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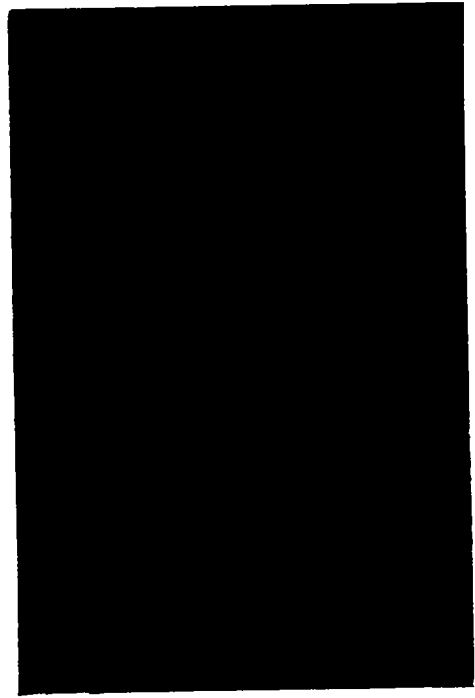
## HOUSING ASSISTANCE SUPPLY EXPERIMENT

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A WORKING NOTE

*This Note was prepared for the DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, under Contract No. H-1789. It is intended to facilitate communication of preliminary research results. Views or conclusions expressed herein may be tentative and do not represent the official opinion of the sponsoring agency.*





WN-9541-HUD

ARE FURTHER SURVEY CYCLES  
NEEDED IN SITE I?

Ira S. Lowry

July 1976

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**Rand**  
SANTA MONICA, CA. 90406

M. Levine  
7/28/76

PROGRAM DATA - BROWN COUNTY HAO

<u>Program Statistic</u>	<u>Status/Value As Of:</u>			
	July,75	Nov.,75	Mar.,76	July,76
Cumulative Enrolled	3247	3914	4434	5202
Enrolled Non-Recip.	570	432	389	364
Dropped Out Enrollees	243	486	611	713
Cumulative Recipients	2434	2996	3434	4125
Terminated (Cumulative)	213	517	799	1015
Reinstated (Since R* Inc.)	-	-	-	77
Current Recipients	2189	2369	2470	2905
Initial Housing Evaluations	3513	3631	4101	4854
Acceptable	1768	1827	2070	2497
Move Evaluations - Enrollees	460	487	569	718
Move Evaluations - Recipients		247	369	558
Ave. Total Income, Current Recipients	\$ 4291	\$ 4414	\$ 4398	\$ 4558
Ave. Adjusted Income	3311	3512	3512	3659
Ave. Monthly Payment	62.33	57.23	57.23	73.83
Total Monthly Disbursement	136,440	135,577	141,358	214,476

ENROLLMENT GREEN DAY

RECIPIENTS (CUM)  
HUNDREDS

75  
70  
65  
60  
55  
50  
45  
40  
35  
30  
25  
20  
15  
10  
5

ACC EXECUTED 3/14/74

ENROLLMENT BEGAN 6/17/74

M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J  
1974 1975 1976  
MONTH ENDING

CUMULATIVE PRELIMINARY APPLICATIONS REC'D

CUMULATIVE RA'S PROCESSED

CUMULATIVE ENROLLED

CURRENTLY ENROLLED

CURRENT RECIPIENTS

CUMULATIVE RECIPIENTS

PLANNED RECIPIENTS

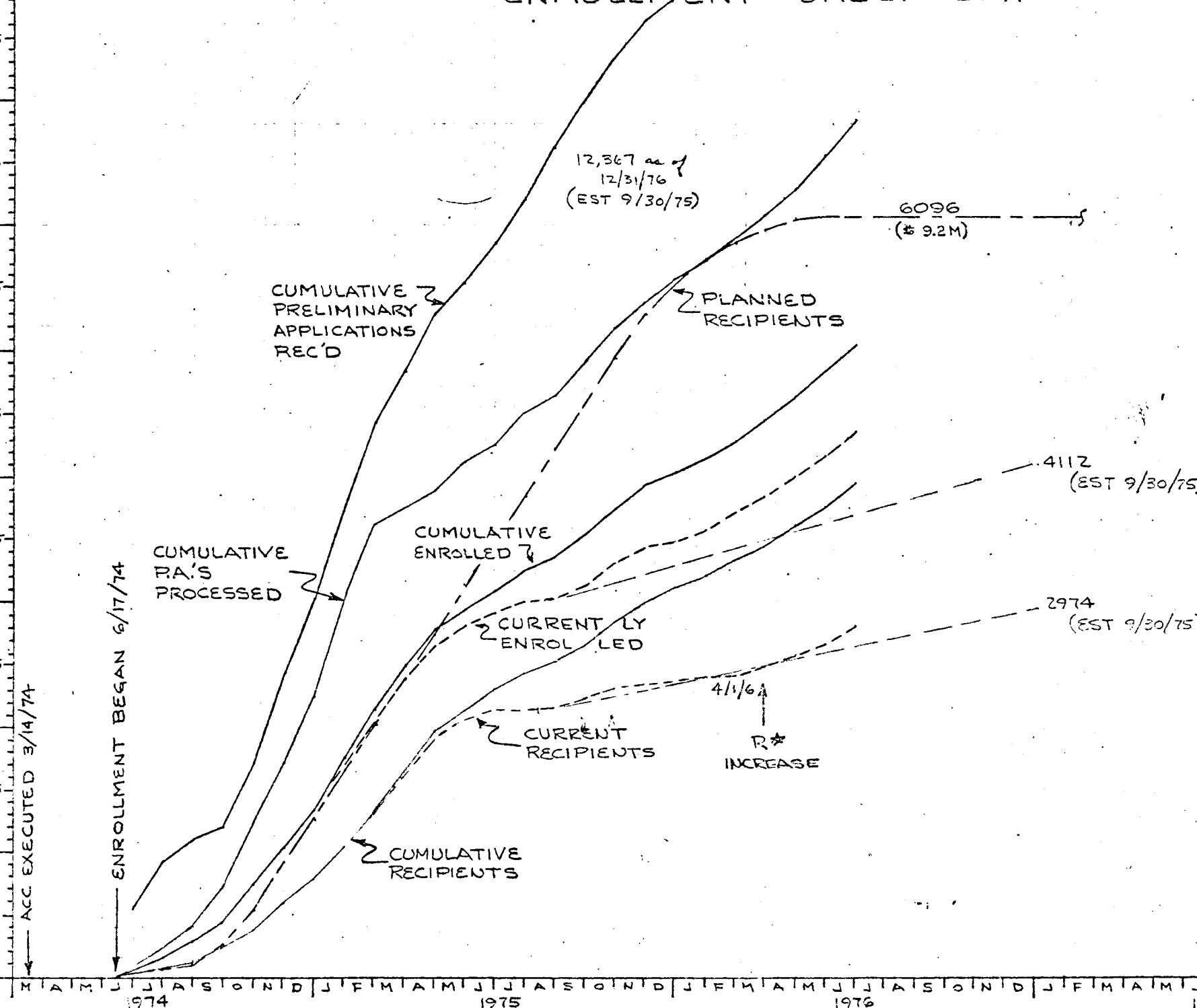
12,367 as of 12/31/76 (EST 9/30/75)

6096 (\$ 9.2M)

4112 (EST 9/30/75)

2974 (EST 9/30/75)

4/1/61  
R\* INCREASE



PREFACE

This working note was prepared for the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD). It addresses the question whether additional annual survey cycles should be conducted in Brown County, Wisconsin, Site I of the Housing Assistance Supply Experiment (HASE).

The conclusions and recommendations reported here reflect the consensus of a committee consisting of Charles E. Nelson, Rand's program director for HASE; G. Thomas Kingsley, deputy director and manager of the Field and Program Operations Group; Daniel J. Alesch, manager of Rand's Brown County site office; Deborah Hensler, director of Rand's survey research unit; and Ira S. Lowry, manager of the HASE Design and Analysis Group. They were reviewed by Gustave H. Shubert, Rand's senior vice-president for domestic programs; and Barbara R. Williams, deputy vice-president (Washington).

Rand's survey operations in Site I include annual interviews with a special sample of urban renter households selected according to specifications provided by The Urban Institute. The records of these interviews are used by the institute in the integrated analysis of data drawn from all the HUD-sponsored experiments with housing allowances. The conclusions and recommendations presented here take no account of the institute's research plans and how they would be affected by a decision to curtail survey operations in Site I. We understand that the institute will present its views on this matter directly to HUD.

The note was written by Ira S. Lowry, with advice and technical assistance from members of the Design and Analysis and Survey groups and from the Brown County site office. The draft was typed by Linda K. Ellsworth. Doris Dong prepared the graphics. Charlotte Cox edited the typescript and supervised production of final copy.

This note was prepared pursuant to HUD Contract H-1789, Mod. 22, Exhibit A, Part IV. C. 3.

SUMMARY

The design for the Housing Assistance Supply Experiment calls for up to six annual cycles of field surveys to measure the effects of the experimental allowance program on the housing market in which it operates. In Brown County, Wisconsin (Site I of the experiment), three such cycles have been completed. This note addresses the question whether more cycles are needed there.

At stake on one side is the value of additional time-series data for experimental conclusions bearing directly on a federal decision about housing allowances as a national program and also their value for research bearing on other housing policies. At stake on the other side is the cost of further fieldwork and of processing and analyzing the data--about \$2 million per survey cycle.

This note analyzes seven salient issues bearing on the decision to continue or to curtail the survey agenda in Brown County. We conclude that some important experimental purposes are adequately served by the three waves of survey data now in hand for Brown County and others will be adequately served by program records that are independent of survey operations. However, conclusions about market and community effects based on survey data covering only the first 18 months of program operations in Site I could easily be attacked as inadequate or misleading. Another survey cycle would extend the coverage by 12 months, or 67 percent, enabling us to report on a period in which the average number of allowance recipients was 43 percent greater and total payments were 70 percent greater than during the period covered by Wave 3 data. Moreover, additional survey data for Site I would help us with the analysis of different events in Site II and would in any case be valuable for housing policy research not directly related to housing allowances.

Given the absence so far of program-caused market or community perturbations in Brown County and the small likelihood that such disturbances will occur in the future, we do not think that the original plan for a total of six annual survey cycles is now justified by the

objectives specified in our research charter. But we do think that the arguments summarized above justify one additional cycle--Wave 4--both for the information it would provide and to protect the experiment's credibility.

We therefore recommend that Wave 4 be planned and conducted during 1977 as the final survey cycle for Site I. As such, it should include the full panoply of fieldwork--surveys of landlords, tenants, homeowners, residential buildings, and neighborhoods--needed to create terminal data files that are comparable in scope and detail to the baseline data that were collected in 1973-74.

When Wave 4 is completed, we recommend that Rand continue to participate in the management of the Housing Allowance Office and to report on its progress through June 1978--five years from the beginning of open enrollment. Until then, we would also maintain the Rand site office in Green Bay, including the team of resident observers who report on community events bearing on the allowance program.

Although Rand would continue its systematic analysis of program data and might, on the basis of the resident observers' reports, recommend additional special studies, our general responsibility for assessing the effects of the program on Brown County's housing market and for reporting on community attitudes toward the program would terminate with Wave 4.



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## I. INTRODUCTION

The design of the Housing Assistance Supply Experiment calls for an annual cycle of field surveys to measure the effects of the experimental allowance program on the housing market in which it operates. The number of annual survey cycles needed to accomplish this purpose depends on the magnitude of program effects and the speed with which the market adjusts to them, neither of which factors could be known in advance.

Plans for the experiment have assumed that a total of six cycles--one before the program began operations and five subsequently--were probably adequate to capture all or nearly all of the policy-relevant information. However, both Rand and HUD recognized that information gained in the first few years was likely to modify our judgments as to the appropriate duration of the experiment. This note addresses that issue for Site I (Brown County, Wisconsin), where the allowance program has been operating for nearly two years and the third annual survey cycle is nearing completion.

The immediate issue is whether the fourth and later survey cycles should proceed as planned, whether fieldwork should be discontinued, or whether some intermediate agenda is possible and preferable. At stake on one side is the value of additional time-series data for experimental conclusions relating to housing allowances and other important issues of federal housing policy. At stake on the other side is the cost of further fieldwork (about \$1 million for each survey cycle) and the cost of processing and analyzing the data that would be collected (harder to estimate, but probably another \$1 million per cycle).

The issue has been raised and will cast a cloud of uncertainty over planning for Wave 4 in Brown County until it is settled. The fieldwork subcontractor for Brown County is especially affected by this uncertainty in staffing its Green Bay office. Rand's planning for its Green Bay site office and for Santa Monica staffing is also affected. We judge that it will be difficult for the subcontractor to perform competently in Wave 4 without an unequivocal affirmative decision by 30 September, and that an earlier decision would improve the subcontractor's performance significantly.

Ideally, a decision about Wave 4 would be made in the light of an up-to-date analysis of allowance program records and Wave 3 survey records. That, however, is impossible because of the long sequence of operations on each annual data base that must precede analysis, and because Rand's staffing plan for the experiment is designed for a level year-round workload such that data from one of the two experimental sites is always waiting in a queue.

At this time, only data from the first year of program operations and the preprogram wave of field surveys have been systematically analyzed. Data for the second year of program operations will be delivered shortly after 30 June, but will take several months to organize and analyze. Most of the second wave survey data have been keypunched, cleaned, and organized into master files but have yet to be audited or analyzed.

However, we believe that enough is known about the progress of the allowance program during its second year and about its effects on the local housing market to date to enable us to judge what Wave 3 data will show when they are analyzed. Although there may be surprises in the data, we are confident that they will be subtle ones. The arguments for and against continuing the survey agenda through Wave 4 will rest, we think, on other grounds.

#### THE OBJECTIVES OF THE EXPERIMENT

The design for the Supply Experiment was approved by HUD in October 1973, after two years of planning, negotiations, and reviews. Although field operations were authorized in Site I well before that date, they began within a well-structured framework. There have been few if any instances of such thorough planning and review in programmatic or social experiments sponsored by the federal government.\*

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\* The *First Annual Report of the Housing Assistance Supply Experiment* (The Rand Corporation, R-1659-HUD, October 1974), Appendix A, lists 22 working notes on various aspects of experimental design, culminating in the *General Design Report: First Draft* (WN-8198-HUD, May 1973), the *Proceedings of the General Design Review of the Housing Assistance Supply Experiment* (WN-8396-HUD, October 1973), and *General Design Report: Supplement* (WN-8364-HUD, August 1973).

This careful planning makes it especially appropriate to consider the Wave 4 issue in the context of the original experimental objectives, which continue to serve as the contractual charter for the Supply Experiment. Its mission was and is to provide reliable and credible answers to four clusters of questions about the effects of a national housing allowance program:

1. Supply responsiveness. How will the suppliers of housing services--landlords, developers, and homeowners--respond to the attempts of allowance recipients to increase their housing consumption? Specifically, what mix of price increases and housing improvements will result? How long will these responses take to work themselves out to a "steady state"? How will these responses differ by market sector?
2. Behavior of market intermediaries and indirect suppliers. How will mortgage lenders, insurance companies, and real estate brokers respond to an allowance program? Will their policies facilitate or inhibit the attempts of allowance recipients to obtain better housing and those of landlords to improve their properties? What happens to the availability, price, and quality of building services and repair and remodeling services? What seem to be the reasons for any observed changes in institutional or industrial policies?
3. Residential mobility and neighborhood change. In their attempts to find better housing (or better neighborhoods), will many allowance recipients relocate within the metropolitan area? What factors influence the decision to move or to stay? What types of neighborhoods will the movers seek and succeed in entering? Do moves by allowance recipients set in motion a chain of moves by nonrecipients--either into neighborhoods vacated by recipients or out of neighborhoods into which recipients have moved?
4. Effects on nonparticipants. How will households not receiving housing allowances--particularly those whose incomes are within or just above the range of eligibility--be affected by the

program? Specifically, will the increased housing demand of allowance recipients cause an increase in housing prices for nonrecipients? Whether or not such price increases occur, will nonrecipients perceive personal hardships or benefits from the program? How will they perceive and react to allowance-stimulated neighborhood changes?

The answers to these questions are interdependent. Whether a landlord chooses to raise rents, and whether he also chooses to offer his tenants improved housing, depends on his perceptions of changes in market demand and of the alternatives available to his tenants. If he wishes to undertake capital improvements, he must usually seek outside mortgage financing. The mortgagee must judge that the future stream of revenues will be adequate for debt service, that foreclosure would not result in capital loss, and that the property is and will continue to be insurable against physical damage or destruction. The extent to which their present landlords raise rents and/or improve physical facilities and services will affect the allowance recipients' decisions to stay or to seek other quarters better suited to their augmented budgets and housing preferences. If they seek better housing elsewhere, they are likely to be competing with nonrecipients for housing previously beyond their means.

Furthermore, the answers are likely to change over time. Those initially enrolled in a housing allowance program are unlikely to react immediately or simultaneously to their augmented housing budgets, so the demand signals to landlords and developers will be delayed and at first unclear. The landlords in turn will need time to respond--whether with rent increases or housing improvements--and as market signals clarify, these responses may change. The actions of landlords and developers may in turn modify the perceptions and policies of market intermediaries and financial institutions. All these events, in time, may perceptibly change the alternatives open to allowance recipients and the consequences of their choices for others (e.g., nonrecipients).

Finally, different groups within the relevant populations of landlords, financial institutions, allowance recipients, and nonrecipients are likely to respond differently to a given stimulus, so that an

"average" response may conceal important information. The structure of the local housing market and its initial conditions may also influence response patterns. A market initially characterized by excess demand would respond differently from one characterized by excess supply. The incidence of rental tenure or multiple dwellings or ethnic minorities may condition responses in ways that reflect more than simply a different mix of responses by, say, renters and owners or blacks and whites.

Thus, though the questions can be phrased simply, the answers are likely to be both complex and highly dependent on local circumstances. No feasible set of experiments can embrace all plausible variations in circumstances or trace out all consequences. Yet if a national program of housing allowances is a serious possibility, some information about its possible consequences is manifestly better than none, and limited empirical evidence can be extended analytically to predict the unobserved.\*

#### COLLECTING EXPERIMENTAL DATA

We planned to use two kinds of data to answer the research questions posed above. One was the administrative records of the allowance programs conducted in each site, including case records for each program participant and for each housing unit occupied or nominated for occupancy by a program participant. The other was an annual cycle of field surveys in each site addressed to a marketwide probability sample of residential properties.

For rental properties in the sample, the annual survey agenda included a field inspection of the property's exterior (survey of residential buildings), an interview with the owner (survey of landlords), and interviews with some or all of the tenants (survey of renters). For owner-occupied homes, the agenda included a field inspection and an interview with the owner (survey of homeowners). In addition, we planned an annual survey of neighborhoods, entailing field reports on the characteristics of each of 8,000 to 11,000 street segments within the experimental sites. Finally, resident observers operating out of Rand's site offices were to monitor community events and reactions to the program that were likely to be missed by the formal surveys.

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\* *General Design Report*, pp. 8-10.

Administrative records of the allowance program were to be batched annually and delivered to Rand for reorganization into research files. The first such delivery was made in July 1975, covering the first year of program operations in Site I. Partly because program operating procedures were in flux during this first year, much effort was required to organize and interpret the HAO's machine-readable files, but eventually they yielded a coherent and reliable data base on both client characteristics and housing characteristics.

The agenda of field surveys has been carried out in both sites nearly as planned. Following the baseline survey cycle in Site I, the sample of residential properties was reduced by 10 percent, the sampling rate for tenants of large multiunit properties was reduced by 40 percent, and the survey of neighborhoods was placed on a 30-month instead of an annual cycle. These adjustments were promoted by budgetary problems. Following the second survey cycle in Site I, the survey of residential buildings shifted to a biennial schedule because our audit of baseline data indicated that the instrument was insufficiently sensitive to small changes to warrant annual fieldwork.

Cleaning, organizing, and auditing the survey data has required considerably more time and resources than was anticipated. About four-fifths of the work so far has been expended on baseline surveys for Site I. However, what we learned from that experience enabled us to forestall many corresponding problems with subsequent survey records and to routinize the resolution of others. Our experience to date with baseline survey records for Site II indicates that cleaning, organizing, and auditing the data will in the future entail much less time and resources.

#### ANALYSIS AND REPORTS

Analysis of baseline survey data and first-year program data for Site I has moved less rapidly than we had planned, mostly because of the delays in file preparation and audit that were noted above. There have also been bottlenecks in report writing, reviewing, and editing that leave us currently with a considerable backlog of draft material not yet ready for publication.

The most convenient summary of findings now in print is contained in the *Second Annual Report*.<sup>\*</sup> Section II of that report describes the progress of the housing allowance program in Brown County through September 1975, and Sec. IV includes a more detailed analysis of program records for the first year.<sup>\*\*</sup> Section IV also reports on the organization and operations of the rental housing market in Brown County during 1973, including analyses of property characteristics, landlord characteristics, turnover and vacancy experience, mortgage financing, and property incomes and expenses.<sup>\*\*\*</sup> Finally, it describes Brown County's population of households and analyzes their housing choices and residential mobility in relation to household characteristics and incomes.<sup>\*\*\*\*</sup>

Another form in which baseline survey data have been reported is in illustrated pamphlets prepared for distribution to survey respondents. For Brown County, four such pamphlets are now in print, two for landlords and two for tenants and homeowners. They are compact, fact-filled summaries of the data collected in the surveys, designed for a lay audience but apparently valuable also to professionals.<sup>\*\*\*\*\*</sup>

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<sup>\*</sup> *Second Annual Report of the Housing Assistance Supply Experiment*, The Rand Corporation, R-1959-HUD, May 1976.

<sup>\*\*</sup> The data were drawn from three reports still in draft at this writing--one on program administration, one on client characteristics, and one on housing characteristics.

<sup>\*\*\*</sup> The data were drawn from two published reports and one that is still in draft. The published reports are C. Peter Rydell and Joseph Friedman, *Rental Housing in Site I: Market Structure and Conditions at Baseline*, The Rand Corporation, WN-8980-HUD, April 1975; and C. Peter Rydell, *Rental Housing in Site I: Characteristics of the Capital Stock at Baseline*, The Rand Corporation, WN-8978-HUD, August 1975. The latter includes an analysis of housing service production functions carried further in a professional paper to be published by the Regional Science Association: C. Peter Rydell, "Measuring the Supply Response to Housing Allowances," The Rand Corporation, P-5564, January 1976. A third report on property income and expenses is now being drafted.

<sup>\*\*\*\*</sup> The full report is now being prepared for publication. A condensed version will be published by the Regional Science Association: Keven McCarthy, "The Household Life Cycle and Housing Choices," The Rand Corporation, P-5565, January 1976.

<sup>\*\*\*\*\*</sup> These are available from The Rand Corporation. They carry the general title, "Brown County Housing Study."



We should also mention the codebooks and audit reports that are prepared for each separate survey. The codebooks interpret every response field in the survey instrument and tabulate unweighted response distributions. They have been published for all baseline surveys except the survey of neighborhoods.\* Audit reports present our conclusions concerning the completeness and reliability of the data collected in each survey. Two have been published for Site I and two more have been drafted and are awaiting technical and editorial review prior to publication.\*\*

Outside the formal survey agenda, we have conducted informal interviews with market intermediaries in Brown County--mortgage lenders, realtors, insurance brokers, home repair and improvement contractors--to learn about their roles in the local housing market. A baseline reconnaissance has been published\*\*\* and a second report is now being prepared for publication.

Finally, we recently completed a special study of housing cost inflation in Brown County between 1973 and 1976, drawing on data from our screening survey and the first two waves of the survey of renters, as well as on records of the allowance program's first year.\*\*\*\*

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\* Ann W. Wang and Charles W. Noland, *Codebook for the Baseline Survey of Residential Buildings in Site I*, The Rand Corporation, WN-8810-HUD, February 1975; Ann W. Wang, Doris Crocker, and Stephanie Schank, *Codebook for the Baseline Landlord Survey in Site I*, The Rand Corporation, WN-8976-HUD, March 1975; and *Codebook for the Survey of Tenants and Homeowners, Site I, Baseline*, The Rand Corporation, WN-8809-HUD, December 1975. Similar codebooks have been compiled for two research files constructed from allowance program records: Marsha A. Dade and Ann W. Wang, *Codebook for the HAO Client Characteristics File: Site I, First Year*, The Rand Corporation, WN-9433-HUD, May 1976; and Iao Katagiri and Ann W. Wang, *Codebook for the HAO Housing Characteristics File: Site I, First Year*, The Rand Corporation, WN-9504-HUD, July 1976.

\*\* David M. de Ferranti, Ira S. Lowry, and others, *Screening Survey Audit Report for Site I*, The Rand Corporation, WN-8684-HUD, November 1974; Larry A. Day, *Audit Report for the Baseline Survey of Residential Buildings in Site I*, The Rand Corporation, WN-8973-HUD, January 1976.

\*\*\* William G. Grigsby, Michael Shanley, and Sammis B. White, *Market Intermediaries and Indirect Suppliers: Baseline Report and Prospectus for Site I*, The Rand Corporation, WN-8577-HUD, February 1974.

\*\*\*\* Ira S. Lowry, *Inflation in the Standard Cost of Adequate Housing: Site I, 1973-1976*, The Rand Corporation, WN-9430-HUD, March 1976.

In short, considerable information is available in print about the first year of program operations and about Brown County's housing market in 1973 and 1974. Much more, including some more current data, is at least half-digested and has been reviewed by contributors to this note. We approach the Wave 4 issue with confidence that we understand both program development and market response to date, even though publication of exact findings lags by one to two years the calendar of events that were studied.

#### ADDRESSING THE WAVE 4 ISSUES

A decision to continue or to curtail the survey agenda in Brown County cannot be reached strictly from known facts or from quantifiable costs and benefits. The decision will entail judgments of several kinds: about uncertain future events, about the salience of additional information for federal policy formation, about the quality of the information itself, and about the importance of alternative uses for the resources required to continue.

Although Rand and HUD may reach different judgments on specific issues, we see no reason to presume that the two institutions have opposing interests. Both are concerned about the cost of the Supply Experiment and the quality of the research and its pertinence to policy formation. If the survey agenda is continued, it should be because we all agree that its benefits, even though not quantifiable, will exceed its costs.

The judgments to be made are, for better or worse, interdependent. However, we have tried to organize this note so that the least debatable issues are treated first. Thus, if the reader agrees with our conclusions on (say) the first three issues, permutations of judgment can be confined to those that follow. Naturally, we hope to carry the reader with us to the end.

Below, we list what seem to us the salient questions that must be answered to reach a reasonable decision about continuing or curtailing the survey agenda in Brown County.

- *Is it technically feasible to collect analyzable data on the phenomena of interest? If because of low response rates,*

unreliable responses, or sampling bias our surveys cannot provide us with analyzable data, there is no advantage to continuing them, however much we might value additional information about program effects.

- *Would discontinuing the surveys in Brown County cripple the remainder of the HASE research effort? Clearly, it would entail major alterations in staffing the experiment and scheduling its work. Would data collection and analysis in the other experimental site become easier and cheaper or more difficult and more expensive?*
- *If discontinuing the surveys is unacceptable, can they be curtailed in a way that meets experimental needs at less cost? We should consider variations in sample sizes, length of survey cycles, and scope of survey instruments.*
- *Which research questions have been or can be answered from the data so far obtained, and which remain to be answered? If little of importance remains to be learned about the market effects of the housing allowance program, a decision to continue the surveys must be justified on other grounds, some of which are suggested below.*
- *Can we forecast with confidence how the allowance program will develop during its third and subsequent years and how these developments will affect the housing market? If our judgments about the future are wrong, terminating the surveys now could cause the experiment to fail needlessly, embarrassing both Rand and HUD. A related question is whether our forecasts, even though correct, can be confirmed without the aid of additional surveys.*
- *How does further data collection in Brown County relate to our research objectives in the second experimental site, St. Joseph County? Do we need comparable data from the two sites to understand events in each? Are the data already collected in Brown County adequate to these needs?*
- *Specific experimental objectives aside, could additional survey data contribute substantially to the formation of federal housing*

*policy or the implementation of federal housing programs?*

The survey data base is designed to permit detailed analysis of the structure and dynamics of the local housing market. Can further surveys be justified in terms of the general relevance of such analysis to federal policy?

The remainder of this note will deal with these issues in the sequence in which they are listed above. Each section states one or more of the problems, summarizes the pertinent information, offers our judgments about unknown facts or uncertain future events, and arrives at conclusions. The final section summarizes the conclusions and presents our recommendations to HUD.

As we are preparing this note, others are analyzing the budgetary consequences of continuing or discontinuing field surveys in Brown County. Their conclusions will not be reported here. Currently, we judge that the marginal cost of each annual survey cycle and the associated data processing, analysis, and reporting is about \$2 million, spread over a period of two to three years.

## II. IS FURTHER DATA COLLECTION FEASIBLE?

A necessary but not sufficient condition for continuing the survey agenda in Brown County is confidence that we can collect the desired data in Wave 4 and subsequently. If because of low response rates, unreliable responses or biased samples our surveys cannot provide us with analyzable data, there is no advantage to continuing them, however much we might value additional information about program effects.

### SURVEY RESPONSE RATES

We have nearly completed sample accounting for the second survey cycle in Brown County, and have preliminary results from the third cycle of the surveys of tenants and homeowners. The third cycle of the survey of landlords entered the field early in May 1976, so field results for it are not yet known.

The basic sampling unit for the Supply Experiment is the residential property. Our longrun analysis plan requires annual data for each property from both its owner and its occupants. Baseline sample sizes were selected to yield approximately 1,000 complete six-year property records (baseline plus five subsequent annual records), allowing for nonresponse in each annual survey cycle. During budget negotiations in 1974, this target was reduced (with HUD's approval) to 929 complete six-year records, a number that we thought was scant but probably adequate.

A complete property record for a given year was defined for a rental property to consist of an interview with the landlord, an interview with at least one tenant (or a vacancy report), and a field report on the exterior condition of the property. For an ownership property, an interview with the owner-occupant (or the owner, if the property was vacant) and a field report on exterior condition was required.

For reasons explained in the Introduction, the survey of residential buildings was shifted to a biennial schedule after Wave 2; in any case, since no interview is required, this survey entails only trivial non-response problems. Landlords, tenants, and homeowners, on the other hand, may be difficult to contact, may be unable to respond, or may refuse to be interviewed. We constructed a record attrition model to estimate the

number of properties that would be needed in each sampling stratum of the permanent panel to meet our (revised) target of 929 complete six-year records.\*

In this model, response rates in a given year were assumed to be contingent on the type of property, the type of respondent, and whether he had been successfully interviewed in an earlier year. The various response rates were estimated with the aid of the survey subcontractor, but prior to field experience with these surveys in Brown County. The probability of obtaining a complete record in a given year was, of course, the product of the probabilities that each of the necessary respondents could be successfully interviewed; and the probability of obtaining a six-year complete record for a property was the product of the probabilities of obtaining complete records for it in each separate year.

We estimated that only 48 percent of the empaneled properties would end the six-year monitoring period with complete records, and these estimates guided the baseline sample selection as well as the subsequent selection of the permanent panel.\*\* Once the basic decisions were made, of course, sample sizes could not be retroactively increased.

The baseline sample of 4,415 properties yielded 2,360 complete property records eligible for admission to the permanent panel. Our target for the permanent panel was 2,074 properties, but stratum imbalances among those eligible limited us to 1,945. These were scheduled for Wave 2 surveys, which yielded 1,545 complete property records.

The large loss at baseline (47 percent) was anticipated; indeed, the sample contained a number of properties that were only conditionally included because of incomplete information on sample selection variables. However, there were some strata in which too few properties were sampled

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\* Timothy M. Corcoran, *The Effects of Nonresponse on Record Completion in a Panel of Residential Properties*, The Rand Corporation, WN-8174-HUD, April 1973.

\*\* Properties with incomplete records at baseline were excluded from the permanent panel. Each property in the panel was to be surveyed annually regardless of its prior completion status. We expect incomplete six-year records to be usable for many though not all of the planned analyses.

at baseline, so that there were 9 percent fewer complete records than were desired for the permanent panel.

Although we have not completed our audit of field final status codes for interviews conducted in Wave 2, a preliminary accounting indicates that 79 percent of the properties empaneled after baseline also have complete Wave 2 records. As can be seen in Table 2.1, completion rates were higher for ownership properties than for rental properties. The results differ principally because an ownership property record can be completed with the cooperation of only one respondent (the homeowner), but completing a rental property record requires the cooperation of at least two respondents (the landlord and at least one tenant).

All 1,945 empaneled properties were fielded in Wave 3. If we assume that 79.4 percent of those records that are complete through Wave 2 are also completed for Wave 3, we will emerge from Wave 3 with 1,227 complete two-year records. Applying the same principle to projected results in Waves 4, 5, and 6, we would end the monitoring period with 614 complete six-year property records for the initial panel of 1,945 properties.\* The completion rate thus calculated is 32 percent, well under our a priori estimate of 48 percent.

The general experience with panel surveys has been that people who respond to two interviews usually continue to respond. If so, the Wave 2 completion rate may be an underestimate of future completion rates. To meet our design target of 929 complete six-year property records, we would need an annual record completion rate of 88 percent for records complete through all prior waves.

It is at least plausible that annual record completion rates for Wave 3 and thereafter could be raised from 79 to 88 percent by dint of extra efforts in both general public relations and specific casework. Optimism on this score must be tempered, however, by preliminary field reports for the Wave 3 survey of tenants and homeowners, discussed below.

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\* These figures count only the initial panel. In each survey cycle after baseline, the panel is augmented by a sample of about 40 newly constructed residential properties, each of which has a complete property record for the year in which it was admitted to the panel.

Table 2.1

NUMBER OF PROPERTY RECORDS THAT ARE COMPLETE THROUGH WAVE 2,  
BY PANEL STRATUM: SITE I

Panel Stratum		Number of Complete Records			Complete Records as Percent of Panel		
Stratum Number	Property Description	Permanent Panel	Through Wave 2	Wave 6 Target	Permanent Panel	Through Wave 2	Wave 6 Target
	<i>Urban Rental</i>						
1,4,7	Single-family	452	338	215	100.0	74.8	47.6
2,5,8	2-4 units	503	410	275	100.0	81.5	54.7
3,6,9	5+ units	164	137	82	100.0	83.5	50.0
	<i>Rural Rental</i>						
10,11	All types	175	125	76	100.0	71.4	43.4
	<i>Urban Owner</i>						
12	Low value	159	131	70	100.0	82.4	44.0
13	Medium value	201	174	88	100.0	86.6	43.8
14	High value	103	91	31	100.0	88.4	30.1
	<i>Rural Owner</i>						
15	Low or medium value	100	87	44	100.0	87.0	44.0
16	High value	50	45	22	100.0	90.0	44.0
	<i>Other Rental</i>						
17	Rooming house	18	12	10	100.0	66.7	55.6
18	Mobile home	20	15	16	100.0	75.0	80.0
	Total	1,945	1,545	929	100.0	79.4	47.8

SOURCE: Tabulations by HASE staff of the survey record management system (HAMISH) master file for Site I and HASE sample design documents. Status of property records through Wave 2 is based on partially audited field final status codes for each survey.



Table 2.2 shows response rates by type of respondent in each survey cycle completed so far. The table gives three different response measures for each survey. All three have the same numerator, the number of completed questionnaires returned from the field.\* The denominators vary, so that each rate reports a different aspect of survey response.

The denominator for the *sample completion rate* is the total sample list--all cases ever scheduled for fieldwork. In the course of fieldwork, however, some of these cases are found to be inappropriate for interviews because of vacancies, tenure changes, demolition of housing units, etc.

The denominator for the *field completion rate* is the number of interviews actually attempted. Some of these interviews are not completed because an appropriate respondent cannot be contacted despite numerous attempts by telephone and in person. The appropriate respondent may never be at home although he is apparently in residence; or he may be away on vacation or even have moved to another city.\*\*

The denominator for the *field response rate* is the number of respondents actually contacted. Some of these refuse to be interviewed and a few are unable to respond because of age, illness, or language difficulties.

Field performance in Wave 2 was extremely good. For landlords, tenants, and homeowners in Wave 2, we obtained substantially higher response rates than at baseline by all three measures, probably for three reasons:

- Properties with incomplete baseline records were ineligible for the permanent panel, so the panel included only locatable and cooperative respondents.

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\* Although data cleaning and auditing may reveal defects in some of these questionnaires, the survey subcontractor has reviewed each one and believes them all to be substantially complete.

\*\* Landlords who live outside Brown County are traced to their places of residence and interviewed in person or by telephone if feasible. Often, they have a local agent who can respond to part of the questionnaire.

Table 2.2

RESPONSE RATES IN SUCCESSIVE SURVEY CYCLES, BY  
TYPE OF RESPONDENT: SITE I, WAVES 1 TO 3

Item	Type of Respondent		
	Landlord	Tenant <sup>a</sup>	Homeowner <sup>a</sup>
<i>Baseline Surveys</i>			
Sample size	3,009	6,706	1,436
Response rates:			
Sample completion	.70	.45	.62
Field completion	.72	.77	.72
Field response	.79	.88	.80
<i>Wave 2 Surveys</i>			
Sample size	1,316	2,973	685
Response rates:			
Sample completion	.81	.74	.81
Field completion	.87	.89	.88
Field response	.88	.89	.88
<i>Wave 3 Surveys</i>			
Sample size	1,336	2,709	688
Response rates:			
Sample completion	(b)	.67 <sup>c</sup>	.80 <sup>c</sup>
Field completion	(b)	.83 <sup>c</sup>	.81 <sup>c</sup>
Field response	(b)	.84 <sup>c</sup>	.81 <sup>c</sup>

SOURCE: Tabulations by HASE staff of the survey record management system (HAMISH) master file for Site I, Baseline, and Wave 2; and preliminary field reports for Wave 3.

NOTE: Response rates are defined as follows:  
Sample completion rate = field completions/total sample. Field completion rate = field completions/total interview attempts. Field response rate = field completions/total contacts.

For tenants, interviews were normally attempted at baseline only if the landlord had been successfully interviewed; thus, their baseline sample completion rate is lower than in subsequent waves.

<sup>a</sup>Excludes households sampled only for Urban Institute comparability panel. In Wave 3, also excludes 72 newly constructed units surveyed for the first time.

<sup>b</sup>Not yet available.

<sup>c</sup>Based on preliminary field reports.

- Survey administration was better organized in Wave 2, with more, and more accurate, advance information about persons to be interviewed.
- The field period was longer, virtually eliminating contact failures.

Preliminary field results for the Wave 3 surveys of tenants and homeowners include estimates of the outcomes of 328 cases still in the field, and the final status codes assigned by the fieldwork subcontractor have not yet been audited. However, it is clear that the field completion rates for both tenants and homeowners will be above the corresponding figures for baseline but below those for Wave 2. As indicated by the near-equality of the field completion and field response rates for each survey, contact failure has been virtually eliminated as a cause for noncompletion, leaving only refusals as a persistent field problem.

The response pattern for landlords in previous survey cycles is very like that for homeowners. If the relationship holds in Wave 3 so that the landlord field completion rate is .81, we can expect to get about 1,400 complete Wave 3 property records, of which about 1,100 are also complete for prior waves. Projection of this pattern through future cycles implies ending the monitoring period with only 417 complete six-year records.

In an effort to forestall refusals by landlords to be reinterviewed in Wave 3, Rand and the survey subcontractor conducted an intensive local warmup campaign just as fieldwork on the survey began. Its most important feature was the public presentation of findings from our prior surveys of rental properties. Media coverage was excellent, and an audience of landlords and realtors was interested and responsive, but it remains to be seen how this generally favorable experience translates into response rates.

All things considered, our target of 929 complete six-year records is unlikely to be attained. As we have noted from the beginning, records that are incomplete for some years are still usable for many purposes even though their rigorous chain of supply-response accounting is broken.

Cross-sectional analysis for each year will not be much hampered if annual completion rates for the permanent panel of residential properties stay in the range of 70 to 80 percent.\* And sample sizes in some strata will be augmented over time by the annual samples of newly constructed residential properties, not counted in the calculations reported above.

Although current evidence suggests that our planned six-year data base may be too small to serve all its intended purposes, this conclusion does not necessarily apply to the corresponding four- to three-year data bases. Even the most pessimistic projection considered above implies that Wave 4 would produce 801 complete four-year records and the most optimistic projection implies 973 complete four-year records, each with four annual observations on the property in question. Since the sampling reliability calculations that were used to select the target size of the terminal panel are directly applicable to Wave 4, these projections can also be measured against the six-year target of 929 complete records.

*We conclude that the survey response rates experienced so far do not bode well for the sample design target of 929 complete six-year property records; but that this number of complete four-year records (baseline plus Waves 2, 3, and 4) is attainable without major changes in survey procedures. We think Wave 4 would produce enough data to meet our analytical needs through that point in the experiment.*

#### COMPLETENESS AND QUALITY OF THE DATA

One aspect of the completeness of our survey data base is survey response rates, discussed above. However, "completed" interviews nearly always have some response fields that lack usable data, either because the respondent declined to answer or claimed ignorance or because the interviewer erroneously skipped a question (*item nonresponse*); or else because the interviewer recorded an illegal or illegible code or one that manifestly contradicted other responses in the questionnaire (*unusable data*).

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\* See the discussion of nonresponse bias later in this section.

These aspects of questionnaire completeness can be thoroughly checked, record by record; and we have completed such checks on baseline records for Brown County.\* Without going into detail, we are prepared to report here that the incidence of item nonresponse and unusable data at baseline is trivial in all three interview surveys (landlords, tenants, and homeowners) and also in the survey of residential buildings.

For example, the auditors of the baseline landlord survey reviewed 2,111 field-complete questionnaires and reported that 1,892 of them (90 percent) were "supply-response-complete," meaning that the landlord answered all questions essential to measuring the supply response to housing allowances. These questions include full financial details on property income and expenses. Given that missing values can often be estimated for an otherwise complete questionnaire, item nonresponse and unusable data are simply not serious problems so far.

Data quality is harder to appraise. If a response field has an entry that is legible and does not clearly contradict any other response in the questionnaire, should we believe that it is exactly or approximately correct? Our survey auditors have applied numerous tests, none foolproof, to many response fields in each survey instrument, searching for implausible responses. The yield of suspicious data has been small and in about a third of the cases the issue was resolved by detective work with hardcopy records or inquiries to the field. Analyses of the data have produced some surprising findings, but none that we are ready to attribute to bad data.

To be sure, we have discovered some questions and some skip patterns in the baseline instruments that failed to capture desired information, usually because some empirical possibility was overlooked. And subjective rating scales, whether the rating is done by a respondent or by an interviewer, are predictably noisy. Many of these problems have been ameliorated by changing the survey instrument. Some are inherent in survey research.

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\* See Day, *Audit Report for the Baseline Survey of Residential Buildings in Site I*. Audit reports on the baseline survey of landlords and the baseline survey of tenants and homeowners are in draft and have been reviewed by contributors to this note.

The Wave 3 instruments for the surveys of landlords, tenants, and homeowners are substantially easier to administer and more flexible in unusual circumstances than were their predecessors. Interviewer training and field procedures are well designed and closely monitored. Data cleaning is thorough. Survey audits are effective in locating problems with the data. We are persuaded that, nonresponse aside, the survey data that we have so far obtained and would be able to obtain from future surveys are not only adequate for their intended use, but are superior in reliability to any survey data base of comparable size that we know about.

*In short, we are satisfied that there are no problems of data quality in our surveys that are serious enough to warrant curtailing further data collection.*

#### NONRESPONSE BIAS

Although we expect the complete records to contain reliable data, there remains a question whether the analyzable records will satisfactorily represent the population of residential properties that we sought to sample. Those who respond to our surveys may differ from those who do not respond in ways that are pertinent to our analysis, so generalizations based only on respondents' records could be misleading.

For nonresponse bias to seriously degrade a data base, three conditions must be met:

- The incidence of nonresponse must be large.
- Nonrespondents must differ substantially from respondents in ways that are vital to the planned analysis.
- Knowledge of the characteristics of nonrespondents must be inadequate to allow them to be matched to respondents.

Our audit of the baseline survey records for Brown County persuades us that nonresponse bias will not be a major problem in our survey data base despite field completion rates as low as 72 percent in those surveys. We have enough information about nonrespondents to conclude with considerable confidence that they are not strikingly different from respondents in ways that matter for this study, and we can use this

information to reweight complete records so that they come closer to representing both respondents and nonrespondents.\*

Properties with incomplete baseline records were excluded from the permanent panel. In weighting completed interview records for Wave 2 and thereafter, baseline nonresponse must be taken into account. Subsequent nonresponse is incremental to baseline nonresponse in that it increases the chances of nonresponse bias in the data. However, potential problems with cumulative nonresponse bias are ameliorated by three factors.

First, the incremental nonresponse in Wave 2 was only 11 to 13 percent of the cases for which interviews were attempted. Second, properties with incomplete records in Wave 2 or later will remain in the panel and we will attempt to interview their owners and occupants in subsequent years; consequently, the pertinent nonresponse in Wave  $n$  is baseline and Wave  $n$  nonresponse, ignoring intervening events. Third--and most important--since we have a completed baseline interview for all landlords and the occupants of nearly all housing units in the permanent panel, we have more than enough information about Wave  $n$  nonrespondents to make the appropriate adjustments to record weights.

We have encountered many second-order problems in devising weights for survey records that simultaneously reflect their sampling histories, keep sampling variance low, and account adequately for nonrespondents. We expect such problems to be a persistent feature of our work precisely because we are attentive to issues that many sample surveys have found it convenient to ignore. But we feel comfortable in saying that in our survey data for Brown County, nonresponse bias is well under control.\*\*

*In short, we are satisfied that there are no problems of nonresponse bias in our surveys that are serious enough to warrant curtailing further data collection.*

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\* See C. Peter Rydell and Richard E. Stanton, *A Plan for Analyzing Nonresponse Bias: Survey of Landlords, Baseline, Site I*, The Rand Corporation, WN-9211-HUD, August 1975.

\*\* Nonresponse problems in our second experimental site, St. Joseph County, are substantially greater than in Brown County. The comments above apply only to the survey data base for Site I.

SUMMARY

When the Supply Experiment was being planned, it was generally recognized that major risks were associated with its dependence on the voluntary cooperation of survey respondents. The risk was especially great for the survey of landlords, whose respondents were to be pressed for details of property financing and management that are often considered business secrets. After much pondering, both Rand and HUD than judged that the risks were acceptable.

In compiling the baseline sample list, large allowances were made for interview failures, so that only properties with complete baseline records need be admitted to our permanent panel. In Wave 2, field completion rates rose dramatically, leaving us optimistic about meeting our targets for complete six-year property records. Early indications from Wave 3 temper that optimism considerably; interview completion rates seem to be falling, though not dramatically.

The future is of course uncertain, but we see no reason to suppose that the remaining risks are greater than the initial ones. We believe that continuing the survey agenda in Brown County, using the instruments and procedures developed over the past three years, would yield a survey data base through Wave 4 that was adequate in size, high in quality, and representative of the population sampled.

After Wave 4, the number of complete longitudinal property records is likely to shrink below design standards for sampling reliability. Even then, we do not anticipate problems of data quality or nonresponse bias; nor do we foresee difficulties in cross-sectional analysis due to sample sizes in Waves 5 and 6.



### III. REORGANIZING THE RESEARCH EFFORT

Those of us who have participated in HASE from its inception have seen its research arm evolve from a hastily staffed planning group to a large and complex organization designed around the specific problems of collecting, processing, and analyzing survey data from our two experimental sites. Excluding the group that oversees HAO operations, there are currently over 90 Rand employees and consultants and two survey subcontractors engaged in various aspects of the research operations.

The structure of these operations emerged only gradually as we gained an understanding of the scale and complexity of the task to which we had committed ourselves. We think that our procedures now compare favorably with those of any survey research organization in the country in terms of both efficiency and carefulness. Improvisation under pressure has given way to standard operating procedures that seem to anticipate nearly every problem that arises. At any given moment, as many as 18 major surveys are in the production pipeline, with little confusion about what needs to be done next in each case, who is to do it, or by when it must be done.

Problems remain. In the field, we are concerned about the downward drift of response rates among our panelists. In Santa Monica, we are concerned about the final stages of data analysis and reporting, where quality is high but schedule slippage is endemic. Even with these qualifications, we think the achievement is considerable.

In deciding whether the survey agenda in Brown County should be curtailed, we must also ask how HASE as an organization would be affected thereby. It is convenient here to consider not just the option of discontinuing survey work in Brown County but also intermediate reductions in the scale or scope of our market monitoring program there.

#### ORGANIZATIONAL EFFECTS OF DISCONTINUING SURVEYS IN SITE I

The longterm research plan under which HASE currently operates provides for terminating field surveys in Brown County in 1979 (Wave 6),

but continuing them in St. Joseph County for another year after that. These events are distant enough so that only general plans and schedules have been made for them. But they entail a phased shutdown of HASE over a period of nearly three years, beginning when the Wave 6 cycle of instrument design is complete. As each function is performed for Site I for the last time, staff will either be released or used to speed up the corresponding final task for Site II. As Wave 6 moves through the pipeline, the pipeline is dismantled front to back, ending with analyzing the last data and drafting the final report.

The scenario would be different in important ways if field surveys were discontinued in Site I in 1976 (after Wave 3) but continued in St. Joseph County through 1980 (Wave 6). All the functions would continue: designing instruments; preparing field materials; conducting fieldwork; editing and cleaning field reports; preparing, auditing and archiving survey master files; analyzing the data; and drafting reports. But the workload for each function would be reduced--in some cases by as much as 50 percent, in others by no more than 20 percent.

The annual instrument design cycle that serves both sites would continue without significant reduction in workload. Fewer copies of questionnaires would be printed, but production and printing costs per copy would rise. Field materials would be needed only for Site II and could be produced by software already in place. The survey record management system (HAMISH) would process 30 to 40 percent fewer forms. The activities of one survey subcontractor could be terminated and the contractor's field office closed. Field reports from Site II would be keypunched and cleaned by now-standard procedures but at higher unit costs because of smaller production runs to offset annual setup and training costs. Organizing clean records into research files and documenting and archiving these files would also follow established procedures and use existing software, but with only half the annual workload. Plans for audit and especially analysis of the files would need revision to take account of the fact that intersite comparisons were no longer possible.

The necessary organizational change would be a reduction in force for the Survey Group, the Survey Data Preparation Group, the Data Systems Group, and finally the Design and Analysis Group as the Site I,

Wave 3, files passed each "station." The Field and Operations Group would continue its supervision of the Brown County HAO, unaffected by the changes in the research groups. In the research groups, we would expect some loss of efficiency for subsequent Site II operations because of decreased specialization within the staffs of these groups and higher ratios of senior to junior staff.

Currently, the production problems are located in the Design and Analysis Group, where there is serious schedule slippage in analysis and reporting. Removing half the agenda would greatly relieve the strains on that group, though not until the first three waves of data from each site had completed their passage through the system. A recent review of work schedules indicates that DAG manpower requirements would not decrease significantly until the latter part of 1978.

*All things considered, we believe that the reduction in force that would result from curtailing survey work in one site while continuing it in the other could be handled without serious organizational disruption. However, because the cycle of work for Wave 4 in Brown County has already begun, closing down these activities in the fall of 1976 would be more difficult organizationally and more expensive than a preplanned closedown after Wave 4. Staff reduction would be phased over about two years as the last wave of surveys from Site I moved through the pipeline. However, costs would not drop proportionally even when analysis and reporting on the last wave of Site I data was complete; the full burden of overhead functions now spread between two sites would then fall on Site II.*

#### ALTERNATIVE MODES OF REDUCING THE SITE I AGENDA

As alternatives to discontinuing the surveys in Brown County after Wave 3, we have considered several plans that would entail continuing our work there but at a lesser scale. The most plausible options are the following:

- Continue all scheduled surveys, but reduce sample sizes.
- Continue the surveys of landlords and homeowners only, eliminating the surveys of tenants, residential buildings, and neighborhoods.

- Continue the surveys of tenants and homeowners, eliminating the surveys of landlords, residential buildings, and neighborhoods.
- Continue all surveys, but reduce the scope and length of the instruments used.
- Skip Wave 4, but mount a full field schedule the following year.

We do not think that any of these are plausible options, either because they are technically inadequate responses to the HASE mission in Site I or because they would not be much cheaper than the full agenda of fieldwork, or for both reasons.

At the technical level, it must be clearly recognized that Rand cannot accept the responsibility for reporting on the marketwide effects of the housing allowance program in Brown County without the information needed to assess these effects reliably. The first four options listed would not provide us with an acceptable data base with which to fulfill our research charter.

Sample sizes in both sites have already been reduced to 90 percent of the original design standards at HUD's behest. Considering recent experience with nonresponse, we think that the Site I sample is already dangerously small. In any case, the savings from further reductions in sample sizes would be small relative to the overhead connected with mounting each survey in Site I.

We judge that it would be possible to construct a useful research program based on the survey of homeowners and either the survey of landlords or the survey of tenants. However, its objectives would be more limited than those now embodied in our research charter. The analysis plan for Site I would need to be recast and instruments for the continuing surveys would need to be redesigned to fit the new agenda. Assuming that the old agenda was still applicable in Site II, the changes in Site I would entail cost increases that would certainly offset first-year savings from dropping one of the Site I surveys; and carrying non-parallel analyses through to the end of the experiment would probably mean a net increase in runout costs. In any case, the redesign could not be accomplished in time to field Wave 4 on schedule and would imperil

the entire research effort by preempting the time and attention of key members of the staff.

Reducing the scope and length of survey instruments is an objective already forced upon us by recent OMB regulations and by our concern for survey response rates. Doing so differentially for the two sites entails much the same redesign and runout costs as dropping a survey from the agenda of one site but not the other, and the direct savings would be even smaller. We do not consider this a serious option.

Of the five options listed, the most plausible is skipping Wave 4 but mounting a full field schedule the following year. But on closer examination, it is an unattractive alternative. The instruments are designed on the premise of annual interviews, and many question sequences would need to be reworked if one year were skipped. We see little chance of recapturing two years of retrospective data on such topics as property income and expenses or repairs and improvements. At the very least, a separate set of analytical plans and data processing specifications would be needed to deal with the irregular reporting interval. Finally, subcontractor operations in Site I would have to be dismantled, then reassembled, an expensive and technically risky operation.

*Although we have not developed a detailed plan, schedule, or budget for any of these five options as alternatives to terminating the field surveys in Site I, we do not think that they hold enough promise to justify such efforts. They either fail to meet the technical requirements of our research charter, fail to yield substantial savings, or would be dangerously difficult to implement.*

#### SUMMARY

Our original research plan provides for closing down field operations in Site I a year before terminating those in Site II. We judge that earlier curtailment of Site I operations is technically feasible, entailing immediately closing out subcontractor operations there and reducing the HASE research staff over a period of about two years, as the last wave of Site I data moves through the pipeline.

Closing down field operations in Site I in the fall of 1976, while operations in Site II are being geared up for the coming survey cycle there, would significantly complicate the agenda of the Survey Group, and shutdown costs would doubtless reflect this fact. Shutting down after Wave 4, if planning begins now, would be easier and smoother and would pose no major organizational difficulties.

On the other hand, there would also be organizational benefits from immediate curtailment of Site I operations. The main benefit would be relief of the present overload in the Design and Analysis Group, but this relief would not be felt until two years after the completion of the last survey wave in Site I--i.e., towards the end of 1978, if no further surveys are conducted in Site I after Wave 3.

However, cutting the survey agenda by half would not reduce costs proportionally even after the shutdown was completed. Some functions now performed jointly for the two sites would continue at nearly the same level of effort for one site. With a smaller staff, there would be less specialization and a higher ratio of senior to junior personnel.

We have considered various intermediate alternatives for reducing our market monitoring agenda in Site I without discontinuing it altogether. These include reducing survey sample sizes, dropping some surveys from the yearly cycle, reducing the length and scope of survey instruments, and skipping one or more of the annual survey cycles. When conjoined with continuation of the full agenda in Site II, none of these Site I alternatives seems promising to us. The resulting data base for Site I would be technically inadequate to meet the objectives of the research charter, the savings in runout costs would be small or nil, and the necessary redesign effort would imperil the overall success of the operations now under way.

In short, we think it would be better to discontinue Site I survey work altogether than to tinker with the planned agenda. A clean cutoff is technically, fiscally, and organizationally sounder than a lingering commitment to market monitoring in Site I.

IV. IS THERE MORE TO BE LEARNED IN BROWN COUNTY?

It is difficult now to recapture the tone of the discussions that were held in 1972 and 1973, when the Supply Experiment was being planned.\* Speculation about the possible effects of a national housing allowance program on local housing markets emphasized a number of possible outcomes that were of concern to HUD's staff and others consulted by HUD:

- Without strong earmarking provisions, housing allowances might be treated by their recipients as general income supplements, in which case the program would have only a second-order effect on housing consumption.
- Unless the benefit formula provided strong incentives to recipients to search the market thoroughly and bargain over rent and conditions of occupancy, landlords and speculators would be liable to capture most of the benefits by raising rents and prices without providing better housing for participants.
- The portability of benefits was a threat to neighborhood stability, especially in segregated markets. Program participants were likely to use their benefits to buy better neighborhoods rather than better housing. Deterioration and market collapse might be accelerated in the neighborhoods they left, and other residents of the neighborhoods into which they moved might be panicked by the apparent "invasion."

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\*The reader who wishes to verify the comments that follow should consult Ira S. Lowry, *Contingency Planning for the Supply Experiment*, The Rand Corporation, WN-7980-HUD, October 1972; HASE Staff, *Supplemental Design Papers for the Housing Assistance Supply Experiment*, The Rand Corporation, WN-7982-HUD, July 1972; Ira S. Lowry, Mack Ott, and Charles Noland, *Housing Allowances and Household Behavior*, The Rand Corporation, WN-8028-HUD, January 1973; Ira S. Lowry (ed.), *General Design Report: First Draft*, The Rand Corporation, WN-8198-HUD, May 1973; *Proceedings of the General Design Review of the Housing Assistance Supply Experiment*, The Rand Corporation, WN-8396-HUD, October 1973; and Ira S. Lowry (ed.), *General Design Report: Supplement*, The Rand Corporation, WN-8364-HUD, August 1973.

- Because the program left housing choices to participants operating through normal market channels, it was unlikely to break down existing patterns of housing segregation. Brokers, mortgage lenders, and rental agents would continue their informal system of support for segregation; program participants would lack the power (and perhaps the motive) to challenge the system.
- Since benefits would not in general be adequate to support the purchase of new homes by program participants, the program would have little or no effect on the supply of housing. Competition for better units in the existing stock would intensify, raising rents and home prices for participants and nonparticipants alike.
- Unless the administering agency closely monitored the use of program benefits, landlords and tenants would collude to divide the benefits without meeting the program's objective of housing improvement.
- Even though the allowance program provided low-income families with greater purchasing power, landlords would not be willing to supply them with well-maintained housing. Landlords believe that low-income tenants lack the social values and technical knowledge to care for their homes, and the allowance program does not assume responsibility for damages or rent-skipping.
- In the experimental situation, with benefits available only to those living within a local jurisdiction, there could be a large influx of low-income families who moved into the area in order to participate in the program.
- Unless it was staged very carefully, enrollment of a community's low-income families in a fullscale program would disastrously shock the local housing market, driving rents and home prices sharply up. Allowance benefits would be dissipated in price inflation; nonparticipants would react against the program's effects on their housing costs.
- Rigid and detailed standards of housing quality for program participants would distort the market, causing property owners



to make improvements "by the book" that were not valued by the occupants of the dwellings.

- Those ineligible to participate in the program would deeply resent its benefits to low-income families, even though their own housing costs and neighborhoods were unaffected.

The generally negative tone of these scenarios was appropriate under the circumstances: Before proceeding with a major social experiment, it is important to consider things that might go wrong. But they seemed also to reflect strongly held convictions of some professional students of housing markets and some administrators of federal housing assistance programs. The pertinence of this fact is, of course, that the scenarios of disaster were often inconsistent with each other in their implicit theories of consumer behavior and market response.

Moreover, these prophecies of disaster were at odds with the scenario that prompted interest in housing allowances as a tool of federal policy: that a housing allowance program would create effective demand for better housing and that the market would quietly supply this demand without construction subsidies, price controls, or other intermediation by government between producers and consumers of housing services. Under this scenario, the main issues were to find a balance in program design between constructive incentives, performance monitoring, and administrative simplicity; to determine the appropriate limits of eligibility for assistance; and to estimate the national cost of the program.

The range of disagreement about the possible and probable effects of a national program was the major motivation for the Supply Experiment. Alone among the components of the Experimental Housing Allowance Program (EHAP), the Supply Experiment provides for virtually open enrollment of eligible households within the two experimental sites; it alone provides assistance to homeowners as well as renters. Its allowance program is the only one committed to run for a long enough time--ten years--to produce longrun as well as shortrun consequences. And it alone provides for systematically monitoring local housing markets as well as program participants.

*In short, the Supply Experiment was designed as and remains EHAP's only opportunity to measure the consequences for a local housing market of a fullscale quasi-permanent housing allowance program. To forego that opportunity by curtailing the market monitoring program requires some sense of confidence that evidence to date is adequate to respond to the kinds of concerns raised in the scenarios presented above. The issues will surely be raised again if legislation is introduced for a national housing allowance program.*

#### LESSONS FROM SITE I

The two main reasons for choosing Brown County as Site I of the Supply Experiment were its history of recent urban growth and the absence of a segregated racial or ethnic minority. The second site, St. Joseph County, contrasts with Brown County in both respects.

In establishing these criteria for site selection, we were governed by the judgment that a rapidly growing urban area would have a persistently "tight" housing market and would thereby provide a stringent test of the inflationary potential of the effective demand added to the market by the allowance program; and that a segregated housing market would provide a stringent test of the program's potential for altering local patterns of residence. The pairing of features in each site was governed by evidence that these pairs were naturally associated in metropolitan communities.\*

In Brown County, we expected excess housing demand to be the dominant issue in appraising supply response, residential mobility, the behavior of market intermediaries and indirect suppliers, and the effects of the program on nonparticipants. In St. Joseph County, we expected the program's effects on market segregation to dominate in all these areas of interest.

#### The First Year of Housing Allowances

The housing allowance program has been operating in Brown County for nearly two years, since June 1974. Nearly 5,000 households have

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\* See HASE Staff, *Site Selection for the Housing Assistance Supply Experiment: Stage I*, The Rand Corporation, WN-7833-HUD, May 1972.

been enrolled at some time during those two years, and 3,300 are currently enrolled. Of those ever enrolled, over 3,900 found acceptable housing and met other requirements that entitled them to monthly allowance payments. As of 18 June, 2,793 were currently receiving payments, an increase of only 600 since June 1975.

Before April 1976, the average monthly payment was about \$57. Benefits were then increased to compensate for background inflation in housing costs and now average \$74 monthly. At the current rate of payment, annual benefits would amount to nearly \$2.5 million.

Most recipients have remained in their preenrollment housing, arranging for repairs or improvements as needed to qualify the dwelling for occupancy. About 45 percent of all dwellings nominated for occupancy by program participants have failed their initial housing evaluations, and about half of those that failed were subsequently repaired or improved to program standards. The required repairs and improvements have usually been minor, but the program has prompted a few instances of major upgrading.

Few enrollees have moved from their preenrollment homes. Those who have moved have virtually all been renters, both before and after the move, and their post-move rents have been considerably higher than their preenrollment rents--as one would expect if they used their allowances to obtain better housing.

At least through June 1975, only 20 percent of the renters who had not moved had experienced rent increases, and even these increases were modest in the light of escalating fuel and utility costs. Units repaired by landlords at the request of program participants had about the same incidence of rent increases as those passing initial evaluations.\*

#### Effects on the Local Housing Market

So far, we have found no evidence from program records, field surveys, or informal monitoring by resident observers that the program has

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\* The data in the last three paragraphs were drawn from an analysis of program records through June 1975, reported in more detail in the *Second Annual Report*, Sec. IV. Subsequent monthly reports from the HAO do not indicate any important changes in the patterns described.

even disturbed, much less shocked, the local housing market. From September 1973 through March 1975, contract rents increased in Brown County at an annual rate of about 4 percent, an amount entirely attributable to escalating fuel and utility costs.\* There are no signs of program-related speculation in real estate or unusual competition for housing meeting program standards. The home repair and improvement industry has had no difficulty in meeting the modest demands for home improvements generated by the program. There has been virtually no program-related activity in home improvement lending and only a handful of program participants have bought homes while enrolled.

#### Effects on the Community

Although there have been some disgruntled applicants, dissatisfied participants, and uncooperative landlords, the program has never been a substantial political issue in Brown County, nor has it stimulated any organized opposition. Residential mobility has been normal in amount and pattern, and there have been no signs of neighborhood upheaval or unusual in-migration by low-income families.

Interest in the program and reactions to it have generally been confined to those directly involved: applicants, enrollees, and their landlords. Most participants are glad to have the financial assistance and do not find their dealings with the Housing Allowance Office onerous. Relatives of participants are often pleased that an actual or potential responsibility has been otherwise cared for. Community organizations hope that the program will stimulate housing repairs and stabilize marginal neighborhoods. Some citizens are ideologically opposed to the program and others are still reserving judgment. Generally, the HAO now appears to have attained the status of a novel but legitimate community institution.

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\* Lowry, *Inflation in the Standard Cost of Adequate Housing: Site I, 1973-1976*, pp. 75-76. Gross rents, including the costs of tenant-paid utilities, increased at an annual rate of about 6 percent. The rent-increase calculations are based on same-unit comparisons of rents reported in the September 1973 screening survey and the baseline and Wave 2 surveys of tenants.

### Conclusions

*In short, the experimental housing allowance program in Brown County has developed very much along the lines of the scenario that originally prompted interest in the concept. It has been a quiet, uncontroversial, effective means of delivering housing subsidies to low-income families.*

Yet in our discussions with HUD, we sense a certain disappointment in this outcome. The disappointment seems to focus on two aspects of program development that seem to us both reasonable and salutary, given the characteristics of the population and housing stock of Brown County:

- Net enrollment and payment authorizations appear to have leveled off well below all our estimates of the numbers of eligible households, despite vigorous outreach by the HAO.
- The amount of housing improvement generated by the program has been modest if measured by its cost. Payments to participants have mostly served to relieve the financial burdens of those already in standard or near-standard housing.

That many families apparently entitled to assistance forego it is interesting and somewhat puzzling but does not seem to us to reflect adversely on the social value of a national program. It is especially noteworthy that enrollment rates have been considerably higher among those most in need than among those near the upper limit of eligibility. And, given that Brown County was known to have a relatively well-maintained housing stock, the fact that minor repairs have usually sufficed to qualify dwellings for occupancy by program participants should not be surprising or alarming.

*We do not suppose that the same patterns of program development and market effects would prevail in all communities. Indeed, events in St. Joseph County during the program's first year there contrast sharply with those in Brown County.\* What is important to remember*

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\* Cf. *Second Annual Report*, Sec. V.

*but easy to forget is that a national program must cover a variety of local situations and that there are many Brown Counties in the United States.*

ARE MORE SURVEYS NEEDED?

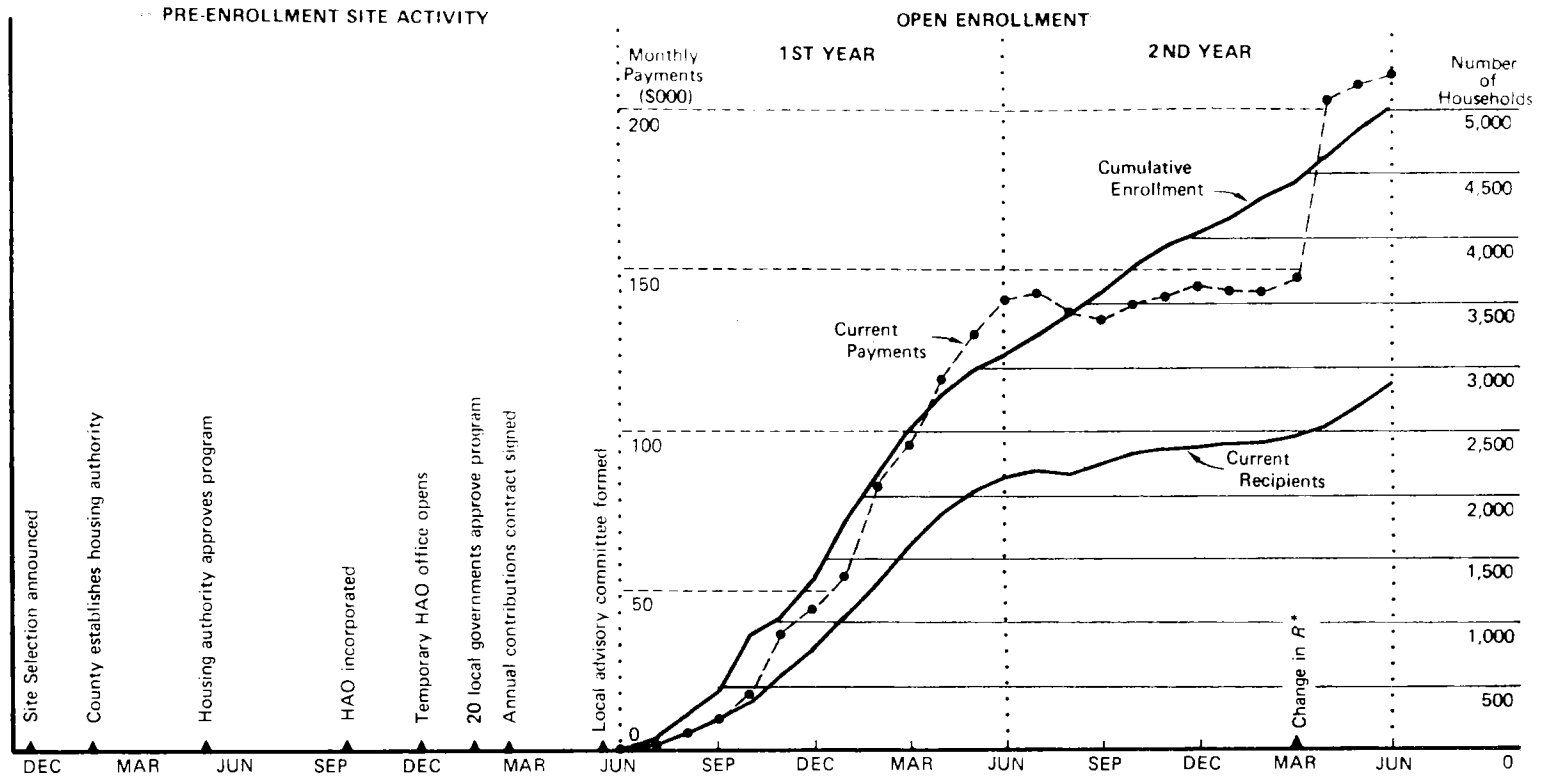
Some of the research questions to which the Supply Experiment is directed relate to the "front-end" effects of the allowance program, perceived as a possible shock to the local housing market or to local sensibilities. Others relate to the longrun market and community equilibria that would presumably be reestablished once the program had reached a steady state of enrollment. The original plan envisaged monitoring the housing market for long enough to obtain systematic data bearing on the latter as well as the former issues.

Figure 1 will help the reader judge whether the first three waves of survey data are adequate for both purposes. The upper panel of the figure plots program development against calendar time, showing the major publicized events prior to open enrollment as well as the subsequent growth in enrollment and in monthly payments to recipients. The lower panel shows how survey data relate to program events.

Many questions in the survey instruments--for example, those about rental property revenues and expenses and those about household income and housing expenses--ask for information covering the preceding calendar year. The data of this type that were gathered in each survey cycle are represented by a horizontally ruled bar covering the calendar year to which they refer. Other questions concern the respondent's current status or current opinions. The data of this type are represented by a vertically shaded bar covering the combined field period for the surveys of landlord, tenants, and homeowners.

Two important points are clarified by Fig. 1. First, the calendar-year data from Wave 2 encompass only the first six months of program enrollment, at the end of which only 1,203 households were enrolled and only 801 were actually receiving allowance payments, which amounted to \$45,000 in December 1974. Second, the calendar-year data from Wave 3 bridge the points at which the curves of current enrollment and current monthly payments begin to level off. Third, any market effects of the

# STAGES IN PROGRAM DEVELOPMENT



# PERIODS COVERED BY SURVEY DATA

Calendar-year data  
 Current-status data

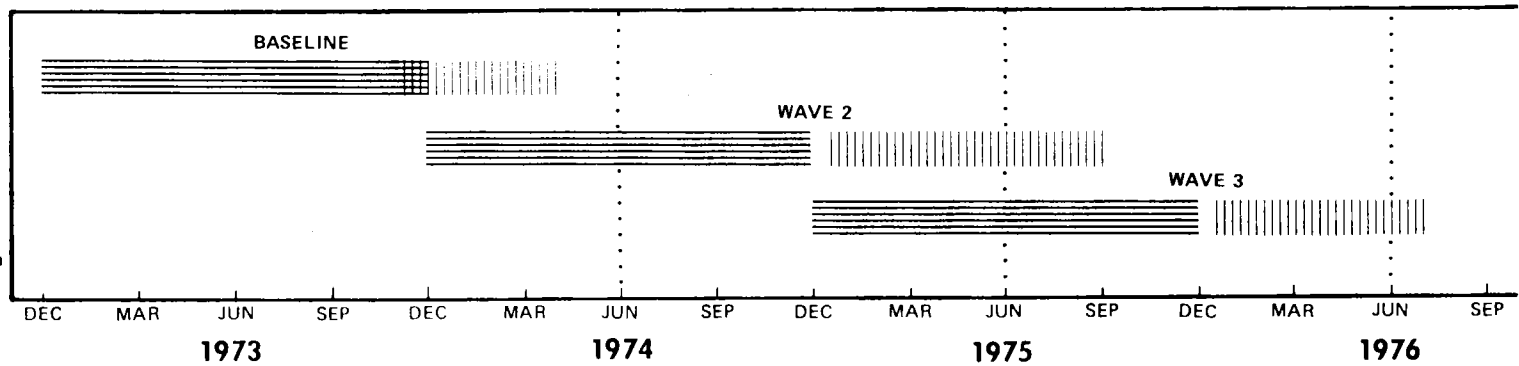


Fig. 1--Chronology of Site I survey data base in relation to program development

sharp increase in monthly payments that resulted from increasing benefit levels in April 1976 would be missed entirely in Wave 3 calendar-year data and only partly reflected in Wave 3 current-status data.

We are nonetheless confident that the administrative records of the allowance program, combined with the first three waves of survey data, are adequate to resolve all reasonable questions about the front-end effects of the program in Brown County. While much remains to be done in the way of extracting exact quantitative conclusions from these data bases, we are sure that the general conclusion will hold: The program's effects during its startup phase are almost entirely confined to the households directly participating and to the housing units in which they live.

If the surveys were terminated with Wave 3, Fig. 1 shows clearly that we would have no systematic data on Brown County's housing market for what appears to be a new phase of program development, in which enrollment and payments are growing only slowly. However, the fact that the first two years of program operations have had little effect on the market is a fairly strong argument for the proposition that the longrun effects of slow growth will also be mild. If this proves true, then the social value of the program *in a community of this type* could be judged entirely in terms of its effects on program participants. In these terms, the program might still be judged good, bad, or indifferent.

Assuming no significant market effects over the long run, further surveys would add to our understanding of the program primarily in three respects:

- *Attitude modules in the postbaseline surveys explore in considerable detail the amount of information respondents have about the program and their attitudes toward it. Respondents who have applied for or enrolled in the program are questioned at length about program features that please or displease them, in an interviewing context that invites frankness. The value of these interviews for program analysis grows rather than diminishes over time, because each year more respondents--*



landlords, tenants, homeowners--will know about the program and more will have had dealings with it.

- *Time-series data on Brown County's households will enable us to explore in much greater depth the dynamics of household circumstances that bear on eligibility for the program. Turn-over among enrollees suggests that the pool of eligibles also turns over rapidly. If this is so, information about the events that occasion movement into or out of the pool would be helpful in assessing genuine need for assistance among different types of households. Indeed, such mobility could be an important explanation for nonparticipation among those who currently appear to be eligible.*
- *A key problem for a national housing allowance program is to set benefit standards at a level consistent with program goals. Whether or not the allowance program affects rents and home prices in Brown County, it is important to understand what factors do affect the annual cost of decent, safe, and sanitary housing. Our surveys so far give us a good cross-sectional data base for analyzing housing costs and their determinants, but are too few for good time-series analysis. Additional survey cycles, we think, would greatly enhance our ability to analyze market dynamics in a period of severe background price inflation. (Note that the early findings from Site I run contrary to the expectations of most observers.)*

These are benefits that would accrue from additional surveys even if the direct effects of the program on the local market continued to be mild. We should also consider the possibility that effects in the future will differ from those in the past.

Two kinds of change are especially consistent with previous developments but could lead to more market disturbance than we have so far observed. One is an increase in the pace of enrollment. The other is a delayed perception by housing suppliers and market intermediaries of opportunities created by the program. Both are possible in a community like Brown County, whose citizens seem to us particularly averse to risks and skeptical of novelties.

At this juncture, we have at best anecdotal evidence that the allowance program is acquiring an institutional legitimacy through word-of-mouth communication. Beneficiaries of the program who find that it has materially helped them without subjecting them to indignities are becoming sufficiently numerous to spread the word to other eligibles, perhaps more effectively than the HAO can do through advertising or community forums. The recent increase in benefit levels to reflect the rising cost of adequate housing helped to establish the program's good faith. It is possible that enrollment will gain momentum rather than tapering off.

Our data on landlords in Brown County show that the majority are nonprofessionals with small properties. Unless their own tenants have enrolled, their contacts with the program so far have been limited to what they learn from the media. Mortgage and home improvement lenders have been officially interested but have so far had few dealings with program participants as loan applicants; a surplus of loanable funds, if it occurred, might make them more interested and aggressive. Continued exposure to the program, especially if enrollment did increase substantially, could lead both landlords and market intermediaries to respond in ways not now evident.

*These are real possibilities not to be overlooked. In our judgment, they are unlikely to combine in a way that would seriously disturb Brown County's housing market, given that the well-publicized initiation of the program had no such effect.*

#### CAN WE AFFORD NOT TO BE SURE?

When all is said and done, our crystal ball is as cloudy as the next one. We *think* we know how the allowance program will affect Brown County's housing market over the next three years, but that is because we expect these years to resemble the past two. To say the least, it would be a serious loss if the market monitoring program were curtailed just as significant events, bearing on the national suitability of a housing allowance program, began to occur in Brown County.

We know of no way to attach even an approximate *probability* to this *possibility*. Technical knowledge of housing markets helps, but if much

firm knowledge of market dynamics had been available, the experiment would have been unnecessary in the first place.

There might also be a problem, even if our current judgments about future events are correct. If we cease to monitor Brown County's housing market, we can support longrun conclusions with powerful evidence only through Wave 3. Anyone who disagreed with those conclusions, for whatever reasons, would not need to prove the contrary; he would only need to point out the missed opportunity to ascertain the facts, after a considerable investment in creating an experimental context in which the facts were ascertainable.

If there is a real possibility that HUD will base a legislative program on findings from the Experimental Housing Allowance Program, this last point should be taken quite seriously. Whatever its thrust, such a program will have a constituency of supporters and a constituency of opponents. The latter will be quick to seize on any weaknesses or ambiguities in the evidence that HUD provides in support of its position.

*So far, the Supply Experiment is in a position of considerable strength in terms of the credibility of experimental findings. The only charge of weakness that can be leveled against those findings is one inherent in an experiment limited to two sites: that the findings cannot be generalized to all empirically relevant housing markets by rigorous statistical inference. Limiting the postallowance market monitoring period to two years, both of which were required to bring enrollment up to its longrun level, cannot help but undermine the credibility of any conclusions that might be drawn about longrun program effects.*

Actually, the limitation is more severe than this statement implies. In June 1976, the allowance program completed its second year of open enrollment. At about the same time, the Wave 3 survey cycle ended. Interviews of tenants and homeowners were conducted between January and April; interviews with landlords began in May. Many survey questions relate to the respondents' current circumstances and opinions, but all income and housing expense data refer to calendar year 1975, which ended in the eighteenth month of program operations. In Wave 4, these data would cover calendar year 1976, ending in the thirtieth month of program operations. Thus, Wave 4 would extend the period for which program effects were monitored by 67 percent.

During the calendar year covered by Wave 3 data, the number of households enrolled in the program (net of terminations) rose from 1,700 to nearly 2,900, and the number authorized for payment rose from under 1,000 to 2,500. Monthly allowance payments increased from \$52,000 to \$145,000. Since the survey data reflect the whole of this period, it is appropriate to measure program size by 12-month averages: 2,604 for enrollments, 2,027 for authorizations, and \$121,500 for payments.

If the fourth wave of surveys were undertaken, the calendar-year data for 1976 would cover a period in which the average level of program activity was considerably higher. Although we have program data for only the first half of 1976, conservative estimates for the second half yield the following 12-month averages: 3,300 for enrollment, 2,900 for authorizations, and \$206,000 for payments. These are increases over 1975 of 27, 43, and 70 percent, respectively.\*

*Even though we have reached mid-1976 without noticing any significant program-related perturbations, program growth of this magnitude might well affect the housing market and community attitudes in ways that would be revealed only by systematic surveys. That any such effects are so far inconspicuous argues against their importance; but we think that a fourth wave of surveys in Site I would provide valuable insurance against the risk of missing delayed market and community responses to a still-growing allowance program.*

#### SUMMARY

During its first two years, the experimental housing allowance program in Brown County has developed very nearly according to plan and without local controversy. None of the scenarios of front-end catastrophe that were considered during the design phase of the experiment have materialized. Although 3,900 households have received assistance during the two years and nearly 2,800 are currently drawing allowances that annualize to \$2.5 million, neither the housing market nor the community has been visibly disturbed by the program. Its effects have so far

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\* Payments grew faster than authorizations because of the increased benefit levels that were effective in April 1976.

been virtually confined to participants and their housing. Because most participants were already living in standard or near-standard housing, the main effect has been to relieve the financial burden of those spending more than a fourth of their incomes for housing. Housing repairs and improvements have been numerous but rarely expensive.

We judge that these results flow from the nature of Brown County's population and its housing stock and are unlikely to change dramatically during the experimental period. There may be a slow increase in enrollment as program information pervades the community and as the favorable reactions of participants are communicated to other eligible households by word of mouth. Additional and more expensive housing improvements may be made by both landlords and homeowners as participation increases and skepticism about the program's longevity is quieted. We doubt that these events will be large enough or enough compressed in time to disturb existing market patterns or processes.

In this context, there are two forceful arguments for continuing our annual cycle of field surveys in Brown County.\* One is that these surveys will teach us more about attitudes toward the program, the dynamics of eligibility, and the factors affecting the standard cost of adequate housing--all issues that would be important in designing a national program. The other is that our prognosis of future events in Brown County might be wrong. Curtailing the survey agenda now would deprive us and HUD of the evidence needed to reach unequivocal and publicly credible conclusions about longrun as well as shortrun program effects.

The Supply Experiment is EHAP's only opportunity to measure the consequences for a local housing market of a fullscale quasi-permanent housing allowance program, serving both renters and homeowners. Creating the necessary experimental conditions in Brown County has been extremely expensive in dollars and human resources. We think that the data so far gathered have been well worth the investment, even taking the narrowest view of experimental objectives. Although continuing

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\* These are not the only arguments for continuing the surveys. Others are treated in Sec. V.

the annual cycle of field surveys will also be expensive, we think that the combination of clear information gains and protection against risk justify continuing them at least through Wave 4.

V. OTHER USES FOR BROWN COUNTY DATA

Two issues are joined in this section because our conclusions about both depend on the research programs in St. Joseph as well as Brown County. First, we address the question whether discontinuing the surveys planned for Brown County would handicap our analysis of program effects in St. Joseph County. Then, we consider whether abbreviating the survey data base in Brown County would seriously diminish the value of the two-site data base as a resource for policy research unrelated to housing allowances.

INTERSITE PROGRAM COMPARISONS

Because we believed that communities would differ in their responses to housing allowances, we thought it was very important to conduct the experiment in more than one site. Although a sample of two sites does not provide a basis for statistical inference, by choosing them for contrast in housing market conditions and population characteristics, we expected at least to forestall oversimple conclusions about program effects and to test some basic hypotheses about the relationships between the program and the environment in which it operated.

With these objectives in mind, we have operated identical experimental allowance programs in Brown and St. Joseph counties and collected comparable data about the housing markets and household populations in these areas. Although there have been minor differences in timing within each cycle, the surveys in the two sites follow the same cyclical pattern; are administered to comparable samples of residential properties, their owners, and their occupants; and use substantially the same survey instruments.\*

Very little of the Site II data so far collected have been analyzed, but it is clear from early studies of screener and baseline data that

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\* There were major changes in instrument formats following baseline in Site I, but we made only minor changes in the sequence or wording of questions, to improve on the completeness and clarity of the data collected.

the two sites are indeed very different in their economic and social structures;<sup>\*</sup> and from HAO records it is clear that they have responded differently to the allowance program. We firmly believe that what we learn in one site about the relationships between the program and its market and community environment will enrich our interpretation of events in the other site.

It is therefore appropriate to ask whether curtailing the survey agenda in Brown County will hamper our ability to analyze and interpret events in St. Joseph County.

One point at least is clear: The first three waves of surveys in each site will provide enough data on the structure of each housing market and community to serve all reasonable requirements for static comparisons. We are less certain on the score of dynamic comparisons. That issue is complicated by the fact that survey cycles in St. Joseph County lag those in Brown County by a year.

The relationship between survey schedules in the two sites is shown in the lower panel of Fig. 2. The upper panel records selected national, regional, and local events that should affect our survey data. The plotted lines are the national consumer price index, a regional index of the costs of homeownership and operation, and a regional index of contract rent. The opening of enrollment in each site's allowance program is also marked.

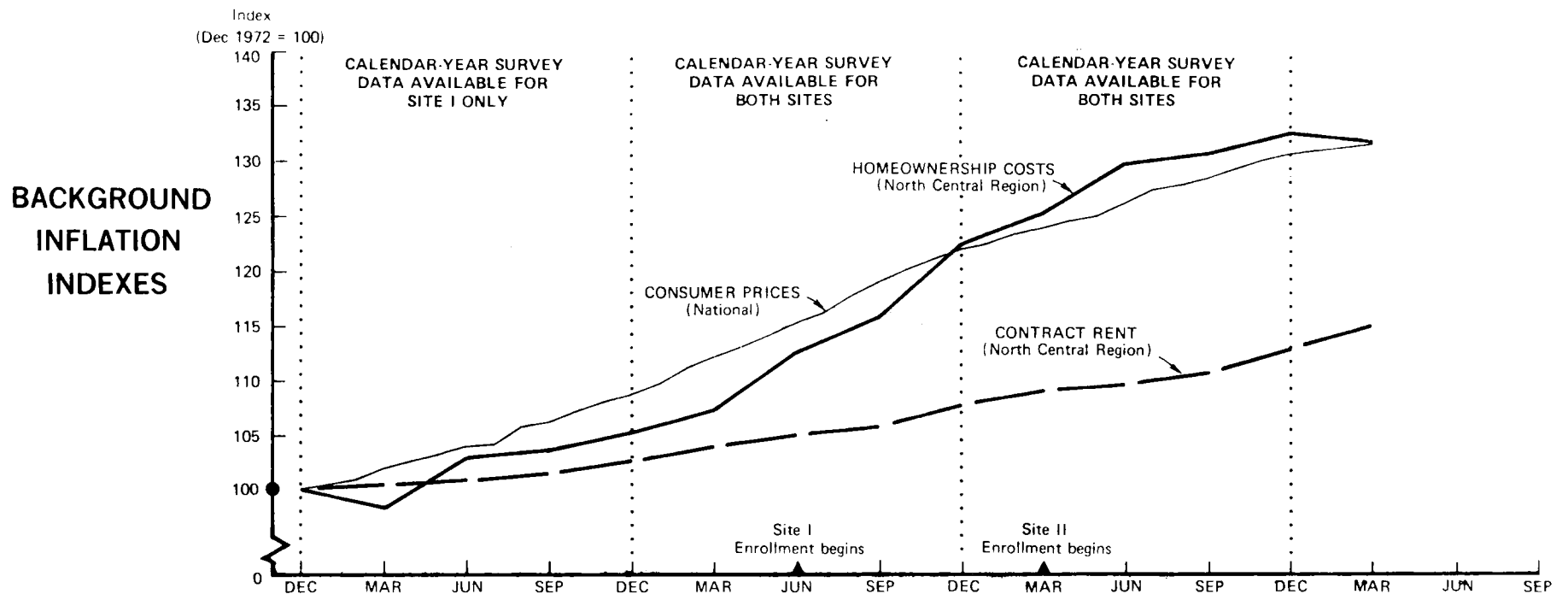
If events in Brown County continue as we expect them to, the most direct effects of time on the data will be those associated with inflation in household incomes and housing costs, a national trend with regional variations. And if this inflation has different consequences for program effects in the two sites, the lack of further time series for Brown County will clearly prevent us from noting that fact. Our comparative conclusions will be limited to the two years 1974-75, which account for 18 months of program operations in Brown County and nine months in St. Joseph County.

On the other hand, for program-induced effects such as residential mobility, curtailing the Site I survey agenda now would leave us with

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<sup>\*</sup> See the *Second Annual Report*, Sec. V.





### PERIODS COVERED BY SURVEY DATA

- Calendar-year data
- Current-status data

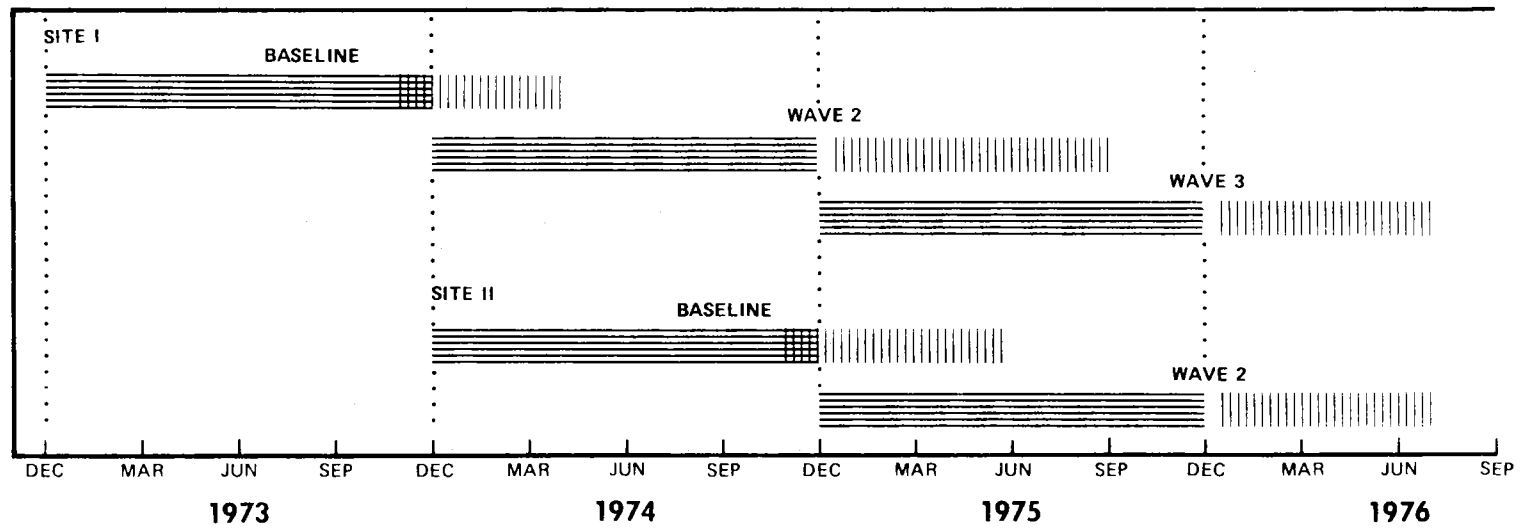


Fig. 2--Chronology of survey data base in relation to price inflation

18 to 24 months of postenrollment data for Brown County, depending on whether the issue was covered by survey questions about the preceding calendar year or about the respondent's status at the time of the survey. The comparable data set for St. Joseph County will be available when the third wave of surveys is completed there.

*These calculations make us uncomfortable about cancelling Wave 4 in Brown County. Our concern is not so much based on the possibility of unexpected developments in Brown County as on the greater likelihood of unexpected developments in St. Joseph County, a much more complex environment for the allowance program. Should something happen in St. Joseph County that needs careful explanation, comparable data for Brown County would be a helpful resource. We would like to have this resource at least through three years of comparable program experience.*

#### EXPLOITING THE HASE DATA BASE

From the beginning, we have viewed the HASE data base as more than a means of answering the specific questions posed in our research charter. Although many local and national surveys of households have included some questions about housing, none has been structured, as ours are, to provide a comprehensive account of the organization and the economic and social dynamics of an entire local housing market.

Surveys of landlords are quite rare. None that we know of has sought or obtained for a marketwide or even a systematic sample of rental properties the detailed information on property income, expenses, and management that we have gathered. We know of no other survey that elicits information from both landlords and tenants of the same property, and no other that permits close comparisons of the circumstances and housing costs of homeowners and renters in the same community. And we know of no other annual time series of local housing and population data that has comparable scope.

*We think that the HASE data base, if made accessible to public and private investigators, will serve a wide range of policy-relevant inquiries for years to come. And because the data files have been so carefully documented, others will find them relatively easy to use.*

Preparing answers to program questions posed in our research charter has already led us into several analyses of wider significance for federal housing policy. For instance:

- We have devised and fully calibrated a three-factor production function for housing services using data from the baseline surveys in Site I. When refined and tested on additional data sets, it should be a major contribution to the scientific understanding of investment and property management decisions pertaining to rental housing and of the pattern and timing of residential development and redevelopment within an urban area. This is in addition to its direct use by HASE as a tool for measuring changes in the quantity and price of housing services.
- We have demonstrated that the most widely used indicator of housing market conditions, the instantaneous vacancy rate, is a misleading tool for policy, concealing important variations in the underlying processes of tenant turnover and vacancy duration. Further, analyzing these processes promises to be an effective approach to distinguishing housing submarkets. The existence of submarkets is a central postulate of much recent theoretical work, but the empirical identification of submarkets has baffled most investigators. They are extremely important for understanding the propagation of price changes through a community's housing stock, in identifying soft spots in local housing markets so as to forestall overbuilding, and in rationalizing the ubiquitous planning exercise of matching the housing "needs" of a local population with the available inventory.
- We have shown that unpaid labor by landlords and their families is a major element in the operating cost of rental housing, accounting in Brown County for nearly 40 percent of the total. It seems to us that this fact, if general, should be important in HUD's dealings with private landlords in any context in which payments to them are intended to reflect their costs. On the one hand, the possibilities for inventive bookkeeping

are impressive; on the other hand, our data suggest that landlords who provide such labor may not treat its value as a cost to be passed on to their tenants.

- Our first trial balance sheets for rental properties in Brown County yield estimates of their cash flows and profitability that sharply disagree with general beliefs. If our present conclusions survive further tests of the reliability and internal consistency of the data, conventional thinking about the motivations and decisions of investors in rental property must be revised. This in turn could directly affect the design of federal programs that operate--not always successfully--through incentives to private developers. It could also lead to changes in the basis for federal program standards such as "fair market rents."
- We have demonstrated the power of the household life cycle as an organizing concept for the study of housing consumption and residential mobility. With its aid, we expect to go much further in modeling household decisions on these matters. But even our early findings, in general, have important implications for the design of federal housing policies, casting light on the types and amounts of assistance that can be used effectively by households at different life-cycle stages.

The findings noted above are based entirely on data from the first (preprogram) wave of surveys in Brown County. Considering the absolute scarcity of reliable information on housing market structure and processes, even data from a single year and a single market can make substantial contributions to knowledge. But the power of such data increases geometrically as the data base is extended over time and space. We have planned parallel analyses of data for Brown County and St. Joseph County, each case serving as an independent check on conclusions drawn from the other, and each year's data serving both to qualify prior findings from cross-sectional analysis and to extend the possibilities for analyzing changes over time.

*Curtailling the survey agenda in Brown County at this point would of course hamper these plans. There is no easy way to predict what*

*would be lost thereby. One of the difficulties of research is that the valuable products can often only be identified in retrospect. The simplest statement of the case is that we would lose the opportunity to analyze housing market dynamics in Brown County.*

We should not minimize the value of the three-year data base already collected for Brown County. Indeed, analyzing these three sets of data could keep HASE researchers usefully employed for some years. But three annual survey cycles do not for most purposes constitute a fruitful time series; they are better viewed as an extraordinarily comprehensive three-year cross-section, in which lumpy events related to individual properties, such as capital improvements or vacancies, are smoothed out by time.

In time-series analysis, the key variables are changes measured by differencing successive observations. Three survey cycles provide two observable changes. A fourth cycle would extend the time series by 50 percent, a fifth cycle by 33 percent, and a sixth by 25 percent. This calculation is instructive but not necessarily persuasive. If only negligible changes are observed in successive years, not much will be learned from them.

In Sec. IV, we expressed our belief that, except for continued inflation in incomes and housing costs attributable to national events and policies, Brown County's housing market would continue in the even tenor of its ways for the remainder of the experiment. But the effects of inflation itself are nontrivial and poorly understood. For example, there has recently been a resurgence of interest in rent control as public policy. Its advocates appear to believe that rent inflation is generally reflected in larger profits for landlords than are needed to motivate them to provide existing levels of housing services. Our data will show--with a thoroughness and marketwide comprehensiveness that cannot be duplicated elsewhere--how rising rents are allocated among the participants in the production of housing services.

Even with the framework of overall market stability, change is the law of life. Some properties improve, others deteriorate. Some occupancy rates rise, others fall. The profits of some landlords increase, those of others decrease. Households move through a succession of dwellings as their domestic circumstances and incomes change.

Because our surveys are addressed to a panel of residential properties and housing units rather than to independently selected annual samples, many of these processes can be traced at the level at which they occur. With a time series that is long enough to confirm trends in the histories of individual properties, housing units, landlords, or households, it becomes possible to search for the determinants of these trends.

*The opportunity to analyze such individual behavior over time will be essentially lost if the surveys in Brown County are discontinued now. Assuming that those in St. Joseph County continue as planned, such analysis will be possible there, and should be of considerable value. But if we are unable to confirm Site II findings with Site I data, the power of the findings is substantially diminished.*

#### SUMMARY

Manifestly, discontinuing the market monitoring surveys in Brown County will hamper our ability to assess the effects of the allowance program there. We judge that this action would also hamper the corresponding analysis of St. Joseph County data. We would have only two calendar years in which comparable data were collected from both sites and could thus be said to reflect comparable regional or national influences. From another perspective, since the Brown County data would cover only the first 18 to 24 months (depending on the topic) of program activity, St. Joseph County could be compared with Brown County only for that period.

These calculations make us uneasy not because we expect startling developments in Brown County but because of the greater likelihood of such developments in St. Joseph County. If events there need careful explanation, comparable data for Brown County would be a helpful resource.

Preparing answers to program questions posed in our research charter has already led us into several analyses of wider significance for federal housing policy. So far, these have been based on the first year of cross-sectional data for Brown County. We think these preliminary findings are important enough (even aside from their pertinence

to housing allowances) to make it worthwhile spending considerable resources to extend the analysis in time and space, as would be possible given the original data collection plan.

Extending our time series for Brown County beyond Wave 3 is, we think, a necessary condition for both the analysis of housing market dynamics there at an aggregate level and the analysis of housing market behavior at the individual level. Even though we do not expect major changes in Brown County's market, the effects of background inflation can be fruitfully studied. And time series on individual properties and market participants have a value that is independent of overall market conditions; they enable us to pose and, we hope, to answer questions such as why some rental properties are profitable and others are not.

A time series in either site that is long enough to capture individual changes will serve analyses of the last type mentioned above. But the environmental differences in our sites are such that the power of the data for either site would be greatly enhanced by comparative studies at the other site.

We think that a fourth cycle of surveys in Brown County would provide needed protection for our ability to interpret postenrollment events in St. Joseph County. It would also open analytical possibilities that would otherwise depend entirely on a longer time series for St. Joseph County and that would be much enhanced by comparable time series from both sites.

## VI. CONCLUSIONS AND RECOMMENDATIONS

In preceding sections we have explored seven salient issues bearing on the decision either to continue or to curtail the survey agenda in Brown County, Site I of the Supply Experiment. Here, we summarize our conclusions on each issue, then present our recommendations. Briefly, we urge that Wave 4 be planned and conducted as the final survey cycle in Site I. The duration of the market monitoring program in Site II, St. Joseph County, is a separate question and may have a quite different answer. It should be addressed in similar fashion next year.

### CONCLUSIONS

The seven questions posed at the end of Sec. I are repeated below. Each is followed by a summary of the conclusions presented at greater length earlier in the note.

- *Is it technically feasible to collect analyzable data on the phenomena of interest?*

We believe that continuing the survey agenda in Brown County, using the instruments and procedures developed over the past three years, would yield a survey data base through Wave 4 that was adequate in size, high in quality, and representative of the population sampled. After Wave 4, the number of complete longitudinal property records is likely to shrink below design standards for sampling reliability. Even then, we do not anticipate problems of data quality or non-response bias; nor do we foresee difficulties in cross-sectional analysis due to sample sizes in Waves 5 and 6. [See Sec. II.]

- *Would discontinuing the surveys in Brown County cripple the remainder of the HASE research effort?*

We think that the surveys in Site I could be terminated after any chosen survey cycle without seriously disrupting the organization needed to continue them in Site II. The first step would be to



terminate the fieldwork subcontract and close the subcontractor's site office. Reductions in HASE staff would follow, group by group, as the last wave of survey data passed through successive steps of processing. However, continuing the surveys in Site II would require more than half the staff and budget of the two-site operation. [See Sec. III.]

- *If discontinuing the surveys is unacceptable, can they be curtailed in a way that meets experimental needs at lesser cost?*

We have considered reducing sample sizes, dropping some surveys from the annual cycle, shortening survey instruments for Site I alone, and skipping one full cycle (Wave 4) of surveys. None of these alternatives would yield a technically adequate data base for our contractual research agenda and none would result in really substantial savings over the life of the experiment. Although a re-designed research agenda might operate without all the surveys or all the cycles, the design effort would imperil the continuing agenda in Site II. A clean cutoff is technically, fiscally, and organizationally sounder than a lingering but underfunded commitment to market monitoring in Site I. [See Sec. III.]

- *Which research questions have been or can be answered from the data so far obtained, and which remain to be answered?*

A major objective of the Supply Experiment was to discover whether introducing a fullscale allowance program into a local housing market would seriously disrupt that market, causing rents and home prices to rise, destabilizing neighborhoods, and provoking hostile community reactions. In the case of Brown County, the data now in hand are adequate to show that none of these undesirable events has occurred. The program has been a quiet, uncontroversial, effective means for delivering housing subsidies to low-income families, its effects being almost entirely confined to participants and their housing.

Further surveys would enable us to learn substantially more about public comprehension of the allowance program and attitudes toward it; about the dynamics of household circumstances that bear on eligibility for the program and participation in it; and about the factors affecting the annual cost of decent, safe, and sanitary housing. Although HAO records alone will tell us about the effects of the program on participants and their housing, future surveys would include increasing numbers of households who have participated in the program and would provide detailed information on their attitudes toward it. [See Sec. IV.]

- *Can we forecast with confidence how the allowance program will develop during its third and subsequent years and how these developments will affect the housing market?*

Despite the recent increase in benefits, we think that active participation in the program is near its limit in Brown County except under conditions of unusual economic stress; and we are fairly sure that even a sharp increase in enrollment would not perturb the housing market significantly. But we also think that curtailing the survey agenda now would deprive us and HUD of the evidence needed to reach unequivocal and publicly credible conclusions about longrun as well as shortrun program effects.

With no further surveys, our findings about the effects of the program on the market and the community will be based on data covering only the first 18 months of program operations. A fourth survey cycle would extend this coverage by another 12 months, or 67 percent. We estimate that monthly allowance payments during the period that would be covered by Wave 4 data will be made to 1.4 times as many households as during the period covered by Wave 3 data, and that the amount of the payments will be 1.7 times as large. Even though at the midpoint of the later period we see no signs of market perturbation, program growth of this degree might well affect the market and community attitudes in ways that would only be revealed by systematic surveys. [See Sec. IV.]

- *How does further data collection in Brown County relate to our research objectives in the second experimental site, St. Joseph County?*

The evidence so far points to substantially different experimental outcomes in the two sites. The reasons for these differences will require careful explanation, and the explanation in turn will depend on comparable data from each site. Terminating field surveys in Brown County after Wave 3 will mean that much of our survey data will reflect only the first 18 months of program operations and none of it will reflect more than 24 months. We would feel much more comfortable with a Wave 4 that would yield three years of postenrollment survey data for intersite comparisons.

Stopping after Wave 4 in Site I will involve some risks that we believe should be assumed. Unusual developments might take place in Site II that could be better understood with further Site I data, and response rates for Waves 3 and 4 might support collecting such data. We, however, do not expect this combination of events to occur. [See Sec. V.]

- *Specific experimental objectives aside, could additional survey data contribute substantially to the formation of federal housing policy or the implementation of federal housing programs?*

Analyses completed on the data obtained from baseline surveys in Site I indicate to us that the planned HASE data base will be extraordinarily valuable for housing policy research, even aside from issues directly related to housing allowances. Halting survey work in Site I following Wave 3 would leave us with a still-valuable three-year data base; but with only two annual change measurements, it would not be suitable for time-series analysis. A fourth cycle would extend the time series by 50 percent and would, we believe, permit fruitful studies of housing market behavior at the individual as well as the aggregate level. [See Sec. V.]

#### RECOMMENDATIONS

The summary above indicates that some important experimental purposes

are adequately served by the three waves of survey data now in hand for Brown County and that others will be adequately served by HAO records that are independent of survey operations. But it also suggests that conclusions based on survey data covering only the first 18 months of program operations in Site I could easily be attacked as inadequate or misleading if they were used to justify a legislative proposal. Moreover, additional survey data for Site I would help us with the analysis of different events in Site II and would in any case be valuable for housing policy research not directly related to housing allowances.

Given the absence so far of program-caused market or community perturbations in Brown County and the small likelihood that such disturbances will occur in the future, we do not think that the original plan for a total of six annual survey cycles is now justified by the objectives specified in our research charter. But we do think the arguments summarized above justify one additional cycle--Wave 4--both for the information it would provide and to protect the experiment's credibility.

*We therefore recommend that Wave 4 be planned and conducted during 1977 as the final survey cycle for Site I. As such, it should include the full panoply of fieldwork--surveys of landlords, tenants, homeowners, residential buildings, and neighborhoods--needed to create terminal data files that are comparable in scope and detail to the baseline data that were collected in 1973-74.*

Even though response rates for Wave 4 may be lower than those for Wave 3, we judge that we can use existing instruments and field procedures to obtain a fourth wave of high-quality survey data and that its value to HUD will exceed the roughly estimated cost for Wave 4 of \$2 million.\* Of course, runout costs on the Supply Experiment would be lower under this plan than if the full six survey cycles were undertaken.

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\* Cost studies of alternative survey agendas are under way and will be reported separately. The figure used here reflects reasonably good estimates of fieldwork costs combined with very rough estimates of the cost of prefield preparations and of subsequent data processing and analysis.

When Wave 4 is completed, we recommend that Rand continue to participate in the management of the HAO and to report on its progress through June 1978--five years from the beginning of open enrollment. Until then, the HASE Field and Program Operations Group would continue to supervise HAO operations and would maintain the Rand site office in Green Bay.

Each year through June 1978, the Design and Analysis Group would receive and analyze HAO administrative records and would report on the characteristics of participants and their housing and on related matters. But our responsibility for assessing the effects of the program on Brown County's housing market and for reporting on community attitudes toward the program would terminate with Wave 4, except as indicated below.

In addition to Rand's site manager, two resident observers currently operate out of the site office, one specializing in HAO affairs and the other in community events bearing on the allowance program. We think their functions should be continued or perhaps even expanded after the field surveys end. Although their reporting is necessarily anecdotal and does not substitute effectively for systematic field surveys, they should be able to alert us to unexpected developments. If such developments appeared to bear importantly on policy decisions relating to housing allowances, we might propose special studies to learn more about them.

A special study under these circumstances could entail additional field surveys, not necessarily addressed to our panel of residential properties and not necessarily drawing on existing survey instruments. But there are serious impediments to following that course. Given the time requires to note the events of interest, to formulate a proposal for studying them, to obtain HUD approval and a supplementary budget, and to organize the field operation, it is all too likely that the survey would be too late to capture the desired information. Closing down survey operations in Brown County before the end of the experiment obviously reduces our ability to respond to unexpected events. We think that, following Wave 4, the risk is acceptable but should not be ignored.

We do not recommend terminating field surveys in Site I after Wave 3, but we recognize that HUD's judgments about the costs and benefits of Wave 4 may legitimately differ from ours. In the event that HUD

decides against Wave 4, we would of course do as much as possible with the three waves of survey data so far collected. And our recommendations for Rand's postsurvey role in Site I would be the same as if the fourth wave were conducted.

Whatever decision is taken about the duration of the market monitoring program for Site I should not become the presumptive conclusion for Site II as well. Differences between the sites, reflected in different paths of program development, imply different priorities and emphases in site-specific research. Different fieldwork problems place different limits on our ability to collect adequate data. After Wave 3 in St. Joseph County, we recommend a comparable review of plans for additional survey work there. Until then, our longrange planning should assume that the full six annual survey cycles will be completed there as originally planned.