimate of the induced change. As discussed above, the group of Housing Gap households that only met the requirements after enrollment consists of two different subsets of households--one is the group of households that would have met the requirements even without a program; the other is the group of households that were induced by the allowance offer to meet the requirements. Normal rent changes for households that would normally have met the requirements may be inferred from Control households that only met requirements after enrollment. Normal rent changes for households that were induced to meet the requirements may be inferred from those households that would normally not have met the requirements (i.e., Control households that did not meet the requirements during the experimental period). Normal rent changes for Minimum Standards households that met only after enrollment can then be computed as the weighted average of the changes for the two Control groups (those meeting after enrollment and

¹This is less than the predicted 7 percent increase based on the estimated response of expenditures to changes in income. The difference between the predicted increase if all these households moved and the actual increase may be attributed to the fact that not all of these households did in fact move (only 23 percent of these households in Pittsburgh and 52 percent in Phoenix moved). See Chapter 7 for an examination of the role of mobility in household response.

those never meeting the standards), using the proportion of households that normally met and the proportion of households that were induced to meet as the weights.¹

The computed normal rent changes for Minimum Standards households meeting after enrollment are 20 percent in Pittsburgh and 23 percent in Phoenix. The implied experimentally induced change in rent is therefore 9 percent in Pittsburgh and 17 percent in Phoenix, as shown in Table 2-6. These figures, which are based on straightforward comparison of means, are fairly close to the more carefully computed estimates of Chapter 5. The estimates presented there are based on a more complicated statistical procedure that takes into account many nonexperimental differences between Experimental and Control households (described in Chapter 4). These estimates for the program-induced increases in housing expenditures are 7.5 percent (with a standard error of 3.9) above two-year normal rent in Pittsburgh and 23.6 percent (with a standard error of 5.4) in Phoenix (from Table 5-1).²

In summary, the data in Table 2-5 suggest that households that already met the housing requirements at enrollment did in fact behave much as they would have without the requirements and that therefore the allowance had only a small impact on their housing expenditures. On the other hand, in both sites, the data in Table 2-6 show that the change in expenditures of households that only met the requirements after enrollment was much larger than the change for Control households. Thus, the responses of the two groups of households do, in fact, appear to be very different. Indeed, the change for the subset of households induced to meet may be much larger than the overall average for the group of households that met requirements after enrollment. Section 2.1 suggested that about 32 percent of households that met after enrollment in Pittsburgh and 46 percent in Phoenix would have met the requirements normally. If these households had the same 2 percent average increase in rent above normal as households that already met requirements at enrollment, then households that were induced to meet requirements after enrollment had an increase in rent above normal

¹ See Table 2-6 for the computation formula.

² Standard errors for the estimates of Chapter 5 are included for information only. Since the observations used for the estimates in Tables 2-6 and 5-1 are the same, differences in the estimates arise from the models used and not from sampling variation.

Table 2-6

HOUSING EXPENDITURES CHANGE FOR MINIMUM STANDARDS
HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT

	PERCENTAGE CHANGE IN EXPENDITURES		NET INDUCED EFFECT ^a	SAMPLE SIZE
	Actual	Normal		
Pittsburgh	31%	20%	9%	(49)
Phoenix	44	23	17	(64)

SAMPLE: Minimum Standards households active and meeting requirements at two years after enrollment that did not meet requirements at 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 and payments file.

NOTE: The formula used for computing the normal rent change is:

$$\frac{P_c \Delta R_M^C + (P_e - P_c) \Delta R_{NM}^C}{P_e} = \frac{P_c}{P_e} \Delta R_M^C + \left(1 - \frac{P_c}{P_e}\right) \Delta R_{NM}^C$$

where P_c = the proportion of Control households that did not meet requirements at enrollment that met requirements at two years

P_e = the proportion of Minimum Standards households that did not meet requirements at enrollment that met requirements at two years

ΔR_M^C = the percentage rent change for Control households that met requirements only after enrollment

ΔR_{NM}^C = the percentage rent change for Control households that did not meet requirements at enrollment or at two years after enrollment.

The proportion (P_c/P_e) is interpreted as the normal probability of Housing Gap households that did not meet requirements at enrollment meeting them at two years after enrollment. From Tables 2-2, 2-5, and V-1, the following values are used:

	<u>Pittsburgh</u>	<u>Phoenix</u>
P_c	0.096	0.241
P_e	0.298	0.523
ΔR_M^C	23%	33%
ΔR_{NM}^C	18%	14%

a. Percent above normal expenditures, computed as the ratio of actual expenditures at two years, R_A , over enrollment expenditures, R_0 (the first column plus one) to normal expenditures at two years, R_N , over enrollment expenditures (the second column plus one), minus one: $\frac{(R_A/R_0)}{(R_N/R_0)} - 1$.

(using the figures in Table 2-6), of approximately 15 percent in Pittsburgh and 37 percent in Phoenix.¹

This differential response is an important part of the Housing Gap design because policy objectives are quite different for households that meet the housing requirements when they enroll as opposed to those that do not. There may be no special interest in having households already in adequate housing spend more to buy even better housing. Poor housing quality is not the only aspect of housing deprivation, however. Households may occupy decent housing but only at an exorbitant cost in terms of their available resources. The ratio of rent to income, referred to as "rent burden," is another measure of housing deprivation, especially for low-income households. Low-income households that spend more than 25 percent of their income on housing are often considered to be deprived with respect to housing in the sense that their residual income is not sufficient to buy nonhousing goods and services to achieve a modest standard of living.² The policy objectives of an allowance program may include reduction of housing deprivation both in terms of improving housing quality for participants in poor quality housing and of reducing high rent burdens. To the extent that the program's housing requirements adequately reflect the government's policy objectives in housing quality, the requirements serve to channel the allowance payment first into the housing expenditures necessary to obtain modest, existing, standard housing and then into reductions in rent burden.

As Table 2-7 indicates, every subpopulation of enrolled households was clearly deprived in terms of high rent burden, with Housing Gap households that met the housing requirements at enrollment having a median preprogram rent burden of over 40 percent at both sites.³ The allowance payment made

¹This is close to the percentage difference in mean rents between Minimum Standards households that did and did not meet requirements at enrollment (19 percent in Pittsburgh and 34 percent in Phoenix). (See Appendix Table V-1.)

²For a historical perspective, see Lane (1977).

³This figure refers to net income; but because the definition of income used here includes items not normally included in census gross income figures, such as the value of Food Stamps, the rent burden in terms of census gross income would be approximately the same. Equivalence for subgroups or for other income definitions is by no means assured.

(continued)

Table 2-7
 MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
 AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
 MINIMUM STANDARDS, UNCONSTRAINED, AND CONTROL HOUSEHOLDS
 (Payment as Rent Reduction)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	37%	18%	-17	(85)
Control households	34	30	-5	(78)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	36	18	-17	(47)
Control households	32	30	-3	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	40	17	-17	(38)
Control households	35	30	-6	(50)
ALL UNCONSTRAINED HOUSEHOLDS	35	23	-13	(49)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	36%	19%	-16	(90)
Control households	34	30	-4	(89)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	34	17	-18	(63)
Control households	33	30	-3	(50)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	39	22	-12	(27)
Control households	34	29	-4	(39)
ALL UNCONSTRAINED HOUSEHOLDS	35	24	-14	(26)

SAMPLE. Minimum Standards, Unconstrained, and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points.

to Experimental households reduced this by almost 15 percentage points by the end of the second year.¹ Recipients not living in acceptable housing at enrollment were also spending a high proportion of income on rent. Their median rent burden was about 35 percent at enrollment; this group also experienced almost a 15 percentage point decline in rent burden.²

This marked reduction in rent burden thus occurred both for households that already met housing requirements at enrollment and for those that only met the requirements after enrollment. Given the small impact of the allowance payment on housing expenditures for households that met the

(footnote continued from previous page)

It should be noted that the large reduction in rent burdens shown in Table 2-7 is partly a matter of definition. Rent burden was computed as

$$(1) \quad \text{Rent Burden} = \frac{R - P}{Y}$$

where

R = monthly rent

P = monthly allowance payment

Y = monthly income (average over 12 months).

This definition obviously reflects the perspective of housing policy and housing-motivated transfers. All of the payment is regarded as reducing the rent that the household pays from its own resources.

From the perspective of pure income transfers, a more appropriate calculation of postpayment rent burden would be

$$(11) \quad \text{Rent Burden} = \frac{R}{Y + P}$$

that is, the payment would simply be considered additional income to be spread over all sorts of purchases.

For the Demand Experiment, the definition of rent burden in Equation (1) seems more appropriate than the definition in Equation (11). For example, a household receiving a housing allowance of \$30 a month that had to increase its rent by \$30 a month to meet the housing requirements could not reasonably be thought of, in policy-relevant terms, as having a higher rent burden, as would be the case if its new rent burden was computed by the income transfer definition given in Equation (11). The important point is to use consistent definitions in comparing housing allowances and general income transfers. However, existing transfer income is simply treated as income in calculating rent burdens at enrollment.

¹The reduction in rent burden for Unconstrained households was about the same as the reduction for Minimum Standards households. Nevertheless, rent burdens computed considering the payment as income (11) are presented in Appendix Tables VI-25 and VI-26 for Minimum Standards households.

²Appendix Table VI-1 repeats Table 2-7 using mean rent burden data. Appendix Table VI-5 presents the actual percentage distribution of rent burden.

housing requirements at enrollment, it appears that most of the allowance payment was used by these households to reduce their rent burden, or in other words, to free income for other needs. Households that only met the requirements after enrollment, on the other hand, appear to have both increased their expenditures and reduced their rent burden.¹

Of course, such reductions in rent burden are not particularly a feature of a housing allowance. Any income transfer program could meet the same end without the additional administrative paraphernalia that surrounds housing requirements. However, a housing allowance and an unrestricted income transfer have an important potential difference: depending on the severity of the requirements, housing allowances may be more selective in the allocation of payments between improved housing and reduced rent burden.

Table 2-8 presents the proportion of the allowance payment used for increased housing expenditures. As might be expected, these figures reflect the findings on the effects of the program on housing expenditures and rent burden. Households that met the Minimum Standards in their enrollment units devoted very little of their payment to increased expenditures. Households that did not meet the Minimum Standards in their enrollment units devoted considerably more, though still less than one-third, of their payment to above-normal increases in rent. Using the proportions reported above, if 32 percent of these households in Pittsburgh and 46 percent in Phoenix would have met the requirements normally and spent the same fraction of their allowance payment on rent as those already meeting at enrollment, then the proportion of the allowance payment spent on rent by the remaining fraction induced to meet is on the order of 26 percent in Pittsburgh and 52 percent in Phoenix. The remaining portion of the payment, of course, is used to reduce rent burden through expenditures on other goods and services (including, at least potentially, savings).²

¹Households that only met requirements after enrollment were able to obtain both improvements because such households started with a lower median rent burden and had somewhat lower incomes and for larger household sizes, so that (in Phoenix) they also received larger allowance payments (see Appendix Table VI-9).

²Table 5-21 presents the estimated proportion of the allowance payment devoted to increased expenditures as computed using the more detailed methodology explained in Chapter 4.

Table 2-8
 PROPORTION OF ALLOWANCE PAYMENT USED FOR
 INCREASED EXPENDITURES FOR MINIMUM STANDARDS HOUSEHOLDS

HOUSEHOLD GROUP	ESTIMATED PERCENTAGE CHANGE IN RENT ABOVE NORMAL ^a	NORMAL TWO-YEAR RENT ^b	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL	SAMPLE SIZE
PITTSBURGH						
MINIMUM STANDARDS HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	10%	\$135	13.5	\$66	20%	(38)
Met requirements at enrollment	3	155	4.6	64	7	(49)
ALL HOUSEHOLDS	--	--	8.5 ^c	65	13	(87)
PHOENIX						
MINIMUM STANDARDS HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	20	148	29.7	94	32	(64)
Met requirements at enrollment	3	156	4.7	52	9	(27)
ALL HOUSEHOLDS	--	--	22.3 ^c	81	28	(91)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

a. See Tables 2-5 and 2-6.

b. For households that only met requirements after enrollment, normal rent is computed in a fashion analogous to the method used to construct Table 2-6. For households that met requirements at enrollment, this is the rent of Control households that met at enrollment.

c. Weighted average.

Housing Services

The analysis of expenditure change directly measures the extent to which allowance payments are translated into increased spending for housing. However, increased expenditures may not always lead to changes in housing services. Most obviously, general price inflation implies higher dollar expenditures without any change in the amount of housing services provided by a dwelling unit. When changes in expenditures of Housing Gap households are compared with changes for Control households, the effects of inflation and other factors external to the experiment are netted out, so that this should not pose a problem. Even so, changes in expenditure may not be reflected in real changes in participant housing. If allowance recipients were unable to act effectively in the private market, or if they were induced by the allowance offer to conduct a less effective search for new housing, then they might have ended up spending more for equivalent housing than they otherwise would.

Hedonic indices address this problem by providing estimates of the normal market value of a unit in terms of its physical characteristics and the housing prices prevailing at enrollment. Through this, changes in the hedonic value of a unit can be used to provide estimates of the real change in participant housing, independent of whether the individual participant paid more or less than usual for the unit.¹

Table 2-9 indicates that differences exist in response between the two sites. While there was only a 1 percentage point difference in the increase in housing services between Minimum Standards and Control households whose units met the Minimum Standards housing requirement both at enrollment and two years in Pittsburgh, there was a 9 percentage point difference in Phoenix. As for expenditures, simple comparison of changes for Minimum Standards and Control households that only met the requirements after enrollment are not appropriate because such a comparison would not account for the effect of the allowance offer in inducing households to meet the requirements. Employing the same method as used for rental expenditures, estimates for

¹Chapter 6 discusses hedonic indices in more detail. Hedonic indices for the Demand Experiment sites were developed by Merrill (1977). See Merrill for further discussion of the interpretation of hedonic indices as indicators of housing quality.

Table 2-9

MEAN HOUSING SERVICES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR MINIMUM STANDARDS AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING SERVICES		CHANGE IN HOUSING SERVICES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Minimum Standards households	\$120	\$128	\$8	9%	7%	(82)
Control households	129	135	6	6	5	(78)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	113	127	15	15	13	(45)
Control households	121	132	12	14	10	(27)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	127	128	1	1	1	(37)
Control households	133	136	3	2	2	(51)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Minimum Standards households	136	162	26	23	19	(72)
Control households	143	166	23	24	16	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	130	160	31	29	24	(51)
Control households	132	171	39	41	30	(47)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Standards households	153	166	14	10	9	(21)
Control households	158	158	1	1	1	(36)

SAMPLE Minimum Standards and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

normal changes in housing services are presented in Table 2-10, along with the estimated net effects of 6 percent in Pittsburgh and 3 percent in Phoenix. While the actual increases in consumption of housing services are much larger in Phoenix, the net effect is larger in Pittsburgh. The estimates of the induced increase in housing services presented in Chapter 6 are 5.6 percent (with a standard error of 4.1) in Pittsburgh and 10.5 percent (with a standard error of 4.7) in Phoenix (from Table 6-3). While close to the rough estimate in Table 2-10 in Pittsburgh, it is not clear why the estimates differ so much in Phoenix. It must be supposed that the higher number is more likely to be correct, as it is obtained through a procedure designed to correct for possible biases.

Another puzzle is the difference between the changes in expenditures and the changes in housing services. Table 2-6 indicated that the change in expenditure above normal for households meeting after enrollment was 9 percent in Pittsburgh and 17 percent in Phoenix, whereas Table 2-10 indicated that the change in housing services above normal was only 6 and 3 percent, respectively. One possible answer to the puzzle lies in the link between the two measures of housing consumption--the price of housing. For expenditures to rise, either the quantity of housing consumed (housing services) must rise or the price of housing must rise (or both). The change in "quantity" in Pittsburgh is enough to account for the change in expenditures in that site. In Phoenix, however, the price that Minimum Standards households pay for the housing appears to be higher than average, though not high enough to account for the entire difference. One possible explanation for the remaining discrepancy is that households in Phoenix, in trying to meet the Minimum Standards, had to purchase components of the housing bundle not valued highly by the market (though important to the policymaker). The analysis presented in Chapter 6 found evidence of only a small overpayment (see Table 6-1).

2.3 SUMMARY

Households that already met the Minimum Standards at enrollment did not make substantial above-normal changes in their housing expenditures. However, since they already occupied acceptable housing, it seems reasonable that the main policy objective for such households might be to

Table 2-10

HOUSING SERVICES CHANGE FOR MINIMUM STANDARDS
HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT

	PERCENTAGE CHANGE IN HOUSING SERVICES		NET INDUCED EFFECT ^a	SAMPLE SIZE
	Actual	Normal		
Pittsburgh	15%	8%	6%	(45)
Phoenix	29	25	3	(51)

SAMPLE: Minimum Standards households active and meeting requirements at two years after enrollment that did not meet requirements at 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: The formula used for computing the normal rent change is:

$$\frac{P_c \Delta Q_M^C + (P_e - P_c) \Delta Q_{NM}^C}{P_e} = \frac{P_c}{P_e} \Delta Q_M^C + \left(1 - \frac{P_c}{P_e}\right) \Delta Q_{NM}^C$$

where P_c = the proportion of Control households that did not meet requirements at enrollment that met requirements at two years

P_e = the proportion of Minimum Standards households that did not meet requirements at enrollment that met requirements at two years

ΔQ_M^C = the percentage housing services change for Control households that met requirements only after enrollment

ΔQ_{NM}^C = the percentage housing services change for Control households that did not meet requirements at enrollment or two years after enrollment.

The proportion (P_c/P_e) is interpreted as the normal probability of Housing Gap households that did not meet requirements at enrollment meeting them at two years after enrollment. From Tables 2-2, 2-9, and V-10, the following values are used:

	Pittsburgh	Phoenix
P_c	0.096	0.241
P_e	0.298	0.523
ΔQ_M^C	14%	41%
ΔQ_{NM}^C	5%	12%

a. Percent above normal services, computed as the ratio of actual services at two years, Q_A , over enrollment services, Q_0 (the first column plus one) to normal services at two years, Q_N , over enrollment services (the second column plus one), minus one:

$$\frac{(Q_A/Q_0)}{(Q_N/Q_0)} - 1.$$

alleviate their excessive rent burden. This is what the allowance payments did.

Households that did not meet the Minimum Standards requirements at enrollment did not occupy acceptable housing, and many of them were nevertheless spending an excessive portion of their income for rent. It seems reasonable that the policy objective for this group would be both to upgrade their housing and to make their housing more affordable. Indeed, this is what the program did. The allowance offer induced many of the households that lived in substandard housing to change their housing into standard housing. These recipients increased both their housing expenditures and housing services. At the same time, the allowance provided them much needed rent relief.

There is some evidence that real changes in housing did not conform to expenditure changes in Phoenix. Households in Phoenix that met requirements after enrollment show smaller changes in housing services than in housing expenditures. Indeed, the real change in housing for these households was smaller than that of households that already met requirements. While the more complete analysis of Chapter 6 indicates that the tabular estimates misstate the changes in Phoenix, the pattern of apparent overpayment for their units relative to the market average by households that met Minimum Standards after enrollment (and underpayment by those that met at enrollment) is maintained.

In addition, while the pattern of expenditure changes among participants conforms to the program design, it appears that the program did not reach many households. Most of the households participating by the end of two years were either meeting the requirements at enrollment or would have met normally. Improvements in housing and rent relief were not provided to nonparticipants. Participation is analyzed in detail in Kennedy and MacMillan (1979).

A major drawback of the Minimum Standards program is the need to inspect the housing units of households that enrolled in the program. Since housing inspections are costly, the requirement of Minimum Rent was tested as a possible alternative. These plans are the subject of the next chapter.

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CHAPTER 3
OVERVIEW OF THE MINIMUM RENT PLANS

The discussion in Chapter 2 focused on the responses of households in the Minimum Standards plans. Administration of those plans required inspections to see whether the dwelling units of eligible households met a variety of requirements for basic facilities, condition of structure and surfaces, light and ventilation, and the like, as described in Appendix III. In addition, at least one bedroom was required for every two persons in the household. (There were no requirements with regard to neighborhood or location.) Such inspections are costly and probably impose some inconvenience on the households whose units are inspected. Since both housing quantity and housing quality tend to increase with the unit's rent level, an alternative requirement, setting a Minimum Rent level, was tested in the Demand Experiment. One potential appeal of a Minimum Rent form of housing requirement is that it would encourage participants not only to spend the allowance for improved housing but to choose improvements that they themselves desired. For example, a household might sacrifice size of dwelling unit for location in a preferred neighborhood.

Households in Minimum Rent plans were required to live in units whose rent levels met or exceeded a certain minimum in order to receive an allowance payment. Two levels of Minimum Rent were tested--70 percent and 90 percent of C^* , where C^* was the estimated cost of modest, existing, standard housing at each site. The two levels are referred to as Minimum Rent Low and Minimum Rent High.

Section 3.1 discusses the extent to which the households were induced to meet their Minimum Rent requirements. Section 3.2 discusses the effects of Minimum Rent plans on the proportion of households living in units that met the Minimum Standards requirements and on housing adequacy. Section 3.3 then presents changes in the other measures of housing consumption (housing expenditures and housing services). Section 3.4 provides a brief summary of both Chapters 2 and 3.

3.1 RATES OF MEETING THE HOUSING REQUIREMENTS

Figures 3-1 and 3-2 present the behavior of Minimum Rent and Control households with respect to each Minimum Rent requirement. As would be expected, noticeably more Minimum Rent Low households met their requirements at enrollment (62 percent in Pittsburgh and 54 percent in Phoenix) than did Minimum Rent High households (31 percent in Pittsburgh and 26 percent in Phoenix). The percentage of Minimum Rent High households that met their requirements at enrollment was close to the percentage of Minimum Standards households that met the Minimum Standards at enrollment in each site.

When only households remaining active for the full two-year experimental period are examined, the percentage of Minimum Rent Low households that met their requirements is found to increase over the two years by a sizeable amount--from 62 to 85 percent in Pittsburgh (a change of 23 percentage points) and from 48 to 77 percent in Phoenix (a change of 29 percentage points) (see Table 3-1). The change in the percentage of Minimum Rent High households that met the requirement was of the same size--from 30 to 52 percent in Pittsburgh (a change of 22 percentage points) and from 20 to 50 percent in Phoenix (a change of 30 percentage points) (see Table 3-2).¹ The changes for Control households were smaller than those for Minimum Rent households, suggesting that some Minimum Rent households were induced to meet the Minimum Rent requirements.

As was true for the Minimum Standards plans, most households that met their Minimum Rent requirement at enrollment continued to meet it in their two-year unit (100 percent in Pittsburgh and 96 percent in Phoenix).² The rates for Control households were almost as high. Among Control households that met Minimum Rent Low requirements at enrollment, 96 percent in Pittsburgh and 92 percent in Phoenix also met the requirements at the end of two years. Comparable figures for Control households that met the Minimum Rent High

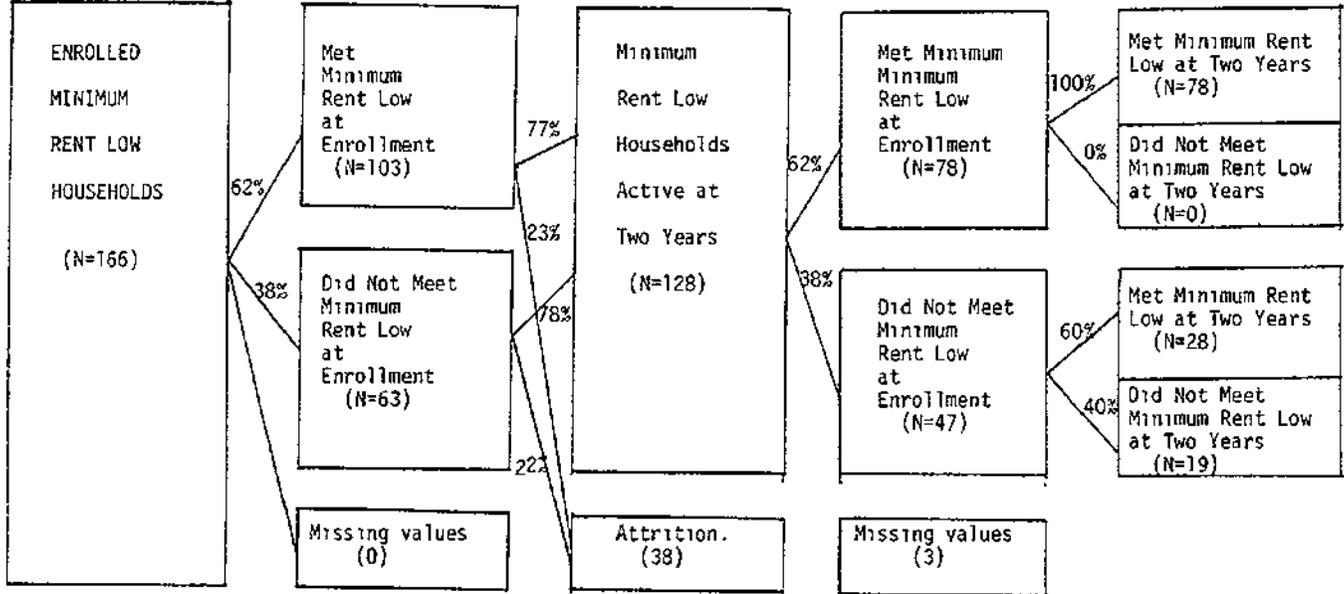
¹The changes in the percent of Minimum Standards households that met Minimum Standards were from 22 to 45 percent in Pittsburgh (a change of 23 percentage points) and from 20 to 56 percent in Phoenix (a change of 36 percentage points). As was true for Minimum Standards households, including households voluntarily leaving the Demand Experiment reduces these changes slightly.

²Comparable figures for Minimum Standards households were only slightly lower (91 and 85 percent for the two sites).

Figure 3-1
 PARTICIPATION AND ATTRITION STATUS OF
 MINIMUM RENT LOW AND CONTROL HOUSEHOLDS
 BETWEEN ENROLLMENT AND TWO YEARS AFTER ENROLLMENT

PITTSBURGH

MINIMUM RENT LOW HOUSEHOLDS



CONTROL HOUSEHOLDS

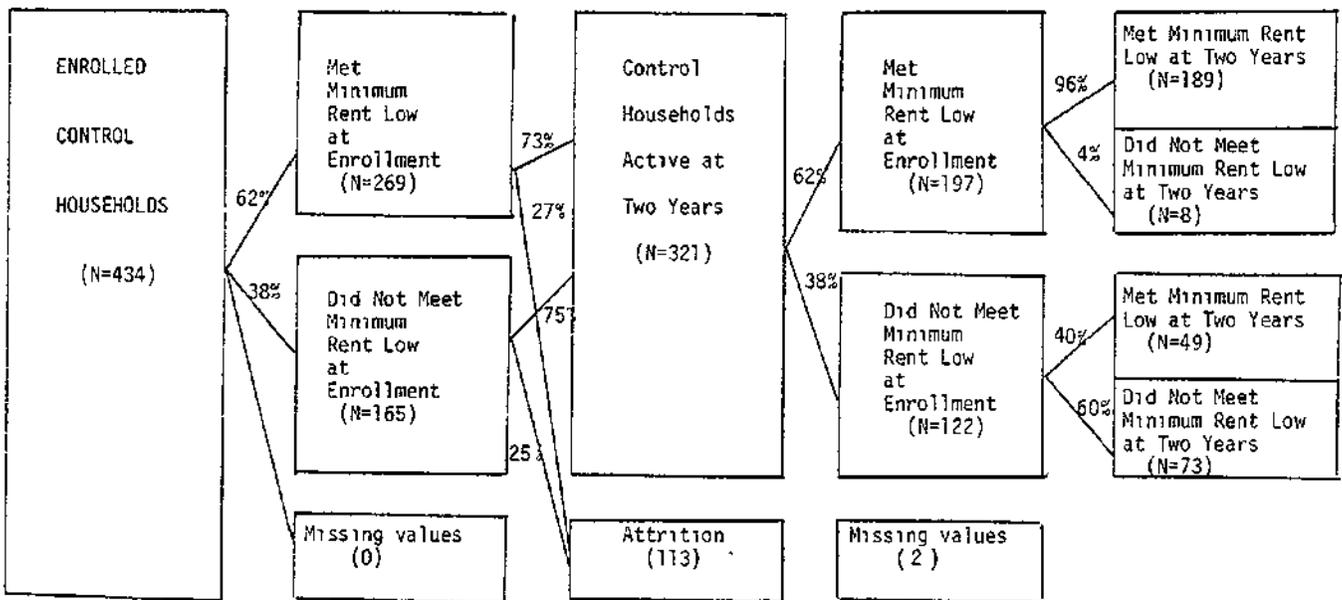
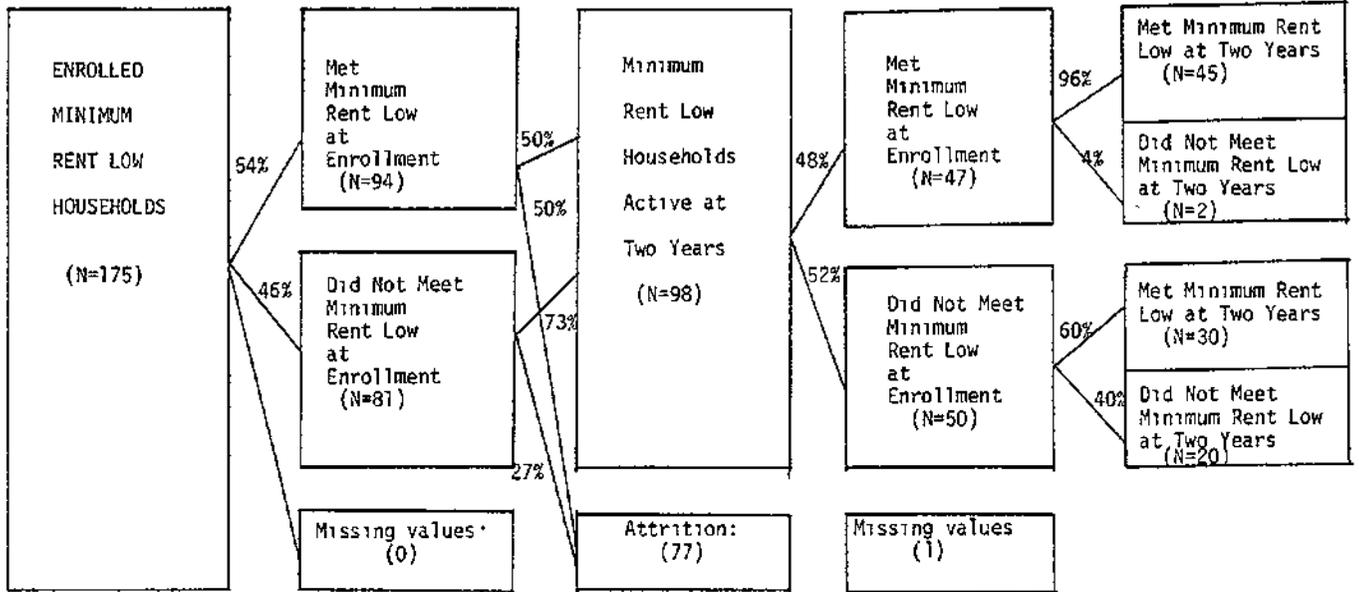


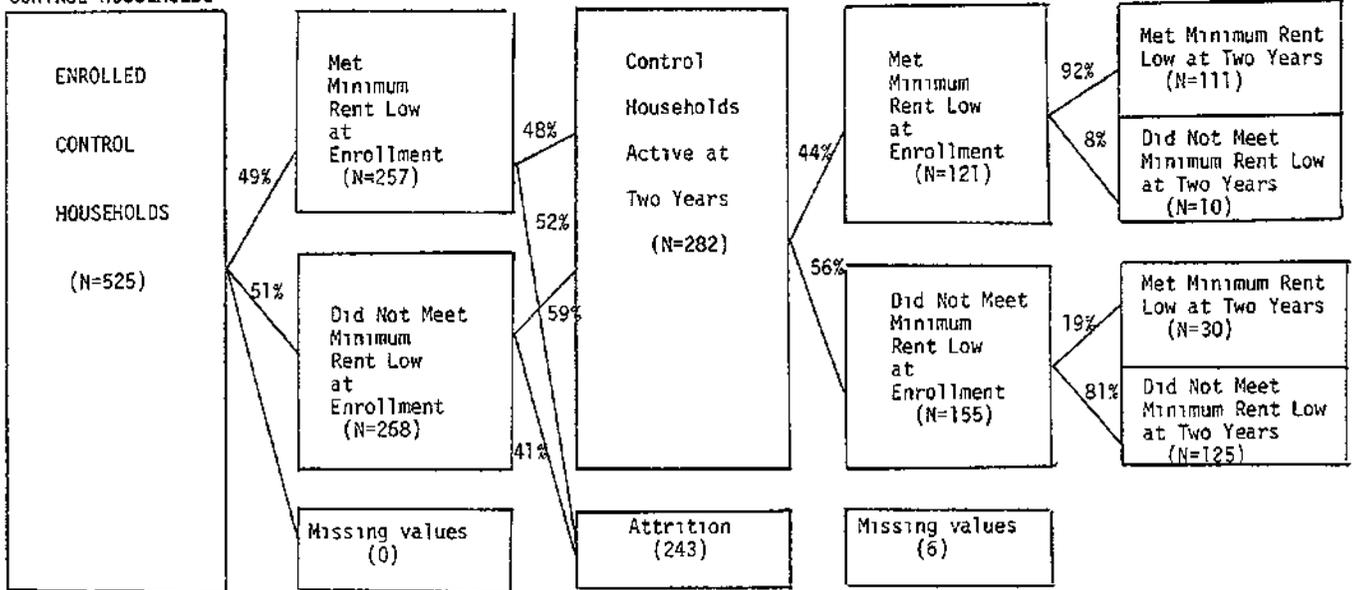
Figure 3-1 (continued)

PHOENIX

MINIMUM RENT LOW HOUSEHOLDS



CONTROL HOUSEHOLDS



SAMPLES Enrolled Households--Enrolled Minimum Rent Low and Control households, excluding those with enrollment incomes over the eligibility limits. Households Active at Two Years--Minimum Rent Low 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.

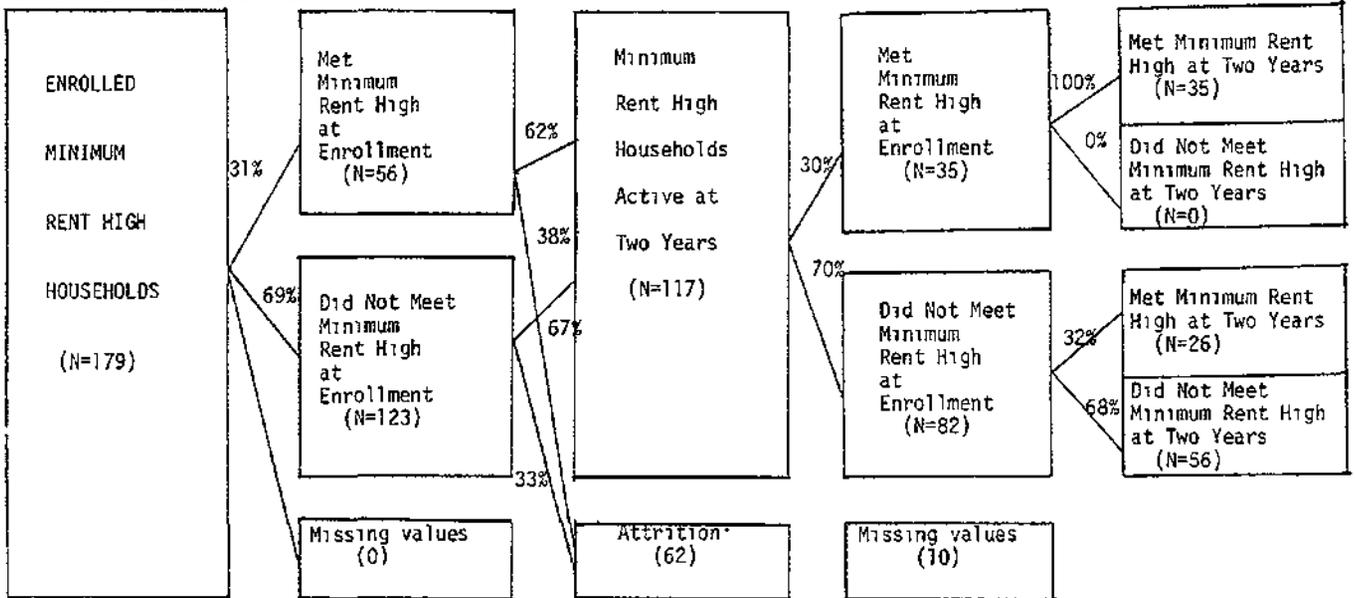
DATA SOURCES Initial and monthly Household Report Forms and payments file.

NOTE Households that remained in units that met requirements at any cross section were considered to have met requirements at two years after enrollment.

Figure 3-2
 PARTICIPATION AND ATTRITION STATUS OF
 MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS
 BETWEEN ENROLLMENT AND TWO YEARS AFTER ENROLLMENT

PITTSBURGH

MINIMUM RENT HIGH HOUSEHOLDS



CONTROL HOUSEHOLDS

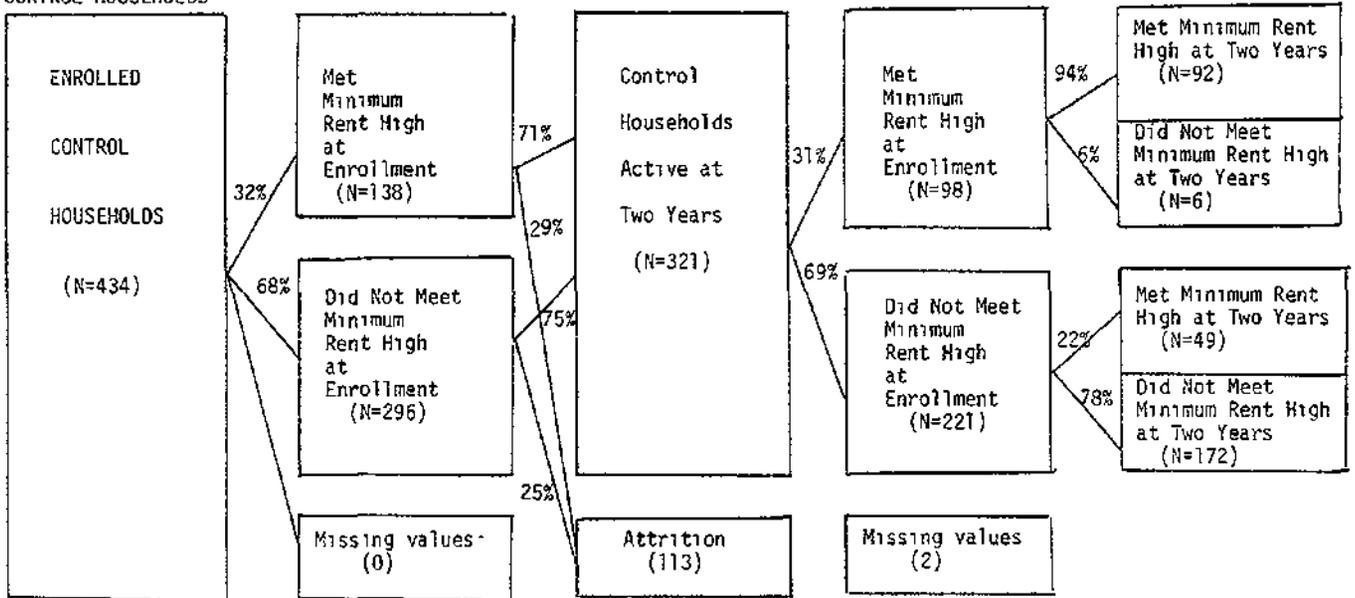
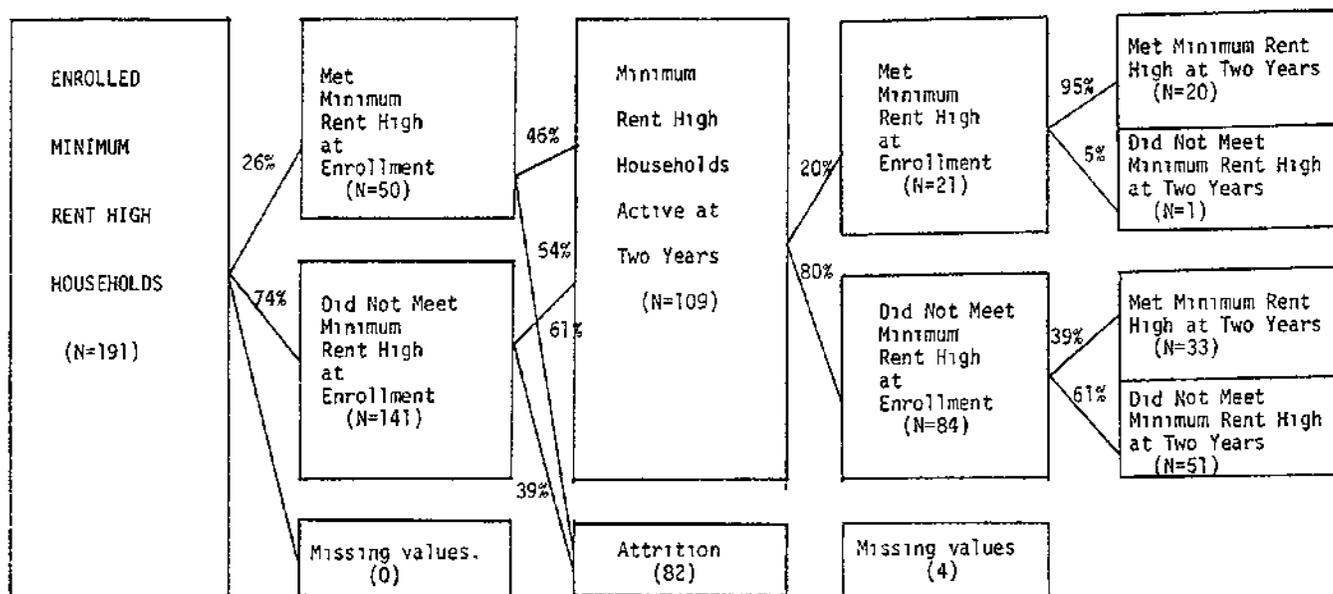


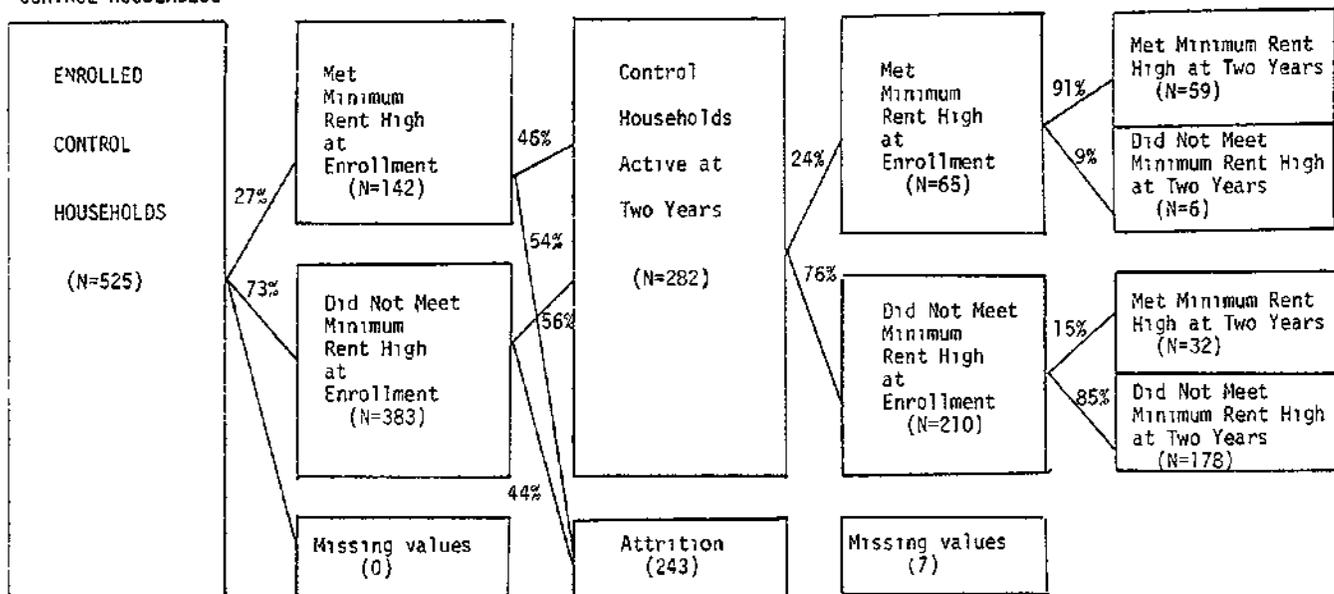
Figure 3-2 (continued)

PHOENIX

MINIMUM RENT HIGH



CONTROL HOUSEHOLDS



SAMPLES Enrolled Households--Enrolled Minimum Rent High and Control households, excluding those with enrollment incomes over the eligibility limits Households Active at Two Years--Minimum Rent High 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 and payments file

NOTE Households that remained in units that met requirements at any cross section were considered to have met requirements at two years after enrollment

Table 3-1

PERCENTAGE OF HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS
AT ENROLLMENT AND AT TWO YEARS AFTER ENROLLMENT

TREATMENT TYPE	PITTSBURGH			PHOENIX		
	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE
	At Enrollment	At Two Years		At Enrollment	At Two Years	
HOUSEHOLDS ACTIVE AT TWO YEARS						
Minimum Rent Low households	62.4%	84.8%	(125)	48.5%	77.3%	(97)
Unconstrained households	59.7	75.8	(62)	46.2	66.7	(39)
Control households	61.8	74.6	(319)	43.8	51.1	(276)
HOUSEHOLDS ACTIVE AT TWO YEARS AND THOSE THAT VOLUNTARILY DROPPED OUT						
Minimum Rent Low households ^a	61.3	76.1	(142)	37.9	62.1	(124)

SAMPLE: Minimum Rent Low , Unconstrained, 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 and payments file.

a. This is a special sample that includes Minimum Rent Low households that dropped out of the program for voluntary reasons. It is assumed here that these households maintained their enrollment housing requirement status.

Table 3-2

PERCENTAGE OF HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS
AT ENROLLMENT AND AT TWO YEARS AFTER ENROLLMENT

TREATMENT TYPE	PITTSBURGH			PHOENIX		
	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE	PERCENTAGE THAT MET REQUIREMENTS		SAMPLE SIZE
	At Enrollment	At Two Years		At Enrollment	At Two Years	
HOUSEHOLDS ACTIVE AT TWO YEARS						
Minimum Rent High households	29.9%	52.1%	(117)	20.0%	50.5%	(105)
Unconstrained households	29.0	48.4	(62)	23.1	41.0	(39)
Control households	30.7	44.2	(319)	23.6	33.1	(275)
HOUSEHOLDS ACTIVE AT TWO YEARS AND THOSE THAT VOLUNTARILY DROPPED OUT						
Minimum Rent High households ^a	25.2	43.4	(143)	19.1	42.6	(136)

SAMPLE: Minimum Rent High, Unconstrained, 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 and payments file.

a. This is a special sample that includes Minimum Rent High households that dropped out of the program for voluntary reasons. It is assumed here that these households maintained their enrollment housing requirement status.

requirement were 94 percent in Pittsburgh and 91 percent in Phoenix. Thus it appears that, as was the case for Minimum Standards, almost all Minimum Rent households that met the Minimum Rent requirement at enrollment would have continued to meet requirements normally, even without the allowance offer.

Among Minimum Rent Low households that did not meet their requirement at enrollment, 60 percent of Minimum Rent Low households in both sites had met the requirement by the end of two years.¹ Comparable figures for Minimum Standards households were 32 percent in Pittsburgh and 49 percent in Phoenix, suggesting that the Minimum Rent Low requirement was easier to meet. Among Minimum Rent High households that did not meet their requirement in their enrollment units, 32 percent in Pittsburgh and 39 percent in Phoenix met the requirements by the end of two years. These rates are below those for the Minimum Rent Low plans but about the same as the Minimum Standards rates.

The differences between figures for Housing Gap and Control households that did not meet Minimum Rent requirements at enrollment indicate that a sizeable number of Housing Gap households were induced to meet the Minimum Rent requirements. This finding is further confirmed by the logit analysis of households not meeting their Minimum Rent requirement at enrollment.² As shown in Tables 3-3 and 3-4, the allowance offer does have a sizeable effect on the probability of meeting requirements. The probability that a Minimum Rent Low household would meet the requirements after enrollment is 34 percentage points higher than that of a comparable Control household in Pittsburgh and 56 percentage points higher in Phoenix (see Table 3-3). These impacts are somewhat larger than the comparable changes for Minimum Standards households (20 percentage points in Pittsburgh and 28 percentage points in Phoenix). The probability that a Minimum Rent High household would meet the requirements after enrollment is 10 percentage points greater than that of a comparable Control household in Pittsburgh and 25 percentage points larger in Phoenix (see Table 3-4).

¹ Minimum Rent households could meet their requirement after enrollment in one of two ways--they could accept or request increases in rent in their enrollment units (hopefully in compensation for improvements in the unit), or they could move to more expensive units.

² Appendix Tables VII-5 through VII-8 present the logit coefficients.

Table 3-3

PROBABILITY OF MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT FOR HOUSEHOLDS THAT DID NOT MEET AT ENROLLMENT

TREATMENT TYPE	PITTSBURGH PROBABILITY	PHOENIX PROBABILITY
CONTROL HOUSEHOLDS	0.341	0.128
UNCONSTRAINED HOUSEHOLDS	0.416	0.394 ^b
MINIMUM RENT LOW HOUSEHOLDS		
Computed using active sample only	0.681 ^b	0.685 ^b
Computed using active sample plus voluntary dropouts ^a	0.560 ^b	0.477 ^b

SAMPLE: Minimum Rent Low , Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Appendix Tables VII-5 and VII-6.

NOTE: These probabilities are evaluated at the means of the independent variables for the active sample using the appropriate coefficients from Appendix VII.

a. This is a special sample that includes households that dropped out of the program for voluntary reasons. It is assumed that these households maintained their enrollment housing requirement status.

b. Logit coefficient significant at the 0.01 level.

Table 3-4

PROBABILITY OF MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT FOR HOUSEHOLDS THAT DID NOT MEET AT ENROLLMENT

TREATMENT TYPE	PITTSBURGH PROBABILITY	PHOENIX PROBABILITY
CONTROL HOUSEHOLDS	0.176	0.081
UNCONSTRAINED HOUSEHOLDS	0.254	0.202 ^b
MINIMUM RENT HIGH HOUSEHOLDS		
Computed using active sample only	0.280 ^b	0.335 ^c
Computed using active sample plus voluntary dropouts ^a	0.219	0.211 ^c

SAMPLE: Minimum Rent High, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

DATA SOURCES: Appendix Tables VII-7 and VII-8.

NOTE: These probabilities are evaluated at the means of the independent variables for the active sample using the appropriate coefficients from Appendix VII.

a. This is a special sample that includes households that dropped out of the program for voluntary reasons. It is assumed that these households maintained their enrollment housing requirement status.

b. Logit coefficient significant at the 0.05 level.

c. Logit coefficient significant at the 0.01 level.

Table 3-5 summarizes the pattern of participation for all Housing Gap households. In this table, the allocation of households that met the requirements only after enrollment between those that would normally have met and those induced to meet the requirements was done using the probabilities in Tables 2-2, 3-3, and 3-4. Overall participation rates, shown at the bottom of Table 3-5, are similar in the two sites (highest for Minimum Rent Low and roughly the same for Minimum Standards and Minimum Rent High). Minimum Rent Low plans have the highest percentage of recipients that met at enrollment and also the lowest percentage of households induced to meet the requirements. Despite the similarity in overall participation rates between the sites, a larger fraction of those meeting requirements after enrollment were induced to meet in Phoenix than in Pittsburgh.

3.2 THE EFFECT OF MINIMUM RENT PLANS ON MEETING THE MINIMUM STANDARDS

An important factor in deciding whether a Minimum Rent requirement can serve as an administrative proxy for a Minimum Standards requirement is the degree to which passing the two requirements is related. A Minimum Standards household must rent a unit passing the Minimum Standards to receive an allowance payment. A Minimum Rent household is not so constrained. The fact that a Minimum Rent household could pay a high enough rent to enable it to rent a unit that passes the Minimum Standards does not mean that the household will in fact choose to do so. Thus the relationship between the two requirements must be determined empirically. The Minimum Standards are highly specific. Since Minimum Rent households were unaware of the Minimum Standards requirements, they might materially improve their housing and still fail to meet the Minimum Standards for some relatively trivial reasons. Because of this possibility, evaluation of other housing measures is important. Tables 3-6 and 3-7 indicate the relation between meeting Minimum Rent requirements and meeting Minimum Standards. The tables include only households that had passed the Minimum Rent requirements by the end of two years after enrollment and show the proportion of Minimum Rent and Control households that passed Minimum Standards at enrollment and at two years. It is apparent that neither Minimum Rent requirement serves as a good proxy for Minimum Standards. Indeed, only about one-third to one-half of the households that met Minimum Rent Low or Minimum Rent High in either site passed Minimum Standards.

Table 3-5

PATTERN OF PARTICIPATION FOR HOUSING GAP HOUSEHOLDS

PERCENTAGE OF ALL HOUSEHOLDS THAT MET THEIR REQUIREMENTS AT TWO YEARS THAT:	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
MET REQUIREMENTS AT ENROLLMENT	44%	74%	57%	30%	60%	38%
DID NOT MEET REQUIREMENTS AT ENROLLMENT	56	26	43	70	40	62
Would normally have met requirements by two years	18	13	35	32	7	15
Were induced to meet requirements by two years	38	13	8	38	33	47
(Sample size)	(89)	(106)	(61)	(93)	(75)	(53)
OVERALL PARTICIPATION RATE ^a	45%	85%	52%	56%	77%	50%
(Sample size)	(199)	(125)	(117)	(167)	(97)	(105)

SAMPLE: Housing Gap 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: Figures 2-1, 3-1, and 3-2; Tables 2-2, 3-3, and 3-4.

a. Percentage of all active households that met their requirements at two years after enrollment.

Table 3-6

PERCENTAGE PASSING MINIMUM STANDARDS REQUIREMENTS FOR HOUSEHOLDS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS

HOUSEHOLD GROUP	PERCENTAGE PASSING MINIMUM STANDARDS		CHANGE ^a	SAMPLE SIZE
	At Enrollment	At Two Years		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW AT TWO YEARS				
Minimum Rent Low	22%	31%	9	(107)
Control	24	31	7	(238)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low	3	14	11	(29)
Control	4	10	6	(49)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low	30	37	7	(78)
Control	29	37	8	(189)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW AT TWO YEARS				
Minimum Rent Low	24	45	21	(75)
Control	29	53	24	(141)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low	14	30	16	(30)
Control	7	57	50	(30)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low	31	56	25	(45)
Control	35	52	17	(111)

SAMPLE: Minimum Rent Low and Control households active and meeting requirements 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, Housing Evaluation Forms, and payments file.

a. Percentage points.

Table 3-7

PERCENTAGE PASSING MINIMUM STANDARDS REQUIREMENTS FOR HOUSEHOLDS
THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS

HOUSEHOLD GROUP	PERCENTAGE PASSING MINIMUM STANDARDS		CHANGE ^a	SAMPLE SIZE
	At Enrollment	At Two Years		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH AT TWO YEARS				
Minimum Rent High	25%	28%	3	(61)
Control	29	39	10	(141)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High	15	23	8	(26)
Control	10	16	6	(49)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High	31	31	0	(35)
Control	38	51	13	(92)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH AT TWO YEARS				
Minimum Rent High	35	47	12	(53)
Control	33	63	30	(91)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High	19	39	20	(33)
Control	13	59	46	(32)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High	60	60	0	(20)
Control	43	64	21	(59)

SAMPLE: Minimum Rent High and Control households active and meeting requirements 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, Housing Evaluation Forms, and payments file.

a. Percentage points.

At the same time, households that passed the Minimum Rent requirements do appear to have passed Minimum Standards at a somewhat higher rate than households that did not meet Minimum Rent. This suggests that the Minimum Rent requirements should at least have increased the proportion of Minimum Rent households active at two years that met Minimum Standards requirements. In fact, the proportion of all active Minimum Rent households that met Minimum Standards at two years was not significantly different from the proportion of Control households that met the Minimum Standards at two years.¹

This is confirmed by a logit analysis of the probability that Minimum Rent households met the Minimum Standards at two years. While the estimated effect of the Minimum Rent offers on the probability of passing Minimum Standards was generally positive, the estimates are always small and never significant.² This was true both for households that did and did not meet Minimum Rent requirements at enrollment.

As indicated at the beginning of this section, the Minimum Standards measure is somewhat arbitrary. Therefore, the effect of the Minimum Rent plans on Budding's measure of housing adequacy is also examined.³ Recall that this measure classifies housing as clearly inadequate, ambiguous, or at least minimally adequate. The "clearly inadequate" category is intended to include only units with serious physical deficiencies, that would be unlikely to be acceptable under any reasonable policy standard. On the other hand, the "at least minimally adequate" category represents units that, on the basis of data collected in the Demand Experiment, seem likely to meet most policy-relevant standards for minimally adequate housing. Analysis of the impact of Minimum Rent on the proportion of households that were living in either clearly inadequate or at least minimally adequate housing

¹The proportion of households active at two years that met the Minimum Standards was:

	<u>Pittsburgh</u>	<u>Phoenix</u>
Minimum Rent Low.....	26%	39%
Minimum Rent High.....	23	35
Control.....	28	36

See Appendix Table VI-13.

²The logit coefficients are reported in Appendix Tables VII-3 and VII-4. Effects are estimated separately for Minimum Rent households that did and did not meet Minimum Rent requirements at enrollment.

³See Budding (1978) and Appendix III.

at two years therefore can be used to examine the effectiveness of Minimum Rent requirements as proxies for a range of explicit physical standards, one less stringent than the Minimum Standards (not clearly inadequate) and one more stringent (at least minimally adequate).

Tables 3-8 and 3-9 present the changes in housing adequacy for all active Minimum Rent and Control households, by whether the Minimum Rent requirements were met at enrollment.¹ Interpretation of changes is hampered by the sample sizes involved. For Minimum Rent households overall, however, the only marked difference from Control households is among Minimum Rent High households in Phoenix; these households showed a substantially larger decrease in the percentage of households in clearly inadequate housing.

Logit analysis of the probability of living in minimally adequate housing and the probability of living in clearly inadequate housing confirms the impression of little or no effect for most Minimum Rent households. As shown in Table 3-10, there is no apparent difference between Minimum Rent and Control households in terms of the probability of living in minimally adequate housing. The estimated effects are generally small, always insignificant, and while positive in Phoenix, are usually negative in Pittsburgh. There is evidence of some effect for Minimum Rent households in Phoenix on the proportion that lived in clearly inadequate housing. Minimum Rent households there in general, and Minimum Rent Low households that already met requirements at enrollment and Minimum Rent High households that only met requirements after enrollment in particular, show significant reductions in the probability of living in clearly inadequate housing relative to Control households. The overall effects in Pittsburgh show no significant change in the probability of living in clearly inadequate housing.

The reduction in the probability of living in clearly inadequate housing in Phoenix for Minimum Rent households is only slightly smaller than the reduction there for Minimum Standards and Unconstrained households (cf. Table 2-4). This further bolsters the finding that the Minimum Rent housing requirements themselves focus households' housing changes on the particular changes called for by the housing requirements.

¹Appendix Tables VI-11 and VI-12 present the changes for Control and Minimum Rent households that met the Minimum Rent requirements at two years.

Table 3-8
 CHANGES IN HOUSING ADEQUACY FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years	CHANGE ^a	At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH							
ALL HOUSEHOLDS							
Minimum Rent Low households	20%	23%	+3	46%	39%	-7	(127)
Control households	29	25	-4	38	35	-3	(305)
DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	4	14	+10	65	37	-28	(49)
Control households	9	9	0	61	47	-14	(119)
MET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	31	28	-3	35	41	+6	(78)
Control households	41	35	-6	23	27	+4	(186)
PHOENIX							
ALL HOUSEHOLDS							
Minimum Rent Low households	36	43	+7	33	32	-1	(92)
Control households	34	37	+3	46	41	-5	(268)
DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	19	25	+6	60	52	-8	(48)
Control households	14	22	+8	71	61	-10	(150)
MET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	55	64	+9	25	9	-16	(44)
Control households	59	57	-2	15	15	0	(118)

SAMPLE Minimum Rent Low 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, Housing Evaluation Forms, and payments file

a Percentage points

Table 3-9
CHANGES IN HOUSING ADEQUACY FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years	CHANGE ^a	At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH							
ALL HOUSEHOLDS							
Minimum Rent High households	25%	22%	-3	43%	40%	-3	(112)
Control households	29	25	-4	38	35	-3	(305)
DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT							
Minimum Rent High households	20	15	-5	53	49	-4	(79)
Control households	17	16	-1	49	42	-7	(212)
MET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT							
Minimum Rent High households	36	39	+3	18	18	0	(33)
Control households	54	47	-7	13	17	+4	(93)
PHOENIX							
ALL HOUSEHOLDS							
Minimum Rent High households	31	39	+8	52	34	-18	(99)
Control households	34	37	+3	46	41	-5	(268)
DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT							
Minimum Rent High households	20	32	+12	61	41	-20	(79)
Control households	22	26	+4	58	53	-5	(205)
MET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT							
Minimum Rent High households	75	70	-5	15	10	-5	(20)
Control households	71	73	+2	8	3	-5	(63)

SAMPLE Minimum Rent High 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 and payments file

a Percentage points

Table 3-10
EFFECT OF ALLOWANCE OFFER ON HOUSING ADEQUACY
FOR MINIMUM RENT HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE POINT CHANGE IN PROBABILITY OF LIVING IN:	
	Minimally Adequate Housing at Two Years	Clearly Inadequate Housing at Two Years
PITTSBURGH		
ALL MINIMUM RENT LOW HOUSEHOLDS	-0.02	+0.01
Did not meet Minimum Rent Low at enrollment	+0.06	-0.13
Met Minimum Rent Low at enrollment	-0.05	+0.09
ALL MINIMUM RENT HIGH HOUSEHOLDS	-0.04	+0.06
Did not meet Minimum Rent High at enrollment	-0.05	+0.06
Met Minimum Rent High at enrollment	-0.04	+0.04
PHOENIX		
ALL MINIMUM RENT LOW HOUSEHOLDS	+0.05	-0.12*
Did not meet Minimum Rent Low at enrollment	+0.01	-0.10
Met Minimum Rent Low at enrollment	+0.11	-0.17†
ALL MINIMUM RENT HIGH HOUSEHOLDS	+0.06	-0.11*
Did not meet Minimum Rent High at enrollment	+0.07	-0.16*
Met Minimum Rent High at enrollment	+0.07	+0.24

SAMPLE: Minimum Rent 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: Appendix Tables VII-11, VII-12, VII-15, and VII-16.

NOTE: Significance indicated is of logit coefficient of contrast with similar Control households.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

3.3 CONTINUOUS MEASURES OF HOUSING IMPACT

The other measures of housing consumption changes examined in Chapter 2 are housing expenditures, rent burden, and housing services (as measured by the hedonic index). Tables 3-11 and 3-12 present the changes in housing expenditures for Minimum Rent households meeting their Minimum Rent requirements in their two-year units. Minimum Rent High households that met their requirement after enrollment did increase their rent by more than similar Control households; however, Minimum Rent Low households that met after enrollment did not. Moreover, as suggested in Section 3.1, Minimum Rent households that did not meet their requirements at enrollment may have been induced to meet the Minimum Rent requirements by the prospect of the housing allowance payment, so the relevant comparison is with normal rent (computed in a similar manner to normal rent computed for Minimum Standards households). Table 3-13 presents these computations.

There is a sizeable above-normal change in expenditures for each Minimum Rent group. Minimum Rent Low households meeting after enrollment had an increase in expenditures of 10 percent above normal in Pittsburgh and 42 percent above normal in Phoenix. The increases above normal for Minimum Rent High households meeting after enrollment are 18 percent in Pittsburgh and 36 percent in Phoenix. These increases are larger than the increases for Minimum Standards households meeting after enrollment (9 percent in Pittsburgh and 17 percent in Phoenix).

The results of these tabular comparisons are somewhat different from those obtained by the more complex methodology presented in Chapter 5. The estimated percentage increases in housing expenditures above normal for households not meeting in their enrollment units presented there are (from Tables 5-9 and 5-10):¹

	<u>Pittsburgh</u>	<u>Phoenix</u>
Minimum Rent Low.....	8.7%	42.0%
	(5.1)	(9.3)
Minimum Rent High.....	15.8%	42.6%
	(6.4)	(9.7)

(Chapter 5 discusses some reasons for the site difference in response.)

¹The standard error of the estimate is in parentheses below the estimate.

Table 3-11
 MEAN HOUSING EXPENDITURES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING EXPENDITURES		CHANGE IN HOUSING EXPENDITURES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	\$115	\$138	\$23	23%	17%	(104)
Control households	125	147	22	21	18	(228)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	93	129	36	42	39	(77)
Control households	90	129	39	46	43	(48)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	123	141	18	16	15	(77)
Control households	134	152	18	15	13	(180)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	133	172	39	40	29	(69)
Control households	154	182	27	26	18	(134)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	101	169	67	78	66	(27)
Control households	103	177	74	84	72	(28)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	154	174	20	15	13	(42)
Control households	168	183	15	10	9	(106)

SAMPLE Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

Table 3-12

MEAN HOUSING EXPENDITURES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING EXPENDITURES		CHANGE IN HOUSING EXPENDITURES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	\$127	\$165	\$37	34%	79%	(59)
Control households	137	164	27	25	20	(136)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	105	166	67	60	59	(26)
Control households	106	154	48	50	45	(47)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	145	164	19	13	13	(33)
Control households	153	169	16	12	10	(89)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	149	208	59	49	40	(46)
Control households	170	199	29	26	17	(85)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	128	213	84	73	66	(28)
Control households	132	201	69	66	52	(28)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	183	202	19	11	10	(18)
Control households	189	199	10	6	5	(57)

SAMPLE Minimum Rent High and Control households active and meeting requirements 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 and payments file.

Table 3-13

HOUSING EXPENDITURES CHANGE FOR MINIMUM RENT HOUSEHOLDS
THAT DID NOT MEET MINIMUM RENT REQUIREMENTS AT ENROLLMENT
BUT MET AT TWO YEARS AFTER ENROLLMENT

	PERCENTAGE CHANGE IN EXPENDITURES		NET INDUCED EFFECT ^a	SAMPLE SIZE
	Actual	Normal		
PITTSBURGH				
Minimum Rent Low	42%	29%	10%	(27)
Minimum Rent High	60	36	18	(26)
PHOENIX				
Minimum Rent Low	78	25	42	(27)
Minimum Rent High	73	27	36	(28)

SAMPLE: Minimum Rent households active and meeting requirements at two years after enrollment that did not meet requirements at 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 and payments file.

NOTE: The formula used for computing the normal rent change is:

$$\frac{P_c \Delta R_M^C + (P_e - P_c) \Delta R_{NM}^C}{P_e} = \frac{P_c}{P_e} \Delta R_M^C + \left(1 - \frac{P_c}{P_e}\right) \Delta R_{NM}^C$$

where P_c = the proportion of Control households that did not meet requirements at enrollment that met requirements at two years

P_e = the proportion of Minimum Rent households that did not meet requirements at enrollment that met requirements at two years

ΔR_M^C = the percentage rent change for Control households that met requirements only after enrollment

ΔR_{NM}^C = the percentage rent change for Control households that did not meet requirements at enrollment or at two years.

The proportion (P_c/P_e) is interpreted as the normal probability of Housing Gap households that did not meet requirements at enrollment meeting them at two years after enrollment. From Tables 3-3, 3-4, 3-11, 3-12, V-2, and V-3, the following values are used:

	Pittsburgh		Phoenix	
	Minimum Rent Low	Minimum Rent High	Minimum Rent Low	Minimum Rent High
P_c	0.341	0.176	0.128	0.081
P_e	0.681	0.280	0.685	0.335
ΔR_M^C	46%	50%	84%	66%
ΔR_{NM}^C	11%	14%	12%	14%

a. Percent above normal expenditures, computed as the ratio of actual expenditures at two years, R_A , over enrollment expenditures, R_0 (the first column plus one) to normal expenditures at two years, R_N , over enrollment expenditures (the second column plus one), minus one: $\frac{(R_A/R_0)}{(R_N/R_0)} - 1$.

Despite this increased expenditure, Minimum Rent households reduced their rent burden more than comparable Control households (see Tables 3-14 and 3-15). Like Minimum Standards households, Minimum Rent households that met their requirements at enrollment were spending a greater fraction of their income on rent than households that did not meet the Minimum Rent requirement. Minimum Rent Low recipients were able to reduce their median rent burdens by about 13 percentage points--from over 35 percent to less than 25 percent. Minimum Rent High recipients started out with a somewhat higher median rent burden (39 percent in Pittsburgh and 35 percent in Phoenix) and also reduced their median rent burdens substantially (to 29 percent in Pittsburgh and 26 percent in Phoenix).¹

Tables 3-16 and 3-17 present the proportion of the allowance payment that was spent for increased housing expenditure above normal for Minimum Rent Low and Minimum Rent High households, respectively. As for Minimum Standards households, very little of the payment to households that met their requirement at enrollment was spent for increased housing expenditures; the money was almost entirely used to reduce rent burden. Among households that only met requirements after enrollment, between one-half and three-quarters of the payment to Minimum Rent High households was spent on housing expenditures above normal. Minimum Rent Low households that met requirements after enrollment in Phoenix spent about the same percentage of the allowance payment on increased rent as did Minimum Rent High households there (about one-half), but only 16 percent of the payment in Pittsburgh was spent on additional housing expenditures.

Finally, Tables 3-18 and 3-19 present the increases in housing services obtained by Minimum Rent recipients. As was the case with expenditures, households that already met the Minimum Rent requirements at enrollment show no increase in housing services above those of similar Control households in Pittsburgh and only modest additional increases in Phoenix. For households that only met requirements after enrollment, the relevant comparison with Control households must again take account of the effect of

¹ Appendix Tables VI-2 and VI-3 present mean rent burden while Appendix Tables VI-27 through VI-30 present rent burdens computed considering the payment as income.

Table 3-14
 MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
 AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
 MINIMUM RENT LOW AND CONTROL HOUSEHOLDS
 (Payment as Rent Reduction)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	35%	20%	-17	(101)
Control households	31	29	-3	(217)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	28	16	-15	(27)
Control households	25	26	+2	(46)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	37	21	-17	(74)
Control households	34	29	-5	(171)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	37%	20%	-16	(68)
Control households	34	33	-1	(132)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	34	14	-16	(26)
Control households	24	33	+7	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	38	23	-15	(42)
Control households	35	32	-4	(104)

SAMPLE - Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points

Table 3-15

MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS
(Payment as Rent Reduction)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	38%	27%	-11	(58)
Control households	36	33	-4	(129)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	34	27	-6	(25)
Control households	27	30	+4	(45)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	43	26	-15	(33)
Control households	40	33	-6	(94)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	34%	24%	-14	(46)
Control households	34	32	-4	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	31	23	-11	(28)
Control households	26	35	+9	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	46	26	-15	(18)
Control households	36	32	-6	(55)

SAMPLE. Minimum Rent High and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points.

Table 3-16

PROPORTION OF ALLOWANCE PAYMENT USED FOR INCREASED EXPENDITURES
FOR MINIMUM RENT LOW HOUSEHOLDS

HOUSEHOLD GROUP	ESTIMATED PERCENTAGE CHANGE IN RENT ABOVE NORMAL ^a	NORMAL TWO-YEAR RENT ^b	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL	SAMPLE SIZE
PITTSBURGH						
MINIMUM RENT LOW HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	9%	\$110	\$10.0	\$61	16%	(27)
Met requirements at enrollment	1	152	1.5	56	3	(77)
ALL HOUSEHOLDS	-	--	3.7 ^c	58	6	(104)
PHOENIX						
MINIMUM RENT LOW HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	52	118	61.3	109	56	(27)
Met requirements at enrollment	6	182	10.9	71	15	(42)
ALL HOUSEHOLDS	-	--	30.6 ^c	86	36	(69)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

a. See Tables 3-11 and 3-13.

b. For households that only met requirements after enrollment, normal rent is computed in a fashion analogous to the method used to construct Table 3-13. For households that met requirements at enrollment, this is the rent of Control households that met at enrollment.

c. Weighted average.

Table 3-17

PROPORTION OF ALLOWANCE PAYMENT USED FOR INCREASED EXPENDITURES
FOR MINIMUM RENT HIGH HOUSEHOLDS

HOUSEHOLD GROUP	ESTIMATED PERCENTAGE CHANGE IN RENT ABOVE NORMAL ^a	NORMAL TWO-YEAR RENT ^b	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL	SAMPLE SIZE
PITTSBURGH						
MINIMUM RENT HIGH HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	28%	\$131	\$36.7	\$50	73%	(26)
Met requirements at enrollment	0	170	0.0	52	0	(33)
ALL HOUSEHOLDS	-	--	16.2 ^c	51	32	(59)
PHOENIX						
MINIMUM RENT HIGH HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	49	132	64.8	114	57	(28)
Met requirements at enrollment	6	198	11.9	85	14	(18)
ALL HOUSEHOLDS	-	--	44.1 ^c	103	43	(46)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

a. See Tables 3-12 and 3-13.

b. For households that only met requirements after enrollment, normal rent is computed in a fashion analogous to the method used to construct Table 3-13. For households that met requirements at enrollment, this is the rent of Control households that met at enrollment.

c. Weighted average.

Table 3-18
 MEAN HOUSING SERVICES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING SERVICES		CHANGE IN HOUSING SERVICES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	\$113	\$118	\$5	6%	4%	(89)
Control households	121	127	6	7	5	(200)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	104	114	10	11	10	(21)
Control households	103	117	14	17	14	(42)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	116	120	4	5	3	(68)
Control households	125	130	4	4	3	(158)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	134	161	27	24	20	(55)
Control households	148	168	20	19	14	(114)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	110	150	40	41	36	(20)
Control households	106	159	53	59	50	(27)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent Low households	148	167	19	15	13	(35)
Control households	161	171	10	7	6	(87)

SAMPLE Minimum Rent Low and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

Table 3-19

MEAN HOUSING SERVICES AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS

HOUSEHOLD GROUP	MEAN HOUSING SERVICES		CHANGE IN HOUSING SERVICES			SAMPLE SIZE
	At Enrollment	At Two Years	Amount	Percentage (Mean of Ratio)	Percentage (Ratio of Means)	
PITTSBURGH						
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	\$122	\$129	\$7	7%	6%	(55)
Control households	127	136	8	8	6	(119)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	109	124	14	13	13	(24)
Control households	111	126	15	15	14	(40)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	132	133	1	2	1	(31)
Control households	135	140	5	4	4	(79)
PHOENIX						
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	142	176	34	29	24	(42)
Control households	159	179	20	19	13	(71)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	127	174	48	41	38	(24)
Control households	127	172	45	47	35	(22)
MET REQUIREMENTS AT ENROLLMENT						
Minimum Rent High households	164	179	15	11	9	(17)
Control households	174	182	9	6	5	(49)

SAMPLE Minimum Rent High and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

the allowance on the proportion of households that met requirements. Table 3-20 presents this computation. Minimum Rent households that met requirements after enrollment in Pittsburgh did not obtain any increase in housing services above normal. In Phoenix, both Minimum Rent Low and Minimum Rent High households that met requirements after enrollment did obtain more housing services than normal. However, the increases are well below the increases in expenditures (as shown in Table 3-13). The more complex analysis in Chapter 6 for Phoenix gives slightly larger estimates: 20.2 percent (with a standard error of 7.2) for Minimum Rent Low and 26.0 percent (with a standard error of 7.3) for Minimum Rent High (from Table 6-3), but still well below the estimated increase in expenditures.

The hedonic index was also used in Chapter 6 to investigate whether Minimum Rent households tended to pay more than the average market rent for their unit. The analysis indicates that overpayment did occur and is particularly pronounced for households that met requirements only after enrollment.

3.4 SUMMARY

The overview of Minimum Standards and Minimum Rent housing allowances presented in Chapters 2 and 3 shows similar patterns for all three requirements. Additional households that did not meet their requirement at enrollment were induced to meet each requirement. However, a substantial proportion of two-year recipients already met the requirements at enrollment and even more would normally have done so during the two years of the experiment. Only among Phoenix Minimum Rent High recipients does it appear that as many as half of those recipients met their requirements because of the allowance offer.

Increases in housing expenditures above normal levels were modest for households that already met their requirements. Households that only met requirements after enrollment generally show larger increases. However, only Minimum Rent High households that met requirements after enrollment and similar Minimum Rent Low households in Pittsburgh devoted as much as half of the allowance payment to increased housing expenditures. Because of this, all groups of households registered substantial reductions in rent burden.

Expenditure increases were generally larger for Minimum Rent households, and especially for Minimum Rent High households, than for Minimum Standards.

Table 3-20

HOUSING SERVICES CHANGE FOR MINIMUM RENT HOUSEHOLDS
THAT DID NOT MEET MINIMUM RENT REQUIREMENTS AT ENROLLMENT
BUT MET AT TWO YEARS AFTER ENROLLMENT

	PERCENTAGE CHANGE IN HOUSING SERVICES		NET INDUCED EFFECT ^a	SAMPLE SIZE
	Actual	Normal		
PITTSBURGH				
Minimum Rent Low	11%	10%	1%	(21)
Minimum Rent High	13	11	2	(24)
PHOENIX				
Minimum Rent Low	41	22	16	(20)
Minimum Rent High	41	23	15	(24)

SAMPLE: Minimum Rent households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: The formula used for computing the normal rent change is:

$$\frac{P_c \Delta Q_M^C + (P_e - P_c) \Delta Q_{NM}^C}{P_e} = \frac{P_c}{P_e} \Delta Q_M^C + \left(1 - \frac{P_c}{P_e}\right) \Delta Q_{NM}^C$$

where P_c = the proportion of Control households that did not meet requirements at enrollment that met requirements at two years

P_e = the proportion of Minimum Rent households that did not meet requirements at enrollment that met requirements at two years

ΔQ_M^C = the percentage housing services change for Control households that met requirements only after enrollment

ΔQ_{NM}^C = the percentage housing services change for Control households that did not meet requirements at enrollment.

The proportion (P_c/P_e) is interpreted as the normal probability of Housing Gap households that did not meet requirements at enrollment meeting them at two years. From Tables 3-3, 3-4, 3-18, 3-19, V-11, and V-12, the following values are used:

	Pittsburgh		Phoenix	
	Minimum Rent Low	Minimum Rent High	Minimum Rent Low	Minimum Rent High
P_c	0.341	0.176	0.128	0.081
P_e	0.681	0.280	0.685	0.335
ΔQ_M^C	17%	15%	59%	47%
ΔQ_{NM}^C	2%	4%	14%	15%

a. Percent above normal services, computed as the ratio of actual services at two years, Q_A , over enrollment services, Q_0 (the first column plus one) to normal services at two years, Q_N , over enrollment services (the second column plus one), minus one: $\frac{(Q_A/Q_0)}{(Q_N/Q_0)} - 1$.

On the other hand, the Minimum Rent requirements had a much smaller impact than did Minimum Standards in terms of moving households out of poor housing as measured either by the Minimum Standards or Budding's measure of physical housing adequacy. (Minimum Rent plans were successful in significantly reducing the probability that a Phoenix Minimum Rent household would be living in clearly inadequate housing at two years.) Minimum Rent does not seem to provide a good proxy for any of a wide range of possible housing standards. A substantial proportion of Minimum Rent households that meet Minimum Rent requirements will fail a housing standard, and the requirement itself produces little or no increase in the proportion of households meeting most of the physical standards examined.

With the exception of Pittsburgh Minimum Standards households, real changes in housing services were smaller than expenditure changes. It appears that the allowance offers generally led households to shop for housing less effectively than they normally would.

These findings rest very much upon the comparisons between Housing Gap and Control households. Housing Gap households generally show substantial increases in both housing expenditures and housing services. It is only the information from Control households that allows the analysis to distinguish normal and program-induced changes. The simple tabular comparisons reported in Chapters 2 and 3 do not, however, take full advantage of the available data. The rest of this report presents a more complex but theoretically more accurate analysis of changes in housing expenditures and housing services.

REFERENCES

Budding, David W., Housing Deprivation Among Enrollees in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., November 1978 (revised June 1980).

CHAPTER 4
SPECIFICATIONS OF EXPERIMENTAL EFFECTS

This chapter presents the methodology used to estimate experimental effects on housing consumption. The specification of experimental effects is discussed in terms of housing expenditures. However, the same methodology can be applied to other measures of interest, such as housing services.

The effect of the Housing Gap plans on housing expenditures is defined as the difference between Housing Gap households' actual housing expenditures and what they normally would have spent on housing in the absence of the experimental program. While actual housing expenditures are known from observation, the amounts households would have spent must be estimated.

The mean changes in housing expenditures (and in housing services) of Control households were used in Chapters 2 and 3 to estimate the changes that Housing Gap households would have experienced in the absence of the program. This simple estimate will have a relatively large error of estimate if other factors (such as demographic characteristics) also affect response and may be biased if Control and Housing Gap households differ with respect to such factors.

This chapter describes a method for obtaining accurate prediction of the housing expenditures and services that Housing Gap households would have incurred at two years after enrollment in the absence of the experimental program. This prediction is based on housing expenditure functions whose parameters have been estimated using the sample of Control households. First the basic model of household behavior underlying household response to the allowance payment is described in Section 4.1. Section 4.2 then describes the methodology used to estimate experimental effects. Section 4.3 discusses the corrections to be made for possible bias due to sample selection. Finally Section 4.4 describes the estimates of normal rent and housing services.

4.1 A MODEL OF HOUSEHOLD BEHAVIOR

This section provides a theoretical model of household response to a housing allowance offer. As discussed in Chapters 2 and 3, the conditional nature

of the offer has a profound effect on household response. Allowance payments were made only if the household occupied housing that met the program housing requirements. Household response to such payments can be analyzed using standard consumer theory. Assume that households normally consume the quantity of housing services (H) and nonhousing goods (Z) that maximize household utility $U(H)$, subject to the budget constraint

$$(1) \quad Y = p_H H + p_Z Z$$

where

Y = household income
 p_H = the price of housing (thus $p_H H$ = rent), and
 p_Z = the price of nonhousing goods.

Figure 4-1 represents this diagrammatically with the hypothetical household choosing to consume housing of H_0 and nonhousing goods of Z_0 (where $Z_0 = (Y_0 - p_H H_0)/p_Z$ from the budget constraint). Receipt of an unconstrained allowance payment (P) would move the budget line outward, inducing the household to consume more housing (H_1). However, a Housing Gap housing allowance is received only if the household's housing consumption is greater than some minimum (H_{min}).

The response to the allowance offer depends on the relationship among H_{min} and H_0 and H_1 . Three cases are illustrated. In Figure 4-1(a), initial consumption exceeds H_{min} and the household automatically receives the allowance payment. These households can treat the payment simply as additional income. Because the income elasticity of demand is fairly low,¹ not much response in terms of additional housing expenditure can be expected. The change is indicated as the move from H_0 to H_1 .

Figure 4-1(b) illustrates a second case. This household would not normally meet the housing requirement (H_{min}). If it were to receive the allowance payment, however, the income-induced increase in housing would be sufficient for the household to meet the requirement. Such households, like those in Figure 4-1(a), are in effect unconstrained by the requirement and are free to treat the payment as additional income.

¹Friedman and Weinberg (1978) estimate that the income elasticity of households eligible to receive housing allowances is 0.36.

The final case is illustrated by Figure 4-1(c). Households whose housing consumption would be less than H_{\min} even with the allowance payment are constrained to allocate more of the allowance payment to housing than they normally would. Because they are required to make a nonoptimal allocation, their benefits from the program are lower than their benefits under an unconstrained allowance offer. Nevertheless, as long as their utility with the allowance payment and the nonoptimal housing is larger than their utility without the allowance, they should choose to participate in the program. That is, the household should in theory participate as long as

$$(2) \quad U(H_{\min}, Y_0 + P - p_H H_{\min}) \geq U(H_0, Y_0 - p_H H_0)$$

where

P = the allowance payment.

For some households, however, the payment will not be large enough to compensate for their nonoptimal allocation. Such households should not in theory participate in the program.¹ The households that do participate will have the largest increase in housing in response to the program when they fall into case (c). Under case (c), households must increase their expenditures by more than they would in response to the additional income from the allowance alone (and hence by more than they would if they were effectively unconstrained as in cases (a) and (b)).

The average change in housing for the overall sample of Housing Gap households thus depends in theory on the size of the allowance payment, the housing requirements level, and on the proportions of participating households that fall into cases (a), (b), and (c). Two factors in particular complicate this simple model. First, H_{\min} is not well defined for either the Minimum Standards or the Minimum Rent requirement. The natural definition of H_{\min} for Minimum Rent households is R_{\min}/p_H , where R_{\min} is the Minimum Rent required and p_H is the price of housing.² If, however, as discussed in

¹See Kennedy and MacMillan (1979) for a more complete discussion of the participation decision.

²The price of housing, p_H , in this case, can be defined with respect to the composite housing bundle, H . This definition is theoretically correct since a Minimum Rent requirement allows households to choose any housing bundle that has an overall rental value greater than R_{\min} .

Figure 4-1
 ALLOCATION OF THE ALLOWANCE PAYMENT TO HOUSING

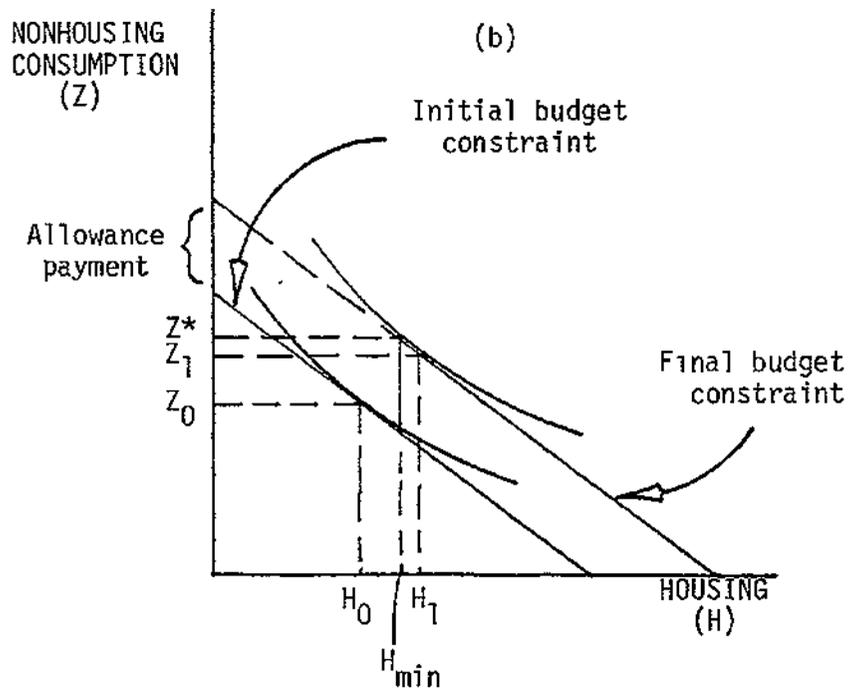
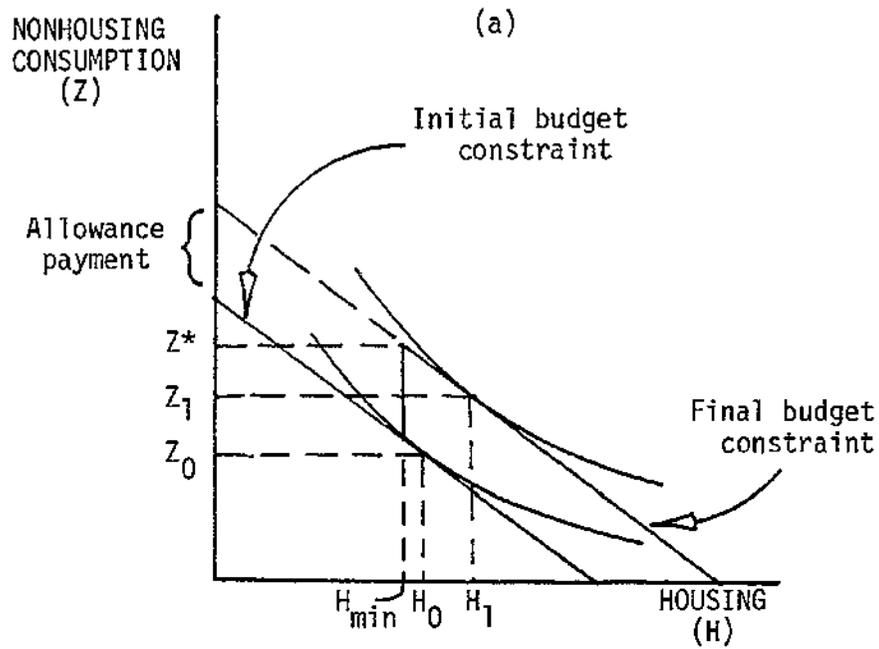
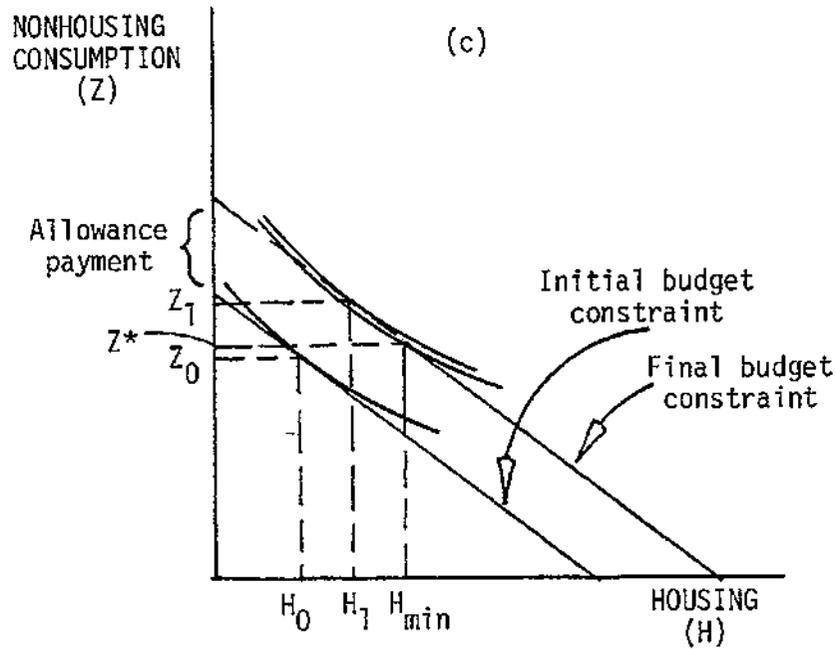


Figure 4-1 (continued)



NOTE: The size of the allowance payment relative to income is exaggerated to improve clarity.

- KEY:
- H_{min} = minimum housing requirement
 - H_0 = initial housing consumption
 - H_1 = hypothetical post-subsidy housing consumption
 - Z^* = consumption of nonhousing goods and services associated with consumption of H_{min}
 - Z_0 = initial consumption of nonhousing goods and services
 - Z_1 = hypothetical consumption of nonhousing goods and services associated with consumption of H_1

Chapter 2, the amount that households pay for a given type of unit varies, then the H_{\min} implied by R_{\min} will also vary. In this case, expenditure changes may not match real changes in housing. On the other hand, the Minimum Standards requirement merely requires certain dwelling unit features. While units that meet the Minimum Standards do on average rent for more than those which do not, it is possible for a household to meet the Minimum Standards after enrollment while reducing its housing.

Second, the simple model posed above essentially assumes that all households have the same tastes (i.e., the same utility function). It is at least conceivable, for example, that the households that in fact were induced to meet the requirements (case (c)), while spending more than they would have given an unconstrained allowance payment, still have lower income elasticities than the households that actually met normally, so that the actual response of households in case (c) could be lower than the response of households in case (a).

In short, though the actual experimental response may be compared with predictions based on simple models, it must be determined empirically, as discussed in the following section.

4.2 DEVELOPMENT OF THE METHODOLOGY

Experimental effects are measured in this report under the assumption that the actual housing expenditures of Housing Gap households at two years after enrollment, R , can be separated into two parts--the normal housing expenditures that would have been made in the absence of the experiment, R_N , and an additional amount that is induced by the experiment, R_X . Thus

$$(3) \quad R = R_N + R_X$$

where

R = actual expenditures two years after enrollment
 R_N = normal expenditures two years after enrollment, and
 R_X = the experimental effect on expenditures.

The experimental effect can be measured either as the difference between actual and normal expenditures, or, as their ratio:

$$(4) \quad \frac{R}{R_N} = \frac{R_N + R_X}{R_N} = 1 + \frac{R_X}{R_N} .$$

Because log-linear functions proved useful in analyzing housing demand in response to experimental rent rebates for households enrolled in the Percent of Rent plans of the Demand Experiment (see Friedman and Weinberg, 1978), and for convenience, throughout this chapter the experimental effect is measured in terms of the ratio of actual to normal expenditures.

Experimental effects are estimated under the assumption that the ratio of actual to normal housing expenditures is functionally related to experimental variables and a random error, specifically

$$(5) \quad \frac{R}{R_N} = \exp(X\beta + e),$$

or

$$(6) \quad \ln(R/R_N) = \ln(R) - \ln(R_N) = X\beta + e$$

where

X = a vector of experimental variables

β = a vector of experimental effects, and

e = a random error term distributed $N(0, \sigma_e^2)$.

The coefficients β of Equation (6) may be interpreted as the percentage change in rent associated with a change in the relevant variable, X .¹

As described in Section 4.1, the expected change in expenditures depends on the normal response of households to an allowance payment, the proportion of households induced to meet the requirements, and the response of the households that were induced to meet the requirements. The contribution of these three factors to the overall experimental effect can be simulated using the results of Chapters 2 and 3.

For households that would normally have met the requirements (those in cases (a) and (b) in Figure 4-1), the effect of receiving an allowance

¹Note that

$$\frac{\partial [\ln(R/R_N)]}{\partial X_1} = \frac{\partial (R/R_N)}{\partial X_1} \frac{1}{(R/R_N)} = \beta_1 .$$

Thus, β_1 measures the proportional change in (R/R_N) in response to a unit change in X_1 .

payment can be approximated using the income elasticity of demand. For these households the change in log rent should be

$$(7) \quad \widehat{\Delta \ln(R)} = \hat{\gamma} \ln(Y + P) - \hat{\gamma} \ln(Y)$$

where

$$\begin{aligned} \widehat{\Delta \ln(R)} &= \text{the change in log rent} \\ P &= \text{the allowance payment} \\ Y &= \text{household income, and} \\ \hat{\gamma} &= \text{the estimated income elasticity.}^1 \end{aligned}$$

The response of participating households that were effectively constrained by the requirements (case (c)), might be approximated by²

$$(8) \quad \widehat{\Delta \ln(R)} = E(\ln(R) | M) - E(\ln(R) | \bar{M})$$

where

M = Housing Gap households meeting the requirements at two years, and

\bar{M} = Housing Gap households not meeting the requirements at two years.

Chapters 2 and 3 suggested that almost all households that met requirements at enrollment were in effect unconstrained. Thus, for these households, expected expenditure changes would be simulated by Equation (7). On the other hand, households that met requirements after enrollment included both those that would have met requirements normally and those that were induced to meet the requirements by the allowance offer.

¹The estimated income elasticity can be used only if all households adjust to the allowance. Typically, however, only movers adjust their housing consumption to changed circumstances (see Friedman and Weinberg, 1978). The expected response is thus modified by expected mobility. As an example, take an income elasticity for movers of 0.4, assume no response to the income change on the part of nonmovers, and a mobility rate of 50 percent. The overall population response to a 10 percent increase in income would be a 2 percent increase in expenditures, not the 4 percent expected if everyone moved. Thus, the income elasticity used in Equation (7) to determine the population response is adjusted for mobility. The role of mobility in determining household response is investigated further in Chapter 7.

²This approximation assumes that participating households that were effectively constrained by the requirements were on average induced to change their expenditures from the average for nonmeeters to the average for meeters. This assumption is likely to result in an overestimate of $\Delta \ln(R)$ for two reasons: (1) households induced to meet requirements are likely to have been closer to meeting than average, and (2) households induced to meet are likely to spend as little extra on rent as possible in order to meet the requirements.

Households that did not meet the requirements at enrollment but would normally have met them with the additional income from the allowance (Figure 4-1 (b)) should also respond according to Equation (7). Households that were induced to meet requirements (that is, those effectively constrained by the requirements--Figure 4-1(c)) should respond according to Equation (8).¹ The proportion of households in the first group was estimated by (π_C/π_E) where π_C and π_E are the proportions of Control and Experimental households that met the requirements only after enrollment. Therefore, the experimental response for households not meeting the requirements at enrollment is given by the weighted average of Equations (7) and (8):

$$(9) \quad \hat{r}_X = \frac{\pi_C}{\pi_E} [\hat{\gamma} \ln(Y + P) - \hat{\gamma} \ln(Y)] + \frac{(\pi_E - \pi_C)}{\pi_E} [E(r|M) - E(r|\bar{M})]$$

where

$$\hat{r}_X = \widehat{\ln(R/R_N)}$$

$$r = \ln(R)$$

π_C = the proportion of Control households that met the requirements at two years, and

π_E = the proportion of Experimental households that met the requirements at two years.

The experimental effect on rent for the entire sample of Housing Gap recipients is given by

$$(10) \quad \widehat{E(r_X)} = \frac{N_1}{N} [\hat{\gamma} \ln(Y + P) - \hat{\gamma} \ln(Y)]$$

$$+ \frac{N_2}{N} \left\{ \frac{\pi_C}{\pi_E} [\hat{\gamma} \ln(Y + P) - \hat{\gamma} \ln(Y)] \right.$$

$$\left. + \frac{(\pi_E - \pi_C)}{\pi_E} [E(r|M) - E(r|\bar{M})] \right\}$$

where

N_1 = the number of two-year recipients that met requirements at enrollment

¹It is possible that Minimum Standards households induced to meet would respond only by increasing their expenditures according to Equation (7). Depending on the ability of households to find relatively inexpensive units that met the Minimum Standards requirement, the simulation of the rent changes to be presented is an overestimate.

N_2 = the number of two-year recipients that met requirements only after enrollment, and

$N = N_1 + N_2$, the number of two-year recipients.

The total experimental effect is thus computed as the weighted average of the effects on those meeting and not meeting their requirements at enrollment.

Table 4-1 presents the experimental effects simulated in this manner for households that met requirements at enrollment, households that met requirements only after enrollment, and the overall sample.

This table predicts a rather sizeable increase in expenditures above normal for those induced to meet the requirements after enrollment. When weighted by the actual proportions that met, the predictions for all Minimum Standards households meeting requirements after enrollment are approximately the same in the two sites, with a much greater increase for Minimum Rent households that met requirements after enrollment in Phoenix than in Pittsburgh. For the overall sample of recipients, the predicted effect for Minimum Standards households is again approximately the same in the two sites--0.08 in Pittsburgh (about 8 percent increase in rent above normal) and 0.11 in Phoenix (about 12 percent above normal).¹ The predicted effect for Minimum Rent households is about the same as for Minimum Standards households in Pittsburgh but higher in Phoenix.

4.3 SPECIFICATION OF SELECTION BIAS

As discussed in Section 4.2, the overall experimental effect, r_x , is estimated as the mean of

$$(11) \quad \hat{r}_x = r - \hat{r}_N$$

where

r = actual log rent at two years, and

\hat{r}_N = estimated normal log rent at two years (using the Control sample).

Bias in the estimate of r_x may be introduced when households are selected for analysis based on whether they met their housing requirement at two

¹The percentage change is computed as $e^X - 1$ where X is the estimated effect. See Section 5.1 for details.

Table 4-1

SIMULATION OF EXPECTED EXPERIMENTAL EFFECTS

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT AND AT TWO YEARS	0.02	0.02	0.02	0.03	0.04	0.04
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Change for households that would normally have met at two years	0.02	0.02	0.02	0.05	0.06	0.06
Change for households induced to meet at two years	0.19	0.46	0.41	0.27	0.47	0.51
Weighted change	0.13	0.17	0.14	0.15	0.34	0.34
ALL HOUSEHOLDS THAT MET AT TWO YEARS	0.08	0.06	0.07	0.11	0.16	0.23

SAMPLE: All Housing Gap households active and meeting requirements 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 and payments file.

NOTES: Income elasticity from Appendix Table VIII-1. Mean income and payment from Appendix Table VI-9. Proportions from Figures 2-1, 3-1, and 3-2. Effect for induced meeters estimated from the rent at two years for Housing Gap households stratified by their two-year status (see Appendix Tables V-1, V-2, and V-3.

years after enrollment.¹ In fact, the analysis in this report does make such a selection--it focuses on recipients of Housing Gap allowances, and households are classified as recipients only if their housing requirement was met at two years after enrollment.

Figure 4-2 illustrates one way in which bias may be introduced in analyzing recipients. The figure shows a hypothetical scatter diagram and regression of actual on predicted rent. In the population, the regression line has no intercept and a 45° slope. The prediction has an error with mean zero and some variance, hence the scatter of the points around the regression line.

In the Minimum Rent plans, recipient status depended on the actual rent level of the household--the recipient group consists of households with rents above the Minimum Rent line. Thus, the selection of households into the group of recipients may select households that are more likely to have positive differences between actual and predicted rent and omit households that are more likely to have negative differences. The observed mean differences for the group of recipients is therefore likely to be positive even if there were no true effect.

An alternate way of looking at the effect of selection is presented in Figure 4-3. The normal curve represents the distribution of residuals (actual minus predicted rent) and has a mean of zero. If households that did not meet the Minimum Rent requirements have residuals less than α and are therefore removed from the sample, the mean of the remaining households increases to μ . Interpreting the mean μ as an effect of the allowance would be misleading.

The estimated experimental effect, \hat{r}_X , is thus related to the true experimental effect, r_X , as

¹Bias may also be introduced as a result of differential program understanding. Households not meeting requirements in their enrollment units may have responded differently if they did not understand what they needed to do in order to receive a full payment than they would have if they had understood. Valid questions about their understanding were asked only on the Second and Third Periodic Interviews (at one and two years after enrollment). Responses to these questions cannot unambiguously be classified as right or wrong answers--the best classification is fivefold: clearly right, probably right, wrong, more information required, and don't know. Moreover, since a household's understanding at enrollment is not known, only responses of those households not meeting requirements in their one-year units could be examined. Too few of these households are available for a meaningful analysis.

Figure 4-2
THE EFFECT OF SELECTION ON
REGRESSION PARAMETERS

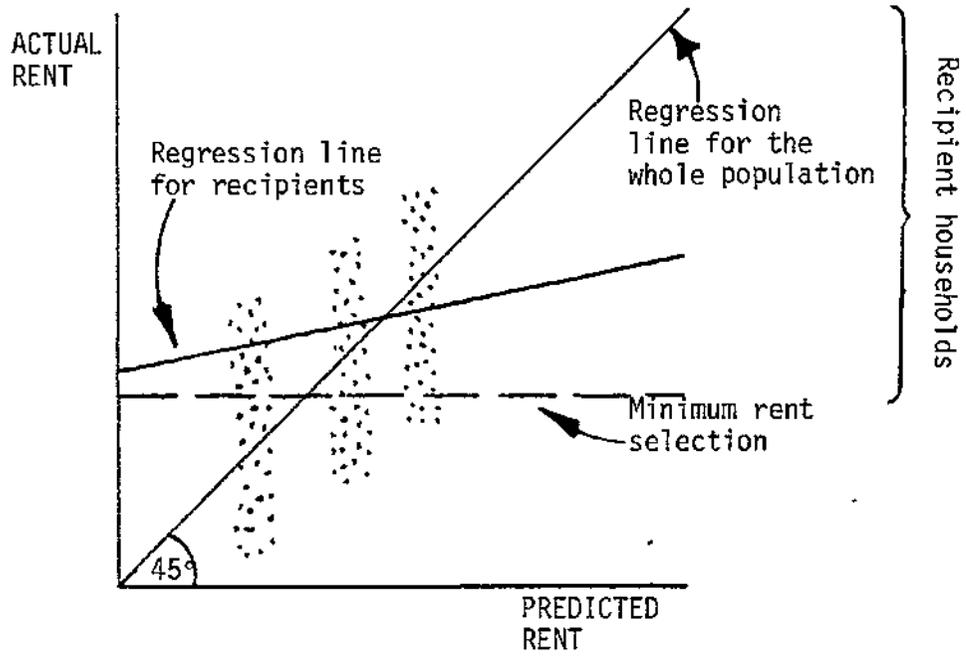
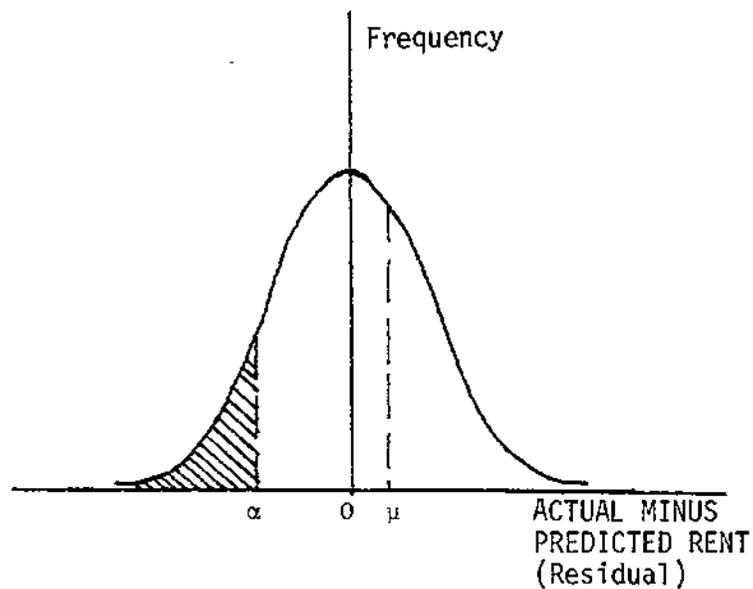


Figure 4-3
THE EFFECT OF SELECTION ON
THE DISTRIBUTION OF RESIDUALS



$$(12) \quad \hat{r}_x = r_x + \delta ,$$

where

δ = the expected value of normal residuals for selected households (the selection bias).

Estimation of the bias rests on the assumption that for the entire population (that is, when no subsample of households is selected), the expected value of the bias is zero:

$$(13) \quad E(\varepsilon) = \frac{N_P}{N} E(\varepsilon|P) + \frac{N_{\bar{P}}}{N} E(\varepsilon|\bar{P}) + \frac{N_D}{N} E(\varepsilon|D) = 0,$$

or

$$(14) \quad E(\varepsilon|P) = - \frac{N_{\bar{P}}}{N_P} E(\varepsilon|\bar{P}) - \frac{N_D}{N_P} E(\varepsilon|D)$$

where the entire sample of enrolled households, for which $E(\varepsilon) = 0$, is divided into three groups: participating households (P), households remaining in the sample but not participating (\bar{P}), and households that dropped out of the experiment before the end of two years (D) and where

N = total number of enrolled households

N_P = total number of participating households

$N_{\bar{P}}$ = total number of nonparticipating households

N_D = total number of households that dropped out of the experiment, and

$E(\varepsilon|D)$ = the expected value of the residual for households that dropped out of the experiment.

Under the assumption that $E(\varepsilon|D) = 0^1$, the bias δ (equal to $E(\varepsilon|P)$) can be determined from

$$(15) \quad \delta = - \frac{N_{\bar{P}}}{N_P} E(\varepsilon|\bar{P}).$$

¹This assumption is borne out by the data (see Appendix Table VI-14). Further, Hausman and Wise (1977b) found that their estimate of experimental effects in the New Jersey Graduated Work Incentive Experiment were unaffected by attrition, when demographic covariates were included in the model.

Two alternative methods for computing $E(\epsilon|\bar{P})$ have been developed, each dependent on a different assumption.¹

Method I: No Effect for Nonrecipient Households

The first method assumes that the experiment had no effect on the housing consumption of nonrecipient households in sample \bar{P} (households enrolled in Housing Gap plans that did not receive allowance payments because their units did not meet the housing requirement of their particular plans). If the mean experimental effect for the group of nonrecipient households is assumed to be zero, any estimated experimental effect for this group must be entirely due to bias, $E(\epsilon|\bar{P})$.

An objection can be raised to the assumption that the experiment did not affect the housing consumption of nonrecipient households. Some households in this group may have attempted to obtain a unit meeting their particular housing requirements to receive allowance payments but were somehow unsuccessful in that attempt. If this were true, the true experimental effect for this group would be greater than zero, and therefore the mean of the estimated experimental effect would overestimate $E(\epsilon|\bar{P})$. An overestimate of $E(\epsilon|\bar{P})$ would lead to an underestimate of the true experimental effect on recipients.

Method II: Comparable Control Households

The second method assumes that Control households (rather than Housing Gap households) whose units did not meet the housing requirements at two years provide a better estimate of $E(\epsilon|\bar{P})$, because the experiment could not have affected their behavior.

¹Hausman and Wise (1977a) propose a maximum likelihood procedure that deals with situations in which only the part of the sample that meets the selection criterion is observed. In the Demand Experiment, their method was used in the analysis of income reporting and verification (see Hoaglin and Joseph, 1978, Appendix VII). A variation of this technique is used by Kennedy (1978) for Demand Experiment data to test for bias due to sample attrition. The procedure developed here rests on the fact that data on the expenditures of nonparticipants is also available.

The implicit assumption made in using Control households not meeting the requirements at two years to estimate $E(\epsilon|\bar{P})$ is equivalent to an assumption that the Experimental households that were induced to meet the requirements were drawn at random from among households that would normally not meet (that is, without regard to their normal expenditure levels). An objection against this method may be raised if the Housing Gap households that became recipients after enrollment were precisely those that were closest to meeting the requirements at enrollment. Comparison of $E(\epsilon|\bar{P})$ for Experimental and Control households suggests that this assumption is reasonable, though. Both methods of estimating the bias clearly have drawbacks. The method of using comparable Control households is used in the rest of the report to estimate the bias and to correct the figures reported in the text. Estimates based on the assumption of no effect for nonparticipating households are reported in Appendix IX.¹

4.4 ESTIMATION OF NORMAL RENT

Since the log of normal rent, $\ln(R_N)$, is not observed for recipients, it must be estimated. The procedure used in estimation is described below.

Assume that the log of normal housing expenditures for Control households at time "t" is given by

$$(16) \quad r_t = \ln(R_t) = \alpha_t + \beta_t \ln(Y_t) + \gamma_t D_t + e_t$$

where

Y = income

D = a vector of household demographic characteristics, and

¹There is little evidence that one method is preferable to the other. The mean rent and housing service levels at enrollment of Housing Gap households that did not meet their requirements at enrollment or at two years are generally lower than the rents of comparable Control households, yet they often show somewhat larger percentage changes in housing consumption (see Appendix V). The first fact tends to indicate that the Housing Gap households that were induced to meet were those closest to meeting. The second fact tends to show that there may have been some marginal effect of the allowance offer on nonparticipant households.

In any event, the two methods give much the same result for estimates of expenditure change. The use of nonparticipants gives slightly lower estimates of housing services changes (see Appendix IX).

$e =$ a stochastic residual.¹

Given the specification of Equation (16) and the fact that observations on each household "1" are available for two time periods, $t=0$ (enrollment) and $t=1$ (two years), a critical issue in estimating the parameters of the equation is the assumptions about the nature of the stochastic residual, e_t^1 . If e_0^1 and e_1^1 are serially correlated, as is likely, then the Ordinary Least Squares (OLS) estimation of this equation, which ignores this possibility, would be inefficient. An asymptotically more efficient estimation technique, Seemingly Unrelated Regressions (SUR), developed by Zellner (1962), is used here.

Using the SUR procedure, Equation (16) is estimated separately for the two time periods using OLS; then $\hat{\rho}$, the correlation between the estimated errors, \hat{e}_0^1 and \hat{e}_1^1 is computed, which is an unbiased estimate of the serial correlation coefficient, ρ . Finally, the estimated $\hat{\rho}$ is used to transform the independent and dependent variables in Equation (16) to provide Generalized Least Squares (GLS) estimates of the parameters.²

Once the parameters of Equation (16) and the serial correlation and coefficient, ρ , are estimated, the asymptotically best linear unbiased predictor³ of r_1^1

¹Following Friedman and Weinberg (1978), the demographic variables (D) are minority status and household composition. Minority status indicates whether the head of the household is a member of a minority group (black in Pittsburgh, black or Spanish American in Phoenix). Household composition indicates whether the household consists only of a single person (restricted by program rules almost exclusively to elderly persons); is a single head of household (with children or other family members present); or is a couple (with or without children).

²A prerequisite for efficiency gains in estimation using SUR is that the values of the explanatory variables in the two equations vary from one period to the next. If there is no temporal variation, then the OLS and SUR coefficient estimates will be identical. In fact, there was only small temporal variation in the independent variables used here. Many of the household demographic characteristics did not change between enrollment and two years. Further, there was a high correlation between enrollment and two-year income. Since the goal is to obtain good predictive equations, if there is any temporal variation in the demographic variables, relationships estimated using SUR have superior predictive power, since they use the estimated serial correlation for prediction. Additional independent variables describing initial housing conditions were valuable in further improving the predictive power of the regression beyond that provided by serial correlation alone.

³See, for example, Pindyck and Rubinfeld (1976), pp. 170-173.

(the natural logarithm of the rental expenditures at two years) for a household "1," given rental expenditures at enrollment and income (both at enrollment and at two years) is provided by the following equation, which takes account of serial correlation:

$$(17) \quad \hat{r}_1^i = \hat{\alpha}_1 + \hat{\beta}_1 \ln(y_1^i) + \gamma_1 D_1^i + \hat{\rho} \hat{e}_0^i .$$

Since \hat{e}_0^i is the difference between the predicted and actual values at enrollment ($t=0$), Equation (17) may be rewritten as

$$(18) \quad \hat{r}_1^i = \hat{a}_1 - \hat{\rho} \hat{\alpha}_0 + \hat{\beta}_1 \ln(y_1^i) - \hat{\rho} \hat{\beta}_0 \ln(y_0^i) + \hat{\gamma}_1 D_1^i \\ - \hat{\rho} \hat{\gamma}_0 D_0^i + \hat{\rho} x_0^i .$$

To improve the predictive ability for the analysis of movers and nonmovers in Chapter 7, the rent prediction model (Equation (18)) was estimated both for all Control households and separately for Control movers and nonmovers. Also included in the model were dummy variables that indicated whether the household met each of the three housing requirements (Minimum Standards, Minimum Rent Low, and Minimum Rent High) at enrollment. These dummy variables effectively ensure, for Control households, that the expected value of the difference between actual and predicted log rent will be zero for subsamples selected on the basis of enrollment housing requirement status. Finally, because the analysis of Chapters 2 and 3 showed marked site differences, separate equations were estimated for each site.¹

The estimated equations are presented in Appendix IX. Three statistics can be used to evaluate the predictive ability of the models. The first statistic, ρ , is the correlation coefficient between actual and predicted log rent.² The second statistic is the Percentage Root Mean Square error (PRMS) and is defined as³

¹The analysis of the Percent of Rent experiment showed that a pooled site equation could be used to predict housing expenditures but not housing services (see Friedman and Weinberg, 1978).

²Equivalent statistics are defined for the logarithm of housing services.

³See Pindyck and Rubinfeld (1976), p. 316.

$$(19) \quad PRMS = \frac{1}{N} \sqrt{\sum_{i=1}^N \left[\frac{r_i - \hat{r}_i}{r_i} \right]^2}$$

where

\hat{r}_i = predicted log rent at two years
 r_i = actual log rent at two years, and
 N = number of households.

This statistic measures the deviation of predicted log rent from actual log rent in percentage terms. The third statistic is the standard error of estimate.¹ Tables 4-2 and 4-3 present the three statistics, computed both for the normal rent equations and the normal housing services equations. All three statistics indicate reasonably good predictive ability, with the correlation lowest for movers and highest for nonmovers.²

¹Recall that the dependent variable is in logarithmic terms. Mean log rent for all households is 4.84 in Pittsburgh and 4.89 in Phoenix. Mean log housing services for all households is 4.74 in Pittsburgh and 4.90 in Phoenix.

²Comparison with the demand function estimated for Percent of Rent and Control households in Friedman and Weinberg (1978) is difficult because of the different specification of the functions. The income elasticity and the other demographic coefficients do not appear to be significantly different.

Table 4-2

STATISTICS FOR THE EVALUATION OF THE
HOUSING EXPENDITURES PREDICTING EQUATIONS

HOUSEHOLD GROUP	PITTSBURGH				PHOENIX			
	$\rho_{r\hat{r}}^a$	PMRS ^b	STANDARD ERROR OF ESTIMATE	SAMPLE SIZE	$\rho_{r\hat{r}}^a$	PMRS ^b	STANDARD ERROR OF ESTIMATE	SAMPLE SIZE
ALL HOUSEHOLDS	0.77	0.25%	0.20	(289)	0.77	0.35%	0.26	(256)
Did not meet requirements at enrollment	0.75	0.35	0.22	(190)	0.70	0.46	0.29	(182)
Met requirements at enrollment	0.75	0.37	0.18	(99)	0.82	0.42	0.18	(74)
ALL MOVERS	0.63	0.52	0.24	(94)	0.66	0.53	0.28	(126)
Did not meet requirements at enrollment	0.62	0.65	0.25	(62)	0.57	0.72	0.32	(88)
Met requirements at enrollment	0.64	0.83	0.23	(32)	0.69	0.61	0.20	(38)
ALL STAYERS	0.89	0.22	0.15	(195)	0.92	0.32	0.16	(130)
Did not meet requirements at enrollment	0.87	0.30	0.16	(128)	0.90	0.39	0.17	(94)
Met requirements at enrollment	0.88	0.32	0.13	(67)	0.92	0.46	0.14	(36)

SAMPLE: 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, Housing Evaluation Forms, and payments file.

NOTE: Control households were randomly assigned housing requirements to determine enrollment status.

a. $\rho_{r\hat{r}}^a$ is the correlation between actual log rent (r) and predicted log rent (\hat{r}).

b. $PMRS = \frac{1}{N} \sqrt{\sum \left[\frac{(r-\hat{r})^2}{r} \right]} \cdot 100 =$ percent root mean square error.

Table 4-3

STATISTICS FOR THE EVALUATION OF THE
HOUSING SERVICES PREDICTING EQUATIONS

HOUSEHOLD GROUP	PITTSBURGH				PHOENIX			
	$\rho_{r\hat{r}}^a$	PMRS ^b	STANDARD ERROR OF ESTIMATE	SAMPLE SIZE	$\rho_{r\hat{r}}^a$	PMRS ^b	STANDARD ERROR OF ESTIMATE	SAMPLE SIZE
ALL HOUSEHOLDS	0.77	0.21%	0.16	(254)	0.75	0.28%	0.21	(230)
Did not meet requirements at enrollment	0.72	0.29	0.17	(166)	0.69	0.35	0.23	(171)
Met requirements at enrollment	0.82	0.29	0.13	(88)	0.79	0.37	0.15	(59)
ALL MOVERS	0.68	0.45	0.20	(83)	0.67	0.43	0.22	(108)
Did not meet requirements at enrollment	0.63	0.62	0.22	(54)	0.63	0.53	0.23	(82)
Met requirements at enrollment	0.77	0.61	0.16	(29)	0.62	0.68	0.19	(26)
ALL STAYERS	0.92	0.15	0.09	(171)	0.96	0.16	0.08	(122)
Did not meet requirements at enrollment	0.92	0.18	0.09	(112)	0.95	0.21	0.09	(89)
Met requirements at enrollment	0.89	0.26	0.10	(59)	0.97	0.17	0.06	(33)

SAMPLE: 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, Housing Evaluation Forms, and payments file.

NOTE: Control households were randomly assigned housing requirements to determine enrollment status.

a. $\rho_{r\hat{r}}$ is the correlation between actual log rent (r) and predicted log rent (\hat{r}).

b. $PMRS = \frac{1}{N} \sqrt{\sum \left[\frac{(r-\hat{r})}{r} \right]^2} \cdot 100 \equiv$ percent root mean square error.

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CHAPTER 5
THE EFFECT OF A HOUSING GAP
HOUSING ALLOWANCE ON RENTAL EXPENDITURES

This chapter presents estimates of the effect of a Housing Gap housing allowance on rental expenditures using the technique developed in Chapter 4. As discussed in Chapter 4, the experimental effect is measured as the percent change in housing expenditures above normal rent at two years. For example, if the estimated experimental effect is 5 percent, two-year rent R will be 5 percent larger than it would normally be: $R = 1.05R_N$, where R_N is two-year normal rent. The effects therefore reflect the generally higher normal housing expenditures at the end of the experiment rather than the smaller enrollment expenditures.

Section 5.1 discusses the effects of the Minimum Standards plan and Section 5.2 the effects of the Minimum Rent plans. Experimental effects for different demographic groups are examined in Section 5.3. Finally, Section 5.4 summarizes the results, presents comparisons with the predictions made in Section 4.2, and examines the proportion of the allowance payment spent on increases in rent above normal.

5.1 RENT CHANGES INDUCED BY THE MINIMUM STANDARDS PLANS

Overall Results

Section 4.3 indicated the possibility that the estimated experimental effect for Housing Gap households may be biased by selecting only recipients for analysis. However, for Minimum Standards households, the estimated selection bias, using either of the methods presented in Chapter 4, is statistically insignificant and close to zero.¹ Once household characteristics and the initial condition of the household's housing unit are taken into consideration in the prediction of normal rent, a correction for selection bias is unnecessary. Therefore, the effects of the Minimum Standards plans

¹Appendix Tables IX-9 and IX-16 present the unweighted estimated effect for nonrecipients. Since the bias is proportional to the estimated experimental effect used as the correction (the standard deviation of $C\chi$ is the C times the standard deviation of χ , where C is a constant), the significance of the bias is the same as the significance of the correction.

were computed as the mean of the difference between actual and predicted log rent.¹

The estimated effects on the expenditures of Minimum Standards households are presented in Table 5-1. The effect for all recipient households is statistically significant only in Phoenix, where the increase in expenditures was 16.2 percent above normal (the effect in Pittsburgh, 4.3 percent, is significant only at the 0.15 level).²

Separating the households according to their enrollment unit's status with respect to the Minimum Standards requirement confirms the findings of Chapter 2: while the allowance had little or no effect on households living in units that already met the requirements at enrollment, it did affect households whose units met the Minimum Standards only after enrollment. For the group that met Minimum Standards after enrollment, the median increase in rental expenditure was 7.5 percent above normal in Pittsburgh and 23.6 percent above normal in Phoenix, both statistically significant.³ (Separate examination of movers and nonmovers is presented in Chapter 7.)

There are at least three potential reasons for the large difference in the estimated effects between the two sites: different initial housing conditions in the two sites, differences in the way the payment was used in the two sites, or differences in the size of the allowance payment itself between the sites. The first reason seems to provide at least a partial explanation for the site differences. One measure of the amount that households not meeting requirements at enrollment had to pay to obtain standard units is the difference between the ratio of enrollment rent to C* for them compared

¹Corrections are necessary when effects for Minimum Rent households are discussed (see Section 5.2). The effects for Minimum Standards households as corrected for the estimated (insignificant) selection bias are presented in Appendix Tables IX-13 and IX-20.

²Since log rent is used, the estimated median percentage change above normal is computed from the actual effect $\hat{\beta}$ as $\exp(\hat{\beta}) - 1$ with standard error $\exp(\hat{\beta}) \cdot [\exp(2\hat{\sigma}^2) - \exp(\hat{\sigma}^2)]^{1/2}$ where $\hat{\sigma}$ is the estimated standard error of β (see, for example, Hastings and Peacock, 1975, p. 84). The estimated mean percentage change above normal would be computed as $\exp\{\hat{\beta} + (1/2)\hat{\sigma}^2\} - 1$. Friedman and Kennedy (1977), Appendix V, showed that the mean would differ from the median by at most one-half percentage point.

³Appendix XI presents an alternate approach to estimating the effect on Minimum Standards households meeting requirements after enrollment. The results reported there are similar to the results reported in this chapter.

Table 5-1

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS
THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MINIMUM STANDARDS HOUSEHOLDS	0.042 (0.026)	4.3% (2.7)	(84)	0.150** (0.034)	16.2% (3.9)	(90)
Did not meet requirements at enrollment	0.072* (0.036)	7.5 (3.9)	(47)	0.212** (0.044)	23.6 (5.4)	(63)
Met requirements at enrollment	0.010 (0.034)	1.1 (3.5)	(37)	-0.007 (0.038)	-0.7 (3.8)	(27)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTES: Effects are not corrected for (insignificant) selection bias. Standard error in parentheses.

* t-statistic of estimated effect significant at the 0.05 level.

** t-statistic of estimated effect significant at the 0.01 level.

to households actually meeting the standards. As Table 5-2 shows, this difference was larger in Phoenix than in Pittsburgh. This implies that Phoenix households needed to make larger changes in expenditures than did Pittsburgh households to obtain standard housing.

As shown in Chapter 2 (Table 2-2) approximately 68 percent of the Pittsburgh households and 54 percent of the Phoenix households that met the Minimum Standards only after enrollment would not have normally met the requirements. Most of these households had to spend more than they would have normally to meet the requirements. For households that did not meet the standard, if the differences between initial rent levels and the rent levels needed to pay for standard units were larger in Phoenix than in Pittsburgh, a larger response would be expected in Phoenix.¹

Another possible explanation for the site difference in behavior is that the allowance payment was viewed differently at the two sites. Since program participants knew that the allowance payment would last for only three years, it is possible that they viewed the allowance income differently from their other income. Evidence developed in Friedman and Weinberg (1978) suggests that the income elasticity of housing was the same at the two sites. However, if, for some reason, Pittsburgh recipients viewed the payments in a different way from Phoenix recipients, the response to the payment would be different, even though the income elasticity is not. To investigate this possibility the following relationship should be estimated:

$$(1) \quad \ln(R) = \alpha + \beta \ln(Y + \lambda P)$$

where

R = rent

Y = three-year average income

P = three-year average allowance payment

λ = discount factor

α = regression constant, and

β = income elasticity.

¹This difference reflects the difference in response for those induced to meet requirements predicted in Chapter 4 (cf Table 4-1).

Table 5-2

MEDIAN RATIO OF ENROLLMENT RENT TO C* FOR
HOUSEHOLDS THAT MET AND DID NOT MEET MINIMUM STANDARDS AT ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	MEDIAN RATIO	SAMPLE SIZE	MEDIAN RATIO	SAMPLE SIZE
Did not meet requirements at enrollment	0.91	(931)	0.82	(736)
Met requirements at enrollment	1.12	(261)	1.12	(441)

SAMPLE: All 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 and payments file.

Equation (1) can be approximated by¹

$$(2) \quad \ln(R) = \alpha + \beta \ln(Y) + \lambda \beta \left(\frac{P}{Y}\right).$$

If β differs significantly from $\lambda\beta$ and if λ is smaller than 1, one may conclude that payments were viewed at least in part as a temporary windfall which was not used for housing to the same extent that a permanent increase in income would have been.

Equation (2) was estimated for the sample of Control and Unconstrained households that moved during the experiment.² The estimates shown in Table 5-3 suggest that, at least for the Unconstrained plan in Phoenix, the payments were viewed no differently from other income. The large standard error on the estimate of $\lambda\beta$ in Pittsburgh precludes any strong conclusion there, though it seems likely that the payment is not viewed as permanent in Pittsburgh. Indeed, as discussed later in this chapter, the housing expenditure response of Unconstrained households is much smaller in Pittsburgh than in Phoenix.

While this site difference in the response of Unconstrained households is puzzling, it would provide some explanation for the site difference in response for Minimum Standards households.^{3,4}

¹This is from a Taylor series expansion of $\ln(Y + \lambda P)$ in the neighborhood of $\lambda = 0$, with second- and higher-order terms ignored.

²See Friedman and Weinberg (1978) for a discussion of the choice of movers.

³Of course, this explanation is valid only if Minimum Standards households treated the allowance similarly at each site to the Unconstrained households at that site.

⁴One explanation for such a difference between the sites could be found in the fact that the Phoenix housing market was apparently looser during the experimental period (with vacancy rates of 14.4 percent in Phoenix as compared with 5.1 percent in Pittsburgh (U.S. Department of Commerce, 1976)) and that Phoenix households were historically much more mobile than Pittsburgh households. Thus, the fact that allowance payments were only made for three years may have had less effect on housing response in Phoenix. Households there would find any readjustment of their housing at the end of three years easier to make both because they moved more readily and because the market offered easy access to units.

It should be noted, however, that no such site difference was found in the response of households to Percent of Rent allowances (Friedman and Weinberg, 1978), though that report focused on the behavior of movers alone.

Table 5-3

REGRESSION OF RENT ON AVERAGE INCOME AND THE ALLOWANCE PAYMENT
FOR UNCONSTRAINED AND CONTROL MOVERS

INDEPENDENT VARIABLES	PITTSBURGH	PHOENIX
Constant	3.468** (0.424)	2.834** (0.402)
Log(average income)	0.242** (0.068)	.0360** (0.066)
Ratio of average payment to average income	0.049 (0.357)	0.260** (0.090)
Implied λ	0.202	0.722
R^2	0.12	0.13
Sample size	(116)	(144)

SAMPLE: Unconstrained and Control movers 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 and payments file.

NOTE: Standard error in parentheses.

** Significant at the 0.01 level.

A third possible explanation for site differences is that the allowance payments were typically much larger in Phoenix than in Pittsburgh, as shown in Table 5-4. If allowance-induced rent changes were related to the size of the allowance, then the average response in Phoenix would be larger than the response in Pittsburgh. As shown in Table 5-4, households that only met requirements after enrollment had much higher payments than those that already met at enrollment in Phoenix but not in Pittsburgh. This larger payment may have been enough to induce some households to meet requirements in Phoenix by enabling households that had to spend more on average in order to meet requirements to do so. Indeed, as indicated in Chapter 2, the effect of the allowance in inducing households to meet Minimum Standards was larger in Phoenix. This assertion about the payment effect can, however, be tested; if the difference in response was caused by intersite variability in the amount of payment, then intrasite variability in payment is likely to be related to intrasite variability in response in the same way. This issue is examined next.

Effects of Variations in Payment Formula Parameters

Recall that households in the Housing Gap and the Unconstrained plans received allowance payments according to the payment formula:

$$(3) \quad P = aC^* - bY$$

where

P = payment

aC^* = the basic payment level; where "a" was set at 1.2, 1.0, or 0.8, and C^* was the estimated cost of modest, existing, standard housing in each site varied by household size

Y = household income, and

b = the benefit reduction rate; "b" was set at 0.15, 0.25, or 0.35.

Variations in the basic payment level enable estimation of the effect of a 40 percent change in the payment. Variations in the benefit reduction rate, "b," enable estimation of the effect of a 20 percentage point change in that rate. The Minimum Standards plans may be shown schematically as follows:

Table 5-4

AVERAGE MONTHLY ALLOWANCE PAYMENT AT TWO YEARS AFTER ENROLLMENT
FOR MINIMUM STANDARDS HOUSEHOLDS THAT MET THE MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT BY ENROLLMENT HOUSING REQUIREMENT STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	AVERAGE MONTHLY PAYMENT	SAMPLE SIZE	AVERAGE MONTHLY PAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS	\$64	(84)	\$81	(90)
Did not meet requirements at enrollment	65	(47)	93	(63)
Met requirements at enrollment	63	(37)	52	(27)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

	b Value		
.C Level	0.15	0.25	0.35
1.2C*		Plan 1	
C*	Plan 10	Plan 2	Plan 11
0.8C*		Plan 3	

As described in Section 4.1, the experimental effects are estimated under the specification:

$$(4) \quad (r - \hat{r}_N) = X\beta + \varepsilon + \theta,$$

where

r = actual ln(rent) at two years after enrollment

\hat{r}_N = estimated normal ln(rent) at two years after enrollment

X = variables used to characterize variations in Minimum Standards plans (such as those defined in Table 5-6)

β = effects to be estimated

ε = an experimental error term, and

θ = the error of prediction of \hat{r}_N .

The first step in analyzing the payment effects is the direct specification

$$(5) \quad (r - \hat{r}_N) = \alpha + \beta P + \omega$$

where

P = the monthly allowance payment, and

ω = a stochastic error term.

Table 5-4

AVERAGE MONTHLY ALLOWANCE PAYMENT AT TWO YEARS AFTER ENROLLMENT
FOR MINIMUM STANDARDS HOUSEHOLDS THAT MET THE MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT BY ENROLLMENT HOUSING REQUIREMENT STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	AVERAGE MONTHLY PAYMENT	SAMPLE SIZE	AVERAGE MONTHLY PAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS	\$64	(84)	\$81	(90)
Did not meet requirements at enrollment	65	(47)	93	(63)
Met requirements at enrollment	63	(37)	52	(27)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

	b Value		
C Level	0.15	0.25	0.35
1.2C*		Plan 1	
C*	Plan 10	Plan 2	Plan 11
0.8C*		Plan 3	

As described in Section 4.1, the experimental effects are estimated under the specification:

$$(4) \quad (r - \hat{r}_N) = X\beta + \epsilon + \theta,$$

where

r = actual $\ln(\text{rent})$ at two years after enrollment

\hat{r}_N = estimated normal $\ln(\text{rent})$ at two years after enrollment

X = variables used to characterize variations in Minimum Standards plans (such as those defined in Table 5-6)

β = effects to be estimated

ϵ = an experimental error term, and

θ = the error of prediction of \hat{r}_N .

The first step in analyzing the payment effects is the direct specification

$$(5) \quad (r - \hat{r}_N) = \alpha + \beta P + \omega$$

where

P = the monthly allowance payment, and

ω = a stochastic error term.

In this specification the parameter β measures the payment effect. A one dollar increase in the payment P will result in a percentage change in rent of β percent. The estimates of β are shown in Table 5-5. None of the Pittsburgh coefficients are significant, indicating that there is no relationship between the size of the payment and the allowance-induced change in rent in that site. This may reflect the finding for Unconstrained households in Pittsburgh (noted above). In contrast, the payment had significant effect in Phoenix. For all recipients, and for those that met only after enrollment, a \$10 increase in payment (about 12 percent of an average payment of \$82) would result in about a 3 percent increase in expenditures. For recipients that already met at enrollment, a \$10 increase in payment would result in about a 2 percent increase in expenditures.¹

Experimental response to the size of the payment may be due to two sources: variation in the size of the payment due to the experimental variables; (the basic payment level and the benefit reduction rate); and variation in the size of the payment due to variations in household size and income. In fact, the two sources may operate in opposite directions. To determine the source of household response, further variables must be specified.

First, to control for variation in payment levels due to variation in income and household size, a reference payment level is defined for each household as the payment it would have received if it were a household in plan 2 (with $a = 1.0$ and $b = 0.25$):

$$(6) \quad P_R = C^* - 0.25Y.$$

Therefore, in the specification

$$(7) \quad (r - \hat{r}_N) = \alpha + \beta P_R + \gamma_1 \cdot BLVL + \gamma_2 \cdot CLVL + \omega ,$$

P_R controls for the effect of variation in payment due to income and household size, while BLVL and CLVL represent the effects of variations in payment parameters. These variables are summarized in Table 5-6.

As already noted above, households that already met Minimum Standards at enrollment would be expected to respond to the housing allowance in the same way they would to any additional income that the household expects to receive for three years. Thus, since a positive income response is expected,

¹The standard error for this group is larger than for the other two groups.

Table 5-5

ESTIMATED EFFECT OF THE SIZE OF THE
PAYMENT ON THE ESTIMATED EXPERIMENTAL EFFECT ON EXPENDITURES

HOUSEHOLD GROUP	PITTSBURGH COEFFICIENT	PHOENIX COEFFICIENT
ALL HOUSEHOLDS	0.0005 (0.0007)	0.0032** (0.0006)
Did not meet requirements at enrollment	0.0007 (0.0012)	0.0032** (0.0008)
Met requirements at enrollment	0.0003 (0.0007)	0.0017† (0.0010)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table 5-6

DEFINITIONS OF EXPERIMENTAL VARIABLES USED TO CHARACTERIZE
VARIATIONS IN THE MINIMUM STANDARDS PLANS

VARIABLE	DEFINITION OF VARIABLE	INTERPRETATION OF COEFFICIENT
P	Payment level $P = aC^* - bY$, where Y is income	Overall effect of the payment
P_R	$C^* - 0.25Y$, the payment to a household in plan 2	Effect of payment variations among households due to variations in household size and income
CLVL	1 if $C = 1.2C^*$ in the payment formula 0 if $C = C^*$ in the payment formula -1 if $C = 0.8C^*$ in the payment formula	Effect of increasing the level of C^* used in calculating payments by 20 percent
BLVL	1 if "b" in the payment formula is 0.35 0 if "b" in the payment formula is 0.25 -1 if "b" in the payment formula is 0.15	Effect of increasing the level of "b" applied in calculating payments by 0.1

γ_1 , the coefficient of BLVL in Equation (7), is expected to be negative (for households with a given income and household size, larger "b" means a smaller allowance payment), whereas γ_2 , the coefficient of CLVL in Equation (7), is expected to be positive (for households with a given income and household size, larger CLVL means a larger allowance payment).

The expected response to larger allowance payments of households that only met Minimum Standards after enrollment is not as simple. As discussed in Chapters 2 and 4, this group of households includes both households that would normally have met Minimum Standards after enrollment and households that were induced to meet Minimum Standards by the allowance offer. The former group is expected to respond to the allowance offer in much the same way as households that already met the requirements at enrollment, simply treating the payment as additional income. Thus, these households would be expected to show a larger response at higher payment levels.

It is not clear what effect higher payments would have on the expenditure change of households that are induced to meet requirements. Higher payments would, however, be expected to induce additional households to meet the Minimum Standards after enrollment (since they would receive larger payments if they did so). Indeed, logit analysis of the probability of meeting Minimum Standards, shown in Appendix Tables VII-1 and VII-2, does find higher probabilities for higher payment levels (though the effect is only significant for changes in the contribution rate, "b").

Households induced to meet requirements appear to have larger increases in housing expenditures than households that would have met requirements normally (as indicated by the discussion in Chapter 4 and the difference in response between households that already met requirements at enrollment and those that only met requirements after enrollment). Thus, higher payment levels should increase the proportion of recipients that were induced to meet requirements and thus increase the average change in housing expenditures.

Table 5-7 presents the estimated parameters of Equation (7). Once again, none of the Pittsburgh coefficients is significant, confirming the results of the simpler specification (Equation (5)). In Phoenix, P_R , which measured the effect of larger payments due to larger household size or smaller income, has a significant coefficient. When household size and income are

Table 5-7

COEFFICIENTS OF PAYMENT PARAMETERS IN EQUATION (7)
FOR MINIMUM STANDARDS HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH COEFFICIENT	PHOENIX COEFFICIENT
ALL HOUSEHOLDS		
Reference payment, P_R	0.0008 (0.0007)	0.0026** (0.0006)
CLVL	-0.0421 (0.0424)	0.0191 (0.0472)
BLVL	-0.0183 (0.0374)	-0.0938* (0.0471)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT		
Reference payment, P_R	0.0011 (0.0012)	0.0026** (0.0009)
CLVL	-0.0226 (0.0670)	0.0088 (0.0665)
BLVL	-0.0088 (0.0599)	-0.0870 (0.0634)
HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT		
Reference payment, P_R	0.0003 (0.0008)	0.0016* (0.0007)
CLVL	-0.0651 (0.0451)	-0.0105 (0.0531)
BLVL	-0.0197 (0.0392)	-0.0582 (0.0579)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTES: Standard error in parentheses. See Table 5-6 for definitions of the independent variables.

* Significant at the 0.05 level.

** Significant at the 0.01 level..

controlled for, there appears to be the expected negative relationship between the contribution rate and the response but not a significant response for variations in the basic payment level.¹ These results extend to Phoenix Minimum Standards households not meeting requirements at enrollment and, to some extent, even to households meeting at enrollment (whose overall response was not significant). Payment formula variations do not affect the response of this latter group.²

The site difference in expenditure response is thus partly explained by the difference in the size of the allowance. Since the size of the payment and the payment parameters were both unrelated to the rent changes in Pittsburgh but were strongly related to response in Phoenix, the larger Phoenix payment contributed to the larger response. Unresolved is the question of why there was so little response to the payment in Pittsburgh.

Comparison With Unconstrained Households

This section has presented the estimated impact on expenditures of a constrained income transfer--a Housing Gap allowance payment conditional on meeting a housing requirement. In contrast, the Unconstrained group received housing allowance payments without having to meet any requirements. The procedure used to estimate the impact of the housing allowance on Housing Gap households can also be used to estimate the impact of the housing allowances on Unconstrained households as well. These estimates are presented in Table 5-8.³ Only in Phoenix do Unconstrained households increase their expenditures significantly more than normal--the increase is only 2.6 percent above normal in Pittsburgh, but is 16.0 percent above normal in Phoenix. The difference in response between the sites for Unconstrained households mirrors the differences for Minimum Standards households.

¹It must be admitted that the lack of significance for some of the payment effects may result from the small sample sizes involved--of the 11 Housing Gap plans, only one in each site had more than 15 households not meeting requirements at enrollment and only three in Pittsburgh and two in Phoenix had more than 15 households meeting at enrollment (see Appendix Table VI-15).

²The response to the payment was, however, broadly consistent with the income elasticity of demand.

³Since all Unconstrained households received a payment, there is no selection effect for them.

Table 5-8

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR UNCONSTRAINED HOUSEHOLDS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE INCREASE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE INCREASE IN EXPENDITURES	SAMPLE SIZE
All Unconstrained households	0.026 (0.030)	2.6% (3.1)	(59)	0.148** (0.048)	16.0% (5.6)	(37)

SAMPLE: Unconstrained households active and meeting requirements 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 and payments file.

NOTES: There is no selection bias. Standard error in parentheses.

** t-statistic of estimated effect significant at the 0.01 level.

Since Unconstrained households receive a Housing Gap form of payment without any requirements to meet, comparison of Housing Gap and Unconstrained responses can reveal the effect of imposing the requirements above and beyond that of the allowance payment. Table 5-9 presents this comparison for the Minimum Standards group (using the Minimum Standards requirement for determination of initial status).¹ As has been pointed out earlier, Housing Gap households that already met Minimum Standards at enrollment were essentially unconstrained in their behavior. Thus, they would be expected to show the same expenditure changes as similar Unconstrained households (controlling for payments). In fact, while Pittsburgh households that met requirements at enrollment show no significant difference in response from Unconstrained households, those in Phoenix increase their housing expenditures significantly less.² This result might be explained if households in Phoenix already living in acceptable housing were reluctant to leave it, and thus ended up spending less on housing than they would have with an unconstrained payment. Analysis of mobility, however, showed almost exactly the same effect of the allowance on the probability of moving in Phoenix for Unconstrained households, Housing Gap households that met requirements at enrollment, and Housing Gap households that did not meet requirements at enrollment (about a 12 point increase in the probability of moving for all three groups).³

Minimum Standards households that only met the requirements after enrollment increased their housing expenditures by more than Unconstrained households in both sites. The differences are not large, however, and not significant in either site. This is somewhat startling. Minimum Standards households that only met requirements after enrollment increased their housing expenditures by much more than those that already met requirements at enrollment (about 6 percentage points in Pittsburgh and 24 percentage points in Phoenix). These large differences were explained above in terms of the different incentives of the allowance offer. It now appears, however,

¹The comparison controls for any differences in payment level.

²The comparison in Table 5-9 is with Unconstrained households that also met the Minimum Standards requirement at enrollment; thus, the sample sizes are small. These small sample sizes lead to large errors of estimate.

³See MacMillan (1978), Chapter 4 (Figure 4-2 and Section 4.3). Estimated effects for Minimum Standards households in Phoenix (as opposed to all Housing Gap households) that met requirements at enrollment were about a 16 point increase (Table IX-1).

Table 5-9

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
FOR MINIMUM STANDARDS HOUSEHOLDS ABOVE THAT FOR
UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	PITTSBURGH PERCENTAGE INCREASE	PHOENIX PERCENTAGE INCREASE
ALL HOUSEHOLDS	1.5% (2.6)	0.3% (3.4)
Did not meet require- ments at enrollment	3.1 (5.1)	6.2 (7.7)
Met requirements at enrollment	6.7 ^a (7.7)	-15.2 ^{†a} (7.3)

SAMPLE: Minimum Standards households active and meeting requirements and Unconstrained 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 and payments file.

NOTE: Standard error in parentheses.

a. Comparison based on 15 or fewer Unconstrained household observations.

† t-statistic of estimated effect significant at the 0.10 level.

that the differences could in large part reflect differences in response to additional income alone. Minimum Standards households that only met requirements after enrollment show only slightly (and insignificantly) larger changes in expenditures than Unconstrained households that did not meet Minimum Standards at enrollment.

Thus, it does not appear that, in comparison to a similar unconstrained income transfer, Minimum Standards requirements either increased housing expenditures overall or even materially affected the allocation of increases among households that did and did not already meet requirements at enrollment. As noted in Chapter 2, however, Minimum Standards did induce a significant increase in the proportion of households that met the Minimum Standards requirements, whereas the Unconstrained offer did not. Thus, the lack of any differences in housing expenditure changes may in part reflect the relatively weak link between unit rent and meeting the Minimum Standards requirements (Merrill et al., 1975).

5.2 RENT CHANGES INDUCED BY THE MINIMUM RENT PLANS

Unlike the analysis of the effects of Minimum Standards plans on rental expenditures, the analysis of the effects of Minimum Rent plans must utilize the methods developed in Section 4.2 in order to correct for significant selection bias.¹ This is not unexpected; a Minimum Rent household's recipient status is directly related to the household's actual rent outlay, while in the Minimum Standards plans, recipient status is only indirectly related to rent. Selection on a dependent variable often leads to bias. The estimated effects, corrected for selection bias using Control households, are presented in Tables 5-10 and 5-11 for Minimum Rent Low and Minimum Rent High households, respectively.²

¹Appendix Tables IX-12 and IX-19 indicate that either method of determining the bias results in a significant coefficient.

²The uncorrected data are presented in Appendix Tables IX-2 and IX-3. The estimates corrected using Minimum Rent households that did not meet their housing requirements are presented in Appendix Tables IX-14 and IX-15.

Table 5-10

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MINIMUM RENT LOW HOUSEHOLDS	0.027 (0.025)	2.8% (2.5)	(101)	0.146** (0.038)	15.7% (4.4)	(68)
Did not meet requirements at enrollment	0.083† (0.047)	8.7 (5.1)	(27)	0.351** (0.065)	42.0 (9.3)	(26)
Met requirements at enrollment ^b	0.024 (0.028)	2.4 (2.9)	(74)	-0.012 (0.034)	-1.2 (3.3)	(42)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Standard error in parentheses.

a. Effects are corrected for selection bias using Control households that did not meet Minimum Rent Low requirements at two years after enrollment

b. No selection bias for this group.

† t-statistic of estimated effect significant at the 0.10 level.

** t-statistic of estimated effect significant at the 0.01 level.

Table 5-11

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
 IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS
 THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MINIMUM RENT HIGH HOUSEHOLDS	0.082* (0.033)	8.5% (3.6)	(57)	0.250** (0.049)	28.4% (6.3)	(45)
Did not meet requirements at enrollment	0.147** (0.055)	15.8 (6.4)	(25)	0.355** (0.068)	42.6 (9.7)	(28)
Met requirements at enrollment ^b	0.045 (0.036)	4.6 (3.7)	(32)	0.072 (0.046)	7.4 (5.0)	(17)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Standard error in parentheses.

a. Effects are corrected for selection bias using Control households that did not meet Minimum Rent High requirements at two years after enrollment,

b. No selection bias for this group.

* t-statistic of estimated effect significant at the 0.05 level.

** t-statistic of estimated effect significant at the 0.01 level.

In Pittsburgh, the Minimum Rent Low plans had only a small effect on expenditures. In contrast, in Phoenix these plans induced rather large and significant increases in rental expenditures above normal--the median increase was about 16 percent. Minimum Rent Low households that met the requirements only after enrollment had a median increase of 42 percent above normal while the change for similar Pittsburgh households was only 9 percent above normal (significant only at the 0.10 level).

Minimum Rent High plans had large and significant effects in both sites, with larger effects in Phoenix. Minimum Rent High plans in Pittsburgh clearly had much larger effects (8 percent overall and 16 percent for households meeting after enrollment) than the Minimum Rent Low plans. In Phoenix, the effects of the two plan types were similar for households that met the requirements only after enrollment (42 percent above normal for Phoenix Minimum Rent Low households; 43 percent for Minimum Rent High households). Overall, however, the effect of the Minimum Rent High plans was larger in Phoenix than either the Minimum Rent Low or the Minimum Standards plans.

The site difference in response can be partially explained by the same reasons that caused site differences for Minimum Standards households: different initial housing conditions and different payment levels. As described in Chapter 4, the average Phoenix Minimum Rent household that met requirements after enrollment had to make larger changes in expenditures than did the average Pittsburgh household. This difference in initial position can account for only part of the difference, however.

The effects of payment variations can be examined using the same specification used in the analysis of Minimum Standards plans. The only difference is the absence of variation in the benefit reduction rate (which was set to 0.25 for all Minimum Rent plans by design).

The anticipated relationship between the basic payment level and the allowance-induced change in expenditures is once again positive. For households that already met the Minimum Rent requirements at enrollment, a higher

basic payment level means a larger increase in their income. Thus, a larger increase in rent would be expected for those that adjust their housing. For households that met the requirements only after enrollment, the anticipated effect is positive as well. This group includes two types of households:

Households whose units at two years have met the requirements even if they were not imposed as requirements. These households would have responded only to the additional income and should show larger increases in rent in plans with higher basic payment levels

Households whose two-year units would not have met the Minimum Rent requirements had they not been imposed. Economic theory predicts that these households will increase their housing expenditures to just meet the Minimum Rent requirements.

The effect of increased payments on the average expenditure increase by households in the latter group is not clear.¹ In any case, higher payments would be expected to induce additional households to meet the Minimum Rent requirements. Since these households appear to have larger expenditure increases than households that would have met normally, this probably would raise the overall average response for all households that met requirements after enrollment.²

The estimated payment effects are presented in Tables 5-12 and 5-13. The findings for the Minimum Rent plans with respect to payment effects basically parallel those for the Minimum Standards plans. There is no effect of the payment itself on expenditures for either Minimum Rent Low or Minimum Rent High plans in Pittsburgh, while there is a significant positive effect for both Minimum Rent groups in Phoenix. This effect is of the same size as the effect found for Minimum Standards households. Also repeated is the lack of significance for the coefficient of the basic payment level (CLVL)

¹In theory, higher payments might induce additional households to meet Minimum Rent requirements by inducing larger increases in expenditures. This could be offset if the higher payment also increased participation by other households with smaller changes.

²In fact, logit estimates presented in Appendix Tables VII-5 and VII-6 show no significant effect of payment level on the probability of meeting Minimum Rent requirements.

Table 5-12

COEFFICIENTS OF PAYMENT PARAMETERS
FOR MINIMUM RENT LOW HOUSEHOLDS

INDEPENDENT VARIABLE	EQUATION	PITTSBURGH COEFFICIENT	PHOENIX COEFFICIENT
ALL HOUSEHOLDS			
Payment, P	(5)	0.0001 (0.0007)	0.0030** (0.0006)
Reference payment, P _R	(7)	0.0006 (0.0005)	0.0027** (0.0005)
CLVL	(7)	-0.0574* (0.0260)	0.0828* (0.0396)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT			
Payment, P	(5)	0.0015 (0.0014)	0.0025* (0.0010)
Reference payment, P _R	(7)	0.0015 (0.0013)	0.0024* (0.0010)
CLVL	(7)	-0.0363 (0.0612)	0.0836 (0.0730)
HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT			
Payment, P	(5)	-0.0006 (0.0007)	0.0018** (0.0005)
Reference payment, P _R	(7)	0.0001 (0.0006)	0.0016** (0.0005)
CLVL	(7)	-0.0614* (0.0271)	0.0097 (0.0344)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTES: Standard error in parentheses. See Table 5-6 for definitions of the independent variables.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table 5-13
COEFFICIENTS OF PAYMENT PARAMETERS
FOR MINIMUM RENT HIGH HOUSEHOLDS

INDEPENDENT VARIABLE	EQUATION	PITTSBURGH COEFFICIENT	PHOENIX COEFFICIENT
ALL HOUSEHOLDS			
Payment, P	(5)	-0.0003 (0.0010)	0.0023** (0.0005)
Reference payment, P _R	(7)	0.0003 (0.0008)	0.0022** (0.0007)
CLVL	(7)	-0.0166 (0.0399)	0.0407 (0.0492)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT			
Payment, P	(5)	-0.0009 (0.0016)	0.0017** (0.0006)
Reference payment, P _R	(7)	-0.0005 (0.0015)	0.0012 (0.0009)
CLVL	(7)	-0.0278 (0.0669)	0.0634 (0.0680)
HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT			
Payment, P	(5)	0.0004 (0.0008)	0.0023* (0.0008)
Reference payment, P _R	(7)	-0.0002 (0.0006)	0.0021* (0.0010)
CLVL	(7)	0.0222 (0.0331)	0.0673 (0.0471)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTES: Standard error in parentheses. See Table 5-6 for definitions of the independent variables.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

in Phoenix. Perversely, there is a negative and significant coefficient for CLVL in Pittsburgh for the Minimum Rent Low households.¹

The response of Minimum Rent households can also be compared to that of Unconstrained households. Table 5-14 presents the comparison between Unconstrained households and each Minimum Rent group, using the appropriate requirement to determine initial status. Overall, Minimum Rent Low households increased their housing expenditures by about the same percentage as Unconstrained households in both sites. Minimum Rent High households in both sites increased their expenditures significantly more than Unconstrained households, though the difference is larger in Phoenix. There is no significant difference in the response of Minimum Rent households that met their requirement at enrollment from that of comparable Unconstrained households. (Minimum Rent Low households do increase their rent slightly less and Minimum Rent High somewhat more than Unconstrained households that met the Minimum Rent requirements at enrollment, but the differences are not significant.)

Minimum Rent households that only met requirements after enrollment would be expected to have to spend more on housing than Unconstrained households in order to meet the requirements. While some of these households would spend enough to meet the requirements due solely to the income effect of the payment, the requirements are large enough to induce additional expenditures. Only the difference for Minimum Rent High households in Phoenix is significant, apparently reflecting the relatively small number of Unconstrained households (and accordingly large standard errors of estimate).

As with Minimum Standards, the changes in expenditure above those of comparable Unconstrained households, while larger for Minimum Rent households that only met requirements after enrollment than for those that met requirements at enrollment, do not show as large differences as the changes above normal expenditure levels (Tables 5-10 and 5-11). Again, this suggests that part of the difference in expenditure response for these two groups reflects different responses to allowance payments per se as opposed to the incentives of the housing requirements.

¹This result is counterintuitive and hard to explain. It might reflect CLVL effects on participation (see Kennedy and MacMillan, 1979). It is, however, consistent with the negative overall effect of the Minimum Rent Low plans in Pittsburgh (see Table 5-10).

Table 5-14

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
FOR MINIMUM RENT HOUSEHOLDS ABOVE THAT FOR UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE INCREASE		PERCENTAGE INCREASE	
	Minimum Rent Low Households	Minimum Rent High Households	Minimum Rent Low Households	Minimum Rent High Households
ALL HOUSEHOLDS	0.1% (3.9)	5.8%† (3.5)	-0.2% (3.8)	10.7%* (5.4)
Did not meet require- ments at enrollment ^a	6.2 (7.2)	10.5 (7.4)	9.6 (10.9)	16.8† (10.4)
Met requirements at enrollment ^a	-1.0 (4.6)	6.1 (5.9)	-4.6 (5.7)	9.1 ^b (8.8)

SAMPLE: Minimum Rent households active and meeting requirements and Unconstrained 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 and payments file.

NOTES: Minimum Rent estimates corrected for selection bias using Control households that did not meet the Minimum Rent requirements at two years. Standard error in parentheses.

a. Comparison uses Unconstrained households that did or did not meet the appropriate Minimum Rent requirements at enrollment. There is no selection bias for households that met requirements at enrollment.

b. Comparison based on 15 or fewer Unconstrained household observations.

† t-statistic based on estimated contrast significant at the 0.10 level.

* t-statistic based on estimated contrast significant at the 0.05 level.

An additional comparison is possible, between Minimum Rent and Minimum Standards households. Because of the direct link between additional expenditures and meeting the Minimum Rent requirements, Minimum Rent households that met requirements after enrollment are likely to increase their rent more than the Minimum Standards households. This is in general confirmed by the data in Table 5-15. Minimum Rent households that met requirements after enrollment show larger increases in expenditures than Minimum Standards households that met Minimum Standards requirements after enrollment. The difference is large and significant only in Phoenix. There is no significant pattern for households that met requirements at enrollment. For all recipients, Minimum Rent High households increased expenditures more than Minimum Standards households (though only significantly so in Phoenix). Minimum Rent Low households showed the same overall increase as Minimum Standards households.

5.3 DEMOGRAPHIC EFFECTS ON EXPENDITURES

Efforts to examine demographic differences in expenditure response have been hampered by small sample sizes. As shown in Sections 5.1 and 5.2, there is little or no response above normal for households that already met their requirements at enrollment. This is true for different demographic groups as well. As a consequence, this section focuses on two groups of households--all households and those that only met requirements after enrollment.

Three demographic characteristics have been selected for their policy interest: race/ethnicity (white, black, and Spanish American), elderly/nonelderly (household heads 62 or older, or not), and poverty/nonpoverty (households with census-defined incomes below the official poverty line, or not).¹

Differences in response can arise in one of two ways: from actual differences in behavior (response to the allowance offer) or from differences in initial housing conditions. If one group of households is further away from meeting the requirements than another, then a larger response for the first group represents, at least in part, the larger change necessary to become a recipient. If both groups are by some metric the same distance

¹See Appendix III for details about census income and the poverty line.

Table 5-15

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
FOR MINIMUM RENT HOUSEHOLDS ABOVE THAT FOR
MINIMUM STANDARDS HOUSEHOLDS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE INCREASE		PERCENTAGE INCREASE	
	Minimum Rent Low vs. Minimum Standards Households	Minimum Rent High vs. Minimum Standards Households	Minimum Rent Low vs. Minimum Standards Households	Minimum Rent High vs. Minimum Standards Households
ALL HOUSEHOLDS	-1.5% (3.5)	4.1% (3.4)	-0.4% (3.8)	10.5%* (5.4)
Did not meet require- ments at enrollment	1.1 (4.8)	7.8 (5.9)	14.9* (7.5)	15.4* (7.9)
Met requirements at enrollment ^a	1.3 (4.5)	3.6 (5.1)	-0.5 (5.1)	8.2 (6.5)

SAMPLE: Housing Gap households active and meeting requirements 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 and payments file.

NOTES: Minimum Rent estimates corrected for selection bias using Control households that did not meet the Minimum Rent requirements. The Minimum Standards estimates are uncorrected. Standard error in parentheses.

a. No selection bias for this group.

* t-statistic based on estimated contrast significant at the 0.05 level.

** t-statistic based on estimated contrast significant at the 0.01 level.

away from meeting requirements, then differences in response above normal rent would represent solely differences in behavior.

Table 5-16 presents one measure of initial housing conditions--the proportion of households in each group that did not meet requirements at enrollment. The proportion meeting any of the requirements is significantly lower for minority households (except for Minimum Standards in Pittsburgh) and for poverty households (except for Minimum Standards and Minimum Rent Low in Pittsburgh).

Further evidence is provided by Table 5-17, which presents a measure of the change in expenditures needed to meet requirements for Housing Gap households that did not pass the housing requirement in their enrollment units.¹ As discussed above, the difference in initial condition between Pittsburgh and Phoenix households is likely to account for at least some of the site difference in response. From examination of Table 5-17, the following differences in initial conditions might also be potentially important for analysis of demographic differences in the response of households not meeting requirements at enrollment between:

White and Spanish American households in Phoenix

Nonelderly and elderly households in Phoenix, and

Poverty and nonpoverty households in both sites.

Table 5-18 presents the estimated effects for the programs as a whole, stratified by each of the three demographic characteristics. Sample sizes are small enough so that differences in response among demographic groups are only significant across all requirements for poverty households in Phoenix. Nevertheless, these trends are apparent--minority households,

¹This measure is the additional dollar expenditure above normal rent that would be needed for a household of median characteristics in each group to meet the requirement. For Minimum Standards households, the cost of a unit meeting the standards is set at C*; the requirements for Minimum Rent households are already in dollar terms. There is a distribution of rents for units that pass the Minimum Standards. Consequently, the distance measure for Minimum Standards households is only a proxy variable.

Table 5-16

PROPORTION OF HOUSEHOLDS THAT MET THEIR HOUSING
REQUIREMENTS AT ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	MINIMUM STANDARDS HOUSEHOLDS		MINIMUM RENT LOW HOUSEHOLDS		MINIMUM RENT HIGH HOUSEHOLDS	
	Percentage That Met	Sample Size	Percentage That Met	Sample Size	Percentage That Met	Sample Size
PITTSBURGH						
ALL HOUSEHOLDS	22%	(203)	62%	(128)	30%	(117)
Nonminority	24	(151)	66	(95)	37	(90)
Minority ^a	16	(51)	47 ^d	(32)	8 ^b	(25)
Nonelderly	19	(146)	64	(96)	29	(86)
Elderly	28	(57)	56	(32)	32	(31)
Poverty	20	(118)	59	(85)	19	(57)
Nonpoverty	24	(85)	67	(43)	40 ^c	(60)
PHOENIX						
ALL HOUSEHOLDS	20	(172)	48	(98)	21	(109)
Nonminority	26	(108)	63	(54)	29	(62)
Minority ^a	8 ^c	(49)	41 ^c	(32)	8 ^c	(38)
Nonelderly	18	(125)	48	(67)	21	(85)
Elderly	23	(47)	48	(31)	21	(24)
Poverty	10	(86)	36	(53)	9	(57)
Nonpoverty	29 ^b	(86)	62 ^c	(45)	35 ^b	(52)

SAMPLE: Housing Gap 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 and payments file.

a. Minority is black households in Pittsburgh, Spanish American households in Phoenix (black households are excluded from this comparison in Phoenix).

b. Difference significant at the 0.01 level.

c. Difference significant at the 0.05 level.

d. Difference significant at the 0.10 level.

Table 5-17

EXPENDITURE CHANGE NEEDED TO PASS REQUIREMENTS FOR
 MEDIAN HOUSING GAP HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	\$19	\$-2	\$12	\$50	\$26	\$51
Nonminority households	15	-3	12	36	16	35
Black households	23	-2	12	[67]	[-7]	[66]
Spanish American households	--	--	--	76	51	72
Nonelderly households	20	-2	12	59	33	60
Elderly households	18	[-3]	10	42	[19]	36
Poverty households	23	5	19	66	31	58
Nonpoverty households	12	[-9]	9	26	6	37

SAMPLE: Housing Gap households active at two years after enrollment that did not meet requirements at 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. Distance from meeting measured as:

$C^* - R_N$ for Minimum Standards households

$0.7C^* - R_N$ for Minimum Rent Low households

$0.9C^* - R_N$ for Minimum Rent High households

where

C^* = the estimated cost of modest, existing standard housing (varied by household size and by site) and

R_N = predicted normal rent at two years.

Table 5-18
 MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
 ABOVE NORMAL BY DEMOGRAPHIC CHARACTERISTICS

	MINIMUM STANDARDS HOUSEHOLDS		MINIMUM RENT LOW HOUSEHOLDS		MINIMUM RENT HIGH HOUSEHOLDS	
	Percentage Increase	Sample Size	Percentage Increase ^b	Sample Size	Percentage Increase ^b	Sample Size
PITTSBURGH						
ALL HOUSEHOLDS	4.3% (2.7)	(84)	2.2% (2.5)	(101)	8.5** (3.6)	(57)
Nonminority	2.7 (2.9)	(66)	-0.9 (3.0)	(75)	5.0 (4.3)	(51)
Minority ^a	10.0 (7.1)	(18)	4.3 (6.1)	(25)	[-5.0] (11.7)	(6)
Nonelderly	6.8* (3.3)	(60)	2.8 (2.9)	(79)	11.4** (4.0)	(47)
Elderly	0.0 (4.6)	(24)	2.5 (5.1)	(22)	[-10.9] ^d (7.1)	(10)
Poverty	7.2† (4.2)	(44)	5.9† (3.7)	(63)	9.6† (5.9)	(24)
Nonpoverty	1.9 (3.6)	(40)	-0.2 (3.6)	(38)	7.6 (4.4)	(33)
PHOENIX						
ALL HOUSEHOLDS	16.2** (3.9)	(90)	15.7** (4.4)	(68)	28.4** (6.3)	(45)
Nonminority	8.5* (3.9)	(63)	13.1** (5.0)	(40)	24.8** (6.4)	(30)
Minority ^a	39.8** ^c (11.6)	(19)	19.8* (9.7)	(21)	[38.0] (16.0)	(12)
Nonelderly	16.8** (4.6)	(66)	18.1** (5.3)	(49)	31.7** (7.1)	(37)
Elderly	17.0* (7.0)	(24)	10.4 (7.7)	(19)	[12.2] (12.2)	(8)
Poverty	27.3** (8.1)	(29)	32.5** (8.6)	(30)	[45.6]** (14.9)	(15)
Nonpoverty	9.5 ^d (4.1)	(61)	4.3 ^c (4.7)	(38)	19.0** ^e (6.0)	(30)

SAMPLE. Housing Gap households active and meeting requirements 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 and payments file.

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard errors in parentheses.

a. Minority is black households in Pittsburgh, Spanish American in Phoenix (see Appendix X for data on Phoenix black households)

b. Corrected for selection bias using Control households that did not meet the Minimum Rent requirements at two years after enrollment.

c. Difference of estimated effects significant at the 0.01 level.

d. Difference of estimated effects significant at the 0.05 level.

e. Difference of estimated effects significant at the 0.10 level.

† t-statistic based on estimated effect significant at the 0.10 level.

* t-statistic based on estimated effect significant at the 0.05 level.

** t-statistic based on estimated effect significant at the 0.01 level.

nonelderly households, and poverty households each tend to increase their rent more than do nonminority households, elderly households, and nonpoverty households. It is precisely these households which were in the worst housing, at least in terms of the measures presented in Tables 5-16 and 5-17.

These trends are repeated for households that only met requirements after enrollment (as shown in Table 5-19).¹ Though small sample sizes make comparisons tenuous, the uniformity of response suggests that the allowance payments helped participants from demographic groups in worse housing to narrow the gap, by inducing them to increase their expenditures by more than other households.²

5.4 CONCLUSIONS

Table 5-20 summarizes the estimated effects of the various allowance plans on housing expenditures. The pattern of expenditure response is similar in the two sites, though response levels are generally higher in Phoenix. Overall, the allowance programs did lead to increased housing expenditures in both sites (though effects for all recipients in Pittsburgh are only significant for Minimum Rent High). The increase was concentrated among households that met their requirements only after enrollment. Effects for these households were substantial and significant in both sites ranging from 8 to 16 percent in Pittsburgh and from 24 to 43 percent in Phoenix. On the other hand, households that already met requirements at enrollment show generally modest and always insignificant increases in expenditures above normal levels. (Estimates for these households are, however, consistent with estimated income responses.)

As summarized in Table 5-20 and reported in Table 5-15 above, the different housing requirements do lead to different responses in terms of housing expenditures. In comparison to Minimum Standards, the Minimum Rent High requirement induces larger expenditure changes for recipients as a whole and for households that met requirements only after enrollment (both are significant only in Phoenix). Indeed, even increases among households

¹Appendix Tables X-25 through X-27 present the actual percentage increases above normal for the groups in Table 5-19.

²Certain demographic characteristics may, however, make a household less likely to participate (see Kennedy and MacMillan, 1979).

Table 5-19

DIFFERENCES IN MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL
BY DEMOGRAPHIC CHARACTERISTICS FOR HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT ENROLLMENT

HOUSEHOLD GROUP	MINIMUM STANDARDS HOUSEHOLDS Percentage Increase	MINIMUM RENT LOW HOUSEHOLDS Percentage Increase ^b	MINIMUM RENT HIGH HOUSEHOLDS Percentage Increase ^b
PITTSBURGH			
COMPARISON BETWEEN:			
Nonminority and minority ^a households	[-16.0%] [†] (7.6)	[-9.5%] (9.1)	[28.9%] (22.1)
Nonelderly and elderly households	[13.8] (9.6)	[7.5] (13.4)	[128.8]** (67.3)
Poverty and nonpoverty households	10.9 (8.0)	[11.6] (11.0)	[5.6] (11.8)
PHOENIX			
COMPARISON BETWEEN:			
Nonminority and minority ^a households	[-23.4]* (8.0)	[-8.3] (14.2)	[-2.4] (14.7)
Nonelderly and elderly households	[2.5] (10.2)	[19.2] (20.4)	[49.7] [†] (35.1)
Poverty and nonpoverty households	10.8 (10.2)	[22.7] (16.1)	[10.3] (16.1)

SAMPLE: Housing Gap households active and meeting requirements at two years after enrollment that did not meet requirements at 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 and payments file.

NOTES: Brackets indicate that at least one coefficient of the comparison is based on 15 or fewer observations. Standard error of the percentage difference in parentheses.

a. Minority is black households in Pittsburgh and Spanish American households in Phoenix (see Appendix X for data on Phoenix black households).

b. Corrected for selection bias using Control households that did not meet the Minimum Rent requirements at two years after enrollment.

† Difference of estimated effects significant at the 0.10 level.

* Difference of estimated effects significant at the 0.05 level.

** Difference of estimated effects significant at the 0.01 level.

Table 5-20

SUMMARY OF EXPERIMENTAL EFFECTS ON EXPENDITURES
(Percentage Increase Above Normal)

HOUSEHOLD GROUP	PITTSBURGH				PHOENIX			
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	UNCON- STRAINED HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	UNCON- STRAINED HOUSEHOLDS
ALL HOUSEHOLDS	4.3% (2.7)	2.8% (2.5)	8.5%* (3.6)	2.6% (3.1)	16.2%** (3.9)	15.7% (4.4)	28.4%** (6.3)	16.0%** (5.6)
Did not meet requirements at enrollment	7.5* (3.9)	8.7† (5.1)	15.8** (6.4)	NA	23.6** (5.4)	42.0** (9.3)	42.6** (9.7)	NA
Met requirements at enrollment	1.1 (3.5)	2.4 (2.9)	4.6 (3.7)	NA	-0.7 (3.8)	-1.2 (3.3)	7.4 (5.0)	NA

SAMPLE: Housing Gap households active and meeting requirements and Unconstrained 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 and payments file.

NOTE: Standard error in parentheses.

† t-statistic based on estimated effect significant at the 0.10 level.

* t-statistic based on estimated effect significant at the 0.05 level.

** t-statistic based on estimated effect significant at the 0.01 level.

NA Not applicable.

that already met requirements at enrollment are larger for Minimum Rent High than for Minimum Standards (though the difference is not significant).

Expenditure effects for Minimum Rent Low households fall between those of Minimum Standards and Minimum Rent High. For all recipients, Minimum Rent Low induced overall increases comparable to those of Minimum Standards households. For households that only met requirements after enrollment, increases were similar to those of Minimum Standards households in Pittsburgh and similar to Minimum Rent High households in Phoenix.

On the other hand, as Chapters 2 and 3 showed, the Minimum Standards requirement did lead to increases in the proportion of households that met the Minimum Standards requirements and other housing indicators. Minimum Rent requirements did not. Thus, it appears that the response to the allowance was focused by the requirements to be in terms of the measure indicated by the requirements--increased housing standardness or increased rent.

The estimates of induced change in expenditures presented in this chapter can be used to improve the determination of the proportion of the allowance payment going to increased housing expenditures. Tables 5-21 through 5-23 present these figures. As was already noted in Chapters 2 and 3, households that already met requirements at enrollment generally allocated only a small portion of the allowance payment to increased housing expenditures (only Minimum Rent High households devoted over 10 percent of the payment to increased housing expenditures). In contrast, households that met only after enrollment spent a much larger proportion of the allowance payment on expenditures (in Pittsburgh, 14 percent for Minimum Standards, 15 percent for Minimum Rent Low, and 39 percent for Minimum Rent High households; in Phoenix, 33 percent for Minimum Standards households, 42 percent for Minimum Rent Low households, and 50 percent for Minimum Rent High households).

Differences between the two sites may be partly due to differences in the initial housing situation of participants. In particular, households in Phoenix that did not meet requirements at enrollment generally had to increase their housing expenditures by much more than comparable households in Pittsburgh in order to meet requirements. This was, to some extent, indicated in the simulated predictions of Chapter 4.

Table 5-21

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM STANDARDS HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS	4.3%	\$130	\$5.6	\$65	9%
Did not meet requirements at enrollment	7.5	125	9.4	66	14
Met requirements at enrollment	1.1	135	1.5	64	2
PHOENIX					
ALL HOUSEHOLDS	16.2	137	22.2	81	27
Did not meet requirements at enrollment	23.6	131	30.8	94	33
Met requirements at enrollment	-0.7	154	-1.1	52	-2

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

a. From Table 5-1.

Table 5-22

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT LOW HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS	2.8%	\$126	\$3.5	\$58	6%
Did not meet requirements at enrollment	8.7	108	9.4	61	15
Met requirements at enrollment	2.4	134	3.2	56	6
PHOENIX					
ALL HOUSEHOLDS	15.7	139	21.9	86	25
Did not meet requirements at enrollment	42.0	108	45.4	109	42
Met requirements at enrollment	-1.2	162	1.9	71	-3

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

a. From Table 5-10.

Table 5-23

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT HIGH HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS	8.5%	\$140	\$11.9	\$51	23%
Did not meet requirements at enrollment	15.8	123	19.4	50	39
Met requirements at enrollment	4.6	155	7.1	52	14
PHOENIX					
ALL HOUSEHOLDS	28.4	150	42.5	103	41
Did not meet requirements at enrollment	42.6	134	57.0	114	50
Met requirements at enrollment	7.4	178	13.1	85	15

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

a. From Table 5-11.

The estimated effects of the Housing Gap housing allowances on the expenditures of recipients compared favorably with the predictions made in Section 4.2. Table 5-24 presents a comparison of the simulated and actual (estimated) change in expenditures above normal. The estimates for the overall effect of the allowance payment and for the effect on households already meeting requirements at enrollment are fairly close, especially when errors of estimation and prediction are taken into account.¹ The predictions made for households meeting requirements after enrollment are even more accurate--the predictions fall within the 95 percent confidence intervals of the actual changes in all six cases.²

Differences between the sites may also reflect basic differences in the way in which households regarded the allowance. Expenditure changes by Unconstrained households showed the same pattern of markedly higher responses in Phoenix than in Pittsburgh. Indeed, when the expenditure changes of Housing Gap recipients are compared to those of Unconstrained households, as shown in Table 5-25, the differences between the sites, though still present, are much smaller.

Only Minimum Rent High leads to significantly larger increases in housing expenditures for all recipients relative to the Unconstrained plan. Comparisons for households that did and did not meet the various requirements at enrollment are generally insignificant, due to the small number of Unconstrained households. There is some indication that allowance recipients that only met requirements after enrollment tended to show larger differences compared to Unconstrained households than recipients that already met requirements at enrollment. Thus, the housing requirements may have focused the response on increased expenditures more than did the Unconstrained payment.

¹Recall from Chapter 4 that the prediction, at least for those induced to meet requirements, was expected to be an overestimate. The assumption made in computing the prediction was that those induced to meet would be spending the average rent of households that met the requirement. If those induced to meet requirements attempted to just meet their requirement, they would therefore have a smaller increase in rent than the prediction.

²Since overestimates were expected, the underprediction for Minimum Standards households that met requirements after enrollment in Phoenix is somewhat of a puzzle.

Table 5-24

COMPARISON OF PREDICTED AND ACTUAL INCREASES
IN EXPENDITURES ABOVE NORMAL

HOUSEHOLD GROUP	MINIMUM STANDARDS HOUSEHOLDS		MINIMUM RENT LOW HOUSEHOLDS		MINIMUM RENT HIGH HOUSEHOLDS	
	Predicted Increase ^a	Actual Increase ^b	Predicted Increase ^a	Actual Increase ^c	Predicted Increase ^a	Actual Increase ^d
PITTSBURGH						
ALL HOUSEHOLDS	0.08	0.04 (0.03)	0.06	0.03 (0.03)	0.07	0.08* (0.03)
Did not meet requirements at enrollment	0.13	0.07* (0.04)	0.17	0.08† (0.05)	0.14	0.15** (0.06)
Met requirements at enrollment	0.02	0.01 (0.03)	0.02	0.02 (0.03)	0.02	0.04 (0.04)
PHOENIX						
ALL HOUSEHOLDS	0.11	0.15** (0.03)	0.16	0.15** (0.04)	0.23	0.25** (0.05)
Did not meet requirements at enrollment	0.15	0.21** (0.04)	0.34	0.35** (0.06)	0.34	0.36** (0.07)
Met requirements at enrollment	0.03	-0.01 (0.04)	0.04	-0.01 (0.03)	0.04	0.07 (0.05)

SAMPLE: Housing Gap households active and meeting requirements 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 and payments file.

NOTE: Standard errors of estimated actual increases in parentheses.

a. From Table 4-1.

b. From Table 5-1.

c. From Table 5-10.

d. From Table 5-11.

† t-statistic of the estimated effect significant at the 0.10 level.

* t-statistic of the estimated effect significant at the 0.05 level.

** t-statistic of the estimated effect significant at the 0.01 level.

Table 5-25

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES FOR
HOUSING GAP HOUSEHOLDS ABOVE THAT OF UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	1.5% (2.6)	0.1% (3.9)	5.8%† (3.5)	0.3% (3.4)	-0.2% (3.8)	10.7%* (5.4)
Did not meet require- ments at enrollment	3.1 (5.1)	6.2 (7.2)	10.5 (7.4)	6.2 (7.7)	9.6 (10.9)	16.8† (10.4)
Met requirements at enrollment	6.7 (7.7)	-1.0 (4.6)	6.1 (5.9)	-15.2† (7.3)	-4.6 (5.7)	9.1 (8.8)

SAMPLE: Housing Gap households active and meeting requirements and Unconstrained 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: Tables 5-9 and 5-14.

† t-statistic of the estimated contrast significant at the 0.10 level.

* t-statistic of the estimated contrast significant at the 0.05 level.

These comparisons are also reflected in the estimated percentage of the allowance devoted by Unconstrained households to increased housing expenditures, as shown in Table 5-26. Only Minimum Rent High households devoted a markedly higher proportion of their payment to increased housing expenditures than Unconstrained households.

Overall, then, the analysis suggests that housing allowances affected recipients in two ways. First, the payment itself was sufficient to induce some increase in expenditures as indicated by the response of the Unconstrained households. Second, the housing requirements led to additional housing changes which varied according to the specific requirement used. Minimum Standards requirements resulted in additional households meeting Minimum Standards, but caused no increase in housing expenditures above those of Unconstrained households. Minimum Rent requirements (at least when set at high enough levels) led to further increases in expenditures but no change in the proportion of households meeting Minimum Standards.

Table 5-26

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
 USING COMPUTED ABOVE NORMAL INCREASE FOR UNCONSTRAINED HOUSEHOLDS

TREATMENT TYPE	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
Unconstrained households	2.6%	\$119	\$3.1	\$54	6%
PHOENIX					
Unconstrained households	16.0	128	20.5	108	19

SAMPLE: Unconstrained 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 and payments file.

a. From Table 5-8.

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CHAPTER 6
THE EFFECT OF A HOUSING GAP ALLOWANCE
ON THE CONSUMPTION OF HOUSING SERVICES

Increased expenditures for housing may not always lead to changes in the amount of housing obtained. Most obviously, general inflation implies higher dollar expenditures without any change in the housing services provided by a dwelling unit. The impact on expenditures estimated in Chapter 4 accounted for inflation by including Control households in the sample, so that this posed no problem there. Even apart from inflation, however, changes in expenditures may not reflect real changes in housing services.¹ If allowance recipients are unable to act effectively in the private market or if they shop less carefully, then they might pay more for their units than the market average rent for similar units. It is possible that the allowance offer may affect shopping behavior because payments are made to households that meet the housing requirements even if their units rent for more than similar units normally would.

This chapter discusses two related issues. First, Section 6.1 presents a model for examining household shopping behavior and then uses indices measuring the amount of real housing services consumed by each household to analyze possible overpayments for housing. Second, Section 6.2 uses the indices to estimate the amount of real change in housing services above normal, employing the same methodology used to analyze changes in housing expenditures. Section 6.3 provides a brief summary.

6.1 ANALYSIS OF SHOPPING BEHAVIOR

A person looking for a rental housing unit in a particular neighborhood is likely to see several units that rent for the same amount but that offer different amounts of housing services. This situation may be expressed mathematically as:

¹Housing services are a single conceptual measure of the amount of housing provided by a unit over a specific period of time.

$$(1) \quad R = p_H H + \epsilon$$

where

R = rent

p_H = price of housing services

H = amount of housing services, and

ϵ = a stochastic term, with zero mean and variance σ_ϵ^2 .

A unit with $\epsilon < 0$ would be considered a "good deal" or a "bargain," while a unit with $\epsilon > 0$ would be considered a "bad deal." In this context, shopping for rental housing may be viewed as looking for units with negative ϵ (that is, bargains).¹

In general, there is no particular reason to expect a randomly selected group of households, such as Control households, to have rented housing that provides below- or above-average amounts of housing services per dollar of housing expenditures. Similarly, households in the Unconstrained plan would be expected on average to purchase average amounts of housing services per dollar of expenditure. These households were free to treat the allowance income just as they would income from any other source, so there is no reason why their shopping behavior would have been altered.²

This reasoning would also apply to changes in housing expenditures by households that already met housing requirements at enrollment, since these households were effectively unconstrained. Notice, however, that the initial housing expenditures of these households may well show unusual shopping behavior. In particular, households that met Minimum Standards at enrollment may to some extent have been households that had purchased exceptionally good housing as well as households that

¹Competitive market forces will tend to reduce the variance of ϵ (but not reduce it to zero). A household with a bad deal may have $\epsilon > 0$ for reasons other than inefficient shopping. If the availability of units satisfying its particular needs is low, it may be forced to accept a bad deal. Similarly, households may accept bad deals to reduce their search costs.

²Unless such a relatively small change in income would lead to a change in shopping behavior.

spent more or happened to buy Minimum Standards housing. Likewise, households that were paying rents high enough to meet the Minimum Rent requirements may include not only households that were obtaining a high level of housing services but also those that were paying above average amounts for the housing they obtained.

In contrast, the allowance offer could have potentially altered the shopping behavior of households that did not meet the housing requirements at enrollment. Consider first a household in a Minimum Rent plan. At enrollment, the household spent too little money on rent to pass the requirement. It had to find a more expensive unit to receive any allowance payment. This could have led the household to prefer a unit that would normally be considered a bad deal ($\epsilon > 0$), but which passed the Minimum Rent requirement, over a unit that would be considered a good deal ($\epsilon < 0$) but did not pass the requirement.

This can be seen with the aid of Figure 6-1. In this figure, the vertical axis measures housing services (H) and the horizontal axis measures housing expenditures (R). The diagonal represents the average relationship between housing expenditures and housing services, that is, $R = p_H H$, or $\epsilon = 0$. Units to the left of this line would be considered good deals ($\epsilon < 0$); units to the right of the line would be considered bad deals ($\epsilon > 0$). A utility-maximizing household would normally prefer unit A over unit B, because unit A both provides more housing services and leaves more income for other purchases. Thus,

$$(2) \quad U(H_A, Y - R_A) > U(H_B, Y - R_B)$$

where

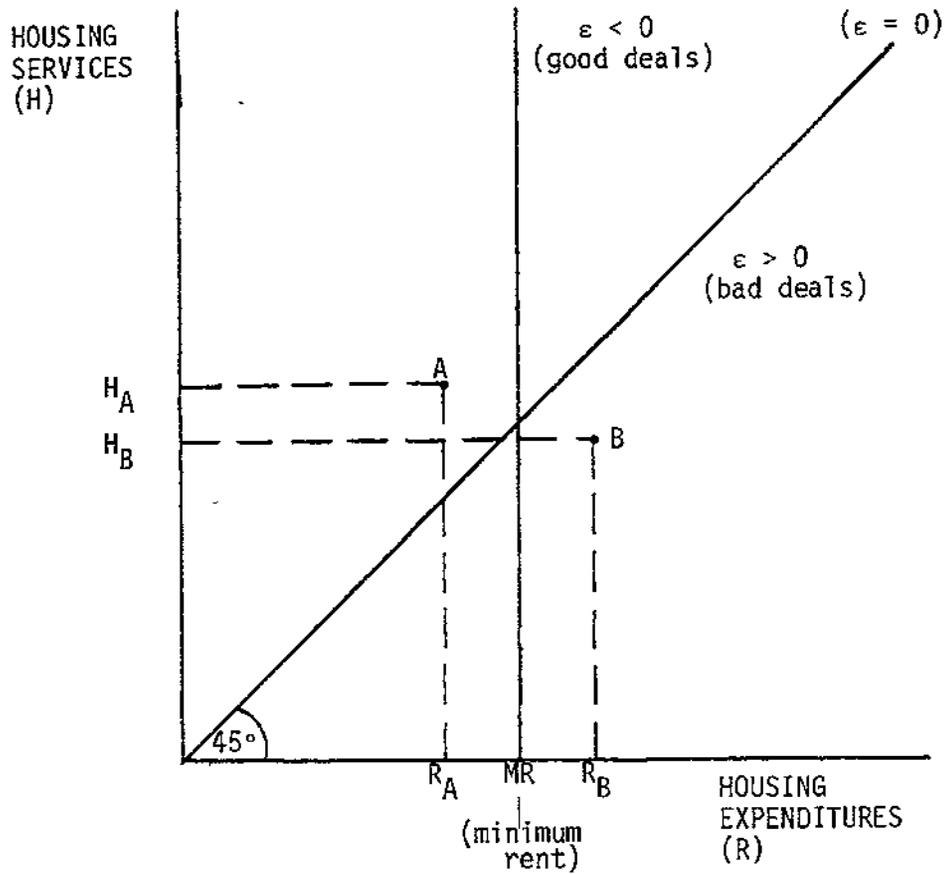
U = the household's utility function, and

Y = household income.

However, the allowance offer may change this relationship. Since unit B passes the Minimum Rent requirement and unit A does not, it is possible, to find an allowance payment, P , such that

$$(3) \quad U(H_A, Y - R_A) < U(H_B, Y + P - R_B).$$

Figure 6-1
 THE RELATIONSHIP BETWEEN
 HOUSING EXPENDITURES AND HOUSING SERVICES



NOTE: $R = p_H H + \epsilon$

where p_H = price of housing services ($p_H = 1$, above), and
 ϵ = residual.

Of course, some units both meet the Minimum Rent requirement and are good deals ($\epsilon < 0$). However, finding these units may require additional search effort, during which the household may both spend part of its income on search costs and get no allowance payment. Thus, under these circumstances the mean value of ϵ at two years for the recipient households that met the Minimum Rent requirements only after enrollment might easily be positive. In other words, their units might be classified as "bad deals."

For Minimum Standards households the argument is similar, although the incentive to choose overpriced units ($\epsilon > 0$) was less direct. These households were looking for units that passed the Minimum Standards, not for more expensive units. However, if in their search for units that passed the Minimum Standards, they found a unit that passed the standards but was overpriced ($\epsilon > 0$), they could have chosen to occupy it even if they would normally have continued searching. To the extent that continued search for units that met Minimum Standards required additional effort, it is reasonable that, on average, this group of households could also have positive ϵ .

In order to determine the effect of the allowance payment on shopping behavior, it is necessary to measure the market value of real housing services. In this report, housing services are measured by hedonic indices developed for the Demand Experiment sites by Merrill (1977). The indices give a dollar value for the amount of housing services provided by a unit. The measures can be interpreted as the expected or average market rent of a unit with given location, size and other physical characteristics. In terms of Equation (1), the hedonic index gives the expected rent of a unit if it is neither a good nor a bad deal ($\epsilon = 0$).

The hedonic housing services index was derived by regressing the logarithm of rent on housing unit and neighborhood characteristics and on conditions at enrollment:

$$(4) \quad \ln(R) = \alpha + X\beta + Z\gamma + \mu$$

where

R = rent

X = a vector of housing unit and neighborhood characteristics

Z = a vector of tenure characteristics such as length of residence in the unit and whether the landlord lives in the building, and

μ = a stochastic error.

The log of the dollar value of the amount of housing services consumed by household "j" in period "t," $\ln(Q_j^t)$, was estimated by multiplying the vector of the dwelling unit, neighborhood and location characteristics of the household's period "t" housing, X_j^t , by the vector of hedonic weights, $\hat{\beta}$. The vector $\hat{\beta}$ estimates the implicit market prices, at enrollment, of housing attributes. That is, $\ln(Q_j^t)$ is estimated as

$$(5) \quad \ln(Q_j^t) = \hat{\alpha} + \sum_{i=1}^I X_{ij}^t \hat{\beta}_i.$$

Since the same vector of hedonic weights, $\hat{\beta}$, is used for each time period, changes in estimated housing services occurred only because of changes in some or all the characteristics of the household's housing.

The hedonic index takes into account a wide variety of physical and locational characteristics, which account for from 65 to 80 percent of the observed variation in rents. Furthermore, as discussed in Merrill (1977) and Kennedy and Merrill (1979), tests of the validity of the index support the contention that it measures housing services with a high degree of accuracy. Nevertheless, it would be unreasonable to claim that the hedonic index captures all the variation in housing services across units. As a consequence, changes in hedonic indices of housing will generally differ from changes in expenditures. Given the supporting evidence on the accuracy of the measure, the differences should not be large, however.

The hedonic index may be subject to several types of specification bias. First, if important attributes of the housing bundle were omitted from the estimating equation, the index will not adequately reflect the unit's housing services.¹ If households increase their purchases of these

¹Omitted variables increase the estimated standard error of the hedonic index.

omitted items in response to the allowance, the estimated housing services response would be biased downward from the true response.

Second, if the housing market in Pittsburgh or Phoenix is segmented, that is, if different racial groups or different locations (central city versus suburban locations, for example) face different housing prices, the same set of relative attribute prices estimated by an overall index may not be applicable to all segments of the market.¹ Finally, the attribute weights estimated during the baseline period may not be applicable after two years due to changing market conditions or, more likely, due to decisions made by movers to rent units in areas unlike those included in the original sample.²

The difference between rent and the predicted value of rent is the hedonic residual, $\hat{\mu}$. This residual may represent omitted quality variables, omitted tenure variables, experimentally induced shopping efficiency or inefficiency, and luck or other random effects. Several hypotheses can be tested to determine the correct interpretation of the residual, $\hat{\mu}$. For example, if the residual involves some omitted quality, then it should be positively correlated with household income and possibly with a household's expressed satisfaction with its housing unit or neighborhood. Also, if the residual reflects changes in shopping behavior, then the search behavior of Experimental households should show some differences from Control households. These specification issues have been assessed in detail by Merrill (1977) (in the development of the hedonic index), and Kennedy and Merrill (1979) (in analysis of the index's behavior over the experimental period). Analysis of the effect of Percent of Rent allowances suggested that the index tends to underestimate the amount of a unit's housing services in Pittsburgh but not in Phoenix.³ Thus, the hedonic index estimates of

¹No conclusive evidence of this was found by Merrill (1977).

²The housing units of all enrolled households were used to estimate the hedonic index. The sample is not a random sample of all dwelling units, since those households all have low or moderate incomes. (See Merrill, 1977.) Further, Census tracts with very low concentrations of rental units (no more than 5 percent of housing units in that tract) were excluded from the sampling frame.

³Results of this analysis are presented in Friedman and Weinberg (1978). The extent of the understatement of housing service change in Pittsburgh is about one-third--that is, actual changes in Pittsburgh housing services may be as much as 1.5 times the estimated change (see Chapter 5, Section 5.2).

housing services changes may be considered lower bounds of actual changes in real housing in Pittsburgh but are likely to be accurate in Phoenix.

Assuming that the hedonic index, $\widehat{\ln(Q)}$, does measure the average market value of housing services accurately, and that deviations from the market average due to tenure characteristics are also measured accurately by the term $Z\hat{\gamma}$ of Equation (4), then the log of the average market value of a unit, corrected for tenure conditions, is $(\ln(Q) + Z\hat{\gamma})$. The logarithm of the overpayment for each household can be calculated by

$$(6) \quad \hat{\mu} = \ln(R) - (\widehat{\ln(Q)} + Z\hat{\gamma})$$

and the median percentage overpayment computed as $\exp(\hat{\mu}) - 1$.¹ Table 6-1 presents the median percentage overpayment relative to the market average for the Minimum Standards, Control, and Unconstrained households that met the Minimum Standards requirements at two years after enrollment.^{2,3} No significant overpayment relative to the market average was found in either site.⁴ Nor does it appear that the Minimum Standards allowance offer induced households to overpay. There is no significant difference between the overpayment of Minimum Standards and Control households (see Table 6-2) or between Minimum Standards and Unconstrained households (see Table 6-1). Tables 6-3 and 6-4 present the median percentage overpayment for Minimum Rent, Control, and Unconstrained households that met the Minimum Rent requirements at two years after enrollment. The data suggest that significant overpayment occurred in both sites for both Control and Experimental households that met either Minimum Rent requirement. This is to be expected. Selecting households with above average rents will to some extent select not

¹See Section 5.1 for an explanation of why this is interpreted as the median. In Chapter 5, the experimental effect examined was the ratio of actual to normal rent; (R/\hat{R}_N) . The percentage overpayment is the ratio of actual rent to housing services adjusted for tenure conditions: $(R/\hat{Q}e^{Z\hat{\gamma}})$.

²Recall that of these three groups, only the Minimum Standards households were told about these standards and were required to meet them.

³These numbers are corrected for inflation by using the mean hedonic residual at two years after enrollment for all Control households as an estimate of inflation.

⁴Significant overpayment relative to the market average would not necessarily imply that households obtained "bad deals." The hedonic residual $\hat{\mu}$ may include some omitted quality items, though this was found to be unlikely in Phoenix. (See Friedman and Weinberg, 1978, Chapter 5.)

Table 6-1

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET THE MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Control households	2.8% (1.8)	(81)	-1.7% (2.0)	(87)
Minimum Standards households	0.3 (2.3)	(83)	1.8 (3.0)	(84)
Unconstrained households	[-3.0] (4.9)	(14)	5.4 (6.2)	(17)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	1.5 (0.9)	(29)	-5.7 (6.5)	(49)
Minimum Standards households	0.2 (3.0)	(45)	1.1 (3.5)	(59)
Unconstrained households	[-10.2] (6.9)	(6)	[3.4] (8.3)	(9)
MET REQUIREMENTS AT ENROLLMENT				
Control households	3.6 (2.3)	(52)	3.7 (4.6)	(38)
Minimum Standards households	0.5 (3.3)	(38)	3.4 (5.3)	(25)
Unconstrained households	[2.8] (7.0)	(8)	[7.8] (9.5)	(8)

SAMPLE. Minimum Standards, Unconstrained, and Control households active and meeting the Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment of Control and Unconstrained households not significantly different from that of Minimum Standards households at the 0.10 level.

Table 6-2

ESTIMATED PERCENTAGE OVERPAYMENT RELATIVE TO CONTROL HOUSEHOLDS
FOR MINIMUM STANDARDS AND UNCONSTRAINED HOUSEHOLDS THAT MET
MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	MINIMUM STANDARDS HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	-2.4% (2.8)	-5.6% (5.1)	3.5% (3.7)	7.2% (6.6)
Did not meet requirements at enrollment	-2.5 (3.4)	-12.6† (6.9)	2.8 (4.1)	5.2 (8.7)
Met requirements at enrollment	-2.3 (3.6)	0.0 (7.0)	5.2 (5.9)	9.6 (10.0)

SAMPLE: Minimum Standards and Unconstrained households active and meeting Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

a. Computed as $e^{(\hat{\mu}_E - \hat{\mu}_C) - 1}$ rather than as $(e^{\hat{\mu}_E - 1}) - (e^{\hat{\mu}_C - 1})$, where $\hat{\mu}_E$ is the estimated residual for Experimental households and $\hat{\mu}_C$ is the estimated residual for Control households.

† t-statistic of comparison significant at the 0.10 level.

Table 6-3

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET THE MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Control households	4.9% ^{**} (0.6)	(214)	7.9% ^{**} (1.5)	(125)
Minimum Rent Low households	6.8 ^{**} (2.3)	(95)	9.0 [*] (3.7)	(63)
Unconstrained households	2.7 (3.2)	(39)	5.5 (5.5)	(23)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	-2.1 ^{**} (0.3)	(43)	7.5 ^{**} (1.5)	(28)
Minimum Rent Low households	3.7 (4.2)	(24)	13.5 [*] (5.9)	(25)
Unconstrained households	[-8.0] (5.7)	(10)	[1.9] (9.7)	(7)
MET REQUIREMENTS AT ENROLLMENT				
Control households	6.8 ^{**} (0.8)	(171)	8.0 ^{**} (1.5)	(97)
Minimum Rent Low households	7.9 ^{**} (2.6)	(71)	6.1 (4.4)	(38)
Unconstrained households	6.7 [†] (3.7)	(29)	7.0 (6.6)	(16)

SAMPLE. Minimum Rent Low, Unconstrained, and Control households active and meeting the Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment of Control and Unconstrained households not significantly different from that of Minimum Rent Low households at the 0.10 level.

† t-statistic of residual significant at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level.

Table 6-4

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET THE MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Control households	10.94** ^a (1.2)	(129)	10.43** (2.3)	(80)
Minimum Rent High households	17.7** (3.1)	(58)	14.1** (4.4)	(44)
Unconstrained households	4.4 ^b (4.0)	(25)	[14.1]† (7.1)	(15)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	7.6** (0.8)	(41)	9.1** (2.0)	(26)
Minimum Rent High households	20.3** (4.7)	(25)	14.9** (5.7)	(26)
Unconstrained households	[-1.2] ^b (5.5)	(12)	[11.9] (9.7)	(8)
MET REQUIREMENTS AT ENROLLMENT				
Control households	12.5** (1.3)	(88)	11.1** (2.5)	(54)
Minimum Rent High households	15.7** (3.9)	(33)	13.1† (6.7)	(18)
Unconstrained households	[9.8]† (5.7)	(13)	[16.6] (10.9)	(7)

SAMPLE Minimum Rent High, Unconstrained, and Control households active and meeting the Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.
a. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.05 level.

b. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.01 level.

† t-statistic of residual significant at the 0.10 level.

** t-statistic of residual significant at the 0.01 level.

only households with above-average housing but also households that pay more than average for the housing they obtain.¹

There was no significant difference between the Minimum Rent Low and the Control groups or between Minimum Rent Low and the Unconstrained households (see Table 6-5). This suggests that the allowance did not induce very substantial overpayment. (Some induced overpayment is, of course, implied by the fact that the households induced to meet requirements were apparently overpaying more than they would have normally.)

Significant program effects on overpayment were found for Minimum Rent High households in Pittsburgh. The difference between all Minimum Rent High and all Control households that met the Minimum Rent High requirement at two years after enrollment (and between those two groups that only met after enrollment) is significant at the 0.05 level (see Table 6-6). Furthermore, Minimum Rent High households overpaid by significantly more than similar Unconstrained households in Pittsburgh (see Table 6-4). The fact that this did not occur in Phoenix (which had a relatively loose housing market during the experiment) suggests that the Minimum Rent High requirements themselves may induce significant overpayment only in a relatively tight housing market (Pittsburgh).

Demographic differences in expenditure response indicated in Chapter 5 suggest that there may be demographic differences in overpayment as well. Furthermore, certain types of households may find it particularly difficult to shop for housing. For example, minority households may face discrimination that forces them to pay more for units than would nonminority households; the elderly may find housing search difficult and accept higher-priced units; poor households may not be able to afford extensive search and end up in overpriced units.

Table 6-7 indicates that poverty households were overpaying significantly more (relative to Control households) than nonpoverty households in both sites but mainly for units meeting the Minimum Standards. This suggests that poorer households find it difficult to find acceptable housing that meets the Minimum Standards without overpaying (relative to nonpoverty households). Poverty households that met the Minimum Rent Low requirement

¹The reasoning here is similar to that of Section 4.3.

Table 6-5

ESTIMATED PERCENTAGE OVERPAYMENT RELATIVE TO CONTROL HOUSEHOLDS
FOR MINIMUM RENT LOW AND UNCONSTRAINED HOUSEHOLDS THAT MET
MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	MINIMUM RENT LOW HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	1.8% (2.1)	-2.1% (2.9)	1.1% (3.6)	-2.2% (5.1)
Did not meet requirements at enrollment	-1.1 (3.7)	-12.3* (5.0)	5.3 (5.5)	-5.5 (8.7)
Met requirements at enrollment	2.8 (2.3)	1.6 (3.3)	-1.6 (4.2)	-0.8 (6.0)

SAMPLE: Minimum Rent Low and Unconstrained households active and meeting Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

a. Computed as $e^{(\hat{\mu}_E - \hat{\mu}_C)} - 1$ rather than as $(e^{\hat{\mu}_E} - 1) - (e^{\hat{\mu}_C} - 1)$, where $\hat{\mu}_E$ is the estimated residual for Experimental households and $\hat{\mu}_C$ is the estimated residual for Control households.

* t-statistic of comparison significant at the 0.05 level.

Table 6-6

ESTIMATED PERCENTAGE OVERPAYMENT RELATIVE TO CONTROL HOUSEHOLDS
FOR MINIMUM RENT HIGH AND UNCONSTRAINED HOUSEHOLDS THAT MET
MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	MINIMUM RENT HIGH HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	UNCONSTRAINED HOUSEHOLDS
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	6.1%* (2.8)	-5.9%† (3.4)	3.4% (4.4)	3.3% (6.6)
Did not meet requirements at enrollment	8.5* (4.0)	-10.9* (4.5)	4.0 (5.4)	1.4 (8.7)
Met requirements at enrollment	4.3 (3.3)	-1.0 (4.6)	2.4 (6.3)	5.6 (9.8)

SAMPLE: Minimum Rent High and Unconstrained households active and meeting Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

a. Computed as $e^{(\hat{\mu}_E - \hat{\mu}_C)} - 1$ rather than as $(e^{\hat{\mu}_E} - 1) - (e^{\hat{\mu}_C} - 1)$, where $\hat{\mu}_E$ is the estimated residual for Experimental households and $\hat{\mu}_C$ is the estimated residual for Control households.

† t-statistic of comparison significant at the 0.10 level.

* t-statistic of comparison significant at the 0.05 level.

Table 6-7
 MEDIAN PERCENTAGE OVERPAYMENT AT TWO YEARS AFTER ENROLLMENT
 ABOVE THAT OF SIMILAR CONTROL HOUSEHOLDS BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	MINIMUM STANDARDS	MINIMUM RENT LOW	MINIMUM RENT HIGH
	HOUSEHOLDS	HOUSEHOLDS	HOUSEHOLDS
	Percentage Overpayment	Percentage Overpayment	Percentage Overpayment
PITTSBURGH			
ALL HOUSEHOLDS	-2.4% (2.8)	1.8% (2.1)	6.1%* (2.8)
Nonminority	-3.9 (2.9)	2.1 (2.3)	6.2* (2.7)
Minority ^a	18.0 ^c (9.9)	2.8 (6.1)	5.5 (11.5)
Nonelderly	-2.3 (3.4)	1.8 (2.4)	6.9* (3.2)
Elderly	-2.8 (5.3)	1.4 (4.4)	2.7 (5.4)
Poverty	8.0 (5.6)	6.5 [†] (3.4)	4.7 (5.0)
Nonpoverty	-6.0 ^c (3.6)	-1.7 ^b (3.0)	7.6* (3.3)
PHOENIX			
ALL HOUSEHOLDS	3.5 (3.7)	1.1 (3.6)	3.4 (4.4)
Nonminority	0.3 (4.1)	0.3 (4.3)	4.0 (5.0)
Minority ^a	4.0 (9.2)	1.8 (7.9)	-2.7 (10.1)
Nonelderly	0.1 (4.0)	2.7 (4.1)	3.1 (4.5)
Elderly	13.2 (8.6)	-3.2 (7.9)	4.0 (13.0)
Poverty	31.9** (10.7)	4.6 (8.0)	3.3 (12.4)
Nonpoverty	-2.0 ^d (3.4)	-0.9 (3.4)	5.2 (4.1)

SAMPLE Housing Gap households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE. Standard error in parentheses.

a. Minority is black households in Pittsburgh and Spanish American households in Phoenix.

b. Overpayment by the two groups of households in this stratification significantly different at the 0.10 level.

c. Overpayment by the two groups of households in this stratification significantly different at the 0.05 level.

d. Overpayment by the two groups of households in this stratification significantly different at the 0.01 level.

† Overpayment by Housing Gap households in this group significantly above similar Control households at the 0.10 level.

* Overpayment by Housing Gap households in this group significantly above similar Control households at the 0.05 level.

** Overpayment by Housing Gap households in this group significantly above similar Control households at the 0.01 level.

in Pittsburgh were also overpaying relative to nonpoverty households, though this was not true in Phoenix or for the Minimum Rent High requirement in either site.

Finally, it should be noted that minority households paid significantly more than nonminority households for units that met the Minimum Standards in Pittsburgh but not in Phoenix. This, coupled with the other findings, suggests that in a tight housing market disadvantaged households may find it difficult to find housing that meets the Minimum Standards requirement without overpaying for those units.¹ It does not appear that it is the Minimum Standards allowance offer that induced households to overpay. There is no significant difference between the overpayment of Minimum Standards and Control households or between Minimum Standards and Unconstrained households (see Table 6-2).

6.2 ALLOWANCE EFFECTS ON HOUSING SERVICES

The same methodology used to determine the experimental impact on expenditures can be used to determine the experimental impact on housing services.² The dependent variable in this analysis was the hedonic index of housing services. As discussed in Section 6.1, the hedonic index estimates of housing service changes can only be considered lower bounds on the actual changes in real housing in Pittsburgh. Selection bias was indicated for each group of Housing Gap households.³ The estimates presented below for the median increase in housing services above normal have been corrected for this bias using Control households. The overall effects of the allowance payment on housing services are much the same for the four groups analyzed--Minimum Standards, Minimum Rent Low, Minimum Rent High, and Unconstrained households.

¹The similarity of results for the comparisons by poverty and minority status may be due, in part, to the fact that of the poverty households, approximately 25 percent in Pittsburgh and 35 percent in Phoenix were minority.

²The same methodology could have been used to predict "normal overpayment" at two years after enrollment. This would require a model of household behavior with regard to shopping, including some recognition of supply considerations. This alternative was not pursued here, however. (See Weinberg et al., (forthcoming), for a simple correlation model used to predict the hedonic residual at two years.)

³See Appendix Tables IX-26 and IX-33.

Effects for Minimum Standards Households

As was true for housing expenditures, the overall increase in housing services above normal for Minimum Standards households in Pittsburgh was not significant at the 0.10 level (see Table 6-8). Unlike housing expenditures, there was also no significant effect on housing services for households that met requirements after enrollment in Pittsburgh. This may reflect the effect of omitted variables in the hedonic index in Pittsburgh, noted in Section 6.1. The estimated changes in housing expenditures for each group of households in Pittsburgh are all about 40 percent higher than the change in housing services. Friedman and Weinberg (1978, Chapter 5) suggest that because there is evidence that the hedonic index in Pittsburgh omitted some quality items, an upward adjustment of about 50 percent is reasonable there. This would make the estimated change in housing services match the change in expenditures almost exactly¹ (indeed even the unadjusted figures for housing services are within a standard deviation of the estimates for expenditures).²

The changes in housing services in Phoenix are significant at the 0.05 level both for all households and for households that only met requirements after enrollment. As with expenditures, these increases are larger than those estimated for Pittsburgh (even if the Pittsburgh numbers are inflated by a factor of 1.5 as suggested above). The increases in housing services are, however, much lower than increases in expenditures. This suggests, contrary to Table 6-1, that Phoenix Minimum Standards households did overpay, at least in terms of the changes in expenditures associated with the allowance.

¹The expenditure estimates (from Table 5-1) and the adjusted housing services estimates are:

	<u>INCREASE ABOVE NORMAL IN:</u>	
	<u>Expenditures</u>	<u>Adjusted Housing Services</u>
All Minimum Standards recipients.....	4.3%	4.6%
Minimum Standards recipients that met after enrollment.....	7.5	8.4
Minimum Standards recipients that met at enrollment.....	1.1	1.2

²This is not an exact test, since the errors of estimate for the two variables are undoubtedly correlated. Exact tests are difficult to perform because of the corrections applied to the estimates both because of omitted variables and because of selection bias.

Table 6-8

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS
THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	0.030 (0.024)	3.1% (2.5)	(79)	0.097** (0.033)	10.2% (3.7)	(71)
Did not meet requirements at enrollment	0.054 (0.039)	5.6 (4.1)	(43)	0.100* (0.042)	10.5 (4.7)	(50)
Met requirements at enrollment ^a	0.008 (0.026)	0.8 (2.6)	(36)	0.079† (0.045)	8.2 (4.9)	(21)

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Effects are corrected for selection bias using Control households that did not meet Minimum Standards requirements at two years after enrollment. Standard error in parentheses.

a. No selection bias for this group.

† t-statistic of estimated effect significant at the 0.10 level.

* t-statistic of estimated effect significant at the 0.05 level.

** t-statistic of estimated effect significant at the 0.01 level.

This overpayment is concentrated among Phoenix households that did not meet the Minimum Standards requirements at enrollment. Indeed, households that already met requirements at enrollment show a significant (at the 0.10 level) increase in housing services even though they showed no significant increase in expenditures. Why this should be the case is not clear, and the result must be treated with some caution.

Effects for Minimum Rent Households

Tables 6-9 and 6-10 present the estimates of housing services changes for Minimum Rent households. As was the case with expenditures, Minimum Rent Low households in Pittsburgh show no significant increase in housing services. Even Pittsburgh Minimum Rent Low and Minimum Rent High households that only met requirements after enrollment (respectively, an estimated 8.7 percent increase in expenditures above normal, significant at the 0.10 level and an estimated 15.8 percent increase in expenditures above normal, significant at the 0.01 level) show no increase in housing services. Thus, it appears that the allowance had little or no effect on the housing services obtained by Minimum Rent households in Pittsburgh. Such additional housing expenditures as there were in that site went largely for increased rents without any material real change in housing.

In Phoenix, the median allowance-induced increases in housing services above normal were significant for both Minimum Rent groups (about 11 percent for households in the Minimum Rent Low plans and about 18 percent for households in the Minimum Rent High plans). As expected, households that met the housing requirements only after enrollment had the largest increases (20.2 percent in Minimum Rent Low plans and 26.0 percent in the Minimum Rent High plans), while those that already met requirements at enrollment showed no significant increases. Nevertheless, the change in housing services above normal was still substantially less than the change in expenditures.¹

¹The increase in expenditures above normal (from Tables 5-10 and 5-11) were:

	<u>Pittsburgh</u>	<u>Phoenix</u>
<u>All Households</u>		
Minimum Rent Low.....	2.8%	15.7%
Minimum Rent High.....	8.5	28.4
<u>Households Not Meeting at Enrollment</u>		
Minimum Rent Low.....	8.7	42.0
Minimum Rent High.....	15.8	42.6

Table 6-9

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	0.000 (0.020)	0.0% (2.0)	(85)	0.104** (0.034)	11.0% (3.8)	(55)
Did not meet requirements at enrollment	-0.009 (0.045)	-0.9 (4.4)	(20)	0.184** (0.060)	20.2 (7.2)	(20)
Met requirements at enrollment ^a	0.004 (0.022)	0.5 (2.2)	(65)	0.025 (0.038)	2.5 (4.0)	(35)

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Effects are corrected for selection bias using Control households that did not meet Minimum Rent Low requirements at two years after enrollment. Standard error in parentheses.

a. No selection bias for this group.

** t-statistic of estimated effect significant at the 0.01 level.

Table 6-10

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS
THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	0.009 (0.026)	0.9% (2.6)	(53)	0.166** (0.042)	18.0% (4.9)	(41)
Did not meet requirements at enrollment	0.031 (0.047)	3.1 (4.8)	(23)	0.232** (0.058)	26.0 (7.3)	(25)
Met requirements at enrollment ^a	-0.007 (0.027)	-0.7 (2.7)	(30)	0.041 (0.050)	4.2 (5.2)	(16)

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Effects are corrected for selection bias using Control households that did not meet Minimum Rent High requirements at two years after enrollment. Standard error in parentheses.

a. No selection bias for this group.

** t-statistic of estimated effect significant at the 0.01 level.

Effects for Unconstrained Households

Unconstrained households had an increase in housing services above normal of 3 percent in Pittsburgh and 13 percent in Phoenix, the latter significant at the 0.01 level (see Table 6-11). These increases are not significantly different from the Housing Gap groups (see Appendix Tables IX-42 through IX-44). Unconstrained households did not overpay for their units and this increase in housing services reflects the change for expenditures: 3 percent above normal in Pittsburgh and 16 percent above normal in Phoenix (see Table 5-8).

6.3 SUMMARY

In summary, all of the allowance plans may have had about the same overall effect on the housing services of participants as the Unconstrained payments. In no case is the estimated overall increase in housing services significantly different from that found for Unconstrained households. For Minimum Rent High plans in Pittsburgh and for Minimum Standards plans in Phoenix, this partly reflects induced shopping behavior. These households increased their expenditures by more than Unconstrained households. However, they were apparently induced by the allowance to shop less carefully than Unconstrained households, so that their overall increase in housing services was effectively the same.

Tables 6-12 through 6-15 present the proportion of the allowance payment that went to increased housing services.¹ Since the increases in housing services were less than the increases in expenditures, the proportions are consequently lower. Further, the proportions for the Housing Gap households are not very different from those for the Unconstrained households.

It must be emphasized that both the evidence on overpayment and the changes in housing services depend on the acceptance of the hedonic indices as a reliable measure. As was already noted, there is evidence that the Pittsburgh index tends to understate the value of housing services provided by a unit because of some omitted quality items. Even if the

¹Since the hedonic index in Pittsburgh has probably omitted some items, the proportion of the allowance going to increased housing services in that site is higher than the figures in the tables suggest.

Table 6-11

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR UNCONSTRAINED HOUSEHOLDS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
All Unconstrained households	0.0334 (0.0242)	3.4% (2.5)	(52)	0.1190** (0.0419)	12.6% (4.7)	(33)

SAMPLE: Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

** t-statistic of estimated effect significant at the 0.01 level.

Table 6-12

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM STANDARDS HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	3.1%	\$117	\$3.6	\$65	6%
Did not meet requirements at enrollment	5.6	113	6.3	66	10
Met requirements at enrollment	0.8	122	1.0	64	2
PHOENIX					
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	10.2	136	13.9	81	17
Did not meet requirements at enrollment	10.5	133	14.0	94	15
Met requirements at enrollment	8.2	144	11.8	52	23

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 6-8.

Table 6-13

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT LOW HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	0.0%	\$112	\$0.0	\$58	0%
Did not meet requirements at enrollment	-0.9	102	-0.9	61	-2
Met requirements at enrollment	0.5	115	0.6	56	1
PHOENIX					
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	11.0	138	15.2	86	18
Did not meet requirements at enrollment	20.2	117	23.6	109	22
Met requirements at enrollment	2.5	153	3.8	71	5

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 6-9.

Table 6-14

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT HIGH HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	0.9%	\$121	\$1.1	\$51	2%
Did not meet requirements at enrollment	3.1	111	3.4	50	7
Met requirements at enrollment	-0.7	130	-0.9	52	-2
PHOENIX					
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	18.0	146	26.3	103	26
Did not meet requirements at enrollment	26.0	132	34.3	114	30
Met requirements at enrollment	4.2	168	7.1	85	8

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 6-10.

Table 6-15

PROPORTION OF ALLOWANCE PAYMENT USED FOR INCREASED HOUSING SERVICES USING
COMPUTED ABOVE-NORMAL INCREASE FOR UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
All Unconstrained households	3.4%	\$107	\$3.6	\$54	7%
PHOENIX					
All Unconstrained households	12.6%	\$132	\$16.6	\$108	15%

SAMPLE: Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 6-11.

hedonic index does understate the absolute level of housing change, however, there is little reason to believe that the relative magnitude for Housing Gap and Unconstrained households are misstated.¹

¹If omitted quality items are correlated with meeting Minimum Standards, the comparison of Minimum Standards and Unconstrained households could also be biased. The lack of any significant overpayment for Control households that met the Minimum Standards requirement, however, suggests that this is not a problem.

REFERENCES

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CHAPTER 7
THE EFFECT OF MOBILITY STATUS
ON HOUSING CONSUMPTION

Chapters 5 and 6 presented estimates of the key experimental effects on housing expenditures and services. The most important explanatory variable was the household's enrollment housing requirement status. Households living in units that met their housing requirements at enrollment had normal increases in housing consumption, while those that met after enrollment had significantly above-normal increases in housing consumption.

The household's mobility status may also play an important role in determining changes in expenditures and services over the experimental period. Households that do not move typically do not make large changes either in their housing expenditures or, since the unit characteristics remain basically the same, in their housing services. In contrast, movers are the households expected to be most responsive to any allowance payment and often make relatively large changes in their housing consumption.¹

This chapter presents separate analyses for movers and stayers. Since normal changes are expected to differ by mobility status, different prediction equations for normal rent are used for each group: a prediction equation derived from Control households that did not move from their enrollment units is used for Housing Gap stayers' normal behavior and an equation derived from Control movers is used for Housing Gap movers' normal behavior.² To the extent that some Housing Gap households were induced to move by the allowance offer, however, this procedure is likely to underestimate the experimental effect on movers by overestimating their normal rent or housing services (stayers typically have lower rents than do movers). Thus, in estimating the normal behavior for Housing Gap movers, it is assumed that no households were induced by the allowance offer to move. Since the offer did apparently induce some households to move³ and the changes for

¹See Appendix V for changes in expenditures and in housing services over the two-year period for movers and stayers.

²The predicting equations are presented in Appendix VIII.

³MacMillan (1978) has found that Housing Gap households that did not meet their requirements at enrollment were more likely to move than otherwise similar Control households; see also Appendix XI.

movers are higher than those for stayers, the normal rent and housing services estimated for Housing Gap movers in this manner would be too high and thus the estimated experimental effects would be too low.

This assumption is nevertheless useful because it provides a better idea of the potential long-run response of households to an allowance program.

MacMillan (1978, p. 26) found that most low-income households (70 percent in Pittsburgh and 88 percent in Phoenix) will have moved in a five-year period. Thus, effects of the experiment due simply to induced moving might well be only an acceleration of normal behavior. Consequently, comparison of the response of Housing Gap movers with Control movers can be used to approximate the response of all households over a longer period of time.

Section 7.1 presents the computed experimental effects for stayers while Section 7.2 presents the results for movers. Each section presents data describing the experimental effects on expenditures and housing services and the percentage overpayment of households that met their requirements. No demographic distinctions are made due to the small sample sizes involved. Section 7.3 provides a brief summary of the chapter.

7.1 EXPERIMENTAL EFFECTS ON STAYERS

Recipient households that did not move from their enrollment units are of two kinds: those that received allowance payments because their units met their housing requirement at enrollment and those that upgraded their units to meet their requirement after enrollment.¹

Tables 7-1 through 7-4 present the experimental effect on expenditures for Housing Gap and Unconstrained stayers.² No group of stayers increased their housing expenditures significantly above normal levels. This was true even for households that met their requirements after enrollment through upgrading. Upgrading may therefore be the route to participation used by those

¹Upgraders are the subject of another report (Merrill and Joseph, 1979) and are examined here for completeness. That report provides more detail on their behavior.

²The estimates for Minimum Rent households are corrected for selection bias for consistency with the treatment of all Minimum Rent households even though no evidence of a significant bias on stayers in particular was found (see Appendix Tables IX-12 and IX-19).

Table 7-1

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS STAYERS
THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	0.014 (0.024)	1.4% (2.4)	(53)	0.031 (0.029)	3.1% (3.0)	(36)
Did not meet requirements at enrollment	-0.006 (0.037)	-0.5 (3.7)	(21)	0.038 (0.040)	3.9 (4.2)	(20)
Met requirements at enrollment	0.033 (0.032)	3.4 (3.3)	(32)	-0.008 (0.040)	-0.8 (3.9)	(16)

SAMPLE: Minimum Standards stayers active and meeting requirements 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 and payments file.

NOTES: Effects are not corrected for (insignificant) selection bias. Standard error in parentheses.

Table 7-2

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT LOW STAYERS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	-0.007 (0.023)	-0.7% (2.3)	(60)	0.037 (0.041)	3.8% (4.3)	(19)
Did not meet requirements at enrollment	[0.072] (0.052)	[7.5] (5.6)	(12)	[0.117] (0.135)	[12.4] (15.4)	(3)
Met requirements at enrollment ^a	-0.021 (0.029)	-2.1 (2.9)	(48)	-0.008 (0.039)	-0.8 (3.9)	(16)

SAMPLE: Minimum Rent Low stayers active and meeting requirements 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control stayers that did not meet the Minimum Rent Low requirements at two years after enrollment.

a. No selection bias for this group.

Table 7-3

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH STAYERS
THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	0.021 (0.037)	2.1% (3.8)	(28)	[0.047] (0.097)	[4.8]* (10.2)	(6)
Did not meet requirements at enrollment	[0.041] (0.093)	[4.2] (9.8)	(8)	--	--	(0)
Met requirements at enrollment ^a	0.023 (0.037)	2.3 (3.8)	(20)	[0.016] (0.058)	[1.6] (5.9)	(6)

SAMPLE: Minimum Rent High stayers active and meeting requirements 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control stayers that did not meet the Minimum Rent High requirements at two years after enrollment.

a. No selection bias for this group.

Table 7-4

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR UNCONSTRAINED STAYERS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
All Unconstrained stayers	0.005 (0.028)	0.5% (2.8)	(37)	[0.045] (0.042)	[4.6%] (4.4)	(15)

SAMPLE: Unconstrained stayers 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

households for which it is a relatively inexpensive means of meeting the requirements.¹ Likewise, no group of Housing Gap stayers had increases in their rent due to the allowance that were significantly greater than Unconstrained stayers (see Appendix Tables IX-37 through IX-39).

Tables 7-5 through 7-7 present figures on overpayment by stayers that met the various requirements at two years after enrollment. Sample sizes are frequently small, especially in Phoenix, so that firm conclusions are not possible. Nevertheless, it appears that households that met the Minimum Rent requirements without moving overpaid on average, while similar Minimum Standards stayers did not. The extent of overpayment was not, however, significantly different from that of Control households (see Table 7-8). Nor, as indicated above, did Minimum Rent stayers show any significant increase in expenditures. Thus, it appears that for households that did not move, the Minimum Rent requirement simply acted to select households with higher rents, including households that were overpaying relative to the market value of their units.

As indicated, Minimum Standards households that met requirements without moving, on the other hand, show no evidence of overpayment. Indeed, in Pittsburgh, where Control households that met Minimum Standards in place did have significant overpayments, Minimum Standards households showed no significant overpayment. Indeed, Minimum Standards households that upgraded to meet requirements paid significantly less (at the 0.10 level) than similar Control households in Pittsburgh (the size of the estimated difference between Minimum Standards and Control upgraders is similar in Phoenix but not significant; see Table 7-8).

Tables 7-9 through 7-12 present the experimental effect on housing services for Housing Gap and Unconstrained stayers. Only one group of Housing Gap stayers increased their housing services significantly above normal--Phoenix Minimum Standards households that met at enrollment. This finding is odd and may result from the small sample size involved. The overall housing services increases for stayers are not very different from the expenditure changes for those households, reflecting the finding that Housing Gap households generally did not overpay differently from similar Control households.

¹See Merrill and Joseph (1979) for further evidence on this point.

Table 7-5

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Control households	4.4%* (1.9)	(62)	0.8% (2.5)	(44)
Minimum Standards households	0.1 (2.7)	(52)	-4.6 (3.7)	(34)
Unconstrained households	[2.3] (5.1)	(9)	[1.9] (7.1)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	7.5% ^a (3.2)	(18)	4.5 (13.2)	(17)
Minimum Standards households	-3.7 (3.9)	(20)	-5.6 (4.5)	(20)
Unconstrained households	[-4.0] (11.9)	(2)	[-5.2] (11.1)	(3)
MET REQUIREMENTS AT ENROLLMENT				
Control households	3.1* (1.4)	(44)	-1.4 (4.1)	(27)
Minimum Standards households	2.5 (3.4)	(32)	[-3.1] (5.6)	(14)
Unconstrained households	[4.2] (7.0)	(7)	[5.7] (9.1)	(6)

SAMPLE Minimum Standards, Unconstrained, and Control stayers active and meeting Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimated overpayment significantly different from that of Minimum Standards households at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

Table 7-6

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Control households	5.64** (0.8)	(134)	10.84** (2.1)	(54)
Minimum Rent Low households	6.4* (2.6)	(62)	6.8 (5.2)	(19)
Unconstrained households	7.8† (4.1)	(21)	[4.6] (7.2)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	[-4.0]** (0.5)	(15)	[25.5]** (5.1)	(3)
Minimum Rent Low households	[3.0] (5.0)	(13)	[11.8] (13.1)	(3)
Unconstrained households	[2.5] (8.8)	(4)	[-37.3] ^a (12.9)	(1)
MET REQUIREMENTS AT ENROLLMENT				
Control households	6.9** (1.0)	(119)	10.0** (1.9)	(51)
Minimum Rent Low households	7.3* (2.9)	(49)	5.8 (5.5)	(16)
Unconstrained households	9.1† (4.7)	(17)	[11.5] (8.0)	(8)

SAMPLE: Minimum Rent Low, Unconstrained, and Control stayers active and meeting the Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimated overpayment significantly different from that of Minimum Rent Low households at the 0.10 level.

† t-statistic of residual significant at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level.

Table 7-7

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Control households	12.7*** (1.5)	(74)	12.8*** (2.9)	(37)
Minimum Rent High households	16.5** (3.8)	(30)	[12.3] (8.7)	(7)
Unconstrained households	[16.1]* (5.9)	(11)	[18.6]† (9.9)	(6)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	9.5** (1.1)	(18)	[15.4]** (3.5)	(5)
Minimum Rent High households	[19.3]* (6.9)	(9)	--	(0)
Unconstrained households	[20.8] (12.0)	(3)	[7.2] (22.2)	(1)
MET REQUIREMENTS AT ENROLLMENT				
Control households	13.7** (1.6)	(56)	12.4** (2.8)	(32)
Minimum Rent High households	15.2** (4.4)	(21)	[12.3] (8.7)	(7)
Unconstrained households	[14.4]† (6.9)	(8)	[21.0]† (11.1)	(5)

SAMPLE. Minimum Rent High, Unconstrained, and Control stayers active and meeting the Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment of Control and Unconstrained households not significantly different from Minimum Rent High households at the 0.10 level.

† t-statistic of residual significant at the 0.10 level

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level.

Table 7-8

ESTIMATED PERCENTAGE OVERPAYMENT RELATIVE TO CONTROL HOUSEHOLDS
FOR STAYERS THAT MET THEIR REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL STAYERS THAT MET REQUIREMENTS AT TWO YEARS	-4.1% (3.1)	0.7% (2.4)	3.3% (3.2)	-5.4% (4.4)	-3.7% (4.7)	-0.4% (7.6)
Did not meet requirements at enrollment	-7.7† (4.1)	-2.5 (4.2)	5.9 (5.4)	-6.4 (5.0)	[0.9] (10.8)	--
Met requirements at enrollment	-1.8 (3.7)	1.6 (2.6)	2.3 (3.6)	-3.9 (6.1)	-4.5 (4.9)	-0.4 (7.7)

SAMPLE: Housing Gap stayers active and meeting their requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Computed as $e^{(\hat{\mu}_E - \hat{\mu}_C)} - 1$ rather than as $(e^{\hat{\mu}_E} - 1) - (e^{\hat{\mu}_C} - 1)$, where $\hat{\mu}_E$ is the estimated residual for Experimental households and $\hat{\mu}_C$ is the estimated residual for Control households.

† t-statistic of comparison significant at the 0.10 level.

Table 7-9

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM STANDARDS STAYERS
THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	0.010 (0.017)	1.0% (1.7)	(50)	0.052* (0.020)	5.4% (2.1)	(32)
Did not meet requirements at enrollment	0.027 (0.060)	2.7 (6.2)	(19)	0.039 (0.024)	4.0 (2.5)	(20)
Met requirements at enrollment ^a	-0.019 (0.021)	-1.9 (2.1)	(31)	[0.069]* (0.027)	[7.2] (2.9)	(12)

SAMPLE: Minimum Standards stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control stayers that did not meet the Minimum Standards requirements at two years after enrollment.

a. No selection bias for this group.

* t-statistic of estimated effect significant at the 0.05 level.

Table 7-10

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT LOW STAYERS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	-0.003 (0.015)	-0.3% (1.5)	(55)	0.038 (0.023)	3.9% (2.4)	(18)
Did not meet requirements at enrollment	[-0.009] (0.031)	[-0.9] (3.1)	(11)	[0.037] (0.097)	[3.7] (10.1)	(2)
Met requirements at enrollment ^a	-0.008 (0.020)	-0.8 (2.0)	(44)	0.029 (0.024)	2.9 (2.5)	(16)

SAMPLE: Minimum Rent Low stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control stayers that did not meet the Minimum Rent Low requirements at two years after enrollment.

a. No selection bias for this group.

Table 7-11

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT HIGH STAYERS
THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL STAYERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	-0.035 (0.022)	-3.4% (2.1)	(27)	[0.026] (0.052)	[2.6] % (5.4)	(6)
Did not meet requirements at enrollment	[-0.052] (0.056)	[-5.1] (5.3)	(7)	--	--	(0)
Met requirements at enrollment ^a	-0.033 (0.024)	-3.3 (2.3)	(20)	[0.009] (0.035)	[0.9] (3.5)	(6)

SAMPLE: Minimum Rent High stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control stayers that did not meet the Minimum Rent High requirements at two years after enrollment.

a. No selection bias for this group.

Table 7-12

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR UNCONSTRAINED STAYERS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
All Unconstrained stayers	0.001 (0.017)	0.1% (1.7)	(33)	[0.065]* (0.023)	[6.7%] (2.5)	(15)

SAMPLE: Unconstrained stayers 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

* t-statistic of estimated effect significant at the 0.05 level.

Nor are the housing services increases significantly different from the changes for Unconstrained households.

7.2 EXPERIMENTAL EFFECT ON MOVERS

In contrast to the results for stayers, there was a significant experimental effect on the expenditures of movers (see Tables 7-13 through 7-15). The effects for the movers that only met Minimum Standards after enrollment were 9.9 percent above normal in Pittsburgh and 27.1 percent in Phoenix, significant at the 0.10 level in Pittsburgh and at the 0.01 level in Phoenix. (Recall that the mover response as defined here probably understates the true two-year response including the effects of induced moving.) Further, the effects for Minimum Rent movers that only met after enrollment were also significant at the 0.01 level (with one exception): for Minimum Rent Low movers, 5.4 percent (not significant) above normal in Pittsburgh but 33.1 percent above normal in Phoenix; for Minimum Rent High movers, 21.9 percent above normal in Pittsburgh and 36.1 percent in Phoenix. As was found in Chapter 5, there were no significant above-normal increases in rent for Housing Gap movers that already met requirements at enrollment. Unconstrained movers had above-normal increases in rent of 3.7 percent in Pittsburgh and 17.9 percent in Phoenix (the latter significant at the 0.05 level; see Table 7-16). Only one Housing Gap group had a significantly larger increase in rent than did similar Unconstrained households--Minimum Rent High households in Pittsburgh (but only at the 0.10 level).¹

Tables 7-17 through 7-19 present the percentage overpayment of movers that met the housing requirements at two years after enrollment relative to the market average. Minimum Standards movers paid significantly more than average in Phoenix (significant at the 0.10 level). Separate analysis of households that met at enrollment and those that only met after enrollment is difficult because of small sample sizes, but Minimum Standards movers that only met after enrollment appear to have overpaid for their units by more than similar Control households (the difference was significant only in Phoenix; see Table 7-20). For households that did not meet the Minimum Standards at enrollment, then, moving to a unit that met Minimum Standards

¹See Appendix Tables IX-37 through IX-39.

Table 7-13

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS MOVERS
THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	0.078 (0.048)	8.1% (5.3)	(31)	0.176** (0.046)	19.2% (5.5)	(54)
Did not meet requirements at enrollment	0.094† (0.055)	9.9 (6.1)	(26)	0.240** (0.058)	27.1 (7.3)	(43)
Met requirements at enrollment	[-0.066] (0.099)	[-6.4] (9.4)	(5)	[-0.041] (0.066)	[-4.0] (6.3)	(11)

SAMPLE: Minimum Standards movers active and meeting requirements 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are not corrected for (insignificant) selection bias.

† t-statistic of estimated effect significant at the 0.10 level.

** t-statistic of estimated effect significant at the 0.01 level.

Table 7-14

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT LOW MOVERS
THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	0.050 ^b (0.044)	5.1% ^b (4.6)	(41)	0.135** (0.048)	14.5% (5.5)	(49)
Did not meet requirements at enrollment	[0.053] ^b (0.070)	[5.4] ^b (7.4)	(15)	0.286** (0.073)	33.1 (9.8)	(23)
Met requirements at enrollment ^a	0.083 (0.056)	8.7 (6.1)	(26)	-0.029 (0.050)	-2.8 (4.8)	(26)

SAMPLE: Minimum Rent Low movers active and meeting requirements 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control movers that did not meet the Minimum Rent Low requirements at two years after enrollment.

a. No selection bias for this group.

b. Correction based on 15 or fewer Control observations.

** t-statistic of estimated effect significant at the 0.01 level.

Table 7-15

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH MOVERS
THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	0.131** (0.050)	14.0% (5.7)	(29)	0.234** (0.055)	26.4% (7.0)	(39)
Did not meet requirements at enrollment	0.198** (0.067)	21.9 (8.2)	(17)	0.308** (0.071)	36.1 (9.7)	(28)
Met requirements at enrollment ^a	[0.048] (0.070)	[4.9] (7.3)	(12)	[0.074] (0.066)	[7.7] (7.1)	(11)

SAMPLE: Minimum Rent High movers active and meeting requirements 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control movers that did not meet the Minimum Rent High requirements at two years after enrollment.

a. No selection bias for this group.

** t-statistic of estimated effect significant at the 0.01 level.

Table 7-16

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR UNCONSTRAINED MOVERS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
All Unconstrained movers	0.036 (0.056)	3.7% (5.8)	(22)	0.165* (0.066)	17.9% (7.8)	(22)

SAMPLE: Unconstrained movers 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 and payments file.

NOTE: Standard error in parentheses.

* t-statistic of estimated effect significant at the 0.05 level.

Table 7-17

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Control households	-2.7% (4.1)	(19)	-3.9% ^b (3.0)	(43)
Minimum Standards households	1.0 (4.3)	(31)	8.2† (4.7)	(50)
Unconstrained households	[-11.6] (8.4)	(5)	[9.4] (10.3)	(8)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	[-7.4] (11.0)	(11)	-8.5 ^a (6.3)	(32)
Minimum Standards households	4.1 (4.8)	(25)	7.4 (5.2)	(39)
Unconstrained households	[-12.4] (9.3)	(4)	[10.8] (12.2)	(6)
MET REQUIREMENTS AT ENROLLMENT				
Control households	[4.1] (6.7)	(8)	[10.6] (9.4)	(11)
Minimum Standards households	[-11.2] (8.1)	(6)	[11.4] (9.9)	(11)
Unconstrained households	[-8.6] (20.5)	(1)	[5.2] (21.5)	(2)

SAMPLE. Minimum Standards, Unconstrained, and Control movers active and meeting Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimated overpayment significantly different from that of Minimum Standards households at the 0.10 level.

b. Estimated overpayment significantly different from that of Minimum Standards households at the 0.05 level.

† t-statistic of residual significant at the 0.10 level.

Table 7-18

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Control households	4.0%** (0.9)	(80)	7.2%** (2.0)	(71)
Minimum Rent Low households	7.8† (4.6)	(33)	13.2* (5.3)	(44)
Unconstrained households	-2.5 (5.3)	(16)	[8.1] (8.1)	(14)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	-0.4** (0.1)	(28)	10.0** (2.9)	(25)
Minimum Rent Low households	[5.1] (7.7)	(11)	18.6* (7.7)	(22)
Unconstrained households	[-13.8] (8.3)	(6)	15.0 (13.5)	(6)
MET REQUIREMENTS AT ENROLLMENT				
Control households	6.5** (1.3)	(52)	5.8** (1.6)	(46)
Minimum Rent Low households	9.1† (5.1)	(22)	8.0 (6.8)	(22)
Unconstrained households	[3.7] (6.3)	(12)	[3.2] (10.2)	(8)

SAMPLE Minimum Rent Low, Unconstrained, and Control movers active and meeting Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment of Control and Unconstrained households not significantly different from Minimum Rent Low households at the 0.10 level.

† t-statistic of residual significant at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level.

Table 7-19

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Control households	8.9% ^a (1.8)	(55)	9.5% ^{**} (3.3)	(43)
Minimum Rent High households	19.6% ^{**} (5.4)	(28)	19.0% ^{**} (5.8)	(37)
Unconstrained households	[-3.4] ^c (5.8)	(14)	[13.2] (10.1)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Control households	6.8% ^a (1.4)	(23)	11.7% ^{**} (4.2)	(21)
Minimum Rent High households	21.9% ^{**} (7.2)	(16)	20.4% ^{**} (6.9)	(26)
Unconstrained households	[-6.7] ^c (7.1)	(9)	[17.3] (12.1)	(7)
MET REQUIREMENTS AT ENROLLMENT				
Control households	10.5% ^{**} (2.1)	(32)	7.5% [*] (2.8)	(22)
Minimum Rent High households	[16.6] [*] (7.5)	(12)	[15.8] (10.2)	(11)
Unconstrained households	[2.9] (10.0)	(5)	[0.0] (20.3)	(2)

SAMPLE Minimum Rent High, Unconstrained, and Control movers active and meeting Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a Estimated overpayment significantly different from that of Minimum Rent High households at the 0.10 level.

b. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.05 level

c Estimated overpayment significantly different from that of Minimum Rent High households at the 0.01 level.

* t-statistic of residual significant at the 0.05 level

** t-statistic of residual significant at the 0.01 level

Table 7-20

ESTIMATED PERCENTAGE OVERPAYMENT RELATIVE TO CONTROL HOUSEHOLDS
FOR MOVERS THAT MET THEIR REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL MOVERS THAT MET REQUIREMENTS AT TWO YEARS	3.8% (6.3)	3.6% (4.2)	9.8%* (4.9)	12.7%* (6.0)	5.5% (5.2)	8.6% (6.1)
Did not meet requirements at enrollment	7.0 (6.8)	1.0 (6.9)	11.9† (6.3)	11.7† (6.4)	10.6 (7.2)	9.9 (7.0)
Met requirements at enrollment	[-8.7] (9.3)	4.8 (4.5)	7.0 (6.4)	16.0 (11.0)	0.8 (6.4)	5.7 (9.7)

SAMPLE: Housing Gap movers active and meeting their requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Computed as $e^{(\hat{\mu}_E - \hat{\mu}_C)} - 1$ rather than as $(e^{\hat{\mu}_E} - 1) - (e^{\hat{\mu}_C} - 1)$, where $\hat{\mu}_E$ is the estimated residual for Experimental households and $\hat{\mu}_C$ is the estimated residual for Control households.

† t-statistic of comparison significant at the 0.10 level.

* t-statistic of comparison significant at the 0.05 level.

resulted in overpayment relative to similar Control households, while meeting the requirements in place did not (cf. Table 7-5).

Minimum Rent movers that met their requirements at two years paid significantly more than average for their units in both sites. There was no significant difference between the overpayment of Minimum Rent Low movers and similar Control movers. However, several Minimum Rent High groups in Pittsburgh did overpay by significantly more than similar Control movers and also than similar Unconstrained movers (significant in two cases). In addition, Minimum Rent High movers paid more above average than did households in Minimum Rent Low plans (20 versus 8 percent above average, respectively, in Pittsburgh and 19 versus 13 percent above average in Phoenix) or movers in Minimum Standards plans (which had overpayments of 1 percent in Pittsburgh and 8 percent in Phoenix). Furthermore, movers overpaid by a larger percentage amount than did stayers. It appears that the Minimum Rent High plans induced significant overpayment for units, even accounting for their bias toward selection of households that would ordinarily overpay for their units.

Tables 7-21 through 7-24 present the increases in housing services above normal for Housing Gap and Unconstrained movers. Only Minimum Rent movers in Phoenix show a significant increase in their housing services above normal, and the increases for all groups are clearly below the increases in expenditures (shown in Tables 7-14 and 7-15). As suggested in Chapter 6, part of the difference can be accounted for by variables omitted from the hedonic equation in Pittsburgh. The significant overpayment relative to the market average for Minimum Rent movers in Pittsburgh (see Tables 7-18 and 7-19) can account for the remaining differences.

In Phoenix, the differences also reflect overpayment. Minimum Standards movers overpaid both relative to the market average, and relative to Control movers, which resulted in some difference between the estimates of expenditures and services increases. The estimates of the increases in expenditures and housing services are close for Minimum Rent Low households; the large overpayment of Minimum Rent High movers relative to similar Control movers accounts for the difference in estimates for that group.

Unconstrained movers show increases in housing services significantly above normal (at the 0.10 level)--9 percent in Pittsburgh and 13 percent in

Table 7-21

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM STANDARDS MOVERS THAT
MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	0.016 (0.050)	1.7% (5.1)	(29)	0.074 (0.049)	7.6% (5.3)	(39)
Did not meet requirements at enrollment	0.027 (0.060)	2.7 (6.2)	(24)	0.091 (0.058)	9.5 (6.4)	(30)
Met requirements at enrollment ^a	[0.011] (0.085)	[1.1] (8.6)	(5)	[0.029] (0.083)	[2.9] (8.6)	(9)

SAMPLE: Minimum Standards movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control movers that did not meet the Minimum Standards requirements at two years after enrollment.

a. No selection bias for this group.

Table 7-22

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT LOW MOVERS THAT
MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	0.003 ^b (0.042)	0.3% (4.3)	(30)	0.116* (0.048)	12.3% (5.4)	(37)
Did not meet requirements at enrollment	[-0.051] ^b (0.080)	[-5.0] (7.6)	(9)	0.192* (0.068)	21.2 (8.2)	(18)
Met requirements at enrollment ^a	0.033 (0.051)	3.3 (5.3)	(21)	-0.004 (0.068)	-0.3 (6.8)	(19)

SAMPLE: Minimum Rent Low movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control movers that did not meet the Minimum Rent Low requirements at two years after enrollment.

a. No selection bias for this group.

b. Correction based on 15 or fewer Control observations.

* t-statistic of estimated effect significant at the 0.05 level.

Table 7-23

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT HIGH MOVERS THAT
MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	0.068 (0.045)	7.1% (4.8)	(26)	0.130* (0.050)	13.9% (5.7)	(35)
Did not meet requirements at enrollment	0.102 (0.061)	10.7 (6.8)	(16)	0.187* (0.062)	20.5 (7.5)	(25)
Met requirements at enrollment ^a	[0.014] (0.064)	[1.4] (6.5)	(10)	[-0.032] (0.080)	[-3.1] (7.8)	(10)

SAMPLE: Minimum Rent High movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Effects are corrected for selection bias using Control movers that did not meet the Minimum Rent High requirements at two years after enrollment.

a. No selection bias for this group.

* t-statistic of estimated effect significant at the 0.05 level.

Table 7-24

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE
INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR UNCONSTRAINED MOVERS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	MEDIAN PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
All Unconstrained movers	0.088† (0.050)	9.2% (5.5)	(19)	0.126† (0.063)	13.4% (7.2)	(18)

SAMPLE: Unconstrained movers 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

† t-statistic of estimated effect significant at the 0.10 level.

Phoenix (see Table 7-24). Appendix Tables IX-42 and IX-44 indicate that these increases are not significantly different from the increases for the Housing Gap movers.

The pattern of results for expenditures and services is maintained when changes are considered in relation to the allowance payment. Movers that only met requirements after enrollment in most cases allocated more of the allowance payment to rent than similar households in the overall sample (cf. Tables 5-21 through 5-23 and 5-26). In Pittsburgh, these proportions were 16 percent for Minimum Standards movers, 12 percent for Minimum Rent Low movers, and 45 percent for Minimum Rent High movers; in Phoenix, 32, 22, and 38 percent, respectively (see Tables 7-25 through 7-27). These allocations are generally greater than the proportions allocated by Unconstrained households--8 percent in Pittsburgh and 24 percent in Phoenix (see Table 7-28). Housing Gap movers do not, however, devote any greater proportion of the allowance payment to increased housing services than do Unconstrained movers (see Tables 7-29 through 7-32).

7.3 SUMMARY AND COMPARISON

The increases in rent above normal for movers are for the most part larger than those for all households (see Table 7-33). Because of this, the proportion of the payment allocated to increased housing expenditures is also typically larger. Both of these results suggest that the overall response to a Housing Gap allowance would increase over time. The magnitude of the difference between movers and all households is not large, however, indicating that dramatic increases in average response subsequent to the first two years of any program are unlikely.¹

There are no differences between movers and all households in the increases in housing services, however. This difference suggests that movers are more likely to dissipate part of their expenditure increase than are stayers. This is partly confirmed by examination of the percentage overpayment relative to the market average (summarized in Table 7-34). Stayers do not have overpayments significantly above those of similar Control

¹Appendix XII discusses the results of the analysis of solely the first year of data (Friedman and Kennedy, 1977). This point is discussed further there.

Table 7-25

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM STANDARDS MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	8.1%	\$136	\$11.0	\$67	16%
Did not meet requirements at enrollment	9.9	134	13.3	65	20
Met requirements at enrollment	-6.4	142	-9.1	73	-12
PHOENIX					
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	19.2	151	29.0	92	32
Did not meet requirements at enrollment	27.1	145	39.3	103	38
Met requirements at enrollment	-4.0	176	-7.0	50	-14

SAMPLE: Minimum Standards movers active and meeting requirements 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 and payments file.

a. From Table 7-13.

Table 7-26

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT LOW MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	5.1%	\$133	\$6.8	\$55	12%
Did not meet requirements at enrollment	5.4	118	6.4	66	10
Met requirements at enrollment	8.7	142	12.3	49	25
PHOENIX					
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	14.5	145	21.0	96	22
Did not meet requirements at enrollment	33.1	122	40.3	114	35
Met requirements at enrollment	-2.8	169	4.7	78	-6

SAMPLE: Minimum Rent Low movers active and meeting requirements 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 and payments file.

a. From Table 7-14.

Table 7-27

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT HIGH MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR EXPENDITURES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	14.0%	\$144	\$20.2	\$45	45%
Did not meet requirements at enrollment	21.9	131	28.8	46	63
Met requirements at enrollment	4.9	165	8.1	44	18
PHOENIX					
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	26.4	155	40.9	108	38
Did not meet requirements at enrollment	36.1	145	52.4	114	46
Met requirements at enrollment	7.7	181	13.9	91	15

SAMPLE: Minimum Rent High movers active and meeting requirements 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 and payments file.

a. From Table 7-15.

Table 7-28

PROPORTION OF ALLOWANCE USED FOR INCREASED EXPENDITURES
USING COMPUTED ABOVE-NORMAL INCREASE FOR UNCONSTRAINED MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN EXPENDITURES ABOVE NORMAL ^a	MEDIAN NORMAL RENT	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR EXPENDITURES ABOVE NORMAL
	PITTSBURGH				
Unconstrained movers	3.7%	\$133	\$4.9	\$62	8%
	PHOENIX				
Unconstrained movers	17.9%	\$136	\$24.4	\$103	24%

SAMPLE: Unconstrained movers 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 and payments file.

a. From Table 7-16.

Table 7-29

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM STANDARDS MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	1.7%	\$122	\$2.1	\$67	3%
Did not meet requirements at enrollment	2.7	121	3.3	65	5
Met requirements at enrollment	1.1	127	1.4	73	2
PHOENIX					
ALL MOVERS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS	7.6	150	11.4	92	12
Did not meet requirements at enrollment	9.5	148	14.1	103	14
Met requirements at enrollment	2.9	156	4.5	50	9

SAMPLE: Minimum Standards movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 7-21.

Table 7-30

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT LOW MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	0.3%	\$114	\$0.3	\$55	1%
Did not meet requirements at enrollment	-5.0	107	-5.4	66	-8
Met requirements at enrollment	3.3	117	3.9	49	8
PHOENIX					
ALL MOVERS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS	12.3	141	17.3	96	18
Did not meet requirements at enrollment	21.2	123	26.1	114	23
Met requirements at enrollment	-0.3	160	-0.5	78	-1

SAMPLE: Minimum Rent Low movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 7- 22.

Table 7-31

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
USING COMPUTED ABOVE-NORMAL INCREASE FOR MINIMUM RENT HIGH MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR SERVICES ABOVE NORMAL
PITTSBURGH					
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	7.1%	\$118	\$8.4	\$45	19%
Did not meet requirements at enrollment	10.7	111	11.9	46	26
Met requirements at enrollment	1.4	130	1.8	44	4
PHOENIX					
ALL MOVERS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS	13.9	152	21.1	108	20
Did not meet requirements at enrollment	20.5	141	28.9	114	25
Met requirements at enrollment	-3.1	181	-5.6	91	-6

SAMPLE: Minimum Rent High movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 7-23.

Table 7-32

PROPORTION OF ALLOWANCE USED FOR INCREASED HOUSING SERVICES
 USING COMPUTED ABOVE-NORMAL INCREASE FOR UNCONSTRAINED MOVERS

HOUSEHOLD GROUP	PERCENTAGE CHANGE IN HOUSING SERVICES ABOVE NORMAL ^a	MEDIAN NORMAL SERVICES	AMOUNT OF CHANGE	MEAN PAYMENT	PROPORTION OF PAYMENT USED FOR HOUSING SERVICES ABOVE NORMAL
PITTSBURGH					
All Unconstrained movers	9.2%	\$115	\$10.6	\$62	17%
PHOENIX					
All Unconstrained movers	13.4%	\$142	\$19.0	\$103	18%

SAMPLE: Unconstrained movers 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. From Table 7-24.

Table 7-33

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES AND
HOUSING SERVICES ABOVE NORMAL BY MOBILITY STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE CHANGE IN EXPENDITURES	PERCENTAGE CHANGE IN SERVICES	PERCENTAGE CHANGE IN EXPENDITURES	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards households	4.3% (2.7)	3.1% (2.5)	16.2%** (3.9)	10.2%** (3.7)
Minimum Rent Low households	2.8 (2.5)	0.0 (2.0)	15.7%** (4.4)	11.0%** (3.8)
Minimum Rent High households	8.5* (3.6)	0.9 (2.6)	28.4%** (6.3)	18.0%** (4.9)
Unconstrained households	2.6 (3.1)	3.4 (2.5)	16.0%** (5.6)	12.6%** (4.7)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards households	8.1 (5.3)	1.7 (5.1)	19.2%** (5.5)	7.6 (5.3)
Minimum Rent Low households	5.1 ^a (4.6)	0.3 ^a (4.3)	14.5%** (5.5)	12.3* (5.4)
Minimum Rent High households	14.0** (5.7)	7.1 (4.8)	26.4%** (7.0)	13.9* (5.7)
Unconstrained households	3.7 (5.8)	9.2† (5.5)	17.9* (7.8)	13.4† (7.2)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards households	1.4 (2.4)	1.0 (1.7)	3.1 (3.0)	5.4* (2.1)
Minimum Rent Low households	-0.7 (2.3)	-0.3 (1.5)	3.8 (4.3)	3.9 (2.4)
Minimum Rent High households	2.1 (3.8)	-3.4 (2.1)	[4.8] (10.2)	[2.6] (5.4)
Unconstrained households	0.5 (2.8)	0.1 (1.7)	[4.6] (4.4)	[6.7]* (2.5)

SAMPLE. Housing Gap households active and meeting their requirements and Unconstrained 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: Tables 5-1, 5-8, 5-10, 5-11, 6-8, 6-9, 6-10, 6-11, 7-1, 7-2, 7-3, 7-4, 7-9, 7-10, 7-11, 7-12, 7-13, 7-14, 7-15, 7-16, 7-21, 7-22, 7-23, and 7-24.

NOTES. Sample sizes for housing services estimates are smaller than for expenditures due to extra data requirements. All numbers corrected for selection bias using Control households that did not meet the particular requirement at two years after enrollment except the expenditure increase for Minimum Standards households and all numbers for Unconstrained households. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Correction based on 15 or fewer Control observations.

† t-statistic of estimated effect significant at the 0.10 level.

* t-statistic of estimated effect significant at the 0.05 level.

** t-statistic of estimated effect significant at the 0.01 level.

Table 7-34

MEDIAN PERCENTAGE OVERPAYMENT AT TWO YEARS AFTER ENROLLMENT
RELATIVE TO THE MARKET AVERAGE BY MOBILITY STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	CONTROL HOUSEHOLDS	HOUSING GAP HOUSEHOLDS	CONTROL HOUSEHOLDS	HOUSING GAP HOUSEHOLDS
ALL HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards requirements	2.8% (1.8)	0.3% (2.3)	-1.7% (2.0)	1.8% (3.0)
Minimum Rent Low requirements	4.9** (0.6)	6.8** (2.3)	7.9** (1.5)	9.0* (3.7)
Minimum Rent High requirements	10.9** (1.2)	17.7** ^a (3.1)	10.4** (2.3)	14.1** (4.4)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards requirements	-2.7 (4.1)	1.0 (4.3)	-3.9 (3.0)	8.2 [†] (4.7)
Minimum Rent Low requirements	4.0** (0.9)	7.8 [†] (4.6)	7.2** (2.0)	13.2* (5.3)
Minimum Rent High requirements	8.9** (1.8)	19.6** ^a (5.4)	9.5** (3.3)	19.0** (5.8)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards requirements	4.4* (1.9)	0.1 (2.7)	0.8 (2.5)	-4.6 (3.7)
Minimum Rent Low requirements	5.6** (0.8)	6.4* (2.6)	10.8** (2.1)	6.8 (5.2)
Minimum Rent High requirements	12.7** (1.5)	16.5** (3.8)	12.8** (2.9)	12.3 (8.7)

SAMPLE Housing Gap and Control households active and meeting requirements 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 Tables 6-1, 6-3, 6-4, 7-5, 7-6, 7-7, 7-17, 7-18, and 7-19.

NOTES Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimated overpayment significantly different from that of Control households at the 0.05 level.

† t-statistic of residual significant at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level.

households. The difference between expenditure and housing services changes can also partly be explained by the possibility of omitted quality components in the hedonic index of housing services (as discussed in Chapter 6).

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- Friedman, Joseph and Stephen D. Kennedy, Housing Expenditures and Quality Part 2: Housing Expenditures Under a Housing Gap Housing Allowance, Cambridge, Mass., Abt Associates Inc., May 1977.
- MacMillan, Jean, Mobility in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., June 1978 (revised June 1980).
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CHAPTER 8
POLICY IMPLICATIONS OF THE RESEARCH

Housing Gap housing allowance plans are housing programs rather than income maintenance programs because the payments made to households are linked directly to housing by the imposition of housing requirements. These housing requirements were an important determining factor for household response to the allowance program.

The estimated effects of the various allowance plans on housing expenditures and services are summarized in Table 8-1. Initial housing requirement status had an overwhelming effect on the way enrolled households responded to the allowance offer. Households that already met their housing requirements at enrollment, and were therefore automatically eligible for allowance payments, did not use the allowance to pay for any substantial increase in their housing expenditures or consumption. Their change in housing consumption was much like what would normally have occurred in the absence of the experiment. For these households, housing allowances essentially provided a reduction in the very high preprogram proportion of income being spent on rent (rent burden).

Households that met their requirements only after enrollment made large increases in their housing expenditures, well beyond those that would have been made without the program. These above-normal increases in housing expenditures still consumed only a portion of the allowance payment. Households that met the requirements after enrollment were able not only to meet the housing requirements and increase their housing expenditures, but also to reduce their rent burden to a reasonable level.¹

Most of the changes in expenditures appear to have been accompanied by real changes in housing. The greatest gap is apparent for households that met their requirements after enrollment. As illustrated by Table 8-2, most of

¹ Many households that did not meet their housing requirements when they enrolled in the experiment never met the requirements and hence did not receive any allowance payment. These households were not analyzed in detail in this report. (See Kennedy and MacMillan, 1979, for an analysis of the household participation decision.)

Table 8-1

MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES AND
HOUSING SERVICES ABOVE NORMAL BY INITIAL HOUSING STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	PERCENTAGE CHANGE IN EXPENDITURES	PERCENTAGE CHANGE IN SERVICES	PERCENTAGE CHANGE IN EXPENDITURES	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards households	4.3 [†] (2.7)	3.1 [†] (2.5)	16.2 ^{**} (3.9)	10.2 ^{**} (3.7)
Minimum Rent Low households	2.8 (2.5)	0.0 (2.0)	15.7 ^{**} (4.4)	11.0 ^{**} (3.8)
Minimum Rent High households	8.5 [*] (3.8)	0.9 (2.6)	28.4 ^{**} (6.3)	18.0 ^{**} (4.9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	7.5 [*] (3.9)	5.6 (4.1)	23.6 ^{**} (5.4)	10.5 [*] (4.7)
Minimum Rent Low households	8.7 [†] (5.1)	-0.9 (4.4)	42.0 ^{**} (9.3)	20.2 ^{**} (7.2)
Minimum Rent High households	15.8 [*] (6.4)	3.1 (4.8)	42.6 ^{**} (9.7)	26.0 ^{**} (7.3)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	1.1 (3.5)	0.8 (2.6)	-0.7 (3.8)	8.2 [†] (4.9)
Minimum Rent Low households	2.4 (2.9)	0.5 (2.2)	-1.2 (3.3)	2.5 (4.0)
Minimum Rent High households	4.6 (3.7)	-0.7 (2.7)	7.4 (5.0)	4.2 (5.2)
ALL UNCONSTRAINED HOUSEHOLDS	2.6 (3.1)	3.4 (2.5)	16.0 ^{**} (5.6)	12.6 ^{**} (4.7)

SAMPLE: Housing Gap households active and meeting requirements and Unconstrained 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. Tables 5-1, 5-8, 5-10, 5-11, 6-8, 6-9, 6-10, and 6-11.

NOTES. Standard error in parentheses. Expenditure amounts are changes above median normal expenditures, services amounts are changes above median normal services.

† t-statistic of estimated effect significant at the 0.10 level.

* t-statistic of estimated effect significant at the 0.05 level.

** t-statistic of estimated effect significant at the 0.01 level.

Table 8-2
 MEDIAN PERCENTAGE OVERPAYMENT AT TWO YEARS AFTER ENROLLMENT
 RELATIVE TO THE MARKET AVERAGE BY INITIAL HOUSING STATUS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	CONTROL HOUSEHOLDS	HOUSING GAP HOUSEHOLDS	CONTROL HOUSEHOLDS	HOUSING GAP HOUSEHOLDS
ALL HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS				
Minimum Standards requirements	2.8% (1.8)	0.3% (2.3)	-1.7% (2.0)	1.8% (3.0)
Minimum Rent Low requirements	4.9** (0.6)	6.8** (2.3)	7.9** (1.5)	9.0* (3.7)
Minimum Rent High requirements	10.9** (1.2)	17.7** ^a (3.1)	10.4** (2.3)	14.1** (4.4)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards requirements	1.5 (0.9)	0.2 (3.0)	-5.7 (6.5)	1.1 (3.5)
Minimum Rent Low requirements	-2.1** (0.3)	3.7 (4.2)	7.5** (1.5)	13.5* (5.9)
Minimum Rent High requirements	7.6** (0.8)	20.3** ^a (4.7)	9.1** (2.0)	14.9** (5.7)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards requirements	3.6 (2.3)	0.5 (3.3)	3.7 (4.6)	3.4 (5.3)
Minimum Rent Low requirements	6.8** (0.8)	7.9** (2.6)	8.0** (1.5)	6.1 (4.4)
Minimum Rent High requirements	12.5** (1.3)	15.7** (3.9)	11.1** (2.5)	13.1† (6.7)

SAMPLE Housing Gap and Control households active and meeting requirements 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. Tables 6-1, 6-3, and 6-4.

NOTE. Standard error in parentheses.

a. Estimated overpayment significantly different from that of Control households at the 0.05 level.

† t-statistic of residual significant at the 0.10 level.

* t-statistic of residual significant at the 0.05 level.

** t-statistic of residual significant at the 0.01 level

these Housing Gap groups were paying significantly above the market average for their units, though only one group--Minimum Rent High households that met their requirements only after enrollment in Pittsburgh--had a significantly larger overpayment than similar Control households.¹

Overall, the Minimum Standards and Minimum Rent Low requirements induced roughly the same increases in both expenditures and services for participants as did the Unconstrained payment. The Minimum Rent High requirement did induce significantly larger increases in expenditures in both sites, but much of this reflected overpayment. The increase in housing services for Minimum Rent High households was higher than that of Minimum Standards and Unconstrained households only in Phoenix, but not significantly higher in either site.

Table 8-3 shows the estimated increase in the expenditures and the housing services of participants induced by the housing allowance in terms of average dollar increases and as a percentage of payments. Again, increases were close for Minimum Standards, Minimum Rent Low, and Unconstrained households in both sites. The change in expenditures for Minimum Rent High households was larger, with a larger proportion of the allowance used for increased expenditures. Only in Phoenix, however, was this also reflected in a larger increase in housing services. In no case were as much as half of the total payments used for additional expenditures. It should be noted that, as a consequence, median rent burden for all groups was substantially reduced.

While all of the programs tested produced roughly the same change in housing services and substantial reductions in rent burden, the housing requirements do result in important differences between the effects of housing allowances and unconstrained payments. In general, the housing requirements

¹It should be emphasized that some of this overpayment reflects selection of households that met the requirements rather than changes in shopping behavior induced by the allowance offer. That the allowance also induced some overpayment is evident from the fact that the median-induced changes in housing services are less than the median-induced changes in expenditures (cf. Table 8-1). As indicated by Table 8-2, however, much of this induced overpayment was normally associated with meeting requirements.

Table 8-3

PROPORTION OF ALLOWANCE USED FOR INCREASED
HOUSING EXPENDITURES AND HOUSING SERVICES ABOVE NORMAL

HOUSEHOLD GROUP	ESTIMATED AMOUNT OF INCREASE ABOVE NORMAL		MEAN PAYMENT	PROPORTION OF ALLOWANCE USED FOR:	
	Expenditures	Services		Expenditures	Services
PITTSBURGH					
Minimum Standards households	\$5.6	\$3.6	\$65	9%	6%
Minimum Rent Low households	3.5	0.0	58	6	0
Minimum Rent High households	11.9	1.1	51	23	2
Unconstrained households	3.1	3.6	54	6	7
PHOENIX					
Minimum Standards households	22.2	13.9	81	27	17
Minimum Rent Low households	21.9	15.2	86	25	18
Minimum Rent High households	42.5	26.3	103	41	26
Unconstrained households	20.5	16.6	108	19	15

SAMPLE: Housing Gap households active and meeting requirements and Unconstrained 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: Tables 5-21, 5-22, 5-23, 5-26, 6-12, 6-13, 6-14, and 6-15.

focused housing change directly on the requirements and produced a much larger increase in the proportion of households that met requirements than did an unconstrained income transfer. These effects were very specific, however, and were purchased at the price of a substantially lower participation rate.

Each of the allowance programs resulted in changes in the proportion of households that met the requirements imposed that were significantly larger than the changes experienced by similar Control households. These changes were, however, largely confined to the specific requirements. Households enrolled in the Minimum Standards plan had a significant increase in the probability of living in a unit meeting the Minimum Standards at two years, after enrollment, but no increase in any other measure of housing consumption (expenditures, housing services, and housing adequacy) beyond that of Unconstrained households (see Table 8-4). Similarly, Minimum Rent households had significantly above-normal increases in rent, but at the expense of paying above-market prices for the units (relative to Control households). Again, they showed no significant increase in the other measures of housing consumption beyond that obtained by Unconstrained households.

In sum, while all the programs tested produced roughly the same change in housing services and substantial reductions in rent burden, the housing requirements do make a difference. In general, they appear to focus housing changes on meeting the requirements--the Minimum Standards requirements do significantly increase the probability that a household would live in a unit that met the requirements and the Minimum Rent requirements do (for the most part) lead to increases in rent above normal.

Likewise, the housing requirements seem to have focused changes among Housing Gap households that did not meet their requirements at enrollment. While the small sample sizes for similar Unconstrained households preclude strong results, it appears that changes in expenditures and services were generally larger than those of similar Unconstrained households for Housing Gap households that only met requirements after enrollment (and somewhat smaller for Housing Gap households that already met requirements at enrollment (see Appendix Tables IX-37 through IX-39 and IX-42 through IX-44).

The major problem with a housing assistance strategy based on the Housing Gap form of housing allowance would appear to be the low participation rate

Table 8-4

EFFECT OF THE ALLOWANCE OFFER ON
MEASURES OF HOUSING ADEQUACY

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	CHANGE IN THE PROBABILITY ^a OF:			CHANGE IN THE PROBABILITY ^a OF:		
	Meeting Minimum Standards ^b	Living in Minimally Adequate Housing	Living in Clearly Inadequate Housing	Meeting Minimum Standards ^b	Living in Minimally Adequate Housing	Living in Clearly Inadequate Housing
Minimum Standards households	+20**	+4	-2	+28**	+11*	-14**
Minimum Rent Low households	+4	-2	+1	+4	+5	-12*
Minimum Rent High households	-1	-4	+6	+4	+6	-11*
Unconstrained households	+1	+8	-3	+8	+10	-22**

SAMPLE: Housing Gap households active and meeting requirements and Unconstrained 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: Tables 2-2, 2-4, 3-10, VII-3, and VII-4.

a. Measured in percentage points at two years after enrollment relative to Control households, at the means of the other independent variables.

b. For households that did not meet Minimum Standards at enrollment.

* t-statistic of logit coefficient significant at the 0.05 level.

** t-statistic of logit coefficient significant at the 0.01 level.

of households in inadequate housing at enrollment. It appears that housing requirements themselves pose a sizeable barrier to participation; a fairly large proportion of households living in inadequate housing when they enrolled in the Demand Experiment were still in inadequate housing at the end of two years.

The low participation rate of Housing Gap households also has an important implication when discussing the likely housing market effects of housing allowance programs. It was found that the Minimum Standards plan and the Unconstrained plan induced roughly the same increase in expenditures above normal. If the participation rate of households in a program of unconstrained income transfers was roughly double that which would be obtained in a program of constrained income transfers, then the program impact on the aggregate demand for housing would also be roughly double.

The major unresolved analytic issue in this report is the difference in response between the two experimental sites. Households in all four of the plans analyzed (the three Housing Gap plans plus the Unconstrained plan) had much larger increases in expenditures in Phoenix than in Pittsburgh.¹ These differences occurred for households that met their requirements after enrollment and consequently influenced the overall effect heavily. Two plausible explanations were offered for the difference and the evidence went a long way toward resolving the problem. First, households that did not meet their requirements at enrollment in Phoenix had to make much larger changes in their housing consumption in order to meet requirements in their two-year units than did similar Pittsburgh households. Second, response to the payment level and to variations in the payment parameters was present in Phoenix, where the payment was larger, but not in Pittsburgh. While this second finding helps to explain the difference in response, it does raise the issue of why the payment response differed between the sites.

There remain areas of potentially fruitful further research. Other approaches to analyzing the experimental response are available. One possibility is to specify the experimental treatment in terms that can be

¹This is in sharp contrast to responses to the Percent of Rent offers, which were essentially the same in both sites (see Friedman and Weinberg, 1978).

analyzed in a standard demand function framework. This advance requires, however, a comprehensive model of the participation decision as it interacts with the decision to change housing consumption. Appendix XI provides a first step in this direction by examining the joint decisions to move and to participate. Weinberg et al. (forthcoming) have also taken a step in this direction by attempting to integrate the mobility decision with the demand for housing. Careful thought needs to be given to integrating these approaches within the participation work of Kennedy and MacMillan (1979). Such investigation of a unified framework can help to more properly understand household behavior and responses to governmental housing programs.

REFERENCES

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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

¹The 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, non-financial 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

¹The 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

¹The 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.

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

²The 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.

³As 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).

⁴Five 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.

¹Designation 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

CONTROL:

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

**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.

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 housing expenditures of movers uses only those households that moved during the first two years after enrollment.

APPENDIX II
DESCRIPTION OF THE SAMPLES
USED FOR ANALYSIS

This appendix describes the household sample selected for analysis in this report and explores some of the factors affecting the exclusion of households from a particular sample. In addition, since the final analytic sample is smaller than the original sample at enrollment, the comparability of the final and original samples is examined.

Table II-1 shows the samples used in this report.¹ The sample of enrolled households is included to show the effects of attrition during the course of the experiment. The samples of households active at two years is used for most of the analysis in this report. The sample of households that moved or did not move over the two-year experimental period are examined separately as well.

Table II-2 sets out the baseline demographic characteristics for the eligible, enrolled and two-year active population.² (See Appendix III for definitions of the characteristics.) Comparison of the pre-experimental (baseline) characteristics of Experimental and Control households at enrollment and at two years after enrollment shows that the mean pre-experimental sample characteristics change by only small amounts due to the acceptance of the enrollment offer and attrition from the experiment.³ This suggests that no substantial selection on demographic characteristics is introduced by analyzing the two-year active sample.

¹All samples exclude households enrolled with incomes above the eligibility limits. In general, households were not allowed to enroll in the experiment if their verified income exceeded the eligibility limit for their treatment group. Verification of income took up to two months, depending on the speed with which income sources (e.g., employers, welfare agencies, and pension funds) replied to requests for information. Towards the end of the enrollment period, it was more efficient to enroll some households prior to the completion of verification and exclude them from the sample if they were later verified to be overincome, since this allowed the enrollment period to be closed two months earlier. Households were assigned to treatment plans at random.

²The eligible population consists of households that completed the Baseline Interview and were determined to be eligible for the experiment on the basis of their baseline income and household size.

³The sample sizes in Table II-2 are slightly smaller than those in Table II-1 due to missing values on some demographic variables.

Table II-1
SAMPLE SIZES AT ENROLLMENT AND AT TWO YEARS

TREATMENT GROUP	PITTSBURGH		PHOENIX	
	SAMPLE SIZE AT ENROLLMENT	SAMPLE SIZE AT TWO YEARS	SAMPLE SIZE AT ENROLLMENT	SAMPLE SIZE AT TWO YEARS
ALL HOUSING GAP HOUSEHOLDS	626	449	695	381
Minimum Standards households	281	204	329	174
Plan 1	43	33	48	30
Plan 2	59	42	74	35
Plan 3	62	43	66	39
Plan 10	57	45	64	36
Plan 11	60	44	77	34
Minimum Rent Low households	166	128	175	98
Plan 4	43	34	42	24
Plan 5	62	50	70	39
Plan 6	61	44	63	35
Minimum Rent High households	179	117	191	109
Plan 7	45	30	43	30
Plan 8	67	44	78	44
Plan 9	67	43	70	35
UNCONSTRAINED HOUSEHOLDS	75	63	70	40
CONTROL HOUSEHOLDS	434	321	525	282

SAMPLE AT ENROLLMENT: All enrolled Housing Gap, Unconstrained, and Control households, excluding those with enrollment incomes over the eligibility limits.

SAMPLE AT TWO YEARS: All Housing Gap, Unconstrained, 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.

Table II-2
 SELECTED HOUSEHOLD CHARACTERISTICS AT BASELINE FOR
 THE ELIGIBLE, ENROLLED, AND TWO-YEAR ACTIVE SAMPLES

SAMPLE	MEAN RENT	MEAN MONTHLY INCOME	MEAN HOUSEHOLD SIZE	PERCENTAGE ELDERLY	PERCENTAGE MINORITY	PERCENTAGE FEMALE-HEADED	SAMPLE SIZE
PITTSBURGH							
ELIGIBLE HOUSEHOLDS	\$107	\$335	2.8	37%	20%	54%	(2,948)
ENROLLED HOUSEHOLDS							
<u>Housing Gap</u>	108	350	3.2	25	26	60	(575)
Minimum Standards	104	344	3.2	29	26	58	(258)
Minimum Rent Low	109	357	3.2	24	24	61	(155)
Minimum Rent High	114	354	3.3	22	27	62	(162)
<u>Unconstrained</u>	110	355	2.9	28	28	56	(71)
<u>Control</u>	114	389	3.2	23	20	50	(403)
HOUSEHOLDS ACTIVE AT TWO YEARS							
<u>Housing Gap</u>	110	351	3.2	25	25	62	(414)
Minimum Standards	107	344	3.2	28	26	59	(188)
Minimum Rent Low	109	359	3.3	24	26	65	(119)
Minimum Rent High	114	354	3.1	21	23	65	(107)
<u>Unconstrained</u>	112	342	2.9	32	27	55	(60)
<u>Control</u>	115	399	3.3	21	19	51	(297)
PHOENIX							
ELIGIBLE HOUSEHOLDS	\$128	\$417	3.2	22%	34%	34%	(2,956)
ENROLLED HOUSEHOLDS							
<u>Housing Gap</u>	127	424	3.4	21	34	37	(632)
Minimum Standards	126	434	3.6	19	35	35	(303)
Minimum Rent Low	126	427	3.3	25	36	36	151
Minimum Rent High	129	407	3.2	22	33	43	178
<u>Unconstrained</u>	133	508	3.2	14	27	37	(63)
<u>Control</u>	131	434	3.4	18	31	35	(477)
HOUSEHOLDS ACTIVE AT TWO YEARS							
<u>Housing Gap</u>	120	395	3.3	27	38	43	(342)
Minimum Standards	121	401	3.3	26	36	38	(157)
Minimum Rent Low	117	391	3.2	35	41	47	(86)
Minimum Rent High	122	389	3.3	21	40	49	(99)
<u>Unconstrained</u>	131	438	3.3	20	34	54	(35)
<u>Control</u>	124	420	3.4	22	36	44	(258)

SAMPLES Eligible Households--all Experimental and Control households that completed the Baseline Interview that were determined to be eligible for the experiment on the basis of their baseline income and household size. Enrolled Households--all Housing Gap, Unconstrained, and Control households, excluding those with enrollment incomes over the eligibility limits. Two-Year Active Households--all Housing Gap, Unconstrained, 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, Household Events List, and payments file.

APPENDIX III
DATA SOURCES AND MAJOR VARIABLES
USED IN THE ANALYSIS

III.1 DATA SOURCES

The following paragraphs briefly describe the data sources used in the derivation of each of the key variables used for the analysis in this report. If a household's record is missing from any of the data sources required for the derivation of a variable, that particular variable is assigned a missing value code and the household is removed from the sample for analyses involving that variable. Reasons for missing value codes include nonresponses; "don't know" responses; out-of-range responses; and data that is inconsistent between data sources.

Initial Household Report Form

Initial Household Report Forms were completed for all enrolled households as part of the enrollment interview. Enrollment interviews were conducted between April 1973 and February 1974. Detailed information was collected on each household's composition, housing expenditures (rent, utilities, furnishings, and so forth), and asset holdings (savings bonds, stocks, and so forth), as of the time of the interview. Income data were collected for each of the previous 12 months for each type of income (e.g., wages, Social Security, welfare) for each household member 18 years of age or over. Household expenses (e.g., alimony, child care, medical) were also collected for the 12 most current months. Data from the Initial Household Report Form were used operationally to determine whether initial household composition and income eligibility requirements had been met.¹ Analytically, these data have been used to describe the household's demographic characteristics and income just prior to participation in the program.

¹Reported income data were verified with third-party sources for eligibility determination at enrollment. Since only 10 percent of Control households' reports were verified, however, reported values are used in the data base.

Monthly Household Report Forms

After households were enrolled, they were required to complete monthly Household Report Forms, which collected detailed information on the household's composition, housing expenditures, and income for the previous month. The information was similar to that collected on the Initial Household Report Form and was used to determine the household's monthly payment. Analytically, these data are used to describe the household's housing expenditures, demographic characteristics, and income during the course of the experiment. In addition, annual supplements collected information on assets and taxes.

Payments Data

After each monthly payment cycle, the household's current payment status, reasons for the status (if other than Full Payments status), payment period number, payment amount, and the intermediate variables used to calculate the payment were extracted from the operational payments system and entered into an analytic payments file.

Baseline Interview¹

Baseline Interviews were administered to all households before they were offered enrollment in the program, and were completed between March 1973 and January 1974. Data were collected in the following general categories: housing expenditures and consumption; location and housing search; neighborhood and housing preferences and satisfaction; maintenance and upgrading; household composition; household assets, income, and expenses; and participation in other government programs. The interviews provided measures of the household's position prior to the experiment.

Periodic Interviews

Periodic Interviews were administered to all enrolled households at approximately six months, one year, and two years after enrollment. Data were collected on a number of subjects included in the Baseline Interview.

¹This interview, as well as the Exit Interview and the First, Second, and Third Periodic Interviews, were designed by Abt Associates Inc. and administered in the field by the National Opinion Research Center; some Baseline Interviews were conducted by Westat, Inc.

Subject areas included housing expenditures and consumption; location and housing search; preferences and satisfaction; maintenance and upgrading; and participation in other government programs. In addition, the Periodic Interviews included questions relating to participant expectations at the time of enrollment and impressions of various aspects of the program, such as the Housing Information Program, the housing and reporting requirements, and the amount and variability of the allowance payment.

Housing Evaluation Form

Housing evaluations were conducted for all dwelling units occupied by households that accepted the enrollment offer. Units were evaluated at enrollment and whenever a household moved or upgraded its current unit to meet either Minimum Standards or Minimum Rent housing requirements. In addition, all units were re-evaluated at least once a year. Households with a Minimum Standards requirement could also request evaluations of new units before deciding to move to see if these units met the requirement. The Housing Evaluation Form, used to collect these data on housing quality, provides information on basic housing services, safety hazards, structure and surface condition, and other indicators of housing condition.

Census Data

Census variables for Allegheny and Maricopa counties were extracted from the 1970 Census of Population and Housing Fourth Count Summary Tapes. The variables that were selected included descriptors of the tract and its housing stock and socioeconomic characteristics of the population. Household-level Census tract assignments were made using standard geocoding programs at the time of enrollment and each of the Periodic Interviews. When the location by tract was determined, the census variables for that tract were posted to the household file.

III.2 KEY VARIABLES

Key variables used in this report include income and demographic variables, rent, satisfaction, housing standards, occupancy measures, a hedonic index measuring housing services, move status, and current payment status. Definitions of the variables used in this report are discussed below. Table III-I summarizes the data sources for these variables.

Table III-1
DATA SOURCES USED TO DERIVE KEY VARIABLES

VARIABLES	DATA SOURCES	
	ENROLLMENT	TWO YEARS
INCOME		
Net income for analysis	Initial Household Report Form	24-month history from Household Report Form
Net income for eligibility	Initial Household Report Form	24-month history from Household Report Form
Census gross income	Initial Household Report Form	24-month history from Household Report Form
DEMOGRAPHIC CHARACTERISTICS		
Race/ethnicity	Baseline Interview	Baseline Interview
Education of head of household	Baseline Interview	Baseline Interview
Age of head of household	Initial Household Report Form	24-month history from Household Report Form
Sex of head of household	Initial Household Report Form	24-month history from Household Report Form
Household size	Initial Household Report Form	24-month history from Household Report Form
Household composition	Initial Household Report Form	24-month history from Household Report Form
RENT	Initial Household Report Form, Baseline Interview	Household Report Form, Third Periodic Interview
RENT BURDEN	Initial Household Report Form, Baseline Interview	Household Report Form, payments file, Third Periodic Interview
HOUSING QUALITY		
Housing standards	Housing Evaluation Form for enrollment	Housing Evaluation Form
Hedonic index	Housing Evaluation Form, Census data, Baseline Interview, other site data	Housing Evaluation Form, Census data, Third Periodic Interview, other site data
Occupancy	Initial Household Report Form, Housing Evaluation Form	Household Report Form, Housing Evaluation Form
Housing adequacy	Housing Evaluation Form for enrollment	Housing Evaluation Form
MOVE STATUS	---	Initial Household Report Form, First, Second, and Third Periodic Interviews
CURRENT STATUS	Initial Household Report Form, payments file	24-month history from Household Report Form, payments file

Income

A major variable used in the analysis in this report is Net Income for Analysis, a measure of household disposable income. Net Income for Analysis is an estimate of the annual income received by all household members age 18 or over; it is the sum of earned and other income net of taxes and alimony paid. A complete list of all income components included in the definition of net income and its relation to two other income measures (the income definition used to determine eligibility for the experimental program and that used by the census) are given in Table III-2.¹

Net Income for Eligibility defines an annual net disposable income for eligibility and payment purposes which is easily and accurately measured and which is defined as equitably as possible for demographically different households that receive income from a variety of sources (see Table III-3 for eligibility limits). Net income for eligibility was derived by adding the annual incomes of all household members who were at least 18 years of age, and subtracting taxes, work-related expenses, alimony paid, and major medical expenses. Table III-2 compares this definition with the census definition and the analytic definition of income.

Census gross income was used to determine household status with respect to the official poverty line. The 1975 figures used for determining poverty status are presented in Table III-4.

Demographic Variables

Race/ethnicity. The following categories were used in this report for each site:

<u>Pittsburgh</u>	<u>Phoenix</u> ²
White	White
Black	Black
	Spanish American

¹Households with annual income less than \$1,000 were excluded from the analysis.

²In some analyses, both black and Spanish American households in Phoenix were classified as minority households.

Table III-2

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	-	-	X
II. GROSS EXPENSES			
A. Taxes			
1. Federal Tax Withheld	X*	X*	-
2. State Tax Withheld	X*	X*	-
3. FICA Tax Withheld	X*	X*	-
B. Work-Conditioned 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.

Table III-3
 INCOME ELIGIBILITY LIMITS AT ENROLLMENT
 FOR HOUSING GAP AND CONTROL HOUSEHOLDS

DESIGN POINT ^a	HOUSEHOLD SIZE				
	1	2	3,4	5,6	7+
PITTSBURGH					
Treatment Groups 1, 2, 4, 5, 7, 8, 10, 12	\$5,050	\$5,800	\$6,750	\$7,700	\$9,150
Treatment Groups 3, 6, 9	4,050	4,650	5,400	6,150	7,300
Treatment Group 11	3,750	4,250	4,950	5,650	6,650
Treatment Groups 24, 25 ^b	12,500	12,500	12,500	12,500	12,500
PHOENIX					
Treatment Groups 1, 2, 4, 5, 7, 8, 10, 12	\$6,000	\$7,450	\$8,650	\$10,600	\$12,750
Treatment Groups 3, 6, 9	4,800	5,950	6,950	8,450	10,200
Treatment Group 11	4,450	5,450	6,350	7,700	9,250
Treatment Groups 24, 25 ^b	15,500	15,500	15,500	15,500	15,500

NOTE: Indicated amounts are \$500 greater than formal eligibility limits. A \$500 margin of error is allowed. Only households with incomes more than \$500 above the formal limits are considered to be overincome.

a. Refer to the summary experimental design in Appendix I for identification of these groups.

b. These amounts were used as criteria in the actual enrollment process. Note, however, that households in these treatment groups are considered to be overincome for the analytic income eligibility status at enrollment if their income is greater than the income eligibility limits for Treatment Groups 1, 2, 4, 5, 7, 8, 10, and 12.

Table III-4
DEFINITION OF OFFICIAL POVERTY LINE^a

HOUSEHOLD SIZE	SEX OF HEAD OF HOUSEHOLD	
	Female	Male
ONE		
Head of household between 14 and 64	\$2,902	\$2,685
Head of household 65 or older	2,608	2,574
TWO		
Head of household between 14 and 64	3,636	3,530
Head of household 65 or older	3,260	3,237
THREE	4,317	4,175
FOUR	5,502	5,473
FIVE	6,504	6,434
SIX	7,322	7,270
SEVEN OR MORE	9,056	8,818

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 106, June 1977.

a. Households are considered poverty households if their census gross income is less than the listed value.

Classifications are based on interviewer observations of the head of household, except for the Spanish American designation, which is based on surname according to census conventions.

Age of head of household. The age of head of household is defined according to census conventions. Elderly households are those with a head of household 62 years of age or older.

Sex of head of household. The census convention is used. To establish the census designated head of household, the sex and relationship of each household member to the respondent who is designated head is checked. Unless the household has a single female head, it is classified as having a male head of household.

Household size. The definition of household size includes all persons living with the household except roomers and boarders.

Household composition. This variable identifies the structure of the household based on the relationships of household members to the head. Two classification schemes are developed from the data:

Basic Classification

One-person household
Single head with children; no relatives
Single head with children and relatives
Single head with no children; relatives present
Married couple; no children, no relatives
Married couple with children; no relatives
Married couple with children and relatives
Married couple with no children, but with relatives

Abbreviated Classification

(with basic categories collapsed into three)
Single-person
Single adult with children or others present
Married couple with or without others present

Rent

Analysis of participant expenditures on housing takes two basically different approaches:

How much do households spend on rent?

How much does it cost to rent a dwelling unit with particular characteristics?

These differences in approach require variations in the analytical definitions of rent. For example, reduction in rent for contributions from roomers and boarders is appropriate for the first approach but not the second.

Analytical adjusted contract rent is basically defined as the monthly payment for an unfurnished dwelling unit including basic utilities. The formula is:

$$\text{Adjusted Contract Rent} = \text{Contract rent} + \text{utilities} - \text{furnishings} \\ + \text{work in lieu of rent adjustment.}$$

The components included are:

Contract rent. Contract rent is adjusted to a monthly amount to provide a common rental period.

Utilities adjustment. If the costs of utilities are not included in the household's contract rent, utilities adjustments are added to contract rent. Adjustments are made via site-specific tables for electricity, gas, heat, water, garbage, and trash. The amount of the adjustments depends on the numbers of rooms reported in the Housing Evaluation Form. No adjustment is made for any other utilities or services, such as parking. Allowance is made for increased utility costs over the two-year experimental period.

Furnishings adjustment.¹ For furnished units, a deduction is made for the rent equivalent of furnishings.

Work in lieu of rent adjustment. If the contract rent paid by the household is reduced because a household member works for the landlord, the amount of the reduction is added to contract rent. The adjustment has not been added to income, although it should in theory be added.

The analytical adjusted contract rent used in this report for the analysis of housing expenditures refers to shelter costs borne by the household, so contributions from roomers and boarders are subtracted.²

¹For more specific definitions of these adjustments, refer to Abt Associates Inc. (1975), Appendix IV.

²Households with rents less than \$40 per month were excluded from the sample. This exclusion was based on a judgment that gross rent figures below this cutoff may be erroneous.

Rent Burden

Rent burden was calculated as the ratio of analytic rent to net income for analysis, adjusted for allowance payments. Rent burden is thus defined as Net Rent/Net Income:

$$\text{Rent Burden} = \frac{\text{Contract Rent-Allowance Payment}^1}{\text{Net Income for Analysis (monthly)}} .$$

Rent burden statistics are highly sensitive to the definition of income used. Statistics calculated from different sources using different definitions of income may have to be recalculated or adjusted before comparisons may be made. The Housing Allowance Demand Experiment data appear to be unique in both attempting to use an analytic definition of net disposable income and in having the data to do so. In general, the source of variation in rent burden statistics is primarily differences in income definitions.

Program Housing and Occupancy Standards

The housing and occupancy measures used in the analysis are based on the Minimum Standards housing requirements used in one part of the experiment. They were developed from elements of the American Public Health Association/Public Health Service, Recommended Housing Ordinance (1971).² Table III-5 lists the Minimum Standards housing requirements as they apply to the dwelling unit itself. The requirements are grouped into 15 components made up of related items.

The occupancy requirement was separate from the physical requirements listed in Table III-5. The occupancy requirement set a maximum of two persons for every adequate bedroom, regardless of age. An adequate bedroom was a room that could be completely closed off from other rooms and that met the following program housing standards: ceiling height, light/ventilation, and electrical service. (A studio or efficiency apartment was counted as a bedroom for the occupancy standards.) In addition, for a unit to meet Minimum Standards, all rooms had to meet the housing standards for the condition of room structure, room surface, floor structure, and floor

¹For Control households, the \$10 cooperation payment was deducted from the contract rent amount.

²See Abt Associates Inc. (1975) for more detail on the development of the Minimum Standards.

Table III-5
COMPONENTS OF MINIMUM STANDARDS
(Program Definition)

- 1 COMPLETE PLUMBING
Private toilet facilities, a shower or tub with hot and cold running water, and a washbasin with hot and cold running water will be present and in working condition
- 2 COMPLETE KITCHEN FACILITIES
A cooking stove or range, refrigerator, and kitchen sink with hot and cold running water will be present and in working condition
- 3 LIVING ROOM, BATHROOM, KITCHEN PRESENCE
A living room, bathroom, and kitchen will be present (This represents the dwelling unit "core," which corresponds to an efficiency unit)
- 4 LIGHT FIXTURES
A ceiling or wall-type fixture will be present and working in the bathroom and kitchen
- 5 ELECTRICAL
At least one electric outlet will be present and operable in both the living room and kitchen. A working wall switch, pull-chain light switch, or additional electrical outlet will be present in the living room ^a
- 6 HEATING EQUIPMENT
Units with no heating equipment, with unvented room heaters which burn gas, oil, or kerosene, or which are heated mainly with portable electric room heaters will be unacceptable
- 7 ADEQUATE EXITS
There will be at least two exits from the dwelling unit leading to safe and open space at ground level (for 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 ^a
- 11 FLOOR STRUCTURE
Floor structure for all rooms must not be in condition requiring replacement (such as large holes or missing parts)
- 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
- 14 EXTERIOR WALLS
The exterior wall structure or exterior wall surface must not need replacement (For structure this would include such conditions as severe leaning, buckling, or sagging, and for surface conditions such as excessive cracks or holes)
- 15 LIGHT/VENTILATION
The unit will have a 10 percent ratio of window area 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 ^a

^a This housing standard is applied to bedrooms in determining the number of adequate bedrooms for the program occupancy standard

surface. If the dwelling unit contained four or more adequate bedrooms, it was judged to meet occupancy standards; this reflects the actual program operating rule, which set this ceiling on occupancy standards at the requirement for an eight-member household. (Roomers and boarders were added to household size when determining whether a household met occupancy standards, because all the rooms in the dwelling unit were taken into account.)

Housing Adequacy Measure

The housing adequacy measure classifies units into one of three categories: clearly inadequate, at least minimally adequate, or ambiguous. The measure is closely related to the Minimum Standards measure. See Chapter 2 and Budding (1978) for a more detailed description.

Hedonic Index of Housing Services

The hedonic index is a summary measure of housing services. This index estimates the market value of a unit in terms of the attributes of the unit itself, its neighborhood, and the quality of public and private services available. See Chapter 6 and Merrill (1977) for a more detailed description.

Move Status

Determination of a move was always based on the comparison of address rather than on the household's response to the interview questions regarding moving. A household was classified as having moved during the experiment if the address on the Initial Household Report Form was different from any of the addresses reported by the household during the two-year experimental period.

Current Payment Status

Status of the household is defined as one of the following:

Active full payments

Active minimum payments

Inactive, reactivated for later cycles (for example, households that moved out of the country and then moved back into the country)

Inactive, never reactivated in later cycles

Terminated.

Possible reasons for minimum payments status are:

- Household owns home
- Household lives in subsidized housing
- Rent receipt not returned
- Failure to meet housing requirements (Housing Gap Minimum Rent and Minimum Standards groups only).

Possible reasons for inactive or terminated status are:

- Move out of the country
- Ineligible household composition
- Residing in institution
- Cannot locate
- Periodic Interview refused
- Housing Evaluation refused
- Missing Household Report Forms
- New household member refused to comply with requirements.

Additional possible reasons for termination are:

- Household deceased
- Ineligible household split
- Fraud
- Received ineligible relocation benefits
- Termination other (conflict of interest)
- Reverification refused
- Quit (voluntary termination).

Analytic Definition of Meeting Housing Requirements

The analytic data base used in this report was organized around the four cross sections defined by enrollment and three subsequent Periodic Interviews (conducted at six months, one year, and two years after enrollment). Analytically, a household is defined as meeting requirements at any cross section if its then current dwelling unit either met the requirements at that cross section or had been found to meet requirements at some previous cross section.

Under the operating rules of the Demand Experiment, once a household met the housing requirements in a unit, it continued to qualify for payments as long as it remained in that unit. Thus some households could, for example, meet the Minimum Standards requirements at enrollment and, if they remained in their enrollment unit, later fail the requirements at a cross section but still receive payments. (If a household moved, it had to meet requirements in its new unit in order to receive payments.)

This was done to avoid imposing unnecessary hardship on households because of the three-year duration of the experiment. This operational definition is essentially the one used in this report to define whether a household met requirements.

There is one difference between the analytic and operational definitions, however. In practice, Minimum Standards households could request a Housing Evaluation at any time to determine whether their units met the requirements. Likewise, compliance with Minimum Rent requirements was determined monthly for Minimum Rent households. Comparable data on meeting the Minimum Standards for Control, Unconstrained, and Minimum Rent households is only available at the three cross sections at which all households had Housing Evaluations (enrollment and one and two years after enrollment). Likewise, although information on rent was collected from all households each month, since the main analytic files of the Demand Experiment are organized around the four cross sections described above, comparable data on meeting the Minimum Rent requirement is readily available only for those four cross sections. In order to provide comparable data on all households, the analytic definition of meeting requirements is based on the four cross sections, as indicated above.

Tables III-6, III-7, and III-8 compare the percentage of Housing Gap households that met the various requirements in terms of the analytic definition with the percentage receiving full payments. As can be seen from the tables, the analytic and operational (full payment) definitions agree closely.

Table III-6

COMPARISON OF ANALYTIC AND OPERATIONAL STATUS OF
MINIMUM STANDARDS HOUSEHOLDS AT TWO YEARS AFTER ENROLLMENT

ANALYTIC STATUS OPERATIONAL STATUS	PITTSBURGH		PHOENIX	
	NUMBER OF HOUSE- HOLDS THAT MET THEIR REQUIRE- MENTS AT SOME TIME IN THEIR TWO-YEAR UNIT	NUMBER OF HOUSE- HOLDS THAT NEVER MET THEIR REQUIRE- MENTS AT THEIR TWO-YEAR UNIT	NUMBER OF HOUSE- HOLDS THAT MET THEIR REQUIRE- MENTS AT SOME TIME IN THEIR TWO-YEAR UNIT	NUMBER OF HOUSE- HOLDS THAT NEVER MET THEIR REQUIRE- MENTS AT THEIR TWO-YEAR UNIT
Met Minimum Standards requirements at two years and received full payment	53	2	78	5
Did not meet Minimum Standards requirements at two years and received minimum payment	0	110	0	71
Did not meet Minimum Standards requirements at two years but received full payment ^a	36	3	13	3
Met Minimum Standards requirements at two years but received minimum payment ^b	0	0	4	0
SAMPLE SIZE	(89)	(115)	(95)	(79)

SAMPLE: Minimum Standards 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 and payments file.

a. Reasons include site administrative error; failure to complete a pre-move housing evaluation within three days following a request; household size increase; unit formerly met requirements.

b. Reasons include site administrative error; cross-sectional linking procedures.

Table III-7

COMPARISON OF ANALYTIC AND OPERATIONAL STATUS OF
MINIMUM RENT LOW HOUSEHOLDS AT TWO YEARS AFTER ENROLLMENT

ANALYTIC STATUS OPERATIONAL STATUS	PITTSBURGH		PHOENIX	
	NUMBER OF HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS
Met Minimum Rent Low requirements at two years and received full payment	100	1	73	1
Did not meet Minimum Rent Low requirements at two years and received minimum payment	1	19	0	22
Did not meet Minimum Rent Low requirements at two years but received full payment ^a	5	1	0	0
Met Minimum Rent Low requirements at two years but received minimum payment ^b	1	0	2	0
SAMPLE SIZE	(107)	(21)	(75)	(23)

SAMPLE: Minimum Rent Low 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 and payments file.

a. Reasons include site administrative error; failure to complete a pre-move housing evaluation within three days following a request; household size increase; unit formerly met requirements.

b. Reasons include site administrative error; cross-sectional linking procedures.

Table III-8

COMPARISON OF ANALYTIC AND OPERATIONAL STATUS OF
MINIMUM RENT HIGH HOUSEHOLDS AT TWO YEARS AFTER ENROLLMENT

ANALYTIC STATUS OPERATIONAL STATUS	PITTSBURGH		PHOENIX	
	NUMBER OF HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS	NUMBER OF HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS
Met Minimum Rent High requirements at two years and received full payment	61	4	52	4
Did not meet Minimum Rent High requirements at two years and received minimum payment	0	52	0	51
Did not meet Minimum Rent High requirements at two years but received full payment ^a	0	0	1	1
Met Minimum Rent High requirements at two years but received minimum payment ^b	0	0	0	0
SAMPLE SIZE	(61)	(56)	(53)	(56)

A-34

SAMPLE: Minimum Rent High 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 and payments file.

a. Reasons include site administrative error; failure to complete a pre-move housing evaluation within three days following a request; household size increase; unit formerly met requirements.

b. Reasons include site administrative error; cross-sectional linking procedures.

REFERENCES

- Abt Associates Inc., Working Paper on Early Findings, Cambridge, Mass., January 1975.
- Budding, David W., Housing Deprivation Among Enrollees in the Housing Allowance Demand Experiment, Cambridge, Mass., Abt Associates Inc., November 1978 (revised June 1980).
- Merrill, Sally R., Hedonic Indices as a Measure of Housing Quality, Cambridge, Mass., Abt Associates Inc., December 1977 (revised June 1980).
- U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 106, June 1977.

APPENDIX IV
THE PROCESS OF MEETING HOUSING REQUIREMENTS

This appendix presents the mobility and participation behavior of the various experimental samples in graphic form. In order to make comparisons between Housing Gap households and Control or Unconstrained households, the participation behavior of each group must be defined on a comparable basis. Here, as throughout this report, households are determined to have met the particular housing standard at a given time if they were living in a unit which either met the housing requirement at the indicated cross section or had previously met the requirement in that unit.¹

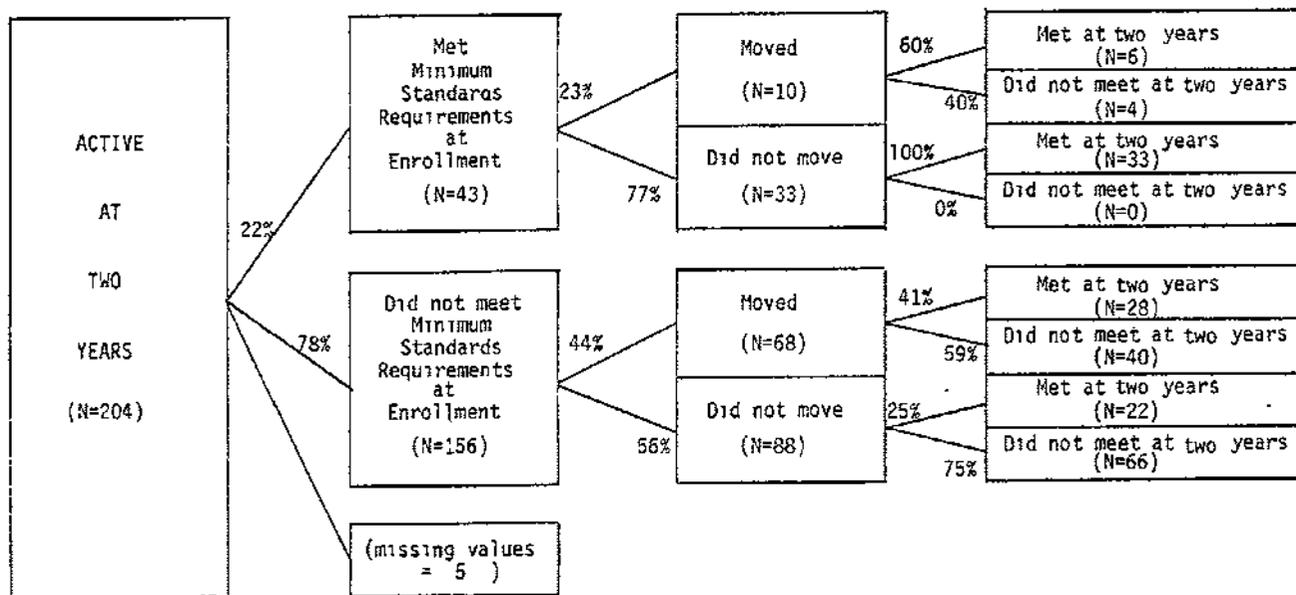
Each figure illustrates, by site, the proportion of Experimental or Control households that met the indicated requirement initially; of those that initially met or did not meet the requirement, the proportion that moved; and of those that moved or did not move, the proportion that met the requirement at the end of two years. Also indicated are the number of households whose status could not be determined. Presented here are each Housing Gap group (Minimum Standards, Minimum Rent Low, and Minimum Rent High), with respect to its own requirement, and Control and Unconstrained groups meeting each of the three different periods. Figures IV-1 through IV-9 show the entire two-year period, and Figures IV-10 through IV-18 and Figures IV-19 through IV-27 show the first and second years of activity, respectively.

¹Thus, not all households treated analytically as meeting their requirement at, say, two years were actually living in a unit that met that requirement at the time of the two-year evaluation. However, the household would have met at some time in that unit and, if a Housing Gap household, would consequently receive a full allowance payment. See Appendix III for more details.

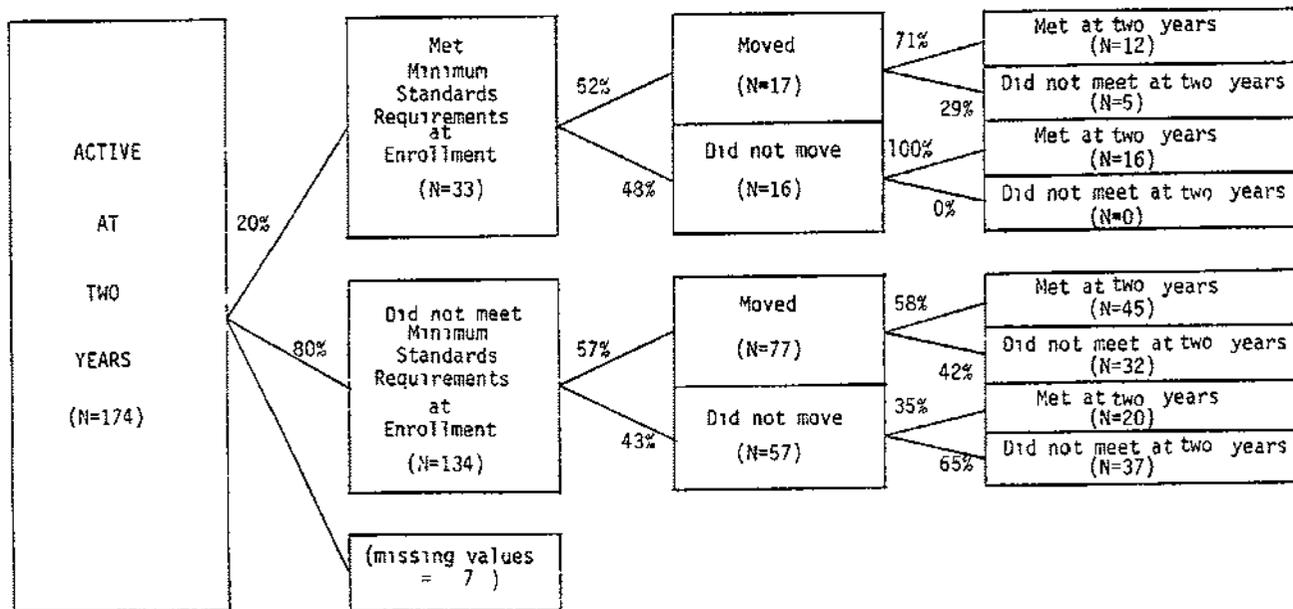
Figure IV-1

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS
MINIMUM STANDARDS HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

P I T T S B U R G H



P H O E N I X



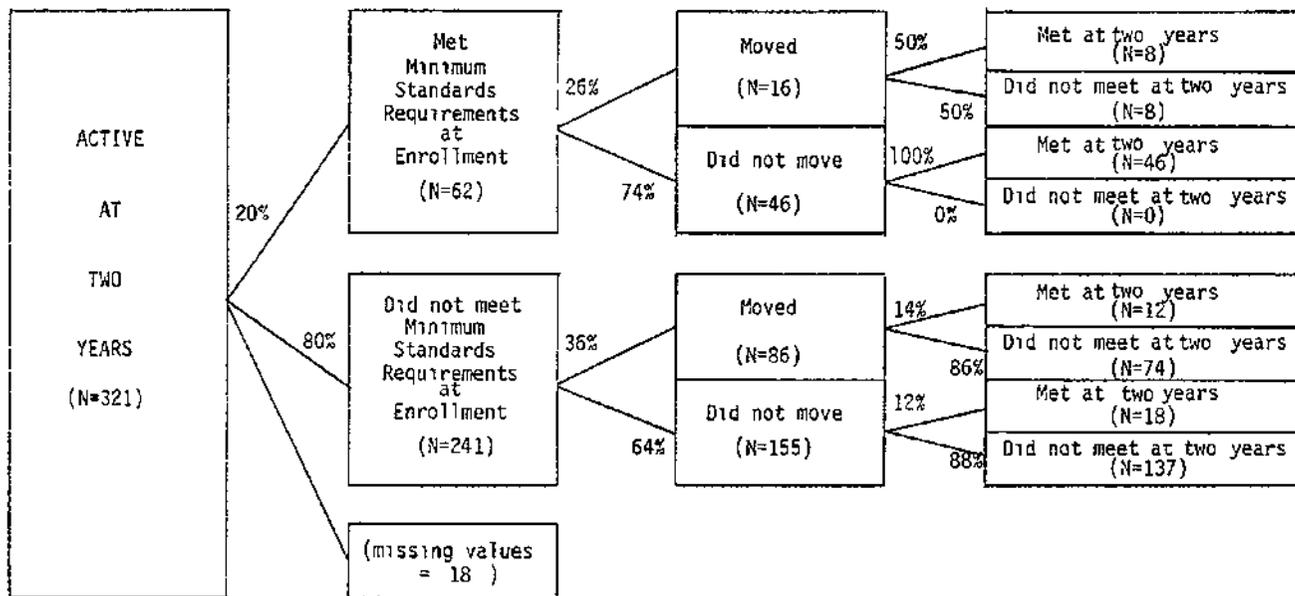
SAMPLE Minimum Standards households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 77 in Pittsburgh and 155 in Phoenix

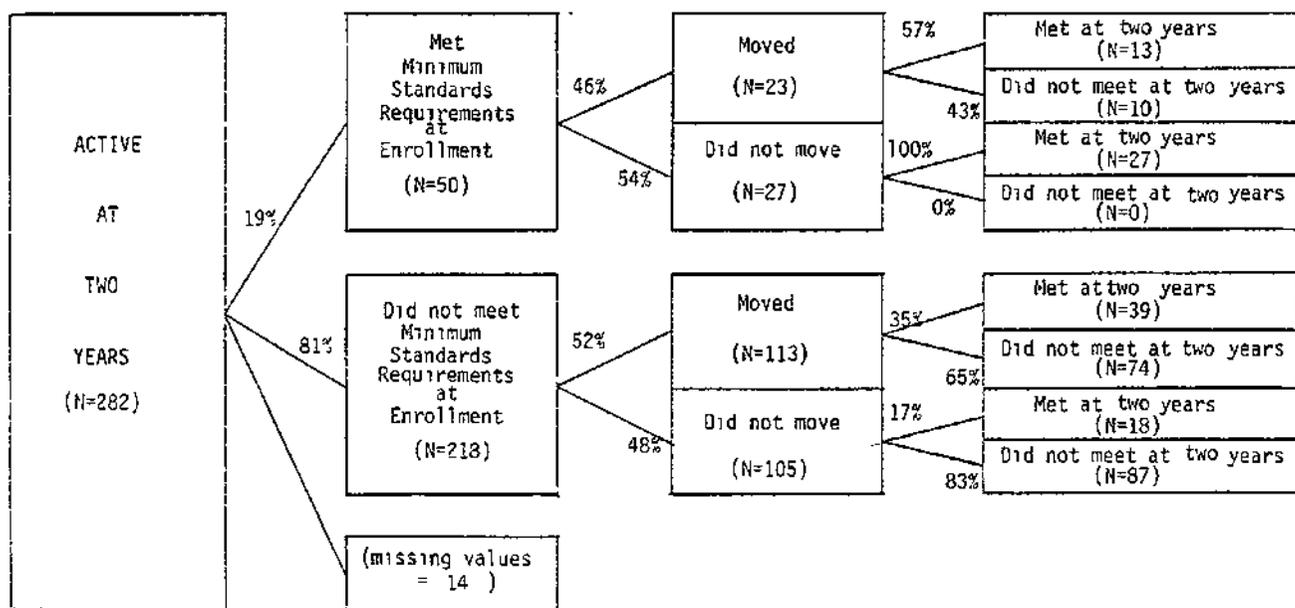
Figure IV-2

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS
CONTROL HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

PITTSBURGH



PHOENIX



SAMPLE Minimum Standards 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.

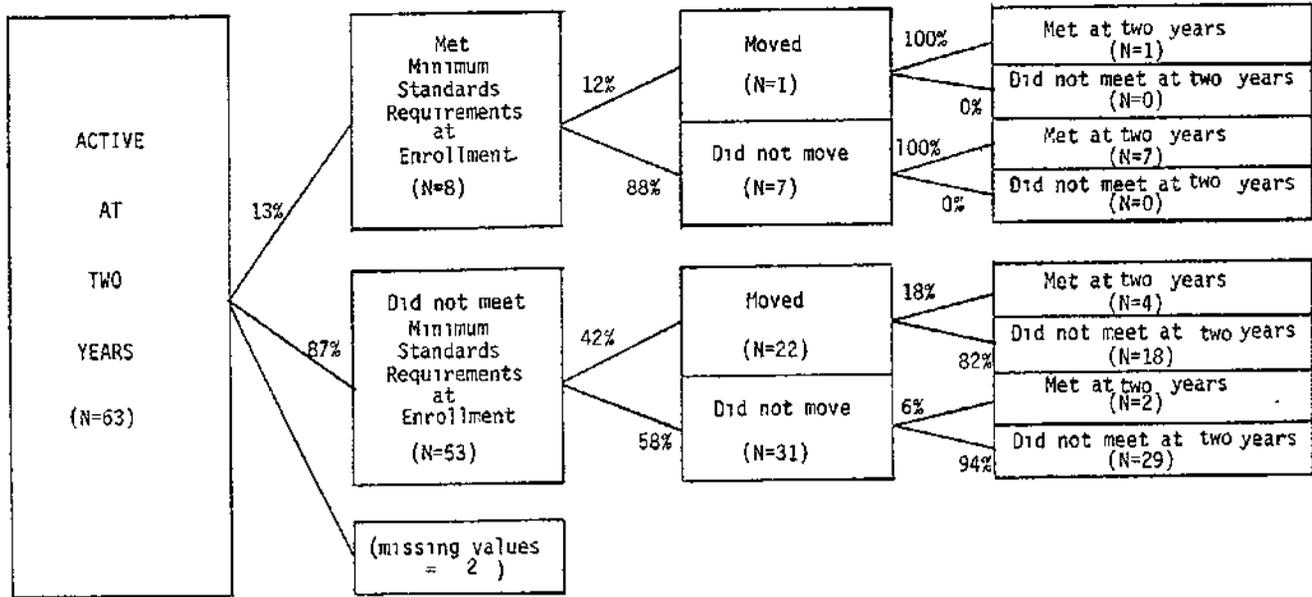
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix

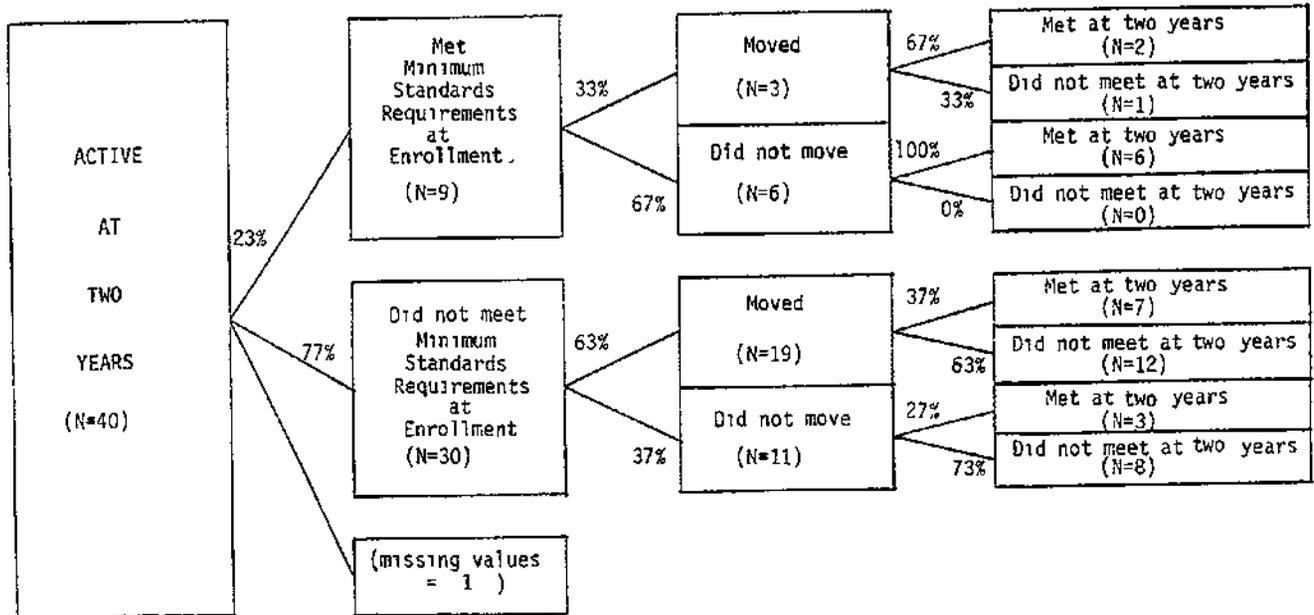
Figure IV-3

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

P I T T S B U R G H



P H O E N I X



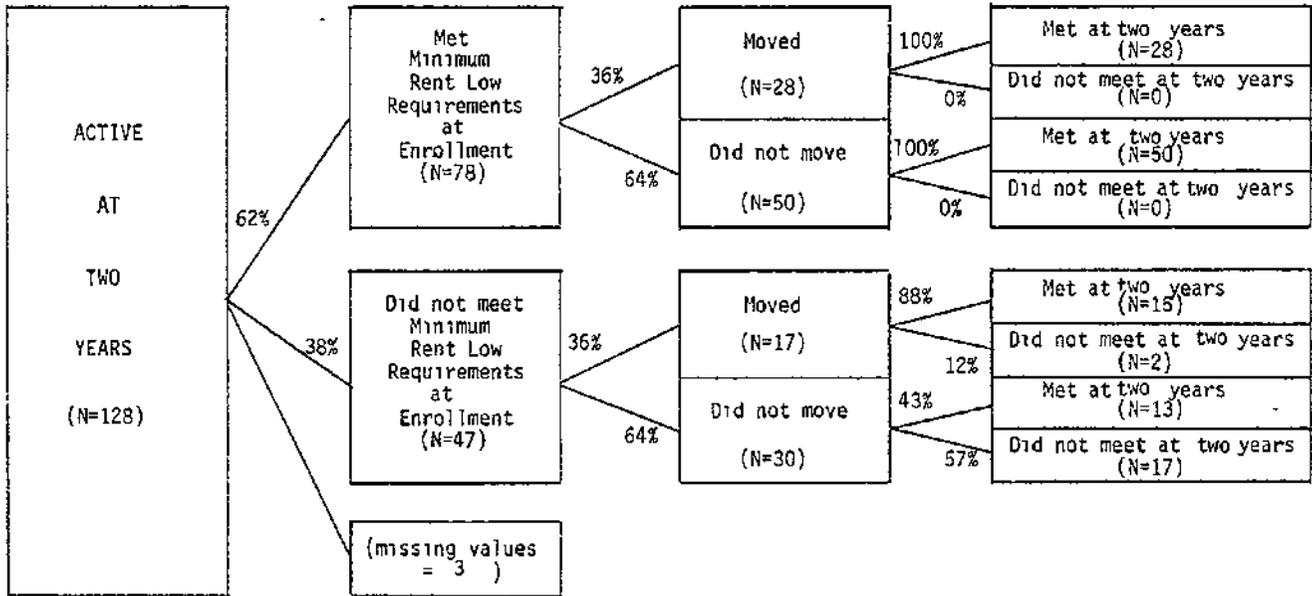
SAMPLE: Unconstrained households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.
DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix.

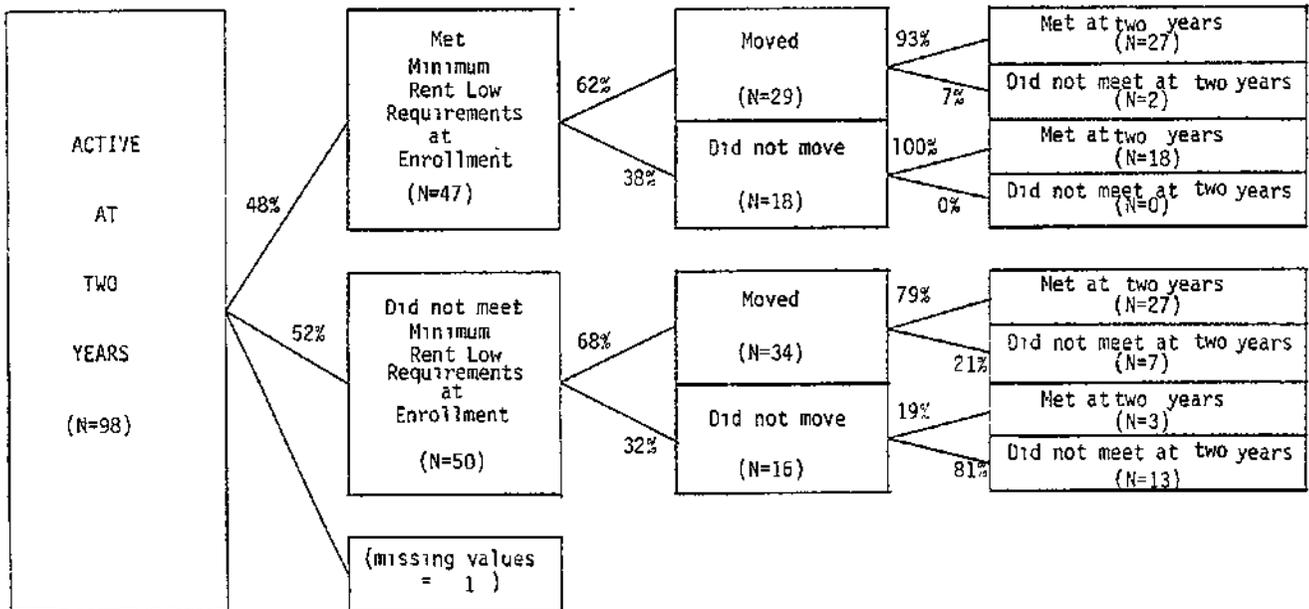
Figure IV-4

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS*
MINIMUM RENT LOW HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

PITTSBURGH



PHOENIX



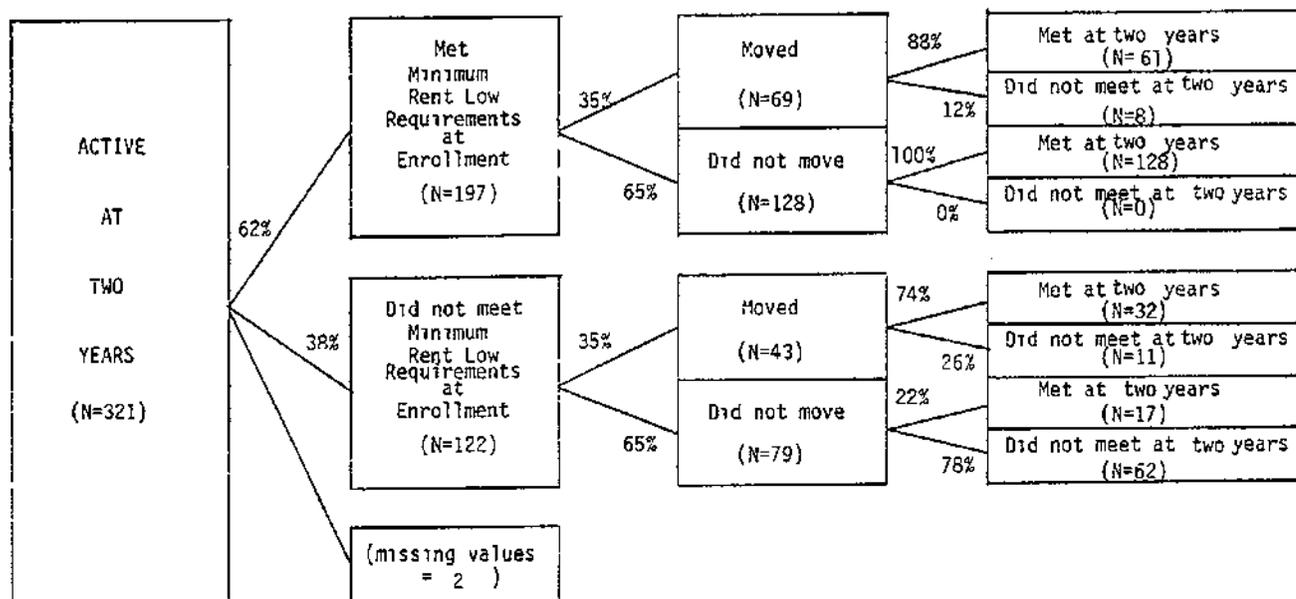
SAMPLE. Minimum Rent Low households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE. The number of enrollees that dropped out at two years was 38 in Pittsburgh and 77 in Phoenix.

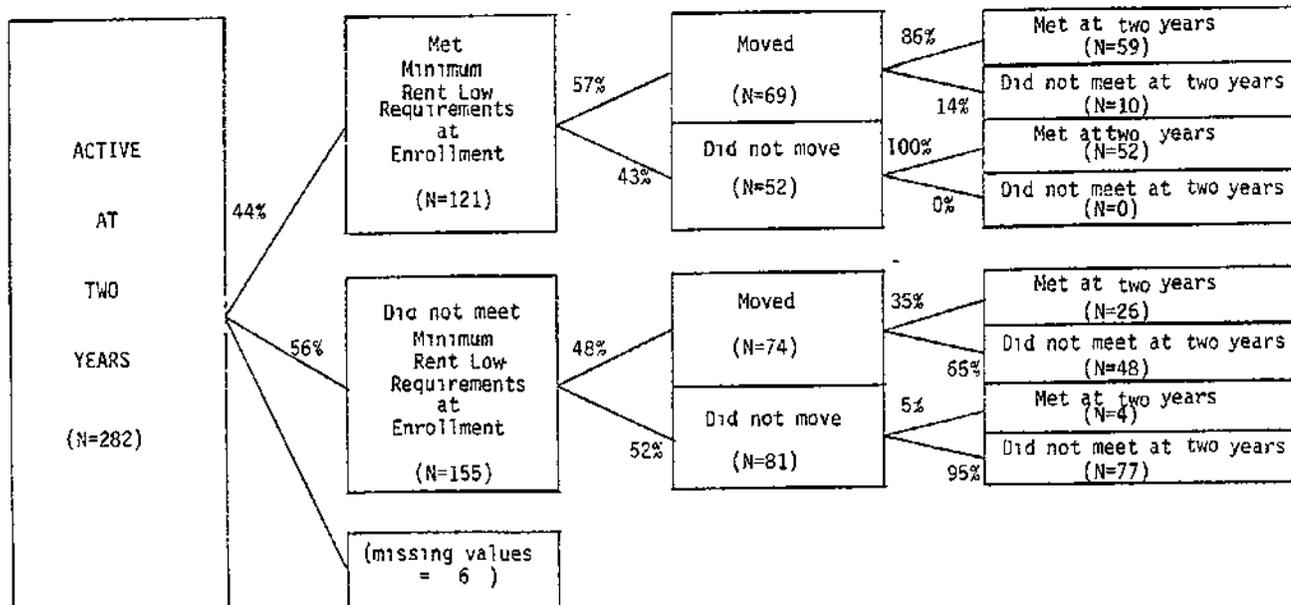
Figure IV-5

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
CONTROL HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

PITTSBURGH



PHOENIX



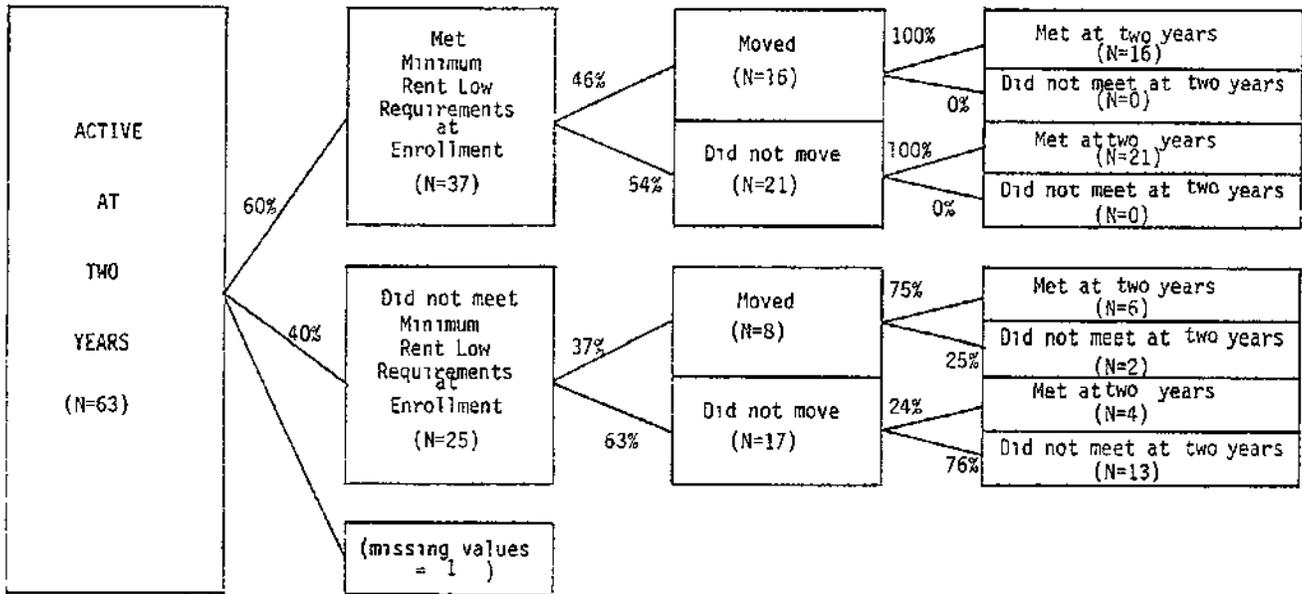
SAMPLE Minimum Rent Low households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE: The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix.

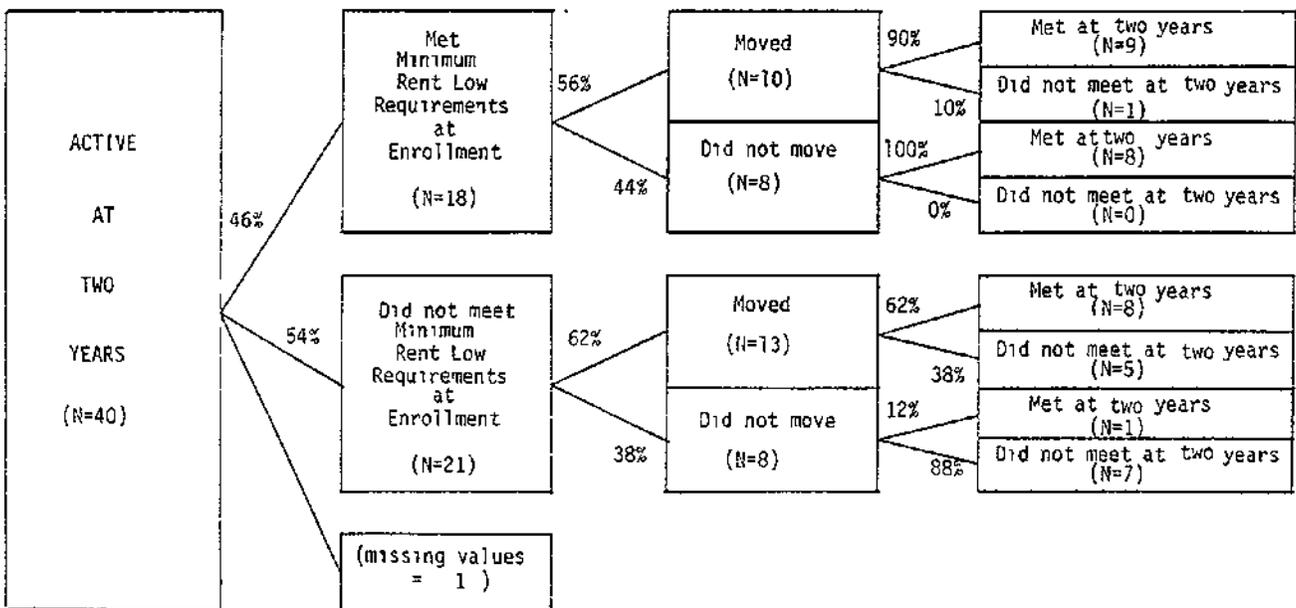
Figure IV-6

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

P I T T S B U R G H



P H O E N I X



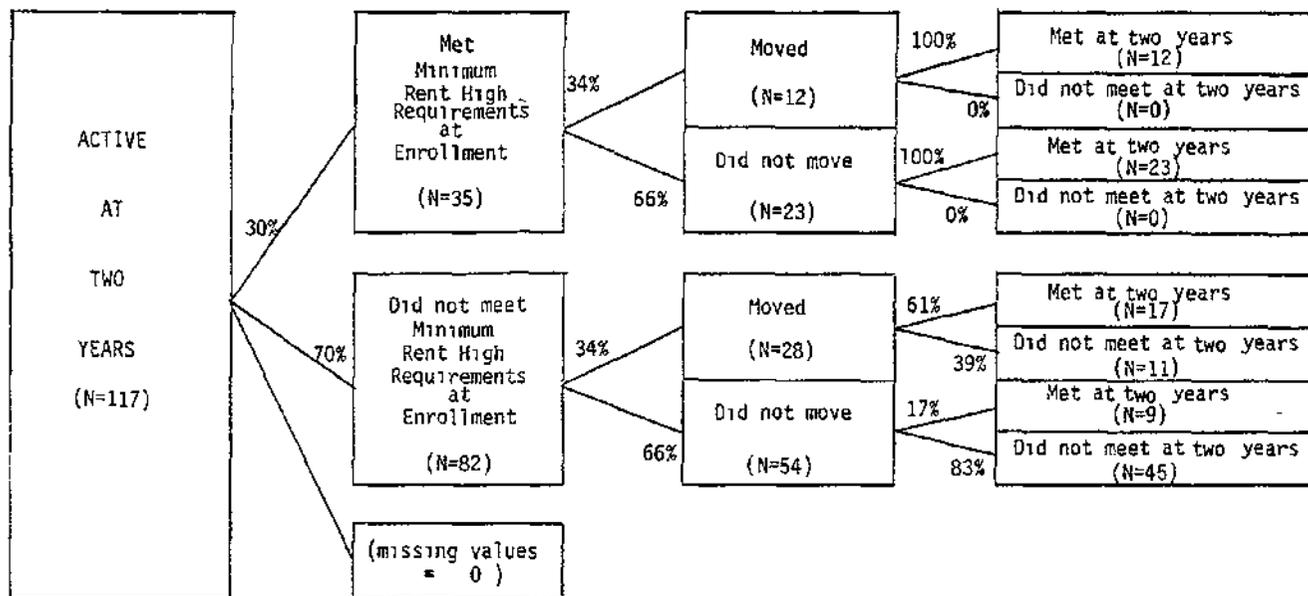
SAMPLE Minimum Rent Low households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix.

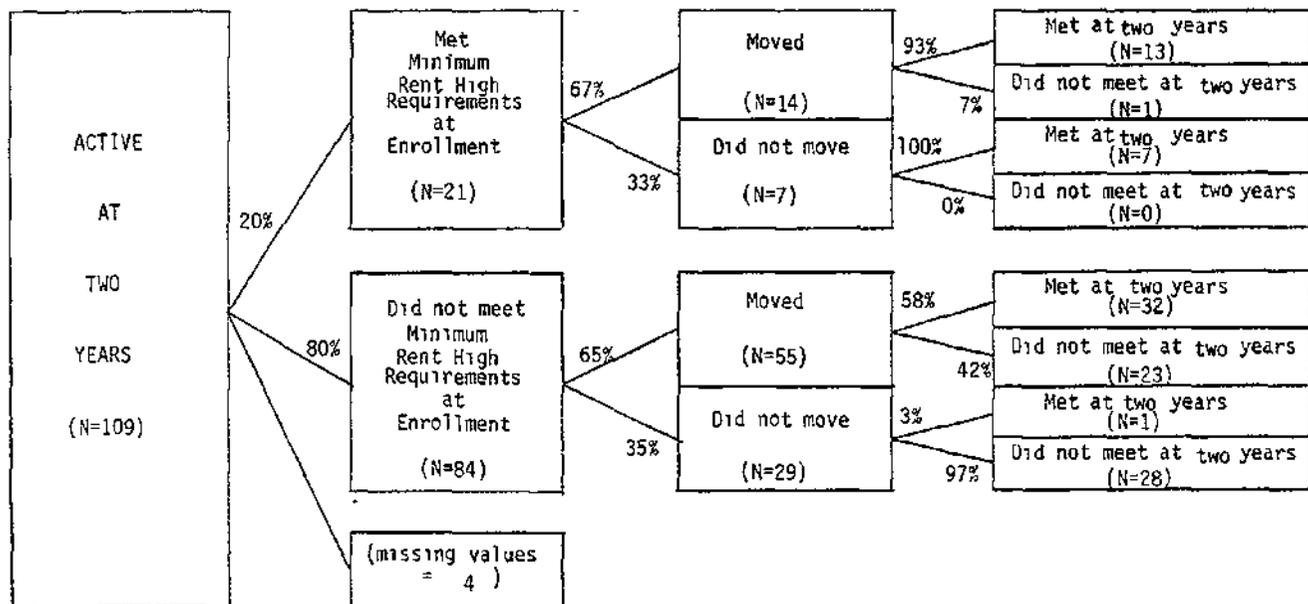
Figure IV-7

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS,
MINIMUM RENT HIGH HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

P I T T S B U R G H



P H O E N I X



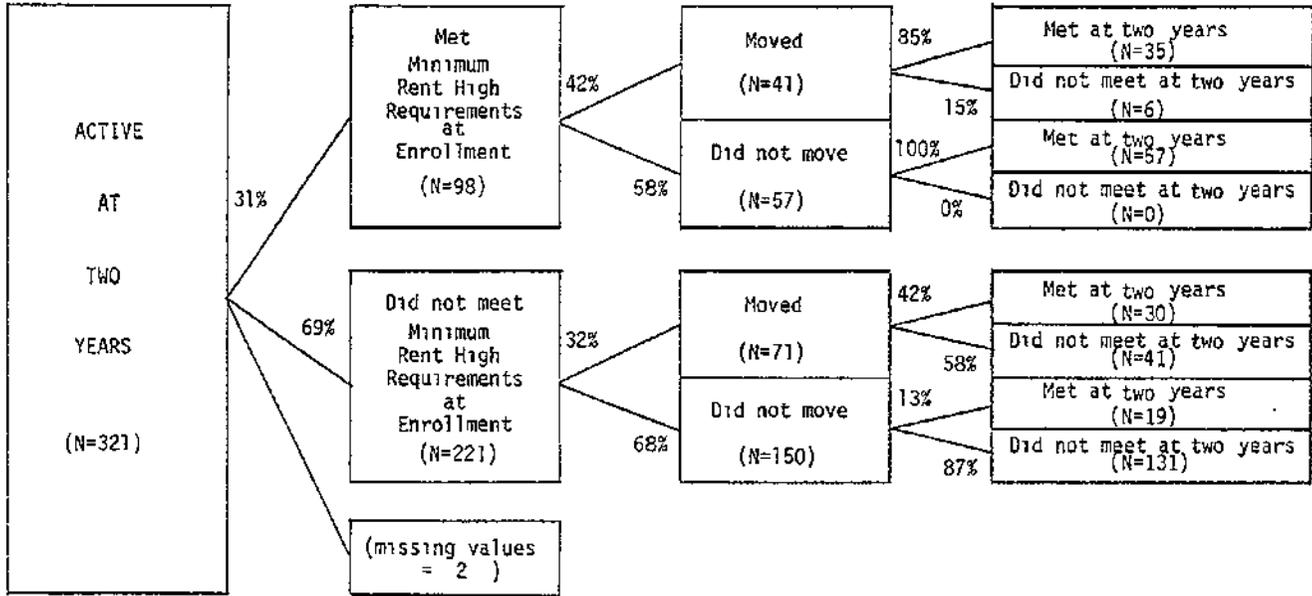
SAMPLE: Minimum Rent High households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE: The number of enrollees that dropped out at two years was 62 in Pittsburgh and 82 in Phoenix.

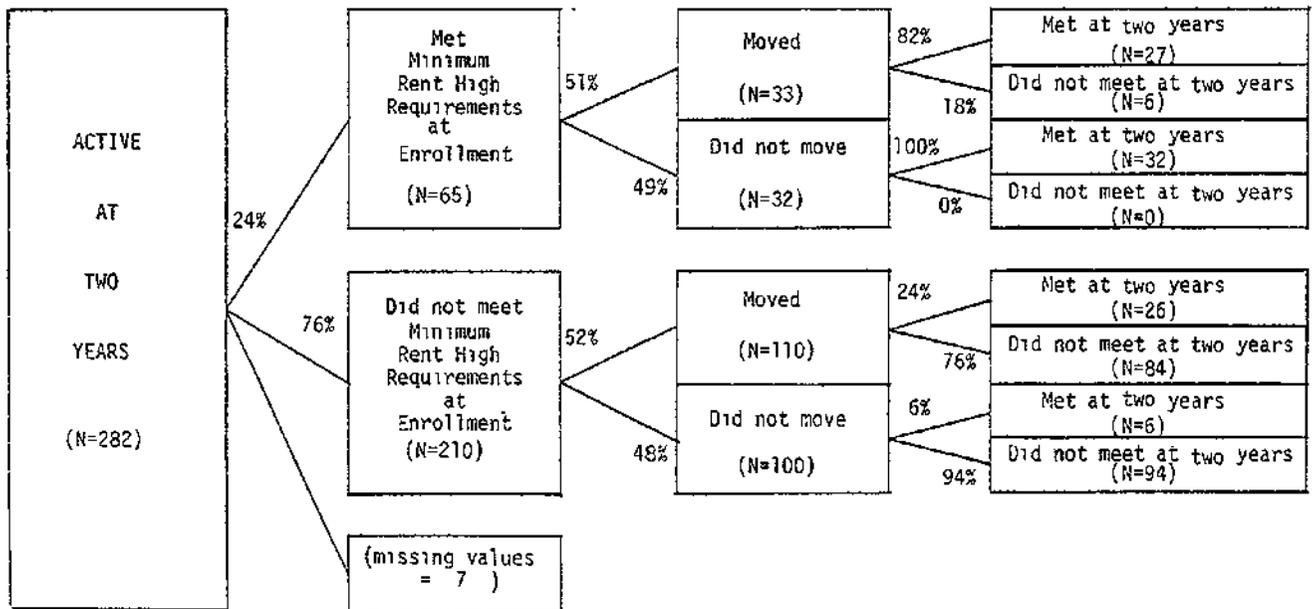
Figure IV-8

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS
CONTROL HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

PITTSBURGH



PHOENIX



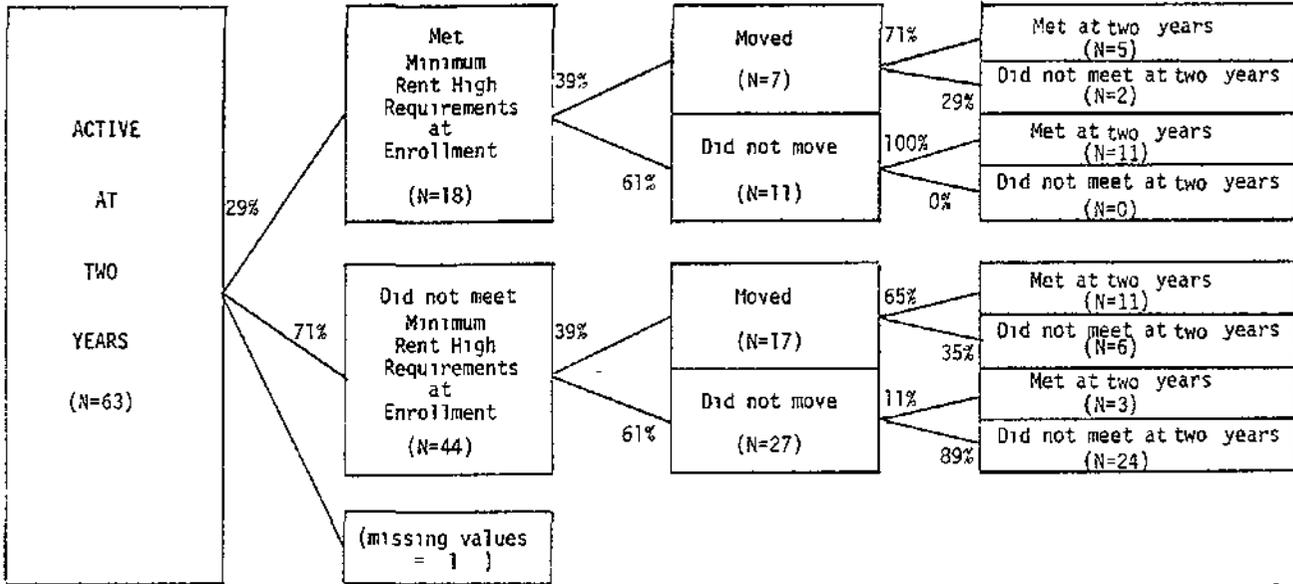
SAMPLE: Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.
DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE: The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix

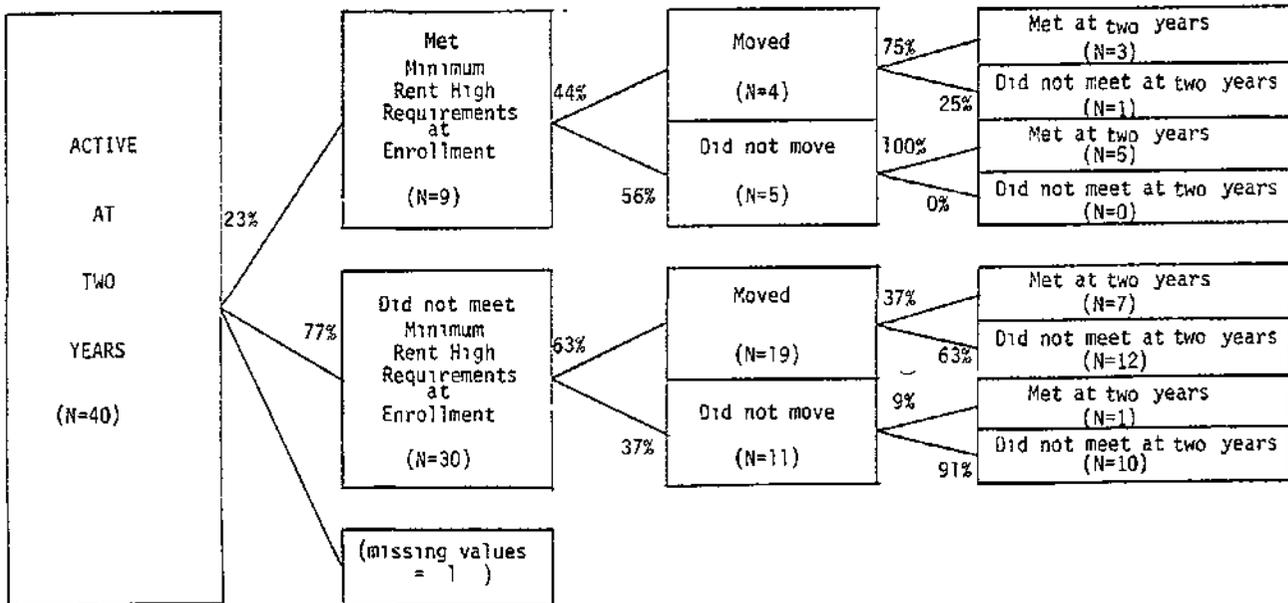
Figure IV-9

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS:
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ENROLLMENT AND TWO YEARS

PITTSBURGH



PHOENIX



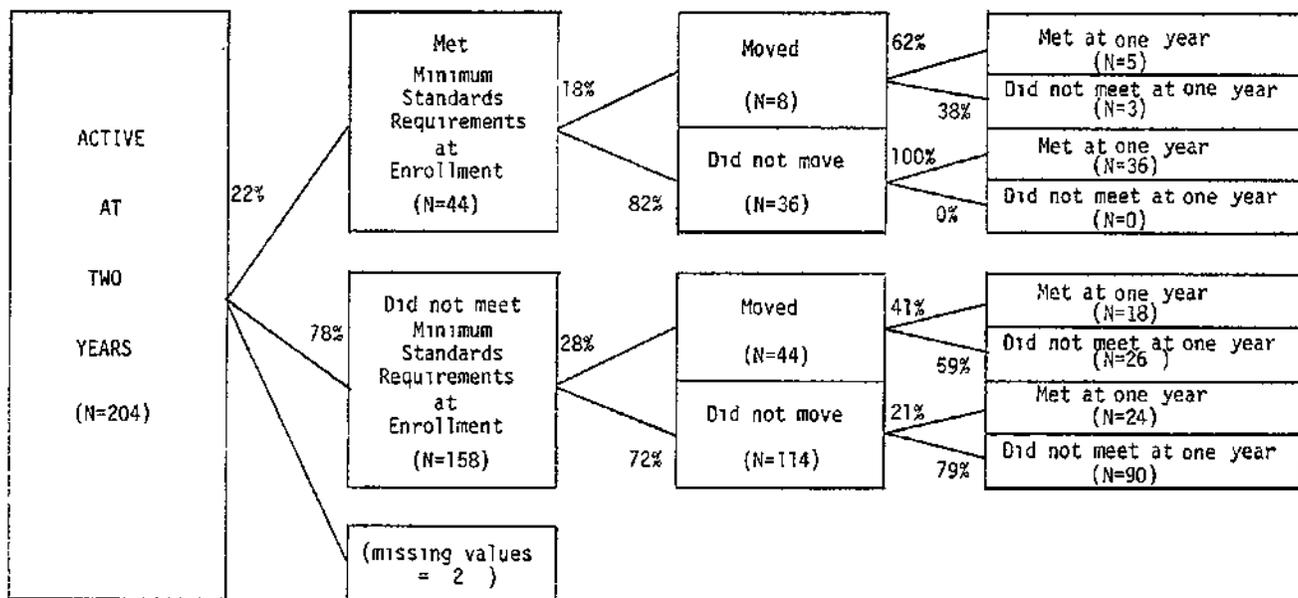
SAMPLE Unconstrained households active at two years after enrollment excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix.

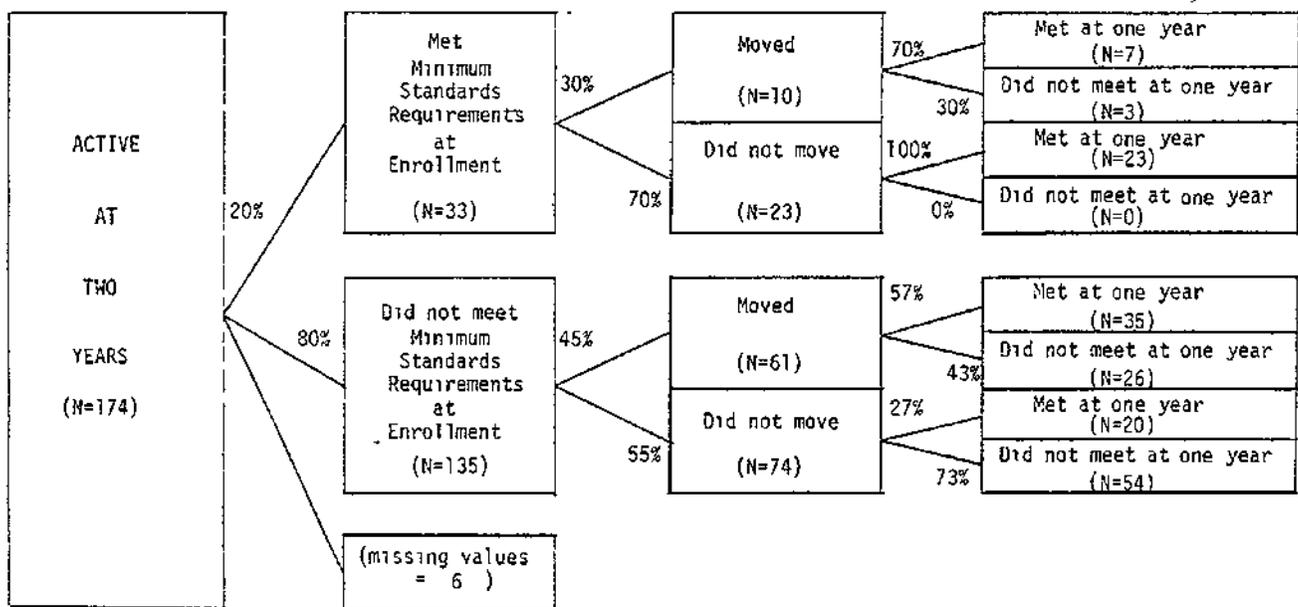
Figure IV-10

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS.
MINIMUM STANDARDS HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

P I T T S B U R G H



P H O E N I X



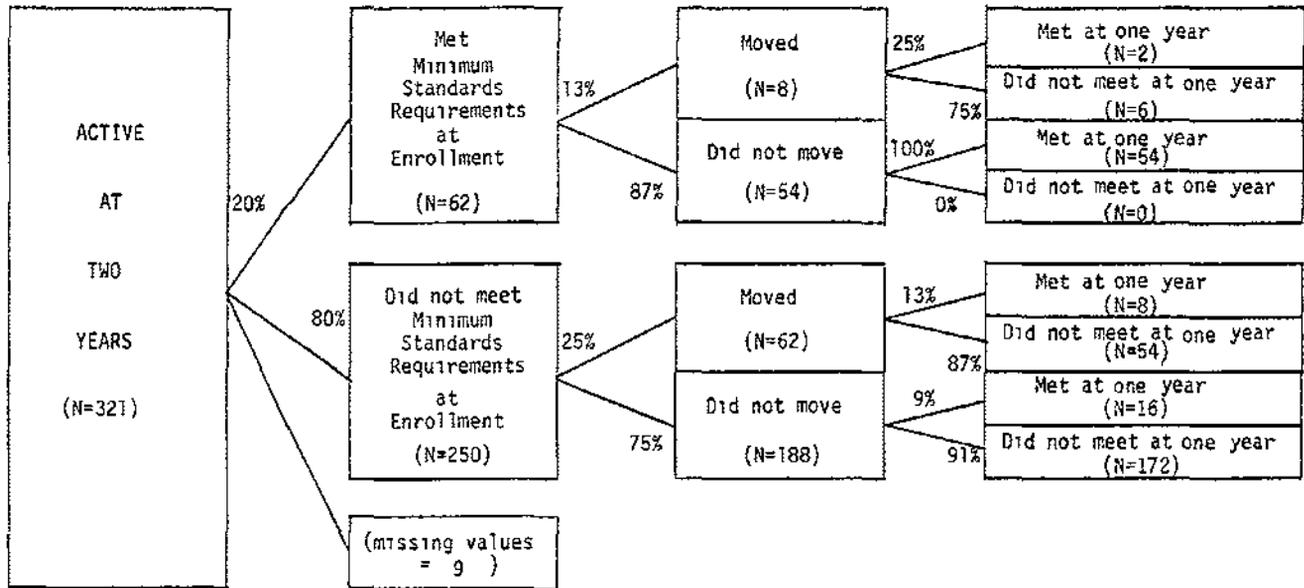
SAMPLE Minimum Standards households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 77 in Pittsburgh and 155 in Phoenix

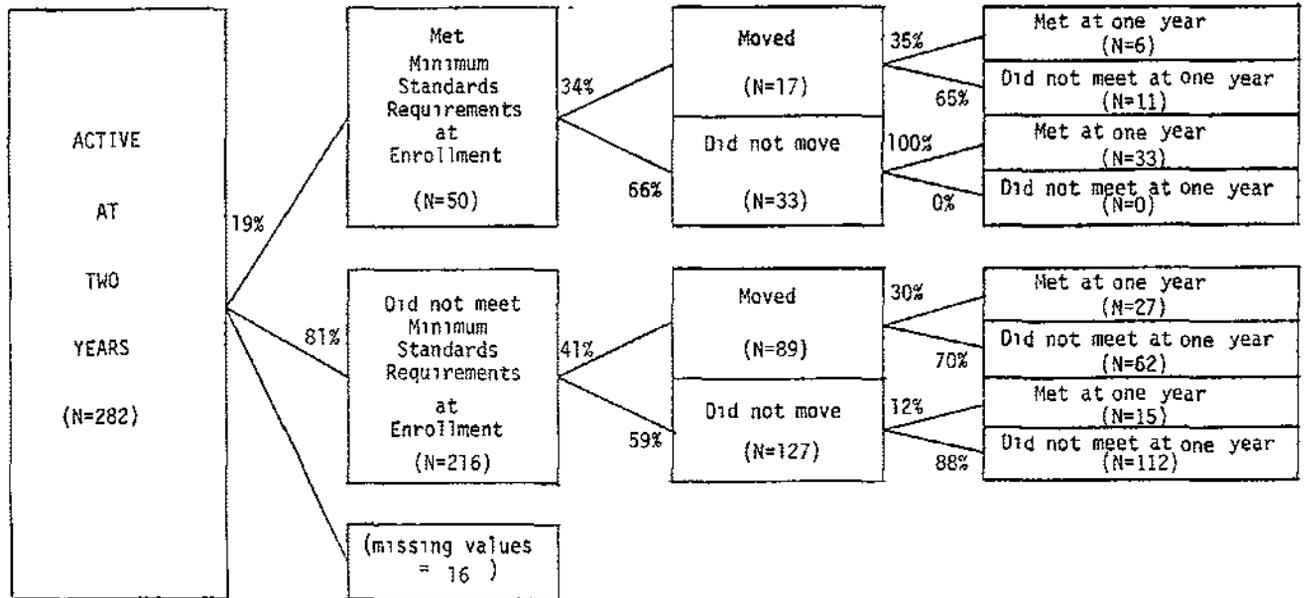
Figure IV-11

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS:
CONTROL HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

P I T T S B U R G H



P H O E N I X



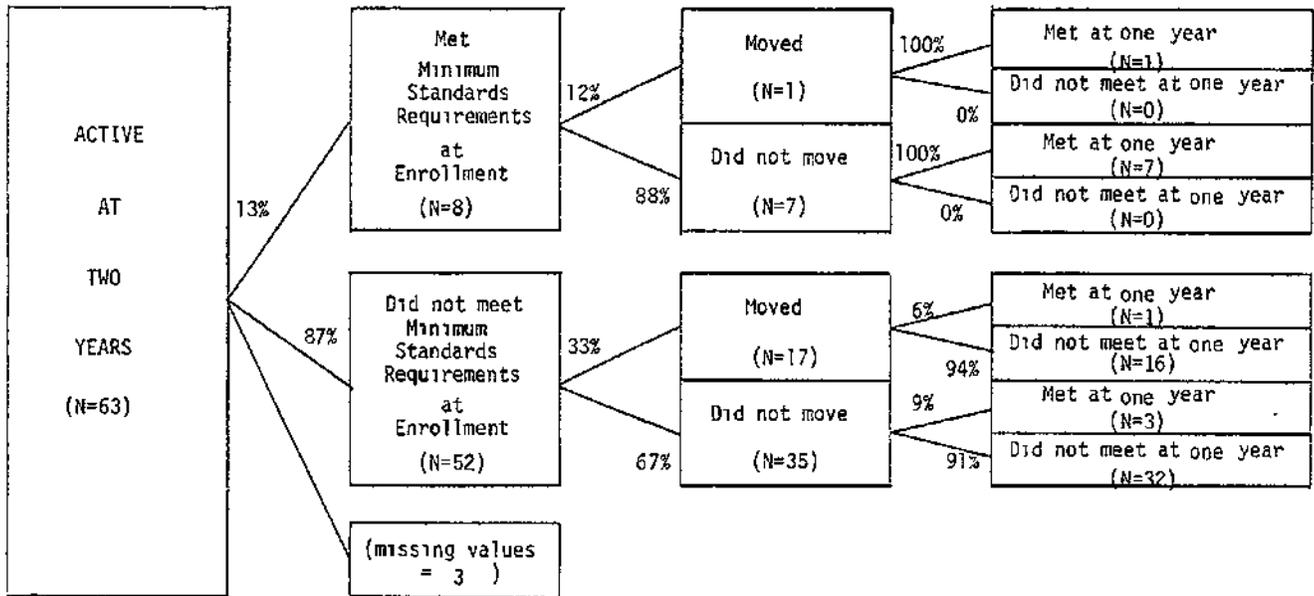
SAMPLE Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE. The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix.

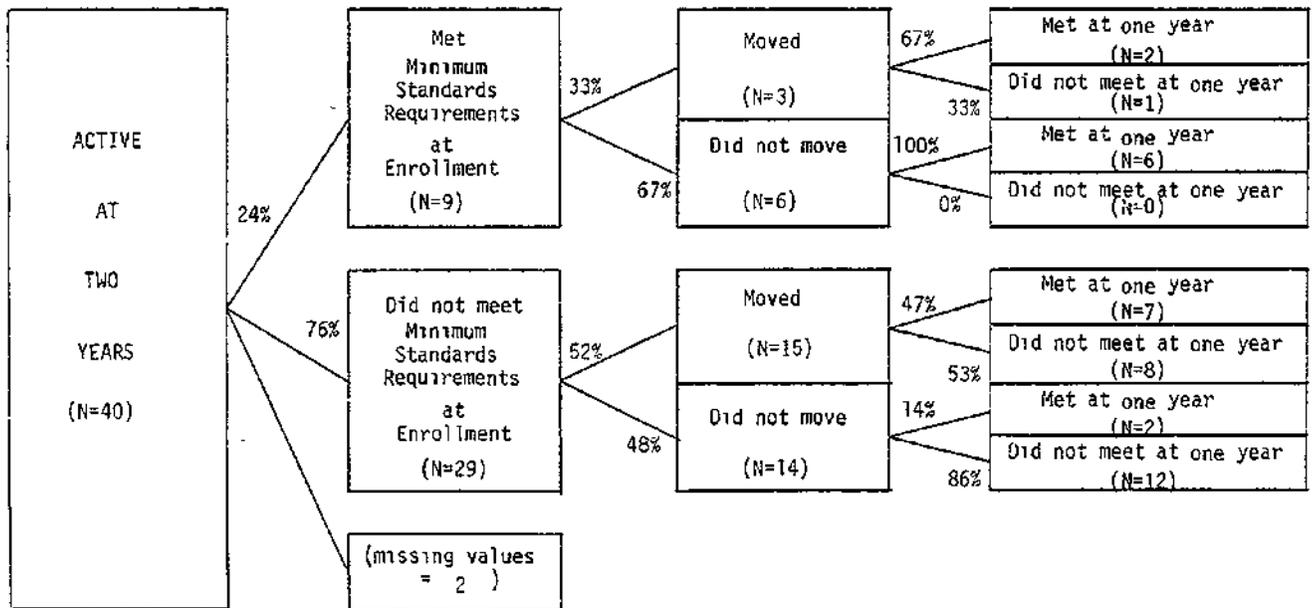
Figure IV-12

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS.
UNCONSTRAINED HOUSEHOLDS
BETWEEN ENROLLMENT AND ONE YEAR

P I T T S B U R G H



P H O E N I X



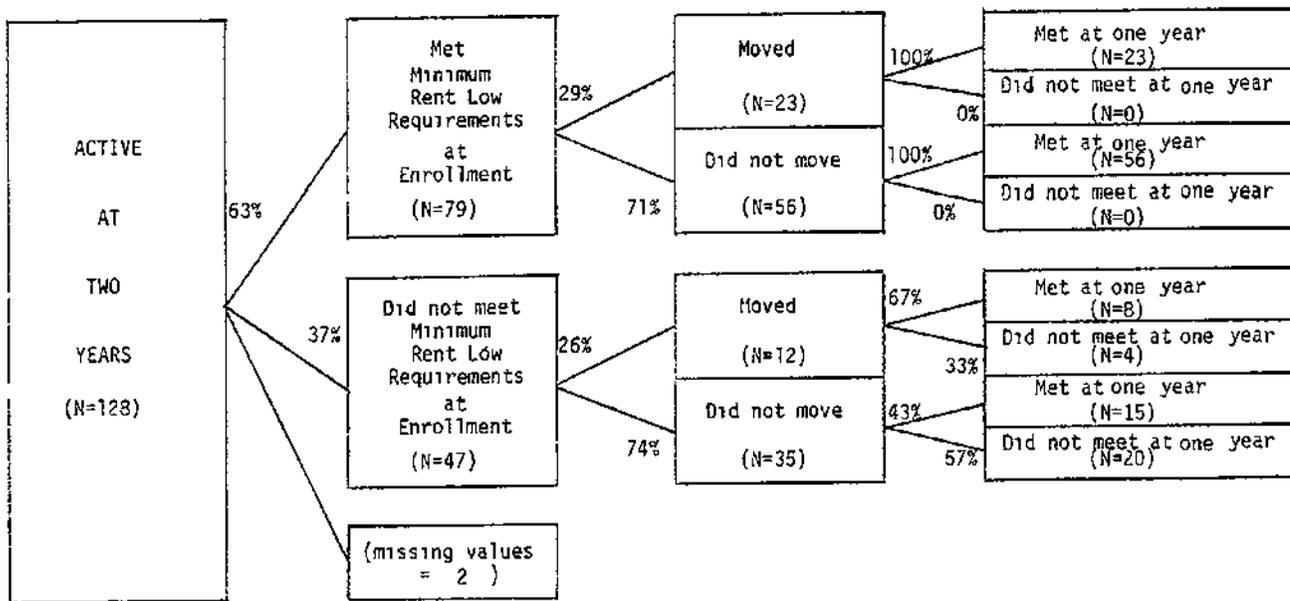
SAMPLE- Unconstrained households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE. The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix

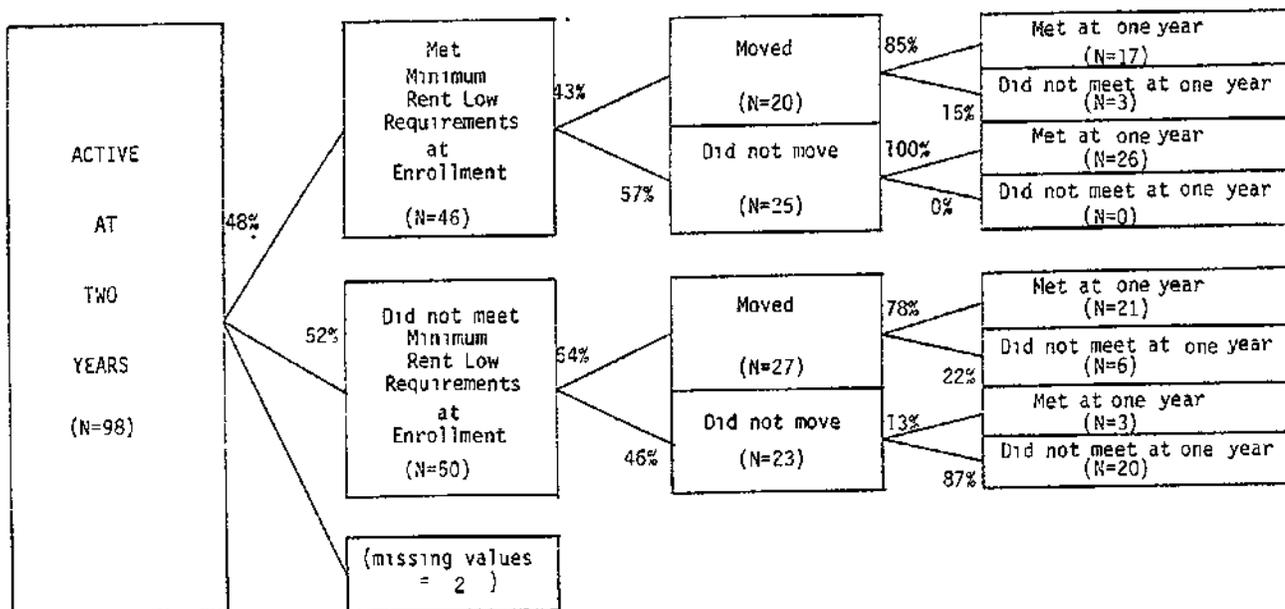
Figure IV-13

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
MINIMUM RENT LOW HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

PITTSBURGH



PHOENIX

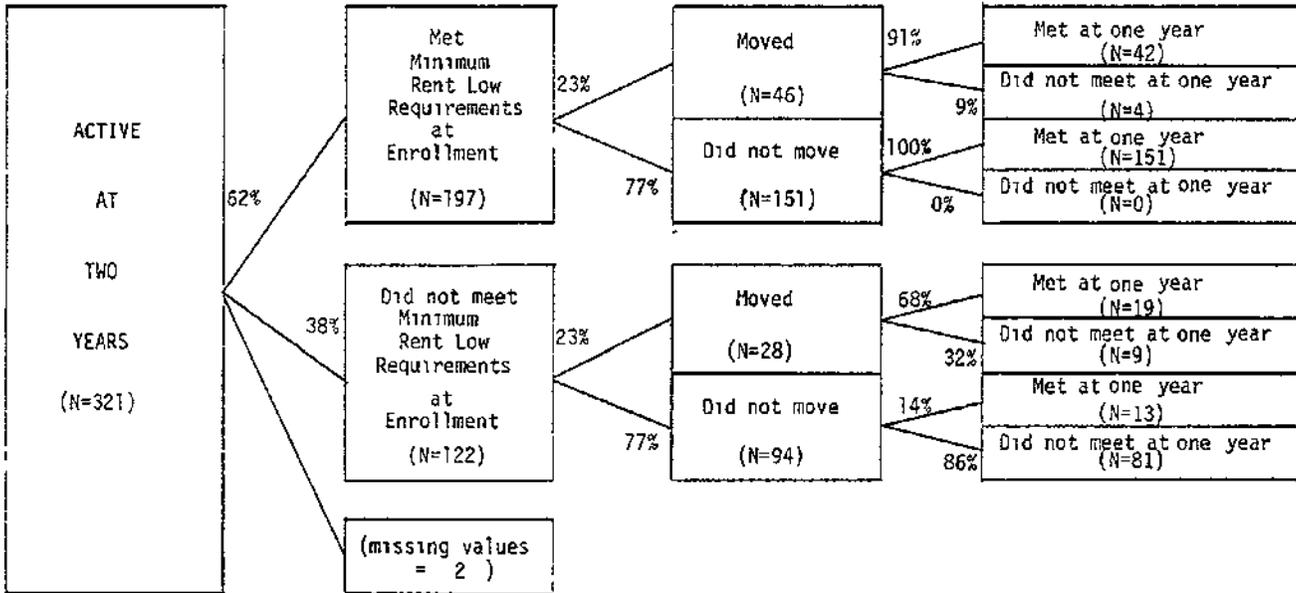


SAMPLE: Minimum Rent Low households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing. DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

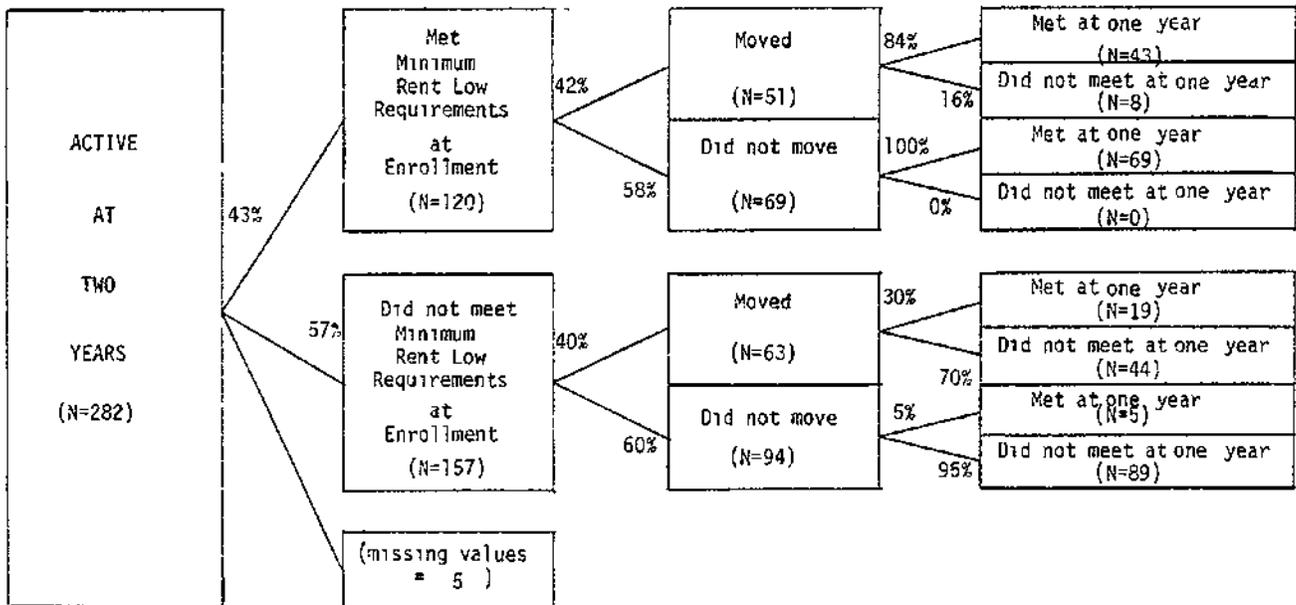
NOTE: The number of enrollees that dropped out at two years was 38 in Pittsburgh and 77 in Phoenix.

Figure IV-14
 THE DYNAMICS OF MEETING
 MINIMUM RENT LOW REQUIREMENTS
 CONTROL HOUSEHOLDS,
 BETWEEN ENROLLMENT AND ONE YEAR

P I T T S B U R G H



P H O E N I X



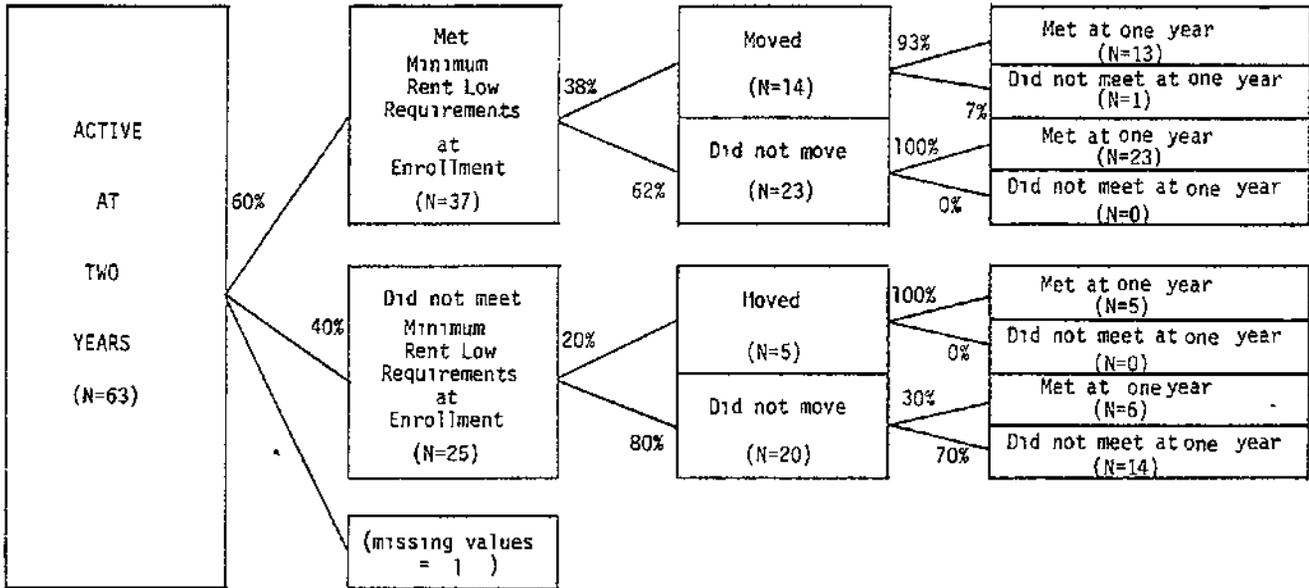
SAMPLE Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
 DATA SOURCES Initial and monthly household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix.

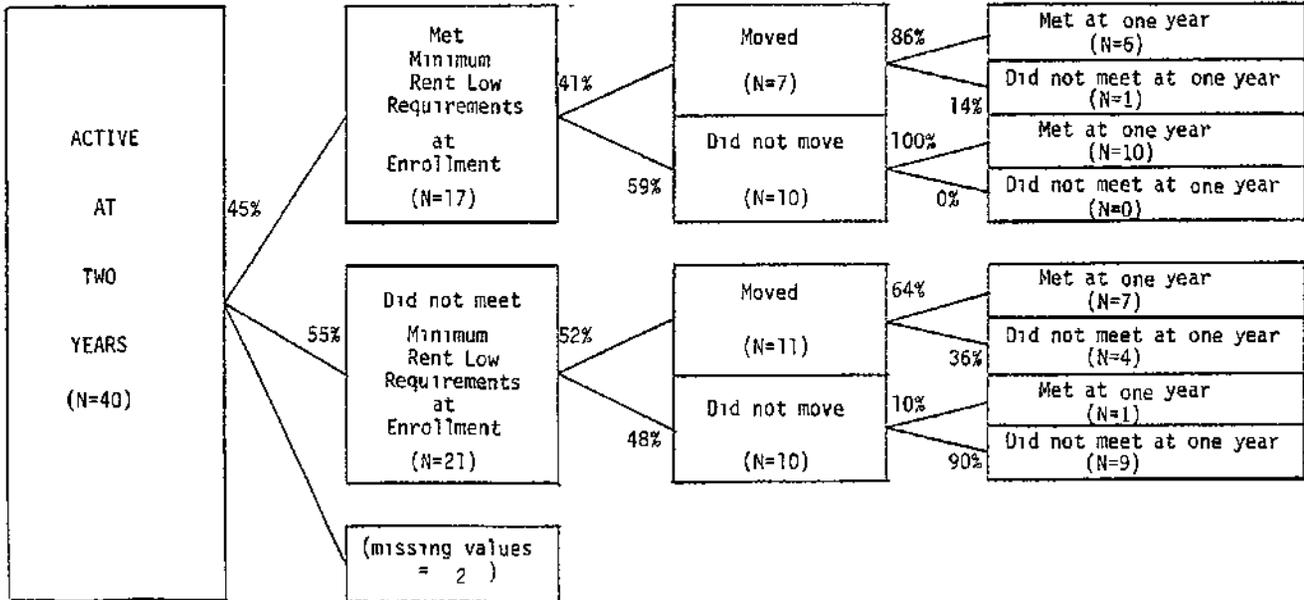
Figure IV-15

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS.
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

P I T T S B U R G H



P H O E N I X



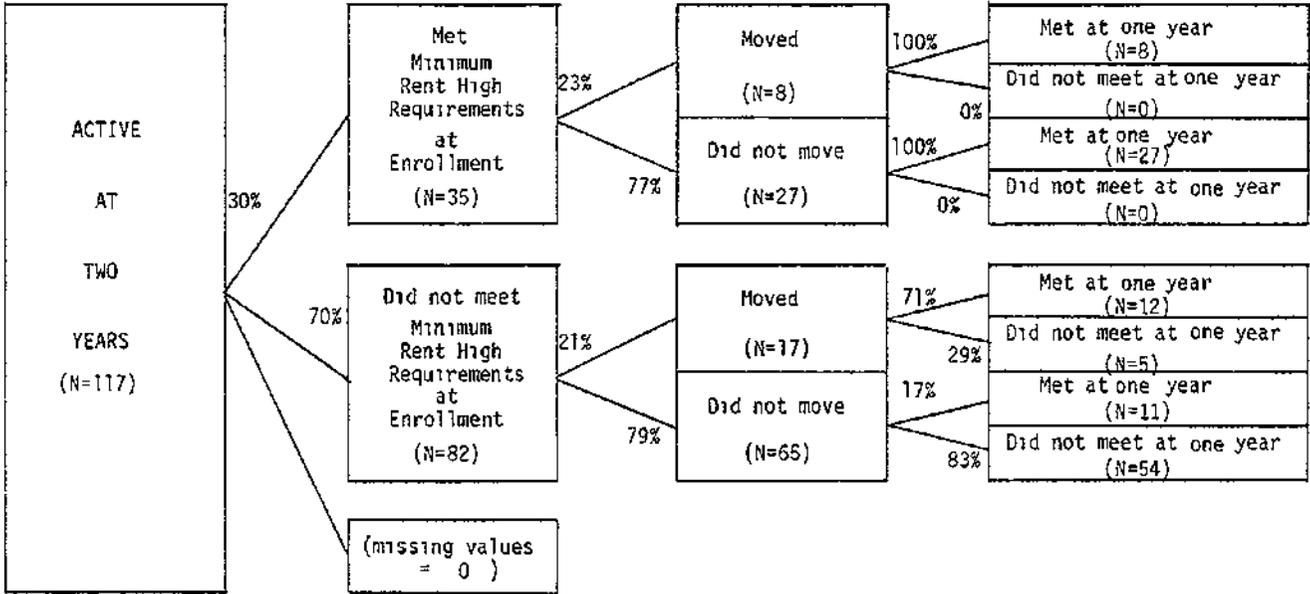
SAMPLE: Unconstrained households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE: The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix

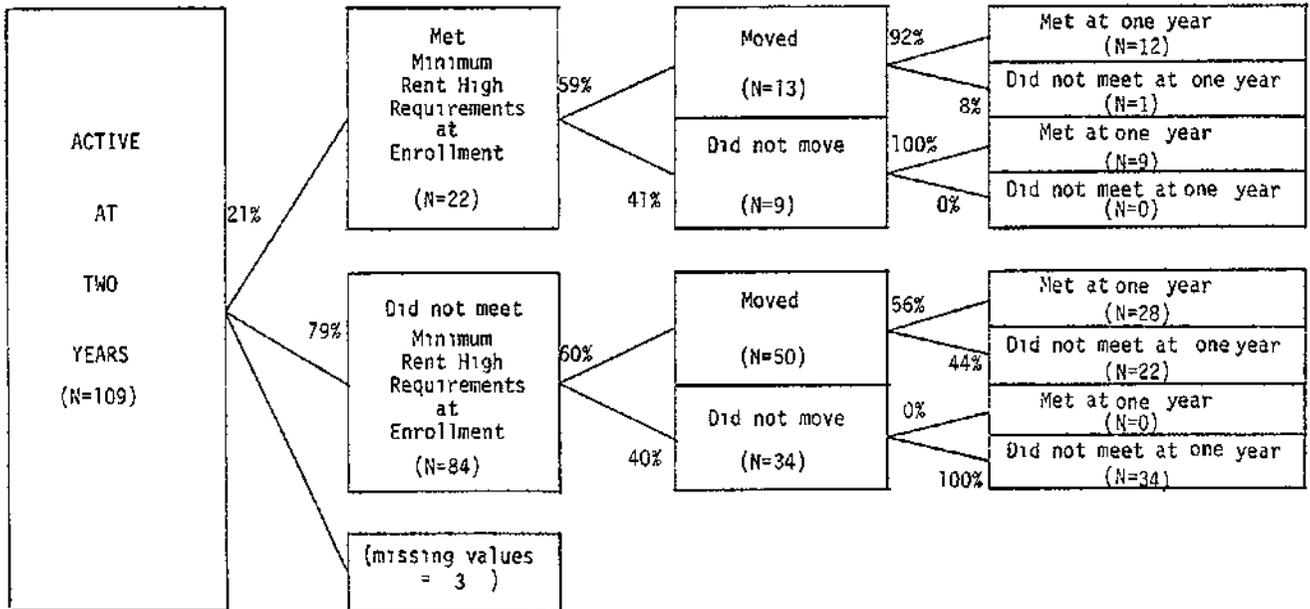
Figure IV-16

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS
MINIMUM RENT HIGH HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

PITTSBURGH



PHOENIX



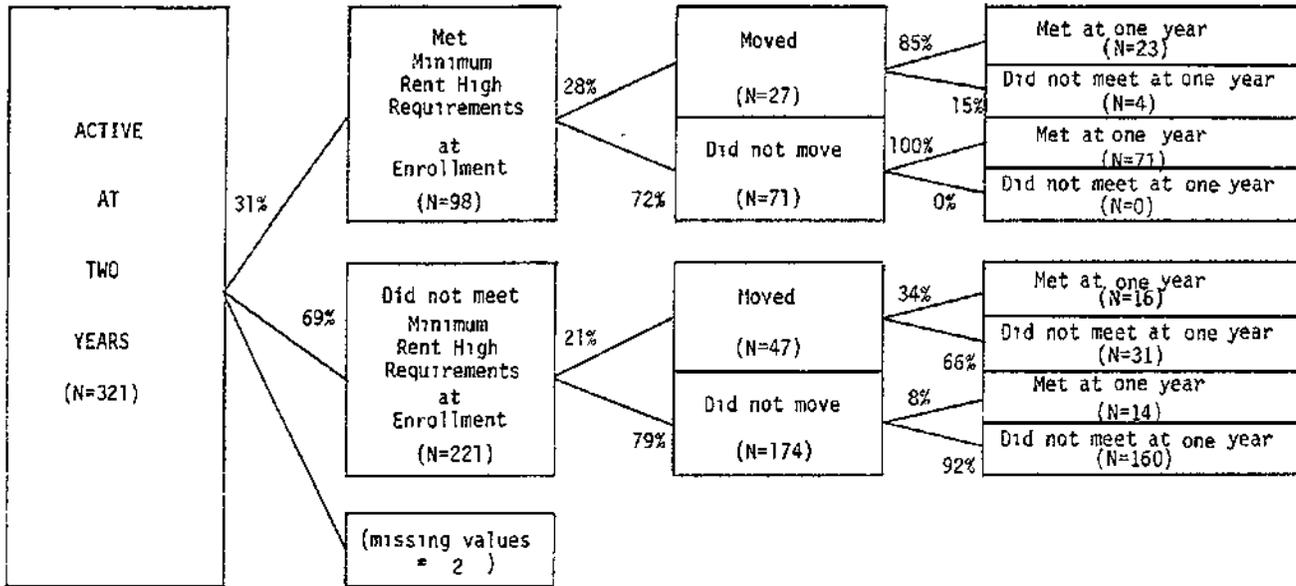
SAMPLE Minimum Rent High households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 62 in Pittsburgh and 82 in Phoenix.

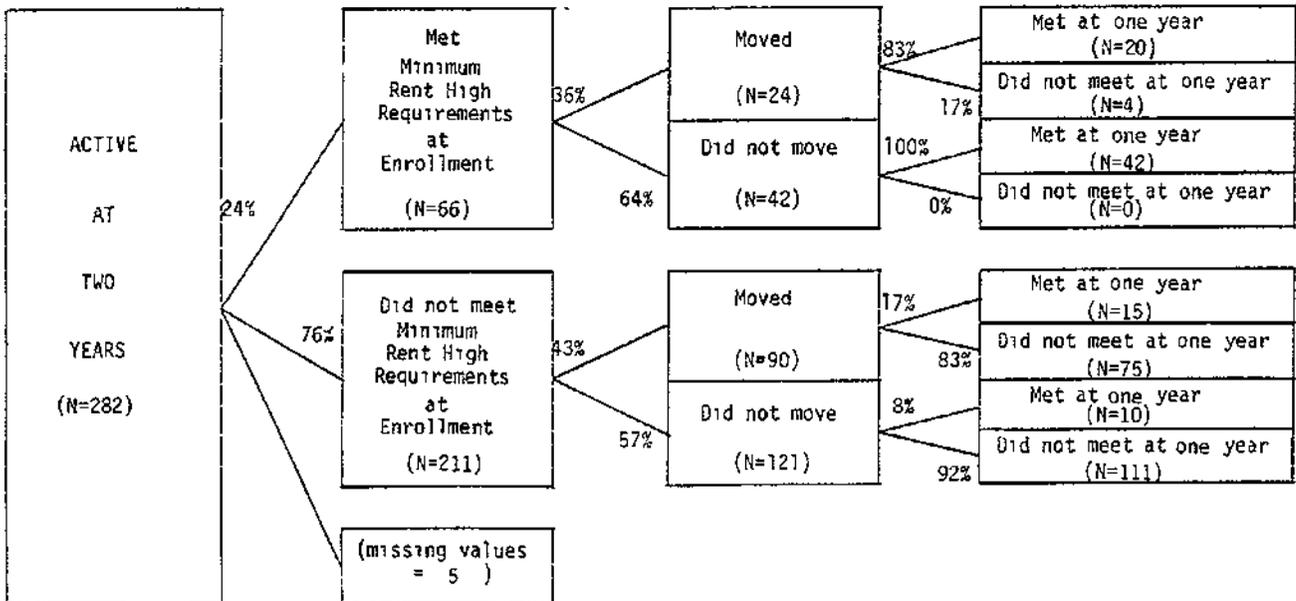
Figure IV-17

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS:
CONTROL HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

PITTSBURGH



PHOENIX



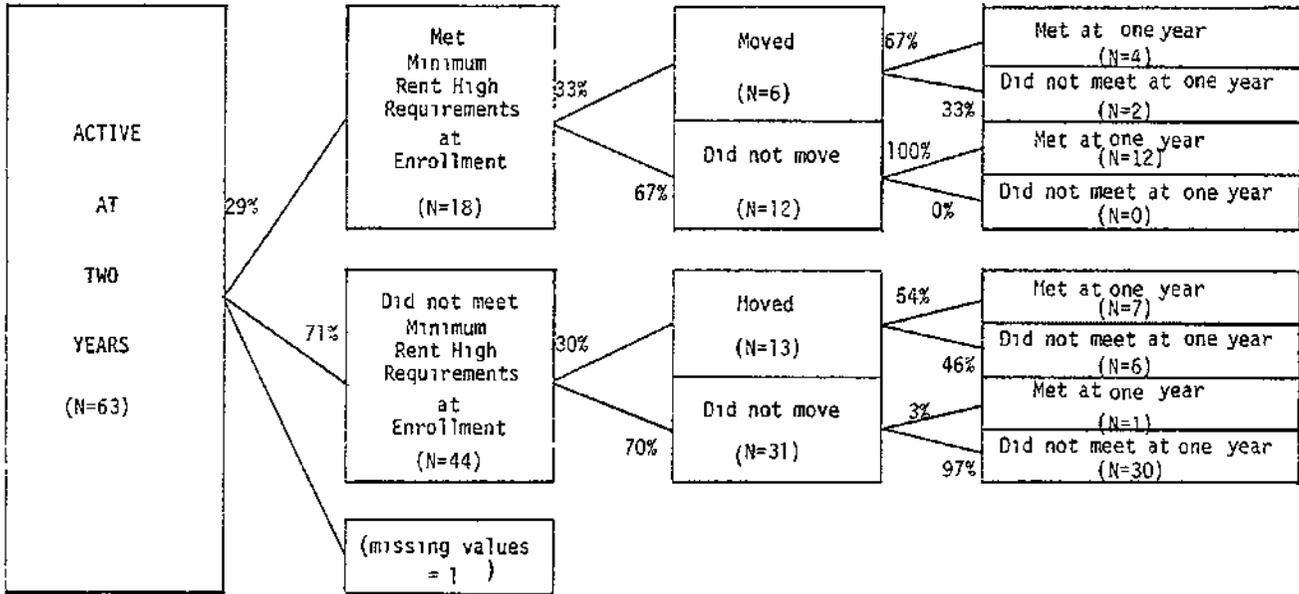
SAMPLE Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their ownhomes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix.

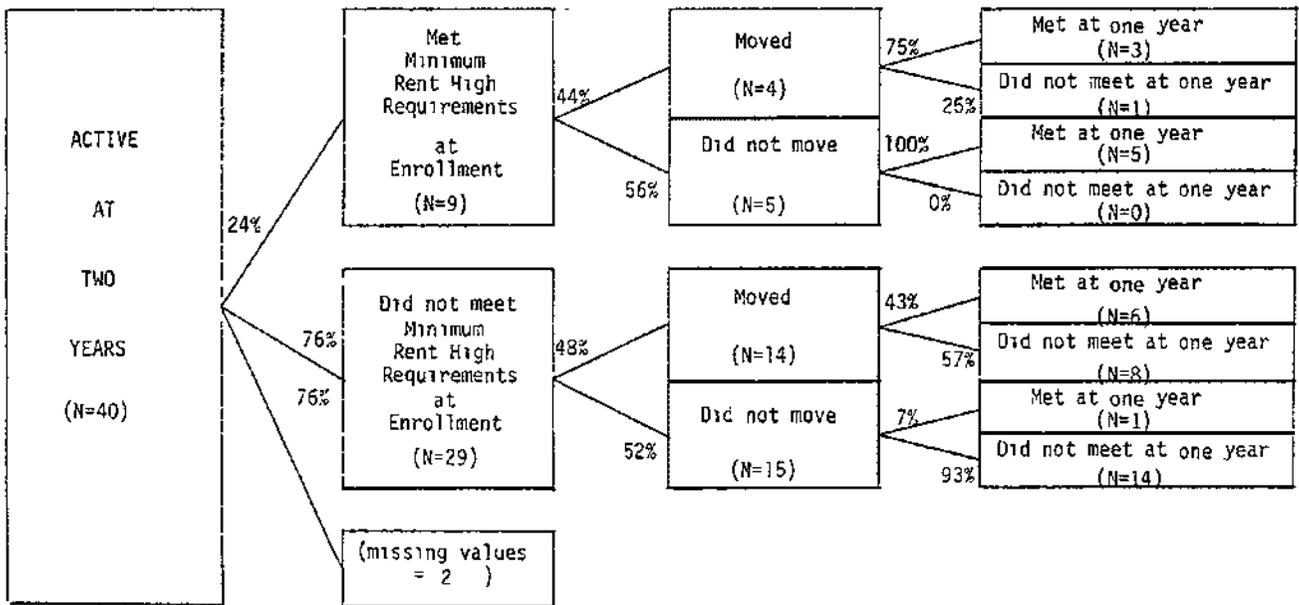
Figure IV-18

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ENROLLMENT AND ONE YEAR

PITTSBURGH



PHOENIX

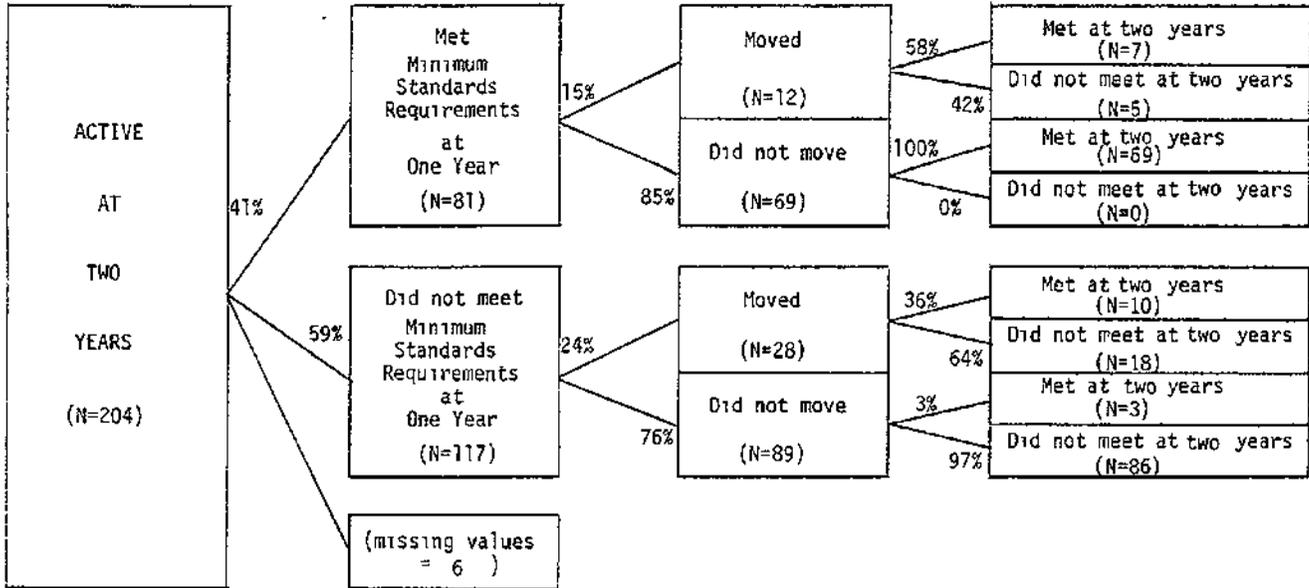


SAMPLE Unconstrained households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

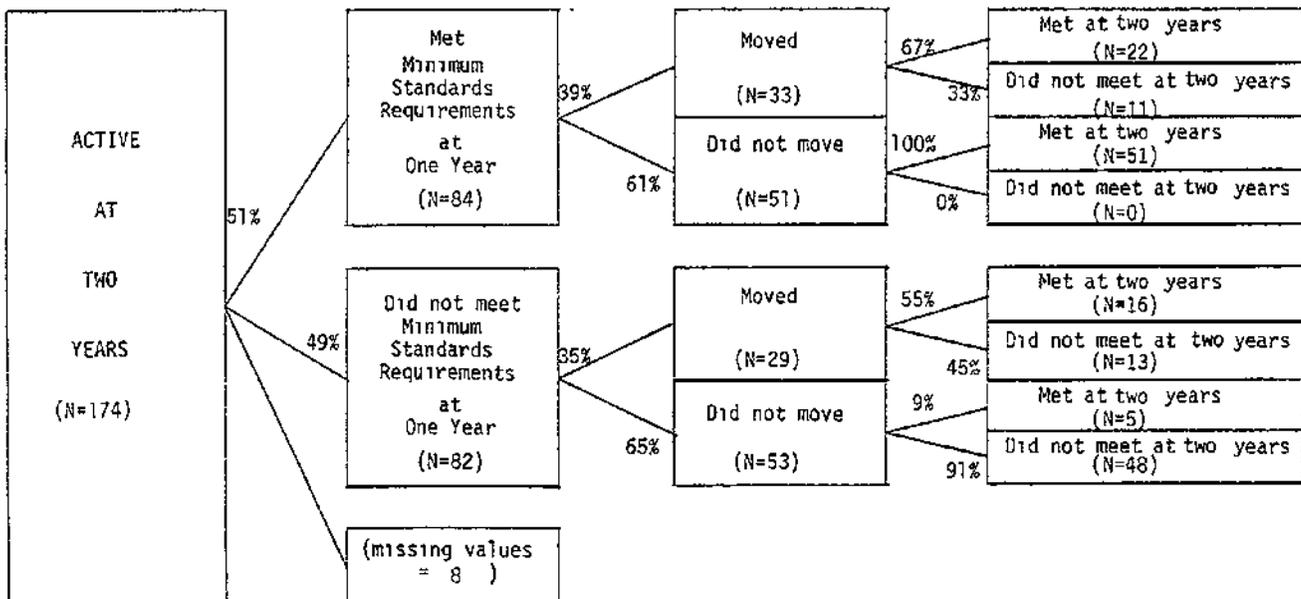
NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix

Figure IV-19
 THE DYNAMICS OF MEETING
 MINIMUM STANDARDS REQUIREMENTS:
 MINIMUM STANDARDS HOUSEHOLDS,
 BETWEEN ONE YEAR AND TWO YEARS

PITTSBURGH



PHOENIX



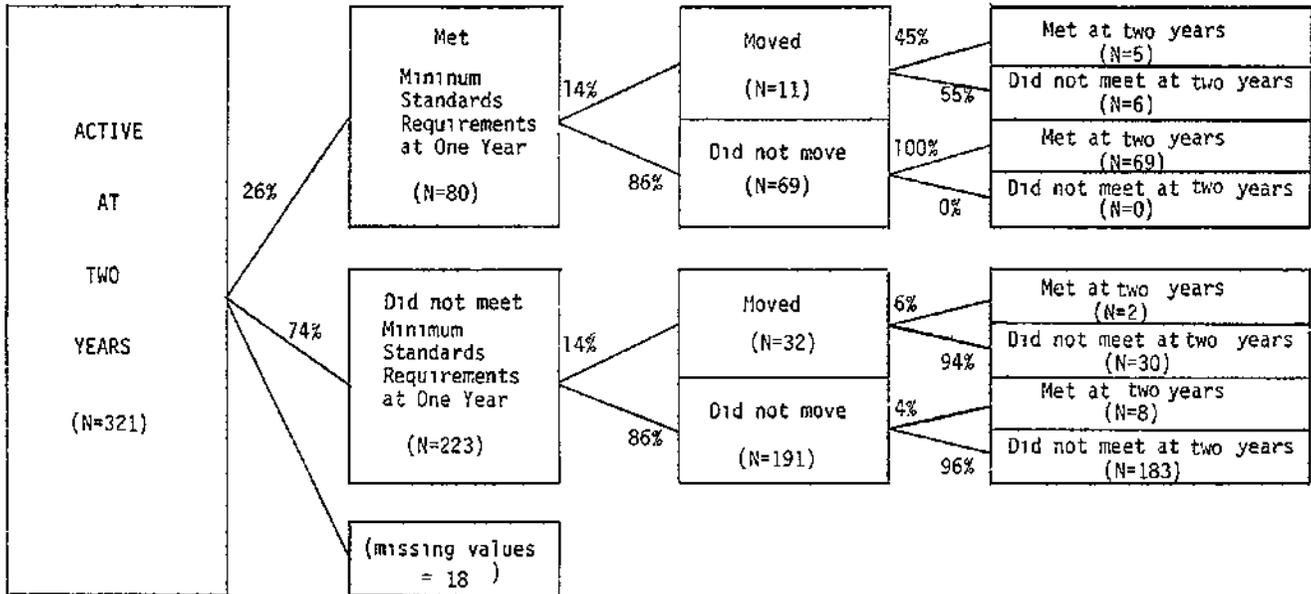
SAMPLE. Minimum Standards households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
 DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE: The number of enrollees that dropped out at two years was 77 in Pittsburgh and 155 in Phoenix.

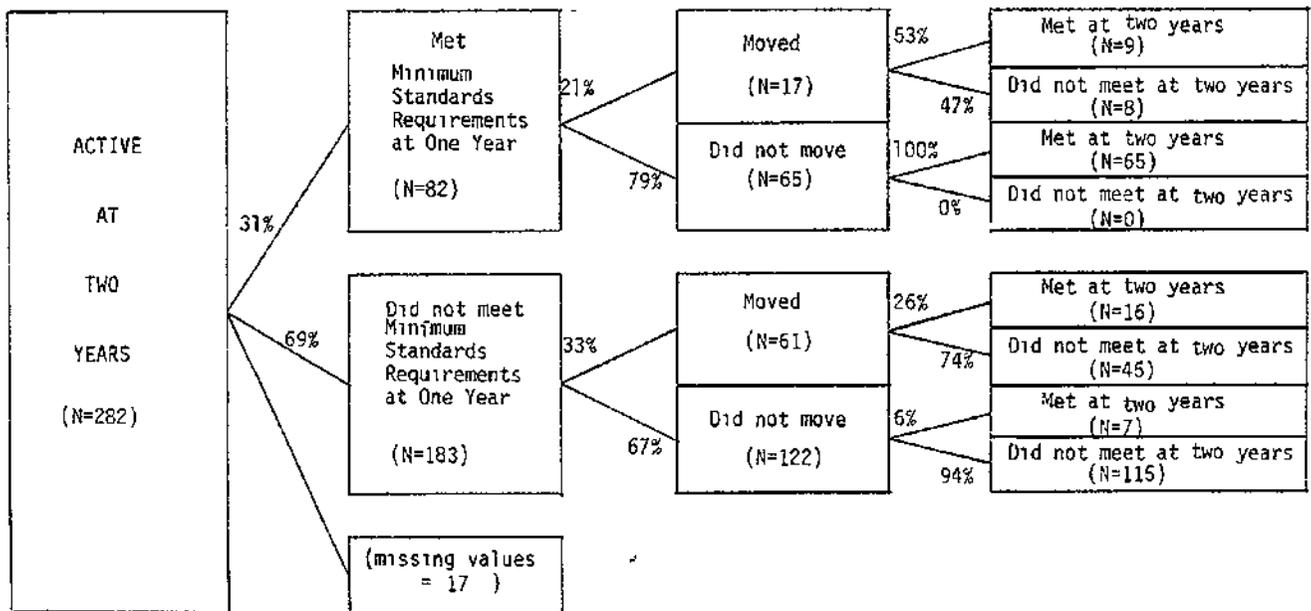
Figure IV-20

THE DYNAMICS OF MEETING
MINIMUM STANDARDS REQUIREMENTS
CONTROL HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G H



P H O E N I X

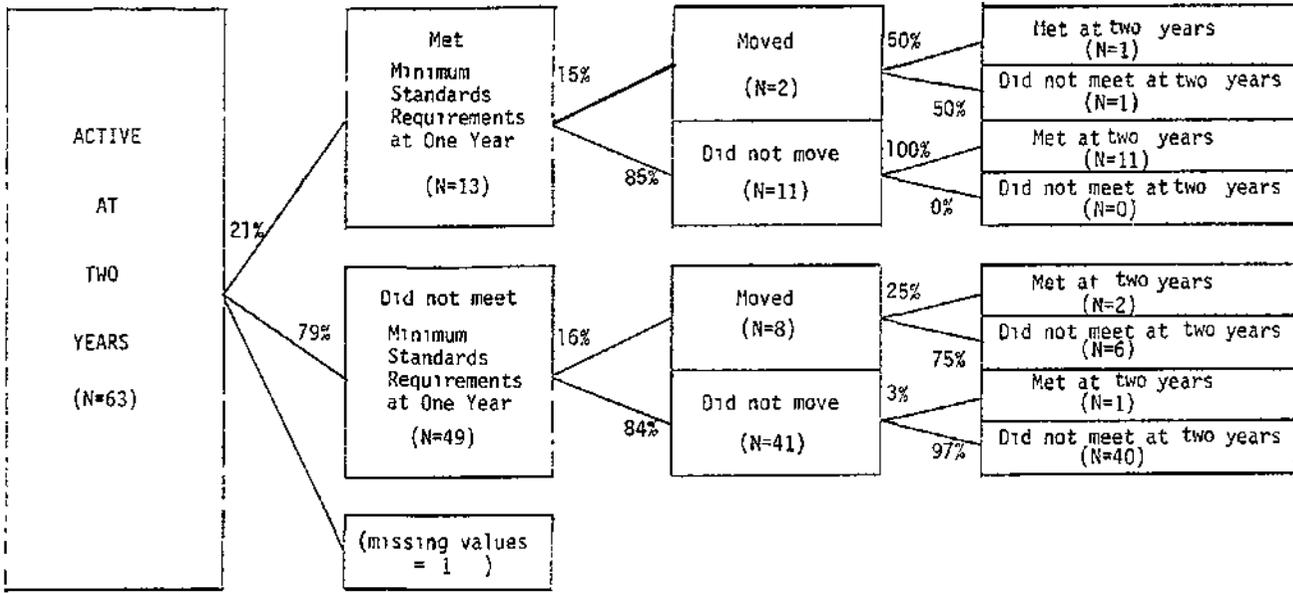


SAMPLE Control households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

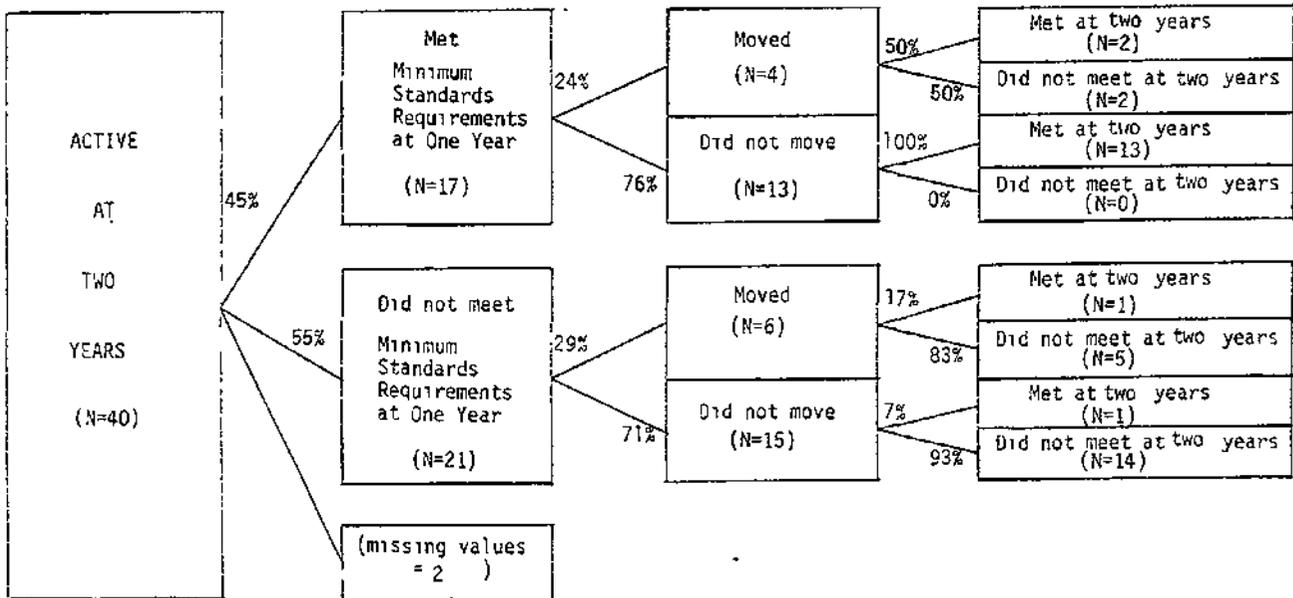
NOTE: The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix

Figure IV-21
 THE DYNAMICS OF MEETING
 MINIMUM STANDARDS REQUIREMENTS,
 UNCONSTRAINED HOUSEHOLDS,
 BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G H



P H O E N I X



SAMPLE Unconstrained 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.

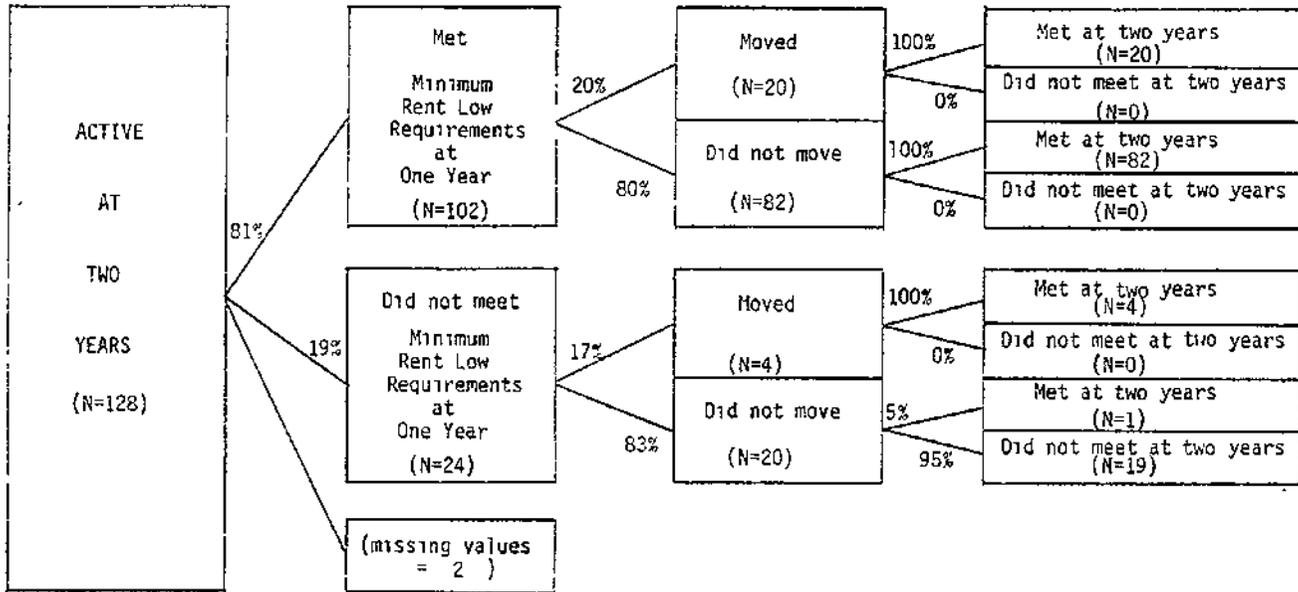
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix

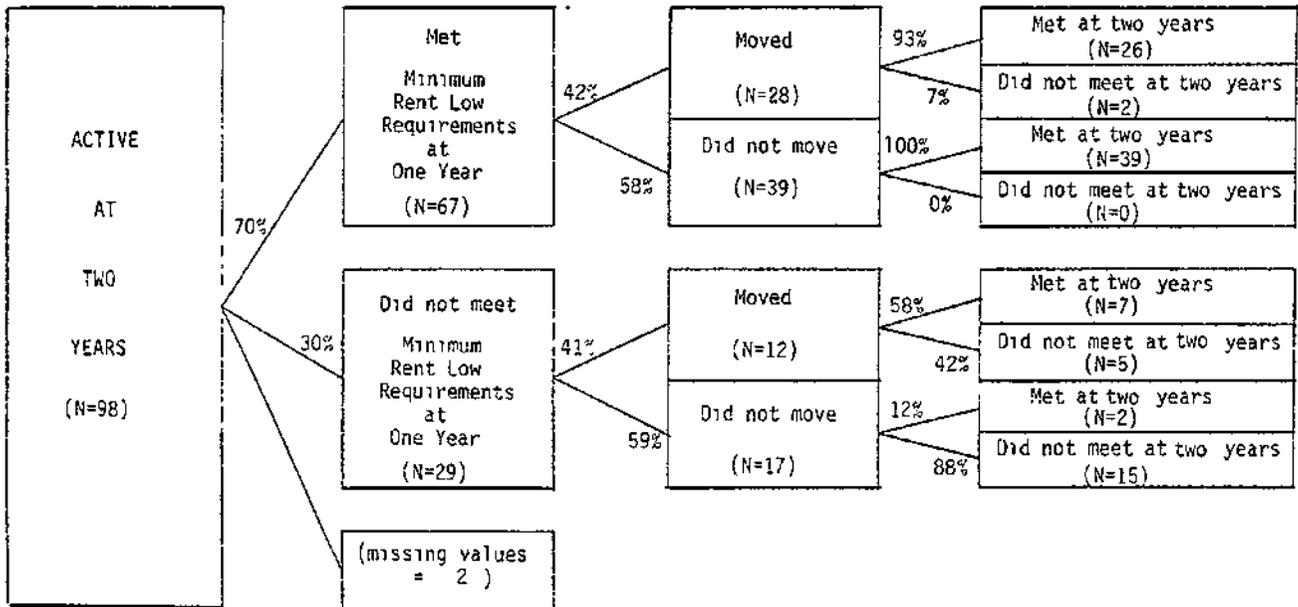
Figure IV-22

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
MINIMUM RENT LOW HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G H



P H O E N I X



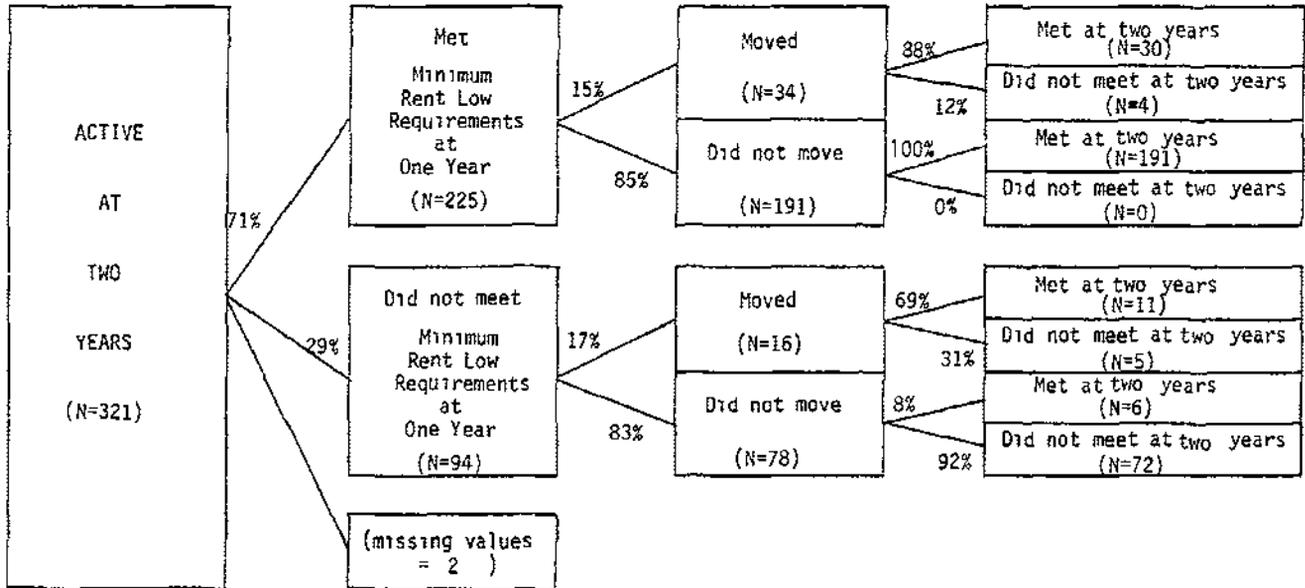
SAMPLE Minimum Rent Low households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 38 in Pittsburgh and 77 in Phoenix.

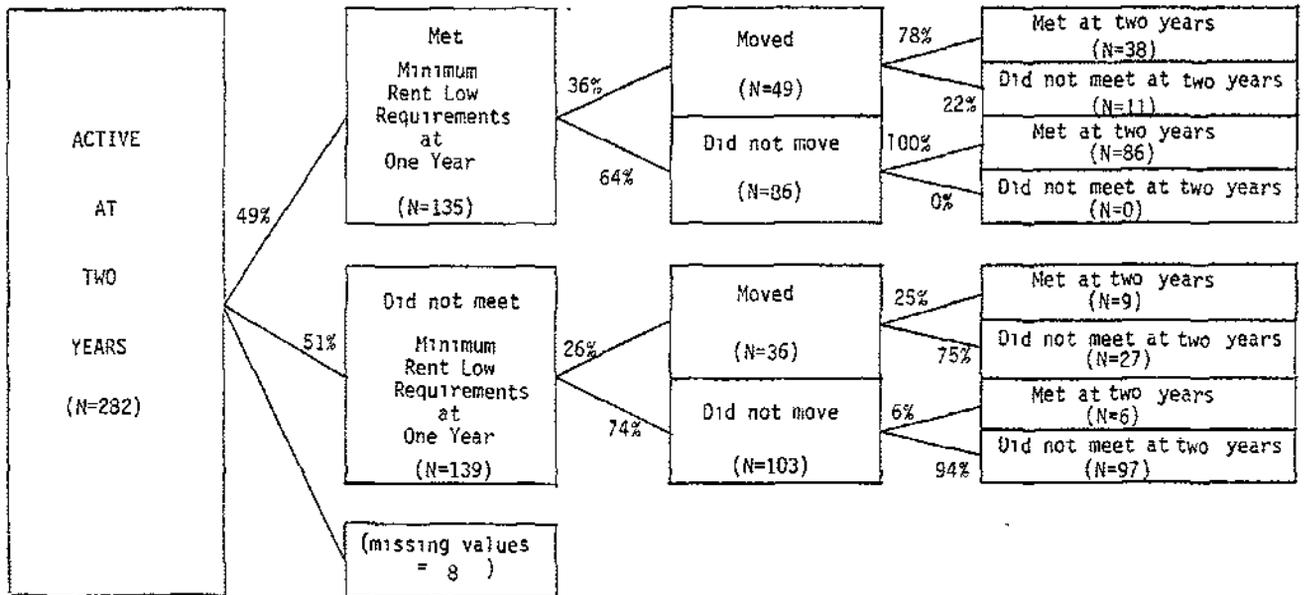
Figure IV-23

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
CONTROL HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

PITTSBURGH



PHOENIX



SAMPLE: Minimum Rent Low 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.

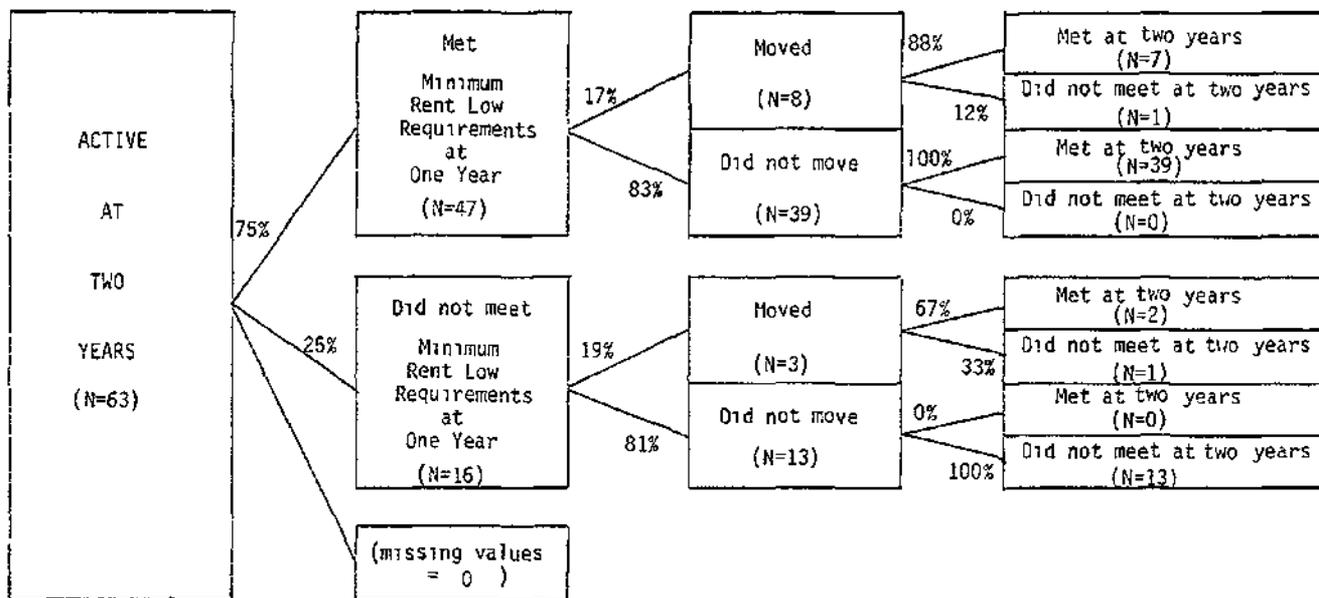
DATA SOURCES: Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE: The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix

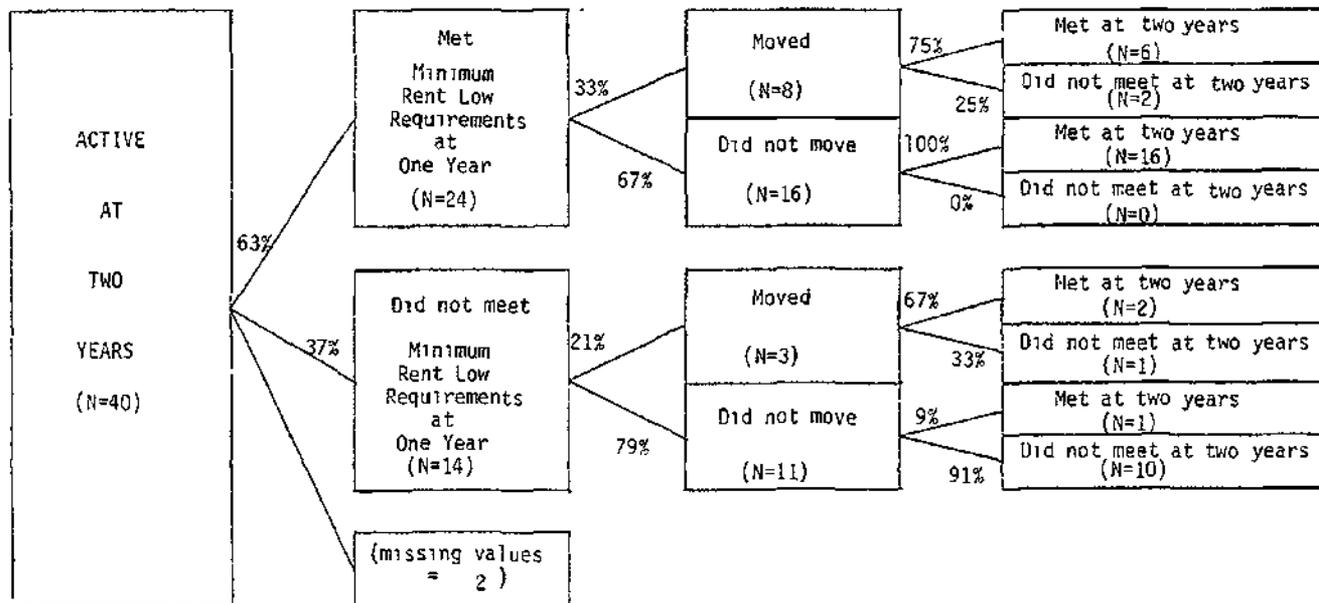
Figure IV-24

THE DYNAMICS OF MEETING
MINIMUM RENT LOW REQUIREMENTS
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G H



P H O E N I X



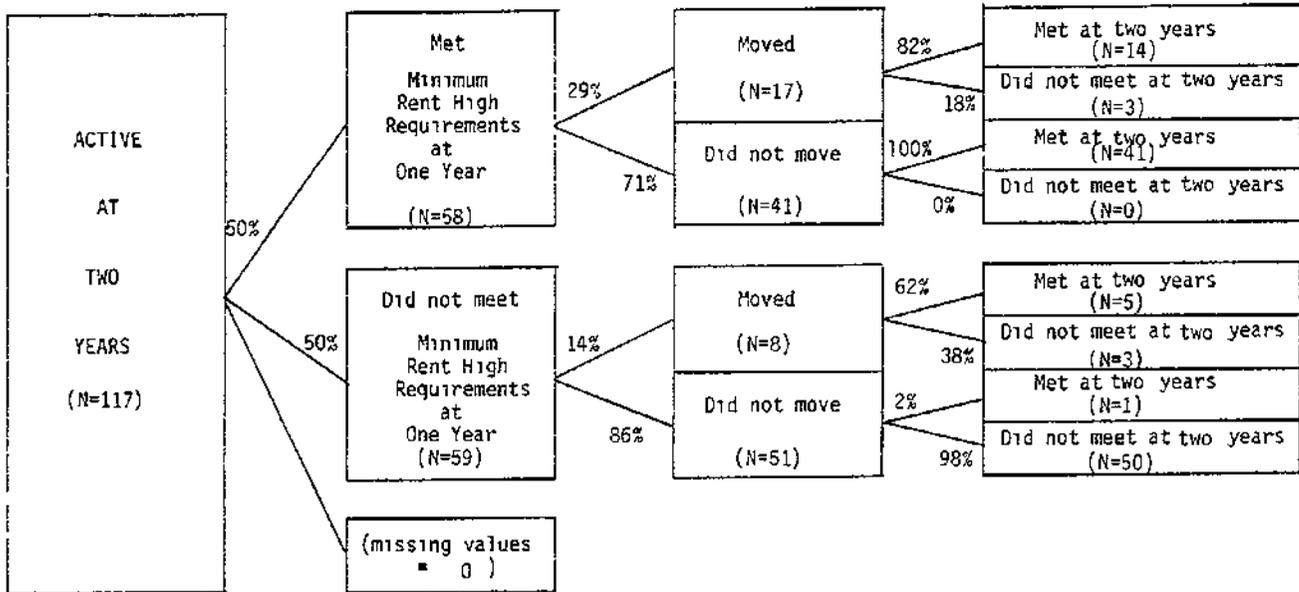
SAMPLE Unconstrained households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix

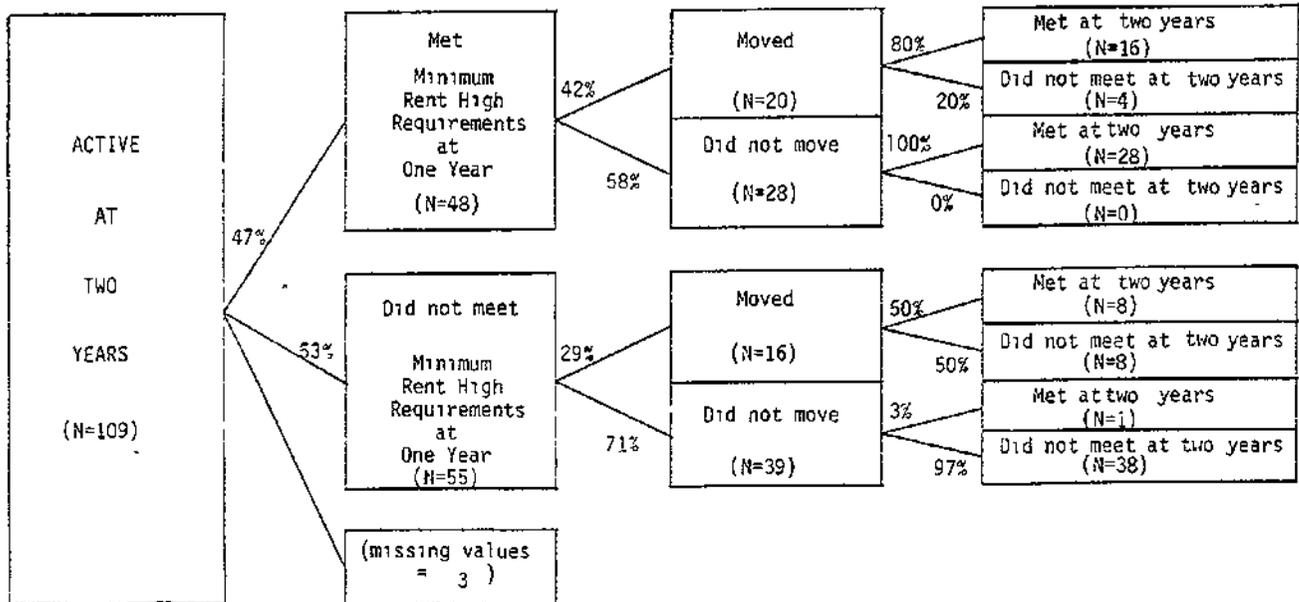
Figure IV-25

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS
MINIMUM RENT HIGH HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G , d



P H O E N I X



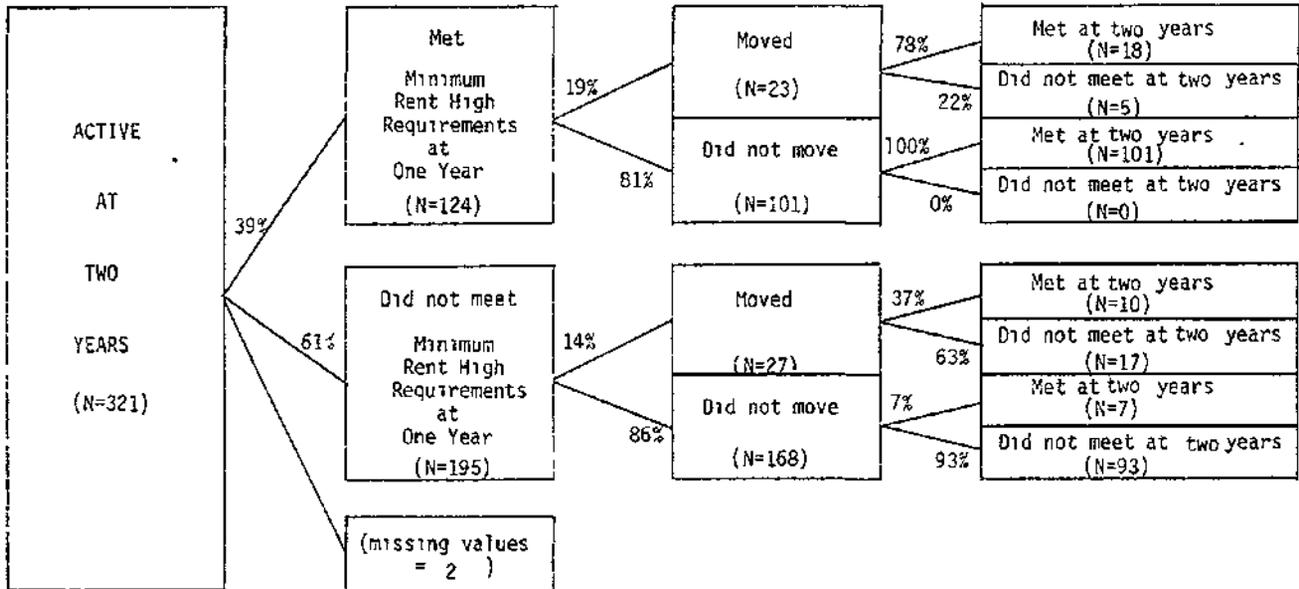
SAMPLE. Minimum Rent High households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
DATA SOURCES. Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 62 in Pittsburgh and 82 in Phoenix

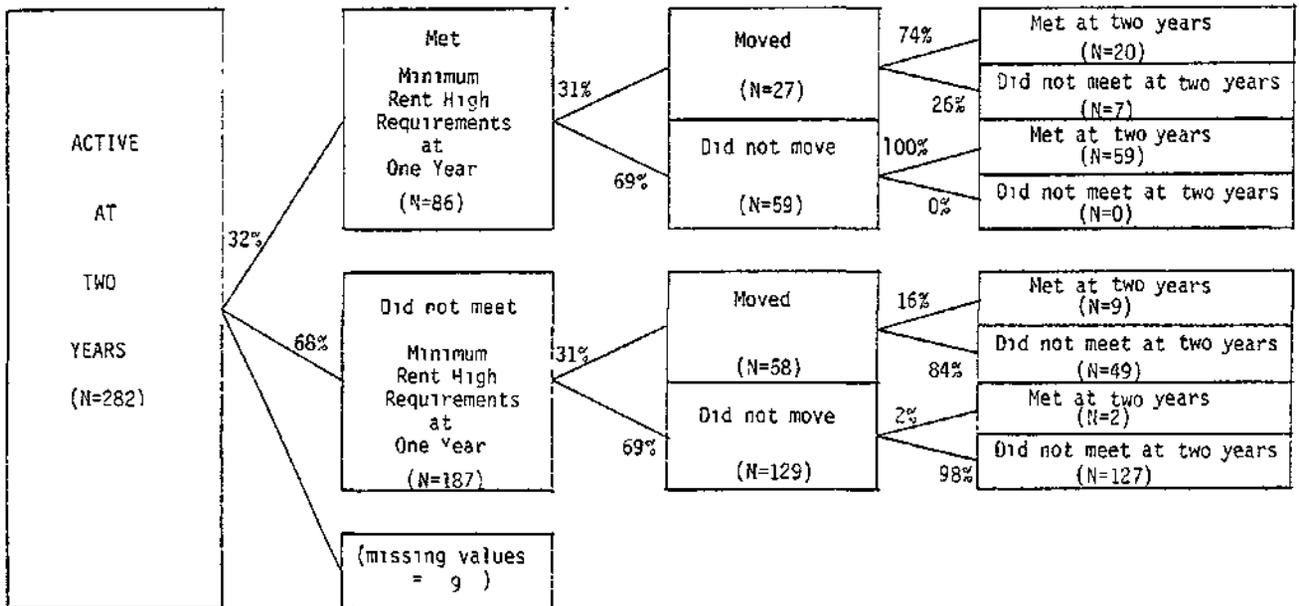
Figure IV-26

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS:
CONTROL HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

PITTSBURGH



PHOENIX



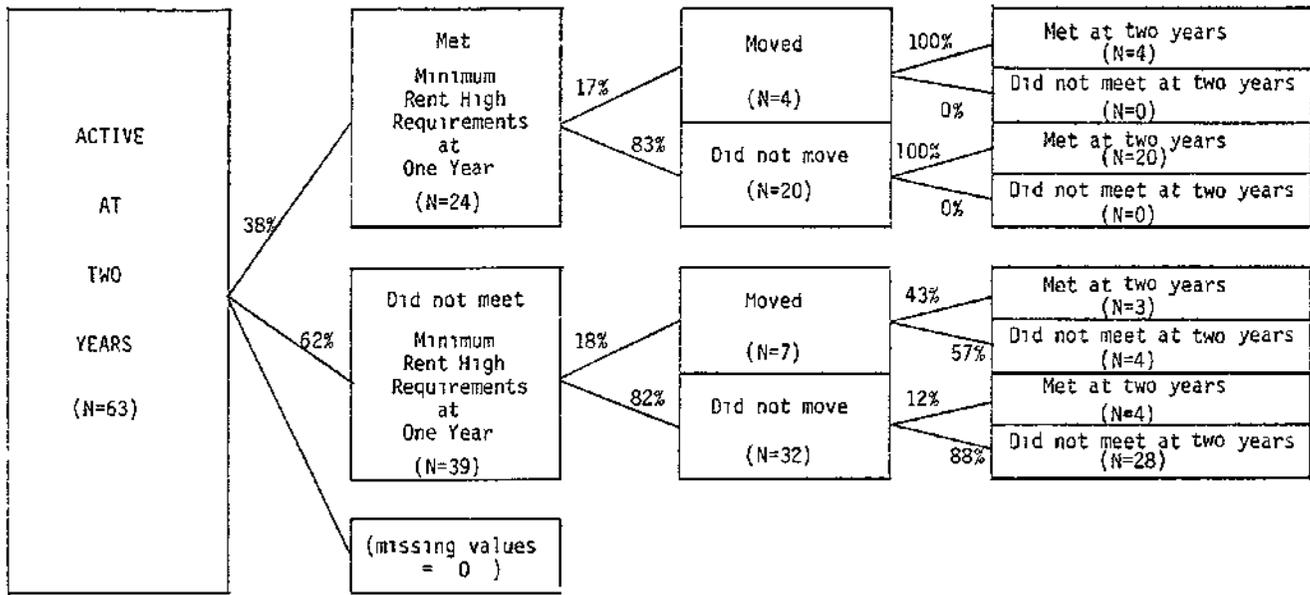
SAMPLE Minimum Rent High households active at two years after enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing
 DATA SOURCES Initial and monthly Household Report Forms, Baseline and Periodic Interviews, and payments file.

NOTE The number of enrollees that dropped out at two years was 113 in Pittsburgh and 243 in Phoenix

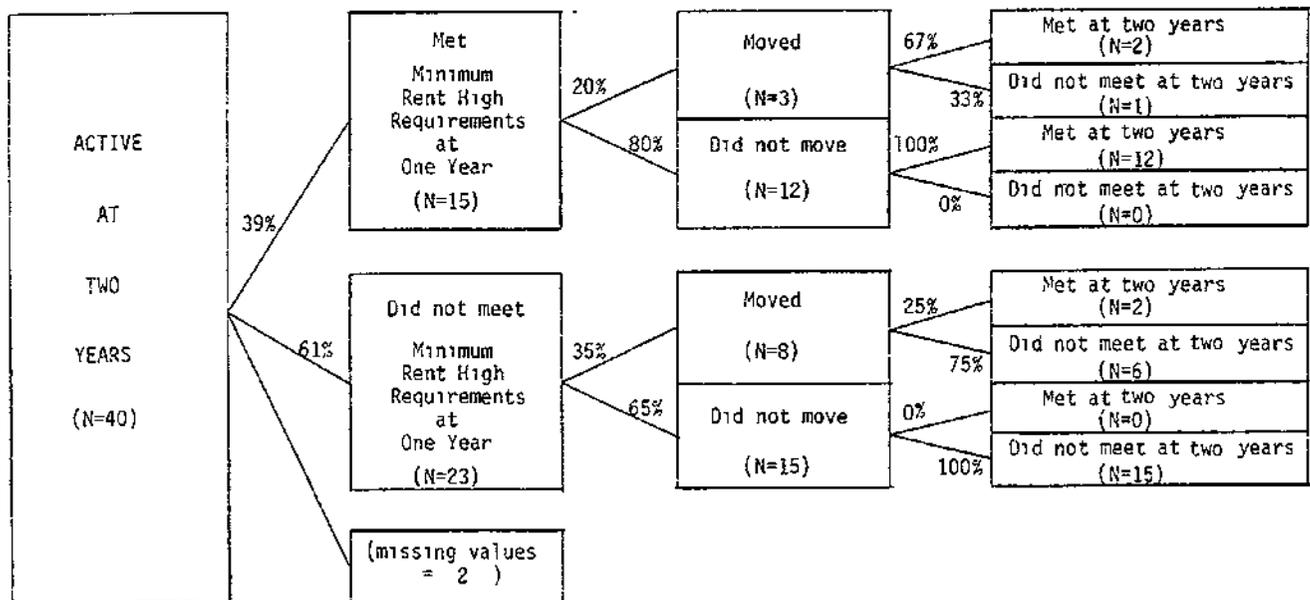
Figure IV-27

THE DYNAMICS OF MEETING
MINIMUM RENT HIGH REQUIREMENTS
UNCONSTRAINED HOUSEHOLDS,
BETWEEN ONE YEAR AND TWO YEARS

P I T T S B U R G H



P H O E N I X



SAMPLE Unconstrained 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.

NOTE The number of enrollees that dropped out at two years was 12 in Pittsburgh and 30 in Phoenix.

APPENDIX V
HOUSING EXPENDITURES AND
HOUSING SERVICES

This appendix presents the actual mean housing expenditures and housing services of Experimental and Control households at enrollment, at two years after enrollment, and the change over that time period in dollars and in percentage terms. Figures are presented first for all households (by type of housing requirement) and then for movers and nonmovers.

Table V-1
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT,
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Standards households	\$109	\$129	\$21	0 22	0 19	(193)
Control households	115	134	18	0 18	0 16	(302)
Unconstrained households	107	128	21	0 22	0 20	(59)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	119	142	23	0 24	0 19	(87)
Control households	132	154	22	0 17	0 17	(83)
Unconstrained households	(121)	(133)	(12)	[0 11]	[0 10]	(14)
Did Not Meet at Enrollment						
Minimum Standards households	114	142	28	0 31	0 25	(49)
Control households	127	155	27	0 23	0 21	(29)
Unconstrained households	(100)	(121)	(21)	[0 20]	[0 21]	(6)
Met at Enrollment						
Minimum Standards households	125	140	16	0.16	0 13	(38)
Control households	135	154	19	0 14	0 14	(54)
Unconstrained households	(137)	(142)	(5)	[0 04]	[0 04]	(8)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	101	120	19	0 21	0 19	(106)
Control households	109	126	17	0.19	0 16	(219)
Unconstrained households	103	127	24	0 26	0 23	(45)
Did Not Meet at Enrollment						
Minimum Standards households	100	119	19	0 21	0 19	(102)
Control households	108	125	17	0 18	0 16	(210)
Unconstrained households	103	127	24	0 26	0 23	(45)
Met at Enrollment						
Minimum Standards households	(129)	(144)	(15)	[0 13]	[0 21]	(4)
Control households	(149)	(157)	(8)	[0 20]	[0 05]	(8)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL HOUSEHOLDS						
Minimum Standards households	\$124	\$151	\$25	0 26	0 20	(163)
Control households	129	145	16	0 18	0 12	(256)
Unconstrained households	135	165	30	0 35	0 22	(37)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	135	170	34	0 35	0 25	(91)
Control households	144	168	24	0 23	0 17	(89)
Unconstrained households	153	187	34	0 39	0 22	(18)
Did Not Meet at Enrollment						
Minimum Standards households	128	170	42	0 44	0 33	(64)
Control households	140	173	33	0.33	0 24	(50)
Unconstrained households	(133)	(182)	(49)	[0 58]	[0 37]	(10)
Met at Enrollment						
Minimum Standards households	150	166	16	0 13	0 11	(27)
Control households	150	163	13	0 12	0 09	(39)
Unconstrained households	(178)	(193)	(15)	[0 15]	[0 08]	(8)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	114	128	14	0 15	0 12	(72)
Control households	120	133	12	0 14	0 10	(167)
Unconstrained households	118	144	26	0 31	0 22	(19)
Did Not Meet at Enrollment						
Minimum Standards households	108	125	17	0 17	0 16	(67)
Control households	117	129	12	0 14	0 10	(157)
Unconstrained households	112	137	26	0 32	0 23	(18)
Met at Enrollment						
Minimum Standards households	(192)	(163)	(-29)	[-0 15]	[-0 15]	(5)
Control households	(168)	(189)	(21)	[0 17]	[0 31]	(10)
Unconstrained households	(233)	(262)	(29)	[0 12]	[0 20]	(1)

SAMPLE Minimum Standards, Control, and Unconstrained 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 and payments file
 NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-2
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Rent Low households	\$109	\$130	\$21	0 23	0 19	(122)
Control households	115	134	18	0 18	0 16	(302)
Unconstrained households	107	128	21	0 22	0 20	(59)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	115	138	23	0 23	0 17	(104)
Control households	125	147	22	0 21	0 18	(228)
Unconstrained households	117	142	25	0 25	0 21	(44)
Did Not Meet at Enrollment						
Minimum Rent Low households	93	129	36	0 42	0 39	(27)
Control households	90	129	39	0 46	0 43	(48)
Unconstrained households	[92]	[129]	[37]	[0 42]	[0 40]	(10)
Met at Enrollment						
Minimum Rent Low households	123	141	18	0 16	0 15	(77)
Control households	134	152	18	0 15	0 13	(180)
Unconstrained households	124	145	21	0 20	0 17	(34)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	74	86	12	0 20	0 16	(18)
Control households	87	93	6	0 09	0 07	(74)
Unconstrained households	[79]	[90]	[11]	[0 15]	[0 14]	(15)
Did Not Meet at Enrollment						
Minimum Rent Low households	74	86	12	0 20	0 16	(18)
Control households	84	93	9	0 11	0 11	(69)
Unconstrained households	[79]	[90]	[11]	[0 15]	[0 14]	(15)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	[12]	[89]	[-33]	[-0 25]	[-0 27]	(5)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL HOUSEHOLDS						
Minimum Rent Low households	\$124	\$158	\$34	0 34	0 27	(89)
Control households	129	145	16	0 18	0 12	(256)
Unconstrained households	135	165	30	0 35	0 22	(37)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	133	172	39	0 40	0 29	(69)
Control households	154	182	27	0 26	0 18	(134)
Unconstrained households	153	191	38	0 42	0 25	(25)
Did Not Meet at Enrollment						
Minimum Rent Low households	101	169	67	0 78	0 66	(27)
Control households	103	177	74	0 84	0 72	(28)
Unconstrained households	[108]	[189]	[81]	[1 05]	[0 75]	(8)
Met at Enrollment						
Minimum Rent Low households	154	174	20	0 15	0 13	(42)
Control households	168	183	15	0 10	0 09	(106)
Unconstrained households	174	192	18	0 13	0 10	(17)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	94	109	16	0 17	0 17	(20)
Control households	101	105	5	0 09	0 05	(122)
Unconstrained households	[97]	[110]	[13]	[0 19]	[0 13]	(12)
Did Not Meet at Enrollment						
Minimum Rent Low households	90	104	15	0 17	0 17	(18)
Control households	95	104	9	0 12	0 09	(113)
Unconstrained households	[90]	[111]	[21]	[0 25]	[0 23]	(11)
Met at Enrollment						
Minimum Rent Low households	[131]	[157]	[26]	[0 20]	[0 20]	(2)
Control households	[169]	[115]	[-54]	[-0 32]	[-0 32]	(9)
Unconstrained households	[180]	[105]	[-75]	[-0 41]	[-0 42]	(1)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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 and payments file
 NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-3
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Rent High households	\$113	\$139	\$25	0 24	0 22	(111)
Control households	115	134	18	0 18	0 16	(302)
Unconstrained households	107	128	21	0 22	0 20	(59)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	127	165	37	0 34	0 29	(59)
Control households	137	164	27	0 25	0 20	(136)
Unconstrained households	124	156	31	0 31	0 25	(27)
Did Not Meet at Enrollment						
Minimum Rent High households	105	166	62	0 60	0 59	(26)
Control households	106	154	48	0 50	0 45	(47)
Unconstrained households	[102]	[157]	[55]	[0 58]	[0 54]	(12)
Met at Enrollment						
Minimum Rent High households	145	164	19	0 13	0 13	(33)
Control households	153	169	16	0 12	0 10	(89)
Unconstrained households	[142]	[155]	[13]	[0 09]	[0 09]	(15)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	97	109	12	0 13	0 12	(52)
Control households	98	109	11	0 13	0 11	(166)
Unconstrained households	93	106	13	0 15	0 14	(32)
Did Not Meet at Enrollment						
Minimum Rent High households	97	109	12	0 13	0 12	(52)
Control households	96	109	13	0 14	0 14	(163)
Unconstrained households	91	104	13	0 16	0 14	(30)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	[172]	[123]	[-49]	[-0 31]	[-0 28]	(3)
Unconstrained households	[123]	[128]	[6]	[0 04]	[0 05]	(2)
PHOENIX						
ALL HOUSEHOLDS						
Minimum Rent High households	\$126	\$166	\$40	0 36	0 32	(93)
Control households	129	145	16	0 18	0 12	(256)
Unconstrained households	135	165	30	0 35	0 22	(37)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	149	208	59	0 49	0 40	(46)
Control households	170	199	29	0 26	0 17	(85)
Unconstrained households	159	199	40	0 45	0 25	(16)
Did Not Meet at Enrollment						
Minimum Rent High households	128	213	84	0 73	0 66	(28)
Control households	132	201	69	0 66	0 52	(28)
Unconstrained households	[117]	[188]	[71]	[0 85]	[0 61]	(8)
Met at Enrollment						
Minimum Rent High households	183	202	19	0 11	0 10	(18)
Control households	189	199	10	0 06	0 05	(57)
Unconstrained households	[202]	[210]	[8]	[0 05]	[0 04]	(8)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	103	124	22	0 23	0 21	(47)
Control households	108	118	10	0 13	0 09	(171)
Unconstrained households	116	139	22	0 27	0 19	(21)
Did Not Meet at Enrollment						
Minimum Rent High households	100	118	18	0 20	0 18	(45)
Control households	106	118	11	0 14	0 10	(166)
Unconstrained households	113	141	27	0 30	0 24	(20)
Met at Enrollment						
Minimum Rent High households	[165]	[275]	[110]	[0 72]	[0 67]	(2)
Control households	[171]	[138]	[-33]	[-0 19]	[-0 19]	(5)
Unconstrained households	[180]	[105]	[-75]	[-0 41]	[-0 04]	(1)

SAMPLE Minimum Rent High, Control, and Unconstrained 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 and payments file
 NOTES. Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-4
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Standards household	\$110	\$121	\$12	0 13	0 11	(116)
Control households	113	127	14	0 13	0 12	(201)
Unconstrained households	106	119	13	0 12	0 12	(37)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	121	135	14	0 15	0 12	(54)
Control households	130	150	20	0 16	0 15	(63)
Unconstrained households	{125}	{132}	{8}	{0 06}	{0 06}	(9)
Did Not Meet at Enrollment						
Minimum Standards households	114	126	9	0 11	0 08	(22)
Control households	132	158	26	0 21	0 20	(17)
Unconstrained households	{90}	{96}	{6}	{0 06}	{0 06}	(2)
Met at Enrollment						
Minimum Standards households	126	141	15	0 16	0 12	(32)
Control households	130	148	18	0 14	0 14	(46)
Unconstrained households	{135}	{143}	{8}	{0 06}	{0 06}	(7)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	100	109	9	0 11	0 09	(62)
Control households	105	117	12	0 12	0 11	(138)
Unconstrained households	100	114	14	0 16	0 14	(28)
Did Not Meet at Enrollment						
Minimum Standards households	100	109	9	0 11	0 09	(62)
Control households	105	117	12	0 12	0 11	(138)
Unconstrained households	100	114	14	0 16	0 14	(28)
Met at Enrollment						
Minimum Standards households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Standards households	\$120	\$127	\$8	0 07	0 07	(73)
Control households	125	132	7	0 07	0 06	(129)
Unconstrained households	145	151	7	0 08	0 05	(16)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	135	142	7	0 05	0 05	(36)
Control households	148	155	7	0 07	0 05	(44)
Unconstrained households	{182}	{187}	{5}	{0 05}	{0 03}	(9)
Did Not Meet at Enrollment						
Minimum Standards households	127	131	5	0 04	0 04	(20)
Control households	161	165	3	0 02	0 02	(17)
Unconstrained households	{171}	{181}	{10}	{0 07}	{0 06}	(3)
Met at Enrollment						
Minimum Standards households	144	155	11	0 07	0 08	(16)
Control households	139	149	10	0 10	0 07	(27)
Unconstrained households	{188}	{190}	{2}	{0 04}	{0 01}	(6)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	105	113	8	0 09	0 08	(37)
Control households	113	120	7	0 07	0 06	(85)
Unconstrained households	{96}	{106}	{9}	{0 12}	{0 09}	(7)
Did Not Meet at Enrollment						
Minimum Standards households	105	113	8	0 09	0 08	(37)
Control households	113	120	7	0 07	0 06	(85)
Unconstrained households	{96}	{106}	{9}	{0 12}	{0 09}	(7)
Met at Enrollment						
Minimum Standards households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Standards, Control, and Unconstrained 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 and payments file

NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-5
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Rent Low households	\$110	\$123	\$13	0 14	0 12	(78)
Control households	113	127	14	0 23	0 12	(201)
Unconstrained households	106	119	13	0 12	0 12	(37)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	119	132	13	0 12	0 11	(62)
Control households	125	141	16	0 14	0 13	(141)
Unconstrained households	120	133	14	0 12	0 12	(24)
Did Not Meet at Enrollment						
Minimum Rent Low households	[100]	[119]	[19]	[0 21]	[0 19]	(12)
Control households	93	111	18	0 21	0 19	(16)
Unconstrained households	90	110	20	0 24	0 22	(4)
Met at Enrollment						
Minimum Rent Low households	123	135	11	0 10	0 09	(50)
Control households	129	145	16	0 13	0 12	(125)
Unconstrained households	126	138	12	0 10	0 10	(20)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	75	88	13	0 19	0 17	(16)
Control households	84	94	10	0 13	0 12	(60)
Unconstrained households	[61]	[91]	[11]	[0 13]	[0 14]	(13)
Did Not Meet at Enrollment						
Minimum Rent Low households	75	88	13	0 19	0 17	(16)
Control households	84	94	10	0 13	0 12	(60)
Unconstrained households	[61]	[91]	[11]	[0 13]	[0 14]	(13)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Rent Low households	\$118	\$130	\$12	0 12	0 10	(31)
Control households	125	132	7	0 07	0 06	(129)
Unconstrained households	145	151	7	0 08	0 05	(16)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	142	156	14	0 12	0 10	(19)
Control households	169	177	7	0 05	0 04	(55)
Unconstrained households	[189]	[196]	[7]	[0 06]	[0 03]	(9)
Did Not Meet at Enrollment						
Minimum Rent Low households	[114]	[135]	[21]	[0 22]	[0 18]	(3)
Control households	[116]	[128]	[12]	[0 10]	[0 10]	(3)
Unconstrained households	[265]	[261]	[-4]	[-0 02]	[-0 02]	(1)
Met at Enrollment						
Minimum Rent Low households	147	160	13	0 10	0 09	(16)
Control households	172	179	7	0 04	0 04	(52)
Unconstrained households	[180]	[188]	[8]	[0 07]	[0 04]	(8)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	80	90	10	0 13	0 12	(12)
Control households	92	98	7	0 09	0 08	(74)
Unconstrained households	[87]	[94]	[7]	[0 11]	[0 08]	(7)
Did Not Meet at Enrollment						
Minimum Rent Low households	[80]	[90]	[10]	[0 13]	[0 13]	(12)
Control households	92	98	7	0 09	0 08	(74)
Unconstrained households	[87]	[94]	[7]	[0 11]	[0 08]	(7)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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 and payments file.

NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-6
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Rent High households	\$112	\$128	\$16	0 14	0 14	(72)
Control households	113	127	14	0 13	0 12	(201)
Unconstrained households	106	119	13	0 12	0 12	(37)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	133	154	22	0 18	0 17	(30)
Control households	141	159	18	0 14	0 13	(76)
Unconstrained households	[134]	[149]	[15]	[0 12]	[0 11]	(13)
Did Not Meet at Enrollment						
Minimum Rent High households	[103]	[139]	[37]	[0 35]	[0 36]	(9)
Control households	119	150	31	0 26	0 26	(19)
Unconstrained households	[120]	[143]	[23]	[0 19]	[0 19]	(3)
Met at Enrollment						
Minimum Rent High households	146	161	15	0 10	0 10	(21)
Control households	148	162	14	0 10	0 09	(57)
Unconstrained households	[138]	[151]	[13]	[0 10]	[0 09]	(10)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	97	109	12	0 12	0 12	(42)
Control households	96	108	12	0 13	0 13	(125)
Unconstrained households	91	102	11	0 13	0 12	(24)
Did Not Meet at Enrollment						
Minimum Rent High households	97	109	12	0 12	0 14	(42)
Control households	96	108	12	0 13	0 13	(125)
Unconstrained households	91	102	11	0 13	0 12	(24)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Rent High households	\$117	\$128	\$11	0 10	0 09	(31)
Control households	125	132	7	0 07	0 06	(129)
Unconstrained households	145	151	7	0 08	0 05	(16)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	[189]	[197]	[9]	[0 05]	[0 05]	(7)
Control households	186	192	6	0 03	0 03	(37)
Unconstrained households	[197]	[202]	[5]	[0 05]	[0 03]	(6)
Did Not Meet at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	[151]	[162]	[11]	[0 07]	[0 07]	(5)
Unconstrained households	[99]	[127]	[28]	[0 28]	[0 03]	(1)
Met at Enrollment						
Minimum Rent High households	[189]	[197]	[9]	[0 05]	[0 05]	(7)
Control households	191	197	6	0 03	0 03	(32)
Unconstrained households	[217]	[217]	[0]	[0 01]	[0 00]	(5)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	96	108	12	0 12	0 13	(24)
Control households	100	107	7	0 08	0 07	(92)
Unconstrained households	[113]	[121]	[8]	[0 10]	[0 07]	(10)
Did Not Meet at Enrollment						
Minimum Rent High households	96	108	12	0 12	0 13	(24)
Control households	100	107	7	0 08	0 07	(92)
Unconstrained households	[113]	[121]	[8]	[0 10]	[0 07]	(10)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Rent High, Control, and Unconstrained 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 and payments file
 NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-7
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Standards households	\$108	\$142	\$34	0 37	0 31	(77)
Control households	121	147	26	0 28	0 21	(101)
Unconstrained households	109	145	36	0 39	0 33	(22)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	115	152	37	0 40	0 32	(33)
Control households	138	167	29	0 23	0 21	(20)
Unconstrained households	[115]	[134]	[19]	[0 19]	[0 17]	(5)
Did Not Meet at Enrollment						
Minimum Standards households	115	156	41	0 45	0 36	(27)
Control households	120	150	30	0 26	0 25	(12)
Unconstrained households	[106]	[134]	[28]	[0 27]	[0 26]	(4)
Met at Enrollment						
Minimum Standards households	[118]	[136]	[17]	[0 16]	[0 14]	(6)
Control households	[164]	[191]	[27]	[0 17]	[0 16]	(8)
Unconstrained households	[153]	[137]	[-16]	[-0 10]	[-0 10]	(1)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	103	135	32	0 35	0 31	(44)
Control households	117	142	26	0 30	0 22	(81)
Unconstrained households	107	148	41	0 44	0 38	(17)
Did Not Meet at Enrollment						
Minimum Standards households	100	134	34	0 37	0 34	(40)
Control households	113	140	27	0 30	0 24	(72)
Unconstrained households	107	148	41	0 44	0 38	(17)
Met at Enrollment						
Minimum Standards households	[129]	[144]	[15]	[0 13]	[0 12]	(4)
Control households	[149]	[157]	[8]	[0 20]	[0 05]	(8)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL MOVERS						
Minimum Standards households	\$130	\$170	\$39	0 42	0 30	(90)
Control households	133	159	26	0 28	0 20	(127)
Unconstrained households	128	175	48	0 55	0 38	(21)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	135	187	52	0 54	0 39	(55)
Control households	141	181	41	0 40	0 29	(45)
Unconstrained households	[124]	[187]	[64]	[0 72]	[0 52]	(9)
Did Not Meet at Enrollment						
Minimum Standards households	129	188	59	0 62	0 46	(44)
Control households	129	177	48	0 49	0 37	(33)
Unconstrained households	[117]	[183]	[66]	[0 80]	[0 56]	(7)
Met at Enrollment						
Minimum Standards households	[157]	[181]	[24]	[0 20]	[0 21]	(11)
Control households	[173]	[194]	[21]	[0 16]	[0 12]	(12)
Unconstrained households	[148]	[203]	[55]	[0 45]	[0 37]	(2)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	123	143	20	0 22	0 16	(35)
Control households	128	147	18	0 22	0 14	(82)
Unconstrained households	[131]	[166]	[36]	[0 42]	[0 27]	(12)
Did Not Meet at Enrollment						
Minimum Standards households	112	140	28	0 28	0 25	(30)
Control households	123	141	18	0 23	0 15	(72)
Unconstrained households	[121]	[157]	[36]	[0 44]	[0 30]	(11)
Met at Enrollment						
Minimum Standards households	[192]	[163]	[-29]	[-0 15]	[-0 13]	(5)
Control households	[168]	[189]	[21]	[0 17]	[0 13]	(10)
Unconstrained households	[233]	[262]	[21]	[0 12]	[0 09]	(1)

SAMPLE Minimum Standards, Control and Unconstrained 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 and payments file

NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-8
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Rent Low households	\$107	\$143	\$36	0 38	0 34	(44)
Control households	121	147	26	0 28	0 21	(101)
Unconstrained households	109	145	36	0 38	0 33	(22)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	109	147	38	0 39	0 35	(42)
Control households	124	157	33	0 34	0 27	(87)
Unconstrained households	113	151	38	0 39	0 34	(20)
Did Not Meet at Enrollment						
Minimum Rent Low households	87	138	50	0 59	0 57	(15)
Control households	89	138	49	0 59	0 55	(32)
Unconstrained households	[93]	[141]	[48]	[0 53]	[0 52]	(6)
Met at Enrollment						
Minimum Rent Low households	122	152	30	0 28	0 25	(27)
Control households	145	168	23	0 20	0 16	(55)
Unconstrained households	[122]	[156]	[34]	[0 33]	[0 28]	(14)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	[62]	[68]	[6]	[0 23]	[0 10]	(2)
Control households	[99]	[89]	[-11]	[-0 08]	[-0 11]	(14)
Unconstrained households	[64]	[81]	[17]	[0 31]	[0 27]	(2)
Did Not Meet at Enrollment						
Minimum Rent Low households	[62]	[68]	[6]	[0 23]	[0 09]	(2)
Control households	[87]	[88]	[1]	[0 01]	[0 01]	(9)
Unconstrained households	[64]	[81]	[17]	[0 31]	[0 27]	(2)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	[121]	[88]	[-33]	[-0 25]	[-0 02]	(5)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL MOVERS						
Minimum Rent Low households	\$128	\$173	\$45	0 46	0 35	(58)
Control households	133	159	26	0 28	0 20	(127)
Unconstrained households	128	175	48	0 55	0 38	(21)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	130	178	48	0 50	0 37	(50)
Control households	144	185	41	0 40	0 28	(79)
Unconstrained households	133	189	56	0 63	0 42	(16)
Did Not Meet at Enrollment						
Minimum Rent Low households	100	173	73	0 85	0 73	(24)
Control households	101	182	81	0 93	0 80	(25)
Unconstrained households	[86]	[179]	[93]	[1 20]	[1 08]	(7)
Met at Enrollment						
Minimum Rent Low households	158	183	25	0 17	0 16	(26)
Control households	164	187	22	0 16	0 13	(54)
Unconstrained households	[169]	[196]	[27]	[0 18]	[0 16]	(9)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	[114]	[139]	[25]	[0 24]	[0 22]	(8)
Control households	114	116	2	0 09	0 02	(48)
Unconstrained households	[112]	[133]	[21]	[0 30]	[0 19]	(5)
Did Not Meet at Enrollment						
Minimum Rent Low households	[108]	[133]	[25]	[0 25]	[0 23]	(6)
Control households	101	116	16	0 18	0 16	(39)
Unconstrained households	[95]	[140]	[45]	[0 48]	[0 47]	(4)
Met at Enrollment						
Minimum Rent Low households	[131]	[157]	[26]	[0 20]	[0 20]	(2)
Control households	[169]	[115]	[-54]	[-0 32]	[-0 32]	(9)
Unconstrained households	[180]	[105]	[-75]	[-0 42]	[-0 42]	(1)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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 and payments file

NOTES Brackets indicate amounts based on 15 or fewer observations Sample sizes may differ between all households and other groups due to availability of data on housing requirement status

Table V-9
 CHANGES IN HOUSING EXPENDITURES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING EXPENDITURES		CHANGE IN EXPENDITURES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Rent High households	\$115	\$159	\$43	0.42	0.37	(39)
Control households	121	147	26	0.28	0.21	(101)
Unconstrained households	109	145	36	0.38	0.33	(22)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	121	175	54	0.51	0.45	(29)
Control households	132	170	38	0.39	0.29	(60)
Unconstrained households	[115]	[162]	[46]	[0.48]	[0.40]	(14)
Did Not Meet at Enrollment						
Minimum Rent High households	106	180	75	0.73	0.71	(17)
Control households	98	157	60	0.66	0.61	(28)
Unconstrained households	[96]	[161]	[66]	[0.71]	[0.69]	(9)
Met at Enrollment						
Minimum Rent High households	[144]	[168]	[25]	[0.19]	[0.17]	(12)
Control households	162	182	19	0.15	0.12	(32)
Unconstrained households	[151]	[162]	[12]	[0.07]	[0.08]	(5)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	[97]	[110]	[13]	[0.18]	[0.13]	(10)
Control households	104	113	9	0.13	0.09	(41)
Unconstrained households	[98]	[116]	[18]	[0.21]	[0.18]	(8)
Did Not Meet at Enrollment						
Minimum Rent High households	[97]	[110]	[13]	[0.18]	[0.13]	(10)
Control households	99	113	14	0.17	0.14	(38)
Unconstrained households	[89]	[112]	[23]	[0.27]	[0.26]	(6)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	[172]	[123]	[-49]	[-0.31]	[-0.28]	(3)
Unconstrained households	[123]	[128]	[6]	[0.04]	[0.04]	(2)
PHOENIX						
ALL MOVERS						
Minimum Rent High households	\$130	\$185	\$54	0.48	0.42	(62)
Control households	133	159	26	0.28	0.20	(127)
Unconstrained households	128	175	48	0.55	0.38	(21)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	142	210	68	0.57	0.48	(39)
Control households	158	205	47	0.43	0.30	(48)
Unconstrained households	[137]	[197]	[61]	[0.69]	[0.45]	(10)
Did Not Meet at Enrollment						
Minimum Rent High households	128	213	84	0.73	0.66	(28)
Control households	128	210	81	0.79	0.63	(23)
Unconstrained households	[119]	[197]	[78]	[0.93]	[0.66]	(7)
Met at Enrollment						
Minimum Rent High households	[179]	[204]	[25]	[0.15]	[0.14]	(11)
Control households	185	201	15	0.10	0.08	(25)
Unconstrained households	[178]	[199]	[21]	[0.12]	[0.12]	(3)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	109	141	32	0.34	0.29	(23)
Control households	117	131	13	0.19	0.11	(29)
Unconstrained households	[119]	[155]	[36]	[0.42]	[0.30]	(11)
Did Not Meet at Enrollment						
Minimum Rent High households	104	128	24	0.30	0.23	(21)
Control households	114	130	17	0.22	0.15	(74)
Unconstrained households	[113]	[160]	[47]	[0.51]	[0.42]	(10)
Met at Enrollment						
Minimum Rent High households	[165]	[275]	[110]	[0.72]	[0.67]	(2)
Control households	[171]	[139]	[-33]	[-0.19]	[-0.19]	(5)
Unconstrained households	[180]	[105]	[-75]	[-0.42]	[-0.42]	(1)

SAMPLE Minimum Rent High, Control, and Unconstrained 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 and payments file.

NOTES Brackets indicate amounts based on 15 or fewer observations. Sample sizes may differ between all households and other groups due to availability of data on housing requirement status.

Table V-10
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Standards households	\$110	\$116	\$ 6	0.07	0.06	(179)
Control households	114	120	5	0.06	0.04	(273)
Unconstrained households	106	116	11	0.12	0.10	(52)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	120	128	8	0.09	0.07	(82)
Control households	129	135	6	0.06	0.05	(78)
Unconstrained households	{119}	{129}	{10}	{0.11}	{0.08}	{14}
Did Not Meet at Enrollment						
Minimum Standards households	113	127	15	0.15	0.13	(45)
Control households	121	132	12	0.14	0.10	(27)
Unconstrained households	{100}	{125}	{25}	{0.27}	{0.25}	{6}
Met at Enrollment						
Minimum Standards households	127	128	1	0.01	0.01	(37)
Control households	133	136	3	0.02	0.02	(51)
Unconstrained households	{133}	{132}	{-1}	{-0.00}	{-0.01}	{8}
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	101	106	4	0.06	0.04	(97)
Control households	109	114	5	0.05	0.05	(195)
Unconstrained households	101	112	11	0.13	0.01	(38)
Did Not Meet at Enrollment						
Minimum Standards households	101	105	4	0.05	0.05	(94)
Control households	109	113	5	0.05	0.05	(189)
Unconstrained households	101	112	11	0.13	0.11	(38)
Met at Enrollment						
Minimum Standards households	{117}	{130}	{14}	{0.12}	{0.12}	{3}
Control households	{130}	{131}	{1}	{0.03}	{0.01}	{6}
Unconstrained households	--	--	--	--	--	{0}
PHOENIX						
ALL HOUSEHOLDS						
Minimum Standards households	\$128	\$146	\$18	0.17	0.14	(128)
Control households	129	145	16	0.16	0.12	(229)
Unconstrained households	135	161	26	0.31	0.19	(33)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	136	162	26	0.23	0.19	(72)
Control households	143	166	23	0.24	0.16	(83)
Unconstrained households	151	178	27	0.31	0.17	(17)
Did Not Meet at Enrollment						
Minimum Standards households	130	160	31	0.29	0.24	(51)
Control households	132	171	39	0.41	0.30	(47)
Unconstrained households	{133}	{179}	{46}	{0.57}	{0.35}	{9}
Met at Enrollment						
Minimum Standards households	153	166	14	0.10	0.09	(21)
Control households	158	158	1	0.01	0.01	(36)
Unconstrained households	{171}	{177}	{5}	{0.03}	{0.03}	{8}
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	118	126	8	0.08	0.07	(56)
Control households	121	133	12	0.12	0.10	(146)
Unconstrained households	117	142	25	0.30	0.21	(16)
Did Not Meet at Enrollment						
Minimum Standards households	112	122	9	0.10	0.08	(51)
Control households	119	131	12	0.12	0.10	(141)
Unconstrained households	{113}	{137}	{25}	{0.31}	{0.22}	{15}
Met at Enrollment						
Minimum Standards households	{169}	{160}	{-9}	{-0.05}	{-0.05}	{5}
Control households	{163}	{183}	{19}	{0.12}	{0.17}	{5}
Unconstrained households	{185}	{216}	{32}	{0.17}	{0.17}	{1}

SAMPLE. Minimum Standards, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE. Brackets indicate amounts based on 15 or fewer observations.

Table V-11

CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Rent Low households	\$110	\$115	\$5	0.06	0.05	(106)
Control households	114	120	5	0.06	0.04	(273)
Unconstrained households	108	116	11	0.13	0.12	(52)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	113	118	5	0.06	0.04	(89)
Control households	121	127	6	0.07	0.05	(200)
Unconstrained households	113	125	13	0.15	0.12	(38)
Did Not Meet at Enrollment						
Minimum Rent Low households	104	114	10	0.11	0.10	(21)
Control households	103	117	14	0.17	0.14	(42)
Unconstrained households	[104]	[124]	[19]	[0.19]	[0.18]	(9)
Met at Enrollment						
Minimum Rent Low households	116	120	4	0.05	0.03	(68)
Control households	125	130	4	0.04	0.03	(158)
Unconstrained households	115	126	11	0.14	0.10	(29)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	95	97	2	0.06	0.02	(17)
Control households	97	99	2	0.02	0.02	(73)
Unconstrained households	[87]	[92]	[5]	[0.06]	[0.06]	(14)
Did Not Meet at Enrollment						
Minimum Rent Low households	95	97	2	0.06	0.02	(17)
Control households	96	98	2	0.02	0.02	(67)
Unconstrained households	[87]	[92]	[5]	[0.06]	[0.06]	(14)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	[108]	[112]	[4]	[0.04]	[0.04]	(6)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL HOUSEHOLDS						
Minimum Rent Low households	\$126	\$148	\$23	0.21	0.18	(74)
Control households	129	145	16	0.16	0.12	(229)
Unconstrained households	135	161	26	0.31	0.19	(33)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	134	161	27	0.24	0.20	(55)
Control households	148	168	20	0.19	0.14	(114)
Unconstrained households	148	178	30	0.34	0.20	(23)
Did Not Meet at Enrollment						
Minimum Rent Low households	110	150	40	0.41	0.36	(20)
Control households	106	159	53	0.59	0.50	(27)
Unconstrained households	[117]	[180]	[63]	[0.84]	[0.54]	(7)
Met at Enrollment						
Minimum Rent Low households	148	167	19	0.15	0.13	(35)
Control households	161	171	10	0.07	0.06	(87)
Unconstrained households	162	178	16	0.12	0.10	(26)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	100	112	11	0.12	0.11	(19)
Control households	110	121	11	0.13	0.10	(115)
Unconstrained households	[103]	[120]	[17]	[0.24]	[0.17]	(10)
Did Not Meet at Enrollment						
Minimum Rent Low households	98	109	11	0.12	0.11	(17)
Control households	106	119	12	0.14	0.11	(109)
Unconstrained households	[98]	[121]	[23]	[0.30]	[0.23]	(9)
Met at Enrollment						
Minimum Rent Low households	[116]	[134]	[18]	[0.15]	[0.16]	(2)
Control households	[174]	[169]	[-5]	[0.02]	[0.03]	(6)
Unconstrained households	[154]	[112]	[-41]	[-0.27]	[-0.27]	(6)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-12
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL HOUSEHOLDS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL HOUSEHOLDS						
Minimum Rent High households	\$113	\$118	\$ 5	0.05	0.04	(101)
Control households	114	120	5	0.06	0.04	(273)
Unconstrained households	106	116	11	0.12	0.10	(52)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	122	129	7	0.07	0.06	(55)
Control households	127	136	8	0.08	0.06	(119)
Unconstrained households	118	133	16	0.19	0.14	(24)
Did Not Meet at Enrollment						
Minimum Rent High households	109	124	14	0.13	0.13	(24)
Control households	111	126	15	0.15	0.14	(40)
Unconstrained households	(104)	(133)	(29)	(0.35)	(0.28)	(11)
Met at Enrollment						
Minimum Rent High households	132	133	1	0.02	0.01	(31)
Control households	135	140	5	0.04	0.04	(79)
Unconstrained households	(129)	(133)	(4)	(0.05)	(0.03)	(13)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	102	105	3	0.04	0.03	(46)
Control households	104	107	3	0.04	0.03	(154)
Unconstrained households	96	102	6	0.07	0.07	(28)
Did Not Meet at Enrollment						
Minimum Rent High households	102	105	3	0.04	0.03	(46)
Control households	104	107	3	0.04	0.03	(151)
Unconstrained households	96	102	5	0.06	0.05	(26)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	--
Control households	(139)	(139)	(0)	(0.02)	(0.00)	(3)
Unconstrained households	(87)	(110)	(23)	(0.28)	(0.26)	(2)
PHOENIX						
ALL HOUSEHOLDS						
Minimum Rent High households	\$131	\$151	\$19	0.17	0.15	(83)
Control households	129	145	16	0.16	0.12	(229)
Unconstrained households	135	161	26	0.31	0.19	(33)
HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	142	176	34	0.29	0.24	(42)
Control households	159	179	20	0.19	0.13	(71)
Unconstrained households	(152)	(178)	(26)	(0.26)	(0.17)	(15)
Did Not Meet at Enrollment						
Minimum Rent High households	127	174	48	0.41	0.38	(24)
Control households	127	172	45	0.47	0.35	(22)
Unconstrained households	(127)	(171)	(44)	(0.46)	(0.35)	(8)
Met at Enrollment						
Minimum Rent High households	164	179	15	0.11	0.09	(17)
Control households	174	182	9	0.06	0.05	(49)
Unconstrained households	(181)	(187)	(7)	(0.03)	(0.04)	(7)
HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	121	124	4	0.05	0.03	(41)
Control households	115	129	14	0.15	0.12	(158)
Unconstrained households	120	146	26	0.35	0.22	(18)
Did Not Meet at Enrollment						
Minimum Rent High households	119	125	5	0.06	0.04	(40)
Control households	114	128	14	0.15	0.12	(156)
Unconstrained households	118	148	30	0.38	0.25	(17)
Met at Enrollment						
Minimum Rent High households	(169)	(107)	(-63)	(-0.37)	(-0.37)	(1)
Control households	(165)	(186)	(21)	(0.13)	(0.13)	(2)
Unconstrained households	(154)	(112)	(-41)	(-0.27)	(-0.27)	(1)

SAMPLE Minimum Rent High, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE- Brackets indicate amounts based on 15 or fewer observations

Table V-13
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Standards households	\$112	\$113	\$1	0 01	0 01	(112)
Control households	114	116	2	0 02	0 02	(181)
Unconstrained households	106	108	2	0 01	0 02	(33)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	124	125	1	0 02	0 01	(51)
Control households	129	131	1	0 01	0 01	(59)
Unconstrained households	[123]	[126]	[3]	[0 03]	[0 02]	(9)
Did Not Meet at Enrollment						
Minimum Standards households	116	122	6	0 05	0 05	(20)
Control households	128	127	-1	-0 01	-0 01	(16)
Unconstrained households	(98)	[106]	[8]	[0 08]	[0 08]	(2)
Met at Enrollment						
Minimum Standards households	128	126	-2	-0 01	-0 02	(31)
Control households	130	132	2	0 01	0 02	(43)
Unconstrained households	[130]	[131]	[1]	[0 01]	[0 01]	(7)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	102	103	1	0 01	0 01	(61)
Control households	107	110	2	0 02	0 02	(122)
Unconstrained households	100	101	1	0 01	0 01	(24)
Did Not Meet at Enrollment						
Minimum Standards households	102	103	1	0 01	0 01	(61)
Control households	107	110	2	0 02	0 02	(122)
Unconstrained households	100	101	1	0 01	0 01	(24)
Met at Enrollment						
Minimum Standards households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Standards households	\$129	\$136	\$7	0 06	0 05	(63)
Control households	131	135	4	0 04	0 03	(121)
Unconstrained households	[146]	[154]	[9]	[0 07]	[0 06]	(15)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	144	152	8	0 06	0 06	(32)
Control households	152	156	4	0 03	0 02	(41)
Unconstrained households	[167]	[172]	[5]	[0 03]	[0 03]	(9)
Did Not Meet at Enrollment						
Minimum Standards households	138	145	7	0 06	0 05	(20)
Control households	[153]	[160]	[8]	[0 06]	[0 05]	(14)
Unconstrained households	[165]	[177]	[12]	[0 08]	[0 07]	(3)
Met at Enrollment						
Minimum Standards households	[155]	[164]	[10]	[0 07]	[0 06]	(12)
Control households	152	153	2	0 02	0 01	(27)
Unconstrained households	[168]	[170]	[1]	[0 01]	[0 01]	(6)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	112	119	7	0 07	0 06	(31)
Control households	120	124	4	0 04	0 03	(80)
Unconstrained households	[114]	[128]	[14]	[0 13]	[0 12]	(6)
Did Not Meet at Enrollment						
Minimum Standards households	112	119	7	0 07	0 06	(31)
Control households	120	124	4	0 04	0 03	(80)
Unconstrained households	[114]	[128]	[14]	[0 13]	[0 12]	(6)
Met at Enrollment						
Minimum Standards households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Standards, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-14
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Rent Low households	\$112	\$113	\$1	0 02	0 01	(72)
Control households	114	116	2	0 02	0 02	(181)
Unconstrained households	106	108	2	0 01	0 02	(33)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	115	117	2	0 02	0 02	(57)
Control households	122	125	2	0 02	0 02	(123)
Unconstrained households	116	117	1	0 01	0 01	(21)
Did Not Meet at Enrollment						
Minimum Rent Low households	[113]	[111]	[-2]	[-0 01]	[-0 02]	(11)
Control households	[110]	[112]	[2]	[0 02]	[0 03]	(14)
Unconstrained households	[97]	[105]	[8]	[0 09]	[0 08]	(4)
Met at Enrollment						
Minimum Rent Low households	116	119	2	0 03	0 02	(46)
Control households	124	126	2	0 02	0 02	(109)
Unconstrained households	120	120	-1	-0 01	-0 01	(17)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	98	98	-1	0 00	0 01	(15)
Control households	98	99	1	0 01	0 01	(58)
Unconstrained households	[89]	[91]	[2]	[0 02]	[0 02]	(12)
Did Not Meet at Enrollment						
Minimum Rent Low households	[98]	[98]	[-1]	[0 00]	[-0 01]	(15)
Control households	98	99	1	0 01	0 01	(58)
Unconstrained households	[89]	[91]	[2]	[0 02]	[0 02]	(12)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Rent Low households	\$124	\$132	\$8	0 08	0 06	(32)
Control households	131	135	4	0 04	0 03	(121)
Unconstrained households	[146]	[154]	[9]	[0 07]	[0 06]	(15)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	145	154	9	0 06	0 06	(28)
Control households	161	164	3	0 02	0 02	(52)
Unconstrained households	[171]	[176]	[5]	[0 03]	[0 03]	(9)
Did Not Meet at Enrollment						
Minimum Rent Low households	[106]	[115]	[9]	[0 08]	[0 08]	(2)
Control households	[111]	[116]	[5]	[0 05]	[0 05]	(3)
Unconstrained households	[211]	[234]	[23]	[0 11]	[0 11]	(1)
Met at Enrollment						
Minimum Rent Low households	150	159	9	0 06	0 06	(16)
Control households	164	167	3	0 02	0 02	(49)
Unconstrained households	[166]	[169]	[3]	[0 02]	[0 02]	(8)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	[97]	[104]	[7]	[0 09]	[0 07]	(14)
Control households	108	113	4	0 05	0 04	(69)
Unconstrained households	[107]	[122]	[14]	[0 14]	[0 13]	(6)
Did Not Meet at Enrollment						
Minimum Rent Low households	[97]	[104]	[7]	[0 09]	[0 07]	(14)
Control households	108	112	4	0 05	0 04	(69)
Unconstrained households	[108]	[122]	[14]	[0 14]	[0 13]	(6)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-15
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL STAYERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL STAYERS						
Minimum Rent High households	\$113	\$114	\$1	0 02	0 01	(67)
Control households	114	116	2	0 02	0 02	(181)
Unconstrained households	106	108	2	0 01	0 02	(33)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	129	127	-2	-0 01	-0 01	(29)
Control households	131	134	3	0 03	0 02	(67)
Unconstrained households	(125)	(124)	(-1)	(-0 01)	(-0 01)	(11)
Did Not Meet at Enrollment						
Minimum Rent High households	(113)	(115)	(1)	(0 01)	(0 01)	(8)
Control households	120	126	5	0 05	0 04	(18)
Unconstrained households	(116)	(114)	(-3)	(-0 02)	(-0 02)	(3)
Met at Enrollment						
Minimum Rent High households	134	132	-3	-0 01	-0 02	(21)
Control households	135	137	2	0 02	0 02	(49)
Unconstrained households	(129)	(128)	(-1)	(-0 01)	(-0 01)	(8)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	101	104	3	0 04	0 03	(38)
Control households	105	106	1	0 01	0 01	(114)
Unconstrained households	97	100	3	0 03	0 03	(22)
Did Not Meet at Enrollment						
Minimum Rent High households	101	104	3	0 04	0 03	(38)
Control households	105	106	1	0 01	0 01	(114)
Unconstrained households	97	100	3	0 03	0 03	(22)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained	--	--	--	--	--	(0)
PHOENIX						
ALL STAYERS						
Minimum Rent High households	\$131	\$139	\$8	0 08	0 06	(31)
Control households	131	135	4	0 04	0 03	(121)
Unconstrained households	(146)	(154)	(9)	(0 07)	(0 06)	(15)
STAYERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	(170)	(177)	(7)	(0 04)	(0 05)	(7)
Control households	171	174	3	0 02	0 08	(35)
Unconstrained households	(170)	(174)	(3)	(0 02)	(0 08)	(6)
Did Not Meet at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	(151)	(150)	(-1)	(0 00)	(-0 01)	(5)
Unconstrained households	(120)	(136)	(16)	(0 14)	(0 13)	(1)
Met at Enrollment						
Minimum Rent High households	(170)	(177)	(7)	(0 04)	(0 04)	(7)
Control households	174	178	4	0 03	0 02	(30)
Unconstrained households	(180)	(181)	(1)	(0 00)	(0 01)	(5)
STAYERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	120	128	9	0 09	0 08	(24)
Control households	114	118	4	0 04	0 04	(86)
Unconstrained households	(129)	(142)	(12)	(0 10)	(0 09)	(9)
Did Not Meet at Enrollment						
Minimum Rent High households	120	128	9	0 09	0 08	(24)
Control households	114	118	4	0 04	0 04	(86)
Unconstrained households	(129)	(142)	(12)	(0 10)	(0 09)	(9)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	--	--	--	--	--	(0)
Unconstrained households	--	--	--	--	--	(0)

SAMPLE Minimum Rent High, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-16
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM STANDARDS REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Standards households	\$106	\$121	\$15	0 17	0 14	(67)
Control households	114	126	12	0 13	0 11	(92)
Unconstrained households	105	131	27	0 31	0 26	(19)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	112	132	20	0 21	0 12	(31)
Control households	127	148	21	0 23	0 17	(19)
Unconstrained households	[111]	[135]	[24]	[0 27]	[0 22]	(5)
Did Not Meet at Enrollment						
Minimum Standards households	110	132	22	0 24	0 20	(25)
Control households	[110]	[140]	[30]	[0 35]	[0 27]	(11)
Unconstrained households	[101]	[135]	[34]	[0 36]	[0 34]	(4)
Met at Enrollment						
Minimum Standards households	[121]	[135]	[14]	[0 11]	[0 12]	(6)
Control households	[150]	[159]	[9]	[0 06]	[0 06]	(8)
Unconstrained households	[150]	[136]	[-14]	[-0 09]	[-0 09]	(1)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	100	111	10	0 14	0 10	(36)
Control households	111	120	9	0 10	0 08	(73)
Unconstrained households	[103]	[130]	[27]	[0 33]	[0 26]	(14)
Did Not Meet at Enrollment						
Minimum Standards households	99	109	10	0 14	0 10	(33)
Control households	109	119	10	0 11	0 09	(67)
Unconstrained households	[103]	[130]	[27]	[0 33]	[0 26]	(14)
Met at Enrollment						
Minimum Standards households	[117]	[130]	[14]	[0 12]	[0 12]	(3)
Control households	[130]	[131]	[1]	[0 03]	[0 01]	(6)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL MOVERS						
Minimum Standards households	\$128	\$156	\$28	0 27	0 22	(65)
Control households	127	156	29	0 30	0 23	(108)
Unconstrained households	125	166	41	0 50	0 33	(18)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	130	170	40	0 37	0 31	(40)
Control households	134	175	41	0 44	0 31	(42)
Unconstrained households	[133]	[185]	[52]	[0 64]	[0 39]	(8)
Did Not Meet at Enrollment						
Minimum Standards households	124	170	46	0 44	0 37	(31)
Control households	123	176	53	0 56	0 43	(33)
Unconstrained households	[117]	[180]	[63]	[0 82]	[0 54]	(6)
Met at Enrollment						
Minimum Standards households	[150]	[169]	[19]	[0 14]	[0 12]	(9)
Control households	[175]	[173]	[-2]	[-0 00]	[-0 01]	(9)
Unconstrained households	[181]	[198]	[17]	[0 09]	[0 09]	(2)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Standards households	125	134	9	0 12	0 07	(25)
Control households	122	144	22	0 21	0 18	(66)
Unconstrained households	[119]	[151]	[32]	[0 40]	[0 27]	(10)
Did Not Meet at Enrollment						
Minimum Standards households	114	127	13	0 16	0 11	(20)
Control households	118	140	22	0 22	0 19	(61)
Unconstrained households	[112]	[144]	[32]	[0 42]	[0 29]	(9)
Met at Enrollment						
Minimum Standards households	[169]	[160]	[-8]	[-0 05]	[-0 05]	(5)
Control households	[163]	[183]	[19]	[0 12]	[0 12]	(5)
Unconstrained households	[185]	[216]	[32]	[0 17]	[0 17]	(1)

SAMPLE Minimum Standards, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-17
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT LOW REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Rent Low households	\$106	\$119	\$13	0 15	0 12	(34)
Control households	114	126	12	0 13	0 11	(92)
Unconstrained households	105	131	27	0 31	0 26	(19)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	108	121	12	0 13	0 11	(32)
Control households	118	131	13	0 14	0 11	(77)
Unconstrained households	108	135	27	0 32	0 25	(17)
Did Not Meet at Enrollment						
Minimum Rent Low households	[94]	[116]	[22]	[0 24]	[0 23]	(10)
Control households	99	120	21	0 24	0 21	(28)
Unconstrained households	[110]	[138]	[28]	[0 26]	[0 25]	(5)
Met at Enrollment						
Minimum Rent Low households	115	123	8	0 08	0 07	(22)
Control households	129	137	8	0 08	0 06	(49)
Unconstrained households	[107]	[134]	[27]	[0 34]	[0 25]	(12)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	[72]	[92]	[20]	[0 50]	[0 28]	(2)
Control households	[95]	[101]	[6]	[0 07]	[0 06]	(15)
Unconstrained households	[76]	[98]	[22]	[0 29]	[0 29]	(2)
Did Not Meet at Enrollment						
Minimum Rent Low households	[72]	[92]	[20]	[0 50]	[0 28]	(2)
Control households	[87]	[94]	[7]	[0 09]	[0 08]	(9)
Unconstrained households	[76]	[98]	[22]	[0 29]	[0 29]	(2)
Met at Enrollment						
Minimum Rent Low households	--	--	--	--	--	(0)
Control households	[108]	[112]	[4]	[0 04]	[0 04]	(6)
Unconstrained households	--	--	--	--	--	(0)
PHOENIX						
ALL MOVERS						
Minimum Rent Low households	\$127	\$160	\$34	0 31	0 27	(42)
Control households	127	156	29	0 30	0 23	(108)
Unconstrained households	125	166	41	0 50	0 33	(18)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	129	164	35	0 33	0 27	(37)
Control households	137	172	35	0 34	0 26	(62)
Unconstrained households	[133]	[180]	[46]	[0 53]	[0 35]	(14)
Did Not Meet at Enrollment						
Minimum Rent Low households	111	154	44	0 44	0 40	(18)
Control households	105	165	59	0 65	0 56	(24)
Unconstrained households	[101]	[171]	[70]	[0 96]	[0 69]	(6)
Met at Enrollment						
Minimum Rent Low households	147	174	27	0 22	0 18	(19)
Control households	157	177	19	0 14	0 12	(38)
Unconstrained households	[158]	[186]	[29]	[0 21]	[0 18]	(8)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent Low households	[109]	[132]	[23]	[0 22]	[0 21]	(5)
Control households	112	134	22	0 25	0 20	(46)
Unconstrained households	[97]	[118]	[21]	[0 40]	[0 22]	(4)
Did Not Meet at Enrollment						
Minimum Rent Low households	[104]	[131]	[27]	[0 27]	[0 26]	(3)
Control households	103	129	26	0 29	0 25	(40)
Unconstrained households	[78]	[120]	[42]	[0 63]	[0 54]	(3)
Met at Enrollment						
Minimum Rent Low households	[116]	[134]	[18]	[0 15]	[0 16]	(2)
Control households	[174]	[169]	[-5]	[-0 02]	[-0 03]	(6)
Unconstrained households	[154]	[112]	[-41]	[-0 27]	[-0 27]	(1)

SAMPLE Minimum Rent Low, Control, and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

Table V-18
 CHANGES IN HOUSING SERVICES FROM ENROLLMENT TO TWO YEARS AFTER ENROLLMENT
 BY TREATMENT TYPE (MINIMUM RENT HIGH REQUIREMENTS) ALL MOVERS

HOUSEHOLD GROUP	HOUSING SERVICES		CHANGE IN SERVICES			SAMPLE SIZE
	AT ENROLLMENT	AT TWO YEARS	AMOUNT	PERCENTAGE		
				MEAN OF RATIO	RATIO OF MEANS	
PITTSBURGH						
ALL MOVERS						
Minimum Rent High households	\$113	\$125	\$12	0 12	0 11	(34)
Control households	114	126	12	0 13	0 11	(92)
Unconstrained households	105	131	27	0 31	0 26	(19)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	115	130	16	0 15	0 14	(26)
Control households	122	137	15	0 15	0 12	(52)
Unconstrained households	{111}	{141}	{30}	{0 36}	{0 27}	(13)
Did Not Meet at Enrollment						
Minimum Rent High households	107	128	21	0 20	0 20	(16)
Control households	104	127	23	0 24	0 22	(22)
Unconstrained households	{99}	{140}	{41}	{0 49}	{0 41}	(8)
Met at Enrollment						
Minimum Rent High households	{127}	{134}	{7}	{0 07}	{0 06}	(10)
Control households	136	145	9	0 08	0 07	(30)
Unconstrained households	{131}	{143}	{12}	{0 14}	{0 09}	(5)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	{107}	{106}	{-1}	{0 00}	{-0 01}	(8)
Control households	104	111	8	0 10	0 08	(40)
Unconstrained households	{91}	{110}	{19}	{0 23}	{0 21}	(6)
Did Not Meet at Enrollment						
Minimum Rent High households	{107}	{106}	{-1}	{0 00}	{-0 01}	(8)
Control households	101	109	8	0 11	0 08	(37)
Unconstrained households	{93}	{110}	{17}	{0 20}	{0 18}	(4)
Met at Enrollment						
Minimum Rent High households	--	--	--	--	--	(0)
Control households	{139}	{139}	{0}	{0 02}	{0 00}	(3)
Unconstrained households	{87}	{110}	{23}	{0 28}	{0 26}	(2)
PHOENIX						
ALL MOVERS						
Minimum Rent High households	\$132	\$157	\$26	0 23	0 20	(52)
Control households	127	156	29	0 30	0 23	(108)
Unconstrained households	125	166	41	0 50	0 33	(18)
MOVERS THAT MET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	136	176	40	0 34	0 29	(35)
Control households	148	184	36	0 34	0 24	(35)
Unconstrained households	{140}	{182}	{42}	{0 42}	{0 30}	(9)
Did Not Meet at Enrollment						
Minimum Rent High households	127	174	48	0 41	0 38	(25)
Control households	120	178	58	0 61	0 48	(17)
Unconstrained households	{128}	{176}	{48}	{0 50}	{0 38}	(7)
Met at Enrollment						
Minimum Rent High households	{160}	{181}	{20}	{0 15}	{0 13}	(10)
Control households	173	189	16	0 11	0 09	(19)
Unconstrained households	{181}	{202}	{21}	{0 12}	{0 01}	(2)
MOVERS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS						
Minimum Rent High households	122	119	-3	0 00	-0 02	(17)
Control households	116	142	26	0 28	0 22	(72)
Unconstrained households	{111}	{150}	{40}	{0 59}	{0 36}	(9)
Did Not Meet at Enrollment						
Minimum Rent High households	119	120	1	0 02	0 01	(16)
Control households	114	141	26	0 29	0 23	(70)
Unconstrained households	{105}	{155}	{50}	{0 70}	{0 48}	(8)
Met at Enrollment						
Minimum Rent High households	{169}	{107}	{-63}	{-0 37}	{-0 37}	(1)
Control households	{165}	{186}	{21}	{0 13}	{0 13}	(2)
Unconstrained households	{154}	{112}	{-41}	{-0 27}	{-0 27}	(1)

SAMPLE Minimum Rent High, Control, Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

APPENDIX VI
ADDITIONAL TABLES

This appendix presents some additional tables referred to in Chapter 2 through 7.

Table VI-1
 MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM STANDARDS HOUSEHOLDS
 (Payment as Rent Reduction)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	39%	19%	-20	(85)
Control households	39	32	-6	(78)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	37	17	-20	(47)
Control households	38	32	-6	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	42	22	-20	(38)
Control households	39	33	-6	(50)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	41%	20%	-21	(90)
Control households	39	34	-5	(89)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	39	18	-22	(63)
Control households	40	35	-6	(50)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	45	27	-18	(27)
Control households	37	34	-3	(39)

SAMPLE Minimum Standards and Control households active and meeting requirements 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 and payments file

a Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income

b Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c Percentage points.

Table VI-2
 MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT LOW HOUSEHOLDS
 (Payment as Rent Reduction)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	40%	22%	-18	(101)
Control households	36	31	-4	(217)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	31	18	-14	(27)
Control households	25	29	+4	(45)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	43	23	-19	(74)
Control households	39	32	-7	(171)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	41%	21%	-19	(68)
Control households	39	39	-1	(132)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	37	17	-20	(26)
Control households	29	40	+11	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	43	24	-19	(42)
Control households	41	39	-4	(104)

SAMPLE Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points.

Table VI-3

MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT HIGH HOUSEHOLDS
 (Payment as Rent Reduction)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^C	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	42%	28%	-14	(58)
Control households	40	36	-4	(129)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	36	28	-8	(25)
Control households	30	36	+6	(45)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	46	27	-18	(33)
Control households	45	35	-10	(84)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	42%	24%	-17	(46)
Control households	40	38	-3	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	36	22	-14	(28)
Control households	32	40	+8	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	50	29	-22	(18)
Control households	44	37	-9	(55)

SAMPLE Minimum Rent High and Control households active and meeting requirements 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 and payments file.

- a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income
 b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.
 c. Percentage points.

Table VI-4

MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR UNCONSTRAINED HOUSEHOLDS

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
Unconstrained households	39%	23%	-16	(49)
PHOENIX				
Unconstrained households	40	24	-16	(26)

SAMPLE: Unconstrained 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points.

Table VI-5
 PERCENTAGE DISTRIBUTION OF RENT BURDEN FOR MINIMUM STANDARDS HOUSEHOLDS

RENT BURDEN RANGE	PITTSBURGH		PHOENIX	
	DISTRIBUTION OF RENT BURDEN		DISTRIBUTION OF RENT BURDEN	
	At Enrollment ^a	At Two Years ^b	At Enrollment ^a	At Two Years ^b
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
<10%	0%	12%	0%	21%
10-20	8	35	9	27
20-25	9	16	13	14
25-30	14	17	13	10
30-40	28	14	27	20
40-50	21	6	17	6
>50	21	0	21	3
Sample size	(80)	(81)	(70)	(71)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
<10%	0	18	0	25
10-20	5	30	12	31
20-25	9	25	16	12
25-30	21	14	16	12
30-40	30	11	24	16
40-50	14	2	16	2
>50	21	0	16	2
Sample size	(43)	(44)	(50)	(51)
MET REQUIREMENTS AT ENROLLMENT				
<10%	0	5	0	10
10-20	11	41	0	15
20-25	8	5	5	20
25-30	5	22	5	5
30-40	24	16	35	30
40-50	30	11	20	15
>50	22	0	35	5
Sample size	(37)	(37)	(20)	(20)

SAMPLE Minimum Standards households active and meeting requirements 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 and payments file

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

Table VI-6
 PERCENTAGE DISTRIBUTION OF RENT BURDEN FOR MINIMUM RENT LOW HOUSEHOLDS

RENT BURDEN RANGE	PITTSBURGH		PHOENIX	
	DISTRIBUTION OF RENT BURDEN		DISTRIBUTION OF RENT BURDEN	
	At Enrollment ^a	At Two Years ^b	At Enrollment ^a	At Two Years ^b
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
<10%	0%	9%	2%	9%
10-20	4	32	4	27
20-25	13	17	9	24
25-30	19	15	15	13
30-40	27	16	29	16
40-50	20	5	9	9
>50	18	7	33	2
Sample size	(85)	(88)	(55)	(55)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
<10%	0	10	5	15
10-20	10	40	10	35
20-25	25	15	15	25
25-30	20	20	10	5
30-40	30	5	30	5
40-50	5	10	0	10
>50	10	0	30	5
Sample size	(20)	(20)	(20)	(20)
MET REQUIREMENTS AT ENROLLMENT				
<10%	0	9	0	6
10-20	2	29	0	23
20-25	9	18	6	23
25-30	18	13	17	17
30-40	26	19	29	23
40-50	25	3	14	9
>50	20	9	34	0
Sample size	(65)	(68)	(35)	(35)

SAMPLE. Minimum Rent Low households active and meeting requirements 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 and payments file

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment

Table VI-7
 PERCENTAGE DISTRIBUTION OF RENT BURDEN FOR MINIMUM RENT HIGH HOUSEHOLDS

RENT BURDEN RANGE	PITTSBURGH		PHOENIX	
	DISTRIBUTION OF RENT BURDEN		DISTRIBUTION OF RENT BURDEN	
	At Enrollment ^a	At Two Years ^b	At Enrollment ^a	At Two Years ^b
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
<10%	0%	2%	0%	7%
10-20	2	9	5	12
20-25	11	25	7	24
25-30	4	20	15	17
30-40	35	29	34	29
40-50	24	11	15	7
>50	24	4	24	2
Sample size	(54)	(55)	(41)	(41)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
<10%	0	0	0	12
10-20	4	12	8	8
20-25	13	25	12	25
25-30	4	12	21	25
30-40	39	38	42	25
40-50	30	8	0	4
>50	9	4	17	0
Sample size	(23)	(24)	(24)	(24)
MET REQUIREMENTS AT ENROLLMENT				
<10%	0	3	0	0
10-20	0	6	0	18
20-25	10	26	0	24
25-30	3	26	6	6
30-40	32	23	24	35
40-50	19	13	35	12
>50	35	3	35	6
Sample size	(31)	(31)	(17)	(17)

SAMPLE- Minimum Rent High households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

Table VI-8

PERCENTAGE DISTRIBUTION OF RENT BURDEN FOR
UNCONSTRAINED AND CONTROL HOUSEHOLDS

RENT BURDEN RANGE	PITTSBURGH		PHOENIX	
	DISTRIBUTION OF RENT BURDEN		DISTRIBUTION OF RENT BURDEN	
	At Enrollment ^a	At Two Years ^b	At Enrollment ^a	At Two Years ^b
UNCONSTRAINED HOUSEHOLDS				
<10%	0%	9%	0%	20%
10-20	8	37	14	17
20-25	12	16	8	20
25-30	14	18	19	13
30-40	32	14	32	20
40-50	14	4	8	3
>50	20	4	19	7
Sample size	(59)	(57)	(37)	(30)
CONTROL HOUSEHOLDS				
<10%	0%	0%	1%	0%
10-20	13	21	14	11
20-25	19	18	15	12
25-30	22	16	13	20
30-40	20	21	29	27
40-50	15	13	17	14
>50	11	12	11	16
Sample size	(290)	(301)	(254)	(256)

SAMPLE: Unconstrained 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

Table VI-9

SELECTED DEMOGRAPHIC CHARACTERISTICS AT TWO YEARS AFTER ENROLLMENT
FOR HOUSING GAP HOUSEHOLDS THAT MET REQUIREMENTS AT TWO YEARS

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MEAN MONTHLY INCOME	MEAN HOUSEHOLD SIZE	MEAN PAYMENT	MEAN MONTHLY INCOME	MEAN HOUSEHOLD SIZE	MEAN PAYMENT
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	\$424	3.4	\$66	\$409	3.0	\$94
Met requirements at enrollment	362	2.6	64	435	2.0	52
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	401	3.7	61	383	3.4	109
Met requirements at enrollment	385	3.0	56	450	2.9	71
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Did not meet requirements at enrollment	426	3.2	50	425	3.8	114
Met requirements at enrollment	411	2.3	52	439	2.4	85

SAMPLE: Housing Gap households active and meeting requirements 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 and payments file.

Table VI-10
 CHANGES IN HOUSING ADEQUACY FOR MINIMUM STANDARDS, CONTROL, AND UNCONSTRAINED
 HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years	CHANGE ^a	At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH							
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS							
Minimum Standards households	42%	50%	+8	24%	10%	-14	(88)
Control households	63	61	-2	13	13	0	(84)
Unconstrained households	[29]	[93]	[+64]	[21]	[0]	[-21]	(14)
DID NOT MEET REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	10	49	+39	41	10	-31	(49)
Control households	23	57	+34	37	17	-20	(30)
Unconstrained households	[0]	[100]	[+100]	[50]	[0]	[-50]	(6)
MET REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	82	51	-31	3	10	+7	(39)
Control households	95	63	-22	0	11	+11	(54)
Unconstrained households	[50]	[88]	[+38]	[0]	[0]	[0]	(8)
PHOENIX							
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS							
Minimum Standards households	50	72	+22	28	4	-24	(92)
Control households	56	79	+23	23	6	-17	(96)
Unconstrained households	44	67	+23	33	11	-22	(18)
DID NOT MEET REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	36	72	+36	41	5	-36	(64)
Control households	29	84	+55	38	7	-31	(56)
Unconstrained households	[10]	[70]	[+60]	[60]	[10]	[-50]	(10)
MET REQUIREMENTS AT ENROLLMENT							
Minimum Standards households	82	71	-11	0	4	+4	(28)
Control households	95	72	-23	2	5	+3	(40)
Unconstrained households	[88]	[62]	[-26]	[0]	[11]	[+11]	(8)

SAMPLE Minimum Standards, Unconstrained, and Control households active and meeting requirements 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 and payments file

NOTE Brackets indicate amounts based on 15 or fewer observations

a Percentage points.

Table VI-11
 CHANGES IN HOUSING ADEQUACY FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS
 THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years	CHANGE ^a	At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH							
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS							
Minimum Rent Low households	24%	25%	+1	42%	38%	-4	(106)
Control households	35	32	-3	29	26	-3	(227)
DID NOT MEET REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	3	17	+14	66	31	-35	(29)
Control households	9	17	+9	53	30	-23	(47)
MET REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	31	29	-2	34	40	+6	(77)
Control households	42	36	-6	23	26	+3	(180)
PHOENIX							
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS							
Minimum Rent Low households	44	51	+7	34	17	-17	(70)
Control households	53	58	+5	24	15	-9	(135)
DID NOT MEET REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	29	32	+3	46	29	-17	(28)
Control households	17	55	+38	66	24	-42	(29)
MET REQUIREMENTS AT ENROLLMENT							
Minimum Rent Low households	55	64	+9	26	10	-16	(42)
Control households	63	58	-5	12	12	0	(106)

SAMPLE Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

a Percentage points

Table VI-12
 CHANGES IN HOUSING ADEQUACY FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS
 THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PERCENTAGE IN MINIMALLY ADEQUATE HOUSING			CHANGE ^a	PERCENTAGE IN CLEARLY INADEQUATE HOUSING			SAMPLE SIZE
	At Enrollment	At Two Years			At Enrollment	At Two Years	CHANGE ^a	
PITTSBURGH								
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS								
Minimum Rent High households	31%	32%	+1	36%	25%	-11	(59)	
Control households	43	39	-4	26	19	-7	(135)	
DID NOT MEET REQUIREMENTS AT ENROLLMENT								
Minimum Rent High households	23	23	0	58	35	-23	(26)	
Control households	20	22	+2	50	26	-24	(46)	
MET REQUIREMENTS AT ENROLLMENT								
Minimum Rent High households	36	39	+3	18	18	0	(33)	
Control households	55	48	-7	13	16	+3	(89)	
PHOENIX								
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS								
Minimum Rent High households	49	53	+4	38	11	-27	(47)	
Control households	59	69	+10	19	6	-13	(86)	
DID NOT MEET REQUIREMENTS AT ENROLLMENT								
Minimum Rent High households	31	41	+10	52	10	-42	(29)	
Control households	38	62	+24	38	10	-28	(29)	
MET REQUIREMENTS AT ENROLLMENT								
Minimum Rent High households	78	72	-6	17	11	-6	(18)	
Control households	70	72	+2	9	4	-5	(57)	

SAMPLE Minimum Rent High and Control households active and meeting requirements 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 and payments file

a Percentage points

Table VI-13
 PERCENTAGE OF MINIMUM RENT HOUSEHOLDS
 THAT MET THE MINIMUM STANDARDS REQUIREMENTS

HOUSEHOLD GROUP	PERCENTAGE PASSING AT ENROLLMENT	SAMPLE SIZE	PERCENTAGE PASSING AT TWO YEARS AFTER ENROLLMENT	SAMPLE SIZE
PITTSBURGH				
Minimum Rent Low households	19%	(127)	26%	(128)
Minimum Rent High households	19	(116)	23	(117)
PHOENIX				
Minimum Rent Low households	21	(97)	39	(98)
Minimum Rent High households	22	(106)	35	(109)

SAMPLE: Minimum Rent 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 and payments file.

Table VI-14

RESIDUAL OF PREDICTED RENT AT ENROLLMENT FOR HOUSEHOLDS
THAT DROPPED OUT OF THE PROGRAM BEFORE TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	RESIDUAL	t-STATISTIC	RESIDUAL	t-STATISTIC
MINIMUM STANDARDS HOUSEHOLDS	-0.029	1.12	0.016	0.95
Did not meet requirements at enrollment	-0.026	0.93	0.011	0.56
Met requirements at enrollment	-0.067	0.92	0.042	1.05
MINIMUM RENT LOW HOUSEHOLDS	-0.012	0.37	0.017	0.78
Did not meet requirements at enrollment	-0.054	0.69	0.035	0.78
Met requirements at enrollment	0.011	0.41	0.005	0.24
MINIMUM RENT HIGH HOUSEHOLDS	-0.021	0.74	0.006	0.30
Did not meet requirements at enrollment	-0.037	1.03	0.014	0.54
Met requirements at enrollment	0.014	0.33	0.011	0.41

SAMPLE: Housing Gap enrollees that dropped out of the program before 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 and payments file.

NOTE: t-statistics not significant at the 0.10 level.

Table VI-15

SAMPLE SIZES OF EACH TREATMENT GROUP BY INITIAL HOUSING STATUS

TREATMENT GROUP	PITTSBURGH		PHOENIX	
	SAMPLE SIZE FOR HOUSEHOLDS THAT DID NOT MEET REQUIRE- MENTS AT ENROLLMENT	SAMPLE SIZE FOR HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT	SAMPLE SIZE FOR HOUSEHOLDS THAT DID NOT MEET REQUIRE- MENTS AT ENROLLMENT	SAMPLE SIZE FOR HOUSEHOLDS THAT MET REQUIREMENTS AT ENROLLMENT
MINIMUM STANDARDS HOUSEHOLDS				
Plan 1	8	7	14	4
Plan 2	12	10	13	5
Plan 3	6	4	9	8
Plan 10	16	11	17	4
Plan 11	5	5	10	6
MINIMUM RENT LOW HOUSEHOLDS				
Plan 4	6	19	10	8
Plan 5	12	26	10	16
Plan 6	9	29	6	18
MINIMUM RENT HIGH HOUSEHOLDS				
Plan 7	5	10	8	7
Plan 8	12	14	14	6
Plan 9	8	8	6	4

SAMPLE: All Housing Gap households active and meeting requirements 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: Payments file.

Table VI-16

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET THE MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Control households	0.0277 (0.0175)	2.8% (1.8)	(81)	-0.0171 (0.0200)	-1.7% (2.0)	(87)
Minimum Standards households	0.0033 (0.0232)	0.3 (2.3)	(83)	0.0176 (0.0294)	1.8 (3.0)	(84)
Unconstrained households	[-0.0300] (0.0509)	[-3.0] (4.9)	(14)	0.0528 (0.0583)	5.4 (6.2)	(17)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	0.0148 (0.0093)	1.5 (0.9)	(29)	-0.0583 (0.0687)	-5.7 (6.5)	(49)
Minimum Standards households	0.0021 (0.0297)	0.2 (3.0)	(45)	0.0108 (0.0341)	1.1 (3.5)	(59)
Unconstrained households	[-0.1072] (0.0764)	[-10.2] (6.9)	(6)	[0.0332] (0.0796)	[3.4] (8.3)	(9)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0349 (0.0223)	3.6 (2.3)	(52)	0.0361 (0.0443)	3.7 (4.6)	(38)
Minimum Standards households	0.0046 (0.0325)	0.5 (3.3)	(38)	0.0335 (0.0514)	3.4 (5.3)	(25)
Unconstrained households	[0.0279] (0.0675)	[2.8] (7.0)	(8)	[0.0747] (0.0879)	[7.8] (9.5)	(8)

SAMPLE. Minimum Standards, Unconstrained, and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment for Control and Unconstrained households not significantly different from that of Minimum Standards households at the 0.10 level.

a. Corrected for inflation using mean for all Control households.

Table VI-17

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET THE MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Control households	0.0481** (0.0059)	4.9% (0.6)	(214)	0.0758** (0.0142)	7.9% (1.5)	(125)
Minimum Rent Low households	0.0660** (0.2016)	6.8 (2.3)	(95)	0.0863* (0.0337)	9.0 (3.7)	(63)
Unconstrained households	0.0266 (0.0312)	2.7 (3.2)	(39)	0.0531 (0.0519)	5.5 (5.5)	(23)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	-0.0217** (0.0027)	-2.1 (0.3)	(43)	0.0719** (0.0139)	7.5 (1.5)	(28)
Minimum Rent Low households	0.0366 (0.0405)	3.7 (4.2)	(24)	0.1270* (0.0519)	13.5 (5.9)	(25)
Unconstrained households	[-0.0833] (0.0613)	[-8.0] (5.7)	(10)	[0.0192] (0.0947)	[1.9] (9.7)	(7)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0657** (0.0078)	6.8 (0.8)	(171)	0.0770** (0.0143)	8.0 (1.5)	(97)
Minimum Rent Low households	0.0759** (0.0237)	7.9 (2.6)	(71)	0.0595 (0.0416)	6.1 (4.4)	(38)
Unconstrained households	0.0644† (0.0349)	6.7 (3.7)	(29)	0.0679 (0.0615)	7.0 (6.6)	(16)

SAMPLE. Minimum Rent Low, Unconstrained and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment for Control and Unconstrained households not significantly different from that of Minimum Rent Low households at the 0.10 level.

a Corrected for inflation using mean for all Control households.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table VI-18

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Control households	0.1034** ^b (0.0108)	10.9% (1.2)	(129)	0.0992** (0.0206)	10.4% (2.3)	(80)
Minimum Rent High households	0.1627** (0.0264)	17.7 (3.1)	(58)	0.1323** (0.0383)	14.1 (4.4)	(44)
Unconstrained households	0.0427 ^c (0.0383)	4.4 (4.0)	(25)	[0.1316]† (0.0622)	[14.1] (7.1)	(15)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	0.0733** ^b (0.0078)	7.6 (0.8)	(41)	0.0871** (0.0185)	9.1 (2.0)	(26)
Minimum Rent High households	0.1852** (0.0393)	20.3 (4.7)	(25)	0.1387** (0.0493)	14.9 (5.7)	(26)
Unconstrained households	[-0.0119] ^c (0.0556)	[-1.2] (5.5)	(12)	[0.1127] (0.0858)	[11.9] (9.7)	(8)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.1175** (0.0119)	12.5 (1.3)	(88)	0.1050** (0.0226)	11.1 (2.5)	(54)
Minimum Rent High households	0.1456** (0.0335)	15.7 (3.9)	(33)	0.1230† (0.0594)	13.1 (6.7)	(18)
Unconstrained households	[0.0932]† (0.0517)	[9.8] (5.7)	(13)	[0.1532] (0.0931)	[16.6] (10.9)	(7)

SAMPLE. Minimum Rent High, Unconstrained, and Control households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Corrected for inflation using mean for all Control households

b. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.05 level.

c. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.01 level.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table VI-19

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET THE MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Control households	0.0428* (0.0182)	4.4% (1.9)	(62)	0.0084 (0.0246)	0.8% (2.5)	(44)
Minimum Standards households	0.0007 (0.0273)	0.1 (2.7)	(52)	-0.0469 (0.0389)	-4.6 (3.7)	(34)
Unconstrained households	[0.0229] (0.0597)	[2.3] (6.1)	(9)	[0.0191] (0.0694)	[1.9] (7.1)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	0.0721* ^b (0.0302)	7.5 (3.2)	(18)	0.0436 (0.1253)	4.5 (13.2)	(17)
Minimum Standards households	-0.0374 (0.0406)	-3.7 (3.9)	(20)	-0.0578 (0.0476)	-5.6 (4.5)	(20)
Unconstrained households	[-0.0404] (0.1229)	[-4.0] (11.9)	(2)	[-0.0538] (0.1155)	[-5.2] (11.1)	(3)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0308* (0.0131)	3.1 (1.4)	(44)	-0.0138 (0.0411)	-1.4 (4.1)	(27)
Minimum Standards households	0.0245 (0.0334)	2.5 (3.4)	(32)	[-0.0313] (0.0576)	[-3.1] (5.6)	(14)
Unconstrained households	[0.0410] (0.0673)	[4.2] (7.0)	(7)	[0.0556] (0.0855)	[5.7] (9.1)	(6)

SAMPLE Minimum Standards, Unconstrained and Control stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Corrected for inflation using mean for all Control stayers.

b. Estimated overpayment significantly different from that of Minimum Standards households at the 0.10 level.

* Significant at the 0.05 level

Table VI-20

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET THE MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Control households	0.0544** (0.0074)	5.6% (0.08)	(134)	0.1027** (0.0187)	10.8% (2.1)	(54)
Minimum Rent Low households	0.0618* (0.0243)	6.4 (2.6)	(62)	0.0654 (0.0489)	6.8 (5.2)	(19)
Unconstrained households	0.0751† (0.0383)	7.8 (4.1)	(21)	{0.0447} (0.0686)	{4.6} (7.2)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	{-0.0404}** (0.0054)	{-4.0} (0.5)	(15)	{0.2272}** (0.0406)	{25.5} (5.1)	(3)
Minimum Rent Low households	{0.0292} (0.0482)	{3.0} (5.0)	(13)	{0.1112} (0.1159)	{11.8} (13.1)	(3)
Unconstrained households	{0.0248} (0.0850)	{2.5} (8.8)	(4)	{-0.4672} ^b (0.1992)	{-37.3} (12.9)	(1)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0663** (0.0092)	6.9 (1.0)	(119)	0.0954** (0.0171)	10.0 (1.9)	(51)
Minimum Rent Low households	0.0705* (0.0272)	7.3 (2.9)	(49)	0.0568 (0.0520)	5.8 (5.5)	(16)
Unconstrained households	0.0869† (0.0431)	9.1 (4.7)	(17)	{0.1087} (0.0715)	{11.5} (8.0)	(8)

SAMPLE: Minimum Rent Low, Unconstrained, and Control stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Corrected for inflation using mean for Control stayers.

b. Estimated overpayment significantly different from that of Minimum Rent Low households at the 0.10 level.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table VI-21

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR STAYERS THAT MET THE MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Control households	0.1194** (0.0129)	12.7% (1.5)	(74)	0.1202** (0.0256)	12.8% (2.9)	(37)
Minimum Rent High households	0.1523** (0.0323)	16.5 (3.8)	(30)	[0.1163] (0.0773)	[12.3] (8.7)	(7)
Unconstrained households	[0.1495]* (0.0510)	16.1 (5.9)	(11)	[0.1703]† (0.0831)	[18.5] (9.9)	(6)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	0.0909** (0.0100)	9.5 (1.0)	(18)	[0.1429]** (0.0304)	[15.4] (3.5)	(5)
Minimum Rent High households	[0.1764]* (0.0578)	[19.3] (6.9)	(9)	--	--	(0)
Unconstrained households	[0.1886] (0.0986)	[20.8] (12.0)	(3)	[0.0698] (0.2006)	[7.2] (22.2)	(1)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.1285** (0.0141)	13.7 (1.6)	(56)	0.1166** (0.0249)	12.4 (2.8)	(32)
Minimum Rent High households	0.1419** (0.0385)	15.2 (4.4)	(21)	[0.1163] (0.0775)	[12.3] (8.7)	(7)
Unconstrained households	[0.1349]† (0.0605)	[14.4] (6.9)	(8)	[0.1904]† (0.0910)	[21.0] (11.1)	(5)

SAMPLE. Minimum Rent High, Unconstrained and Control stayers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment of Control and Unconstrained households not significantly different from that of Minimum Rent High households at the 0.10 level.

a. Corrected for inflation using mean for all Control stayers.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table VI-22

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET THE MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS						
Control households	-0.0276 (0.0425)	-2.7% (4.1)	(19)	-0.0400 ^c (0.0307)	-3.9% (3.0)	(43)
Minimum Standards households	0.0096 (0.0428)	1.0 (4.3)	(31)	0.0792† (0.0432)	8.2 (4.7)	(50)
Unconstrained households	[-0.1238] (0.0947)	[-11.6] (8.4)	(5)	[0.0894] (0.0932)	[9.4] (10.3)	(8)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	[-0.0767] (0.1178)	[-7.4] (11.0)	(11)	-0.0883 ^b (0.0691)	-8.5 (6.3)	(32)
Minimum Standards households	0.0404 (0.0464)	4.1 (4.8)	(25)	0.0710 (0.0482)	7.4 (5.2)	(39)
Unconstrained households	[-0.1324] (0.1052)	[-12.4] (9.3)	(4)	[0.1023] (0.1089)	[10.8] (12.2)	(6)
MET REQUIREMENTS AT ENROLLMENT						
Control households	{0.0399} (0.0641)	{4.1} (6.7)	(8)	{0.1004} (0.0843)	{10.6} (9.4)	(11)
Minimum Standards households	[-0.1186] (0.0908)	[-11.2] (8.1)	(6)	[0.1083] (0.0880)	[11.4] (9.9)	(11)
Unconstrained households	[-0.0894] (0.2168)	[-8.6] (20.5)	(1)	[0.0507] (0.1988)	[5.2] (21.5)	(2)

SAMPLE. Minimum Standards, Unconstrained, and Control movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Corrected for inflation using mean for all Control movers.

b. Estimated overpayment significantly different from that of Minimum Standards households at the 0.10 level.

c. Estimated overpayment significantly different from that of Minimum Standards households at the 0.05 level.

† Significant at the 0.10 level.

Table VI-23

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET THE MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS						
Control households	0.0397** (0.0084)	4.0% (0.9)	(80)	0.0697** (0.0187)	7.2% (2.0)	(71)
Minimum Rent Low households	0.0747† (0.0424)	7.8 (4.6)	(33)	0.1238* (0.0468)	13.2 (5.3)	(44)
Unconstrained households	-0.0253 (0.0539)	-2.5 (5.3)	(18)	[0.0778] (0.0747)	[8.1] (8.1)	(14)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	-0.0037** (0.0008)	-0.4 (0.1)	(28)	0.0950** (0.0266)	10.0 (2.9)	(25)
Minimum Rent Low households	[0.0501] (0.0726)	[5.1] (7.7)	(11)	0.1703* (0.0644)	18.6 (7.7)	(22)
Unconstrained households	[-0.1481] (0.0959)	[-13.8] (8.3)	(6)	[0.1401] (0.1160)	15.0 (13.5)	(6)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0630** (0.0123)	6.5 (1.3)	(52)	0.0560** (0.0152)	5.8 (1.6)	(46)
Minimum Rent Low households	0.0871† (0.0466)	9.1 (5.1)	(22)	0.0773 (0.0627)	8.0 (6.8)	(22)
Unconstrained households	[0.0361] (0.0603)	[3.7] (6.3)	(12)	[0.0312] (0.0985)	[3.2] (10.2)	(8)

SAMPLE. Minimum Rent Low, Unconstrained, and Control movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES. Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses. Estimated overpayment for Control and Unconstrained households not significantly different from that of Minimum Rent Low households at the 0.10 level.

a. Corrected for inflation using mean for all Control movers

† Significant at the 0.10 level.

* Significant at the 0.05 level

** Significant at the 0.01 level

Table VI-24

ESTIMATED OVERPAYMENT RELATIVE TO THE MARKET AVERAGE AT TWO YEARS AFTER ENROLLMENT
FOR MOVERS THAT MET THE MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE	RESIDUAL ^a	PERCENTAGE OVERPAYMENT	SAMPLE SIZE
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS						
Control households	0.0857** ^c (0.0167)	8.9% (1.8)	(55)	0.0912** (0.0300)	9.5% (3.3)	(43)
Minimum Rent High households	0.1791** (0.0452)	19.6 (5.4)	(28)	0.1741** (0.0483)	19.0 (5.8)	(37)
Unconstrained households	[-0.0344] ^d (0.0602)	[-3.4] (5.8)	(14)	[0.1242] (0.0884)	[13.2] (10.1)	(9)
DID NOT MEET REQUIREMENTS AT ENROLLMENT						
Control households	0.0662** ^b (0.0132)	6.8 (1.4)	(23)	0.1105** (0.0375)	11.7 (4.2)	(21)
Minimum Rent High households	0.1981** (0.0586)	21.9 (7.2)	(16)	0.1856** (0.0571)	20.4 (6.9)	(26)
Unconstrained households	[-0.0697] ^d (0.0756)	[-6.7] (7.1)	(9)	[0.1596] (0.1024)	[17.3] (12.1)	(7)
MET REQUIREMENTS AT ENROLLMENT						
Control households	0.0998** (0.0190)	10.5 (2.1)	(32)	0.0727* (0.0259)	7.5 (2.8)	(22)
Minimum Rent High households	[0.1539]* (0.0642)	[16.6] (7.5)	(12)	[0.1470] (0.0872)	[15.8] (10.2)	(11)
Unconstrained households	[0.0290] (0.0962)	[2.9] (30.0)	(5)	[0.0002] (0.1970)	[0.0] (20.3)	(2)

SAMPLE. Minimum Rent High, Unconstrained, and Control movers active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file

NOTES: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses

a. Corrected for inflation using mean for all Control movers.

b. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.10 level.

c. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.05 level.

d. Estimated overpayment significantly different from that of Minimum Rent High households at the 0.01 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table VI-25

MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
MINIMUM STANDARDS, UNCONSTRAINED, AND CONTROL HOUSEHOLDS
(PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	37%	31%	-7	(85)
Control households	34	32	-3	(78)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	36	30	-6	(47)
Control households	32	32	-1	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	40	32	-7	(38)
Control households	35	32	-5	(50)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	36%	35%	-3	(90)
Control households	34	32	-2	(89)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	34	35	-1	(63)
Control households	33	32	-2	(50)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	39	35	-6	(27)
Control households	34	31	-2	(39)

SAMPLE: Minimum Standards, Unconstrained, and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment,

P = payment in the two-year unit, and Y = income at two years after enrollment

c. Percentage points.

Table VI-26
 MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM STANDARDS HOUSEHOLDS
 (PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	39%	32%	-7	(85)
Control households	39	34	-5	(78)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	37	30	-8	(47)
Control households	38	33	-4	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	42	35	-7	(38)
Control households	39	34	-5	(50)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS				
Minimum Standards households	41%	36%	-5	(90)
Control households	39	36	-3	(89)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	39	36	-3	(63)
Control households	40	36	-4	(50)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Standards households	45	37	-8	(27)
Control households	37	35	-2	(39)

SAMPLE. Minimum Standards and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment,

P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points

Table VI-27

MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
MINIMUM RENT LOW AND CONTROL HOUSEHOLDS
(PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	35%	31%	-4	(101)
Control households	31	31	-2	(217)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	28	30	-1	(27)
Control households	25	28	+3	(46)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	37	34	-5	(74)
Control households	34	31	-4	(171)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	37%	33%	-5	(68)
Control households	34	34	0	(132)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	34	32	-2	(26)
Control households	24	35	+9	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	38	33	-6	(42)
Control households	35	34	-3	(104)

SAMPLE: Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment

c. Percentage points.

Table VI-28

MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT LOW HOUSEHOLDS
(PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	40%	34%	-6	(101)
Control households	36	33	-3	(217)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	31	30	-1	(27)
Control households	25	30	+5	(46)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	43	35	-8	(74)
Control households	39	34	-5	(171)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS				
Minimum Rent Low households	41%	37%	-4	(68)
Control households	39	40	+1	(132)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	37	38	+2	(26)
Control households	29	42	+12	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent Low households	43	35	-7	(42)
Control households	41	40	-2	(104)

SAMPLE. Minimum Rent Low and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment

c. Percentage points.

Table VI-29
 MEDIAN RENT BURDENS AT ENROLLMENT AND TWO YEARS
 AFTER ENROLLMENT BY HOUSING REQUIREMENT STATUS FOR
 MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS
 (PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEDIAN RENT BURDEN		MEDIAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	38%	36%	-3	(58)
Control households	36	34	-3	(129)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	34	36	+3	(25)
Control households	27	32	+5	(45)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	43	35	-8	(33)
Control households	40	35	-5	(84)
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	34%	41%	+1	(46)
Control households	34	33	-2	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	31	41	+9	(28)
Control households	26	36	+10	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	46	46	-7	(18)
Control households	36	33	-4	(55)

SAMPLE. Minimum Rent High and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment

c. Percentage points.

Table VI-30
 MEAN RENT BURDENS AT ENROLLMENT AND TWO YEARS AFTER ENROLLMENT
 BY HOUSING REQUIREMENT STATUS FOR MINIMUM RENT HIGH HOUSEHOLDS
 (PAYMENT AS INCOME SUPPLEMENT)

HOUSEHOLD GROUP	MEAN RENT BURDEN		MEAN REDUCTION IN RENT BURDEN ^c	SAMPLE SIZE
	At Enrollment ^a	At Two Years ^b		
PITTSBURGH				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	42%	37%	-5	(58)
Control households	40	37	-3	(129)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	36	37	+1	(25)
Control households	30	37	+7	(45)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	46	37	-9	(33)
Control households	45	37	-8	(84)
ALL UNCONSTRAINED HOUSEHOLDS				
PHOENIX				
ALL HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS				
Minimum Rent High households	42%	41%	0	(46)
Control households	40	39	-2	(83)
DID NOT MEET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	36	40	+4	(28)
Control households	32	42	+9	(28)
MET REQUIREMENTS AT ENROLLMENT				
Minimum Rent High households	50	43	-7	(18)
Control households	44	38	-8	(55)
ALL UNCONSTRAINED HOUSEHOLDS				

SAMPLE. Minimum Rent High and Control households active and meeting requirements 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 and payments file.

a. Rent burden at enrollment computed as R/Y , where R = enrollment rent and Y = enrollment income.

b. Rent burden at two years computed as $(R-P)/Y$, where R = rent at two years after enrollment, P = payment in the two-year unit, and Y = income at two years after enrollment.

c. Percentage points.

APPENDIX VII
LOGIT FUNCTIONS

This appendix presents the estimated probabilities of meeting the housing requirements and of occupying minimally adequate or clearly inadequate housing (as defined by Budding, 1978). These functions were used in the discussions of Chapters 2 and 3.

The determinants of household behavior included as explanatory variables are: (1) variables included in an independent analysis of Mobility (see MacMillan, 1978); (2) a variable measuring the distance from the housing requirement;¹ and (3) experimental variables. As discussed in Chapters 2 and 3, two samples were used to estimate some of these functions. One sample included only the households that remained active in the experiment at two years after enrollment. The other included, in addition to the active households, households that dropped out of the program voluntarily. Because it was not known if these households met the housing requirement at two years, they were treated as maintaining their enrollment status.

Meeting the Minimum Standards

Logit functions of the probability of meeting the Minimum Standards were estimated using the samples of Minimum Standards, Control and Unconstrained households that did not live in units that met the Minimum Standards requirements at enrollment.

The estimated functions are presented in Tables VII-1 and 2. At both sites the allowance offer had a significant effect on meeting the Minimum Standards.² Payment variations were significant only in Pittsburgh, however. The coefficient for the Unconstrained households was insignificant indicating that the increased probability of meeting for Minimum Standards households was

¹When the requirement analyzed was a minimum rent the distance was measured as the required rent minus actual rent at enrollment. When the requirement analyzed was Minimum Standards or minimally adequate housing, distance was measured as C* (the estimated cost of standard housing) minus actual enrollment rent.

²Note that those tables suggest that sample attrition affected only the magnitude, but not the direction, of effects.

caused by the conditional nature of the allowance offer and not by its income effect.

The effect of the Minimum Rent plans on meeting the Minimum Standards requirement is shown in Tables VII-3 and VII-4. No significant effects were found.

Meeting the Minimum Rent Requirements

Logit functions of the probability of meeting the Minimum Rent requirements at two years were estimated using the sample of Minimum Rent, Control and Unconstrained households that did not meet these requirements at enrollment. The estimated functions are shown in Tables VII-5 to VII-8. The results indicate that the Minimum Rent requirement did cause households to meet their requirement.

Occupying Minimally Adequate Housing

Logit functions of the probability of occupying at least minimally adequate housing or clearly inadequate housing are shown in Tables VII-9 through VII-16.

Table VII-1
 PROBABILITY OF MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT
 FOR HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT ACTIVE SAMPLE ONLY

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.773 (1.068)	0.72	2.128 (0.787)	2.71**
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.015 (0.010)	1.52	-0.002 (0.007)	0.33
Number of children	-0.041 (0.095)	0.43	-0.089 (0.087)	1.02
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.081 (0.225)	0.36	0.112 (0.210)	0.53
Years of education of household head	0.010 (0.056)	0.17	0.125 (0.036)	3.48**
Number of moves in three years prior to the experiment	0.059 (0.096)	0.61	0.194 (0.065)	2.98**
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.000 (0.153)	0.00	0.134 (0.117)	1.14
C* minus enrollment rent	-0.019 (0.004)	4.32**	-0.010 (0.003)	3.18**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.058 (0.041)	1.43	-0.001 (0.062)	0.02
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.88†	-0.001 (0.002)	0.22
DISSATISFACTION				
Dissatisfaction with unit at enrollment	-0.160 (0.300)	0.53	-0.029 (0.247)	0.12
Dissatisfaction with neighborhood at enrollment	-0.341 (0.281)	1.22	-0.017 (0.260)	0.07
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.159 (0.280)	0.57	0.123 (0.202)	0.61
PROGRAM FACTORS ^a				
Minimum Standards household that did not meet requirements at enrollment	1.381 (0.244)	5.65**	1.241 (0.241)	5.16**
CLVL ^b	0.608 (0.338)	1.80†	0.288 (0.284)	1.02
BLVL ^b	-1.094 (0.298)	3.67**	-0.168 (0.283)	0.59
Unconstrained household	0.113 (0.403)	0.28	0.418 (0.432)	0.97
Likelihood ratio (significance)	65.562 (0.01)		74.969 (0.01)	
Observed proportions	0.188		0.351	
Coefficient of determination	0.157		0.157	
Sample size	(431)		(368)	

SAMPLE Minimum Standards, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, 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 Forms, Baseline Interviews, and payments file

NOTE Standard error in parentheses

a. Reference group is Control households that did not meet Minimum Standards requirements at enrollment

b. See Table 5-6 for definition of these variables

† t-statistic significant at the 0.10 level

** t-statistic significant at the 0.01 level

Table VII-2
 PROBABILITY OF MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT FOR HOUSEHOLDS
 THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT ACTIVE AND VOLUNTARY ATTRITION SAMPLE

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.767 (1.033)	0.74	-1.795 (0.716)	2.51*
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.013 (0.009)	1.35	-0.001 (-0.007)	0.15
Number of children	-0.047 (0.091)	0.51	-0.112 (0.087)	1.28
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.179 (0.233)	0.77	0.099 (0.178)	0.56
Years of education of household head	-0.005 (0.056)	0.09	0.077 (0.034)	2.27*
Number of moves in three years prior to the experiment	0.052 (0.088)	0.60	0.202 (0.052)	3.92**
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.055 (0.152)	0.36	0.128 (0.110)	1.16
C* minus enrollment rent	-0.018 (0.004)	4.25**	-0.009 (0.003)	3.29**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.094 (0.064)	1.46	0.046 (0.047)	0.98
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.72†	-0.001 (0.002)	0.33
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.183 (0.257)	0.71	-0.014 (0.215)	0.06
Dissatisfied with neighborhood at enrollment	-0.215 (0.287)	0.75	0.200 (0.239)	0.84
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.090 (0.243)	0.37	-0.062 (0.237)	0.26
PROGRAM FACTORS ^a				
Minimum Standards household that did not meet requirements at enrollment	1.027 (0.227)	4.53**	0.588 (0.205)	2.87**
CIVL ^b	0.506 (0.311)	1.62	0.240 (0.254)	0.94
ELNL ^b	-0.963 (0.274)	3.51**	0.363 (0.243)	1.49
Unconstrained household	0.102 (0.406)	0.25	0.414 (0.418)	0.99
Likelihood ratio (significance)		53.517 (0.01)		57.598 (0.01)
Observed proportions		0.171		0.314
Coefficient of determination		0.123		0.111
Sample size		(475)		(417)

SAMPLE Minimum Standards, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment and Minimum Standards households that did not meet at enrollment and voluntarily dropped out of the program, 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 Forms, Baseline Interviews, and payments file

NOTE Standard error in parentheses.

a Reference group is Control households that did not meet Minimum Standards requirements at enrollment.

b See Table 5-6 for definition of these variables

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level

Table VII-3
 PROBABILITY OF MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT
 FOR MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.007 (1.398)	0.72	-1.280 (0.874)	1.46
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.010 (0.012)	0.84	-0.008 (0.009)	0.89
Number of children	-0.107 (0.135)	0.79	0.034 (0.092)	0.38
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.124 (0.299)	0.42	0.015 (0.272)	0.06
Years of education of household head	0.049 (0.073)	0.67	0.118 (0.045)	2.64**
Number of moves in three years prior to the experiment	0.182 (0.113)	1.62	-0.019 (0.087)	0.22
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.179 (0.244)	0.74	0.025 (0.130)	0.19
C* minus enrollment rent	-0.018 (0.005)	3.76**	-0.011 (0.004)	3.12
SOCIAL BONDS				
Positive feelings toward neighbors	-0.029 (0.059)	0.49	-0.015 (0.070)	0.21
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.59	0.000 (0.003)	0.01
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.167 (0.372)	0.45	0.212 (0.261)	0.81
Dissatisfied with neighborhood at enrollment	-0.516 (0.382)	1.35	-0.288 (0.288)	1.00
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.873 (0.325)	2.68**	0.037 (0.263)	0.14
PROGRAM FACTORS ^a				
Minimum Rent Low household	0.378 (0.323)	1.17	0.183 (0.263)	0.69
Unconstrained household	-0.046 (0.484)	0.09	0.559 (0.423)	1.32
Likelihood ratio (significance)	36.214 (0.01)		35.828 (0.01)	
Observed proportions	0.129		0.277	
Coefficient of Determination	0.124		0.096	
Sample size	(380)		(307)	

SAMPLE Minimum Rent Low, Unconstrained, and Control households active at two years after enrollment that did not meet the Minimum Standards requirements at 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 Interviews, and payments file.

NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Standards requirements at enrollment

** t-statistic significant at the 0.01 level.

Table VII-4

PROBABILITY OF MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT
FOR MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.178 (1.378)	0.86	-2.630 (0.885)	2.97**
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.012 (0.012)	0.95	0.007 (0.009)	0.72
Number of children	-0.211 (0.153)	1.38	-0.006 (0.106)	0.05
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.017 (0.277)	0.06	0.337 (0.231)	1.46
Years of education of household head	0.038 (0.074)	0.52	0.140 (0.043)	3.25**
Number of moves in three years prior to the experiment	0.181 (0.110)	1.64	0.043 (0.086)	0.50
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.029 (0.243)	0.12	0.023 (0.146)	0.16
C* minus enrollment rent	-0.014 (0.005)	2.90**	-0.012 (0.003)	3.64**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.008 (0.093)	0.09	0.043 (0.060)	0.71
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.62	-0.002 (0.004)	0.44
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.219 (0.382)	0.58	0.121 (0.271)	0.45
Dissatisfied with neighborhood at enrollment	-0.224 (0.381)	0.59	-0.238 (0.314)	0.76
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.451 (0.339)	1.33	0.531 (0.279)	1.90†
PROGRAM FACTORS ^a				
Minimum Rent High household	-0.119 (0.349)	0.34	0.207 (0.273)	0.76
Unconstrained household	0.002 (0.444)	0.01	0.563 (0.417)	1.35
Likelihood ratio (significance)	24.160 (0.05)		41.731 (0.01)	
Observed proportions	0.119		0.272	
Coefficient of determination	0.089		0.115	
Sample size	(371)		(309)	

SAMPLE Minimum Rent High, Unconstrained, and Control households active at two years after enrollment that did not meet the Minimum Standards requirements at 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 Interviews, and payments file.

NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Standards requirements at enrollment

† t-statistic significant at the 0.10 level.

** t-statistic significant at the 0.01 level.

Table VII-5
 PROBABILITY OF MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT
 FOR HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT ACTIVE SAMPLE ONLY

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.795 (1.452)	1.24	0.305 (0.112)	0.27
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.006 (0.013)	0.47	-0.049 (0.013)	3.62**
Number of children	0.102 (0.114)	0.89	-0.223 (0.116)	1.92†
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.031 (0.282)	0.11	0.338 (0.370)	0.91
Years of education of household head	0.125 (0.078)	1.61	0.116 (0.056)	2.08*
Number of moves in three years prior to the experiment	0.394 (0.149)	2.64**	0.073 (0.116)	0.63
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.038 (0.223)	0.17	0.079 (0.164)	0.48
0.70* minus enrollment unit	-0.058 (0.012)	4.74**	-0.027 (0.009)	3.04**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.076 (0.095)	0.80	-0.164 (0.096)	1.72†
Length of residence in enrollment unit (in years)	0.004 (0.002)	2.04*	0.006 (0.004)	1.43
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.114 (0.327)	0.35	0.524 (0.360)	1.46
Dissatisfied with neighborhood at enrollment	-0.561 (0.364)	1.54	-0.344 (0.365)	0.94
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	1.319 (0.388)	3.40**	0.337 (0.382)	0.88
PROGRAM FACTORS ^a				
Minimum Rent Low household that did not meet requirements at enrollment	1.417 (0.374)	3.79**	2.696 (0.435)	6.20**
CIVL ^b	-0.189 (0.412)	0.46	0.700 (0.469)	1.49
Unconstrained household	0.320 (0.472)	0.68	1.490 (0.522)	2.86**
Likelihood ratio (significance)	49.453 (0.01)		85.513 (0.01)	
Observed proportions	0.446		0.314	
Coefficient of determination	0.193		0.327	
Sample size	(186)		(210)	

SAMPLE Minimum Rent Low, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, 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 Forms, Baseline Interviews, and payments file

NOTE Standard error in parentheses

^a Reference group is Control households that did not meet Minimum Rent Low requirements at enrollment

^b See Table 5-5 for definition of this variable.

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level.

Table VII-6

PROBABILITY OF MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT FOR HOUSEHOLDS
THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT ACTIVE AND VOLUNTARY ATTRITION SAMPLE

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.979 (1.351)	0.72	0.040 (1.044)	0.04
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.006 (0.013)	0.45	-0.040 (0.012)	3.26**
Number of children	0.105 (0.112)	0.94	-0.227 (0.104)	2.18*
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.018 (0.260)	0.07	0.395 (0.302)	1.31
Years of education of household head	0.104 (0.738)	1.41	0.100 (0.052)	1.90†
Number of moves in three years prior to the experiment	0.324 (0.131)	2.48*	0.077 (0.108)	0.71
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.097 (0.186)	0.52	0.082 (0.151)	0.55
0.70 ^a minus enrollment rent	-0.049 (0.013)	3.96**	-0.017 (0.008)	2.24*
SOCIAL BONDS				
Positive feelings toward neighbors	-0.159 (0.086)	1.79†	-0.188 (0.094)	2.01*
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.70†	0.004 (0.004)	1.22
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.307 (0.278)	1.10	0.380 (0.331)	1.15
Dissatisfied with neighborhood at enrollment	-0.515 (0.348)	1.48	-0.259 (0.337)	0.77
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.958 (0.353)	2.71**	0.195 (0.338)	0.58
PROGRAM FACTORS ^a				
Minimum Rent Low household that did not meet requirements at enrollment	0.829 (0.311)	2.70**	1.669 (0.325)	5.14**
CLVL ^b	0.154 (0.352)	0.44	0.496 (0.357)	1.39
Unconstrained household	0.298 (0.402)	0.74	1.293 (0.512)	2.53†
Likelihood ratio (significance)		40.249 (0.01)		65.228 (0.01)
Observed proportions		0.431		0.296
Coefficient of determination		0.151		0.241
Sample size		(195)		(223)

SAMPLE Minimum Rent Low, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment and Minimum Rent Low households that did not meet at enrollment and voluntarily dropped out of the program, 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 Interviews, and payments file.

NOTE Standard error in parentheses

^a Reference group is Control households that did not meet Minimum Rent Low requirements at enrollment

^b See Table 5-6 for definition of this variable

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level

Table VII-7
 PROBABILITY OF MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT
 FOR HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT ACTIVE SAMPLE ONLY

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	0.247 (0.120)	0.21	0.122 (1.150)	0.11
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.025 (0.011)	2.36*	-0.034 (0.012)	2.86**
Number of children	-0.088 (0.089)	1.00	0.061 (0.129)	0.48
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.317 (0.219)	1.45	0.208 (0.276)	0.75
Years of education of household head	0.092 (0.057)	1.38	0.008 (0.051)	0.16
Number of moves in three years prior to the experiment	0.065 (0.113)	0.57	0.109 (0.073)	1.49
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.016 (0.107)	0.15	-0.283 (0.220)	1.29
0.9C* minus enrollment rent	-0.036 (0.009)	3.98**	-0.032 (0.006)	5.58**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.235 (0.076)	3.10**	0.027 (0.095)	0.28
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.42	0.008 (0.004)	2.18*
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.535 (0.261)	2.05*	0.837 (0.316)	2.65**
Dissatisfied with neighborhood at enrollment	-0.912 (0.316)	2.89**	-0.210 (0.336)	0.63
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.259 (0.294)	0.88	0.834 (0.348)	2.39*
PROGRAM FACTORS ^a				
Minimum Rent High household that did not meet requirements at enrollment	0.601 (0.279)	2.15*	1.739 (0.320)	5.44**
CLVL ^b	0.264 (0.326)	0.81	0.360 (0.358)	1.01
Unconstrained household	0.466 (0.389)	1.12	1.052 (0.461)	2.28*
Likelihood ratio (significance)		58.439 (0.01)		79.827 (0.01)
Observed proportions		0.254		0.212
Coefficient of determination		0.154		0.256
Sample size		(335)		(302)

SAMPLE Minimum Rent High, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment, excluding those with enrollment incomes over the eligibility limits and those living in their own homes or in subsidized housing.

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

NOTE. Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Rent High requirements at enrollment.

b. See Table 5-6 for definition of this variable

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-8

PROBABILITY OF MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT FOR HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT ACTIVE AND VOLUNTARY ATTRITION SAMPLE

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	0.492 (1.167)	0.42	-0.309 (1.072)	0.29
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.026 (0.011)	2.37*	-0.027 (0.011)	2.40*
Number of children	-0.102 (0.068)	1.15	0.048 (0.108)	0.44
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.324 (0.214)	1.52	0.352 (0.260)	1.35
Years of education of household head	0.077 (0.066)	1.17	0.005 (0.046)	0.11
Number of moves in three years prior to the experiment	0.059 (0.107)	0.55	0.142 (0.073)	1.93†
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.025 (0.133)	0.19	-0.326 (0.084)	3.91**
0.9C* minus enrollment rent	-0.036 (0.008)	4.34**	-0.024 (0.005)	5.30**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.243 (0.075)	3.24**	0.039 (0.089)	0.44
Length of residence in enrollment unit (in years)	0.003 (0.002)	1.40	0.006 (0.003)	1.82†
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.624 (0.258)	2.42*	0.625 (0.294)	2.12*
Dissatisfied with neighborhood at enrollment	-0.832 (0.323)	2.57*	0.034 (0.305)	0.11
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.415 (0.284)	0.51	0.663 (0.286)	2.32*
PROGRAM FACTORS^a				
Minimum Rent High household that did not meet requirements at enrollment	0.268 (0.273)	0.98	0.883 (0.287)	3.08**
CLVL ^b	0.149 (0.304)	0.49	0.458 (0.315)	1.46
Unconstrained household	0.469 (0.403)	1.16	0.908 (0.471)	1.93
Likelihood ratio (significance)	56.107 (0.01)		61.521 (0.01)	
Observed proportions	0.240		0.198	
Coefficient of determination	0.144		0.188	
Sample size	(354)		(328)	

SAMPLE Minimum Rent High, Unconstrained, and Control households active at two years after enrollment that did not meet requirements at enrollment and Minimum Rent High households that did not meet at enrollment and voluntarily dropped out of the program, 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 Forms, Baseline Interviews and payments file.

NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Rent High requirements at enrollment.

b. See Table 5-6 for definition of this variable.

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level

Table VII-9
 OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING AT LEAST
 MINIMALLY ADEQUATE HOUSING AT TWO YEARS AFTER ENROLLMENT

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	1.085 (0.742)	1.50	-1.739 (0.563)	3.09**
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.006 (0.006)	0.96	0.007 (0.005)	1.46
Number of children	0.066 (0.066)	1.00	0.061 (0.069)	0.89
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.054 (0.140)	0.38	-0.021 (0.145)	0.15
Years of education of household head	0.655 (0.376)	1.47	0.138 (0.026)	5.30**
Number of moves in three years prior to the experiment	-0.010 (0.055)	0.16	0.010 (0.054)	0.19
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.039 (0.120)	0.33	0.079 (0.090)	0.88
C* minus enrollment rent	-0.021 (0.003)	7.96**	-0.015 (0.002)	5.43**
SOCIAL BONDS				
Positive feelings toward neighbors	0.004 (0.049)	0.09	0.018 (0.044)	0.40
Length of residence in enrollment unit (in years)	0.002 (0.001)	1.98*	-0.003 (0.002)	1.68†
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.288 (0.169)	1.70†	-0.353 (0.170)	2.07
Dissatisfied with neighborhood at enrollment	-0.058 (0.213)	0.27	0.065 (0.191)	0.34
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.069 (0.138)	0.50	0.176 (0.164)	2.28*
PROGRAM FACTORS ^a				
Minimum Standards household	0.220 (0.201)	1.09	0.441 (0.188)	2.34*
Minimum Rent Low household	-0.097 (0.244)	0.40	0.217 (0.238)	0.91
Minimum Rent High household	-0.194 (0.253)	0.77	0.249 (0.235)	1.06
Unconstrained household	0.450 (0.314)	1.44	0.422 (0.352)	1.20
Likelihood ratio (significance)	83.992 (0.01)		126.788 (0.01)	
Observed proportions	0.215		0.417	
Coefficient of determination	0.096		0.146	
Sample size	(772)		(641)	

SAMPLE Housing Gap, Unconstrained, 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE: Standard error in parentheses.

a. Reference group is Control households.

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level.

Table VII-10

OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING AT LEAST MINIMALLY ADEQUATE HOUSING AT TWO YEARS
AFTER ENROLLMENT FOR MINIMUM STANDARDS AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	1.269 (0.892)	1.42	-2.369 (0.721)	3.29**
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.003 (0.008)	0.38	0.009 (0.006)	1.50
Number of children	0.066 (0.083)	0.79	0.055 (0.089)	0.62
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	-0.062 (0.224)	0.28	-0.067 (0.177)	0.38
Years of education of household head	0.048 (0.046)	1.05	0.114 (0.330)	3.45**
Number of moves in three years prior to the experiment	-0.029 (0.089)	0.32	0.095 (0.059)	1.62
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.111 (0.157)	0.71	0.154 (0.112)	1.38
C* minus enrollment rent	-0.017 (0.003)	5.41**	-0.013 (0.003)	4.62**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.086 (0.065)	1.31	0.065 (0.049)	1.31
Length of residence in enrollment unit (in years)	0.001 (0.000)	0.15	-0.004 (0.002)	1.93†
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.422 (0.193)	2.19*	-0.310 (0.195)	1.59
Dissatisfied with neighborhood at enrollment	-0.218 (0.213)	1.02	0.191 (0.253)	0.76
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.098 (0.177)	0.55	0.523 (0.227)	2.30*
PROGRAM FACTORS ²				
Control household that met Minimum Standards requirements at enrollment	1.357 (0.281)	4.83**	1.006 (0.341)	2.95**
Minimum Standards household that met requirements at enrollment	1.394 (0.357)	3.90**	0.917 (0.391)	2.35*
Minimum Standards household that did not meet requirements at enrollment	0.298 (0.214)	1.39	0.524 (0.228)	2.30*
Likelihood ratio (significance)		79.329 (0.01)		80.488 (0.01)
Observed proportions		0.259		0.415
Coefficient of determination		0.143		0.156
Sample size		(486)		(417)

SAMPLE Minimum Standards 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Standards requirements at enrollment.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-11
 OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING AT LEAST MINIMALLY ADEQUATE HOUSING
 AT TWO YEARS AFTER ENROLLMENT FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	2.179 (0.032)	2.11*	-1.492 (0.786)	1.90†
LIFE CYCLE FACTORS				
Age of household head (in decades)	0.001 (0.007)	0.15	0.003 (0.007)	0.40
Number of children	-0.013 (0.062)	0.21	-0.038 (0.083)	0.46
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.093 (0.214)	0.44	-0.083 (0.212)	0.39
Years of education of household head	0.056 (0.051)	1.11	0.075 (0.038)	1.94†
Number of moves in three years prior to the experiment	-0.012 (0.095)	0.12	-0.004 (0.076)	0.06
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.155 (0.143)	1.09	0.150 (0.123)	1.22
C* minus enrollment rent	-0.017 (0.004)	3.83**	-0.013 (0.003)	4.62**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.009 (0.072)	0.13	-0.024 (0.072)	0.34
Length of residence in enrollment unit (in years)	-0.001 (0.002)	0.30	-0.001 (0.003)	0.24
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.077 (0.210)	0.37	-0.432 (0.233)	1.85
Dissatisfied with neighborhood at enrollment	0.103 (0.235)	0.44	-0.299 (0.260)	1.15
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.117 (0.170)	0.68	0.128 (0.235)	0.54
PROGRAM FACTORS ^a				
Control Household that met Minimum Rent Low requirements at enrollment	0.647 (0.383)	1.69†	0.346 (0.238)	1.45
Minimum Rent Low household that met requirements at enrollment	0.402 (0.430)	0.94	0.803 (0.340)	2.36*
Minimum Rent Low household that did not meet requirements at enrollment	0.349 (0.498)	0.70	0.052 (0.327)	0.16
Likelihood ratio (significance)		50.819 (0.01)		62.691 (0.01)
Observed proportions		0.243		0.401
Coefficient of determination		0.110		0.136
Sample size		(415)		(432)

SAMPLE Minimum Rent Low 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Rent Low requirements at enrollment.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-12

OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING AT LEAST MINIMALLY ADEQUATE HOUSING
AT TWO YEARS AFTER ENROLLMENT FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	2.246 (0.985)	2.28*	-1.926 (0.802)	2.40*
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.004 (0.008)	0.49	0.004 (0.008)	0.47
Number of children	0.034 (0.086)	0.40	0.048 (0.099)	0.49
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.227 (0.221)	1.03	-0.021 (0.190)	0.11
Years of education of household head	0.131 (0.054)	2.40*	0.115 (0.038)	3.03*
Number of moves in three years prior to the experiment	-0.001 (0.097)	0.01	-0.020 (0.076)	0.26
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.020 (0.154)	0.13	0.030 (0.138)	0.22
C* minus enrollment rent	-0.222 (0.005)	3.70**	-0.008 (0.005)	1.73†
SOCIAL BONDS				
Positive feelings toward neighbors	-0.003 (0.063)	0.02	0.054 (0.050)	1.09
Length of residence in enrollment unit (in years)	0.002 (0.002)	0.88	-0.003 (0.003)	0.97
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.317 (0.262)	1.21	-0.299 (0.262)	1.14
Dissatisfied with neighborhood at enrollment	-0.141 (0.249)	0.56	0.075 (0.260)	0.29
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.061 (0.227)	0.27	0.155 (0.245)	0.63
PROGRAM FACTORS ^a				
Control household that met Minimum Rent High requirements at enrollment	0.094 (0.425)	0.22	0.987 (0.469)	2.10*
Minimum Rent High household that met requirements at enrollment	-0.133 (0.541)	0.25	1.287 (0.603)	2.13*
Minimum Rent High household that did not meet requirements at enrollment	-0.271 (0.308)	0.88	0.290 (0.257)	1.09
Likelihood ratio (significance)	54.661 (0.01)		69.353 (0.01)	
Observed proportions	0.244		0.394	
Coefficient of determination	0.144		0.150	
Sample size	(405)		(345)	

SAMPLE Minimum Rent High 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE Standard error in parentheses.

^a Reference group is Control households that did not meet Minimum Rent High requirements at enrollment.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-13
 OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING CLEARLY
 INADEQUATE HOUSING AT TWO YEARS AFTER ENROLLMENT

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.433 (0.640)	2.24*	0.236 (0.619)	0.38
LIFE CYCLE FACTORS				
Age of household head (in decades)	0.013 (0.006)	2.14*	-0.001 (0.006)	0.13
Number of children	-0.037 (0.058)	0.64	-0.071 (0.074)	0.97
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.378 (0.125)	3.01**	0.190 (0.162)	1.17
Years of education of household head	-0.045 (0.033)	1.37	-0.178 (0.029)	6.11**
Number of moves in three years prior to the experiment	0.104 (0.059)	1.77†	-0.087 (0.053)	1.66†
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.030 (0.106)	0.29	9.036 (0.087)	0.41
C* minus enrollment rent	0.024 (0.003)	8.42**	0.022 (0.003)	8.10**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.030 (0.042)	0.73	-0.046 (0.046)	1.01
Length of residence in enrollment unit (in years)	-0.004 (0.001)	4.44**	0.003 (0.002)	1.83†
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.266 (0.156)	1.70†	0.042 (0.211)	0.20
Dissatisfied with neighborhood at enrollment	-0.071 (0.153)	0.47	0.328 (0.217)	1.51
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.078 (0.161)	0.48	-0.357 (0.203)	1.76†
PROGRAM FACTORS ^a				
Minimum Standards household	-0.090 (0.194)	0.46	-0.636 (0.204)	3.11**
Minimum Rent Low household	0.053 (0.225)	0.24	-0.540 (0.270)	2.00*
Minimum Rent High household	0.252 (0.230)	1.09	-0.478 (0.239)	2.00*
Unconstrained household	-0.127 (0.302)	0.42	-0.984 (0.355)	2.77**
Likelihood ratio (significance)		93.384 (0.01)		221.599 (0.01)
Observed proportions		0.365		0.354
Coefficient of determination		0.009		0.266
Sample size		(772)		(641)

SAMPLE Housing Gap, Unconstrained, 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, Housing Evaluation Forms, Baseline Interviews, and payments file

NOTE Standard error in parentheses.

a. Reference group is Control households.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-14

OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING CLEARLY INADEQUATE HOUSING
AT TWO YEARS AFTER ENROLLMENT FOR MINIMUM STANDARDS AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.302 (0.811)	1.61	0.100 (0.793)	0.13
LIFE CYCLE FACTORS				
Age of household head (in decades)	0.014 (0.008)	1.81†	0.009 (0.008)	1.19
Number of children	0.054 (0.069)	0.94	-0.040 (0.091)	0.44
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.429 (0.139)	2.26*	0.303 (0.227)	1.34
* Years of education of household head	-0.042 (0.042)	0.98	-0.170 (0.032)	5.25**
Number of moves in three years prior to the experiment	0.127 (0.083)	1.54	-0.090 (0.072)	1.25
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.271 (0.138)	1.96*	-0.100 (0.095)	1.05
C* minus enrollment rent	0.023 (0.004)	5.54**	0.021 (0.003)	7.83**
SOCIAL BONDS				
Positive feelings toward neighbors	0.010 (0.036)	0.26	-0.057 (0.047)	1.19
Length of residence in enrollment unit (in years)	-0.003 (0.001)	2.16*	0.004 (0.002)	1.49
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.448 (0.191)	2.34*	0.056 (0.200)	0.28
Dissatisfied with neighborhood at enrollment	-0.030 (0.201)	0.15	0.187 (0.265)	0.71
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.145 (0.196)	0.74	-0.111 (0.218)	0.51
PROGRAM FACTORS ^a				
Control household that met Minimum Standards requirements at enrollment	-0.900 (0.342)	2.64**	-2.458 (0.646)	3.80**
Minimum Standards household that met requirements at enrollment	-1.459 (0.425)	3.43**	-2.509 (0.866)	2.90**
Minimum Standards household that did not meet requirements at enrollment	-0.017 (0.200)	0.08	-0.797 (0.225)	3.54**
Likelihood ratio (significance)	83.560 (0.01)		173.918 (0.01)	
Observed proportions	0.350		0.369	
Coefficient of determination	0.133		0.317	
Sample size	(486)		(417)	

SAMPLE Minimum Standards 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, Housing Evaluation Forms, Baseline Interviews, and payments file.
NOTE Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Standards requirements at enrollment.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

Table VII-15
 OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING CLEARLY INADEQUATE HOUSING
 AT TWO YEARS AFTER ENROLLMENT FOR MINIMUM RENT LOW AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.745 (0.872)	0.85	0.231 (0.825)	0.28
LIFE CYCLE FACTORS				
Age of household head (in decades)	0.015 (0.007)	2.14*	0.006 (0.008)	0.76
Number of children	0.166 (0.078)	2.13*	0.110 (0.960)	1.14
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.267 (0.212)	1.26	0.342 (0.232)	1.48
Years of education of household head	-0.060 (0.047)	1.28	-0.092 (0.039)	2.33*
Number of moves in three years prior to the experiment	0.125 (0.093)	1.34	-0.034 (0.072)	0.46
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.162 (0.158)	1.02	-0.080 (0.129)	0.62
C* minus enrollment rent	0.025 (0.052)	4.71**	0.022 (0.004)	5.93**
SOCIAL BONDS				
Positive feelings toward neighbors	0.040 (0.047)	0.86	-0.051 (0.047)	1.08
Length of residence in enrollment unit (in years)	-0.004 (0.002)	2.48*	0.003 (0.002)	1.04
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.262 (0.197)	1.33	-0.185 (0.264)	0.70
Dissatisfied with neighborhood at enrollment	-0.148 (0.218)	0.68	0.313 (0.277)	1.13
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.009 (0.224)	0.04	-0.080 (0.258)	0.31
PROGRAM FACTORS ^a				
Control household that met Minimum Rent Low requirements at enrollment	0.174 (0.339)	0.55	-0.585 (0.239)	2.45*
Minimum Rent Low household that met requirements at enrollment	0.574 (0.347)	1.66†	-1.336 (0.366)	3.65**
Minimum Rent Low household that did not meet requirements at enrollment	-0.576 (0.353)	1.63	-0.428 (0.321)	1.33
Likelihood ratio (significance)		50.095 (0.01)		121.136 (0.01)
Observed proportions		0.359		0.377
Coefficient of determination		0.092		0.267
Sample size		(415)		(342)

SAMPLE Minimum Rent Low 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE Standard error in parentheses

a. Reference group is Control households that did not meet Minimum Rent Low requirements at enrollment

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level

Table VII-16

OVERALL HOUSING ADEQUACY PROBABILITY OF OCCUPYING CLEARLY INADEQUATE HOUSING
AT TWO YEARS AFTER ENROLLMENT FOR MINIMUM RENT HIGH AND CONTROL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.743 (0.878)	1.98*	0.124 (0.843)	0.14
LIFE CYCLE FACTORS				
Age of household head (in decades)	0.018 (0.007)	2.44*	-0.003 (0.009)	0.38
Number of children	0.075 (0.068)	1.10	-0.798 (0.081)	0.10
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.213 (0.196)	1.09	0.479 (0.224)	2.14*
Years of education of household head	-0.045 (0.047)	0.96	-0.120 (0.041)	2.95**
Number of moves in three years prior to the experiment	0.093 (0.092)	1.01	-0.048 (0.069)	0.69
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.050 (0.137)	0.36	-0.062 (0.119)	0.52
C* minus enrollment rent	0.016 (0.006)	2.87**	0.024 (0.005)	5.14**
SOCIAL BONDS				
Positive feelings toward neighbors	0.086 (0.056)	1.53	-0.077 (0.051)	1.52
Length of residence in enrollment unit (in years)	-0.005 (0.002)	2.44*	0.004 (0.003)	1.66†
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.195 (0.222)	0.88	-0.243 (0.237)	1.03
Dissatisfied with neighborhood at enrollment	0.150 (0.216)	0.69	0.092 (0.255)	0.36
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.065 (0.163)	0.40	-0.095 (0.260)	0.36
PROGRAM FACTORS ^a				
Control household that met Minimum Rent High requirements at enrollment	-0.410 (0.363)	1.13	-1.287 (0.742)	1.74†
Minimum Rent High household that met requirements at enrollment	-0.277 (0.466)	0.49	-0.243 (0.771)	0.32
Minimum Rent High households that did not meet requirements at enrollment	0.241 (0.248)	0.97	-0.659 (0.262)	2.52*
Likelihood ratio (significance)		53.411 (0.01)		125.714 (0.01)
Observed proportions		0.363		0.398
Coefficient of determination		0.101		0.273
Sample size		(405)		(345)

SAMPLE Minimum Rent High 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, Housing Evaluation Forms, Baseline Interviews, and payments file.

NOTE: Standard error in parentheses.

a. Reference group is Control households that did not meet Minimum Rent High requirements at enrollment.

† t-statistic significant at the 0.10 level.

* t-statistic significant at the 0.05 level.

** t-statistic significant at the 0.01 level.

APPENDIX VIII
PREDICTING EQUATIONS

Appendix VIII presents the estimated equations used for predicting normal expenditures and housing services. Tables VIII-1 through VIII-3 are predicting equations for rent, for all households, movers, and nonmovers, respectively. Tables VIII-4 through VIII-6 present the equations for housing services for the same groups.

Table VIII-1
 PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
 EXPENDITURES: ALL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	3.838 (0.235)	3.673 (0.184)	3.303 (0.264)	3.556 (0.191)
Log (monthly income)	0.132 (0.037)	0.127 (0.030)	0.244 (0.043)	0.174 (0.031)
Nonminority single-person household ^a	-0.152 (0.051)	-0.184 (0.038)	-0.210 (0.062)	-0.183 (0.049)
Nonminority single head of household with others present ^a	0.026 (0.036)	0.009 (0.027)	-0.045 (0.049)	-0.025 (0.037)
Minority single-person household ^a	-0.222 (0.109)	-0.035 (0.094)	-0.308 (0.118)	-0.414 (0.124)
Minority single head of household with others present ^a	0.055 (0.047)	0.119 (0.035)	0.067 (0.063)	-0.022 (0.043)
Minority household headed by a couple ^a	0.036 (0.057)	0.037 (0.046)	-0.087 (0.057)	-0.041 (0.040)
Enrollment unit passed Minimum Standards require- ments ^b	0.043 (0.036)	0.051 (0.028)	0.045 (0.053)	-0.031 (0.039)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.205 (0.034)	0.284 (0.266)	0.311 (0.049)	0.395 (0.037)
Enrollment unit passed Minimum Rent High require- ment ^b	0.247 (0.036)	0.326 (0.028)	0.142 (0.059)	0.252 (0.043)
Serial correlation	0.417		0.431	
Correlation of actual and predicted rent	0.77		0.77	
Standard error of estimate	0.20		0.26	
Sample size	(289)		(256)	

SAMPLE: 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 and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

Table VIII-2

PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
EXPENDITURES: ALL MOVERS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	3.244 (0.516)	3.037 (0.363)	3.241 (0.401)	3.427 (0.317)
Log (monthly income)	0.247 (0.083)	0.228 (0.060)	0.280 (0.065)	0.198 (0.051)
Nonminority single-person household ^a	0.111 (0.124)	0.186 (0.103)	-0.225 (0.102)	-0.156 (0.096)
Nonminority single head of household with others present ^a	0.116 (0.069)	0.854 (0.049)	-0.089 (0.072)	0.002 (0.056)
Minority single-person household ^a	0.000 (0.000)	0.000 (0.000)	-0.273 (0.177)	-0.496 (0.226)
Minority single head of household with others present ^a	0.069 (0.084)	0.174 (0.060)	0.132 (0.094)	0.003 (0.065)
Minority household headed by a couple ^a	0.041 (0.129)	0.012 (0.100)	-0.172 (0.092)	-0.004 (0.060)
Enrollment unit passed Minimum Standards require- ments ^b	0.048 (0.079)	0.037 (0.059)	0.108 (0.085)	-0.016 (0.062)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.073 (0.070)	0.295 (0.050)	0.212 (0.072)	0.375 (0.052)
Enrollment unit passed Minimum Rent High require- ment ^b	0.226 (0.072)	0.391 (0.053)	0.059 (0.087)	0.215 (0.062)
Serial correlation		0.107		0.247
Correlation of actual and predicted rent		0.63		0.66
Standard error of estimate		0.24		0.28
Sample size		(94)		(126)

SAMPLE: 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 and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

Table VIII-3
 PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
 EXPENDITURES: ALL STAYERS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	4.117 (0.223)	4.179 (0.195)	3.841 (0.280)	3.914 (0.223)
Log (monthly income)	0.077 (0.035)	0.046 (0.032)	0.136 (0.046)	0.113 (0.037)
Nonminority single-person household ^a	-0.206 (0.049)	-0.229 (0.041)	-0.209 (0.068)	-0.224 (0.060)
Nonminority single head of household with others present ^a	-0.038 (0.038)	-0.040 (0.031)	-0.082 (0.059)	-0.068 (0.055)
Minority single-person household ^a	-0.191 (0.097)	0.107 (0.091)	-0.299 (0.131)	-0.329 (0.143)
Minority single head of household with others present ^a	0.056 (0.052)	0.078 (0.043)	-0.132 (0.073)	-0.065 (0.060)
Minority household headed by a couple ^a	0.028 (0.061)	0.036 (0.051)	-0.032 (0.062)	-0.066 (0.056)
Enrollment unit passed Minimum Standards require- ments ^b	0.066 (0.038)	0.060 (0.032)	0.012 (0.058)	-0.038 (0.053)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.284 (0.037)	0.282 (0.032)	0.400 (0.062)	0.413 (0.056)
Enrollment unit passed Minimum Rent High require- ment ^b	0.231 (0.039)	0.291 (0.033)	0.228 (0.071)	0.293 (0.063)
Serial correlation	0.659		0.690	
Correlation of actual and predicted rent	0.89		0.92	
Standard error of estimate	0.15		0.16	
Sample size	(195)		(130)	

SAMPLE: 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 and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

Table VIII-4
 PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
 SERVICES: ALL HOUSEHOLDS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	3.739 (0.196)	3.665 (0.174)	3.737 (0.223)	3.955 (0.180)
Log (monthly income)	0.141 (0.031)	0.148 (0.029)	0.181 (0.036)	0.120 (0.030)
Nonminority single-person household ^a	-0.041 (0.043)	-0.047 (0.035)	-0.124 (0.053)	-0.113 (0.045)
Nonminority single head of household with others present ^a	0.025 (0.032)	0.018 (0.025)	-0.003 (0.042)	-0.020 (0.035)
Minority single-person household ^a	-0.046 (0.089)	-0.012 (0.075)	-0.346 (0.120)	-0.487 (0.111)
Minority single head of household with others present ^a	0.129 (0.042)	0.069 (0.034)	0.003 (0.051)	-0.103 (0.039)
Minority household headed by a couple ^a	-0.043 (0.052)	0.021 (0.043)	-0.066 (0.047)	-0.088 (0.038)
Enrollment unit passed Minimum Standards require- ments ^b	0.072 (0.032)	0.108 (0.027)	0.030 (0.045)	0.114 (0.036)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.101 (0.031)	0.107 (0.026)	0.193 (0.043)	0.275 (0.352)
Enrollment unit passed Minimum Rent High require- ment ^b	0.164 (0.033)	0.187 (0.027)	0.153 (0.051)	0.152 (0.040)
Serial correlation		0.539		0.388
Correlation of actual and predicted housing services		0.77		0.75
Standard error of estimate		0.16		0.21
Sample size		(254)		(230)

SAMPLE: 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

Table VIII-5
 PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
 SERVICES: ALL MOVERS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	3.084 (0.459)	3.381 (0.340)	3.392 (0.326)	3.626 (0.283)
Log (monthly income)	0.258 (0.740)	0.187 (0.057)	0.261 (0.053)	0.166 (0.046)
Nonminority single-person household ^a	0.155 (0.109)	-0.138 (0.092)	-0.119 (0.093)	-0.063 (0.087)
Nonminority single head of household with others present ^a	0.080 (0.064)	0.076 (0.046)	-0.065 (0.061)	0.024 (0.052)
Minority single-person household ^a	0.000 (0.000)	0.000 (0.000)	-0.505 (0.242)	-0.605 (0.194)
Minority single head of household with others present ^a	0.333 (0.083)	0.102 (0.060)	0.048 (0.075)	0.014 (0.059)
Minority household headed by a couple ^a	-0.235 (0.113)	-0.004 (0.090)	-0.093 (0.075)	-0.086 (0.057)
Enrollment unit passed Minimum Standards require- ments ^b	0.038 (0.075)	0.100 (0.058)	-0.050 (0.077)	0.100 (0.061)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.003 (0.065)	0.112 (0.049)	0.127 (0.067)	0.295 (0.052)
Enrollment unit passed Minimum Rent High require- ment ^b	0.144 (0.067)	0.232 (0.051)	0.170 (0.076)	0.161 (0.060)
Serial correlation		0.282		0.108
Correlation of actual and predicted housing services		0.68		0.67
Standard error of estimate		0.20		0.22
Sample size		(83)		(108)

SAMPLE: 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

Table VIII-6
 PREDICTING EQUATIONS FOR NORMAL LOG HOUSING
 SERVICES: ALL STAYERS

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENTS		COEFFICIENTS	
	At Two Years	At Enrollment	At Two Years	At Enrollment
Constant	3.998 (0.165)	4.041 (0.171)	4.480 (0.173)	4.508 (0.161)
Log (monthly income)	0.095 (0.026)	0.089 (0.028)	0.040 (0.028)	0.034 (0.027)
Nonminority single-person household ^a	-0.084 (0.039)	-0.073 (0.036)	-0.129 (0.050)	-0.169 (0.050)
Nonminority single head of household with others present ^a	-0.007 (0.030)	-0.024 (0.027)	-0.028 (0.040)	-0.086 (0.041)
Minority single-person household ^a	-0.028 (0.072)	-0.047 (0.068)	-0.270 (0.088)	-0.362 (0.104)
Minority single head of household with others present ^a	0.034 (0.043)	0.032 (0.039)	-0.160 (0.055)	-0.213 (0.051)
Minority household headed by a couple ^a	0.016 (0.051)	0.027 (0.046)	-0.058 (0.049)	-0.087 (0.049)
Enrollment unit passed Minimum Standards require- ments ^b	0.094 (0.033)	0.105 (0.031)	0.072 (0.046)	0.096 (0.046)
Enrollment unit passed Minimum Rent Low require- ment ^b	0.131 (0.033)	0.108 (0.031)	0.278 (0.049)	0.306 (0.049)
Enrollment unit passed Minimum Rent High require- ment ^b	0.158 (0.035)	0.176 (0.033)	0.173 (0.057)	0.143 (0.056)
Serial correlation		0.796		0.858
Correlation of actual and predicted housing services		0.92		0.96
Standard error of estimate		0.09		0.08
Sample size		(171)		(122)

SAMPLE: 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

a. Dummy variables; omitted category is nonminority household headed by a couple.

b. Dummy variables.

APPENDIX IX
ESTIMATES OF EXPERIMENTAL EFFECT ON
HOUSING EXPENDITURES AND SERVICES

This appendix presents the estimate of the experimental effect on expenditures and housing services. The experimental effect for each household is measured as the difference between actual log rent (services) and predicted log rent (services). The overall experimental effect $\hat{\beta}$ is therefore the mean of this difference for households in a particular group. The estimated median change above normal is computed as $\exp(\hat{\beta}) - 1$, with standard error $\exp(\hat{\beta}) \cdot [\exp(2\hat{\sigma}^2) - \exp(\hat{\sigma}^2)]^{1/2}$, where $\hat{\sigma}$ is the estimated standard of β . These estimated effects for Housing Gap and Unconstrained households are presented in Tables IX-1 to IX-8.

The estimated effects may, however, be subject to bias. As discussed in Chapter 4, two methods of computing the bias, γ , were used--one based on nonparticipant Housing Gap households and one based on Control households that did not meet the housing requirements. As indicated in Chapter 4, the bias is proportional to the estimated effects of these households:

$$(1) \quad \gamma = a\hat{\beta}$$

where "a" equals the negative of the ratio of the number of Housing Gap non-participants to the number of participants and is taken as fixed. Therefore, the t-statistic determining the significance of the bias is equal to the t-statistic of the estimated effect, as shown below. The t-statistic of the effect is:

$$(2) \quad t_{\hat{\beta}} = \frac{\hat{\beta}}{\hat{\sigma}}$$

The standard error of the bias is $[a^2\hat{\sigma}^2]^{1/2}$, so the t-statistic of the bias is:

$$(3) \quad t_{\hat{\gamma}} = \frac{a\hat{\beta}}{[a^2\hat{\sigma}^2]^{1/2}} = \frac{\hat{\beta}}{\hat{\sigma}} = t_{\hat{\beta}}$$

The estimated effects for Housing Gap and Control households that did not meet the requirements, the significance of the computed biases, and the experimental effects on participants corrected for bias are all presented in Tables IX-9 through IX-36.

Finally, Tables IX-37 through IX-44 present some comparisons among the Housing Gap groups and between the Housing Gap and the Unconstrained groups.

Table IX-1

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0418 (0.0258)	4.3% (2.7)	(84)	0.1502** (0.0336)	16.2% (3.9)	(90)
Did not meet requirements at enrollment	0.0719* (0.0358)	7.5 (3.9)	(47)	0.2118** (0.0437)	23.6 (5.4)	(63)
Met requirements at enrollment	0.0105 (0.0343)	1.1 (3.5)	(37)	-0.0072 (0.0385)	-0.7 (3.8)	(27)
ALL MOVERS	0.0781 (0.0485)	8.1 (5.3)	(31)	0.1756** (0.0464)	19.2 (5.5)	(54)
Did not meet requirements at enrollment	0.0945† (0.0552)	9.9 (6.1)	(26)	0.2400** (0.0575)	27.1 (7.3)	(43)
Met requirements at enrollment	[-0.0663] (0.0992)	[-6.4] (9.4)	(5)	[-0.0407] (0.0655)	[-4.0] (6.3)	(11)
ALL STAYERS	0.0141 (0.0240)	1.4 (2.4)	(53)	0.0306 (0.0288)	3.1 (3.0)	(36)
Did not meet requirements at enrollment	-0.0055 (0.0372)	-0.5 (3.7)	(21)	0.0381 (0.0403)	3.9 (4.2)	(20)
Met requirements at enrollment	0.0331 (0.0321)	3.4 (3.3)	(32)	-0.0079 (0.0395)	-0.8 (3.9)	(16)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-2

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
 ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0499* (0.0243)	5.1% (2.6)	(101)	0.1789** (0.0374)	19.6% (4.5)	(68)
Did not meet requirements at enrollment	0.1575** (0.0454)	17.1 (5.3)	(27)	0.4153** (0.0625)	51.5 (9.5)	(26)
Met requirements at enrollment	0.0235 (0.0282)	2.4 (2.9)	(74)	-0.0124 (0.0335)	-1.2 (3.3)	(42)
ALL MOVERS	0.0657 (0.0442)	6.8 (4.7)	(41)	0.1650** (0.0479)	17.9 (5.7)	(49)
Did not meet requirements at enrollment	[0.0942] (0.0693)	[9.9] (7.6)	(15)	0.3267** (0.0718)	38.6 (10.0)	(23)
Met requirements at enrollment	0.0831 (0.0561)	8.7 (6.1)	(26)	-0.0286 (0.0498)	-2.8 (4.8)	(26)
ALL STAYERS	-0.0019 (0.0231)	-0.2 (2.3)	(60)	0.0403 (0.0379)	4.1 (4.0)	(19)
Did not meet requirements at enrollment	[0.0979]* (0.0475)	[10.3] (5.2)	(12)	[0.1359] (0.0966)	[14.6] (11.1)	(3)
Met requirements at enrollment	-0.0208 (0.0293)	-2.1 (2.9)	(48)	-0.0082 (0.0392)	-0.8 (3.9)	(16)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-3

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL HOUSEHOLDS	0.1390** (0.0299)	14.9% (3.4)	(57)	0.3027** (0.0443)	35.4% (6.0)	(45)
Did not meet requirements at enrollment	0.2720** (0.0466)	31.3 (6.1)	(25)	0.4295** (0.0605)	53.6 (9.3)	(28)
Met requirements at enrollment	0.0454 (0.0356)	4.6 (3.7)	(32)	0.0715 (0.0463)	7.4 (5.0)	(17)
ALL MOVERS	0.1735** (0.0494)	18.9 (5.9)	(29)	0.2830** (0.0521)	32.7 (6.9)	(39)
Did not meet requirements at enrollment	0.2693** (0.0645)	30.9 (8.5)	(17)	0.3646** (0.0666)	44.0 (9.6)	(28)
Met requirements at enrollment	[0.0480] (0.0696)	[4.9] (7.3)	(12)	[0.0743] (0.0657)	[7.7] (7.1)	(11)
ALL STAYERS	0.0505 (0.0310)	5.2 (3.3)	(28)	[0.0540] (0.0639)	[5.5] (6.8)	(6)
Did not meet requirements at enrollment	[0.1440]* (0.0575)	[15.5] (6.7)	(8)	--	--	(0)
Met requirements at enrollment	0.0229 (0.0372)	2.3 (3.8)	(20)	[0.0160] (0.0577)	[1.6] (5.9)	(6)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-4
ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN
HOUSING EXPENDITURES ABOVE NORMAL FOR UNCONSTRAINED HOUSEHOLDS AT
TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0264 (0.0297)	2.6% (3.1)	(59)	0.1477** (0.0482)	16.0% (5.6)	(37)
Did not meet Minimum Standards requirements at enrollment	0.0410 (0.0336)	4.2 (3.5)	(51)	0.1517* (0.0577)	16.4 (6.8)	(29)
Did not meet Minimum Rent Low requirements at enrollment	0.0224 (0.0483)	2.2 (4.9)	(25)	0.2596** (0.0745)	29.7 (9.6)	(20)
Did not meet Minimum Rent High requirements at enrollment	0.0473 (0.0376)	4.8 (4.0)	(42)	0.1999** (0.0564)	22.1 (6.9)	(29)
Met Minimum Standards requirements at enrollment	[-0.0543] (0.0631)	[-5.3] (6.0)	(8)	[0.1573]† (0.0765)	[17.0] (8.9)	(8)
Met Minimum Rent Low requirements at enrollment	0.0336 (0.0368)	3.5 (3.8)	(34)	0.0354 (0.0487)	3.6 (5.1)	(17)
Met Minimum Rent High requirements at enrollment	-0.0138 (0.0423)	-1.4 (4.1)	(17)	[-0.0155] (0.0657)	[-1.6] (6.5)	(8)
ALL MOVERS	0.0358 (0.0557)	3.7 (5.8)	(22)	0.1653** (0.0657)	17.9 (7.8)	(22)
Did not meet Minimum Standards requirements at enrollment	0.0583 (0.0606)	6.0 (6.5)	(21)	0.1633* (0.0762)	17.7 (9.0)	(19)
Did not meet Minimum Rent Low requirements at enrollment	[0.0261] (0.0974)	[2.6] (10.0)	(8)	[0.2705]* (0.1048)	[31.0] (13.9)	(12)
Did not meet Minimum Rent High requirements at enrollment	[0.0980] (0.0699)	[10.3] (7.7)	(15)	0.2170** (0.0756)	24.2 (9.5)	(18)
Met Minimum Standards requirements at enrollment	[-0.2568] (0.1706)	[-22.7] (13.5)	(1)	[0.2149]† (0.1218)	[24.0] (15.3)	(3)
Met Minimum Rent Low requirements at enrollment	[0.0558] (0.0700)	[5.8] (7.4)	(14)	[0.0410] (0.0751)	[4.2] (7.8)	(10)
Met Minimum Rent High requirements at enrollment	[-0.0624] (0.0893)	[6.4] (9.5)	(7)	[-0.0746] (0.1122)	-7.2 (10.5)	(4)
ALL STAYERS	0.0055 (0.0276)	0.5 (2.8)	(37)	[0.0448] (0.0419)	[4.6] (4.4)	(15)
Did not meet Minimum Standards requirements at enrollment	0.0176 (0.0310)	1.8 (3.2)	(30)	[0.0549] (0.0534)	[5.7] (5.6)	(10)
Did not meet Minimum Rent Low requirements at enrollment	0.0154 (0.0370)	1.5 (3.8)	(17)	[0.0918] (0.0697)	[9.6] (7.7)	(8)
Did not meet Minimum Rent High requirements at enrollment	0.0078 (0.0344)	0.8 (3.4)	(27)	[0.0652] (0.0538)	[6.7] (5.8)	(11)
Met Minimum Standards requirements at enrollment	[-0.0404] (0.0602)	[-3.9] (5.8)	(7)	[0.0154] (0.0711)	[1.5] (7.2)	(5)
Met Minimum Rent Low requirements at enrollment	-0.0079 (0.0380)	-0.8 (3.8)	(20)	[0.0144] (0.0440)	[1.4] (4.5)	(7)
Met Minimum Rent High requirements at enrollment	[0.0001] (0.0348)	[0.0] (3.5)	(10)	[0.0067] (0.0668)	[0.7] (6.8)	(4)

SAMPLE: Unconstrained 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-5

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES
ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0416* (0.0206)	4.2% (2.1)	(79)	0.1370** (0.0306)	14.7 (3.5)	(71)
Did not meet requirements at enrollment	0.0711* (0.0306)	7.4 (3.3)	(43)	0.1547** (0.0387)	16.7 (4.5)	(50)
Met requirements at enrollment	0.0080 (0.0258)	0.8 (2.6)	(36)	0.0787† (0.0452)	8.2 (4.9)	(21)
ALL MOVERS	0.0414 (0.0428)	4.2 (4.4)	(29)	0.1122* (0.0466)	11.9 (5.2)	(39)
Did not meet requirements at enrollment	0.0453 (0.0515)	4.6 (5.4)	(24)	0.1332* (0.0553)	14.2 (6.3)	(30)
Met requirements at enrollment	{0.0111} (0.0847)	[1.1] (8.6)	(5)	{0.0286} (0.0830)	[2.9] (8.6)	(9)
ALL STAYERS	0.0072 (0.0148)	0.7 (1.5)	(50)	0.0556** (0.0167)	5.7 (1.8)	(32)
Did not meet requirements at enrollment	0.0431† (0.0225)	4.4 (2.3)	(19)	0.0426† (0.0216)	4.4 (2.3)	(20)
Met requirements at enrollment	-0.0193 (0.0209)	-1.9 (2.1)	(31)	[0.0693]* (0.0267)	[7.2] (2.9)	(12)

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-6

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES
 ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0100 (0.0202)	1.0% (2.0)	(85)	0.1228** (0.0338)	13.1% (3.8)	(55)
Did not meet requirements at enrollment	0.0328 (0.0425)	3.3 (4.4)	(20)	0.2375** (0.0568)	26.8 (7.2)	(20)
Met requirements at enrollment	0.0045 (0.0220)	0.5 (2.2)	(65)	0.0250 (0.0385)	2.5 (4.0)	(35)
ALL MOVERS	0.0115 (0.0423)	1.2 (4.3)	(30)	0.1276* (0.0474)	13.6 (5.4)	(37)
Did not meet requirements at enrollment	[-0.0266] (0.0770)	[-2.6] (7.5)	(9)	0.2091** (0.0671)	23.3 (8.3)	(18)
Met requirements at enrollment	0.0326 (0.0510)	3.3 (5.3)	(21)	-0.0035 (0.0678)	-0.3 (6.8)	(19)
ALL STAYERS	-0.0013 (0.0145)	-0.1 (1.4)	(55)	0.0393† (0.0215)	4.0 (2.2)	(18)
Did not meet requirements at enrollment	[-0.0017] (0.0286)	[-0.2] (2.9)	(11)	[0.0439] (0.0628)	[4.5] (6.6)	(2)
Met requirements at enrollment	-0.0082 (0.0197)	-0.8 (2.0)	(44)	0.0290 (0.0240)	2.9 (2.5)	(16)

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-7

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES
 ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0310 (0.0239)	3.1% (2.5)	(53)	0.1900** (0.0381)	20.9% 4.6	(41)
Did not meet requirements at enrollment	0.0821* (0.0397)	.8.6 (4.3)	(23)	0.2725** (0.0514)	31.3 (6.8)	(25)
Met requirements at enrollment	-0.0074 (0.0270)	-0.7 (2.7)	(30)	0.0413 (0.0502)	4.2 (5.2)	(16)
ALL MOVERS	0.0794† (0.0442)	8.3 (4.8)	(26)	0.1458** (0.0484)	15.7 (5.6)	(35)
Did not meet requirements at enrollment	0.1204† (0.0596)	12.8 (6.7)	(16)	0.2074** (0.0590)	23.0 (7.3)	(25)
Met requirements at enrollment	[0.0140] (0.0637)	[1.4] (6.5)	(10)	[-0.0319] (0.0803)	[-3.1] (7.8)	(10)
ALL STAYERS	-0.0252 (0.0189)	-2.5 (1.8)	(27)	[0.0206] (0.0353)	[2.1] (3.6)	(6)
Did not meet requirements at enrollment	[-0.0143] (0.0353)	[-1.4] (3.5)	(7)	-- --	-- --	(0)
Met requirements at enrollment	-0.0332 (0.0238)	-3.3 (2.3)	(20)	[0.0088] (0.0350)	[0.9] (3.5)	(6)

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-8
ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN
HOUSING SERVICES ABOVE NORMAL FOR UNCONSTRAINED HOUSEHOLDS AT
TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
ALL HOUSEHOLDS	0.0334 (0.0242)	3.4% (2.5)	(52)	0.1190** (0.0419)	12.6% (4.7)	(33)
Did not meet Minimum Standards requirements at enrollment	0.0366 (0.0295)	3.7 (3.1)	(44)	0.1166* (0.0485)	12.4 (5.5)	(25)
Did not meet Minimum Rent Low requirements at enrollment	0.0189 (0.0430)	1.9 (4.4)	(23)	0.1948** (0.0673)	21.5 (8.2)	(17)
Did not meet Minimum Rent High requirements at enrollment	0.0467 (0.0322)	4.8 (3.4)	(37)	0.1686** (0.0485)	18.4 (5.8)	(26)
Met Minimum Standards requirements at enrollment	[0.0176] (0.0473)	[1.8] (4.8)	(8)	[0.1203] (0.0711)	[12.8] (8.0)	(8)
Met Minimum Rent Low requirements at enrollment	0.0491 (0.0292)	5.0 (3.1)	(29)	0.0443 (0.0485)	4.5 (5.1)	(16)
Met Minimum Rent High requirements at enrollment	[0.0056] (0.0349)	[0.6] (3.5)	(15)	[-0.0617] (0.0619)	[-6.0] (5.8)	(7)
ALL MOVERS	0.0884† (0.0505)	9.2 (5.5)	(19)	0.1256† (0.0634)	13.4 (7.2)	(18)
Did not meet Minimum Standards requirements at enrollment	0.1075† (0.0604)	11.3 (6.7)	(18)	(0.0839) (0.0688)	[8.8] (7.5)	(15)
Did not meet Minimum Rent Low requirements at enrollment	[0.0781] (0.1043)	[8.1] (11.4)	(7)	[0.1926]† (0.1008)	[21.2] (12.3)	(9)
Did not meet Minimum Rent High requirements at enrollment	[0.1406]† (0.0730)	[15.1] (8.4)	(12)	[0.1504]* (0.0688)	[16.2] (8.0)	(15)
Met Minimum Standards requirements at enrollment	[-0.0876] (0.1564)	[-8.4] (14.6)	(1)	[0.2508] (0.1399)	[28.5] (18.2)	(3)
Met Minimum Rent Low requirements at enrollment	[0.1387]* (0.0586)	[14.9] (6.7)	(12)	[0.0377] (0.0789)	[3.8] (8.2)	(9)
Met Minimum Rent High requirements at enrollment	[0.0571] (0.0677)	[5.9] (7.2)	(7)	[-0.1232] (0.1080)	[-11.6] (9.6)	(3)
ALL STAYERS	0.0010 (0.0174)	0.1 (1.7)	(33)	[0.0648]* (0.0232)	[6.7] (2.5)	(15)
Did not meet Minimum Standards requirements at enrollment	-0.0205 (0.0246)	-2.0 (2.4)	(26)	[0.1179]* (0.0465)	[12.5] (5.2)	(10)
Did not meet Minimum Rent Low requirements at enrollment	-0.0038 (0.0317)	-0.4 (3.2)	(16)	[0.1992]* (0.0615)	[22.0] (7.5)	(8)
Did not meet Minimum Rent High requirements at enrollment	0.0019 (0.0269)	0.2 (2.7)	(25)	[0.1564]** (0.0498)	[16.9] (5.8)	(11)
Met Minimum Standards requirements at enrollment	[0.0332] (0.0490)	[3.4] (5.1)	(7)	[0.0305] (0.0766)	[3.1] (7.9)	(5)
Met Minimum Rent Low requirements at enrollment	-0.0159 (0.0304)	-1.6 (3.0)	(17)	[0.0412] (0.0501)	[4.2] (5.2)	(7)
Met Minimum Rent High requirements at enrollment	[-0.0383] (0.0371)	[-3.8] (3.6)	(8)	[-0.0204] (0.0726)	[-2.0] (7.1)	(4)

SAMPLE Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE Brackets indicate amounts based on 15 or fewer observations

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-9

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR MINIMUM STANDARDS
HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0042 (0.0229)	(102)	-0.0311 (0.0379)	(71)
Did not meet requirements at enrollment	-0.0122 (0.0250)	(98)	-0.0053 (0.0422)	(66)
ALL MOVERS	0.0091 (0.0439)	(42)	-0.0918 (0.0587)	(34)
Did not meet requirements at enrollment	-0.0067 (0.0484)	(38)	-0.0490 (0.0664)	(29)
ALL STAYERS	-0.0268 (0.0206)	(60)	0.0019 (0.0530)	(37)
Did not meet requirements at enrollment	-0.0314 (0.0220)	(60)	0.0089 (0.0592)	(37)

SAMPLE: Minimum Standards households active and not meeting requirements 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 and payments file.

Table IX-10
 ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR MINIMUM RENT LOW
 HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.1226* (0.0466)	(19)	0.0878 (0.0642)	(21)
Did not meet requirements at enrollment	-0.1257* (0.0482)	(19)	0.1078 (0.0710)	(19)
ALL MOVERS	[-0.4623] (0.1666)	(2)	[0.0484] (0.1126)	(8)
Did not meet requirements at enrollment	[-0.4737] (0.1682)	(2)	[0.1446] (0.1364)	(6)
ALL STAYERS	0.0001 (0.0350)	(17)	[0.2581]** (0.0820)	(13)
Did not meet requirements at enrollment	-0.0024 (0.0362)	(17)	[0.2650]* (0.0901)	(13)

SAMPLE: Minimum Rent Low households active and not meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-11
 ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR MINIMUM RENT HIGH
 HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0689* (0.0300)	(50)	0.0057 (0.0454)	(46)
Did not meet requirements at enrollment	-0.0781* (0.0315)	(50)	-0.0026 (0.0494)	(44)
ALL MOVERS	[-0.1513]† (0.0810)	(9)	0.0273 (0.0702)	(22)
Did not meet requirements at enrollment	[-0.1786]† (0.0831)	(9)	-0.0045 (0.0769)	(20)
ALL STAYERS	-0.0284 (0.0236)	(41)	0.0347 (0.0635)	(24)
Did not meet requirements at enrollment	-0.0348 (0.0249)	(41)	0.0417 (0.0701)	(24)

SAMPLE: Minimum Rent High households active and not meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

Table IX-12

SUMMARY TABLE INDICATING SIGNIFICANCE OF BIAS ON HOUSING EXPENDITURES COMPUTED USING HOUSING GAP HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	NS	0.05	0.05	NS	NS	NS
Did not meet requirements at enrollment	NS	0.05	0.05	NS	NS	NS
ALL MOVERS	NS	[NS]	[0.10]	NS	[NS]	NS
Did not meet requirements at enrollment	NS	[NS]	[0.10]	NS	[NS]	NS
ALL STAYERS	NS	NS	NS	NS	[0.01]	NS
Did not meet requirements at enrollment	NS	NS	NS	NS	[0.05]	NS

SAMPLE: Housing Gap households active and not meeting requirements 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 and payments file.

NOTE: Brackets indicate estimates based on 15 or fewer observations. Significance level is of estimated effect.

NS: Not significant at the 0.10 level.

Table IX-13

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.037 (0.038)	3.8% (3.9)	0.126** (0.045)	13.4% (5.1)
Did not meet requirements at enrollment	0.046 (0.063)	4.7 (6.6)	0.206** (0.062)	22.9 (7.6)
ALL MOVERS	0.090 (0.077)	9.4 (8.5)	0.118* (0.059)	12.5 (6.7)
Did not meet requirements at enrollment	0.085 (0.090)	8.9 (9.9)	0.207** (0.073)	23.0 (9.0)
ALL STAYERS	-0.016 (0.033)	-1.6 (3.3)	0.033 (0.062)	3.4 (6.4)
Did not meet requirements at enrollment	-0.095 (0.073)	-9.1 (6.7)	0.055 (0.117)	5.7 (12.5)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: See Table IX-1 for sample sizes and for results for households that met requirements at enrollment.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-14

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
 ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND
 CORRECTED USING MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.027 (0.026)	2.7% (2.7)	0.206** (0.042)	22.9% (5.2)
Did not meet requirements at enrollment	0.069 (0.057)	7.1 (6.1)	0.494** (0.081)	63.9 (13.3)
ALL MOVERS	0.043 ^a (0.045)	4.4 ^a (4.7)	0.173** ^a (0.051)	18.9 ^a (6.1)
Did not meet requirements at enrollment	[0.031] ^a (0.073)	[3.1] ^a (7.6)	0.364** ^a (0.080)	43.9 ^a (11.6)
ALL STAYERS	-0.002 (0.025)	-0.2 (2.5)	0.217** ^a (0.068)	24.2 ^a (8.5)
Did not meet requirements at enrollment	[0.095] (0.070)	[10.0] (7.7)	[1.284]* ^a (0.402)	[261.1] ^a (164.0)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-2 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Minimum Rent Low household observations.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-15

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.079† (0.040)	8.2% (4.3)	0.309** (0.064)	36.2% (8.7)
Did not meet requirements at enrollment	0.116 (0.078)	12.3 (8.8)	0.425** (0.098)	53.0 (15.1)
ALL MOVERS	0.127* ^a (0.055)	13.5 ^a (6.3)	0.298** (0.065)	34.7 (8.8)
Did not meet requirements at enrollment	0.175* ^a (0.078)	19.1 ^a (9.3)	0.361** (0.086)	43.5 (12.4)
ALL STAYERS	0.009 (0.046)	0.9 (4.6)	[0.193] (0.262)	[21.3] (33.5)
Did not meet requirements at enrollment	[-0.034] (0.140)	[-3.3] (13.7)	--	--

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-3 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Minimum Rent High observations.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-16

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0043 (0.0140)	(211)	-0.0172 (0.0193)	(166)
Did not meet requirements at enrollment	-0.0045 (0.0141)	(204)	-0.0237 (0.0199)	(156)
ALL MOVERS	0.0090 (0.0245)	(76)	-0.0204 (0.0281)	(80)
Did not meet requirements at enrollment	0.0157 (0.0263)	(69)	-0.0272 (0.0310)	(70)
ALL STAYERS	-0.0115 (0.0124)	(135)	0.0090 (0.0188)	(86)
Did not meet requirements at enrollment	-0.0115 (0.0124)	(135)	0.0090 (0.0188)	(86)

SAMPLE: Control households active and not meeting Minimum Standards requirements 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 and payments file.

Table IX-17

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.1196** (0.0201)	(73)	-0.1055** (0.0223)	(124)
Did not meet requirements at enrollment	-0.1062** (0.0186)	(69)	-0.0886** (0.0232)	(115)
ALL MOVERS	[-0.3207]** (0.0653)	(13)	-0.1844** (0.0397)	(49)
Did not meet requirements at enrollment	[-0.3070]** (0.0735)	(9)	-0.1558** (0.0472)	(40)
ALL STAYERS	-0.0185 (0.0142)	(60)	-0.0044 (0.0218)	(75)
Did not meet requirements at enrollment	-0.0185 (0.0142)	(60)	-0.0044 (0.0218)	(75)

SAMPLE: Control households active and not meeting Minimum Rent Low requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

** Significant at the 0.01 level.

Table IX-18

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0646** (0.0147)	(161)	-0.0514** (0.0194)	(173)
Did not meet requirements at enrollment	-0.0627** (0.0149)	(159)	-0.0476* (0.0196)	(168)
ALL MOVERS	-0.1385** (0.0336)	(40)	-0.0861** (0.0311)	(80)
Did not meet requirements at enrollment	-0.1339** (0.0352)	(38)	-0.0794* (0.0324)	(75)
ALL STAYERS	-0.0201 (0.0142)	(121)	-0.0017 (0.0182)	(93)
Did not meet requirements at enrollment	-0.0201 (0.0142)	(121)	-0.0017 (0.0182)	(93)

SAMPLE: Control households active and not meeting Minimum Rent High requirements 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 and payments file.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-19

SUMMARY TABLE INDICATING SIGNIFICANCE OF BIAS ON HOUSING EXPENDITURES COMPUTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	NS	0.01	0.01	NS	0.01	0.01
Did not meet requirements at enrollment	NS	0.01	0.01	NS	0.01	0.05
ALL MOVERS	NS	[0.01]	0.01	NS	0.01	0.01
Did not meet requirements at enrollment	NS	[0.01]	0.01	NS	0.01	0.05
ALL STAYERS	NS	NS	NS	NS	NS	NS
Did not meet requirements at enrollment	NS	NS	NS	NS	NS	NS

SAMPLE: Control households active and not meeting requirements 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 and payments file.

NOTE: Brackets indicate estimates based on 15 or fewer observations. Significance level is of mean residual of normal rent.

NS: Not significant at the 0.10 level.

Table IX-20

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET THE REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.037 (0.031)	3.8% (3.2)	0.137** (0.037)	14.7% (4.2)
Did not meet requirements at enrollment	0.063 (0.046)	6.5 (4.9)	0.187** (0.048)	20.6 (5.8)
ALL MOVERS	0.090 (0.059)	9.4 (6.5)	0.163** (0.050)	17.7 (5.9)
Did not meet requirements at enrollment	0.117+ (0.067)	12.4 (7.6)	0.222** (0.061)	24.9 (7.6)
ALL STAYERS	0.001 (0.028)	0.1 (2.8)	0.040 (0.035)	4.1 (3.6)
Did not meet requirements at enrollment	-0.038 (0.051)	-3.7 (4.9)	0.055 (0.053)	5.7 (5.6)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: See Table IX-1 for sample sizes and for results for households that met requirements at enrollment.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table IX-21

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES
 ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS
 AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND
 CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET THE REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.027 (0.025)	2.8% (2.5)	0.146** (0.038)	15.7% (4.4)
Did not meet requirements at enrollment	0.083† (0.047)	8.7 (5.1)	0.351** (0.065)	42.0 (9.3)
ALL MOVERS	0.050 ^a (0.044)	5.1 ^a (4.6)	0.135** (0.048)	14.5 (5.5)
Did not meet requirements at enrollment	[0.053] ^a (0.070)	[5.4] ^a (7.4)	0.286** (0.073)	33.1 (9.8)
ALL STAYERS	-0.007 (0.023)	-0.7 (2.3)	0.037 (0.041)	3.8 (4.3)
Did not meet requirements at enrollment	[0.072] (0.052)	[7.5] (5.6)	[0.117] (0.135)	[12.4] (15.4)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-2 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Control household observations.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table IX-22

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET THE REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.082* (0.033)	8.5% (3.6)	0.250** (0.049)	28.4% (6.3)
Did not meet requirements at enrollment	0.147* (0.055)	15.8 (6.4)	0.355** (0.068)	42.6 (9.7)
ALL MOVERS	0.131* (0.050)	14.0 (5.7)	0.234** (0.055)	26.4 (7.0)
Did not meet requirements at enrollment	0.198** (0.067)	21.9 (8.2)	0.308** (0.071)	36.1 (9.7)
ALL STAYERS	0.021 (0.037)	2.1 (3.8)	[0.047] (0.097)	[4.8] (10.2)
Did not meet requirements at enrollment	[0.041] (0.093)	[4.2] (9.8)	--	--

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-3 for sample sizes and for results for households that met requirements at enrollment.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-23

ESTIMATED EFFECT ON HOUSING SERVICES FOR
MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS
REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0338† (0.0186)	(91)	-0.1089** (0.0315)	(58)
Did not meet requirements at enrollment	-0.0377† (0.0203)	(88)	-0.1035** (0.0353)	(53)
ALL MOVERS	-0.1188** (0.0432)	(33)	-0.1901** (0.0534)	(25)
Did not meet requirements at enrollment	-0.1429** (0.0492)	(30)	-0.1958** (0.0627)	(20)
ALL STAYERS	-0.0218 (0.0139)	(58)	0.0041 (0.0184)	(33)
Did not meet requirements at enrollment	-0.0094 (0.0142)	(58)	0.0057 (0.0201)	(33)

SAMPLE: Minimum Standards households active and not meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table IX-24

ESTIMATED EFFECT ON HOUSING SERVICES FOR
MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW
REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0269 (0.0377)	(17)	-0.0324 (0.0510)	(19)
Did not meet requirements at enrollment	-0.0244 (0.0391)	(17)	-0.0222 (0.0570)	(17)
ALL MOVERS	[-0.0817] (0.1484)	(2)	[-0.0210] (0.1015)	(6)
Did not meet requirements at enrollment	[-0.0866] (0.1554)	(2)	[0.0982] (0.1314)	(4)
ALL STAYERS	[-0.0113] (0.0244)	(15)	[00.0051] (0.0272)	(13)
Did not meet requirements at enrollment	[-0.0066] (0.0240)	(15)	[-0.0035] (0.0292)	(13)

SAMPLE: Minimum Rent Low households active and not meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

Table IX-25

ESTIMATED EFFECT ON HOUSING SERVICES FOR
MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH
REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0656* (0.0251)	(41)	-0.0632† (0.0359)	(42)
Did not meet requirements at enrollment	-0.0666* (0.0265)	(41)	-0.0523 (0.0389)	(41)
ALL MOVERS	[-0.2113]† (0.0872)	(6)	-0.1840** (0.0611)	(18)
Did not meet requirements at enrollment	[-0.2199]† (0.0925)	(6)	-0.1701* (0.0668)	(17)
ALL STAYERS	-0.0043 (0.0166)	(35)	0.0322 (0.0209)	(24)
Did not meet requirements at enrollment	-0.0020 (0.0167)	(35)	0.0338 (0.0227)	(24)

SAMPLE: Minimum Rent High households active and not meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-26

SUMMARY TABLE INDICATING SIGNIFICANCE OF BIAS ON HOUSING SERVICES COMPUTED USING
HOUSING GAP HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	0.10	NS	0.05	0.01	NS	0.10
Did not meet requirements at enrollment	0.10	NS	0.05	0.01	NS	NS
ALL MOVERS	0.01	[NS]	0.10	0.01	[NS]	0.01
Did not meet requirements at enrollment	0.01	[NS]	0.10	0.01	[NS]	0.05
ALL STAYERS	NS	[NS]	NS	NS	[NS]	NS
Did not meet requirements at enrollment	NS	[NS]	NS	NS	[NS]	NS

SAMPLE: Housing Gap households active and not meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate estimates based on 15 or fewer observations. Significance level is of estimated effect.

NS: Not significant at the 0.10 level.

Table IX-27

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	0.0027 (0.0297)	0.3% (3.0)	0.0480 (0.0400)	4.9% (4.2)
Did not meet requirements at enrollment	-0.0061 (0.0516)	-0.6 (5.1)	0.0450 (0.0538)	4.6 (5.6)
ALL MOVERS	-0.0938 (0.0652)	-9.0 (6.0)	-0.0097 (0.0578)	-1.0 (5.7)
Did not meet requirements at enrollment	-0.1333 (0.0802)	-12.5 (7.1)	0.0027 (0.0693)	0.3 (7.0)
ALL STAYERS	-0.0076 (0.0219)	-0.8 (2.2)	0.0598* (0.0253)	6.2 (2.7)
Did not meet requirements at enrollment	0.0144 (0.0488)	1.5 (5.0)	0.0485 (0.0299)	5.0 (3.1)

SAMPLE: Minimum Standards 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: See Table IX-5 for sample sizes and for results for households that met requirements at enrollment.

* Significant at the 0.05 level.

Table IX-28

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	0.0046 (0.0216)	0.5% (2.2)	0.1116** (0.0381)	11.8% (4.3)
Did not meet requirements at enrollment	0.0121 (0.0540)	1.2 (5.5)	0.2164* (0.0785)	24.2 (9.8)
ALL MOVERS	0.0061 ^a (0.0434)	0.6 ^a (4.4)	0.1242* ^a (0.0502)	13.2 ^a (5.7)
Did not meet requirements at enrollment	[-0.0458] ^a (0.0844)	[-4.5] ^a (8.1)	0.2309** ^a (0.0732)	26.0 ^a (9.3)
ALL STAYERS	-0.0044 ^a (0.0160)	-0.4 ^a (1.6)	0.0356 ^a (0.0291)	3.6 ^a (3.0)
Did not meet requirements at enrollment	[-0.0107] ^a (0.0435)	[-1.1] ^a (4.3)	[0.0212] ^a (0.1999)	[2.1] ^a (21.0)

SAMPLE: Minimum Rent Low 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-6 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Minimum Rent Low household observations.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-29

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	-0.0197 (0.0308)	-2.0% (3.0)	0.1253* (0.0530)	13.3% (6.0)
Did not meet requirements at enrollment	-0.0366 (0.0617)	-3.6 (6.0)	0.1867* (0.0819)	20.5 (9.9)
ALL MOVERS	0.0306 ^a (0.0486)	3.1 ^a (5.0)	0.0512 (0.0577)	5.3 (6.1)
Did not meet requirements at enrollment	0.0379 ^a (0.0690)	3.9 ^a (7.2)	0.0917 (0.0745)	9.6 (8.2)
ALL STAYERS	-0.0308 (0.0286)	-3.0 (2.8)	[0.1494] (0.0907)	[16.1] (10.6)
Did not meet requirements at enrollment	[-0.0243] (0.0907)	[-2.4] (8.9)	--	--

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-7 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Minimum Rent High household observations.

* Significant at the 0.05 level.

Table IX-30

ESTIMATED EFFECT ON HOUSING SERVICES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0099 (0.0113)	(183)	-0.0489** (0.0156)	(147)
Did not meet requirements at enrollment	-0.0081 (0.0116)	(178)	-0.0514** (0.0160)	(142)
ALL MOVERS	-0.0220 (0.0234)	(66)	-0.0603* (0.0253)	(66)
Did not meet requirements at enrollment	-0.0148 (0.0251)	(61)	-0.0638* (0.0270)	(61)
ALL STAYERS	0.0025 (0.0077)	(117)	-0.0031 (0.0100)	(81)
Did not meet requirements at enrollment	0.0025 (0.0077)	(117)	-0.0031 (0.0100)	(81)

SAMPLE: Control households active and not meeting Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-31

ESTIMATED EFFECT ON HOUSING SERVICES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0505** (0.0157)	(69)	-0.0533** (0.0187)	(117)
Did not meet requirements at enrollment	-0.0493** (0.0163)	(65)	-0.0559** (0.0190)	(111)
ALL MOVERS	[-0.1219]† (0.0593)	(12)	-0.0736* (0.0335)	(47)
Did not meet requirements at enrollment	[-0.1116] (0.0885)	(8)	-0.0768* (0.0360)	(41)
ALL STAYERS	-0.0054 (0.0095)	(57)	-0.0011 (0.0113)	(70)
Did not meet requirements at enrollment	-0.0054 (0.0095)	(57)	-0.0011 (0.0113)	(70)

SAMPLE: Control households active and not meeting Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-32

ESTIMATED EFFECT ON HOUSING SERVICES FOR
CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
ALL HOUSEHOLDS	-0.0287* (0.0136)	(143)	-0.0235 (0.0163)	(160)
Did not meet requirements at enrollment	-0.0288* (0.0137)	(142)	-0.0250 (0.0164)	(158)
ALL MOVERS	-0.0487 (0.0374)	(36)	-0.0298 (0.0260)	(73)
Did not meet requirements at enrollment	-0.0503 (0.0384)	(35)	-0.0306 (0.0268)	(71)
ALL STAYERS	-0.0076 (0.0086)	(107)	0.0013 (0.0096)	(87)
Did not meet requirements at enrollment	-0.0076 (0.0086)	(107)	0.0013 (0.0096)	(87)

SAMPLE: Control households active and not meeting Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

* Significant at the 0.05 level.

Table IX-33

SUMMARY TABLE INDICATING SIGNIFICANCE OF BIAS ON HOUSING SERVICES COMPUTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS	MINIMUM STANDARDS HOUSEHOLDS	MINIMUM RENT LOW HOUSEHOLDS	MINIMUM RENT HIGH HOUSEHOLDS
ALL HOUSEHOLDS	NS	0.01	0.05	0.01	0.01	NS
Did not meet requirements at enrollment	NS	0.01	0.05	0.01	0.01	NS
ALL MOVERS	NS	[0.10]	NS	0.05	0.05	NS
Did not meet requirements at enrollment	NS	[NS]	NS	0.05	0.05	NS
ALL STAYERS	NS	NS	NS	NS	NS	NS
Did not meet requirements at enrollment	NS	NS	NS	NS	NS	NS

SAMPLE: Control households active and not meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate estimates based on 15 or fewer observations. Significance level is of mean residual of housing services index.

NS: Not significant at the 0.10 level.

Table IX-34

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	0.030 (0.024)	3.1% (2.5)	0.097** (0.033)	10.2% (3.7)
Did not meet requirements at enrollment	0.054 (0.039)	5.6 (4.1)	0.100* (0.042)	10.5 (4.7)
ALL MOVERS	0.016 (0.050)	1.7 (5.1)	0.074 (0.049)	7.6 (5.3)
Did not meet requirements at enrollment	0.027 (0.060)	2.7 (6.2)	0.091 (0.058)	9.5 (6.4)
ALL STAYERS	0.010 (0.017)	1.0 (1.7)	0.052* (0.020)	5.4 (2.1)
Did not meet requirements at enrollment	0.051 (0.032)	5.2 (3.4)	0.039 (0.024)	4.0 (2.5)

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: See Table IX-5 for sample sizes and for results for households that met requirements at enrollment.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-35

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	-0.000 (0.020)	-9.9% (2.0)	0.104** (0.034)	11.0% (3.8)
Did not meet requirements at enrollment	-0.009 (0.045)	-0.9 (4.4)	0.184** (0.060)	20.2 (7.2)
ALL MOVERS	0.003 ^a (0.042)	0.3 ^a (4.3)	0.116* (0.048)	12.3 (5.4)
Did not meet requirements at enrollment	[-0.051] ^a (0.080)	[-5.0] ^a (7.6)	0.192* (0.068)	21.2 (8.2)
ALL STAYERS	-0.003 (0.015)	-0.3 (1.5)	0.038 (0.023)	3.9 (2.4)
Did not meet requirements at enrollment	[-0.009] (0.031)	[-0.9] (3.1)	[0.037] (0.097)	[3.7] (10.1)

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-6 for sample sizes and for results for households that met requirements at enrollment.

a. Correction based on 15 or fewer Control household observations.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-36

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET REQUIREMENTS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	0.009 (0.026)	0.9% (2.6)	0.166** (0.042)	18.0% (4.9)
Did not meet requirements at enrollment	0.031 (0.047)	3.1 (4.8)	0.232** (0.058)	26.0 (7.3)
ALL MOVERS	0.068 (0.045)	7.1 (4.8)	0.130* (0.050)	13.9 (5.7)
Did not meet requirements at enrollment	0.102 (0.061)	10.7 (6.8)	0.187** (0.062)	20.5 (7.5)
ALL STAYERS	-0.035 (0.022)	-3.4 (2.1)	[0.026] (0.052)	[2.6] (5.4)
Did not meet requirements at enrollment	[-0.052] (0.056)	[-5.1] (5.3)	--	--

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate main effects based on 15 or fewer observations. See Table IX-7 for sample sizes and for results for households that met requirements at enrollment.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-37

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL COMPARING MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.015 (0.026)	1.5% (2.6)	0.003 (0.034)	0.3% (3.4)
Did not meet requirements at enrollment	0.031 (0.049)	3.1 (5.1)	0.060 (0.072)	6.2 (7.7)
Met requirements at enrollment	0.065 ^b (0.072)	6.7 (7.7)	-0.164 ^{†b} (0.086)	-15.2 (7.3)
ALL MOVERS	0.042 (0.049)	4.3 (5.1)	0.010 (0.046)	1.0 (4.7)
Did not meet requirements at enrollment	0.036 (0.082)	3.7 (8.5)	0.077 (0.096)	8.0 (10.4)
Met requirements at enrollment	[0.190] (---) ^c	[21.0] (--)	[-0.256] (0.138)	[-22.6] (10.9)
ALL STAYERS	0.009 (0.024)	0.9 (2.4)	-0.014 ^b (0.029)	-1.4 (2.9)
Did not meet requirements at enrollment	-0.023 (0.048)	-2.3 (4.7)	-0.017 ^b (0.067)	-1.7 (6.6)
Met requirements at enrollment	0.074 ^b (0.068)	7.6 (7.4)	-0.023 ^b (0.081)	-2.3 (8.0)

SAMPLE: Minimum Standards households active and meeting requirements and Unconstrained 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Standards observations.

a. No selection effect for Minimum Standards households. Effect represents increase in expenditures for Minimum Standards households above that for Unconstrained households.

b. Comparison based on 15 or fewer Unconstrained household observations.

c. Only 1 Unconstrained household observation.

† Significant at the 0.10 level.

Table IX-38

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL COMPARING MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.001 (0.039)	0.1% (3.9)	-0.002 (0.038)	-0.2% (3.8)
Did not meet requirements at enrollment	0.061 (0.067)	6.2 (7.2)	0.091 (0.099)	9.6 (10.9)
Met requirements at enrollment ^b	-0.010 (0.046)	-1.0 (4.6)	-0.047 (0.059)	-4.6 (5.7)
ALL MOVERS	0.014 ^c (0.044)	1.4 (4.5)	-0.030 (0.048)	-3.0 (4.7)
Did not meet requirements at enrollment	[0.027] ^{c, d} (0.120)	[2.7] (12.5)	0.016 ^d (0.128)	1.6 (13.1)
Met requirements at enrollment ^b	0.027 ^d (0.090)	2.8 (9.3)	-0.070 ^d (0.090)	-6.8 (8.5)
ALL STAYERS	-0.013 (0.023)	-1.3 (2.3)	-0.008 ^d (0.041)	-0.8 (4.1)
Did not meet requirements at enrollment	[0.057] (0.064)	[5.8] (6.8)	[0.025] (0.152)	[2.6] (15.8)
Met requirements at enrollment ^b	-0.013 (0.048)	-1.3 (4.7)	-0.022 ^d (0.059)	-2.2 (5.8)

SAMPLE: Minimum Rent Low households active and meeting requirements and Unconstrained 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Rent Low observations.

a. Estimates for Minimum Rent Low households corrected for selection bias using Control households that did not meet the Minimum Rent Low requirements at two years after enrollment. Effect represents increase in expenditures for Minimum Rent Low households above that for Unconstrained households.

b. No selection effect for Minimum Rent Low households.

c. Correction based on 15 or fewer Control household observations.

d. Comparison based on 15 or fewer Unconstrained household observations.

* Significant at the 0.05 level.

Table IX-39

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL COMPARING MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.056† (0.033)	5.8% (3.5)	0.102* (0.049)	10.7% (5.4)
Did not meet requirements at enrollment	0.100 (0.067)	10.5 (7.4)	0.155† (0.088)	16.8 (10.4)
Met requirements at enrollment ^b	0.059 (0.056)	6.1 (5.9)	0.088 ^c (0.080)	9.1 (8.8)
ALL MOVERS	0.095† (0.050)	10.0 (5.5)	0.069 (0.055)	7.1 (5.9)
Did not meet requirements at enrollment	0.100 ^c (0.097)	10.5 (10.8)	0.091 (0.104)	9.5 (11.4)
Met requirements at enrollment ^b	[0.110] ^c (0.114)	[11.7] (12.8)	[0.149] ^c (0.130)	[16.0] (15.3)
ALL STAYERS	0.016 (0.037)	1.6 (3.8)	[0.002] ^c (0.097)	[0.2] (9.8)
Did not meet requirements at enrollment	[0.033] (0.099)	[3.4] (10.3)	---	--
Met requirements at enrollment ^b	0.023 (0.051)	2.3 (5.2)	[0.009] ^c (0.088)	[0.9] (9.0)

SAMPLE: Minimum Rent High households active and meeting requirements and Unconstrained 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Rent High observations.

a. Estimates for Minimum Rent High households corrected for selection bias using Control households that did not meet the Minimum Rent High requirements at two years after enrollment. Effect represents increase in expenditures for Minimum Rent High households above that for Unconstrained households.

b. No selection effect for Minimum Rent High households.

c. Comparison based on 15 or fewer Unconstrained household observations.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

Table IX-40

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL COMPARING MINIMUM RENT LOW HOUSEHOLDS MEETING MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	-0.015 (0.036)	-1.5% (3.5)	-0.004 (0.038)	-0.4% (3.8)
Did not meet requirements at enrollment	0.011 (0.047)	1.1 (4.8)	0.139* (0.065)	14.9 (7.5)
Met requirements at enrollment ^b	0.013 (0.044)	1.3 (4.5)	-0.005 (0.051)	-0.5 (5.1)
ALL MOVERS	-0.028 ^c (0.044)	-2.8 ^c (4.3)	-0.041 (0.048)	-4.0 (4.6)
Did not meet requirements at enrollment	[-0.042] ^c (0.070)	[-4.1] ^c (6.7)	0.046 (0.073)	4.7 (7.7)
Met requirements at enrollment ^b	0.149 ^d (0.114)	16.1 ^d (13.4)	0.012 ^d (0.082)	1.2 ^d (8.3)
ALL STAYERS	-0.021 (0.023)	-2.1 (2.3)	0.006 (0.041)	0.6 (4.1)
Did not meet requirements at enrollment	[0.078] (0.052)	[8.1] (5.6)	[0.079] (0.135)	[8.2] (14.8)
Met requirements at enrollment ^b	-0.054 (0.043)	-5.3 (4.1)	0.000 (0.056)	0.0 (5.6)

SAMPLE: Minimum Rent Low and Minimum Standards households active and meeting their own requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Rent Low observations.

a. No selection effect for Minimum Standards households; Minimum Rent Low corrected for selection bias using Control households that did not meet the Minimum Rent Low requirements at two years after enrollment. Effect represents increase in expenditures for Minimum Rent Low households above that for Minimum Standards households.

b. No selection effect for either Minimum Standards or Minimum Rent Low households.

c. Correction based on 15 or fewer Control observations.

d. Comparison based on 15 or fewer Minimum Standards observations.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table IX-41

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL, COMPARING MINIMUM RENT HIGH HOUSEHOLDS MEETING MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH MINIMUM STANDARDS HOUSEHOLDS MEETING MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
ALL HOUSEHOLDS	0.040 (0.033)	4.1% (3.4)	0.100* (0.049)	10.5% (5.4)
Did not meet requirements at enrollment	0.075 (0.055)	7.8 (5.9)	0.143* (0.068)	15.4 (7.9)
Met requirements at enrollment ^b	0.035 (0.049)	3.6 (5.1)	0.079 (0.060)	8.2 (6.5)
ALL MOVERS	0.053 (0.050)	5.4 (5.3)	0.058 (0.055)	6.0 (5.8)
Did not meet requirements at enrollment	0.104 (0.067)	11.0 (7.5)	0.068 (0.071)	7.0 (7.6)
Met requirements at enrollment ^b	[0.114] ^c (0.121)	[12.1] ^c (13.7)	[0.115] ^c (0.093)	[12.2] ^c (10.5)
ALL STAYERS	0.007 (0.037)	0.7 (3.7)	[0.016] (0.097)	[1.6] (9.9)
Did not meet requirements at enrollment	[0.047] (0.093)	[4.8] (9.8)	---	---
Met requirements at enrollment ^b	-0.010 (0.049)	-1.0 (4.9)	[0.024] (0.070)	[2.4] (7.2)

SAMPLE: Minimum Rent High and Minimum Standards households active and meeting their own requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Rent Low observations.

a. No selection effect for Minimum Standards households; Minimum Rent High corrected for selection bias using Control households that did not meet the Minimum Rent High requirements at two years after enrollment. Effect represents increase in expenditures for Minimum Rent High households above that for Minimum Standards households.

b. No selection effect for either Minimum Standards or Minimum Rent High households.

c. Comparison based on 15 or fewer Minimum Standards observations.

* Significant at the 0.05 level.

Table IX-42

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL COMPARING MINIMUM STANDARDS HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	-0.003 (0.034)	-0.3% (3.4)	-0.022 (0.053)	-2.2% (5.2)
Did not meet requirements at enrollment	0.017 (0.049)	1.7 (5.0)	-0.017 (0.064)	-1.7 (6.3)
Met requirements at enrollment	-0.010 ^b (0.054)	-1.0 ^b (5.4)	-0.041 ^b (0.084)	-4.0 ^b (8.1)
ALL MOVERS	-0.072 (0.071)	-6.9 (6.6)	-0.052 (0.080)	-5.1 (7.6)
Did not meet requirements at enrollment	-0.081 (0.085)	-7.8 (7.9)	0.007 (0.090)	0.7 (9.1)
Met requirements at enrollment	[0.099] ^b (0.178)	[10.4] ^b (20.1)	[-0.222] ^b (0.163)	[-19.9] ^b (13.3)
ALL STAYERS	0.009 (0.025)	0.9 (2.5)	-0.012 ^b (0.030)	-1.2 ^b (3.0)
Did not meet requirements at enrollment	0.071 [†] (0.041)	7.4 (4.4)	-0.079 ^b (0.052)	-7.6 ^b (4.8)
Met requirements at enrollment	-0.053 ^b (0.053)	-5.2 ^b (5.0)	[0.039] ^b (0.081)	[4.0] ^b (8.5)

SAMPLE: Minimum Standards households active and meeting requirements and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect for Minimum Standards households. Increase is that above comparable Unconstrained households.

b. Comparison based on 15 or fewer Unconstrained household observations.

† Significant at the 0.10 level.

Table IX-43

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL COMPARING MINIMUM RENT LOW HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	-0.033 (0.031)	-3.2% (3.0)	-0.015 (0.054)	-1.5% (5.3)
Did not meet requirements at enrollment	-0.028 (0.062)	-2.8 (6.0)	-0.011 (0.090)	-1.1 (9.0)
Met requirements at enrollment	-0.045 (0.037)	-4.4 (3.5)	-0.019 (0.062)	-1.9 (6.1)
ALL MOVERS	-0.085 (0.066)	-8.1 (6.1)	-0.010 (0.079)	-1.0 (7.9)
Did not meet requirements at enrollment	[-0.130] ^{b,c} (0.131)	[12.2] ^{b,c} (11.7)	-0.001 ^b (0.121)	-0.1 ^b (12.2)
Met requirements at enrollment	[-0.106] ^b (0.078)	[-10.1] ^b (7.0)	-0.041 ^b (0.084)	-4.0 ^b (8.1)
ALL STAYERS	-0.004 (0.023)	-0.4 (2.3)	-0.026 ^b (0.033)	-2.6 ^b (3.2)
Did not meet requirements at enrollment	[-0.005] (0.045)	[-0.5] (4.5)	[-0.082] ^b (0.115)	[-7.9] ^b (10.7)
Met requirements at enrollment	0.008 (0.036)	0.8 (3.6)	-0.012 ^b (0.056)	-1.2 ^b (5.5)

SAMPLE: Minimum Rent Low households active and meeting requirements and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimates for Minimum Rent Low households corrected using Control households that did not meet the requirements. Increase is that above comparable Unconstrained households.

b. Comparison based on 15 or fewer Unconstrained household observations.

c. Correction based on 15 or fewer Control household observations.

Table IX-44

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL COMPARING MINIMUM RENT HIGH HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT WITH UNCONSTRAINED HOUSEHOLDS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
ALL HOUSEHOLDS	-0.024 (0.036)	-2.4% (3.5)	0.047 (0.059)	4.8% (6.2)
Did not meet requirements at enrollment	-0.016 (0.057)	-1.6 (5.6)	0.063 (0.076)	6.5 (8.1)
Met requirements at enrollment	-0.013 ^b (0.044)	-1.3 ^b (4.3)	0.108 ^b (0.080)	11.4 ^b (9.0)
ALL MOVERS	-0.020 (0.068)	-2.0 (6.7)	0.005 (0.081)	0.5 (8.2)
Did not meet requirements at enrollment	-0.039 ^b (0.095)	-3.8 ^b (9.2)	0.036 ^b (0.092)	3.7 ^b (9.6)
Met requirements at enrollment	[-0.043] ^b (0.093)	[-4.2] ^b (9.0)	[0.091] ^b (0.102)	[9.5] ^b (11.3)
ALL STAYERS	-0.036 (0.028)	-3.5 (2.7)	[-0.039] ^b (0.057)	[-3.8] ^b (5.5)
Did not meet requirements at enrollment	[-0.054] (0.062)	[-5.3] (5.9)	--	--
Met requirements at enrollment	0.005 ^b (0.044)	0.5 ^b (4.4)	[0.029] ^b (0.081)	[2.9] ^b (8.4)

SAMPLE: Minimum Rent High households active and meeting requirements and Unconstrained 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. Estimates for Minimum Rent High households corrected using Control households that did not meet the requirements. Increase is that above comparable Unconstrained households.

b. Comparison based on 15 or fewer Unconstrained household observations.

APPENDIX X
DEMOGRAPHIC DIFFERENCES IN RESPONSE

This appendix presents the estimated experimental effects on rent and housing services for all Housing Gap households and on rent for households that did not meet requirements at enrollment. For each measure of housing consumption, three types of tables are included: estimates uncorrected for possible selection bias, estimates of the experimental effect for Control households that did not meet at enrollment, and experimental effects estimates for participants corrected for possible selection bias.

Table X-1

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM STANDARDS HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
Nonminority households	0.0268 (0.0282)	2.7% (2.9)	(66)	0.0813* (0.0362)	8.5% (3.9)	(63)
Black households	0.0954 (0.0642)	10.0 (7.1)	(18)	[0.5542]* (0.2270)	[74.1] (41.1)	(3)
Spanish American households	--	--	--	0.3350** (0.0825)	39.8 (11.6)	(19)
Nonelderly households	0.0654* (0.0307)	6.8 (3.3)	(60)	0.1550** (0.0396)	16.8 (4.6)	(66)
Elderly households	0.0002 (0.0456)	0.0 (4.6)	(24)	0.1573* (0.0600)	17.0 (7.0)	(24)
Poverty households	0.0697† (0.0387)	7.2 (4.2)	(44)	0.2417** (0.0637)	27.3 (8.1)	(29)
Nonpoverty households	0.0193 (0.0349)	1.9 (3.6)	(40)	0.0905* (0.0376)	9.5 (4.1)	(61)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-2

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT LOW HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
Nonminority households	0.0452† (0.0282)	4.6% (3.0)	(75)	0.1473** (0.0431)	15.9% (5.0)	(42)
Black households	0.0629 (0.0575)	6.5 (6.1)	(25)	[0.2373] (0.1836)	[26.8] (23.9)	(5)
Spanish American households	--	--	--	0.2162* (0.0796)	24.1 (9.9)	(21)
Nonelderly households	0.0425 (0.0279)	4.3 (2.9)	(79)	0.1850** (0.0444)	20.3 (5.4)	(49)
Elderly households	0.0803 (0.0473)	8.4 (5.1)	(22)	0.1831* (0.0654)	20.1 (7.9)	(19)
Poverty households	0.0854* (0.0344)	8.9 (3.8)	(63)	0.3287** (0.0624)	38.9 (8.7)	(30)
Nonpoverty households	0.0114 (0.0355)	1.1 (3.6)	(38)	0.0612 (0.0445)	6.3 (4.7)	(38)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-3

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	SAMPLE SIZE
Nonminority households	0.1388** (0.0311)	14.9% (3.6)	(51)	0.2585** (0.0486)	29.5% (6.3)	(30)
Black households	[0.1342] (0.1006)	[14.4] (11.6)	(6)	[0.4380] ⁺ (0.2508)	[55.0] (40.7)	(3)
Spanish American households	--	--	--	[0.3675]** (0.0987)	[44.4] (14.4)	(12)
Nonelderly households	0.1448** (0.0336)	15.6 (3.9)	(47)	0.2959** (0.0499)	34.4 (6.7)	(37)
Elderly households	[0.0968] (0.0643)	[10.2] (7.1)	(10)	[0.3195]** (0.0928)	[37.6] (12.9)	(8)
Poverty households	0.1857** (0.0489)	20.4 (5.9)	(24)	[0.4497]** (0.0836)	[56.8] (3.2)	(15)
Nonpoverty households	0.1058** (0.0376)	11.2 (4.2)	(33)	0.2114** (0.0492)	23.5 (6.1)	(30)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

⁺ Significant at the 0.10 level.

** Significant at the 0.01 level.

Table X-4

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0120 (0.0161)	(163)	0.0024 (0.0221)	(93)
Black households	0.0281 (0.0291)	(45)	-0.0607 (0.0763)	(18)
Spanish American households	--	--	-0.0366 (0.0394)	(51)
Nonelderly households	0.0082 (0.0152)	(177)	-0.0057 (0.0218)	(136)
Elderly households	-0.0690* (0.0333)	(34)	-0.0693† (0.0388)	(30)
Poverty households	-0.0071 (0.0222)	(94)	-0.0211 (0.0274)	(97)
Nonpoverty households	-0.0020 (0.0178)	(117)	-0.0116 (0.0261)	(69)

SAMPLE: Control households active and not meeting the Minimum Standards requirements 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

Table X-5

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL
HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.1271** (0.0257)	(46)	-0.0955** (0.0298)	(63)
Black households	-0.1057** (0.0339)	(26)	-0.1598† (0.0806)	(17)
Spanish American households	--	--	-0.0938* (0.0361)	(42)
Nonelderly households	-0.1098** (0.0235)	(56)	-0.0841** (0.0260)	(89)
Elderly households	-0.1520** (0.0380)	(17)	-0.1600** (0.0425)	(35)
Poverty households	-0.1162** (0.0202)	(43)	-0.0887** (0.0298)	(85)
Nonpoverty households	-0.1245** (0.0399)	(30)	-0.1421** (0.0280)	(39)

SAMPLE: Control households active and not meeting the Minimum Rent Low requirements 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-6

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL
HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0622** (0.0180)	(118)	-0.0506* (0.0234)	(97)
Black households	-0.0696** (0.0255)	(42)	-0.1237 (0.0761)	(19)
Spanish American households	--	--	-0.0287 (0.0372)	(53)
Nonelderly households	-0.0509** (0.0165)	(134)	-0.0226 (0.0224)	(129)
Elderly households	-0.1325** (0.0289)	(27)	-0.1361** (0.0360)	(44)
Poverty households	-0.0806** (0.0187)	(78)	-0.0357 (0.0278)	(105)
Nonpoverty households	-0.0495* (0.0225)	(83)	-0.0757** (0.0242)	(68)

SAMPLE: Control households active and not meeting the Minimum Rent High requirements 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 and payments file.

NOTE: Standard error in parentheses.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-7

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM STANDARDS HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	0.024 (0.028)	2.5% (2.9)	0.083* (0.039)	8.6% (4.2)
Black households	0.139† (0.079)	14.9 (9.1)	[0.433] (0.274)	[54.2] (44.6)
Spanish American households	--	--	0.283* (0.100)	32.7 (13.3)
Nonelderly households	0.075* (0.036)	7.8 (3.9)	0.151** (0.043)	16.3 (5.0)
Elderly households	-0.083 (0.061)	-8.0 (5.6)	0.094 (0.070)	9.8 (7.7)
Poverty households	0.059 (0.051)	6.1 (5.4)	0.206* (0.079)	22.9 (9.7)
Nonpoverty households	0.018 (0.038)	1.8 (3.9)	0.086* (0.039)	9.0 (4.2)

SAMPLE: Minimum Standards households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer Minimum Standards observations. For sample sizes see Table X-1. Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-8

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT LOW
HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR
PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET
MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	-0.009 (0.030)	-0.9% (3.0)	0.123** (0.044)	13.1% (5.0)
Black households	0.042 (0.058)	4.3 (6.1)	[0.173] (0.186)	[18.9] (22.8)
Spanish American households	--	--	0.181* (0.081)	19.8 (9.7)
Nonelderly households	0.027 (0.028)	2.8 (2.9)	0.166** (0.045)	18.1 (5.3)
Elderly households	0.025 (0.049)	2.5 (5.1)	0.099 (0.069)	10.4 (7.7)
Poverty households	0.058† (0.035)	5.9 (3.7)	0.281** (0.064)	32.5 (8.6)
Nonpoverty households	-0.001 (0.036)	-0.2 (3.6)	0.042 (0.045)	4.3 (4.7)

SAMPLE: Minimum Rent Low households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. For sample sizes see Table X-2. Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-9

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH
HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR
PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET
MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	0.048 (0.041)	5.0% (4.3)	0.221** (0.052)	24.8% (6.4)
Black households	[-0.051] (0.121)	[-5.0] (11.7)	[0.273] (0.270)	[31.4] (37.6)
Spanish American households	--	--	[0.322]* (0.115)	[38.0] (16.0)
Nonelderly households	0.108** (0.036)	11.4 (4.0)	0.275** (0.054)	31.7 (7.1)
Elderly households	[-0.115] (0.079)	[-10.9] (7.1)	[0.115] (0.107)	[12.2] (12.2)
Poverty households	0.092† (0.054)	9.6 (5.9)	[0.376]** (0.101)	[45.6] (14.9)
Nonpoverty households	0.073 (0.040)	7.6 (4.4)	0.174** (0.051)	19.0 (6.0)

SAMPLE: Minimum Rent High households active and meeting requirements 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. For sample sizes see Table X-3. Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-10

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM STANDARDS HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.0312 (0.0220)	3.2% (2.3)	(61)	0.0857* (0.0327)	8.9% (3.6)	(52)
Black households	0.0762 (0.0533)	7.9 (5.8)	(18)	[0.3868]† (0.1342)	47.2 (20.0)	(3)
Spanish American households	--	--	--	[0.2790]** (0.0859)	32.2 (11.4)	(13)
Nonelderly households	0.0510* (0.0250)	5.2 (2.6)	(57)	0.1563** (0.0383)	16.9 (4.5)	(49)
Elderly households	0.0278 (0.0343)	2.8 (3.5)	(22)	0.0929† (0.0455)	9.7 (5.0)	(22)
Poverty households	0.0514 (0.0324)	5.3 (3.4)	(41)	0.1811** (0.0555)	19.9 (6.7)	(25)
Nonpoverty households	0.0340 (0.0266)	3.5 (2.8)	(38)	0.1031** (0.0353)	10.9 (3.9)	(46)

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file. Standard error in parentheses.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-11

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM RENT LOW HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.0170 (0.0217)	1.7% (2.2)	(65)	0.1046** (0.0373)	11.0% (4.1)	(37)
Black households	-0.0104 (0.0527)	-1.0 (5.2)	(19)	[0.0471] (0.1199)	4.8 (12.7)	(4)
Spanish American households	--	--	--	[0.1745]† (0.0865)	19.1 (10.4)	(13)
Nonelderly households	-0.0037 (0.0241)	-0.4 (2.4)	(64)	0.1437** (0.0433)	15.5 (5.0)	(36)
Elderly households	0.0582 (0.0352)	6.0 (3.7)	(21)	0.0950† (0.0479)	10.0 (5.3)	(19)
Poverty households	0.0120 (0.0297)	1.2 (3.0)	(54)	0.2438** (0.0568)	27.6 (7.3)	(23)
Nonpoverty households	0.0102 (0.0288)	1.0 (2.9)	(31)	0.0320 (0.0401)	3.3 (4.1)	(32)

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file. Standard error in parentheses.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table X-12

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.0346 (0.0240)	3.5% (2.5)	(48)	0.1536** (0.0424)	16.8% (5.0)	(27)
Black households	[0.0090] (0.0902)	0.9 (9.2)	(5)	[0.0909] (0.1491)	9.5 (16.6)	(3)
Spanish American households	--	--	--	[0.2727]* (0.0918)	3.14 (12.1)	(11)
Nonelderly households	0.0322 (0.0274)	3.3 (2.8)	(44)	0.2068** (0.0455)	23.0 (5.6)	(32)
Elderly households	[0.0626] (0.0352)	6.5 (3.8)	(9)	[0.1206]† (0.0645)	12.8 (7.3)	(9)
Poverty households	0.0560 (0.0395)	5.8 (14.2)	(24)	[0.3341]** (0.0699)	39.7 (9.8)	(14)
Nonpoverty households	0.0134 (0.0295)	1.3 (3.0)	(29)	0.1044* (0.0431)	11.0 (4.8)	(27)

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file. Standard error in parentheses.

NOTE: Brackets indicate amounts based on 15 or fewer observations.

a. No selection effect.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-13

ESTIMATED EFFECT ON HOUSING SERVICES FOR ALL CONTROL
HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0073 (0.0130)	(140)	-0.0289 (0.0190)	(82)
Black households	-0.0205 (0.0242)	(41)	[-0.0587] (0.0442)	(14)
Spanish American households	--	--	-0.0707* (0.0326)	(47)
Nonelderly households	-0.0046 (0.0128)	(153)	-0.0422* (0.0180)	(121)
Elderly households	-0.0367 (0.0217)	(30)	-0.0801** (0.0275)	(26)
Poverty households	-0.0135 (0.0181)	(80)	-0.0627 (0.0207)	(87)
Nonpoverty households	-0.0071 (0.0145)	(103)	-0.0289 (0.0235)	(60)

SAMPLE: Control households active and not meeting the Minimum Standards requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-14

ESTIMATED EFFECT ON HOUSING SERVICES FOR ALL CONTROL
HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0521 (0.0205)	(43)	-0.0348 (0.0251)	(60)
Black households	-0.0492 (0.0258)	(25)	-0.0252 (0.0475)	(17)
Spanish American households	--	--	-0.0843 (0.0353)	(38)
Nonelderly households	-0.0328 (0.0183)	(52)	-0.0568 (0.0231)	(86)
Elderly households	-0.1045 (0.0274)	(17)	-0.0436 (0.0301)	(31)
Poverty households	-0.0473* (0.0225)	(40)	-0.0520* (0.0242)	(80)
Nonpoverty households	-0.0549* (0.0213)	(29)	-0.0560* (0.0283)	(37)

SAMPLE: Control households active and not meeting the Minimum Rent Low requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

* Significant at the 0.05 level.

Table X-15

ESTIMATED EFFECT ON HOUSING SERVICES FOR ALL CONTROL
HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS
AT TWO YEARS AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0329 (0.0139)	(102)	-0.0107 (0.0201)	(89)
Black households	-0.0184 (0.0339)	(40)	-0.0069 (0.0484)	(18)
Spanish American households	--	--	-0.0409 (0.0339)	(49)
Nonelderly households	-0.0185 (0.0157)	(118)	-0.0166 (0.0198)	(121)
Elderly households	-0.0771 (0.0222)	(25)	-0.0448 (0.0260)	(39)
Poverty households	-0.0222 (0.0231)	(66)	-0.0214 (0.0223)	(98)
Nonpoverty households	-0.0344* (0.0160)	(77)	-0.0268 (0.0231)	(62)

SAMPLE: Control households active and not meeting the Minimum Rent High requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTE: Standard error in parentheses.

* Significant at the 0.05 level.

Table X-16

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM STANDARDS
HOUSEHOLDS THAT MET MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR
PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET
MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
Nonminority households	0.023 (0.026)	2.4% (2.7)	0.068† (0.035)	7.1% (3.7)
Black households	0.048 (0.063)	4.9 (6.6)	[0.289] ^a (0.153)	33.5 (20.8)
Spanish American households	--	--	[0.159] (0.102)	17.3 (12.1)
Nonelderly households	.046 (0.029)	4.7 (3.0)	0.122** (0.041)	13.0 (4.6)
Elderly households	-0.019 (0.044)	-1.9 (4.3)	0.027 (0.051)	2.8 (5.2)
Poverty households	0.032 (0.041)	3.3 (4.3)	0.081 (0.065)	8.4 (7.0)
Nonpoverty households	0.028 (0.029)	2.8 (3.0)	0.092 (0.036)	9.6 (4.0)

SAMPLE: Minimum Standards households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer Minimum Standards observations. For sample sizes, see Table X-10. Standard error in parentheses.

a. Correction based on 15 or fewer observations.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table X-17

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM RENT LOW
HOUSEHOLDS THAT MET MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR
PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET
MINIMUM RENT LOW REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
Nonminority households	0.007 (0.022)	0.7% (2.2)	0.095* (0.038)	10.0% (4.2)
Black households	-0.023 (0.053)	-2.3 (5.2)	[0.041] (0.120)	4.2 (12.7)
Spanish American households	--	--	[0.129] (0.089)	13.8 (10.1)
Nonelderly households	-0.009 (0.024)	-0.9 (2.4)	0.128** (0.044)	13.6 (5.0)
Elderly households	0.023 (0.036)	2.4 (3.7)	0.074 (0.050)	7.7 (5.4)
Poverty households	0.001 (0.030)	0.1 (3.0)	0.212** (0.059)	23.6 (7.3)
Nonpoverty households	0.003 (0.029)	0.3 (2.9)	0.023 (0.040)	2.4 (4.1)

SAMPLE: Minimum Rent Low households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer Minimum Rent Low observations. For sample sizes, see Table X-11. Standard error in parentheses.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-18

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE
IN HOUSING SERVICES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH
HOUSEHOLDS THAT MET MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS
AFTER ENROLLMENT, BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR
PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET
MINIMUM RENT HIGH REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES
Nonminority households	0.018 (0.025)	1.8% (2.6)	0.147 (0.046)	15.8% (5.3)
Black households	[-0.046] (0.136)	-4.5 (13.2)	[0.086] (0.153)	9.0 (16.9)
Spanish American households	--	--	[0.210]† (0.106)	23.3 (13.1)
Nonelderly households	0.020 (0.029)	2.0 (3.0)	0.191** (0.049)	21.0 (6.0)
Elderly households	[-0.040] (0.046)	-3.9 (4.4)	[0.066] (0.072)	6.8 (7.7)
Poverty households	0.037 (0.044)	3.7 (4.6)	[0.294] (0.081)	[34.2] (11.0)
Nonpoverty households	-0.010 (0.032)	-1.0 (3.1)	0.088† (0.045)	9.3 (4.9)

SAMPLE: Minimum Rent High households active and meeting requirements 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, Housing Evaluation Forms, 1970 Census of Population, Baseline and Periodic Interviews, and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer Minimum Rent High observations. For sample sizes, see Table X-12. Standard error in parentheses.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table X-19

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.0338 (0.0398)	3.4% (4.1)	(37)	0.1308** (0.0512)	14.0% (5.8)	(41)
Black households	[0.2087]* (0.0810)	[23.2] (10.0)	(10)	[0.5687]* (0.2250)	[76.6] (41.3)	(3)
Spanish American households	--	--	--	[0.3969]** (0.0902)	[48.7] (13.5)	(15)
Nonelderly households	0.0965* (0.0401)	10.1 (4.4)	(38)	0.2135** (0.0498)	23.8 (6.2)	(50)
Elderly households	[-0.0326] (0.0737)	[-3.2] (7.2)	(9)	[0.1890]* (0.0852)	20.8 (10.3)	(13)
Poverty households	0.1226* (0.0518)	13.0 (5.9)	(24)	0.2600** (0.0726)	29.7 (9.5)	(23)
Nonpoverty households	0.0191 (0.0497)	1.9 (5.1)	(23)	0.1573** (0.0555)	17.0 (6.5)	(40)

SAMPLE: Minimum Standards households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-20

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.01432** (0.0573)	15.4% (6.6)	(16)	[0.4428]** (0.0877)	[55.7%] (13.7)	(11)
Black households	[0.1827]* (0.0776)	[20.0] (9.4)	(11)	[0.2544] (0.1826)	29.0 (24.1)	(5)
Spanish American households	--	--	--	[0.5553]** (0.1172)	[74.2] (20.6)	(8)
Nonelderly households	0.1337* (0.0508)	14.3 (5.8)	(22)	0.3946** (0.0706)	48.4 (10.5)	(21)
Elderly households	[0.2587]* (0.0942)	[29.5] (12.3)	(5)	[0.4940]* (0.1255)	[63.9] (20.8)	(5)
Poverty households	0.2151 (0.0584)	24.0 (7.3)	(18)	0.5195** (0.0897)	68.1 (15.2)	(14)
Nonpoverty households	0.0668 (0.0746)	6.9 (8.0)	(9)	0.2825** (0.0872)	32.6 (11.6)	(12)

SAMPLE: Minimum Rent Low households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-21

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS^a

HOUSEHOLD GROUP	PITTSBURGH			PHOENIX		
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN SERVICES	SAMPLE SIZE
Nonminority households	0.2814** (0.0504)	32.5% (6.7)	(21)	0.3943** (0.0724)	48.3% (10.8)	(17)
Black households	[0.2150]† (0.1200)	24.0 (15.0)	(4)	[0.9626] (0.3692)	[161.8] (107.1)	(1)
Spanish American households	--	--	--	[0.4193]** (0.1064)	[52.1] (16.3)	(10)
Nonelderly households	0.2484** (0.0493)	28.2 (6.3)	(23)	0.4063** (0.0654)	50.1 (9.8)	(25)
Elderly households	[0.4094] (0.1436)	50.6 (22.0)	(2)	[0.4904]† (0.1582)	[63.3] (26.3)	(3)
Poverty households	[0.3262]** (0.0648)	[38.6] (9.0)	(14)	0.4955** (0.0966)	64.1 (16.0)	(12)
Nonpoverty households	[0.2104]** (0.0678)	[23.4] (8.4)	(11)	0.3589** (0.0772)	43.2 (11.1)	(16)

SAMPLE: Minimum Rent High households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTE: Brackets indicate amounts based on 15 or fewer observations. Standard error in parentheses.

a. No selection effect.

† Significant at the 0.10 level.

** Significant at the 0.01 level.

Table X-22

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL HOUSEHOLDS
THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT OR AT
TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0135 (0.0163)	(157)	-0.0027 (0.0225)	(86)
Black households	0.0324 (0.0294)	(44)	-0.0892 (0.0833)	(16)
Spanish American households	--	--	-0.0384 (0.0401)	(50)
Nonelderly households	0.0104 (0.0154)	(171)	-0.0128 (0.0228)	(126)
Elderly households	-0.0816* (0.0318)	(33)	-0.0693† (0.0388)	(30)
Poverty households	-0.0080 (0.0225)	(92)	-0.0232 (0.0276)	(96)
Nonpoverty households	-0.0015 (0.0179)	(112)	-0.0244 (0.0274)	(60)

SAMPLE: Control households active and not meeting the Minimum standards requirements at enrollment or 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

Table X-23

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL HOUSEHOLDS
THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT OR AT
TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.1154** (0.0240)	(43)	-0.0744* (0.0306)	(58)
Black households	-0.0891** (0.0307)	(25)	-0.1527† (0.0855)	(16)
Spanish American households	--	--	-0.0802* (0.0366)	(40)
Nonelderly households	-0.0912** (0.0210)	(52)	-0.0625* (0.0272)	(81)
Elderly households	-0.1520** (0.0380)	(17)	-0.1509** (0.0427)	(34)
Poverty households	-0.1040** (0.0184)	(41)	-0.0704 (0.0310)	(79)
Nonpoverty households	-0.1093** (0.0374)	(28)	-0.1287** (0.0287)	(36)

SAMPLE: Control households active and not meeting the Minimum Rent Low requirements at enrollment or 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-24

ESTIMATED EFFECT ON HOUSING EXPENDITURES FOR ALL CONTROL HOUSEHOLDS
THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT OR AT
TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	ESTIMATED EFFECT	SAMPLE SIZE	ESTIMATED EFFECT	SAMPLE SIZE
Nonminority households	-0.0596** (0.0182)	(116)	-0.0413† (0.0236)	(93)
Black households	-0.0696** (0.0255)	(42)	-0.1407† (0.0784)	(18)
Spanish American households	--	--	-0.0287 (0.0372)	(53)
Nonelderly households	-0.0484** (0.0166)	(132)	-0.0199 (0.0228)	(125)
Elderly households	-0.1325** (0.0289)	(27)	-0.1283** (0.0360)	(43)
Poverty households	-0.0785 (0.0188)	(77)	-0.0378 (0.0280)	(104)
Nonpoverty households	-0.0479* (0.0228)	(82)	-0.0636* (0.0243)	(64)

SAMPLE: Control households active and not meeting the Minimum Rent High requirements at enrollment or 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 and payments file.

NOTE: Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-25

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT OR AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	0.008 (0.050)	0.8% (5.1)	0.129* (0.054)	13.7% (6.2)
Black households	[0.299]* (0.116)	[34.9] (15.7)	[0.420] (0.264)	[52.2] (42.4)
Spanish American households	--	--	[0.328]* (0.116)	[38.8] (16.2)
Nonelderly households	0.115* (0.049)	12.2 (5.5)	0.202** (0.054)	22.4 (6.6)
Elderly households	[-0.296]* (0.126)	[-25.6] (9.5)	[0.072] (0.108)	[7.4] (11.7)
Poverty households	0.101 (0.079)	10.7 (8.8)	0.308** (0.093)	36.1 (12.7)
Nonpoverty households	0.017 (0.056)	1.7 (5.7)	0.147** (0.057)	15.8 (6.6)

SAMPLE: Minimum Standards households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. See Table X-19 for sample sizes. Standard error in parentheses.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-26

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT LOW HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT LOW REQUIREMENTS AT ENROLLMENT OR AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	0.042 (0.061)	4.3% (6.4)	0.389 (0.090)	47.5% (13.4)
Black households	[0.142]† (0.079)	[15.3] (9.1)	[0.193] (0.186)	[21.3] (23.1)
Spanish American households	--	--	[0.475]** (0.123)	[60.8]* (20.0)
Nonelderly households	0.088 (0.052)	9.2 (5.7)	0.368** (0.072)	44.5 (10.4)
Elderly households	[0.016] (0.112)	[1.6] (11.5)	[0.192] (0.152)	[21.2] (18.7)
Poverty households	0.128* (0.060)	13.7 (6.9)	[0.444] (0.096)	[55.9] (15.0)
Nonpoverty households	[0.018 (0.076)	[1.8] (7.8)	[0.240]* (0.088)	[27.1] (11.2)

SAMPLE: Minimum Rent Low households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. See Table X-20 for sample sizes. Standard error in parentheses.

† Significant at the 0.10 level.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table X-27

ESTIMATED EXPERIMENTAL EFFECT AND MEDIAN PERCENTAGE INCREASE IN HOUSING EXPENDITURES ABOVE NORMAL FOR ALL MINIMUM RENT HIGH HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT BUT MET AT TWO YEARS AFTER ENROLLMENT BY DEMOGRAPHIC CHARACTERISTICS, CONTROLLING FOR PAYMENTS AND CORRECTED USING CONTROL HOUSEHOLDS THAT DID NOT MEET MINIMUM RENT HIGH REQUIREMENTS AT ENROLLMENT OR AT TWO YEARS AFTER ENROLLMENT

HOUSEHOLD GROUP	PITTSBURGH		PHOENIX	
	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES	EXPERIMENTAL EFFECT	PERCENTAGE CHANGE IN EXPENDITURES
Nonminority households	0.191** (0.058)	21.0% (7.0)	0.343** (0.078)	41.0% (11.0)
Black households	[-0.063] (0.158)	[-6.1] (15.1)	[0.400] (0.484)	[49.2] (86.3)
Spanish American households	--	--	[0.368]* (0.126)	[44.4] (18.4)
Nonelderly households	0.177 (0.055)	19.4 (6.6)	0.381** (0.072)	46.3 (10.5)
Elderly households	[-0.651] (0.272)	-47.8 (15.0)	[-0.023] (0.214)	[-2.3] (21.6)
Poverty households	[0.169]* (0.075)	18.4 (8.9)	[0.401]** (0.119)	49.3 (18.0)
Nonpoverty households	[0.115] (0.082)	12.1 (9.2)	0.303 (0.080)	35.4 (10.9)

SAMPLE: Minimum Rent High households active and meeting requirements at two years after enrollment that did not meet the requirements at 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 and payments file.

NOTES: Brackets indicate amounts based on 15 or fewer observations. See Table X-21 for sample sizes. Standard error in parentheses.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

APPENDIX XI

ALTERNATE ESTIMATION OF EXPERIMENTAL EFFECTS FOR MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET IN THEIR ENROLLMENT UNIT

Chapter 4 presented a methodology for estimating normal rent that was based solely on households' demographic characteristics (and income) at enrollment and at two years after enrollment. The method presented in this appendix takes account of, in addition, households' actual mobility and participation behavior over the experimental period. Section XI.1 presents a method of estimating the normal behavior of Minimum Standards households with respect to mobility and participation. Section XI.2 describes the methodology used to estimate normal rent for Housing Gap households that did not meet their housing requirements in their enrollment units. Section XI.3 then provides some empirical results on expenditures and on housing services.

XI.1 NORMAL MOBILITY AND PARTICIPATION

A household that did not meet its housing requirement at enrollment (and consequently did not receive a housing allowance payment) had five choices:

Stay in the enrollment unit and continue not to meet the requirements

Stay in the enrollment unit and upgrade the unit in order to meet the requirements

Move to a unit that also did not meet the requirements

Move, but to a unit that met the requirements

Drop out of the program.

Multinomial logit analysis (see Theil, 1969) is one method of characterizing household behavior in terms of these five choices. Multinomial logit analysis conceptualizes the problem as a series of comparisons between two alternatives: the probability of a household choosing A over B, assuming the other possibilities are irrelevant for the particular comparison under

investigation.¹ With five choices, four comparisons are possible, with one category serving as the reference group (the reference group used here is the first choice, stay and continue not to meet).² Further, only Minimum Standards households are used to illustrate this technique.

The determinants of household behavior included as independent variables are (1) variables included in an independent analysis of mobility (see MacMillan, 1978); (2) a variable measuring the distance from the housing requirement;³ and (3) experimental variables, including payment parameters.⁴ The estimated coefficients are presented in Table XI-1. Only the experimental variables are discussed here. The dummy variable representing Minimum Standards households was significantly greater than zero in six of the eight comparisons computed for the two sites (see Table XI-1). The increases in the probabilities, controlling for demographic characteristics and initial position, reflect expectations--the Minimum Standards housing allowance offer increased the probability of staying and meeting the Minimum Standards by 5 percentage points in Pittsburgh and 4 in Phoenix, and it increased the probability of moving and meeting the Minimum Standards by 8 percentage points in Pittsburgh and 15 in Phoenix (see Table XI-2).⁵ These increases

¹The assumption that the probability of choosing A over B would not change if additional choices were offered has been termed "independence of irrelevant alternatives." This assumption is important when the independent variables include measures of characteristics of the choices. The situation here focuses only on the characteristics of the decision makers. See McFadden (1974), for example, for a discussion of the implications of such an assumption in the case where choice characteristics are included.

²The estimated probabilities are normalized to sum to one.

³The distance was measured as C^* (the estimated cost of standard housing) minus the actual rent at enrollment.

⁴Only households voluntarily dropping out of the program are included; households involuntarily dropping out could not have made a free choice among the alternatives. See Chapter 2 for a list of reasons.

⁵It is currently not possible to estimate the significance of such changes in the estimated probability. It should be noted that these estimated effects are not directly comparable to the binomial logit estimates of Chapter 2 (Table 2-2). The binomial estimates were based on households that did not drop out. If the estimated probabilities in Table XI-2 are modified to refer only to households that did not drop out (by dividing by 1 minus the probability of dropping out), the implied probabilities are: (footnote continued on next page)

Table XI-1
 MULTINOMIAL LOGIT COEFFICIENTS OF MOBILITY, PARTICIPATION, AND ATTRITION FOR HOUSEHOLDS
 THAT DID NOT MEET THE MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT

1 STAY AND MEET MINIMUM STANDARDS REQUIREMENTS^a

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.702 (1.104)	0.64	-2.366 (1.197)	1.98*
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.008 (0.009)	0.90	0.009 (0.009)	1.03 [†]
Number of children	-0.082 (0.078)	1.05	0.085 (0.133)	0.64
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	-0.152 (0.237)	0.64	0.302 (0.301)	1.00
Years of education of household head	0.017 (0.051)	0.33	0.125 (0.041)	3.04**
Number of moves in three years prior to the experiment	0.068 (0.121)	0.56	0.024 (0.115)	0.21
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	-0.076 (0.139)	0.55	-0.359 (0.314)	1.14
C* minus enrollment rent	-0.024 (0.004)	5.32**	-0.015 (0.003)	4.50**
SOCIAL BONDS				
Positive feelings toward neighbors	-0.032 (0.046)	0.70	0.043 (0.087)	0.50
Length of residence in enrollment unit (in years)	0.002 (0.002)	0.95	-0.009 (0.003)	1.46
DISSATISFACTION				
Dissatisfied with unit at enrollment	-0.032 (0.406)	0.08	-0.113 (0.356)	0.31
Dissatisfied with neighborhood at enrollment	-0.599 (0.362)	1.66†	-0.382 (0.469)	0.62
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.906 (0.327)	2.78**	0.677 (0.302)	2.24*
PROGRAM FACTORS				
Minimum Standards household	1.360 (0.294)	4.63**	1.358 (0.306)	4.44**
CLVL ^b	0.723 (0.454)	1.60	0.358 (0.499)	0.72
BLVL ^b	-1.018 (0.420)	2.43*	-0.216 (0.434)	0.50
Unconstrained household	-0.276 (0.583)	0.47	1.010 (0.710)	1.42

(CONTINUED)

Table XI-1 (continued)

2 MOVE AND NOT MEET MINIMUM STANDARDS REQUIREMENTS^a

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	0.296 (0.784)	0.38	0.555 (0.520)	1.07
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.022 (0.006)	3.69**	-0.018 (0.006)	3.17**
Number of children	-0.043 (0.063)	0.68	-0.064 (0.055)	1.16
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.258 (0.168)	1.54	0.614 (0.236)	2.61*
Years of education of household head	-0.052 (0.039)	1.32	-0.001 (0.027)	0.02
Number of moves in three years prior to the experiment	0.207 (0.080)	2.60*	0.283 (0.071)	4.00**
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.391 (0.110)	3.54**	0.020 (0.078)	0.23
C* minus enrollment rent	-0.002 (0.003)	0.72	-0.000 (0.003)	0.02
SOCIAL BONDS				
Positive feelings toward neighbors	-0.080 (0.045)	1.75†	-0.230 (0.049)	4.70**
Length of residence in enrollment unit (in years)	-0.009 (0.002)	5.21**	-0.008 (0.002)	3.35**
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.848 (0.198)	4.29**	0.271 (0.236)	0.98
Dissatisfied with neighborhood at enrollment	-0.121 (0.213)	0.57	-0.352 (0.309)	1.14
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.045 (0.155)	0.29	0.948 (0.258)	3.67**
PROGRAM FACTORS				
Minimum Standards household	0.249 (0.228)	1.09	0.184 (0.226)	0.82
CLVL ^b	0.903 (0.503)	2.98**	-0.211 (0.356)	0.59
BLVL ^b	-0.446 (0.287)	1.55	0.051 (0.327)	0.16
Unconstrained household	0.262 (0.346)	0.76	0.915 (0.498)	1.84†

(CONTINUED)

Table XI-1 (continued)

3 MOVE AND MEET MINIMUM STANDARDS REQUIREMENTS^a

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-0.728 (1.143)	0.64	-0.722 (0.401)	1.80†
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.046 (0.011)	4.03**	-0.029 (0.006)	4.51**
Number of children	-0.122 (0.101)	1.21	-0.151 (0.083)	1.94†
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.627 (0.264)	2.37*	0.462 (0.266)	1.74†
Years of education of household head	-0.070 (0.065)	1.08	0.097 (0.028)	3.43**
Number of moves in three years prior to the experiment	0.260 (0.110)	2.35*	0.483 (0.067)	7.25**
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.404 (0.184)	2.20*	0.119 (0.108)	1.10
C* minus enrollment rent	-0.012 (0.005)	2.70**	-0.005 (0.003)	1.56
SOCIAL BONDS				
Positive feelings toward neighbors	-0.163 (0.067)	2.42*	-0.184 (0.051)	3.59**
Length of residence in enrollment unit (in years)	0.002 (0.002)	0.89	-0.003 (0.003)	0.95
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.354 (0.312)	1.14	0.287 (0.294)	0.97
Dissatisfied with neighborhood at enrollment	-0.128 (0.330)	0.39	-0.270 (0.330)	0.82
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	0.742 (0.339)	2.18*	0.456 (0.234)	1.95†
PROGRAM FACTORS				
Minimum Standards household	1.621 (0.324)	5.01**	1.302 (0.262)	4.98**
CLVL ^b	1.100 (0.453)	2.43*	0.217 (0.375)	0.58
BLVL ^b	-1.368 (0.404)	3.38**	-0.203 (0.346)	0.59
Unconstrained household	0.703 (0.538)	1.31	0.992 (0.554)	1.79†

(CONTINUED)

Table XI-1 (continued)

4. VOLUNTARILY DROP OUT OF PROGRAM^a

INDEPENDENT VARIABLES	PITTSBURGH		PHOENIX	
	COEFFICIENT	ASYMPTOTIC t-STATISTIC	COEFFICIENT	ASYMPTOTIC t-STATISTIC
CONSTANT	-1.256 (0.533)	2.36*	0.539 (0.404)	1.34
LIFE CYCLE FACTORS				
Age of household head (in decades)	-0.015 (0.005)	2.81**	-0.019 (0.005)	4.11**
Number of children	-0.219 (0.075)	2.90**	0.049 (0.059)	0.82
OTHER HOUSEHOLD CHARACTERISTICS				
Female head of household	0.066 (0.188)	0.35	0.099 (0.231)	0.43
Years of education of household head	0.048 (0.033)	1.45	0.084 (0.027)	3.09**
Number of moves in three years prior to the experiment	-0.020 (0.089)	0.23	0.298 (0.066)	4.51**
HOUSING AND NEIGHBORHOOD FACTORS				
Number of household members per bedroom	0.028 (0.140)	0.20	-0.096 (0.076)	1.27
C* minus enrollment rent	0.004 (0.003)	1.36	-0.002 (0.003)	0.76
SOCIAL BONDS				
Positive feelings toward neighbors	0.063 (0.043)	1.48	-0.274 (0.055)	4.98**
Length of residence in enrollment unit (in years)	-0.002 (0.001)	1.75†	-0.007 (0.003)	2.85**
DISSATISFACTION				
Dissatisfied with unit at enrollment	0.583 (0.254)	2.29*	0.111 (0.270)	0.41
Dissatisfied with neighborhood at enrollment	-0.101 (0.253)	0.40	-0.845 (0.312)	2.70**
PREDISPOSITION TO MOVE				
Would move with an increase in money available for rent	-0.242 (0.219)	1.10	0.618 (0.202)	3.05**
PROGRAM FACTORS				
Minimum Standards household	1.172 (0.243)	4.83**	0.705 (0.221)	3.18**
CLVL ^b	0.514 (0.346)	1.49	-0.157 (0.355)	0.44
BLVL ^b	-0.249 (0.323)	1.08	0.340 (0.325)	1.04
Unconstrained household	-0.260 (0.428)	0.61	0.117 (0.503)	0.23
Likelihood ratio (significance)		206.36 (0.01)		218.47 (0.01)
Observed proportions				
Stay and not meet Minimum Standards requirements		0.438		0.256
Stay and meet Minimum Standards requirements		0.079		0.081
Move and not meet Minimum Standards requirements		0.250		0.238
Move and meet Minimum Standards requirements		0.081		0.186
Voluntarily drop out of program		0.153		0.240
Coefficient of determination		0.145		0.146
Sample Size		(509)		(484)

SAMPLE Minimum Standards, Unconstrained, and Control households active at two years after enrollment that did not meet the Minimum Standards requirements at enrollment and households that did not meet requirements at enrollment and voluntarily dropped out of the program, 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 Interviews and payments file.

NOTE Standard error in parentheses

a Reference group (omitted) Control households that stayed and continued not to meet the Minimum Standards requirements

b See Table 5-6 for definition of these variables

† t-statistic significant at the 0.10 level

* t-statistic significant at the 0.05 level

** t-statistic significant at the 0.01 level

Table XI-2

MULTINOMIAL LOGIT PROBABILITIES OF MOBILITY, PARTICIPATION, AND
ATTRITION FOR HOUSEHOLDS THAT DID NOT MEET THE MINIMUM STANDARDS REQUIREMENTS AT ENROLLMENT

	STAY AND NOT MEET MINIMUM STANDARDS REQUIREMENTS	STAY AND MEET MINIMUM STANDARDS REQUIREMENTS	MOVE AND NOT MEET MINIMUM STANDARDS REQUIREMENTS	MOVE AND MEET MINIMUM STANDARDS REQUIREMENTS	VOLUNTARILY DROP OUT OF THE PROGRAM
PITTSBURGH					
Normal probability of each state ^a	0.55	0.04	0.25	0.04	0.13
Effect of the Housing Gap allowance ^{b,c}	-0.21	+0.05	-0.15	+0.08	+0.13
Effect of the Uncon- strained allowance ^b	-0.04	-0.01	+0.05	+0.03	-0.04
Sample size	(509)				
PHOENIX					
Normal probability of each state ^a	0.25	0.04	0.29	0.15	0.28
Effect of the Housing Gap allowance ^{b,c}	-0.11	+0.04	-0.10	+0.15	+0.03
Effect of the Uncon- strained allowance ^b	-0.11	+0.02	+0.12	+0.08	-0.10
Sample size	(484)				

SAMPLE: Minimum Standards, Unconstrained, and Control households active at two years after enrollment that did not meet the Minimum Standards requirements at enrollment and households that did not meet requirements at enrollment and voluntarily dropped out of the program, 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 Interviews, and payments file.

a. Evaluated at the mean of all independent variables.

b. Increase in the probability (percentage points).

c. At the center of the design.

are coupled with a decrease in the probabilities of not meeting and a 13 percentage point increase in the probability of dropping out in Pittsburgh.¹ The Unconstrained allowance had little effect on normal behavior in Pittsburgh, while in Phoenix it decreased the likelihood of both dropping out and staying and not meeting requirements and increased the probability of both moving and meeting requirements and moving and not meeting requirements. (The results of the binomial logit presented in Table 2-2 indicated that the net effect on meeting the Minimum Standards requirements for Unconstrained households was, however, insignificant.)

Payment Variations

Several of the independent variables representing payment variations were significant in the logit analysis (see Table XI-1). Table XI-3 presents the effect of these parameters on the probability of meeting the Minimum Standards requirement at two years for movers and nonmovers. Each effect is in the expected direction--both a higher basic payment level (C level) and a lower contribution rate (b level) led to a larger probability of meeting for both movers and nonmovers. The effect is largest for movers in Phoenix.

(footnote continued from previous page)

	PITTSBURGH			PHOENIX		
	MINIMUM STANDARDS HOUSEHOLDS	CONTROL HOUSEHOLDS	DIFFERENCE	MINIMUM STANDARDS HOUSEHOLDS	CONTROL HOUSEHOLDS	DIFFERENCE
Stayed and met Minimum Standards requirements	0.119	0.042	0.077	0.107	0.048	0.059
Moved and met Minimum Standards requirements	0.153	0.041	0.112	0.421	0.202	0.219
Total that met (Multinomial Logit)	0.272	0.083	0.189	0.528	0.250	0.278
Total that met (Binomial Logit)	0.298	0.096	0.202	0.523	0.241	0.282

Thus both methods yield similar estimates for households that did not drop out. Actual impact, of course, depends upon the normal behavior of dropouts.

¹This latter increase may be due to lower availability of units meeting the Minimum Standards requirement in Pittsburgh due to the low vacancy rate.

Table XI-3

EFFECTS OF PAYMENT PARAMETERS ON THE PROBABILITY OF MEETING
 MINIMUM STANDARDS REQUIREMENTS AT TWO YEARS AFTER ENROLLMENT FOR
 MINIMUM STANDARDS HOUSEHOLDS THAT DID NOT MEET THE REQUIREMENTS AT ENROLLMENT
 (Increase in Probability Above Normal)^a

C LEVEL ^b	PITTSBURGH			PHOENIX		
	b VALUE ^b			b VALUE		
	0.15	0.25	0.35	0.15	0.25	0.35
	STAYED IN ENROLLMENT UNIT					
1.2C*	--	+0.06	--	--	+0.07	--
C*	+0.10	+0.05	+0.01	+0.06	+0.04	+0.02
0.8C*	--	+0.03	--	--	+0.02	--
	MOVED FROM ENROLLMENT UNIT					
1.2C*	--	+0.15	--	--	+0.21	--
C*	+0.22	+0.08	0.00	+0.22	+0.15	+0.08
0.8C*	--	+0.02	--	--	+0.09	--

SAMPLE: Minimum Standards households active at two years after enrollment that did not meet requirements at 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 Interviews, and payments file.

a. Percentage points.

b. Payment formula: $\text{Payment} = C - b \times \text{Income}$.

XI.2 NORMAL RENT

Figure XI-1 presents an accounting of Housing Gap households' normal behavior during the two-year period.¹ Following this figure, log normal rent (r_N) for any household active at two years after enrollment is

$$(1) \quad r_N = \frac{1}{(1-p_{DO}^C)} \left[(p_{ST,NM}^C) r_{NM}^{ST} + (p_{ST,M}^C) r_M^{ST} \right. \\ \left. + (p_{MV,NM}^C) r_{NM}^{MV} + (p_{MV,M}^C) r_M^{MV} \right]$$

where

$p_{\beta,\gamma}^C$ = the probability that a Control household that did not meet requirements at its enrollment unit will stay in its enrollment unit ($\beta = ST$) or move from its enrollment unit ($\beta = MV$) to a unit that does not meet ($\gamma = NM$) or meets ($\gamma = M$) the Minimum Standards requirement at two years after enrollment

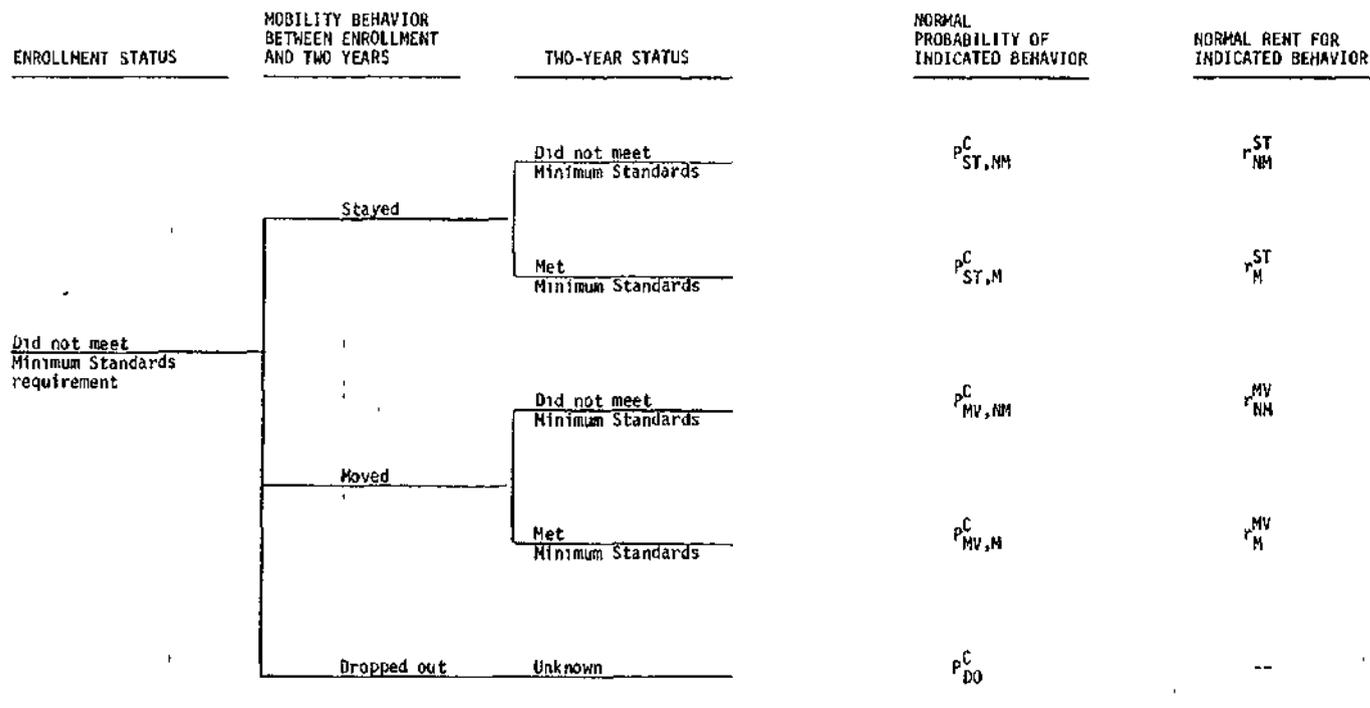
p_{DO}^C = the probability that a Control household will drop out of the program ($1/[1-p_{DO}^C]$ is thus the normalization factor), and

r_{ϵ}^{δ} = the logarithm of normal rent for Control households that did not meet Minimum Standards requirements at enrollment that stayed in ($\delta = ST$) or moved to ($\delta = MV$) a unit that met ($\epsilon = M$) or did not meet ($\epsilon = NM$) at two years after enrollment.

Conceptually, this computation is not complex. As in Chapter 4, the behavior of Control households is assumed to represent normal behavior in the absence of the experiment. The multinomial logit regressions reported in Table XI-1 are used both to compute the probability that each household would normally behave in a particular manner and also to compute the probability of each type of induced behavior. The choice of normal rent for each pattern of normal behavior is straightforward--it is the rent for Control households with that behavior.

¹Only expenditures are focused on in this appendix; the procedure could be applied as well to housing services.

Figure XI-1
 NORMAL BEHAVIOR OF MINIMUM STANDARDS HOUSEHOLDS
 THAT DID NOT MEET THEIR REQUIREMENT AT ENROLLMENT



KEY r = the logarithm of normal rent for Control households that did not meet the Minimum Standards requirement at enrollment
 P^C = probability that a Control household followed a particular behavior path
 ST = Stay between enrollment and two years
 MV = move between enrollment and two years
 M = meet at two years
 NM = not meet at two years
 DO = drop out of the program

Examples $(P_{ST,M}^C)$ is the probability that a Control household would stay and meet the Minimum Standards requirement at two years
 (r_M^{MV}) is the logarithm of normal rent, estimated for Control households moving from a unit not meeting at enrollment and one meeting at two years

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- McFadden, Daniel, "Conditional Logit Analysis of Qualitative Choice Behavior" in Paul Zarembka (ed.), Frontiers in Econometrics, New York, Academic Press, 1974, pp. 105-142.
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APPENDIX XII
COMPARISON OF RESULTS REPORTED IN FIRST-YEAR REPORT
WITH THOSE REPORTED IN THIS REPORT

Most of the conclusions reported in the first-year report (Friedman and Kennedy, 1977) are borne out by further analysis of the two-year data base. The changes in the conclusions that occur are due to the longer period of response. Each point in the summary of that report is reviewed below.

1. On the average, recipients of Housing Gap allowances made only modest increases [above normal] in their housing expenditures during the first year.

Analysis in the first-year report was carried out on the sample of Housing Gap households as a whole, and found an increase in rent above normal of 5.7 percent in Pittsburgh and 13.4 percent in Phoenix. A decision was made for the second-year report to analyze each group of Housing Gap households --Minimum Standards, Minimum Rent Low, and Minimum Rent High--separately. This choice was made because of the very different responses to the program for each group (based on evidence from the first-year report and early second-year analyses). Averaging the response of these households leads to an increase in rent above normal for the two years of the experiment for all Housing Gap households of 2.0 percent in Pittsburgh and 18.7 percent in Phoenix (see Tables 5-1, 5-9, and 5-10).

2. Recipient households had very high rent burdens when they enrolled in the experiment. The allowances reduced their rent burdens to a level which is standard in most conventional housing assistance programs.

This conclusion holds true for the full two years of observation. The reduction for Housing Gap households was from median rent burdens of 37 percent in Pittsburgh and 35 percent in Phoenix to 23 percent in both sites (see Tables 2-7, 3-13, and 3-14).

3. Overall, recipients devoted less than one-third of the allowance payment to increased expenditures for housing.

Estimated increases in expenditures above normal were still less than one-third of the allowance payment. Housing Gap households on average

spent 5 percent of the allowance on increased expenditures in Pittsburgh and 29 percent in Phoenix (see Tables 5-21 through 5-23).

4. Recipients that moved during the first year of the experiment increased their housing expenditures much more than those that did not move. However, they still spend less than one-half of the allowance on increased housing expenditures.

The estimates of change for the first year were 8.9 percent in Pittsburgh and 21.2 percent for Phoenix compared to less than 4 percent for nonmovers. The changes for movers over the two years remain larger than those for nonmovers--8.6 percent for movers in Pittsburgh and 19.6 percent for movers in Phoenix compared to 1 and 3 percent for nonmovers in the two sites (see Tables 7-1 through 7-3 and 7-13 through 7-15). The proportion of the allowance payment devoted to increased expenditures is still less than one-half (see Tables 7-25 through 7-27). Using the estimates for movers as an indication of long-term impact is still reasonable, as the group used for computation of normal rent was Control movers. Indeed, the closeness of the estimated change over the one-year or two-year period does indicate that response to the program is likely to grow over time only through the effect of increased mobility.

5. The housing requirements appear to be an effective mechanism for allocating allowance payments between increased housing expenditures and reduced rent burden.

This conclusion remains valid. Households that met the requirements after enrollment devote a much larger proportion of the allowance payment to increased rent than do those meeting at enrollment, yet still manage to reduce their rent burdens substantially. Comparison with Unconstrained households suggests that at least some of the difference between households that already met requirements at enrollment and those that only met requirements after enrollment may reflect differences in responses to the allowance payment per se, rather than the incentives of the housing requirements.

6. Recipients that only met the housing requirements after enrollment increased their housing expenditures much more than recipients that already met the requirements at enrollment.

This conclusion remains valid. In the first year, increases above normal for households meeting after enrollment were 12.2 percent in Pittsburgh

and 26.0 percent in Phoenix, while increases for those meeting at enrollment were only 2 percent. In the two years, increases for those meeting after enrollment were 9.9 percent in Pittsburgh and 32.2 percent in Phoenix. The increases for those meeting at enrollment were only 3 percent in Pittsburgh and 1 percent in Phoenix (see Tables 5-1, 5-9, and 5-10).

7. Both recipients that already met housing requirements at enrollment and those that only met requirements after enrollment reduced their rent burden substantially.

This conclusion remains valid. Rent burdens were reduced to approximately 22 percent for those meeting after enrollment and to 25 percent for those meeting at enrollment (see Tables 2-7, 3-13, and 3-14).

8. There is evidence that in the first year, at least, the allowance program reached only a small proportion of eligible households that would not normally meet housing requirements. Most recipients appear to be households that could be expected to meet the housing requirements without the program. This may, however, change over time.

As in the first year, there remains a sizeable group of households that did not participate in the program by the end of two years. However, the proportion of households not meeting their requirements at enrollment that did participate increased beyond that in the first year, though not by much. All groups had increases above that which would normally occur. The actual percentage of households passing their requirement were (from Appendix IV):

	PERCENTAGE PARTICIPATING AT THE END OF THE:	
	FIRST YEAR	SECOND YEAR
<u>Pittsburgh</u>		
Minimum Standards households	27%	32%
Minimum Rent Low households	49	60
Minimum Rent High households	26	40
Housing Gap households	31	36
<u>Phoenix</u>		
Minimum Standards households	41	49
Minimum Rent Low households	48	60
Minimum Rent High households	15	19
Housing Gap households	40	48

SAMPLE: Household not meeting their requirement at enrollment.

9. It appears that responses at the two sites may be similar once differences in residential mobility are taken into account.

Site differences in response remain, even for movers, in the analysis of the two years of data. Alternate explanations of the site differences are offered here--different initial housing conditions in the two sites requiring a larger adjustment in Phoenix; and different responses to the payment level (no response was evident in Pittsburgh). (See Chapters 5 and 6 for more discussion.)

10. Variations in the type of housing requirements and in payment schedules significantly affected the experimentally induced changes in housing expenditures of recipients that only met the requirements after enrollment.

Variations in the housing requirements did affect the response of households meeting their requirement after enrollment (compare Tables 5-1, 5-9, and 5-10). Variations in the payment affected only households in Phoenix (see Tables 5-6, 5-12, and 5-13).

11. Variations in housing requirements and payment schedules did not significantly affect the experimentally induced changes in housing expenditures for recipients that already met the requirements at enrollment.

This conclusion remains valid (see Tables 5-1, 5-6, 5-9, 5-10, 5-12, and 5-13).

12. Actual changes in housing expenditures due to the allowance may have been somewhat larger than the estimates reported here.

Estimates of the experimental effect on expenditures for Minimum Rent households have been corrected for selection bias in the second-year report; correction was not necessary for Minimum Standards households.

13. The results of the first-year analysis provide a firm basis for the final analysis of data from the two years of the experiment.

Extensions of the models proposed in the first-year report have proven useful in analyzing the full two years of data. A major extension of the work reported there was analysis of two additional measures of housing quality--two housing adequacy measures developed by Budding (1978) and a hedonic index of housing services developed by Merrill (1977).

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