

# **HOW HOUSING ALLOWANCES AFFECT HOUSING PRICES**

**C. LANCE BARNETT  
IRA S. LOWRY**

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SEPTEMBER 1979**

## **HOUSING ASSISTANCE SUPPLY EXPERIMENT**

*Sponsored by*

**The Office of Policy Development and Research  
U.S. Department of Housing and Urban Development**

**Rand**  
SANTA MONICA, CA 90406

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PREFACE

This report was prepared for a conference on the housing choices of low-income families, sponsored by the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD). The conference was held in Washington, D.C., on 8-9 March 1979.

The report draws on research conducted by Rand as part of the HUD-sponsored Housing Assistance Supply Experiment (HASE). The authors wish to thank the many individuals on the HASE staff who contributed directly or indirectly to the collection, processing, and analysis of the data reported here. A special acknowledgment is due Teresa E. Barrett, who abstracted and indexed the literature of pre-experimental conjecture about the effects of housing allowances.

An earlier version of this report was prepared by C. Lance Barnett for the summer meetings of the Econometric Society in Boulder, Colorado, 21-24 June 1978. It is available from Rand as P-6184, *Expected and Actual Effects of Housing Allowances on Housing Prices*.



SUMMARY

The Housing Assistance Supply Experiment was undertaken to learn how a fullscale housing allowance program for low-income households would affect local housing markets. A key issue in preexperimental conjectures was the possibility that such a program would drive up housing prices, as participants spent their allowances attempting to secure better housing.

Before the experiment began, most economists and housing market analysts conjectured that the program might cause substantial price increases under market conditions that were not uncommon. After the experiment was under way, two research institutions, the National Bureau of Economic Research and the Urban Institute, used market simulation models to predict the price effects of an allowance program and reached similar conclusions, but emphasized that various sectors of the housing market would be differently affected: Prices would rise in some sectors, fall in others.

This report examines experimental evidence from fullscale housing allowance programs conducted in Brown County, Wisconsin (an unsegregated market with a low vacancy rate), and St. Joseph County, Indiana (a segregated market with a high vacancy rate). The records of the first several years of program operations and of systematic annual surveys of the rental markets in the sites reveal no significant price increases beyond those clearly attributable to national price inflation--especially rising energy prices. Those who expected substantial price effects generally assumed faster program growth, more elastic housing demand by participants, stronger earmarking effects, and less elastic supply than was encountered in the field.

If the longrun effects of allowances on market prices are no greater than those observed, the issues to be addressed by policymakers are much simplified: Housing allowances can be judged in terms of who participates, how much they benefit, and the costs of the program relative to alternatives. Those not in the program would be unaffected by it, except as contributors to its costs.



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## I. INTRODUCTION

The Housing Assistance Supply Experiment (HASE) was designed (in 1972) primarily to test the effects of a fullscale allowance program on local housing markets. As then envisaged, a national housing allowance program would entail cash transfers to millions of low-income households, their benefits being "earmarked" for housing expenditures. Having observed the rapid inflation in the price of medical services following the introduction of the federal Medicare program, the sponsors of the experiment had reason to worry whether housing allowances would similarly affect housing prices.

If substantial inflation in housing prices were a likely outcome of an allowance program, it was surely better to learn about it from a local experiment than from a national program. On the other hand, neither the Department of Housing and Urban Development (HUD--the sponsor of the experiment) nor The Rand Corporation (designers and managers of the experiment) could face with equanimity the serious disruption of even a local housing market as a byproduct of the pursuit of knowledge. That issue and one other--the neighborhood effects of residential mobility engendered by the program--were the central topics of many months of design studies and reviews.

Before beginning field operations, both HUD and Rand were satisfied from a *a fortiori* analysis that catastrophic outcomes were unlikely, but they nonetheless laid plans to obtain early warnings of untoward events and respond with countermeasures--if necessary, aborting the experiment. Now, after four years of program operations in two midwestern housing markets, it is clear that the precautions, though sensible, were needless: The experimental program has had virtually no effect on housing prices, either marketwide or in the market sectors most heavily populated by program participants.\*

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\*For a general assessment of findings midway through the experiment, including residential mobility, neighborhood change, housing improvement, participant and community attitudes, and program administration, see the *Fourth Annual Report of the Housing Assistance Supply Experiment*, The Rand Corporation, R-2302-HUD, May 1978, Secs. IV-VI.

This report reviews the preexperimental conjectures and formal predictions by economists and housing experts concerning the effects of a housing allowance program on housing prices, summarizes the relevant evidence from the experiment, and explains why the program has not engendered housing price increases.

PREEXPERIMENTAL CONJECTURES

Generally, housing experts thought that large price increases were likely to follow the introduction of a national housing allowance program. In 1968, the Kaiser Committee warned that if such a program were authorized, enrollment should be spread out to avoid disruptive price increases.\* In 1972 Congressional testimony, Anthony Downs likened the possible effects to those occurring in the price of health care following the introduction of Medicare and Medicaid; Henry Aaron estimated that housing prices would increase by about 10 percent.  
\*\*

In predicting price effects, analysts usually assumed that the shortrun supply of housing was quite inelastic. If so, increased spending for housing by allowance recipients would be dissipated by rent increases, and landlords would reap windfall profits. Households whose incomes were close to the eligibility limits would also face higher prices but would not receive offsetting allowances. Giving allowances to low-income families would thus be a shortrun disaster.

If the shortrun supply were not perfectly inelastic, some of the allowance would, of course, be lost to price increases, although some would pay for increased consumption.

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\* "A Decent Home," *The Report of the President's Committee on Urban Housing* [also known as the Kaiser Committee], Washington, D.C., 1968, pp. 71-72.

\*\* *Housing Subsidies and Housing Policies*, Hearings before the Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, Congress of the United States, Ninety-Second Congress, Second Session, 4, 5, 7 December 1972, pp. 306-310. At the time, Aaron was a senior fellow with the Brookings Institution and Downs was a senior vice-president of the Real Estate Research Corporation.

Regardless of the value of the shortrun elasticity of supply, the amount of the allowance spent on housing would greatly influence the outcome of the program. If allowances were not earmarked, most of the money would be spent on other goods because "most poor households already live in decent quality units but pay a high fraction of their incomes to do so."<sup>\*</sup> In that case, the allowance would have almost no effect on housing, even though it relieved recipients' budgetary problems.

Earmarking, whether specifying minimum rent, setting minimum standards, or issuing rent certificates, could substantially increase the allowance's effect on housing demand. Evidence from the housing allowance demonstration in Kansas City suggests that imposing minimum housing standards on recipients would yield an allowance income elasticity of approximately 2.<sup>\*\*</sup> Earmarking could also produce greater inflation by shrinking the supply of housing that allowance recipients could occupy. Earmarking might also decrease demand for the lowest quality dwellings. If such housing were concentrated in certain neighborhoods, the program might exacerbate neighborhood decline.<sup>\*\*\*</sup>

Whether a housing market was loose (high vacancy rate) or tight (low vacancy rate) was thought to have important implications for price effects. The allowance would work best in loose markets where recipients could expand consumption with little danger of price increases. In tight markets, however, allowances "would simply increase inflationary pressures . . . as landlords could charge greater rents for the same units."<sup>†</sup>

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<sup>\*</sup> See *Housing Subsidies and Housing Policies*, p. 290.

<sup>\*\*</sup> Arthur P. Solomon and Chester G. Fenton, *The Nation's First Experience with Housing Allowances*, The Joint Center for Urban Studies, Harvard and M.I.T., WP-23, October 1973.

<sup>\*\*\*</sup> The National Urban League feared just such an outcome. See *Issues in Equal Access to Housing Under Revenue Sharing Programs, Housing Allowance Programs, Production Oriented Programs, and Housing Preservation Programs*, The National Urban League Development Foundation, August 1973, p. 26.

<sup>†</sup> Philip A. Brownstein, former Commissioner of The Federal Housing Administration, quoted in *Housing Subsidies and Housing Policies*, p. 254.

Market structure might also influence price effects. If a housing market were well integrated in that housing of one type could be easily converted into housing of another type and the cross-elasticities of demand were high, then allowances would have a smaller price effect. The increased demand would be partly satisfied by conversions (upgrading or downgrading of units) and partly spread throughout a broad market. On the other hand, housing markets might be composed of several submarkets, because of either residential segregation or strongly different consumer preferences in housing. If cross-elasticities of demand were near zero (a condition sufficient to sustain different prices across submarkets), allowances could have large effects on prices in some parts of the market and little effect in others. Increased demand caused by allowances would concentrate in submarkets patronized by program participants, driving up prices there while the low cross-elasticities and perhaps high costs of conversion insulated the remainder of the market from increased demand. \*

#### PROGRAM DESIGN

The conjectures reported above rested on general principles of market behavior, analogy to other transfer programs, and very general assumptions about the scale, benefit standards, and earmarking methods of a national housing allowance program. Not everyone agreed with them. Housing allowance enthusiasts argued that if the housing earmark were designed so that program participants would benefit from careful housing choices, they would have both the incentive and the bargaining power to secure decent, safe, and sanitary housing at competitive prices; and that housing suppliers would respond to any shortages of acceptable housing by repairing or rehabilitating sub-standard dwellings.

In that context, HUD and Rand worked out the design for the Supply Experiment. They decided to operate a fullscale allowance program in each of two metropolitan housing markets, chosen for strong contrasts

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\* Frank de Leeuw and Nkanta F. Ekanem, "The Supply of Rental Housing," *American Economic Review*, Vol. 61, 1971, pp. 806-817.

in market structure and conditions. The program would operate for ten years in each site, and its market effects would be monitored for about five years, or until the market had adjusted to the allowance-induced demand changes.

The Experimental Sites

The chosen sites are Brown County, Wisconsin (whose central city is Green Bay), and St. Joseph County, Indiana (whose central city is South Bend). Those sites were selected from among all metropolitan areas whose populations in 1970 were less than 250,000; the size limitation reflects constraints on the resources available for the experiment. We sought a contrast in factors that were likely to affect how the allowances influenced housing prices--on the one hand, between a "tight" and a "loose" market; on the other hand, between a market free of racial segregation and one with a segregated minority population.

At baseline (1974), Brown County had about 170,000 inhabitants (48,000 households). Because of rapid growth in employment and population, the county has had a persistently tight housing market (see Tables 1 and 2). Since nearly 60 percent of the dwellings were built

Table 1

BASELINE POPULATION CONTRASTS: BROWN AND ST. JOSEPH COUNTIES

Area	Number of Persons	Average Annual Growth (%)		Households	
		1960-70	After 1970	Number	Percent Black or Latin
<i>Brown County</i>					
Green Bay	88,500	3.3	.2	28,100	1.9
Rest of county	81,900	1.2	3.0	19,800	.6
Total	170,400	2.4	1.5	47,900	1.4
<i>St. Joseph County</i>					
South Bend	112,500	-.5	-2.2	39,300	18.6
Rest of county	123,000	1.2	.6	36,300	1.3
Total	235,500	.3	-.8	75,600	10.4

SOURCES: U.S. Bureau of the Census, *Census of Population and Housing: 1970*; and estimates by HASE staff from records of the baseline household surveys in each site.

Table 2

HOUSING VACANCIES AND TURNOVER AT BASELINE:  
BROWN AND ST. JOSEPH COUNTIES

Area	Number of Habitable Units	Average Vacancy Rate (%)	Annual Turnover per 100 Units	Average Vacancy Duration (weeks)
<i>Regular Rental Housing<sup>a</sup></i>				
Brown County	14,700	5.1	65.6	4.0
St. Joseph County	16,400	10.6	57.4	9.6
Central South Bend	8,000	12.3	59.5	10.7
Rest of county	8,400	8.9	55.3	8.4
<i>Homeowner Housing<sup>b</sup></i>				
Brown County	31,700	.8	7.4	5.6
St. Joseph County	57,000	2.4	9.9	12.6
Central South Bend	13,600	4.2	8.5	25.7
Rest of county	43,400	1.9	10.2	9.7

SOURCE: Estimated by HASE staff from records of the baseline surveys of landlords and homeowners in each site.

<sup>a</sup>Excludes mobile home parks, rooming houses, farmhouses, and federally subsidized dwellings.

<sup>b</sup>Excludes mobile homes.

after 1944, the housing stock is in relatively good condition; even in the urban core there are no blighted neighborhoods. Finally, the county is racially homogeneous, so housing is unsegregated.

St. Joseph County's baseline (1975) population was 240,000 (about 76,000 households). Manufacturing employment has declined sharply since World War II, resulting in population losses, first from South Bend and later from the county as a whole. The central city has a large surplus of deteriorating housing, and suburban vacancy rates are rising. About 21,000 blacks and 2,000 Latins live in the county. Nearly all the blacks live in South Bend, where they compose 18 percent of all households. The central South Bend neighborhoods with the highest concentrations of blacks generally have the worst housing and lowest property values.

Eligibility, Benefits, and Earmarking

The allowance program is open to all families and most single adults in the two counties who are unable to afford adequate housing on the private market. Each enrolled household receives monthly cash payments equal to the "housing gap" between the standard cost of adequate housing (as measured by local market surveys) and a fourth of its adjusted gross income, provided that its housing meets minimum standards of decency, safety, and sanitation and is large enough for the family.

Participants, whether renters or homeowners, must find their homes in the open market and are entirely responsible for negotiating the lease or purchase terms and for meeting their obligations to their landlords, lenders, or other parties to the transaction. They may change tenure or move anywhere within the program jurisdiction, so long as their chosen dwellings meet program standards (as checked by periodic inspections).

Each enrolled household is informed of the amount of its allowance entitlement and of the housing requirements that must be met before payments will commence. If an enrollee's current dwelling fails its initial inspection, he is informed of the reasons; to qualify for payments, he must either arrange for repairs or move to an acceptable dwelling. There is no time limit for action, but neither are benefits received until the housing requirements are met.

The housing standards closely parallel the national model housing codes that have been adopted by most urban jurisdictions, including those in our sites. Unlike building codes, which are concerned with the durability of new or remodeled residential structures, housing codes are concerned with current habitability. They set standards for space (relative to household size), domestic facilities, safety, and sanitation. With rare exceptions, a dwelling that would pass a local code inspection would also be considered acceptable for program participants.

It should be clear from the preceding account that earmarking in the Supply Experiment is indirect. Enrollees are offered a fixed monthly payment conditional on occupying acceptable housing, but are

not required to spend any particular amount to obtain that housing. Their allowances are fungible with their incomes from other sources. Consequently, they have ample reason to search for bargains in the housing market. Except through its income effect, the program offers no incentive for housing consumption beyond the minimum standard,<sup>\*</sup> but neither does it penalize those who choose to pay for housing above the standard.

FORMAL PREDICTIONS OF PROGRAM EFFECTS

Whereas preexperimental conjectures were based on very general assumptions about program design, the analyses discussed below were conducted after the details of program design were fixed, sites were selected, and program operations had begun--eliminating major sources of uncertainty about program effects. There remained other sources of uncertainty: How many households in each site were eligible for assistance? How many would enroll? How much housing demand would be generated by the combination of allowance payments and housing standards? How would the suppliers of housing respond to the new demand? The discussion below shows how formal market models, reasonably well informed about program characteristics and baseline market conditions, assessed the likelihood of program-engendered price increases.

After the experiment began, the National Bureau of Economic Research (NBER) and the Urban Institute (UI) used simulation models to predict the market effects of housing allowances.<sup>\*\*</sup> In both cases, the simulations begin with observed baseline conditions in actual

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<sup>\*</sup> One qualification should be noted: Allowance payments cannot exceed actual housing expenditures. But since the allowance entitlement is usually well below actual expenditures, the constraint is rarely binding.

<sup>\*\*</sup> The simulation results summarized in the following pages are taken from the most recent report by each institution: John F. Kain and William C. Apgar, Jr., *Simulation of the Market Effects of Housing Allowances*, Vol. II, *Baseline and Policy Simulation for Pittsburgh and Chicago*, National Bureau of Economic Research, New York, January 1977; and Jean E. Vanski and Larry Ozanne, *Simulating the Housing Allowance Program in Green Bay and South Bend*, The Urban Institute, Working Paper 249-5, Washington, D.C., October 1978.

housing markets. The models first predict the vector of housing prices and quantities that would prevail at a specified future date in the absence of an allowance program. Then, the prediction is repeated on the assumption that a fullscale allowance program was introduced early in the interval between baseline and the prediction date. Finally, program effects are deduced by comparing the two predictions.

The models differ considerably as to the amount of detail they carry and how their parameters are estimated. For example, one version of the NBER model solves separate demand equations for each of 264 types of households in order to allocate them among 90 types of dwellings. In contrast, the UI model represents the entire housing market by 40 to 45 typical households and an equal number of typical dwellings. In each model, some demand and supply parameters are postulated, some are assigned values estimated outside the model, and some are "calibrated" by operating the model against known outcomes.

To date, the NBER has simulated program effects for the Pittsburgh and Chicago housing markets. With greater temerity, the Urban Institute has simulated program effects for the Supply Experiment sites (Green Bay and South Bend), as well as for six other metropolitan housing markets and four prototypical (synthetic) cities. Although both institutions regard their models as still needing improvements and decline to defend some details of the predictions, their findings are nonetheless offered as being worth public attention and relevant to policy analysis.\*

#### NBER Simulations: Pittsburgh and Chicago

The NBER simulations for Pittsburgh and Chicago indicate that a fullscale housing allowance program would fundamentally disturb those housing markets. Contrary to preexperimental conjectures, the simulations predict that the program would cause average rents to fall slightly--by about 3 percent in both places, the decline beginning in

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\* Work on the NBER model began in 1968; that on the UI model began in 1971. Both models have thus existed longer than the Supply Experiment.

the year after the program is introduced.\* However, the average change conceals sharply diverging trends in the model's 90 submarkets.

Table 3 summarizes the trends. Six years after introduction of the allowance program, a fifth of all dwellings in each housing market

Table 3

DISTRIBUTION OF PROGRAM-INDUCED RENT CHANGES  
PREDICTED BY NBER SIMULATIONS:  
PITTSBURGH AND CHICAGO

Program-Induced Rent Change After Six Years	Percent of All Dwellings <sup>a</sup>	
	Pittsburgh	Chicago
Increase (%):		
20 or more	--	14.5
11-19	20.3	4.2
6-10	14.3	5.0
0-5	24.1	6.6
Decrease (%):		
0-5	11.4	43.5
6-10	7.3	2.4
11-19	10.3	12.8
20 or more	12.3	11.0
Total	100.0	100.0
Median change	+1.8	-2.3
Mean change	-3.2	-3.1

SOURCE: Kain and Apgar, Table 9-5.

NOTE: Simulations cover the decade 1960-70 and assume that a housing allowance program began in each place in 1964. Program-induced rent changes are the differences between those predicted for 1970 with an allowance program and those predicted without the program.

<sup>a</sup>Includes both rented dwellings and owner-occupied homes. The latter are assigned rental values that change with market condition.

\*Rents are expressed in constant dollars, not corrected for allowance-induced changes in the quantity of structure services consumed. Consequently, the reported rent changes are not pure price changes. According to Kain and Apgar (p. 4), the average price must have fallen by more than the average rent.

In both the NBER and UI models, owner-occupied homes are assigned rental values that change with market conditions. The reported results do not distinguish either households or dwellings by tenure.

would have rent increases of more than 10 percent, and nearly a fourth would have equivalent rent decreases. In nearly all submarkets, the program-induced changes--whether increases or decreases--are monotonic over time, so that the market disturbance is cumulative rather than temporary.

Considered by submarket (not shown in the table), the program-induced rent changes are chaotic. When the program is introduced, rents fall abruptly in the better neighborhoods and rise slowly in the worse. Even in more stable, medium-quality neighborhoods, six-year changes by type of structure are large; examples follow of percentage changes due to the program:<sup>\*</sup>

	<u>Pittsburgh</u>	<u>Chicago</u>
Small multifamily structures:		
Units with 0-1 bedrooms . . . . .	-1	-3
Units with 2+ bedrooms . . . . .	+3	+30
Large multifamily structures:		
Units with 0-1 bedrooms . . . . .	-42	+3
Units with 2+ bedrooms . . . . .	-46	-25

The allowance program also affects the rate of new construction, which rises by 14 percent in Pittsburgh and 23 percent in Chicago. Demolition rates in the two places increase by 11 and 32 percent. Finally, the NBER analysts believe the model demonstrates that a housing allowance program "is likely to create a wide variety of indirect effects which may ultimately prove more significant than its immediate and obvious impacts. . . . Program-induced changes in neighborhood quality are probably the most important and least understood of those direct effects."<sup>\*\*</sup>

#### UI Simulations: Green Bay and South Bend

The UI model was used twice to assess the effects of housing allowance programs in Green Bay and South Bend. First, the model

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<sup>\*</sup> Kain and Apgar, Tables 9-3 and 9-4 (Neighborhood Type III).

<sup>\*\*</sup> Kain and Apgar, p. 5.

was calibrated to each site with 1960-70 census data, and a simulated allowance program was introduced during that decade. Later, 1970 census data and mid-decade market data from the Supply Experiment were used to simulate a program operating from 1970 to 1980. Here, we discuss only the 1970-80 simulations, which are preferred by UI analysts.\*

The simulations predict no change in the average price of housing services in Green Bay as a consequence of ten years of housing allowances, and a 5 percent increase in South Bend.\*\* As in the NBER model, the averages conceal sharply diverging submarket trends. In fact, it appears that the program actually creates submarkets by making some dwellings no longer acceptable--at any price--to program participants.

Table 4 summarizes the predictions for households in different program status groups.\*\*\* The alternatives reflect the UI's uncertainty about supply elasticities for housing priced below the cost of new construction. Participants' housing expenditure increases by as much as 84 percent; the price they pay per unit of housing services

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\* In some respects, the earlier simulations are a better test of the model, inasmuch as they were uninformed by interim reports of program outcomes. The market disturbances predicted by the later simulations are more moderate than those predicted earlier, a result that could be due merely to the different initial conditions in 1970 as compared with 1960; but it might also reflect parameter adjustments unintentionally influenced by experimental results. The earlier predictions are reported in Jean E. Vanski, *The Urban Institute Housing Model: Application to Green Bay, Wisconsin*, The Urban Institute, Working Paper 216-27, Washington, D.C., June 1976; and Sue A. Marshall, *The Urban Institute Housing Model: Application to South Bend, Indiana*, The Urban Institute, Working Paper 216-26, Washington, D.C., June 1976.

\*\* Unlike the year-by-year NBER simulation, the UI model uses comparative statics. The baseline characteristics of the market are altered by the introduction of a housing allowance program, and the model is solved for a new market equilibrium; the nominal ten-year interval is reflected only in various estimated parameters.

\*\*\* The UI does not report price changes by type or location of dwelling. The price changes noted in the table pertain to households who may have moved to qualify for allowances or for other reasons. Comparing their changed expenditures with changes in the quantity of housing they consume, the UI estimates the change in the prices they pay.

Table 4

PROGRAM-INDUCED CHANGES IN HOUSING EXPENDITURE, CONSUMPTION,  
AND PRICES PREDICTED BY UI SIMULATIONS:  
GREEN BAY AND SOUTH BEND

Item, by Program Status Group	Average Program-Induced Change (%), by Site and Postulated Supply Elasticity <sup>a</sup>			
	Green Bay		South Bend	
	.75	1.07	.67	1.27
<i>Participants</i>				
Housing expenditure	38	23	57	84
Quantity of housing services	27	18	24	53
Price of housing services	9	4	27	20
<i>Eligible Nonparticipants</i>				
Housing expenditure	-33	-23	-50	(b)
Quantity of housing services	-14	-8	-23	(b)
Price of housing services	-22	-16	-36	(b)
<i>Near-Eligible Households</i>				
Housing expenditure	2	--	18	14
Quantity of housing services	--	--	8	11
Price of housing services	2	--	9	3
<i>All Households</i>				
Housing expenditure	1	--	9	10
Quantity of housing services	1	1	4	7
Price of housing services	--	--	5	5

SOURCE: Vanski and Ozanne, Tables 3, 5, and A-2.

<sup>a</sup>Supply elasticities were estimated endogenously in simulations assuming no allowance program. The alternatives reflect a range of estimates that could not be narrowed by the procedures used for estimation. When the price of existing housing reaches the cost of new construction, supply is postulated to become perfectly elastic.

<sup>b</sup>Not reported; no reason given.

rises by as much as 27 percent. However, the outcome is reversed for eligible nonparticipants, who consume considerably less housing even though the price per unit falls by as much as 36 percent. Near-eligibles--those whose income is between the limit for participation and 150 percent of that limit, and those who are within the income limit but are categorically ineligible (single persons under 62)--are affected only in South Bend. They increase their housing consumption even though they pay higher prices.

Contrary to most preexperimental conjectures, the UI model predicts that earmarked housing allowances will cause larger price increases in a loose market (South Bend) than in a tight market (Green Bay). The underlying scenario is that an excess supply of aging, low-quality dwellings leads to substantial price "discounting." When demand increases, landlords raise prices on the discounted dwellings. In a tight market, existing housing commands prices close to the cost of new construction. Increased demand is therefore met by constructing new dwellings, the supply of which is perfectly elastic at a price equal to the cost of production.

UI analysts explain the consistent reduction in the housing expenditures of eligible nonparticipants as resulting from the program's minimum-quality standards. Participants leave substandard dwellings for better ones; the market price of substandard housing declines, and eligible nonparticipants--identified as households with very low incomes--reap the benefits. Why they also choose to consume less when the price falls is not clear.

## II. EXPERIMENTAL EVIDENCE

In September 1978, the housing allowance program had operated for 51 months in Brown County and for 45 months in St. Joseph County.\* Altogether, over 20,500 households had been enrolled and nearly 16,300 had received one or more allowance payments. Currently, about 10,400 households are enrolled and over 8,700 are receiving monthly payments. In each site, 40 to 50 percent of all eligible households and about 8 percent of all households are enrolled.

Offering allowances to all eligible households who could secure acceptable housing has had virtually no effect on the price of housing services. The evidence covers the period of rapid enrollment, when price changes were most likely. Now that enrollment has leveled off, allowance-induced demand is no longer growing. Although some further market adjustment may be expected, severe price changes due to the program are implausible.

Below, we summarize the experiment's stimulus on the rental market and the market's response.\*\* Market stimulus data come from administrative records of the allowance program. Market response data come from annual surveys of properties in a stratified probability sample of all rental properties in each site. We report here only

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\* During the first three months of the program in St. Joseph County, applications were invited from 750 homeowners, of whom 130 enrolled. There have been only 42 months of open enrollment, beginning in April 1975. Initially, only South Bend participated; but the program's jurisdiction was extended to include most of the county by June 1976; the last minor civil division joined on 1 November 1976.

Open enrollment began in Brown County at the end of June 1974. The entire county participated in the program from its inception.

\*\* Because much of the annual housing cost for homeowners is not observable in explicit transactions, measuring price changes for them is more difficult and the results are less precise. So far, we have limited our time-series analysis to rented dwellings. This account treats only the renters in the allowance program and their influence on the rental market. Separate treatment of the rental market does little violence to the data; less than 2 percent of all renter enrollees have bought homes, and they are nearly offset by homeowner enrollees who have become renters.

the evidence bearing most directly and quantitatively on the issue of allowance-induced inflation. Qualitative evidence from the surveys and from informal monitoring of the sites supports our conclusions.

MARKET STIMULUS

Through September 1978, Brown County's program had enrolled 5,350 renter households and had authorized payments to 4,391. In that month, 2,686 were still enrolled and 2,258 were receiving payments. The average annual payment of \$1,019 amounted to 22 percent of the average annual gross income of recipient renters (\$4,646).

The program's scale and potential market stimulus can be measured against the size of the market.\* In 1978, Brown County had about 13,700 renter-occupied dwellings with an average annual gross rent of about \$2,300. With about 20 percent of all renters enrolled in September 1978 and 16 percent receiving payments, annual allowance payments to renters totaled \$2.3 million, or 7 percent of rent payments countywide (\$31.5 million).

Relative to market size, the stimulus was similar in St. Joseph County. There, the program had enrolled 6,539 renters and authorized payments to 4,459. In September 1978, 3,005 were still enrolled and 2,130 were receiving payments. The average annual payment of \$1,045 amounted to 30 percent of the average annual gross income of recipient renters (\$3,467).

In 1978, St. Joseph County had about 17,400 renter-occupied dwellings whose average annual gross rent was about \$2,100. With about 17 percent of all renters enrolled in September 1978 and 12 percent receiving payments, annual allowance payments to renters totaled \$2.2 million, or 6 percent of rent payments countywide (\$36.5 million).

In short, the program could have stimulated substantial price increases, though less than many predictions suggested. If all recipients spent all their allowances for housing but were unable to thereby

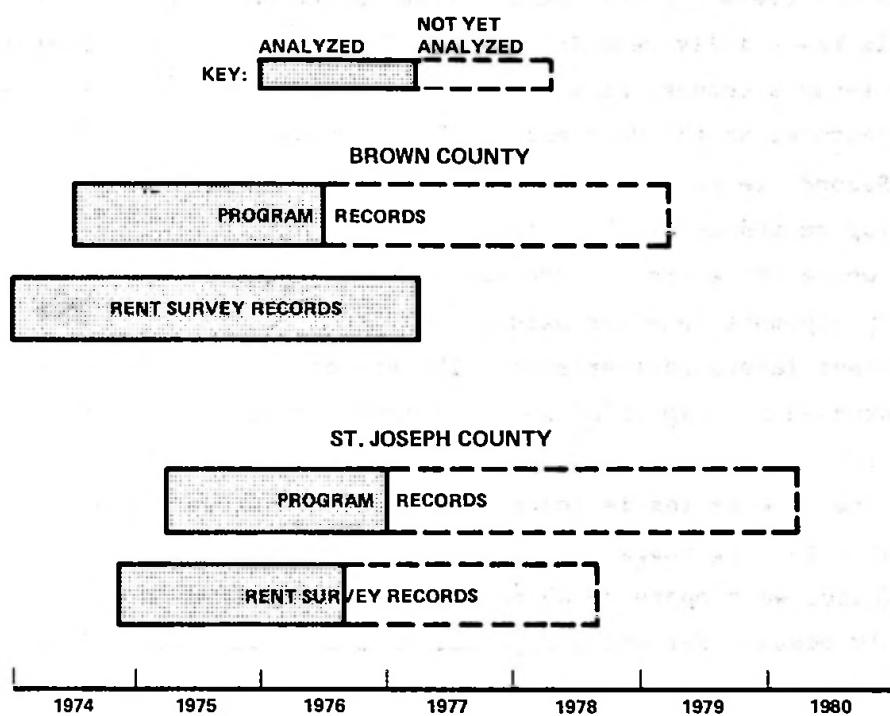
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\* Marketwide survey data for 1978 are still being processed. Estimates of the numbers of renters and average gross rents are extrapolated from earlier years. Although the extrapolation is inexact, the calculated ratios (percentage of all renters enrolled, allowance payments as a percentage of all rent payments) should be accurate within two percentage points.

increase their housing consumption, housing prices (gross rents) would have risen by 6 or 7 percent. That increase would be in addition to background rent inflation, which averaged 5 to 7 percent per year in question.

#### MEASURING MARKET EFFECTS

The evidence that the allowance program did not cause housing prices to rise comes from both program records and annual interviews of landlords, tenants, and homeowners. The figure shows the temporal relationship between the program and survey data. For Brown County, the survey data span 39 months, from January 1974 (six months before enrollment in the allowance program began) through March 1977. For St. Joseph County, the survey data so far analyzed cover 21 months, from late November



Chronological relationship of allowance program and rent survey records

1974 (four months before enrollment began) through August 1976.\*

We expect eventually to account for all the housing services produced and consumed in each site during the baseline year and each of the first three program years--estimating both quantities and prices as precisely as our fairly large sample of properties will permit, tracing cash flows between the various actors in the market (property owners, tenants, financial intermediaries, factor suppliers, local governments), and separating rent revenues into itemized costs of production and profits. So far, we have conducted only simple tests for program effects on rents. None is foolproof, but jointly they tell a persuasive story.

First, we use tenant survey records to calculate rent changes for a fixed sample of dwellings, linking the records for each dwelling whose occupant reported rent in the baseline and one or more post-baseline surveys. Since the dwelling is the same, a change in gross rent is essentially rent inflation. The sample includes dwellings whose tenants changed as well as those continuously occupied by the same tenants, so the data capture both turnover and imposed rent increases.

Second, we remove the part of the rent change that is clearly not program-induced. The easiest items to delete are fuel and utilities, whose price changes are manifestly exogenous. Deleting fuel and utility expenses (whether paid by the landlord or the tenant) from gross rent leaves shelter rent. The change in shelter rent is an upper bound on program effects--an upper bound because shelter supply costs are also affected by exogenous price changes. For Brown County, where the time series is longer, we show that exogenous price changes increased shelter supply costs more than shelter rents rose.

Third, we compare local and regional inflation in contract rent, the only measure for which regional data are available. (Contract rent is the amount paid by a tenant to his landlord; it may include some or all utility expenses.) The comparison assumes that the region's inflation rate is "normal," so that local differences could be program-related.

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\* During 1979, we expect to analyze another two years of data for St. Joseph County, bringing coverage through mid-1978.

Fourth, we compare submarket inflation rates within St. Joseph County, which has the most distinct submarkets. Our null hypothesis is that the program's price effects would be greatest in the submarket most heavily populated by program participants.

Fifth, we measure participants' contract rent changes after they enroll. Even if their submarkets are not noticeably affected by the program, their specific dwellings might be. To control on housing quantity, we restrict the test to nonmovers, and distinguish dwellings that are repaired to meet program standards. However, we also form program and market data into crude estimates of the consumption and price changes associated with participants' moves.

Sixth, we consider whether rents might have decreased without the program. Our findings from the second, third, and fourth tests make that outcome wholly implausible except in central South Bend. We expected rents to increase in both sites because of rapid national inflation. From the beginning of 1974 through 1977, the national consumer price index compiled by the Bureau of Labor Statistics (BLS) rose by 34 percent. The housing cost index rose by 39 percent, and the index of contract rent rose by 24 percent.

The following pages report findings from the first five tests; methodological details are documented elsewhere.\*

#### GROSS AND CONTRACT RENT INCREASES

We find that rents in each site increased substantially during the period covered by our data. Table 5 shows estimates of the average annual increase in rents for different-sized dwellings. The smaller dwellings, between 1 and 3 rooms, are mostly apartments on multiunit properties. The large dwellings, 5 or more rooms, are

\* See Ira S. Lowry, *Inflation in the Standard Cost of Adequate Housing: Site I, 1973-1976*, WN-9430-HUD, March 1976; James P. Stucker, *Rent Inflation in St. Joseph County, Indiana: 1974-77*, WN-9734-HUD, September 1977, and *Rent Inflation in Brown County, Wisconsin: 1973-78*, WN-10073-HUD, August 1978; Charles W. Noland, *Indexing the Cost of Producing Housing Services in Site I, 1973-75*, WN-9979-HUD, June 1978, and *Indexing the Cost of Producing Housing Services in Site II, 1974-75*, WN-9980-HUD, May 1978. All are publications of The Rand Corporation.

Table 5

ANNUAL PERCENTAGE RENT INCREASE BY SIZE OF DWELLING:  
BROWN AND ST. JOSEPH COUNTIES, 1974-77

Number of Rooms	Brown County Jan. 1974-Mar. 1977		St. Joseph County Nov. 1974-Aug. 1976	
	Contract Rent	Gross Rent	Contract Rent	Gross Rent
1 or 2	4.6	5.7	4.0	4.9
3	4.6	5.8	4.1	5.1
4	4.2	6.1	3.7	6.7
5	4.2	7.7	2.6	4.6
6+	5.9	9.0	1.7	3.3
All sizes	4.4	6.7	3.1	5.0

SOURCES: Stucker, *Rent Inflation in Brown County*, Table 2.8; and *Rent Inflation in St. Joseph County*, Table 2.7.

mostly single-family houses. Because the party responsible for utilities (landlord or tenant) varies, we estimate inflation rates for two measures of rent. Gross rent, which includes all fuel and utility expenditures regardless of who pays them, increased at an annual rate of 6.7 percent in Brown County and 5.0 percent in St. Joseph County. Contract rent, the amount a tenant pays his landlord and which does not usually include all fuel and utility payments, increased much less rapidly: 4.4 percent for Brown County and 3.1 percent for St. Joseph County.

COMPONENTS OF GROSS RENT INCREASES

The difference of two percentage points between the inflation rates for contract and gross rent suggests that tenant-paid fuel and utility expenditures account for most of the gross rent inflation. Table 6 confirms that inference for Brown County, where we estimate that the rising prices of fuel and utilities accounted for 70 percent of the increase in gross rent over the 39 months in question. Shelter rent--the part of gross rent that pays for the use of the dwelling and its maintenance--increased by an average of only 3.2 percent

Table 6

COMPONENTS OF GROSS RENT INCREASE FOR A TYPICAL DWELLING: BROWN COUNTY, 1974-77

Date or Period	Shelter Rent	Fuel and Utilities	Gross Rent
<i>Typical Monthly Expense (\$)</i>			
January 1974	128.89	41.11	170.00
January 1975	131.03	49.70	180.73
January 1976	135.40	61.05	196.45
January 1977	141.44	70.69	212.13
<i>Change in Expense (%)</i>			
1974-75	1.7	20.9	6.3
1975-76	3.3	22.8	8.7
1976-77	4.5	15.8	8.0
Annual average	3.2	19.8	7.7

SOURCE: Adapted from Stucker, *Rent Inflation in Brown County*, Tables 3.8 and 3.9.

NOTE: Estimates are for a 5-room dwelling meeting HAO standards and renting for \$170 (including fuel and utilities) in January 1974. Gross rent inflation was estimated from survey data for the years indicated; inflation in fuel and utility expenses was estimated from consumption norms and local rate schedules. Shelter rent inflation was derived as a residual.

annually.\* Results are similar for St. Joseph County, where the increased expenditures for fuel oil, gas, and electricity alone account

\* As indicated in the note to Table 6, Stucker's computation for a typical dwelling estimates fuel and utility expenditures from consumption norms and local rate schedules. We have since confirmed his estimates almost to the dollar by comparing the expenditures reported by the occupants of similar dwellings for 1973 and 1976. Given that fuel and utility prices increased by 72 percent from 1974 to 1977, the data imply zero price elasticity of demand. That inference is roughly confirmed by countywide consumption records for electricity and natural gas maintained by the Wisconsin Public Service Corporation; only weather conditions appreciably affected year-to-year consumption.

for two-thirds of the gross rent inflation over the shorter period for which data are available.\*

The increases in fuel and utility prices are clearly not consequences of the allowance program; they primarily reflect the worldwide energy price increases that followed the Arab oil embargo of October 1973. The smaller increases in shelter rent could reflect allowance-induced demand, but the evidence favors "cost-push" inflation.

That evidence is summarized in Table 7. Data gathered by the BLS and by our own staff form factor-cost indexes for housing services in the two experimental sites and in the north central region.

Table 7

SHELTER RENT SUPPLY COST INCREASES: BROWN AND ST. JOSEPH COUNTIES AND NORTH CENTRAL REGION, 1973-77

Item	Average Annual Price Increase (%)			
	1973-76		1974-77	
	Brown County	North Central Region	St. Joseph County	North Central Region
Maintenance wages	10.0	9.4	9.8	9.6
Maintenance supplies	11.8	11.8	8.6	8.6
Structural repairs	9.7	10.0	7.4	7.9
Utility system repairs	10.3	9.3	9.2	8.1
Painting	8.0	9.8	5.2	7.5
Office wages	9.0	7.5	9.8	7.6
Other business expenses	10.1	3.7	6.7	2.6
Insurance	5.0	7.1	10.2	11.1
Property taxes	.9	2.2	-1.6	5.5
Weighted average <sup>a</sup>	5.8	5.6	4.1	6.5

SOURCE: Noland, *Indexing the Cost of Producing Housing Services in Site I, 1973-75; Indexing the Cost of Producing Housing Services in Site II, 1974-75*; and unpublished data for 1976 and 1977.

<sup>a</sup>Entries in each column are weighted according to the item's average contribution to shelter supply costs in Brown County during 1973.

\* Stucker, *Rent Inflation in St. Joseph County, Table 5.4.*

Expenditure-weighted averages of the indexes indicate that shelter supply costs were increasing annually at about 5.8 percent in Brown County and 4.1 percent in St. Joseph County. The index rose at about the same rate in the baseline (preprogram) and subsequent years. Moreover, the local rate of increase is about equal to (Brown County) or less than (St. Joseph County) the regional rate. The breadth of the market for most of the indexed items also argues against program effects on factor prices.\*

We will eventually index shelter supply costs for individual properties; but even the crude marketwide averages convey an important message. Comparable entries in Tables 6 and 7 for Brown County show that during the first several years of program operations, shelter supply costs were increasing faster than shelter rents. The implication is that landlords' net operating revenues per occupied dwelling were decreasing, which is not the result one would expect from demand-driven inflation.\*\* Data for a shorter interval in St. Joseph County yield the same conclusion: Shelter rent increases (about 2 percent annually) were driven by rising costs, not increased demand.

Although the average annual increase in shelter rent in Brown County from 1974 to 1977 was 3.2 percent, Table 6 shows that the rate accelerated from 1.7 percent in 1974-75 to 4.5 percent in 1976-77.

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\* Although we cannot rigorously demonstrate that allowance-induced demand for additional shelter services did not affect the factor prices, home repair and improvement activities reported by program participants have never amounted to more than one percent of the market-wide dollar volume of residential repairs and improvements, and our surveys and site reports have yet to identify any substantial repairs or improvements that were indirectly stimulated by the program. We think it is safe to conclude that the increase in shelter supply costs is exogenous rather than program-caused. We should also note that the difference between the weighted-average increase for St. Joseph County (4.1 percent) and the region (6.5 percent) is entirely attributable to different changes in property taxes, which decreased in St. Joseph County but increased in the region. (Property taxes account for 42 percent of the expenditure mix used to weight the indexes.)

\*\* What one should expect from increased demand is explained by C. Peter Rydell in *Shortrun Response of Housing Markets to Demand Shifts*, The Rand Corporation, R-2453-HUD, forthcoming. We will return to that issue later in this paper.

The acceleration coincides with program growth and could therefore be interpreted as a program effect. However, it is also consistent with the cost-push hypothesis. When a landlord's shelter supply costs go up, there is normally a delay before the new cost structure translates into contract rent increases. Such a delay seems especially likely when tenants also face large increases in their fuel bills, as they did in 1975 and 1976. In any case, during each of the three years shelter rents fell farther relative to shelter supply costs.

LOCAL VERSUS NATIONAL AND REGIONAL RENT INFLATION

The findings reported above can be checked by comparing the local increases in contract rent estimated from our surveys with the increases reported by the BLS for the nation and for other north central cities. The comparisons are necessarily inexact. What is included in contract rent and what is left for the tenant to pay directly varies according to local custom and structure type. For example, in cities where centrally heated multiple dwellings predominate, fuel costs are mostly covered by contract rent; where rented single-family houses are common, a larger share of fuel costs is paid directly by tenants. But the BLS does not compile an index for either gross rent (which includes all fuel and utility expenses) or shelter rent (which includes none).\*

Table 8 gives the comparisons. Nationally, contract rents rose at an average rate of 5.5 percent from 1973 through 1977. For the north central region, the corresponding figure is 4.9 percent. The five-year averages range from 4.2 percent for cities with populations of 250,000 to 1,400,000 to 5.2 percent for those with populations of less than 50,000. Both the national and regional series increase monotonically; only among the entries by city size do we find

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\* Also, the BLS and HASE indexes reflect different sampling and index construction methods that may bias the estimated inflation rates. One of the cities surveyed by the BLS is Green Bay, whose index could be compared directly with HASE data for Brown County to assess such biases; however, the BLS will not release data for the smaller individual cities in its sample.

Table 8

COMPARISON OF CONTRACT RENT INCREASES: NATIONAL,  
REGIONAL, AND LOCAL, 1973-77

Area	Average Annual Increase in Contract Rent <sup>a</sup> (%)				
	1973	1974	1975	1976	1977
All U.S. cities	4.9	5.2	5.3	5.5	6.5
North central cities by size (000):	4.0	4.5	4.6	4.9	6.3
Over 1,400	6.8	4.8	3.7	3.9	5.7
250-1,400	2.4	3.6	4.5	4.2	6.3
50-250 <sup>b</sup>	2.8	4.6	5.0	7.1	5.7
2.5-50	4.1	5.0	5.0	4.4	7.5
Brown County		3.7	4.4	4.8	
St. Joseph County			3.1		

SOURCES: U.S. Bureau of Labor Statistics, *CPI Detailed Report*, various issues; and special tabulations for north central cities, based on monthly or quarterly sample surveys in 56 urban areas nationally and 14 in the north central region. Entries for Brown and St. Joseph counties are based on annual sample surveys conducted by HASE; see Stucker, *Rent Inflation in Brown County*, Table 2.8, and *Rent Inflation in St. Joseph County*, Table 2.7.

<sup>a</sup>Entries for the entire U.S. and for the north central region are based on the BLS index of "rent," definitionally equivalent to "contract rent" in the HASE surveys. Changes are calculated from December to December.

<sup>b</sup>Group consists of only two urban areas--Champaign-Urbana, Illinois, and Green Bay, Wisconsin. Differences between entries for this group and those for Brown County (which includes Green Bay) should be primarily due to events in Champaign-Urbana, but could also reflect different methods of sampling and index construction.

occasional reversals of that trend, and we doubt their significance.

In both Brown and St. Joseph counties, the rates of contract rent increase are below the national and regional averages for the corresponding years, and also below most (but not all) the rates for city-size groups. The data for our sites are not precisely bounded by the calendar years for which BLS data are presented. However, with only minor interpolation, we can conform the national and regional data to the time intervals of the site data, with the following results:

	Average Increase in Contract Rent (%)			
	All U.S. Cities	North Central Cities	Brown County	St. Joseph County
January 1974				
-March 1977	18.8	16.4	14.9	--
November 1974				
-August 1976	10.1	8.6	--	5.8

Because cross-city comparisons of contract rent are inexact, we can only conclude from these data that rent inflation in Brown and St. Joseph counties since the allowance program began has been no greater than that in the nation or the region. We note, however, that the estimates of Brown County's annual rent increases imply an acceleration that is also visible in the shelter rent data of Table 6. By the end of 1976, Brown County's contract rent inflation had nearly reached the regional rate, a logical result if rent inflation in

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\* According to the BLS, the standard error of year-to-year changes in the national series (based on data for 56 urban areas) is just under 0.2; reliability statistics are not available for the north central region (14 urban areas) or its city-size groups (2 to 5 cities each). For Brown County, the standard error of year-to-year changes is about 0.4; the standard error of the single rate reported for St. Joseph County is about 0.3. Few of the year-to-year changes shown in Table 8 would pass a 95 percent confidence-level test of statistical significance, but a general upward trend is visible in all the rows except that for north central cities with populations over 1,400,000.

Brown County were driven by price increases in national factor markets.

#### GROSS RENT CHANGES IN SUBMARKETS

Even though marketwide data do not show program-induced rent changes, submarket data might. Preexperimental conjectures and formal models both predicted that the strongest program effects would occur in submarkets that were heavily patronized by participants, either before or after they enrolled: Dwellings that were no longer desired by participants would fall in price, whereas the dwellings they sought would rise. Most conjectures supposed that high vacancy rates would dampen such effects, but Urban Institute analysts have argued the contrary, predicting the largest price increases for low-quality dwellings with high vacancy rates.\*

The best-defined submarket in our sites is central South Bend, where the rental vacancy rate exceeds 12 percent and most rental housing is old and poorly maintained. During the first two program years (through December 1976), 27 percent of all renter households living in central South Bend enrolled in the allowance program, surely enough to be noticed by local landlords. A third of all renters in the area and 57 percent of those who enrolled were blacks, who were likely to encounter discrimination if they sought housing elsewhere in the county. In the rest of the county, the rental vacancy rate was lower (about 9 percent), the renter enrollment rate was lower (about 16 percent of all renters), and nearly all enrollees were white.

Survey records of rent changes from November 1974 through August 1976 show different rates of gross rent increase for different types of dwellings, both in central South Bend and elsewhere in St. Joseph County. However, in every price range and for every structure type,

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\* Or at least for some such dwellings. Their findings are reported only for groups of households (see Table 4, above); they predict that housing prices will rise sharply for program participants but fall sharply for eligible nonparticipants. Their model seems to create a strong submarket boundary at the minimum quality level required by program rules; the program apparently causes households, but not housing units, to cross that boundary.

the average annual increase in gross rent for dwellings in central South Bend was less than or equal to the corresponding rate elsewhere in the urban part of the county (see Table 9).

The pattern of inflation shown in Table 9 illustrates the different effects of rising fuel prices on various dwelling types. Multiple dwellings are usually smaller and better insulated than single-

Table 9

COMPARISON OF GROSS RENT INCREASES: CENTRAL  
SOUTH BEND AND OTHER PARTS OF ST. JOSEPH  
COUNTY, 1974-76

Type of Property <sup>a</sup>	Average Annual Increase (%)	
	Central South Bend	Rest of Urban Area
Low-rent dwellings:		
Single-family	10	14
2-4 units	6	6
5+ units	6	9
Medium-rent dwellings:		
Single-family	7	9
2-4 units	5	6
5+ units	2	2
High-rent dwellings:		
Single-family	7	9
2-4 units	-1	2
5+ units	-3	3

SOURCE: Stucker, *Rent Inflation in St. Joseph County*, Tables 4.2 and 4.3.

NOTE: Estimates are based on survey records that span the period from mid-November 1974 through August 1976. Sample sizes underlying the individual entries range from 12 to 93 dwellings, totaling 331 for central South Bend and 247 for the rest of the urban area.

<sup>a</sup>Dwellings are classified by the average gross rent per unit on the property at baseline, and are grouped approximately into terciles of the countywide rent distribution.

family houses, so use less fuel per unit; their rents are thus less affected by fuel price increases. For a given structure type, the fuel bill is a larger share of a low gross rent than a high one, so rising fuel prices cause larger percentage rent increases for low-rent than for high-rent dwellings.

Finally, the survey data show that dwellings in central South Bend consume a fifth more fuel than their counterparts elsewhere in the county, perhaps because their furnaces are older and less efficient or because the dwellings are poorly insulated. Absent program-induced rent changes, one might therefore expect that the largest percentage rent increases would have occurred in central South Bend. Yet the increases were generally smaller there than elsewhere in the county, despite the concentration of enrollees in the central area. We conclude that the presumptive inflationary effect of the allowance program in central South Bend was not powerful enough to override the area's generally weak housing demand, reflected in its 12 percent vacancy rate.

#### CONTRACT RENT CHANGES FOR PARTICIPANTS

Although the geographic submarket with the most participants shows no "extra" rent inflation, the participant's dwellings might be affected. Table 10 reports the average increases in contract rents during the first two program years for two groups of participants in each site: those who stayed in the same dwelling ("nonmovers") and those who moved after enrolling ("movers"). Members of each group are also classified as to whether the dwellings they occupied at enrollment passed or failed the initial evaluation. Those whose dwellings failed either had to repair them or move to better dwellings to qualify for allowance payments.

The data in Table 10 are not standardized for each participant's period of exposure to rent changes (from enrollment to the end of the second program year), nor are they adjusted for changes in the quantity of housing services consumed.\* The clearest entries are for nonmovers,

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\*We have begun more rigorous analysis of similar data that cover the first three years of program records.

Table 10

POSTENROLLMENT CHANGES IN CONTRACT RENT FOR PARTICIPANTS

Postenrollment Mobility Status	Percent with Rent Increases		Average Rent Change <sup>a</sup>		Number of Records	Average Enrollment <sup>b</sup> (months)
	Passed Initial Evaluation	Failed Initial Evaluation	Passed Initial Evaluation	Failed Initial Evaluation		
Brown County						
Nonmovers	30	32	3	7	1,133	12
Movers	69	84	23	42	410	15
St. Joseph County						
Nonmovers	13	15	1	3	1,218	10
Movers	66	74	32	46	325	13

SOURCE: Tabulated by HASE staff from housing allowance program records through June 1976 for Brown County and December 1976 for St. Joseph County.

NOTE: Entries are based on records for renter enrollees who were receiving payments at the end of the program's second year, excluding those whose rent records were defective, who were living rent-free at enrollment, or whose enrollment dwellings were not evaluated.

<sup>a</sup>Some movers reported lower rents after moving. For both nonmovers and movers, the average rent change is based on all cases (not just those whose rents increased), but excludes a few in which the reported rent changes exceeded 500 percent. The excluded cases were usually ones in which the rent at enrollment was clearly below the market rent for the dwelling because of subsidies by the owner--a friend or a relative.

<sup>b</sup>Time from date of enrollment to the close of the file used for this analysis--the interval over which the participant was exposed to the "risk" of a postenrollment rent increase.

whose average enrollment was close to a year and whose housing consumption was either unlikely to have changed at all (those whose dwellings passed the initial evaluation) or likely to have increased only slightly (those whose dwellings failed but were repaired). For the movers, we cannot yet distinguish the consumption changes associated with a move from the coincident price changes.

About a third of the nonmovers in Brown County and a seventh in St. Joseph County reported postenrollment rent increases. For the entire group whose dwellings passed the initial evaluation, the average rent increase was about 3 percent in Brown County and one percent

in St. Joseph County--well below our estimates of the marketwide averages for the same general period (4.4 percent for Brown County, 3.1 percent for St. Joseph County). Although participants' rent increases may have been greater than those imposed on other tenants (see below, "Rent Increases for Stayers and Movers"), they were not much larger; clearly, landlords did not usually impose large rent increases on tenants who enrolled in the allowance program.\*

Among nonmovers whose dwellings failed but were then repaired to meet program standards, the average postenrollment rent increases were larger--7 percent in Brown County and 3 percent in St. Joseph County. Landlords whose tenants asked for repairs presumably raised rents at least enough to recover the costs of the repairs. Because the tenant was then consuming more housing services, the price increase was less than the rent increase. But even so, the rent increases, if compared to the no-repair case, are modest: The increment is 4 percent in Brown County and 2 percent in St. Joseph County.

About a fourth of the records for Brown County and a fifth for St. Joseph County pertain to enrollees who moved before the end of the second program year.\*\* Most of the movers paid substantially more rent after moving: on the average, 23 to 32 percent more if they moved from dwellings that met program standards, 42 to 46 percent more if they moved from failed dwellings. Although we have yet to estimate the associated changes in housing consumption--a complex task, entailing the use of hedonic indexes--we believe that increased consumption accounts for most of the increased expenditure. It is implausible that participant movers would be singled out by landlords for much

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\* Participants were required to enter a lease agreement with their landlords even if they did not move, so the landlords both knew that their tenants were participants and had a ready-made occasion for raising rents.

\*\* Because of the exclusions mentioned in the notes to Table 10, the mover fractions do not accurately reflect participants' mobility. Among all renter enrollees authorized for payments at any time during the first two program years, 32 percent in Brown County and 39 percent in St. Joseph County had moved before the end of the second year. For additional information on participants' mobility, see *Fourth Annual Report of the Housing Assistance Supply Experiment*, pp. 118-133.

larger rent increases than were imposed on either participant non-movers or nonparticipant movers.

RENT INCREASES FOR STAYERS AND MOVERS

It is generally believed that landlords are reluctant to increase the rents of current tenants ("stayers"), preferring to wait for a vacancy. If so, the marketwide average rent changes reported earlier are a mixture of larger "turnover" rent increases and smaller or less frequent increases for occupied dwellings. We have enough evidence to estimate some crude marketwide benchmarks for the data in Table 10. They suggest that participant stayers may have experienced rent increases that are slightly above average, and that 70 to 80 percent of the increased rent expenditures reported by participant movers reflect payments for better housing, not higher prices.

Hedonic index studies of rental housing in both sites indicate that the contract rent discount for stayers accumulates at about 3.7 percent annually for several years.\* We also know the average annual turnover rate in each site (see Table 2), whose inverse is the average duration of tenancy. Consequently, we can calculate the average accumulated rent discount at the time of a turnover, as shown below:

	Brown County	St. Joseph County
Marketwide average contract rent increase (% per year) . . . . .	4.4	3.1
Rent discount per year of tenancy (%) . . . . .	3.7	3.8
Turnover per 100 rental units per year . . . . .	66	57
Average duration of tenancy (years) . . . . .	1.50	1.75
Average accumulated discount at turnover (%) . . . . .	5.6	6.6

\* C. Lance Barnett, *Using Hedonic Indexes to Measure Housing Quantity* (The Rand Corporation, R-2450-HUD, forthcoming) estimates that the average discount on gross rent for tenants in Brown County (1974 data) was \$4.45 per year for the first 3.5 years of their tenancy. A

Let us assume that when a landlord fills a vacancy, he imposes a rent increase equal to the accumulated discount plus an additional amount  $x$ , which is the average annual rent increase imposed on stayers. If so, we can use the data above to solve for  $x$ :

$$\begin{aligned} \text{Brown County: } & 4.4 = .66(5.6 + x) + .34x \\ & x = 0.7 \end{aligned}$$

$$\begin{aligned} \text{St. Joseph County: } & 3.1 = .57(6.6 + x) + .43x \\ & x = -0.7 \end{aligned}$$

We suspect that these calculations yield downward-biased estimates of  $x$ ; we are especially skeptical of the negative estimate for St. Joseph County. However, in the calculations that follow, a downward bias leads to conservative conclusions.

Referring again to Table 10, it appears that participant non-movers whose dwellings passed the initial evaluation had rent increases about 2.3 percentage points ( $3.0 - 0.7$ ) above the marketwide average for Brown County's other nonmovers and 1.7 percentage points ( $1.0 - (-0.7)$ ) above the marketwide average for St. Joseph County. Rent increases for participants in the program, even if above the market rate, were clearly too small to instigate general changes in the structure of housing prices.

If we assume that participant movers paid market rents for their new homes, we can estimate the turnover price increases on those dwellings: in Brown County,  $5.6 + 0.7 = 6.3$  percent, and in St. Joseph County,  $6.6 + (-0.7) = 5.9$  percent. The movers' consumption changes can then be estimated:

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similar study of St. Joseph County (1975 data), not yet published, provides an estimate of \$4.37. Applying the discount amount entirely to the average contract (not gross) rent in those years yields an annual discount rate of 3.7 percent for Brown County and 3.8 percent for St. Joseph County.

	Brown County	St. Joseph County	
	<u>Pass</u>	<u>Fail</u>	<u>Pass</u>
			<u>Fail</u>
Postmove rent as percent of premove rent . . . . .	123	142	132
Price increase on post- move dwelling (%) . . . . .	6.3	6.3	5.9
Postmove consumption as percent of premove consumption . . . . .	116	134	125
			138

Again, these are crude estimates, based on marketwide averages and incompletely verified assumptions. But it appears that participant movers increased their housing consumption by 16 to 38 percent, depending on site and whether their dwelling passed program standards ("pass," "fail" in the tabulation above), and that 70 to 80 percent of their increased expenditure reflects increased consumption, not price changes.

#### CONCLUSIONS

The experimental housing allowance programs have now operated for about four years in two metropolitan housing markets chosen for their different market structures and initial conditions. To date, our analysis has focused on the rental market, which is generally agreed to be more susceptible to program-induced price effects than owner-occupied housing. We have compiled and analyzed data covering about three years in Brown County and two years in St. Joseph County. A diligent search of the data indicates that offering housing allowances to low-income households on the condition that they occupy decent, safe, and sanitary dwellings has had virtually no effect on the market price of housing services.

During the period covered by our data, rents rose rapidly in both Brown County's tight market and St. Joseph County's loose market. However, the observed rent increases can readily be attributed to background inflation in factor prices. Because supply costs rose faster than rents, the average net revenue per occupied dwelling decreased in Brown County after the allowance program began; that result seems

inconsistent with the hypothesis that rent inflation was significantly due to excess housing demand.

If rent increases in the experimental sites were driven solely by price increases in regional or national markets, we would expect the local, regional, and national rates of rent increase to be about the same. Since the allowance programs began, contract rents in both sites have risen by less than rents in the north central region or the nation. The rate of increase in Brown County apparently accelerated during the three years covered by our data, but has yet to exceed the regional or national rate.

Central South Bend is a segregated housing submarket that was strongly patronized by program participants both before and after they enrolled. Controlling on structure type and rent level, we find that rents in central South Bend rose by less than rents elsewhere in the county. Because the demand for housing in central South Bend had been declining, rents there might have risen even less without a boost from the allowance program; but the boost, if any, was clearly not large enough to cause substantial price increases.

That inference is supported by data on the experience of program participants in both sites. Among those whose dwellings initially met program standards, first-year rent increases were modest, even though the participants were required to enter lease agreements with their landlords. Crude estimation places the first-year increases (3 percent in Brown County, one percent in St. Joseph County) slightly above the marketwide average increase for other nonmovers. Those whose dwellings were repaired paid extra for the improvements, and those who moved increased their housing expenditures quite substantially. However, unless landlords treated participant movers differently from either participant stayers or nonparticipant movers, 70 to 80 percent of the movers' increased outlay reflected increased housing consumption, not increased prices.

### III. WHY PRICE EFFECTS HAVE BEEN SMALL

Before the experiment, we were warned by various observers that a fullscale housing allowance program could seriously disturb the housing markets in which it operated, causing housing prices to rise sharply either marketwide or in selected submarkets. After the experiment was under way, formal simulations of the allowance program confirmed those conjectures, but added predictions that prices would fall in other submarkets. However, in neither Brown nor St. Joseph County have there been market disturbances that even remotely resemble those that were predicted. The allowance program's effects on housing prices have so far been too small even to be positively identified as such.

There are several reasons for that outcome. First, although most of the eligible renters enrolled, program growth was gradual enough to avoid an abrupt or urgent demand increase. Second, only a minority of those who qualified for payments sought to substantially increase their housing consumption. Third, the supply of decent, safe, and sanitary housing has readily expanded by means of inexpensive repairs to existing dwellings. Fourth, there are good theoretical and empirical reasons to doubt that even a substantial increase in housing demand addressed to a fixed stock of dwellings would much affect rents.

#### PROGRAM PARTICIPATION

One reason for uncertainty about program effects was uncertainty about the eventual size of an open-enrollment program and how quickly that size would be reached. The outcome depends on a number of factors: how many households are eligible, how many of those who are eligible choose to enroll, when they enroll, how long they stay in the program, and (for some purposes) how many enrollees subsequently qualify for payments.

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\*See C. Peter Rydell, John E. Mulford, and Lawrence W. Kozimor, *Dynamics of Participation in a Housing Allowance Program*, The Rand Corporation, WN-10200-HUD, June 1978, for a mathematical treatment of most of these relationships.

Although homeowners have not participated in the expected numbers, renters have. Applying detailed eligibility tests to individual survey records, we estimate that about 26 percent of the renters in Brown County and 33 percent in St. Joseph County would be admitted to the program if they applied; the pool of eligibles turns over rapidly, but its size has not changed much since the program began. In September 1978, about 75 percent of the eligible renters (20 percent of all renters) in Brown County were enrolled; in St. Joseph County, 52 percent of the eligible renters (17 percent of all renters) were enrolled.\*

From the pattern of program growth, we judge that a permanent open-enrollment program is unlikely to serve more than a fifth of all renters at any given time. That is a large enough fraction to have a considerable effect on the rental housing market, but it is perhaps important that program growth was not instantaneous. Housing demand was fed into the local market over a period of several years rather than all at once (as in the simulation models). To be sure, about two-thirds of the September 1978 renter enrollment in Brown County and half in St. Joseph County was achieved by the end of the program's first year, but growth was slow thereafter. Enrollees whose dwellings were initially acceptable began receiving payments immediately, but few of those who eventually opted for more housing consumption acted immediately. Those whose dwellings initially failed had to either repair or move before they could draw allowances, but there were no deadlines. Repair actions usually took one to three months; moves, up to six months.\*\* Fourteen percent of the renter enrollees in

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\*The figures do not include enrollees who dropped out before September 1978. About a third of all enrollees terminate each year, usually because they become ineligible. Thus, many more have participated than are currently enrolled.

Expressed as a percentage of those eligible, renter enrollment is lower in St. Joseph than in Brown County. The main reason is that about 1,350 eligible renters in St. Joseph County are beneficiaries of other federal housing subsidies which they must forgo in order to receive allowance payments. Sixty-eight percent of the "unsubsidized" eligibles were enrolled in September 1978.

\*\*Bruce W. Lamar and Ira S. Lowry, *Client Responses to Housing Requirements: The First Two Years*, The Rand Corporation, WN-9814-HUD, February 1979, Sec. III.

Brown County and 22 percent in St. Joseph County dropped out of the program without ever qualifying for payments.

INCREMENTAL HOUSING EXPENDITURES

Despite the substantial sums paid out in housing allowances, incremental housing expenditures by participants have characteristically been small except for movers (refer to Table 10). On the average, allowances increase the gross incomes of renter recipients by 22 percent in Brown County and 30 percent in St. Joseph County, but only a fourth to a third of the recipients increase their housing consumption beyond what the program requires.

A cross-sectional analysis of the income elasticity of housing expenditures in the two experimental sites shows that participants' behavior is typical of all renters. Controlling on household size, stage in life cycle, and race of head, we estimate current income elasticities for all renters in the range of .10 to .14, and "permanent income" elasticities for nonmovers in the range of .11 to .25.\* We were unable to find persuasive evidence that the elasticity varied with incomes over the range from \$4,000 to \$20,000. The author of the study judges that, even allowing for identifiable biases in the estimating procedure, our data will not support permanent income elasticities greater than .3; he favors a cross-site estimate of .2. Using that figure, the average renter recipient in Brown County would voluntarily increase his housing expenditure by about 4 percent because of his allowance; and in St. Joseph County, by about 5 percent.\*\*

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\* John E. Mulford, *The Income Elasticity of Housing Demand*, The Rand Corporation, R-2449-HUD, July 1979. The values shown take the lowest and highest estimates from the two sites, then extend the range by one standard error at each end. Permanent income is measured by a three-year average for each household; to obtain that average, we restricted the sample to nonmovers.

\*\* For Brown County,  $(1.22)^2 = 1.041$ ; for St. Joseph County,  $(1.30)^2 = 1.054$ . The estimates assume that income at enrollment equals "permanent income"; if we used the estimated elasticities for current income, the increase in participants' housing expenditures would be even smaller.

#### HOUSING IMPROVEMENT

Before an enrolled household can begin receiving allowances, it must secure acceptable housing (about half the renter enrollees in Brown County and two-fifths in St. Joseph County already live in acceptable dwellings). If its dwelling fails the initial evaluation, the household can either move to acceptable housing or repair its present dwelling. About half the renters whose dwellings fail the initial evaluation choose to repair. Nearly all who repair do so successfully.\*

The repaired dwellings average 1.8 repairs each and rarely have more than five.\*\* The cash cost of such repairs is usually small; the median expenditure in both sites is \$11. Moreover, a third of all repairs are accomplished without any cash expenditure on the part of the landlords, tenants, or friends who do the work. Although total repair costs exceed cash costs (because total cost includes an imputed value for free labor), it is clear from reports of hours worked that total repair costs are also small compared with allowance benefits and rents. The small cost of repairing a dwelling so that it is acceptable means that the supply of acceptable housing can expand easily to accommodate the demand pressures induced by allowances.

#### DEMAND SHIFTS AND RENT CHANGES

Before the experiment began, we expected to find housing prices higher in tight markets (such as Brown County) than in loose markets (such as St. Joseph County). Subsequently, we found that market condition has little effect on the rents landlords ask for comparable dwellings. Table 11 gives average gross rents for similar dwellings in Brown County, central South Bend, and St. Joseph County outside South Bend, three places with vastly different vacancy rates (refer to Table 2). After controlling for differences in dwelling age and

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\* For more information on housing repairs, see James L. McDowell, *Housing Allowances and Housing Improvement: Early Findings*, The Rand Corporation, N-1198-HUD, forthcoming.

\*\* Most enrollees whose dwellings would require five or more repairs either move or drop out of the program.

Table 11

GROSS RENT BY PROPERTY SIZE AND LOCATION: BROWN COUNTY (1973) AND ST. JOSEPH COUNTY (1974)

Size of Property and Year Built	Annual Amount (\$) per Unit		
	Brown County	Central South Bend	Rest of St. Joseph County
<i>1 Unit</i>			
Post-1944	2,151	1,783	1,896
1915 to 1944	1,910	2,022	1,789
Pre-1915	1,702	1,840	1,927
<i>2-4 Units</i>			
Post-1944	2,171	1,551	1,808
1915 to 1944	1,551	1,461	1,535
Pre-1915	1,448	1,377	1,300
<i>5+ Units</i>			
Post-1944	1,984	2,829	2,568
1915 to 1944	1,443	1,332	1,445
Pre-1915	1,515	1,348	1,320
Average <sup>a</sup>	1,783	1,615	1,799
Adjusted average <sup>b</sup>	1,764	1,727	1,732
Adjustment (%)	-1.1	6.9	-3.7

SOURCE: Tabulated by HASE staff from records of the baseline surveys of landlords in each site.

NOTE: Brown County data for 1973 are adjusted for price inflation during 1973-74.

<sup>a</sup>A weighted average, in which the weights equal the number of units in each cell divided by the total number of units in the corresponding location.

<sup>b</sup>A simple average that controls for differing distribution of units across locations.

property type, we find that rents are virtually identical in central South Bend and the rest of St. Joseph County (about \$1,730 annually) and only slightly higher in Brown County (\$1,764 annually).\* We

\*C. Peter Rydell documents how differences were controlled for, in *Effects of Market Condition on Prices and Profits of Rental Housing*, The Rand Corporation, P-6008, September 1977.

think that, at most, rents in central South Bend are "discounted" by only about 2 percent relative to rents in the other two places.

On the other hand, the market value of rental properties varied greatly between the three places, in a pattern that neatly reflects relative vacancy rates. The mix-adjusted average value for Brown County was \$12,300; for central South Bend, \$6,900; and for the rest of St. Joseph County, \$9,300.

Those data suggest that current price (contract rent) adjustments play at most a subsidiary role in market equilibration following a shift in housing demand. In the absence of a price change, a change in the vacancy rate ensues and is reflected in more or less revenue for the owners. Insofar as the altered market conditions are expected to persist, the associated revenue expectations will be capitalized into property values.

Our colleague C. Peter Rydell has developed an explicit theory of shortrun market adjustments and has used cross-market HASE data to estimate the parameters of the process.\* His calculations indicate that under typical market conditions (6.0 percent vacancy rate), a 1.0 percent increase in housing demand should cause rents to rise 0.25 percent and property values to increase up to 4.0 percent. The results are symmetrical for a demand decrease.

If both the theory and its parameters are correct, a much larger demand increase than was generated by the experimental housing allowance program would be needed to have a measurable effect on housing prices. In neither site has the program caused a marketwide demand shift as large as 1.0 percent. Even if all renter participants patronized a single submarket and were its only customers, their allowances would cause them to demand only 4 to 5 percent more housing, which would cause rents to rise by only about one percent under normal vacancy conditions.

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\**Shortrun Response of Housing Markets to Demand Shifts.*

IV. CONCLUSIONS

HASE was undertaken to test preexperimental conjectures about the market effects of a fullscale national program. Most economists and housing market analysts thought such a program was likely to disrupt local rental markets and engender substantial rent inflation. After the experiment was designed and its sites selected, two formal models of housing markets were used to predict the effects of the now well-specified allowance program on housing prices. Both models predicted dramatic market disturbances, with prices rising sharply in some submarkets and falling in others; however, they disagreed as to the pattern of change.

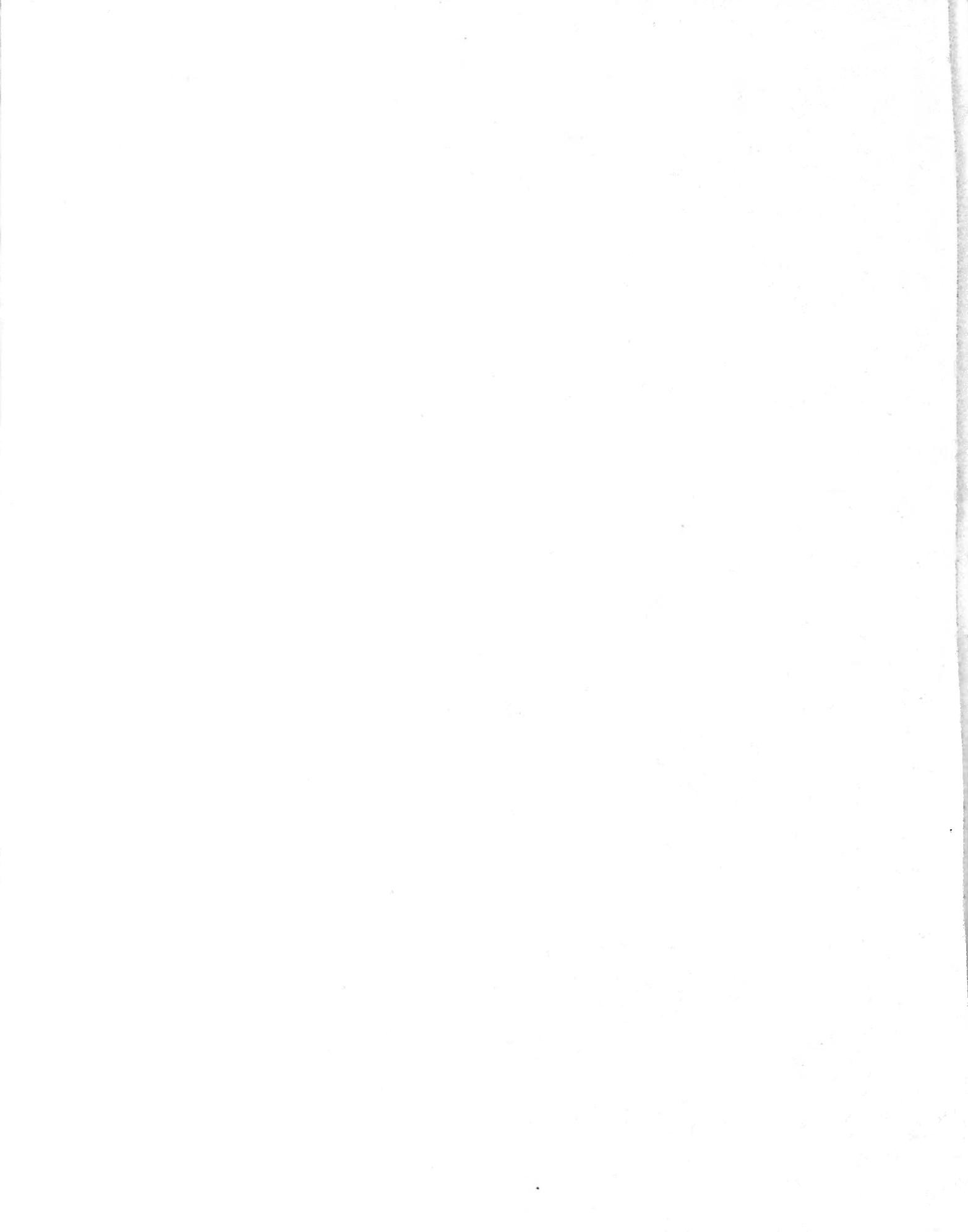
Contrary to predictions, the experimental evidence reveals no significant price changes attributable to the allowance program's first three years of operation in Brown County (an unsegregated market with a low vacancy rate) or its first two years in St. Joseph County (a segregated market with a high vacancy rate). Those who expected substantial price effects generally assumed faster program growth, more elastic housing demand by participants, stronger ear-marking effects, and less elastic supply than was encountered in the field.

If the longrun effects of allowances on market prices are no greater than those observed, the issues to be addressed by policymakers are much simplified: Housing allowances can be judged in terms of who participates, how much they benefit, and the costs of the program relative to alternatives. Those not in the program would be unaffected by it, except as contributors to its costs.

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