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August 1980

HOW ALLOWANCE RECIPIENTS ADJUST
HOUSING CONSUMPTION

John E. Mulford, George D. Weiner, James L. McDowell

HOUSING ASSISTANCE SUPPLY EXPERIMENT

A RAND NOTE

This Note was prepared for the Office of Policy Development and Research, U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, under Contract No. H-1789. Its views and conclusions do not necessarily reflect the opinions or policies of the sponsoring agency.

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Rand
SANTA MONICA, CA. 90406

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

5720 S. UNIVERSITY AVE.

CHICAGO, ILL. 60637

PREFACE

This note was originally prepared for the Twenty-Sixth North American Meetings of the Regional Science Association, held in Los Angeles on 9 November 1979. It draws on Rand research conducted as part of the Housing Assistance Supply Experiment (HASE), under sponsorship of the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD).

The authors wish to thank C. Lance Barnett, Stephen J. Carroll, Lawrence Helbers, and Ira S. Lowry, all of Rand, and James R. Follain, Jr., of the Federal Home Loan Bank in San Francisco, for reviewing earlier drafts. Helbers's research provided the population repair estimates given in the Appendix.

John Mulford was responsible for organizing the note and wrote Secs. I, II, V, and the Appendix. James McDowell wrote Sec. III; George Weiner, Sec. IV. Gwen Shepherdson typed the draft typescript and tables; Denise Young was the production typist. Charlotte Cox edited the note; Judy Rasmussen supervised its production.

The note was prepared under HUD contract H-1789, Task 2.16.7.

The first part of the report is devoted to a general survey of the situation in the country. It is followed by a detailed account of the work done during the year. The report concludes with a summary of the results and a list of recommendations.

The work done during the year has been of a very satisfactory nature. It has been possible to carry out the programme of work which was laid down in the report for the previous year. This has been due to the co-operation of the various departments and to the assistance of the staff.

The results of the work have been very good. It has been possible to complete the work on the various projects which were undertaken. This has been due to the efficient organization of the work and to the high quality of the work done.

The following are the main results of the work done during the year:

- The work on the various projects has been completed.
- The results of the work have been very good.
- The work has been carried out in accordance with the programme of work laid down in the report for the previous year.

The following are the main recommendations:

- The work should be continued in the same way.
- The results should be kept under review.
- The work should be carried out in accordance with the programme of work laid down in the report for the next year.

SUMMARY

Before the Housing Assistance Supply Experiment (HASE) began, researchers held various views about the housing conditions of low-income households, their likely response to changes in income, and their ability to repair defective housing or locate adequate housing in the market. By narrowing the uncertainty surrounding each of those issues, findings from HASE not only comment on the effectiveness of housing allowances, they also contribute to the national housing policy debate.

Low-income households that join the housing allowance program spend, on the average, enough to obtain adequate housing, but only by devoting large fractions of their incomes to housing. As their incomes rise, they do not increase their housing expenditures much. Thus, housing allowances cause only modest increases in housing expenditures. We estimate that at program equilibrium, recipients will spend on the average 20 percent of their allowances for housing, increasing their housing expenditures by 8 percent and decreasing their housing expenditure burdens (fraction of income spent on housing) by 12 percent.

About half the enrollees occupy housing that fails one or more of the program's housing quality standards. Although those defects may seriously threaten health and safety, they can be remedied inexpensively-- for an average of about \$60 and a few hours of unpaid labor.

About four-fifths of homeowner enrollees who live in failed dwellings repair them, one percent move, and the other fifth terminate from the program. After qualifying for payments, homeowners voluntarily make additional repairs; they annually spend about a fourth more for repairs than comparable nonparticipating homeowners.

On the other hand, renters repair less and move more than homeowners. Three-fifths of those in failed dwellings repair them (with inexpensive repairs averaging less than \$40), a fifth move, and a fifth terminate. Renters usually move to achieve large consumption changes. On the average, renter recipients who move increase their housing expenditures from a level just below the standard cost of adequate

housing (R^*) to a level 20 percent above R^* . Those whose premove expenditures are low relative to R^* increase them most, buying mainly habitable space; those whose premove expenditures are high relative to R^* increase them least, buying mostly dwelling quality.

The allowance program has shown that low-income households can negotiate in the housing market, adjusting their housing consumption to changing household circumstances, cash assistance, and housing standards. The ability of allowance recipients to remedy housing defects or to find adequate housing on their own suggests that the housing problems faced by many low-income families could be resolved by assistance that utilized the existing stock of housing rather than new construction, and that depended on client initiative and normal market processes rather than on direct management by public agencies.

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CHAPTER 10

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I. INTRODUCTION

The housing allowance program being conducted as part of the Housing Assistance Supply Experiment (HASE)* enables its participants to afford decent, safe, and sanitary housing without spending more than a fourth of their nonallowance income. Households receive allowances equal to the difference between the standard cost of adequate housing (R^*) and 25 percent of their adjusted gross income. They may use the allowance for any purpose, providing they occupy dwellings that meet program standards and spend at least the amount of the allowance on housing. Housing standards, allowance payments, nonallowance incomes, and housing preferences jointly determine recipients' housing consumption.

This note examines recipients' consumption response to allowance payments and housing standards.** Before HASE began, housing researchers held various views about the housing conditions of low-income households, their likely response to changes in income, and their ability to repair defective housing or locate adequate housing in the market. By narrowing the uncertainty surrounding each of those issues, findings from HASE not only comment on the effectiveness of housing allowances but also contribute to the national housing policy debate.

Here, we address three groups of questions:

- o What fraction of allowance payments goes to increased housing expenditures, and how much do recipients' housing

* HASE is part of the experimental housing allowance program begun in 1972 by the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD). The experiment entails operating a fullscale allowance program in two sites (Brown County, Wisconsin, whose main city is Green Bay; and St. Joseph County, Indiana, whose main city is South Bend) and monitoring market responses and program operations for about five years.

** We focus on allowance recipients rather than on all eligibles or all enrollees (some enrollees never qualify for payments), because recipients seem most likely to exhibit a housing response to the program. Other HASE research specifically addresses eligibility and participation.

expenditures increase and expenditure burdens decrease as a result of the program?

- o What is defective in enrollees' dwellings; what do they repair; and how much do repairs cost?
- o How much do movers increase their housing consumption, and how do they allocate the increase between space, quality, and location?

The findings are preliminary in terms of both the data base and the method. Future research will incorporate two more years of allowance program records as well as yet-unused data from program records and household surveys.

To estimate program-induced housing effects,^{*} we compare recipients' housing consumption with that of typical low-income households before the program began. If recipients' housing preferences are systematically different from those of all low-income households, their participation in the allowance program will create a self-selection bias in estimates of how the program affects them. Program records and household survey data gathered over several years will help disentangle program effects from those of background and self-selection; but even the most sophisticated estimation procedures will suffer from the lack of an experimental control group.^{**}

Preliminary estimates support the conclusion that little of the allowance goes for more or better housing--a conclusion we are confident further research will uphold. Section II estimates that when the program reaches equilibrium enrollment, about a fifth of the payments will go toward increased housing expenditures on the part of recipients. The payments, representing a 20 percent increase in recipients' incomes, will cause an 8 percent increase in their housing expenditures and a 12 percent reduction in their housing expenditure burdens.

* The program's effect on housing consumption is the difference between recipients' housing consumption and the housing they would have consumed without the program.

** HASE mounted an open enrollment allowance program; no eligible household could therefore be excluded to serve as a control.

Although the program is not expected to ever cause much increase in recipients' average housing expenditures, its housing effects are important for two reasons. First, many households who live in sub-standard housing at enrollment gain standard housing: Health and safety hazards are remedied by inexpensive repairs, often made with the occupants' unpaid labor; overcrowding is remedied, usually by moving.

Second, certain households increase their housing consumption beyond program standards by voluntarily making repairs or by moving to dwellings that exceed the standards.* The options of moving and repairing are exercised by both homeowners and renters, but in greatly different patterns. Of homeowners whose enrollment dwellings fail the initial housing evaluation, about four-fifths repair, one percent move, and the other fifth terminate from the program. Among renters whose enrollment dwellings fail, three-fifths repair, a fifth move, and a fifth terminate. After qualifying for payments, homeowners continue to repair more and move less than renters. Recipients' median first-year cash outlay for repairs is \$125 for homeowners and \$10 for renters. About 28 percent of renter recipients moved during the first three program years; only 4 percent of homeowner recipients moved during the same period.**

Sections III and IV focus on homeowners' repairs and renters' moves, respectively. Future research will close accounts by addressing homeowners' moves and renters' repairs. Section V summarizes the key findings and discusses their implications for national housing policy.

*The standards are set and enforced by the housing allowance offices (HAOs), nonprofit corporations established in each site to administer the allowance program--enrolling eligible applicants, evaluating their current and prospective housing, and disbursing payments.

**These are not mobility rates in the traditional sense because households were at risk of moving for different periods--some enrolled just after the program started, others near the end of the third year.

The first part of the document is a letter from the Secretary of the State to the Governor, dated the 10th day of January, 1862. The letter is addressed to the Governor and is signed by the Secretary of the State. The letter contains the following text:

Sir, I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the application of the State for the purchase of land for the purpose of building a bridge over the river. I have the honor to inform you that the same has been referred to the proper authorities for their consideration.

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II. HOUSING EXPENDITURE EFFECTS

HOW THE PROGRAM WORKS

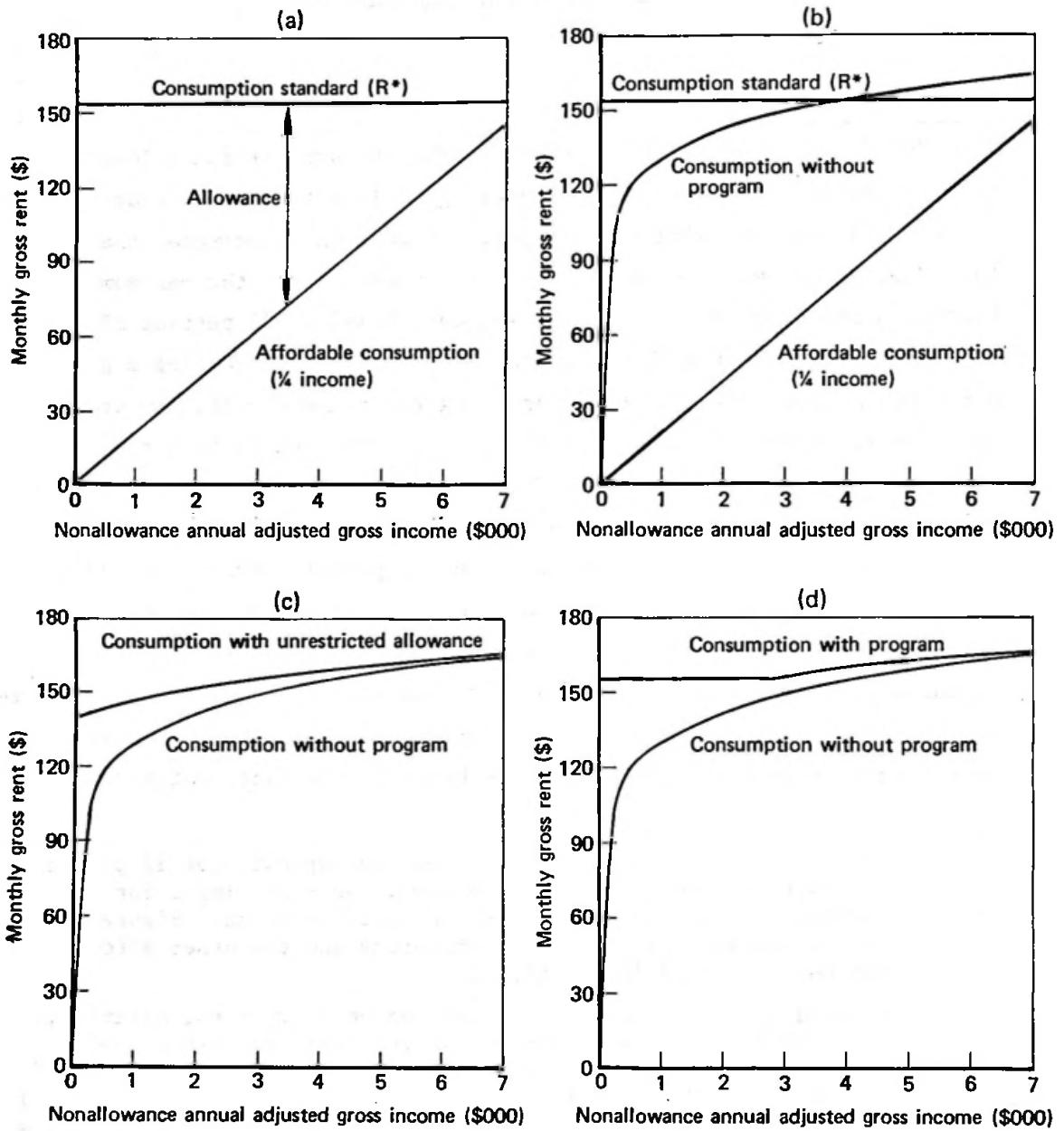
The four panels of Fig. 1 show how the features of the allowance program interact with recipients' housing choices to cause a modest increase in their housing consumption.* Figure 1a illustrates that the allowance payment is the difference between R^* and the maximum a household should have to spend for adequate housing (25 percent of its income, in accordance with the Brooke Amendment to the Housing and Urban Development Act of 1969). Applying the allowance program standards to Brown County in 1974, a 3-to-4 person household with an adjusted annual gross income of \$4,000** was entitled to an allowance of about \$72 per month, or \$864 per year.

R^* is defined as the price at which the private market can supply enough units that meet the HAO standards to serve the allowance program's objectives.*** Figure 1 assumes that the HAO housing quality standards define a *consumption standard* that can alternatively be expressed as a gross rent equal to R^* --less than R^* buys substandard housing, more than R^* buys better than standard housing. In fact, units renting

* R^* and housing consumption (equivalent to expenditures if prices do not vary) are functions of household size. We draw Fig. 1 for a specific household-size category to remove that variation. Figures plotted for the other household-size categories and the other site (St. Joseph County) would look similar.

** Adjusted gross income equals total income from wages, salaries, government transfers, retirement benefits, interest, dividends, and property investments (including 5 percent imputed return on homeowners' equity) less a standard 5 percent deduction (10 percent for the elderly) and deductions for dependents, secondary workers, work-related childcare expenses, medical expenses, and court-ordered alimony and child-support payments.

*** R^* was determined after examining housing price and quality in a probability sample of properties in the two sites. For details, see Ira S. Lowry, Barbara M. Woodfill, and Tiina Repnau, *Program Standards for Site I*, The Rand Corporation, WN-8574-HUD, January 1974 (forthcoming as N-1058-HUD); and Lowry and Woodfill, *Program Standards for Site II*, The Rand Corporation, WN-8974-HUD, February 1975 (forthcoming as N-1079-HUD).



SOURCE: HAO records through June 1976.

Fig. 1 — Effect of allowances on housing consumption:
3-4 person renter households, Brown County

for less than R^* may be standard, and units renting for more than R^* may be substandard. But at least the probability of meeting the standards increases with housing expenditure, holding dwelling size constant.*

Figure 1b shows that low-income households' consumption is much closer to the consumption standard than to *affordable consumption*. About half the allowance recipients occupy standard or better housing when they enroll. The half in substandard housing could, according to our findings, repair it to standard for an average of \$60 and a few hours' unpaid labor.

Thus, when they enroll in the program, allowance recipients occupy, on the average, adequate or nearly adequate housing, regardless of their income.** Low-income households obtain nearly adequate housing by spending large fractions of their incomes for it--in fact, the median enrollee spends more than 50 percent of his adjusted gross income for housing.

Enrollees increase their housing expenditures only a little when their income rises. Cross-sectional evidence (the curve in Fig. 1 labeled *consumption without program*) shows that doubling income from \$3,000 to \$6,000 causes only a \$13, or 9 percent, increase in monthly gross rent--figures consistent with a .12 income elasticity of housing expenditures.*** Such a low income elasticity of housing expenditures implies that given an unrestricted income transfer equal to the allowance

* For example, in the Brown County allowance program, the percentage of renters whose enrollment dwellings meet the standards increases steadily from 49 percent for the lowest quintile of the rent per room distribution to 88 percent for the highest quintile.

** Although the housing is nearly adequate in terms of cost to repair to standard, the defects may still present serious threats to health and safety.

*** The *consumption without program* curve results from drawing the curve $R = aY^{.12}$ through the mean R (\$155) and mean Y (\$4,000) for 3-to-4 person renter households enrolling in the Brown County allowance program during its first year, where R = monthly gross rent at enrollment and Y = preallowance annual adjusted gross income. The .12 exponent is the income elasticity estimated for all first-year renter enrollees in Brown County using current income. John E. Mulford (*Income Elasticity of Housing Demand*, The Rand Corporation, R-2449-HUD, July 1979) estimates a permanent income elasticity of .21 for Brown

(calculated from Fig. 1a), households would increase their housing consumption only slightly--by the vertical distance between the curves in Fig. 1c.*

As for the effects of the housing standards and allowances combined (vertical distance between curves in Fig. 1d), up to about \$3,000 of income, the consumption standard binds. Even if recipients would like to consume less, they must consume at least the standard amount to qualify for payments. Above \$3,000 in income, recipients move along the *consumption with unrestricted allowance* curve--above the consumption standard. The program induces only a small increase in housing consumption relative to consumption without such a program (in Fig. 1d, compare the vertical distance between the curves with the lower curve); and that increase represents a small fraction of the allowance payment (compare the vertical distance between the curves in Fig. 1d with the distance representing the allowance in Fig. 1a).

PROGRAM-INDUCED EXPENDITURE CHANGES

Although Fig. 1 oversimplifies reality--the consumption lines are regression "averages," and R^* and standard housing are only loosely related--the data clearly support the overall message. Recipient households do not have to increase their housing consumption much to meet the program's housing standards--they occupy nearly adequate housing at enrollment. Nor do they voluntarily increase housing expenditures much upon receipt of allowances--income elasticity is low and average burdens are high. Little of the allowance therefore goes to more housing consumption.

Because HASE operates a longterm (10 years of operation, 5 years of monitoring) open-enrollment allowance program, we can address the issues most relevant to a permanent, national program. If the start-up

County renters from marketwide survey data, and does not reject the hypothesis of constant income elasticity with respect to income and life-cycle stage.

* Note that both consumption curves are plotted against nonallowance income, which equals total income for the lower curve but is less than total income (by the amount of the allowance) for the upper.

phase of the program causes no major shortrun disruptions in the housing market,* then of most interest are the housing effects of the program when it has reached, or nearly reached, equilibrium.** The key questions are, What fraction of the allowance payments is spent on housing? and What percentage increase in housing expenditures results?

This analysis considers the effect of housing allowances on only recipients' housing expenditures. Allowances might affect nonrecipients through changes in marketwide housing prices, but HASE research finds that allowances do not cause measurable price inflation.*** The allowance program might also cause nonrecipients' housing expenditures to decrease because the taxes they pay to support the program lower their income. That link is difficult to identify for particular communities, but it may be important in evaluating a nationwide program. The net change in housing expenditures for the total population caused by housing allowances depends on the income distribution in the population, the income elasticities of housing expenditures for nonrecipients as against recipients, and how strongly the allowance is earmarked for housing.

We also assume that recipients are affected by housing allowances only while they are receiving them, although it is possible that they are affected even when not receiving payments. A recipient might anticipate the receipt of an allowance (e.g., remain in an expensive dwelling rather than move to a less expensive one when income falls, on the assumption that when he enrolls his allowance will make up part of the income loss), and the effect of allowances may linger after he leaves the program. Our future research will explore the hypothesis

* C. Peter Rydell, *Shortrun Response of Housing Markets to Demand Shifts*, The Rand Corporation, R-2453-HUD, September 1979, explains how vacancy rates decrease to absorb demand shocks in the short run.

** At equilibrium, the number of households in the program is constant because the number enrolling equals the number terminating in any period. C. Peter Rydell, John E. Mulford, and Lawrence Kozimor ("Participation Rates in Government Transfer Programs: Application to Housing Allowances," *Management Science*, Vol. 25, No. 5, May 1979, pp. 444-453) estimate that the HASE allowance programs will reach 95 percent of their equilibrium size after 5.5 years.

*** See C. Lance Barnett and Ira S. Lowry, *How Housing Allowances Affect Housing Prices*, The Rand Corporation, R-2452-HUD, September 1979.

that allowances are an increment to permanent income, to which recipients react over many years.

We estimate the program's effect on recipients at equilibrium by extrapolating from three years of HAO records to determine the characteristics of recipients at equilibrium (e.g., the distributions of length of enrollment and probability of having moved since enrollment) and by using baseline survey data as a control for how recipients would have behaved without the program.* Table 1 presents data on recipients' preprogram housing expenditures and income, the allowance increment to income, and our estimates of recipients' expenditure changes at equilibrium.

The median recipient household spends more than R^* for housing before enrolling in the program--1.34 R^* for owners and 1.05 R^* for renters. These low-income households sustain such high expenditures by spending over three-fifths of their adjusted gross incomes for housing.

We estimate that in response to allowance payments representing 16 to 31 percent increases in adjusted gross income, recipients at program equilibrium will have increased their housing expenditures 6 to 9 percent.** Owners will achieve most of their increase by repairing; renters, by moving.***

An 8 percent increase in housing expenditure would mean a fifth of allowance payments went to housing. The other four-fifths would be saved or spent for other consumption. Because most of the allowance would be spent for purposes other than housing, housing expenditures as a fraction of adjusted gross income would fall from .62 to

* See Appendix for details.

** Alternative predictions, using permanent income elasticities estimated from marketwide data (see Mulford), are 7 percent (owners) and 5 percent (renters). The estimates are not strictly comparable because the income elasticities estimate longrun adjustments to pure income changes, whereas the estimates in Table 1 are for a cross section of households at program equilibrium, some of whom will have been recipients for only a short time, and all of whom must meet housing standards before they can receive allowances. The general agreement of the estimates is still reassuring and may be attributable to offsetting differences--longterm adjustments are larger than shortterm to mediumterm ones, but responses to pure income transfers are smaller than responses to earmarked transfers.

*** See Appendix for details.

Table 1

HOUSING EXPENDITURE AND INCOME RATIOS FOR RECIPIENTS,
PREPROGRAM TO EQUILIBRIUM

Relation	Median (%)	
	Homeowners	Renters
<i>Preprogram Conditions</i>		
Expenditure/R*	134	105
Expenditure/Income	62	62
<i>Program's Stimulus</i>		
Allowance/Income	16	31
<i>Equilibrium Conditions</i>		
Expenditure change/Expenditure	6	9
Expenditure change/Allowance	21	19
Expenditure/Income	57	52

SOURCE: FAO records through Year 3 (June 1977 for Brown County, December 1977 for St. Joseph County) and household survey records, four waves, both sites.

NOTE: "Expenditure" is housing expenditure at enrollment (*preprogram conditions*) or at program equilibrium (*equilibrium conditions*). "Expenditure change" is the difference between estimated expenditures at program equilibrium and actual enrollment expenditures. "Income" is preallowance adjusted gross income (*preprogram conditions* and *program's stimulus*) or preallowance adjusted gross income plus allowance (*equilibrium conditions*). The sample includes occupants of unsubsidized, regular units (excludes mobile homes and rooming houses) who pay full rent, if renters, and who have positive adjusted gross incomes.

.57 for owners, .52 for renters. The decrease is only 5 to 10 percentage points, or 12 percent (average), because the income transfer (allowance) is modest. If none of the allowance were spent on housing, expenditure burdens would decrease to .53 for owners and .47 for renters.*

* An alternate way to measure the burdens of allowance recipients (which gives much greater reductions) is to subtract the allowance

SUMMARY

After the allowance program reaches equilibrium, we expect 20 percent of the allowance to be spent on housing, which will represent an 8 percent increase in housing expenditures. The housing increase is modest both because recipients do not voluntarily buy much more housing with their allowance-augmented income and because the housing standards do not force them to do so--they occupy nearly acceptable housing when they enroll.

Because most of the housing allowance is not spent on housing, it is available for other consumption expenditures; equivalently, it reduces housing expenditure burdens. The allowance represents a 20 percent increase in income and a 12 percent reduction in housing expenditure burden, on the average.

from housing expenditures and divide by preallowance income. That method regards the entire allowance as paying for housing. But since in HASE the allowance is almost entirely fungible with income, we use the method of Table 1.

III. DEFECTS AND REPAIRS IN HOMEOWNER HOUSING

The allowance program promotes dwelling maintenance and repair by giving low-income households an incentive to occupy adequate housing. Most homeowner recipients either live in acceptable housing at enrollment (54 percent) or repair their failed enrollment dwellings (45 percent) so as to qualify for the program. Only one percent move from failed dwellings. We restrict this discussion to homeowners' repairs because their costs are significant; renters' repairs, though numerous, are much less costly.

The allowance program's administrative files contain unusually detailed accounts of dwelling defects and the cost of repairing them. That information allows us to challenge or verify common preconceptions about the difficulty and cost of repairing defective housing, casting light on three persistent questions:

- o What is required to bring defective housing to acceptable standards?
- o Can low-income households make the required repairs themselves?
- o After qualifying their housing, at what level will low-income homeowners maintain their homes?

This section analyzes why dwellings fail to meet program standards and the owners' alternatives to making repairs. For households who undertake required repairs, we consider what they repair, how they do it, and the cost. Finally, we describe the repairs allowance recipients voluntarily make after qualifying for payments.

DEFECTS IN ENROLLEES' DWELLINGS

About half the program enrollees live in dwellings that are too small, have inadequate facilities, or contain health and safety hazards.*

* This analysis considers initial defects in all enrollees' dwellings. The information comes from the housing evaluation file, which does not indicate whether enrollees subsequently qualify for payments. About 80 percent of the enrollees do eventually qualify, so data on

Many dwellings fail because of only one of the evaluation standards (there are 38 in all), but some fail for several reasons. Overall, defects are more common in St. Joseph County than in Brown County.

Inadequate kitchen and bathroom facilities are common. Incomplete bathroom facilities--such as missing or inoperable sinks, toilets, or bathtubs and showers--outnumber kitchen defects more than two-to-one. The most common kitchen failures are inoperable stoves, refrigerators, or sinks. Inadequate lighting or deficient electrical, heating, or ventilating systems cause both kitchens and bathrooms to fail the standards.

About a sixth of the dwellings in each site have too few habitable rooms: They lack private sleeping rooms for every two residents or a general-purpose room for households of three or more persons. Habitable rooms must have sufficient heating, lighting, and ventilation; and room size and ceiling height must exceed certain dimensions.*

Almost three-fifths of the dwelling defects constitute hazardous conditions. HAO evaluators have found inadequate interior stairways and railings in over a fourth of the dwellings inspected in Brown County and in a third of those in St. Joseph County. Damaged windows are an important source of failure, particularly in St. Joseph County. Unsafe heating, electrical, plumbing, or water-heating systems disqualify many dwellings. Exterior hazards include a variety of defects: dangerous exterior stairways and porches, loose siding or roofing, damaged foundations, accumulated refuse. Evaluators also note several types of interior defects, such as damaged walls, ceilings, and floors; inadequate exits; excessive accumulations of refuse; and badly damaged bathroom or kitchen fixtures and appliances.

REPAIRS TO FAILED DWELLINGS

To qualify defective dwellings, most households undertake only one or two repairs. The number is related to the number of defects, but the correlation is not perfect. The percentage of households

all enrollees' initial defects should not be greatly biased as a descriptor of recipients' initial defects.

* Households may have additional space, such as an attic, that is not currently habitable.

undertaking required repairs declines as the number of deficiencies increases.*

What Is Done

Required repairs (itemized in Table 2) range from clearing accumulated debris to re-siding or reroofing entire buildings. Most such repairs overcome health or safety hazards. With allowance payments as an incentive, enrollees install handrails to prevent stairway accidents, replace broken windows to block drafts and reduce the possibility of injuries, seal leaky vent pipes to prevent asphyxiation, fix plumbing leaks to avoid water contamination, or repair walls and roofs

Table 2

HOMEOWNERS' REQUIRED REPAIRS

Item Repaired	Brown County (%)	St. Joseph County (%)
Handrail or steps	32	33
Window, door, or partition	29	30
Structural component ^a	13	13
Plumbing system	5	10
Heating system or vent	10	5
Electrical system	5	4
Refrigerator or range	(b)	1
Grounds or fence	6	4
Other	(b)	(b)
Total	100	100

SOURCE: HAO records from January 1976 through June 1977.

^aStructural component repairs are wall, floor, ceiling, roof, foundation, or porch repairs. Category includes painting those items.

^bLess than .5 percent.

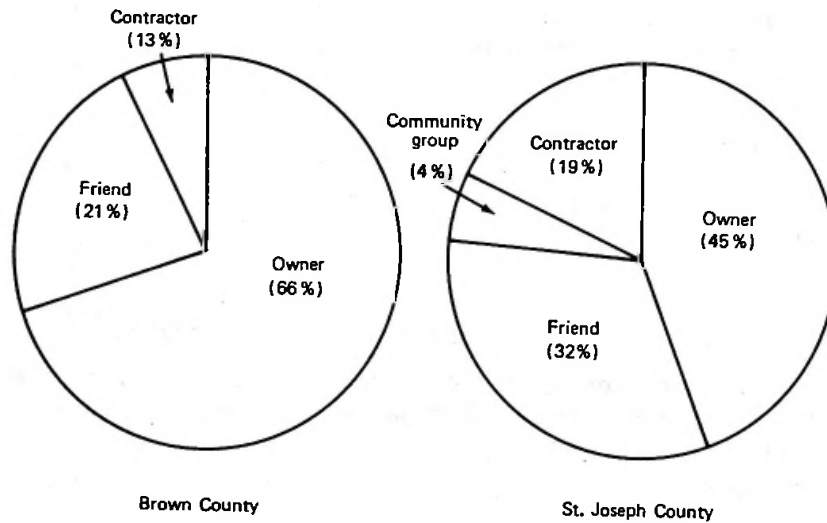
* This analysis includes all repairs to failed dwellings, regardless of whether the occupants ever received allowance payments. Accordingly, the repairs could follow several different kinds of evaluations, including initial, annual, move, and reinstatement. Repairs in response to failure of any evaluation are called *required repairs*, because without them, a failed dwelling cannot be certified as meeting program standards.

to make them sound and weathertight. A few install cooking facilities, add fire exits, install full bathroom facilities, or completely rewire. Some undertake several such repairs, and a few virtually rehabilitate an entire dwelling.

Who Does the Work

Figure 2 shows that nonprofessionals--occupants and their friends--undertake most of the repairs. Contractors are used more frequently in St. Joseph County than in Brown County, but in each county, friends of the occupant account for more labor than contractors do.

Whether to hire a contractor is partly determined by the type of housing defect. Enrollees tend to hire contractors for work such as plumbing, heating, or electrical repairs; whereas they allow nonprofessionals to tackle less technical tasks. Enrollees' low incomes give them an incentive to avoid highly paid professionals and use low-cost or free labor. Many, in fact, make repairs without assistance.



SOURCE: HAO records from January 1976 through June 1977.

Fig. 2 — Who does the work on homeowners' required repairs

Cash Outlay

Most required repairs are inexpensive, three-fourths of them entailing cash outlays of less than \$24 in Brown County and \$29 in St. Joseph County. The median cash expense in both sites is \$10. The mean amounts, influenced by occasional high-cost repairs, are \$55 in Brown County and \$81 in St. Joseph County.

About a fourth of the repairs at each site are made without cash expenditure, using unpaid labor and materials on hand. A dwelling that fails because of a leaking water tap, paint-sealed windows, or unsafely stored flammable materials can readily be repaired by the occupant with ordinary household tools and a few minutes' work, for example. Some repairs, such as clearing accumulated rubbish, might entail several hours or even a day of unpaid labor without requiring new materials. At the other extreme, a few enrollees report cash outlays of several thousand dollars. Expensive repairs usually remedy HAO-designated defects but also include improvements beyond the HAOs' requirements--for instance, completely remodeling a kitchen or bathroom that fails the evaluation because of leaking plumbing or a defective electrical outlet.

Cash costs are an imperfect yardstick for measuring repairs because they exclude unpaid labor. Only 17 percent of the Brown County and 24 percent of the St. Joseph County repairs involve paid labor of any sort, from either a contractor or a nonprofessional laborer. The lower three-quarters of the cost-of-repair distribution consists almost exclusively of payments for materials.

Including the value of unpaid labor boosts the repair costs. For example, if we priced each hour of unpaid labor at the minimum wage, the average required repair cost in this study would be \$67 in Brown County and \$95 in St. Joseph County. The data show, however, that these costs are still well below what contractors charge for comparable repairs.

VOLUNTARY REPAIRS

More than half the enrollees report undertaking voluntary annual repairs in the year prior to the annual evaluation. Such repairs are

not required, but the evaluator records information about them for research purposes. Enrollees who report any voluntary repair activity make on the average 2.7 separate repairs per dwelling. We suppose that enrollees let several repairs accumulate, then do them all at once. For example, a homeowner might wait several years to repair the roof. Once the ladders are up, he or she might also paint the gables and repair the gutters.

What Is Done

Over half of all voluntary annual repairs are to structural components (as Table 3 shows). Unlike required repairs (compare Table 2), enrollees make few voluntary repairs to handrails, steps, windows, or doors.

The emphasis of voluntary repairs on structural components suggests only part of the difference between voluntary and required repairs. Even when the same item is repaired, voluntary annual repairs are usually more difficult and more expensive. As an example, the most frequent required repair to windows is prying open one that is

Table 3

HOMEOWNERS' VOLUNTARY ANNUAL REPAIRS

Item Repaired	Brown County (%)	St. Joseph County (%)
Handrail or steps	3	3
Window, door, or partition	10	10
Structural component ^a	54	49
Plumbing system	13	20
Heating system or vent	4	5
Electrical system	3	3
Refrigerator or range	2	2
Grounds or fence	6	5
Other	5	3
Total	100	100

SOURCE: HAO records from January 1976 through June 1977.

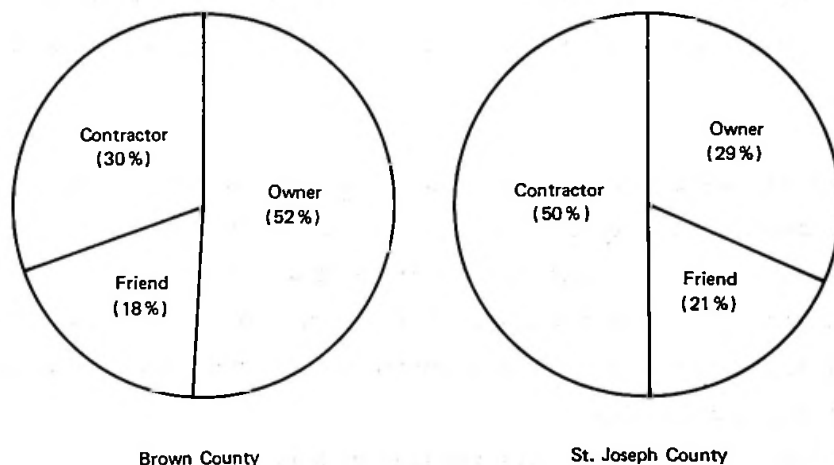
^aStructural component repairs are wall, floor, ceiling, roof, foundation, or porch repairs. Category includes painting those items.

stuck, whereas the more common voluntary repairs are replacing sashes or installing storm windows.

Those findings suggest that few voluntary repairs fix items that would fail subsequent evaluations. In fact, the two categories representing about 70 percent of the voluntary repairs (plumbing and structural components) account for only slightly more than 20 percent of the required repairs. In addition, voluntary repairs commonly entail replacing or installing an item, whereas required repairs usually involve fixing an old one. That evidence, with the findings cited above, suggests that no more than 10 to 15 percent of the repairs made voluntarily would have been required by later evaluations.

Who Does the Work

Despite the complexity of voluntary annual repairs, occupants and their friends undertake much of the work themselves. Figure 3 shows that contractors are hired for a larger share of the voluntary than of the required repairs. Even so, nonprofessionals perform 50 to 70 percent of all voluntary repairs.



SOURCE: HAO records from January 1976 through June 1977.

Fig. 3 — Who does the work on homeowners' voluntary annual repairs

Cash Outlay

Voluntary annual repairs cost much more than required repairs. Among homeowner recipients, the median outlay for voluntary repairs is \$105 in Brown County and \$125 in St. Joseph County. Medians for required repairs are one-tenth as large, \$10 to \$11. Because not everyone makes voluntary repairs each year, the median cash outlay for homeowners undertaking repairs in the year preceding the annual evaluation is about double that for all homeowners.

There is a wide variance in the cash outlays enrollees report for voluntary repairs. Many actions involve substantial amounts, the greatest exceeding \$20,000. Consequently, the average cash costs, which range from \$324 to \$347 in the two counties, are much higher than the medians.

Voluntary repairs account for more hours of unpaid labor than do required repairs. Adjusting for the value of that labor boosts average repair costs 7 to 13 percent.

Unlike required repairs, only a fraction of voluntary repairs are program induced. The difference between the repair costs (cash and noncash) of recipients and other low-income homeowners, calculated from population survey data, is 22 to 29 percent. Recipients report twice as many hours of unpaid labor as do other low-income households.

SUMMARY

The allowance program provides incentives for making housing repairs needed to meet the program's standards for sufficient habitable space, essential facilities in good working order, and freedom from health or safety hazards. The allowance itself provides the means to make additional repairs and improvements that enhance a dwelling's comfort and durability.

About 45 percent of all recipient homeowners repair their dwellings to qualify for allowance payments. Those repairs usually remedy hazards. Occupants and their friends do most of the work, and a quarter of the repairs entail no cash outlay.

About 70 percent of the owner-occupied homes are voluntarily repaired or improved in the year following certification. Contractors

do between a third and half of the work. Although the range of repair costs is wide, the average amount spent is much larger than the mean required repair expenditure—reflecting the more substantial nature of the work and the greater use of paid labor. Recipient homeowners spend about a fourth more on voluntary repairs than other low-income homeowners.

1862
The first of the year was a very dry one
and the crops were much injured
by the drought. The wheat was
very poor and the corn was
scarcely worth the raising.

IV. MOVING AS A MEANS OF CONSUMPTION ADJUSTMENT

Large changes in housing consumption are usually achieved by moving. Housing allowances facilitate moving because they are portable to any dwelling that meets the HAO standards. This section analyzes moves that take renters to another rental unit where they then receive allowance payments. Moves by homeowner recipients and moves that signal tenure changes are less important because they are infrequent; they are also more difficult to analyze because they entail investment as well as consumption decisions.

We summarize consumption adjustment first in terms of gross rent, noting both increases and reductions. We then examine the consumption adjustments in terms of space, quality, and location. Finally, we discuss how the adjustments relate to the program status of the pre-move dwelling.

EXPENDITURE CHANGES

Movers' rent changes can be attributed to changes in the amount of housing and locational services consumed and in the price of those services.* Movers increase their gross rent an average of 19 percent in Brown County and 26 percent in St. Joseph County. In each site, however, about a quarter of the movers reduce their gross rents an average of 11 percent, even though some move from unacceptable to acceptable housing. The remaining three-quarters increase their rent 30 percent (Brown County) and 45 percent (St. Joseph County). On the average, those who increase their rent spent less than R^* at their premove units; those with reduced rent spent more.

* Movers lose a length-of-stay discount of 3.5 percent per year of occupancy up to three years (see C. Lance Barnett, *Using Hedonic Indexes to Measure Housing Quantity*, The Rand Corporation, R-2450-HUD, September 1979) which amounts to an average of 5 percent for allowance recipients. Recipient movers do not seem to experience other systematic price changes--the allowance program does not cause significant marketwide or recipient-specific housing price increases (see Barnett and Lowry).

The pattern of expenditure changes is extremely regular in both size and direction when compared with premove expenditures (see Table 4). In each county, percentage changes vary inversely with normalized premove expenditures.* Those who start below R^* increase their expenditures to about 10 percent above it; those who start above R^* change only slightly. Overall, postmove expenditures average about 20 percent above R^* .

Table 4

CHANGE IN HOUSING EXPENDITURES, PREMOVE TO POSTMOVE

Premove Expenditure Level	Premove Distribution (%)	Mean Change (%)	Ratio of Postmove Expenditures to R^*
<i>Brown County</i>			
Less than $.9R^*$	31	51	1.1
$.9R^*$ to $1.1R^*$	32	19	1.2
More than $1.1R^*$	37	3	1.3
All levels	100	19	1.2
<i>St. Joseph County</i>			
Less than $.9R^*$	41	68	1.1
$.9R^*$ to $1.1R^*$	29	22	1.2
More than $1.1R^*$	30	-2	1.3
All levels	100	26	1.2

SOURCE: HAO records through June 1977 (Brown County) and December 1977 (St. Joseph County).

DIMENSIONS OF CONSUMPTION CHANGE

Housing expenditure changes only summarize consumption adjustments. Three dimensions of residential service--space, quality, and location--better demonstrate how movers adjust their housing consumption.

We normalize housing expenditures in each site by dividing by the R^ for that site. R^* is a function of household size and is periodically updated to reflect changing market conditions. Normalized expenditures provide a measure of overconsumption or underconsumption that is controlled for household size, and facilitate intersite comparisons.

Space

Although the hedonic indexes* produced for Brown and St. Joseph counties indicate that the number of rooms [actually, \ln (rooms)] and bathrooms account for a large part of observed rent differences between dwellings, low-income renters do not significantly change their consumption of those items when they move. In Brown County, the number of rooms actually declines; in St. Joseph County, it increases less than four-tenths of a room. In both counties, the change in the total number of bathrooms is negligible. Despite the small change in number of rooms, tenants who move increase their *habitable* space--rooms with acceptable ceiling height, floor area, natural light, ventilation, and heating; they apparently replace storage rooms and the like with habitable rooms.

As Table 5 shows, movers in both sites unmistakably choose housing with capacity well above the minimum set by the allowance program. Those leaving units with excess capacity either keep it at the same level (Brown County) or increase it slightly (St. Joseph County). Movers leaving capacity-deficient units differ markedly. They have larger households and leave smaller units than other movers; by moving, they not only increase capacity sufficiently to overcome the deficit, but acquire excess capacity as well. Consequently, the average post-move unit can adequately accommodate an additional 1.3 persons in Brown County and 1.4 in St. Joseph County. Overconsumption of habitable space thus accounts for part (about 40 percent in Brown County and 35 percent in St. Joseph County) of the positive deviation of postmove expenditures from R^* **

Quality

The HAO housing evaluations are designed primarily to determine whether a dwelling is adequate in size, has basic domestic facilities in good working order, and is free of health or safety hazards; they

* A hedonic index consists of a set of *housing attributes* and associated price coefficients, the latter estimated by regressing rent on attribute values. See Barnett.

** We estimate the cost of excess capacity by determining R^* for a hypothetical household equal in size to the postmove unit's rated capacity (which implies no excess capacity) and subtracting R^* for the recipient household.

Table 5

PREMOVE AND POSTMOVE DWELLING CAPACITY

Premove Capacity	Household Size (persons)	Dwelling Capacity (persons)			
		Premove		Postmove	
		Rated ^a	Excess or Deficit ^b	Rated ^a	Excess or Deficit ^b
<i>Brown County</i>					
Sufficient	2.5	3.8	1.3	3.8	1.3
Deficient	3.6	2.0	-1.5	4.4	.9
All cases	2.7	3.4	.8	3.9	1.3
<i>St. Joseph County</i>					
Sufficient	2.6	3.8	1.2	4.0	1.4
Deficient	4.1	1.8	-2.3	5.5	1.3
All cases	2.9	3.4	.5	4.3	1.4

SOURCE: HAO records through June 1977 (Brown County) and December 1977 (St. Joseph County).

^aMaximum number of persons the unit can accommodate based on number of habitable rooms.

^bRated capacity minus household size.

are not intended to measure its attractiveness or amenities. The market, however, stresses other quality measures, such as building type, condition in relation to other buildings in the area, presence of a garage and storage space, and number of landlord-supplied appliances.* Our analysis equates quality with building type (single-family, duplex, or row house, as opposed to multifamily building) and HAO condition ratings.**

* For a complete list, see Barnett.

** Similar items (housing attributes) have positive price coefficients in the Brown County hedonic index.

In response to HASE survey questions, most households express a preference for single-family dwellings. Movers' preferences agree: After moving, 23 percent more of the Brown County and 17 percent more of the St. Joseph County recipients live in single-family homes, duplexes, or row houses.

To determine a housing unit's acceptability, the HAO evaluates various aspects of the building's interior and exterior, as well as the exterior property.* If applicable and observable, each item is rated on a four-point scale, ranging from "hazardous" (endangering the health and safety of the occupants) to "satisfactory" (meeting HAO housing standards). Two intermediate ratings note defects (major or minor) and suggested repairs. A unit that receives a hazardous rating on any item is unacceptable for program participants; however, all items need not be rated satisfactory for a unit to be acceptable. We use as our condition index the proportion of all applicable and observable items receiving the highest HAO rating—satisfactory.

Table 6 compares housing quality measures for premove and post-move units, and estimates upper and lower bounds for nonrequired improvements.** Participants in both sites, but especially in

* Building interior: exits, sanitation and storage, walls, ceilings, floors, stairs and railings, toilet and bath facilities, kitchen facilities, water heater, plumbing system, heating systems, and electrical system. Building exterior: foundation, walls and exterior surfaces, roofs, stairs, porches and railings, windows, and doors and hatchways. Exterior property: sanitation and sewage, grading and drainage, trees and other plants, and accessory structures and fences.

** Our analysis considers only movers whose new residences passed the housing evaluation and who were then authorized to receive allowance payments. Necessarily, their postmove units had no items rated hazardous, although many of their premove units had one or more items so rated. We estimate a lower bound for nonrequired change by assuming that the mover remained at the premove unit and qualified for allowance payments by remedying all hazardous conditions to the extent that a subsequent reevaluation rated the items satisfactory. The difference between this hypothetical condition index and the actual postmove index establishes a lower bound for nonrequired change. The upper bound is the difference between the actual premove and postmove indexes, since hazardous items can be acceptably eliminated without being reevaluated as satisfactory.

Table 6

PREMOVE AND POSTMOVE BUILDING AND PROPERTY QUALITY

Item Rated	Mean Percent Satisfactory ^a		Nonrequired Change	
	Premove Dwellings	Postmove Dwellings	Upper Bound ^b	Lower Bound ^c
<i>Brown County</i>				
Building interior	89.0	94.3	5.3	3.1
Building exterior	68.0	77.9	9.9	7.6
Exterior property	85.4	90.9	5.5	4.3
Overall condition	82.7	89.3	6.6	4.6
<i>St. Joseph County</i>				
Building interior	71.5	84.2	12.7	7.1
Building exterior	60.1	72.2	12.1	6.1
Exterior property	80.8	84.0	3.2	1.5
Overall condition	70.0	80.9	10.9	6.0

SOURCE: HAO records through June 1977 (Brown County) and December 1977 (St. Joseph County).

^aOf applicable and observable items in category: building interior (12 possible items), building exterior (6), and exterior property (4).

^bDifference between postmove and premove mean.

^cDifference between postmove mean and hypothetical premove mean (assumes all "hazardous" items are remedied such that if reevaluated, they would rate "satisfactory").

St. Joseph County, improve their housing conditions (overall and in each category) when they move. Moreover, most of the improvement appears not to be required. To the extent that substandard conditions are independent of hazardous ones, movers in both counties voluntarily opt for better housing.*

* A positive correlation between the presence of hazardous conditions and the number of other less serious defects would imply that a move to a hazard-free unit would reduce the number of unsatisfactory but nonhazardous items as well, thus increasing the condition index whether or not the mover desired the additional improvement.

Location

Relatively few of the movers that we studied changed neighborhoods--about one-third in Brown County and one-fifth in St. Joseph County--and even when they did, the new and old neighborhoods differed only slightly.* In terms of the characteristics studied (neighborhood quality and access to employment**), locational changes do not account for observed housing expenditure changes.***

We stress that we consider only certain neighborhood-level variables--we have not yet analyzed some intuitively appealing demographic characteristics of neighborhoods (population density, racial balance, income). However, given the propensity of movers to stay in the same neighborhood, those who change would have to move to distinctly different neighborhoods to effect any noticeable overall change.

REMOVE HOUSING ADEQUACY AND CONSUMPTION CHANGES

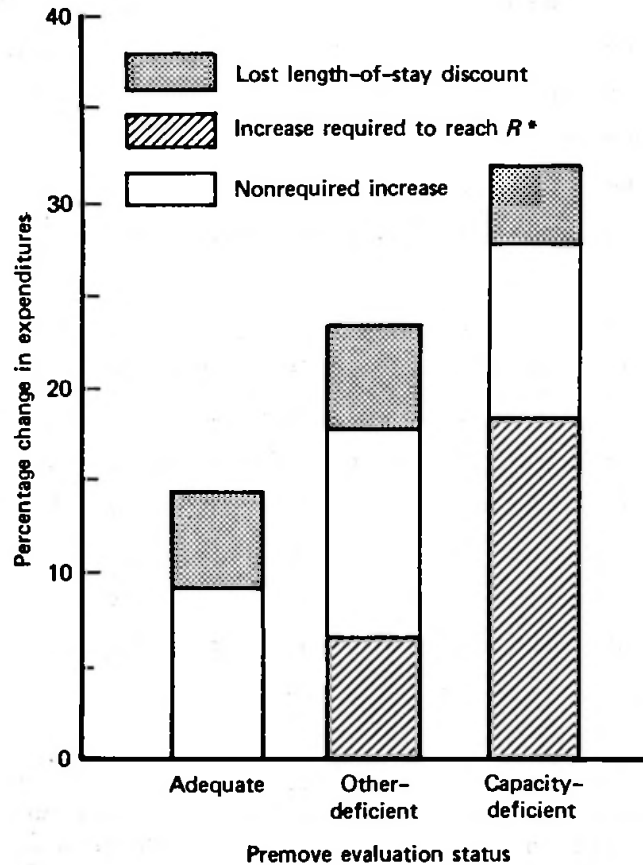
Our analysis considers households who move to acceptable housing. Those leaving substandard units may be adjusting their housing consumption to their needs--or just qualifying for allowance payments to reduce their rent burden. Households leaving acceptable dwellings move voluntarily, but the allowance program influences the consumption adjustment by constraining the choice to other acceptable units. In effect, this constraint establishes a lower limit that may push post-move consumption above the desired level.

* For analytic purposes, each site is divided into residentially homogeneous neighborhoods. There are 108 in Brown County, ranging in size from 100 acres in central Green Bay to more than 23,000 acres in the rural county. The 86 neighborhoods in St. Joseph County range from 200 to 33,000 acres. For details, see Carol E. Hillestad, *Audit of the Neighborhood Survey, Site I, Wave 4*, The Rand Corporation, N-1282-HUD, November 1979; and John E. Bala, *Neighborhoods in St. Joseph County, Indiana*, The Rand Corporation, N-1205-HUD, September 1979.

** Neighborhood quality is the average of a neighborhood's quality ratings for buildings, yards, and cleanliness. Access to employment measures a neighborhood's closeness to employment. Other HASE research has shown that consumers value those attributes--see Barnett.

*** Movers, even those staying in the same neighborhood, may change the characteristics of their immediate environs; but we are unable to analyze any such effect because HAO data record only neighborhood codes.

Measuring the effect of housing standards on consumption adjustment is difficult and awaits more sophisticated analysis. Now we simply compare adjustments by those leaving acceptable units with the adjustments by those leaving substandard ones. Figure 4 shows the relationship between premove evaluation status* and housing expenditure change. Brown County renters who leave adequate units increase their expenditures



SOURCE: HAO records through June 1977.

Fig. 4—Percentage change in expenditures, Brown County recipient movers through year 3

* We define *adequate* units as meeting all HAO standards; *other-deficient* units as having adequate capacity but failing to meet other standards; *capacity-deficient* units as having too few habitable rooms for the household, and possibly other deficiencies.

the least (14 percent); those who leave capacity-deficient units increase them the most (32 percent).^{*} Assuming that the average mover has to increase his expenditures to R^* to obtain adequate housing, program standards must account for much of the variation. For example, 55 percent of the expenditure increases for households leaving capacity-deficient units went to meet program standards.

The increased expenditures not accounted for by program standards are very nearly equal for the three groups of movers shown in Fig. 4. Part of the residual results from losing a length-of-stay discount (averaging \$7.75, or 4.8 percent of premove expenditures); the remainder results from increased consumption of excess capacity or quality. But Table 7 shows that movers leaving adequate units do not alter their consumption of excess capacity; improved quality must therefore explain the increase. In contrast, consumption of excess capacity explains much of the increase for those leaving capacity-deficient units. Standards aside, priorities appear to be first more habitable space, then improved quality.

SUMMARY

Renters participating in the allowance program substantially increase their housing expenditures when they move from enrollment units to acceptable housing. Although some reduce their rent, large increases by the others result in an overall increase. The changes vary inversely with normalized premove expenditures,^{**} pushing post-move expenditures 20 percent above R^* .

Our analysis further suggests that program participants seek improved quality when they move. Movers in both sites exhibit a substantial net shift to single-family houses, duplexes, or row houses, as well as to dwellings in better condition than those they left.

Although movers end up in bigger and better dwellings, relatively few change neighborhoods; and those that change neighborhoods move to

* Expenditure changes for St. Joseph County movers are similar.

** Premove gross rent/ R^* .

Table 7

EXCESS DWELLING CAPACITY, PREMOVE TO POSTMOVE

Premove Rating	Excess Capacity (persons) ^a		
	Premove	Postmove	Change
<i>Brown County</i>			
Adequate	1.4	1.4	.0
Other-deficient	.9	1.2	.3
Capacity-deficient	.0	.9	.9
<i>St. Joseph County</i>			
Adequate	1.4	1.4	.0
Other-deficient	.8	1.4	.6
Capacity-deficient	.0	1.3	1.3

SOURCE: HAO records through June 1977 (Brown County) and December 1977 (St. Joseph County).

^aThe difference between HAO-rated capacity and household size if positive; 0 otherwise.

similar ones. Either movers do not want different neighborhoods, or they are inhibited by financial or other barriers.

Regardless of premove dwelling condition, movers increase their housing consumption more than program standards call for. And, standards aside, their priorities are first more habitable space, then improved quality.

V. CONCLUSIONS

KEY FINDINGS

Analysis of three years of program data and four waves of household survey data for Brown and St. Joseph counties yields the following conclusions:

- o At program equilibrium, an estimated 20 percent of an average allowance will be spent on housing, which represents an 8 percent increase in housing expenditures. Recipients' incomes will increase 20 percent and their housing expenditure burdens will decrease 12 percent.
- o Four-fifths of homeowners whose enrollment dwellings fail the HAO standards repair the defects inexpensively (for an average expenditure of \$68), often doing the work themselves or with friends. They also voluntarily make durable repairs during the year between inspections; they annually spend about a fourth more for repairs than comparable nonparticipating homeowners.
- o Renter recipients who move increase their housing expenditures to about 20 percent above the standard cost of adequate housing (R^*). Those whose premove housing expenditures are low relative to R^* increase them most, buying mainly habitable space; those whose premove expenditures are high relative to R^* increase them least, buying only added dwelling quality.

Although additional data and further refinements in analysis will surely alter many of the numerical estimates presented in Secs. II, III, and IV, we are confident that the qualitative findings are robust. Below, we explore their implications for federal housing policy.

POLICY IMPLICATIONS

The housing allowance program provides its participants with an income transfer that relieves their budgets, while imposing housing standards that require them to remedy overcrowding and hazardous conditions in their dwellings. Those objectives have been sought jointly or separately by other housing programs. It is illuminating to compare the results of the experimental allowance program with the alternatives that have most directly addressed problems of housing quality. These include housing code enforcement, repair and rehabilitation assistance, and the provision of housing under direct public management.

Most urban jurisdictions have housing codes that are similar to the HAO standards, and HUD has often funded local efforts to enforce such codes. Nonetheless, code enforcement is generally lax. In most jurisdictions, inspections are conducted primarily in response to complaints from neighbors or other public agencies, property owners are cited only for conditions that constitute manifest hazards or public nuisances, and the prosecution of recalcitrant violators is slow and uncertain. Local agencies usually lack the personnel needed for thorough coverage of the housing stock, and often lack the political support needed for vigorous enforcement. In fact, it is often argued that strict enforcement would result in rent increases or repair bills for those least able to afford them; and that unprofitable buildings are more likely to be abandoned than repaired when cited for violations that would be costly to correct.*

As cases in point, Green Bay in Brown County and South Bend and Mishawaka in St. Joseph County all have adopted housing codes that closely resemble the HAO standards, and all have enforcement staffs.**

* New York City offers an extreme example of an overburdened, ineffective system of housing code enforcement. See Michael B. Teitz and Stephen R. Rosenthal, *Housing Code Enforcement in New York City*, The New York City Rand Institute, R-648-NYC, April 1971.

** These *housing codes*, based on a national model promulgated by the Building Officials and Code Administrators International, pertain to the habitability of existing residential structures. They should be distinguished from *building codes*, which regulate the site plans, architectural features, and materials used in new construction and major alterations.

St. Joseph County has adopted a similar code for unincorporated areas, but lacks an enforcement staff. Only Green Bay has a plan for cyclical inspection of the entire housing stock, and its small (two-man) inspection staff is apparently aggressive, issuing about 900 violation notices annually. South Bend and Mishawaka jointly have eight inspectors who issue about 850 violation notices annually. Violators are subject only to civil, not criminal penalties; for a recalcitrant, condemnation and demolition of the building is possible but is not usually a politically acceptable remedy.

Despite these local efforts to regulate housing quality, the HAOs in each site fail about half the dwellings they evaluate. Through September 1978, the Brown County HAO had failed over 6,000 different dwellings, including 30 percent of the county's rental stock; the St. Joseph County HAO had failed over 10,000 dwellings, including 31 percent of the rental stock. HAO-failed dwellings have only occasionally been recently inspected or cited by the local code-enforcement agency.

The housing allowance program does not evaluate all dwellings, only those nominated by enrollees as current or prospective residences. However, by September 1979, 58 percent of all rental dwellings and 11 percent of all owner-occupied homes in the two sites had been evaluated at least once by the HAOs; and because these evaluations were directed at the housing of low-income families, we judge that even higher proportions of each county's defective dwellings were evaluated.*

The allowance program induced participants to repair a large fraction of the substandard dwellings it identified--about 60 percent of rental and 76 percent of owner-occupied units. The high success rate owes to the incentive of cash payments averaging about \$75 per month (1977) and the stipulation that only program enrollees occupying standard housing could receive those payments. However, dwellings deteriorate between inspections so that, by our estimates, 12 to 23 percent of renter recipients, in Brown and St. Joseph counties respectively, occupy substandard housing at any point in time.

* We estimate that over 70 percent of all substandard rental dwellings have been evaluated at least once. With less reliability, we estimate that about 40 percent of all substandard owner-occupied homes have been evaluated at least once.

Public ownership and management of low-income housing might be expected to provide decent, safe, and sanitary housing to its clients at least as often as the earmarked transfer approach of housing allowances. However, a comparison of rental housing assistance programs in the two sites (Phoenix and Pittsburgh) of the Housing Allowance Demand Experiment (HADE) found that the public housing program provided units of either slightly less quality (judged by HADE's housing standards, which represent a public perspective) or comparable quality (judged by hedonic rents, which represent the private market's standards) than those in the housing allowance program, even though the government subsidy for a two-bedroom unit was 25 to 49 percent greater for public housing than for housing allowances.*

One reason housing allowances may achieve more per subsidy dollar than other housing programs is that they tap a labor source--occupants and their friends--that other programs ignore or discourage. For example, several repair and rehabilitation programs, such as Sec. 312 loans and community development grants and loans, use contractors almost exclusively and do repairs aimed at reducing future maintenance (e.g., installing aluminum siding rather than painting), which might be done by the occupants.**

Results from HASE suggest that the housing problems faced by many low-income families could be resolved by assistance that utilized the existing stock of housing rather than new construction, and that depended

* About 25 and 37 percent of public housing units failed HADE's housing standards (similar to municipal housing codes) in Phoenix and Pittsburgh, respectively, whereas only 14 and 26 percent of housing allowance units failed the standards. Hedonic rents were slightly higher in Phoenix and slightly lower in Pittsburgh for public housing units as compared with housing allowance units. See Stephen K. Mayo, et al., *Report on Housing Allowances and Other Rental Housing Assistance Programs--A Comparison Based on the Housing Allowance Demand Experiment*, Abt Associates, Cambridge, Mass., forthcoming; Part 1, Figs. 3-1, 4-1, and 4-2; Part 2, Table 4-4.

** According to the South Bend Bureau of Housing's Annual Report for fiscal year 1976-77, contractors performed all the work for these programs in that city.

on client initiative and normal market processes rather than on direct management by public agencies.* Housing quality is not the problem it was in 1940. The incidence of costly (to repair) defects, such as lack of facilities, overcrowding, and structural deterioration, has declined steadily (see Table 8). Housing defects are still prevalent in the HASE sites; but although they may present serious hazards to health and safety, those that have come to the HAOs' attention can usually be inexpensively repaired.**

Furthermore, the Supply Experiment has shown that households can negotiate in the housing market to adjust their consumption (up or down) in response to changing circumstances, including that of cash assistance. They do not, in general, place much priority on health and safety features; however, when offered cash assistance that is contingent on meeting explicit housing standards, they find inexpensive ways to comply with those standards.

*The Sec. 8 existing housing program, which assists low-income households living in existing units, has grown rapidly in recent years. Although the assistance is portable (follows the client, not the dwelling), the rent is determined by negotiation between the landlord and a local housing authority, and subsidy payments go directly to the landlord. The housing allowance concept relies more on client initiative and normal market processes than does Sec. 8.

**We have examined the evaluation records of dwellings that failed HAO inspections but were not repaired. We estimate that repairs to these dwellings would typically cost about 2.5 times the average for those dwellings that were repaired; however, if the same repair methods were used, the cost would still be low, probably averaging under \$200. We have yet to estimate repair costs for substandard dwellings never evaluated by the HAOs; but as noted above, the HAOs have evaluated about 70 percent of the substandard rental units and perhaps 40 percent of the substandard owner-occupied homes in our sites. Especially for the rental dwellings, the residuum of unevaluated, substandard, expensive-to-repair dwellings must be rather small.

Table 8

MEASURES OF HOUSING INADEQUACY, 1940-76

Inadequacy	Percent of Occupied Dwellings with Inadequacy					
	1940	1950	1960	1970	1973	1976
Some or all plumbing lacking	55.4	34.0	14.7	5.5	3.6	2.6
Poor overall physical condition ^a	18.1	9.1	4.6	3.7	--	2.8
Overcrowding (more than 1.5 persons per room)	9.0	6.2	3.8	2.0	1.3	1.0
"Doubling up" (married couples without own households)	6.8	5.6	2.4	1.4	1.4	1.2

SOURCE: John C. Weicher, "Substandard Housing: The Trend and Current Situation," paper presented at Symposium on the Housing Delivery System, Ohio State University, 4 October 1979.

^aCalled "needing major repairs" in 1940; "dilapidated" in 1950, 1960, and 1970; "poor overall structural condition" in 1976.

Appendix

CALCULATING PROGRAM-INDUCED CHANGE IN CONSUMPTION

This appendix details the assumptions, data, and calculations underlying our estimates of the program-induced housing consumption changes (for recipients) that will prevail at program equilibrium (reported in Table 1, p. 10).

METHOD

We assume that all repairs remedying defects identified during housing evaluations--which we call required repairs--are program induced. Perhaps a small fraction would have been done even without the program, but lacking an estimate of that fraction, we set it at zero. The estimated overall program effect is insensitive to that assumption because the dollar volume of required repairs is small.

We estimate the amount of program-induced voluntary repairs as the difference between the repair expenditures of recipients and those of all low-income households before the program began--with all repair figures expressed in constant dollars using the regional repair price index.* To estimate the program-induced housing consumption change upon moving, we subtract the percentage increase in housing expenditures of all moving households (taken from baseline survey data) from that for recipient movers. At baseline, households were asked how much rent they paid just before moving out of their previous unit and how much they paid upon moving to their current unit. The ratio between the two amounts is the percentage increase for movers.**

We cannot yet estimate program-induced voluntary repairs for renter recipients or program-induced consumption change for moving homeowners because we either lack the necessary data or have not yet analyzed what

*The input cost of repairs (i.e., repair expenditures) serves as a proxy for the housing services provided by the repairs.

**The current method of calculation uses contract rent. When we have estimated tenant-paid utilities, we will be able to base the calculation on gross rent.

we do have. Renter recipients often underestimate or are unaware of repairs made by their landlords, which biases the HAO rental repair data downward. The HASE surveys should yield unbiased repair data because they collect the information from both landlords and their tenants. However, the HAO data would still bias a comparison of HAO and survey repair data.*

This analysis assumes that there are no program-induced voluntary repairs for renter recipients. We know that nonmoving renter recipients who do no required repairs experience rent increases no greater than those of nonmoving nonrecipients. Because they have not caused rent increases, we conclude that program-induced voluntary repairs to rental dwellings are negligible.

The retrospective mobility data collected at baseline do not include enough information from homeowners to determine how their housing consumption changed when they moved. We assume that the program-induced change for moving owners is the same as that for moving renters, and ignore tenure changes. The error potentially introduced by those assumptions is mitigated by the fact that recipient owners move infrequently and that only 3 percent of all recipients changed tenure during the program's first four years.

ESTIMATES

We estimate the fraction of recipients who, at program equilibrium, will have moved since they enrolled as the probability of a postenrollment move, given that a participant has been enrolled t years, multiplied by the probability that a recipient has been enrolled t years, summed over $t = 0$ to ∞ . We estimate the first probability from mobility data for recipients;** the second, from the rate of termination from the program (α), assuming it to be constant (for example, the probability of having been enrolled more than 5 years is $1 - \alpha^5$).

* We are exploring two solutions to the bias problem. First, we have conducted a special survey of the repairs made by landlords of renter recipients, which will mesh with the HAO-collected clients' reports. Second, we are using survey data to compare properties that had recipient tenants with those that never had them.

** For methodology and estimates, see Mark David Menchik, *Residential Mobility of Housing Allowance Recipients*, The Rand Corporation, N-1144-HUD, October 1979.

Gross rent increased by an average of 26 percent in St. Joseph County and 19 percent in Brown County for recipient renters who moved. The baseline mobility retrospectives show that when there was no allowance program, renters increased their rent 7 percent in St. Joseph County and 3 percent in Brown County when they moved. We therefore infer that the program has caused 19 percent and 16 percent increases in housing consumption for renter recipients who move in the two sites.

At equilibrium, the program-induced change in recipients' housing expenditures due to moving (recall that the change for owners is assumed to be the same as for renters) will equal the proportion who move multiplied by the percentage increase attendant on a move:

	Movers (Proportion)	Movers' Expenditure Increase (%)	Average Expenditure Increase (%)
Brown County:			
Owners	.12	16	1.9
Renters	.51	16	8.2
St. Joseph County:			
Owners	.12	19	2.3
Renters	.42	19	8.0

We estimate program-induced annual repair costs as the sum of costs for all required and program-induced voluntary repairs. At equilibrium, the program-induced increase in recipients' housing consumption resulting from repairs will equal the program-induced annual repair costs divided by recipients' annual housing expenditures when they enrolled:*

	Average Repair Costs (\$/recipient)	Average Housing Expenditure (\$)	Average Expenditure Increase (%)
Brown County:			
Owners	124	2,607	4.8
Renters	15	1,949	.8
St. Joseph County:			
Owners	77	2,073	3.7
Renters	26	1,844	1.4

* Costs are in 1975 dollars.

The estimated total program-induced housing change is the change resulting from moving plus that resulting from repairing--simply the sum of the percentages in the right-most columns of the two tables above:

	Expenditure Increase (%)		
	<u>Moving</u>	<u>Repairing</u>	<u>Total</u>
Brown County:			
Owners	1.9	4.8	6.7
Renters	8.2	.8	9.0
St. Joseph County:			
Owners	2.3	3.7	6.0
Renters	8.0	1.4	9.4
Average:			
Owners	2.1	4.3	6.4
Renters	8.1	1.1	9.2

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