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INTRODUCTION

The Housing Assistance Supply Experiment is designed to test the effects on local housing markets of a full-scale program of housing allowances for low-income households. A test is important because, unlike most housing assistance programs, this one is administered largely by its beneficiaries, operating through normal market channels.

Within limits, a program participant is free to choose the type and quality of housing and the form of tenure that suit his preferences and his allowance-augmented budget. The administering agency assists with a monthly payment whose amount does not depend on these decisions, requiring of the recipient only that he occupy housing that meets minimum standards of space and habitability.

To understand how the allowance payments and related program rules affect participants' housing choices, it is first necessary to understand the structure of those choices in the absence of an allowance program. This paper summarizes what we have learned so far from pre-program interviews with homeowners and renters in Brown County, Wisconsin, the first of our two experimental sites.

The analysis reported here is preliminary to building an integrated and, we hope, fairly general model of the determinants of the kinds of housing choices open to program participants: tenure, type and quality of housing, housing expenditures, and location of residence.

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The major theme of this paper is that housing choices are powerfully conditioned by the demographic configuration of the household, as measured jointly by the marital status and ages of the household heads, the presence of children in the household, and the age of the youngest child. These configurations are denoted here as stages in the household life cycle. The paper shows how housing characteristics and changes of residence in Brown County, Wisconsin, vary with life-cycle stage, controlling for income differences where appropriate and possible.

The life-cycle approach to the study of housing consumption and its adjustments over time is not new. Lansing and Kish [12], Lansing and Morgan [11], and David [5] have demonstrated the variability of consumption patterns over the household life cycle, while Speare [19], Chevan [4], Guest [9], and Pickvance [14] have demonstrated the relationship between the life cycle, housing consumption, and local mobility. Most analyses of housing consumption patterns that do not explicitly include a life-cycle variable (Kain and Quigley [10]; Struyk and Marshall [20]) use some of its component measures as separate explanatory factors. The approach used here differs from these studies partly in emphasis and partly in the amount of detail afforded by our data base.

The remainder of this paper is divided into five parts. The first part describes the data base on which the analysis draws and comments on its statistical properties. The second part classifies households in Brown County by life-cycle stage and shows how a number of consumption-related household characteristics vary by stage. The third part examines differences in current housing consumption by life-cycle stage and income. The fourth part deals with changes of residence as the principal means by which households adjust their housing consumption to changes in their circumstances. The last part summarizes our principal findings and lists topics for future research.

THE DATA BASE AND STATISTICAL ISSUES

The data used for this analysis were produced by the survey of tenants and homeowners conducted in Brown County from December 1973 through April 1974. This survey was conducted on a multi-stage stratified cluster

sample of 3,722 households, the records of which were then weighted to represent approximately 42,600 comparable households in the county's population. The population represented by our sample excludes roughly 12 percent of all Brown County households.[1] The largest excluded group consists of about 3,200 households containing landlords (or their agents); persons to be interviewed as landlords were deliberately skipped by the survey of tenants and homeowners. Another excluded group consists of some 1,300 occupants of federally subsidized housing units, also deliberately skipped by the survey; the majority of these are homeowners receiving mortgage assistance. Finally, residents of mobile homes and lodgers in rooming houses and private homes, although interviewed, presented special data processing problems and are excluded from the data base used here; they represent a population of about 1,300 households. Although these excluded households may differ in some respects from the population covered by our sample, for simplicity in exposition we will refer to the sampled population as though it fully represented Brown County.

In conducting our analysis we were confronted with the problem of missing data, particularly on income and expense items. Consequently, the results reported here pertain to three different sets of records. For general descriptions of households and their housing, the full set of 3,722 records (887 owners and 2,835 renters) was used. In examining the income characteristics of households, only the 3,223 records containing complete income information were used (733 owners and 2,490 renters). In examining the relationship between renters' housing expenses and income, only the 2,326 records containing both income and

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[1] A household is a person living alone or a group of people who share a housing unit--i.e., share a room or group of rooms intended for occupancy as a separate living quarters with complete kitchen facilities and direct access to the unit either through the outside of a unit or through a common hall. Usually, but not necessarily, members of a household are related by blood or marriage. The related members of a household constitute a family. Individuals not living in households consist of transients, persons living in group quarters such as student dormitories, and inmates of institutions such as hospitals or prisons.

expense data were used. In each case, population weights were recalculated for respondents in each of 16 sampling strata, to compensate for nonresponse in that stratum. An audit of within-stratum nonresponse patterns does not reveal any biases serious enough to affect interpretation of the findings reported here.

Most of the data presented are in the form of cross-tabulations. The entries in these tabulations are population estimates from sample data and are thus subject to sampling error in addition to the sampling exclusions and possible nonresponse biases noted above. Because of the structure of the sample, calculating accurate variances for population estimates is an extremely complex procedure, the software for which is still being developed. We are as yet unable to test reliably for the statistical significance of differences between estimated population parameters, depending instead on conservative interpretations of the evidence.[2] To enable the reader to make independent judgments, each table reports the number of observations on which its entries are based, and all entries based on fewer than ten observations are flagged.

THE HOUSEHOLD LIFE CYCLE IN BROWN COUNTY

Households in Brown County are similar to those of most other small metropolitan areas in that they are somewhat larger than households in the nation as a whole (3.4 vs. 3.0 persons), more likely to consist of married couples (75 percent vs. 67 percent), and have younger heads (42.7 years vs. 47.3 years).[3] The most notable characteristic of Brown County's households that relates to housing choices is their racial and ethnic homogeneity. Over 98 percent of all household heads are white (vs. 89 percent nationally) and approximately two-thirds report ethnic origins in northern Europe. The only conspicuous minority group consists of American Indians (about 1.5 percent of the county's population), most of whom live in tribal lands in the rural part of the county. This

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[2] Given that this preliminary analysis is designed primarily to guide subsequent model specification by revealing any strong patterns in the data, significance testing at this stage is not crucial to our purposes.

[3] The data on the national population of households are taken from U.S. Bureau of the Census [23].

lack of racial and ethnic diversity eliminates from Brown County an important differentiating factor which many analysts have found to be important to the operation of the housing market in more heterogeneous communities.

Differences between households within Brown County are, of course, considerably more important to local consumption patterns than differences between local and national averages. In an attempt to identify households with similar housing preferences, we have sorted them into mutually exclusive life-cycle stages based jointly on the marital status and ages of household heads, the presence of children in the household, and the age of the youngest child. The rationale for using a life-cycle classification to differentiate households with similar preferences is threefold. First, the importance of the demographic characteristics used in defining life-cycle stages has been consistently documented in the literature on housing demand. Second, many of the traditional social and economic determinants of demand vary systematically over the life cycle. Third, the variables that define successive stages of the life cycle do not increase or decrease monotonically over these stages and appear to interact in ways that are not reflected in simple linear combinations of their separate values. A list of the life-cycle stages and their definitions is presented in Table 1.

The choice of these particular stages is based on the premise that the passage between stages corresponds to significant changes in household circumstances that should affect housing needs and preferences. In defining specific stages, changes in marital status and the presence or absence of children are included as marking significant compositional changes for the household. Differentiating stages according to the age of the youngest child is intended to reflect the different consumption requirements that children of different ages impose on the household. The ages six and eighteen are selected as cutting points because they generally correspond to the ages at which children enter school and at which they complete high school, respectively. For household heads, the choice of 45 and 60 years as boundaries for life-cycle stages is more arbitrary, but they do seem to approximate ages of change in life style and have been used by others (Lansing and Kish [12], David [5], Lansing and Morgan [11]).

Table 1

A LIFE-CYCLE CLASSIFICATION OF HOUSEHOLDS

Stage in Life Cycle	Definition
1. Young single head, no children	Household headed by single adult (man or woman) under 46 years old, no members under 18 years old.
2. Young couple, no children	Household headed by married couple, husband under 46 years old, no other members under 18 years old.
3. Young couple, young children	Household headed by married couple, husband under 46 years old, at least one other member under 6 years old.
4. Young couple, older children	Household headed by married couple, husband under 46 years old, at least one other member between 6 and 18 years old.
5. Older couple, older children	Household headed by married couple, husband at least 46 years old, at least one other member under 18 years old.
6. Older couple, no children	Household headed by married couple, husband at least 46 years old, no other members under 18 years old.
7. Older single head, no children	Household headed by single person (man or woman) at least 46 years old, no other members under 18 years old.
8. Single head with children	Household headed by single person (man or woman) under 60 years old, at least one other member under 18 years old.
9. All other	Residual category; most are households headed by single persons over 60 years old who live with married children and grandchildren.

SOURCE: Classification scheme devised by HASE staff for analysis of data from surveys of tenants and homeowners.

NOTE: Household heads are designated by survey respondents. A married couple consists of a cohabiting man and woman. A single household head may have never been married; or may have been married but was separated, divorced, or widowed at the time of the interview. Other household members need not be but usually are related to the household head(s); those under 18 are usually children of the head(s).

Although this classification scheme does not incorporate all possible demographic differences among households, it does define a manageably small set of mutually exclusive classes that accounts for all but a small number of households; and, with one exception, the classes can be arrayed in a temporal sequence that most households follow. Typically, the life cycle of a household begins when a young unmarried individual leaves the parental home to form a separate household, alone or with friends (Stage 1). The Bureau of the Census estimates that approximately 95 percent of all persons eventually marry, thus entering Stage 2 as childless couples. Similarly, between 90 and 95 percent of all married couples bear at least one child[4] and pass through the next several stages as a matter of course. An increasingly frequent departure from this natural progression is marital disruption through separation, divorce, or death of one spouse (Stage 8).

Table 2 shows the distribution of Brown County households by life-cycle stage and summarizes the demographic characteristics of each stage. It is important to remember that the data presented in this and later tables represent the characteristics of households in each life-cycle stage at a given time, not the progression through stages of a given set of households. Nonetheless, our interpretation of the data assumes that these cross-sectional differences would be equally reflected in longitudinal differences.

Over 40 percent of all households in Brown County are in the first three stages, a local manifestation of the nationwide increase in the population of persons 20 to 30 years old that resulted from the post-war "baby boom." An additional factor contributing to the large proportion of young couples with young children (Stage 3) is that this stage is a long one for most households. It lasts from the birth of the first child to six years after the birth of the last child.

The definition of stages accounts in large part for the ascending sequence of average ages and the accordian pattern of household sizes--expanding up to Stage 5, then contracting first as the children mature and leave home, then as one of the spouses dies.

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[4] See U.S. Bureau of the Census [22].

Table 2

DISTRIBUTION OF HOUSEHOLDS AND SELECTED HOUSEHOLD CHARACTERISTICS, BY LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Distribution of Households		Average Age of Male or Only Head	Average Number of Members		
				All Members	Other than Heads	
	Number	Percent			Under 18	18 or Over
1. Young single head, no children	3,656	8.6	25.4	1.65	--	.65
2. Young couple, no children	3,093	7.3	26.4	2.01	--	.01
3. Young couple, young children	11,073	26.0	31.5	4.53	2.47	.06
4. Young couple, older children	4,332	10.2	38.9	5.16	2.78	.38
5. Older couple, older children	5,007	11.8	51.8	5.46	2.41	1.05
6. Older couple, no children	7,649	18.0	62.8	2.27	--	.27
7. Older single head, no children	5,548	13.0	67.1	1.23	--	.23
8. Single head with children	2,164	5.1	37.2	3.60	2.17	.43
All stages	42,587[a]	100.0	44.3	3.39	1.32[b]	.33

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries are estimates based on a stratified probability sample of 3,722 households. Data base excludes about 12 percent of all households living in Brown County in 1974; see text for explanation of exclusions.

[a] All households living in unsubsidized regular housing units except resident landlords. Total includes an estimated 66 households not classified by life-cycle stage. Distribution does not add exactly to total because of rounding.

[b] Average for all households with children is 2.48.

The demographic changes which mark the life-cycle progression do not occur in isolation. Accompanying this progression are changes in the households' social and economic circumstances that will also affect housing choices.

The most important changes accompanying the life-cycle progression occur in labor-force participation by household members and in household income. Several factors contribute to these changes. Foremost among them is the general correspondence between the life cycle and the career development of the male head of the household.

Just as Stage 1 marks the individual's formation of a new household, it also usually marks his economic independence and the beginning of regular full-time employment. In this stage, his earnings are usually low, but they typically increase as he develops occupational skills and acquires seniority. Eventually, he retires from the labor force because of age or disability, at which point there is usually a sudden and sharp drop in household income.

The male head's employment history is, of course, not the only element in a household's employment and income profiles. Labor-force participation by wives and adolescent children is common and contributes substantially to the earnings of many households.

The correspondence between life-cycle stage and the employment of household heads in Brown County can be seen in Table 3. Eighty-four percent of the young single household heads (Stage 1) are employed even though almost a fourth of them are still in school. Among married couples, the male heads are nearly all employed until Stage 6, when many of them reach the normal age of retirement. The employment of married women follows a different pattern. In Stage 2, two-thirds are employed, but that proportion drops sharply with the arrival of the first child. A good many married women subsequently reenter the labor force when their children reach school age. The frequency of employment among older children can be seen in Stages 4 and 5, where the average numbers of workers exceed the sums of employed husbands and wives.

The variation in household income over the life cycle reflects these employment patterns. Income reaches its first peak in Stage 2, when both husbands and wives are usually employed. It drops when the

Table 3

EMPLOYMENT AND INCOME CHARACTERISTICS OF HOUSEHOLDS, BY LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Percentage of Households with:				Average Number of Workers	Median Income ($) in 1973
	Male or Only Head[a]		Wife Employed	No Members Employed		
	In School	Employed				
1. Young single head, no children	23.3	83.7	(b)	7.1	1.40	7,564
2. Young couple, no children	11.6	90.9	67.2	1.8	1.59	13,433
3. Young couple, young children	4.5	95.6	30.6	2.4	1.30	12,656
4. Young couple, older children	1.3	97.9	48.6	1.1	1.74	14,593
5. Older couple, older children	.9	92.3	34.2	1.2	2.15	17,549
6. Older couple, no children	--	61.2	27.1	29.6	1.07	10,965
7. Older single head, no children	--	35.3	(b)	57.5	.51	4,697
8. Single head, with children	8.4	56.4	(b)	35.6	.75	5,704
All stages	4.7	77.9	36.5[c]	16.3	1.30	11,988

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site 1, baseline.

NOTE: Employment entries are estimates based on a stratified probability sample of 3,722 households; income entries are based on a smaller sample of 3,223 households reporting complete income information. Data base excludes about 12 percent of all households living in Brown County in 1974; see text for explanation of exclusions.

[a] Household heads in school may also be employed.

[b] Not applicable.

[c] Base for percentage includes only households headed by a married couple.

wives leave the labor force to care for their young children and then rises as mothers return to the labor force and both husbands and wives acquire skills and seniority in their jobs. Household income reaches its peak in Stage 5, when the number of workers in the household is also at its peak, often including the husband, the wife, and one or more of the older children. As the children leave home and the heads retire from the labor force (Stages 6 and 7), household income drops sharply.

LIFE-CYCLE STAGES AND HOUSING CONSUMPTION

These data suggest that there should be a particularly strong relationship between housing consumption and progression through the life cycle. Movement through life-cycle stages brings characteristic changes in the size and composition of households and, consequently, in their housing requirements. The concomitant changes in the household's social and economic characteristics, particularly the changes in income, affect the household's ability to adjust its consumption accordingly. In general, these two kinds of changes complement each other. However, this is not always the case. For example, between Stages 2 and 3, average household size increases by 2.5 persons but household income decreases. The increased space requirements of these larger households, along with their increased requirements for food and clothing, must often be met from the same or a smaller budget, forcing many households to compromise in their housing choices.

In later stages, household consumption needs and the means to satisfy them are better balanced. Peak household size occurs in Stage 5, which is also the stage of peak household income. When income begins to drop sharply (Stages 6 and 7), the number of persons to be supported by that income also decreases sharply.

Tenure and Type of Housing Unit

Although most single-family houses are owner-occupied and most apartments in multiple dwellings are renter-occupied, it is important to distinguish tenure and type of housing as separate dimensions of housing choice. As households move through the life cycle, there are

characteristic shifts in tenure from rental to ownership and back to rental. Although owners nearly always live in single-family houses, there are also characteristic changes in the type of housing selected by renters at different stages of the life cycle.

Figure 1 displays the main features of these two choices in relation to life-cycle stages. Less than 7 percent of all young single household heads are homeowners; the others rent their homes, and 90 percent of these renters live in apartments. This pattern is, of course, consistent with the relatively small space requirements, the relatively low incomes, and the considerable occupational and demographic instability of these households. The incidence of homeownership rises sharply thereafter, reaching 95 percent in Stage 5. Nearly all of these homeowners occupy single-family houses. Among renters in the middle of the life cycle there is also a decided shift from apartments to single-family houses; by Stage 5, nearly 60 percent of the renters and 98 percent of all households live in single-family houses.

In the later stages of the life cycle, when the children have left home and finally when one of the spouses dies, the incidence of both ownership and of renters in single-family houses declines. In Stage 7, only 45 percent of all households own their homes and only 10 percent of all renters live in single-family houses.

When the patterns shown in the figure are considered in conjunction with the data on household characteristics by life-cycle stage, two important ideas emerge. First, although nearly everyone in Brown County lives in a single-family house during the peak years of household size and income, few spend all their adult years in such a residence.[5] Second, renters and homeowners in the same life-cycle stages appear to be less distinguished by different housing preferences than by different resources for satisfying those preferences. Thus, it is likely that more renters in the middle of the life cycle would prefer single-family homes to apartments but cannot afford them.

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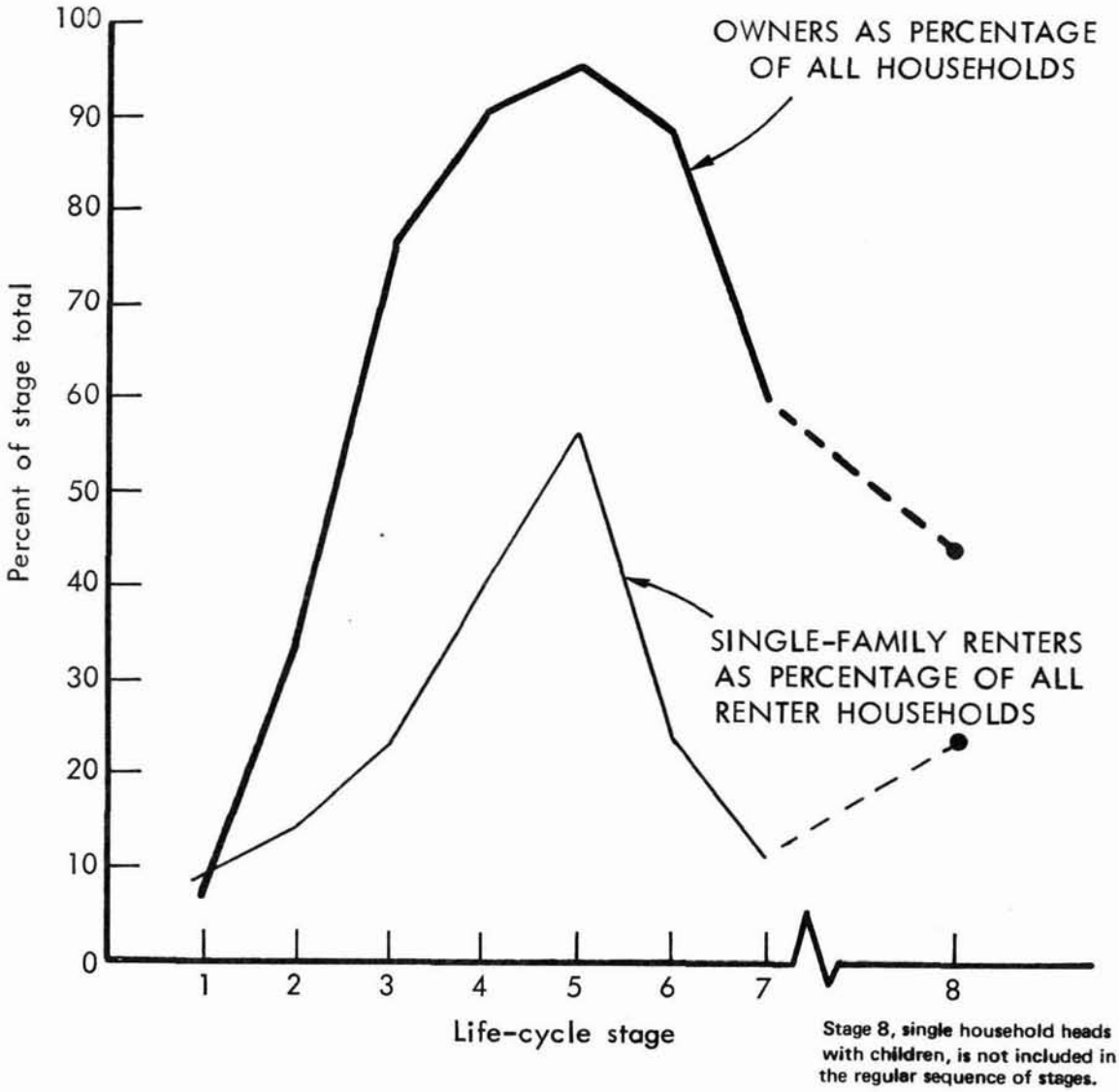
[5]This pattern does not apply equally to all local housing markets. Both the size of the market (Carliner [3]) and the racial composition of the population are likely to affect life-cycle patterns of homeownership.



SOURCE: Survey of tenants and homeowners, Site I, baseline.

Fig. 1—Type of housing unit and tenure by life-cycle stage

The preference for single-family homes characteristic of the middle stages of the life cycle undoubtedly reflects the importance of indoor and outdoor space to households with children. The role of income as a constraint on this preference is less straightforward because it tends to vary over life-cycle stages in parallel with the number of children in the household. However, there is considerable variation in income among households within a given stage, which is likely to affect the choice both of housing type and of tenure.[6]

The data shown in Table 4 indicate that with only one exception, Stage 3, renters and owners in the same life-cycle stage have households of approximately the same size, so that both groups of households should experience similar pressures for living space. A notable difference between owners and renters is in their ages. In the earlier stages of the life cycle, household heads who are owners tend to be older than those who are renters; in the older stages, owners tend to be younger than renters. Thus, at each stage, owners are closer than renters to their peak lifetime earnings.

These differences in age are one factor accounting for the pattern of income differences between owner and renter households at each life-cycle stage, also shown in Table 4. This pattern indicates that owners are more prosperous than renters in all life-cycle stages, and especially so in Stages 2, 5, and 6. In the earlier stage, they are therefore better able to accumulate a downpayment on a house before the wife leaves the labor force to have children. In the later stages, the more prosperous homeowners are less often impelled to economize by moving to smaller homes after their children have left the household.

Size of Housing Unit

Housing is a complex commodity, and differences in tenure and type of units by no means encompass the household's range of choices. The decision to live in a single-family house rather than an apartment will be based in part on such other factors as unit size and cost. We have

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[6] An appendix to this paper reports on a regression model that helps to sort out the independent relationships of housing tenure to life-cycle stages on the one hand and to income on the other hand.

Table 4

HOUSEHOLD CHARACTERISTICS OF OWNERS AND RENTERS, BY LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Average Number of Members		Average Age of Male or Only Head		Median Income ($) in 1973	
	Owners	Renters	Owners	Renters	Owners	Renters
1. Young single head, no children	1.26	1.68	35.3	24.7	10,907	7,313
2. Young couple, no children	2.00	2.01	29.4	24.9	17,637	11,565
3. Young couple, young children	4.73	3.83	32.8	27.1	13,084	10,325
4. Young couple, older children	5.16	5.17	39.2	36.3	14,733	12,891
5. Older couple, older children	5.46	5.55	51.7	54.2	18,218	11,282
6. Older couple, no children	2.28	2.18	62.7	64.2	11,360	7,500
7. Older single head, no children	1.29	1.14	67.6	66.3	5,077	3,948
8. Single head with children	4.06	3.26	44.1	31.7	9,004	4,669
All stages	3.81	2.42	47.7	36.4	13,205	8,153

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries for household size and age of head are based on a stratified probability sample of 887 owner households and 2,835 renter households. Entries for household income are based on samples of 733 owner households and 2,490 renter households who provided full information about household income. Data base excludes about 12 percent of all households living in Brown County in 1974; see text for explanation of exclusions.

already described single-family houses as more spacious than apartments in multiple dwellings. This characterization is appropriate both in the narrow sense of number of rooms and in the broader sense of insulation from neighbors and access to private outdoor space.

In Brown County, the average number of rooms in owner-occupied single-family houses is 6.02; in renter-occupied single-family houses, 5.22; in small (2-4 unit) multiple dwellings, 4.17 rooms; and in large (5+ units) multiple dwellings, 3.43 rooms. While we do not have such exact information about the sizes of yards, it is clear that those who live in multiple dwellings have less access to private outdoor space.

The variation in average unit size and persons per room by life-cycle stage for owners and renters is reported in Table 5. Households in both tenure classes tend to increase their space consumption as household size increases (Stages 1 to 5), then to reduce it as household size shrinks in Stages 6 and 7. However, owners have larger units than renters at every life-cycle stage. These differences are largest (about 1.7 rooms) among young childless couples (Stage 2) and among older single-headed households (Stage 7); they are smallest (0.8 rooms) for older couples with children (Stages 5 and 6). This pattern in average unit size, along with the accompanying person-per-room ratios, suggests that childless couples purchase homes larger than they need at the time in anticipation of future growth in household size; and that older households are reluctant to move to smaller homes after the departure of their children.

Since household sizes for renters and owners at each stage are approximately the same, renters appear to be consistently more crowded than owners. Nonetheless, there is no stage in which renter households in Brown County average more than one person per room; indeed, a smaller proportion of renters than owners (4 percent vs. 8 percent) exceed that standard. Thus it appears that by moving from one unit to another as household size changes, renter households are able to avoid overcrowding.

Because income also varies by life-cycle stage, we examine the space consumption of Brown County households by life-cycle stage and income level in Fig. 2. This comparison is limited to renter households because they exhibit greater adaptability in their space consumption.

Table 5

SIZE OF HOUSING UNIT AND PERSONS PER ROOM, BY HOUSING TENURE AND LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Average Number of Rooms per Unit		Average Number of Persons per Room	
	Owners	Renters	Owners	Renters
1. Young single head, no children	5.14	3.69	.25	.46
2. Young couple, no children	5.65	3.99	.37	.54
3. Young couple, young children	6.10	4.66	.80	.83
4. Young couple, older children	6.52	5.39	.82	.98
5. Older couple, older children	6.61	5.81	.84	.96
6. Older couple, no children	5.57	4.42	.43	.52
7. Older single head, no children	5.52	3.81	.24	.32
8. Single head with children	5.79	4.77	.70	.68
All stages	6.02	4.19	.64	.57

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries are based on a stratified probability sample of 887 owner households and 2,835 renter households. Data base excludes about 12 percent of all households living in Brown County in 1974; see text for explanation of exclusions.

The figure shows the same pattern of space adjustment across life-cycle stages at each income level; within life-cycle stages, space consumption is unaffected by income. As we shall see, the more prosperous renters within each life-cycle stage do spend more for housing, but the desire for more space does not appear to be the motivating factor.

Income and Housing Expenditures: Renters[7]

A comparison of the average monthly gross rent of renter households paying full rent by life-cycle stage and income indicates an expectable expenditure pattern. Within each income class, expenditures increase from the early to the middle stages of the life cycle and then decline in the later stages. This pattern reflects the changing space requirements of households over these stages. For households within each life-cycle stage, expenditures have a general tendency to increase with income, but the amounts of increase are irregular.

A clearer picture of the relationship between housing expenditures and income can be seen in Fig. 3, in which the average rent/income ratios for individual households are compared. Although the differences in relative expenditures between stages generally disappear, the average ratios drop sharply as income increases. Households in the lowest income bracket spend almost twice the proportion of their incomes on housing as do those in the middle bracket and over three times the proportion as do those in the upper bracket. The pattern reflected in this figure contrasts sharply with the comparison of person-per-room ratios pictured in Fig. 2. This contrast suggests that income, not

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[7] Estimating housing expenditures for homeowners is considerably more difficult than it is for renters. While gross rent is a relatively accurate measure of the renter's total housing expenditures, a comparable measure for owners must include not only debt service, utility expenditures, taxes, and insurance but also the imputed value of the homeowner's time spent on maintenance and repair, as well as the opportunity costs entailed in buying a home rather than investing equivalent savings in some other way. Since we are still working on these accounting problems, we will not present any tabulations of homeowner housing expenses here.

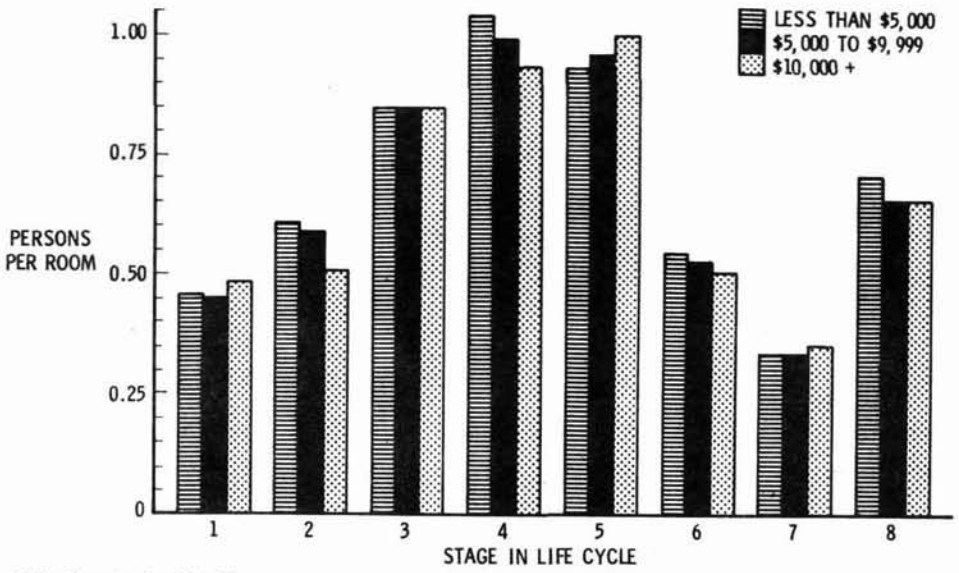

Fig. 2—Persons per room by life-cycle stage and income: renter households

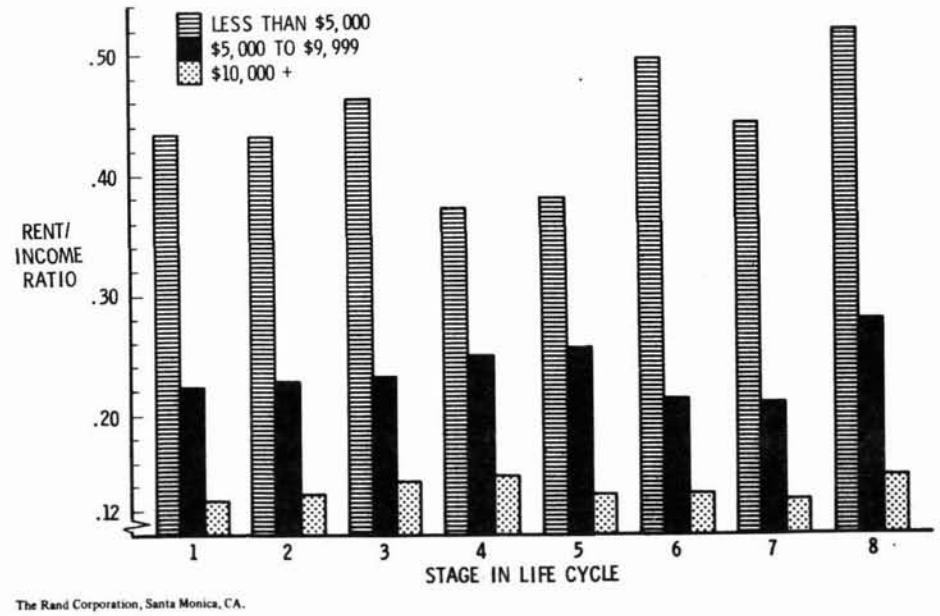

Fig. 3—Rent/income ratio by life-cycle stage: renters

life-cycle stage, is the important variable in explaining housing expenditures; life-cycle variables, on the other hand, do better at explaining what is bought--e.g., the size and type of unit chosen.

RESIDENTIAL MOBILITY OVER THE LIFE CYCLE

An examination of current consumption patterns provides a benchmark for future comparisons. It also suggests that significant consumption adjustments accompany the natural progression of a household through its life cycle. A change in household composition compels a household to reassess the suitability of its current housing. An increase in income enables a household to buy or rent better housing even in the absence of changes in underlying preferences, while a decrease in income can force a household to adjust its housing expenditures downward. Prior research (Rossi [15]; Morgan [13]; U.S. Bureau of the Census [21]) indicates that local mobility provides a particularly good index of this adjustment because most local moves occur as households attempt to adjust their housing to their changing demographic and economic circumstances.

Frequency of Moving

Although a significant amount of mobility is a consequence of the natural progression of households through the life cycle, we do not expect the frequency or type of mobility to be uniformly distributed over the stages of the life cycle. Since moving is a mechanism through which the household matches its housing consumption to its changing characteristics and resources, the nature of household mobility will be conditioned by the types of changes the household undergoes. The results presented in Table 6 provide a useful index of these differences. The first three columns report the percentage of households who moved during the year preceding the baseline survey; the last three report the percentage of households who moved during the preceding five years.

These data indicate that there are sharp differences in mobility by both life-cycle stage and tenure. Among both renters and owners, the percentage of mover households declines sharply from the early stages of the life cycle to Stage 5 (older couples with children).

Table 6

RESIDENTIAL MOBILITY, BY HOUSING TENURE AND LIFE-CYCLE STAGE:
BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Percentage of Households That Moved During Preceding Year[a]			Percentage of Households That Moved During Preceding 5 Years[b]		
	Owners	Renters	Total	Owners	Renters	Total
1. Young single head, no children	9.6	72.6	68.5	65.1	95.7	93.7
2. Young couple, no children	45.0	65.7	58.6	78.7	98.9	91.9
3. Young couple, young children	14.2	43.6	20.8	62.6	91.5	61.9
4. Young couple, older children	8.3	32.9	10.4	28.0	72.6	31.9
5. Older couple, older children	.5	18.5	1.3	12.6	54.7	14.5
6. Older couple, no children	.6	27.9	3.7	10.9	63.9	16.8
7. Older single head, no children	.7	23.2	9.4	13.2	55.5	29.6
8. Single head with children	8.9	45.4	29.3	21.4	87.4	58.2
All stages	7.4	49.8	20.1	31.7	84.3	47.5

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries are based on stratified probability samples of 887 owner and 2,835 renter households. Data base excludes about 12 percent of all households living in Brown County in 1974; see text for explanation of exclusions.

[a] Year preceding the interview date.

[b] Five years preceding the interview date.

This pattern undoubtedly reflects the considerable instability during early stages of the life cycle of household size and composition on the one hand and of employment and income on the other. As childbearing is completed and career patterns become more definite, both the household's housing needs and the resources available to satisfy those needs stabilize. The slight increase in the mobility of renter households in Stages 6 and 7 probably reflects an adjustment in consumption due to the declining household sizes and incomes common to these stages.

Mobility and Housing Tenure

Just as striking as the differences in mobility over the life cycle are the differences between renters and owners. At every life-cycle stage, renters are significantly more likely to be movers than owners. Several factors contribute to this difference. First, as the results in Table 5 indicated, owner-occupied homes are significantly larger than rented units, so that owner households have more flexibility in adapting to changes in household size. Second, the decision to purchase a home is in a real sense a manifestation of the household's stability. Buying a house is the single largest investment most households ever make. This decision is not likely to be made until the household's income is relatively stable and unless the household is committed to remaining in the residence for some time. Research by Shelton [17], for example, indicates that owning is less expensive than renting only if the period of ownership exceeds four years. Third, the circumstances of homeownership and the expenses associated with moving are likely to reinforce the household's stability, so that opportunities that might have appealed to them as renters are foregone as homeowners.

The household's satisfaction with its move and the probability of its moving again in the near future will depend on the type of move that it makes. In Table 7 we examine the characteristics of moves over the life-cycle stages in terms of the tenure of the prior and current units. These data are limited to the 80 percent of all households who moved at least once in the five years preceding the survey and whose last prior residence was also in Brown County. Detailed data on prior residences were collected only for these local moves.

Table 7

CHANGES IN HOUSING TENURE FOR LOCAL MOVERS, BY LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Percentage Distributions of Households by Former and Current Tenure							Number of Last Local Moves
	Former Owners by Current Tenure		Former Renters by Current Tenure		New Households[a] by Current Tenure		Total	
	Owner	Renter	Owner	Renter	Owner	Renter		
1. Young single head, no children	--	5.2	3.6	69.4	1.6	20.3	100.0	2,591
2. Young couple, no children	5.3	1.0	24.8	41.8	5.5	21.5	100.0	2,287
3. Young couple, young children	14.1	.6	55.0	24.3	1.8	4.2	100.0	6,129
4. Young couple, older children	39.2	1.9	36.5	21.5	--	.9	100.0	850
5. Older couple, older children	80.6	2.5	--	16.3	.5	--	100.0	589
6. Older couple, no children	58.1	9.1	6.1	24.6	2.1	--	100.0	1,085
7. Older single head, no children	23.9	27.9	4.8	41.4	--	2.0	100.0	1,412
8. Single head, with children	3.8	9.6	12.3	66.7	--	7.6	100.0	1,136
All stages	17.6	5.1	28.7	38.1	1.9	8.7	100.0	16,079

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries compare housing tenure before and after respondent's last local move. Distributions are based on a stratified probability sample of 2,039 households whose last move occurred during the five years preceding the interview and who moved within Brown County. Data base excludes about 12 percent of all households in Brown County in 1974; see text for explanation of exclusions.

[a]Prior to last move, respondent was not a household head.

As these data indicate, the character of local moves varies with life-cycle stage. Almost 70 percent of Stage 1 moves were between rental units and another 20 percent were to form new households in rental units. This apparent preference for renting is consistent with the transitional character of these households. Confronting the strong probability of future changes in household composition and resources, young singles limit their commitments by renting. They thus retain flexibility for future adjustments in housing consumption when their own circumstances are better defined. As that definition takes place in Stages 2 and 3, the proportion of households moving between rental units or forming new households in rental units declines sharply, and the proportion purchasing homes increases. By Stage 3 (young couples with young children), 55 percent of all moves entail a change from renting to owning and over 70 percent of all moves are into owned homes. By Stage 5, over 95 percent of all households own their homes (see Table 4). Consequently, the frequency of moves from rented to owned units declines (in our data, to zero) and the proportion of moves between owned units is at its maximum. Given that many of these households purchased their first homes at an earlier stage in the life cycle when the balance between their resources and their consumption requirements was tighter, a significant proportion of these moves may be motivated by the later shift to a more favorable balance of these factors.

Adjustments to the decreases in incomes and household sizes that are customary in life-cycle Stages 6 and 7 are reflected in a decline in the proportion of moves between owned units and an increase in the proportion of moves from owned to rented units or between rented units.

This pattern of moving results in characteristic tenure changes by life-cycle stage. Only in the first stage (trivially) and in the last two stages are homeowners more likely to move to a rented unit than to another owned unit. Conversely, only in Stages 3 and 4, when most households are purchasing their first homes, are renters more likely to purchase a home than to move to another rented unit. These retrospective data on the behavior of individual households support the inferences about tenure changes by life-cycle stage that were drawn from the cross-sectional comparisons discussed earlier in this paper.

Reasons for Moving

The life-cycle differences in movers' housing choices undoubtedly reflect the different circumstances that prompt moves in each life-cycle stage. Comparing the primary reasons for moving reported by households in each stage should therefore give us additional insight into the factors at work. This is done in Tables 8 and 9.

Table 8 classifies recent movers' reported motivations into seven primary reasons for moving. Coding interview responses of this type is difficult, because different respondents may express essentially the same motivation quite differently. For example, following the birth of a couple's first child, they may decide that they need a home with a second bedroom; the respondent may describe the decision as prompted by changes in family circumstances or by a desire for more space. Our coding was guided by the respondent's own emphasis, and the results shown in Table 9 suggest that this was a valid criterion.

Overall, a fourth of all movers mentioned some change in family circumstances as their primary reason for moving (Table 8). Over 40 percent mentioned a desire for homeownership, a single-family house, or more space or better quality as the primary reason. It should not be surprising in a small metropolitan area with such a homogeneous population that few respondents cited location (5 percent) or neighborhood characteristics (10 percent) as the motive for their moves.[8] Involuntary moves accounted for about 9 percent of the total, and the explicit desire for cheaper housing was reported in fewer than 7 percent of all cases.

The ordering of primary reasons in Table 8 was chosen because it corresponds fairly well with the shifts in emphasis over the household life cycle. This is demonstrated in Table 9. Note there that the greatest emphasis on changes in family circumstances comes during the first two stages of the life cycle; these are also the stages in which

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[8] However, several other studies, some of which were conducted in larger urban areas, also find that location and neighborhood characteristics are subordinate to changes in family circumstances as reasons for moving (Rossi [15]; Greenbie [8]; Gans [6]).

Table 8

CLASSIFICATION OF PRIMARY REASONS FOR LOCAL MOVES AND RESPONSE FREQUENCIES: BROWN COUNTY, WISCONSIN, 1974

Primary Reason for Moving	Characteristic Responses Included	Response Frequency	
		Number	Percent
• Change in family circumstances	• Change in marital status, change in family size, establish own household, family or health problem, new job, job search, attend school.	4,285	26.8
• Wanted cheaper housing	• Wanted lower rent, cheaper place to live.	1,033	6.5
• Wanted change in tenure or structure type	• Wanted to own, wanted to rent, wanted single-family house.	3,114	19.5
• Wanted change in space or quality	• Wanted larger or smaller unit, larger rooms, specific floorplan, nicer place, cleaner place, better quality.	3,784	23.6
• Wanted more convenient location	• Wanted to be closer to work, to schools, to retail stores.	756	4.7
• Wanted better neighborhood	• Wanted quieter neighbors, friendlier neighbors, more neighboring children, nicer neighborhood, safer area, more open space, more trees and yards.	1,538	9.6
• Had to leave former residence	• Residence no longer available, problems with landlord.	1,494	9.3
All reasons		16,004	100.0

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Population response frequencies are estimated from a stratified probability sample of 2,039 households whose last move occurred within the five years preceding the survey and who moved within Brown County. Data base excludes about 12 percent of all households in Brown County in 1974; see text for explanation of exclusions.

Table 9

DISTRIBUTION OF PRIMARY REASONS FOR LAST LOCAL MOVE, BY LIFE-CYCLE STAGE: BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Percentage Distribution of Households by Primary Reasons for Moving[a]							
	Change in Family Circumstances	Wanted Cheaper Housing	Wanted Change in Tenure or Structure Type	Wanted Change in Space or Quality	Wanted More Convenient Location	Wanted Better Neighborhood	Had to Leave Former Residence	All Reasons
1. Young single head, no children	45.4	11.4	3.4	16.7	3.9	7.9	11.4	100.0
2. Young couple, no children	45.4	10.5	12.4	17.0	2.0	8.0	4.7	100.0
3. Young couple, young children	15.5	3.6	37.0	28.0	.6	10.3	4.9	100.0
4. Young couple, older children	10.8	3.2	32.5	32.7	2.5	10.7	7.7	100.0
5. Older couple, older children	13.4	1.0	10.5	6.1	41.4	18.0	9.5	100.0
6. Older couple, no children	22.1	5.6	4.0	23.3	22.8	12.8	9.4	100.0
7. Older single head, no children	32.3	3.7	5.0	21.3	2.2	8.6	26.8	100.0
8. Single head, with children	24.3	11.8	2.6	34.4	2.9	6.3	17.6	100.0
All stages	26.8	6.4	19.5	23.6	4.7	9.6	9.3	100.0

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Distributions are based on a stratified probability sample of 2,039 households whose last move was within Brown County. Data base excludes about 12 percent of all households in Brown County in 1974; see text for explanation of exclusions.

[a]See Table 8 for characteristic responses included in each reason for moving.

housing cost is the most salient consideration in decisions to move. During Stages 3 and 4, the emphasis shifts to tenure, type of structure, space, and quality.

During Stage 5, location suddenly emerges as the major consideration and neighborhood characteristics increase in importance. During Stages 6 and 7, the variety of frequently cited reasons increases to include changes in family circumstances, change in space or quality, location, and neighborhood characteristics. In Stage 7, involuntary moves are prominent for the first time, accounting for over a fourth of the total.

For disrupted households (Stage 8) outside the regular sequence of stages, the desire for change in space or quality is the leading reason for moving, but two other reasons--changes in family circumstances and involuntary moves--are also prominent.

It should not be surprising that changes in household circumstances are so frequently cited by households in Stages 1 and 2 of the life cycle: These households were mostly formed by persons leaving their parental homes or getting married. Among young couples with children, family circumstances are less subject to drastic change, but the housing choice made in Stage 2 is increasingly inadequate for the growing, child-centered family. Hence the great emphasis on homeownership, single-family houses, more space, or better quality, which were cited as primary reasons for moving by nearly two-thirds of the households in Stages 3 and 4.

The sudden emphasis on convenience of location and neighborhood quality that occurs in Stage 5 probably reflects changes both in household characteristics and in the neighborhoods chosen at earlier stages. Ninety-five percent of the couples in Stage 5 are homeowners (see Fig. 1) and only 13 percent had moved in the five years preceding the survey (see Table 8). Their children are older and are beginning to leave home; the parents may well begin to think more about their own convenience. In a growing urban area, fringe development alters the relative positions of older neighborhoods in the overall scheme of land use and traffic patterns. The characters of neighborhoods also change as their residents age or move and are replaced by new households.

These factors should continue to be important for households in Stage 6, but added to them are the sharp decreases in both household size and income that are characteristic of this stage. Hence the increased emphasis found here on changes in family circumstances and considerations of space and quality. Following the death of one spouse (Stage 7), the survivor is likely to be either physically or financially unable to maintain a single-family home, so involuntary moves are often reported.

Locational Preference of Movers

Although neither convenience of location nor neighborhood characteristics are prominent in our respondents' articulated reasons for moving, it does not follow that we should expect random movement within Brown County. First, the decision to move and the choice of a new residence are not necessarily determined by the same factors (Butler [2]). Indeed, Greenbie indicates that although few households in his study cited neighborhood factors as their primary reason for moving, a majority cited improved surroundings as the most important result of their moves. Second, in most communities, similar kinds of housing tend to cluster in neighborhoods, so that those who seek the same kinds of housing tend to look in the same places.

Neighborhood distinctions within Brown County are minimal. Although areas the size of census tracts can be distinguished by different central tendencies in either their housing characteristics or their population characteristics, the central tendencies themselves are, with some notable exceptions, weak. But the county does exhibit the common pattern of declining residential density and more recent residential development as one moves from the center of Green Bay outward.

To test for differences in locational preferences by life-cycle stage, we divided the county into roughly concentric rings, following the tradition of urban sociological analysis (Burgess [1]; Schnore [16]). We constructed the rings by geographic aggregation of the 108 small neighborhoods into which we have divided the county. The divisions correspond generally to the inner and outer portions of the city of Green Bay, a suburban belt, and the rural remainder of the county.

Table 10 shows how local movers have avoided or favored each of these rings in recent years. The entries in the table are ratios for each area of move-ins to move-outs among our sample of household heads who recently moved. Thus, an entry greater than unity indicates that on balance the area was attracting local movers; an entry less than unity indicates that the area was losing them. It is important to remember that the size of the ratio does not reflect the absolute

Table 10

INDEX OF LOCATIONAL PREFERENCES OF LOCAL MOVERS, BY LIFE-CYCLE STAGE: AREAS WITHIN BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Ratio of Move-ins to Move-outs				Number of Last Local Moves
	Inner City	Outer City	Suburbs	Rural Area	
1. Young single head, no children	1.12	1.10	.66	.70	2,532
2. Young couple, no children	.86	1.31	1.02	1.05	2,273
3. Young couple, young children	.66	1.20	1.69	.86	6,068
4. Young couple, older children	.53	1.36	.88	2.24[a]	848
5. Older couple, older children	.52	4.07[a]	.64[a]	1.00[a]	588
6. Older couple, no children	.79	1.47	.87	3.39[a]	1,085
7. Older single head, no children	.99	1.38	.96	.31[a]	1,409
8. Single head with children	.96	1.64	.87	.93[a]	1,132
All stages	.83	1.32	1.12	1.03	15,994

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Distributions are based on a stratified probability sample of 2,039 households whose last move occurred within the five years preceding the survey and who moved within Brown County. Data base excludes about 12 percent of all households in Brown County in 1974; see text for explanation of exclusions.

[a]Either the numerator or the denominator or both are based on fewer than ten observations.

numbers of in- or out-movers, only the relationship between the two flows. Moreover, each area may gain or lose population in ways not reflected in this table--i.e., by nonlocal moves or by births and deaths among those living there.

Overall, the process of local movement has been shifting population out of the inner city. The most attractive area is clearly the outer city, followed by the suburbs. The rural area of the county is close to a balance of local in- and out-movement.

There are notable differences in the pattern of local movement by life-cycle stage. Young single persons comprise the one group that, on balance, is attracted to the inner city. Older single persons and disrupted households are neutral, but couples in Stages 2 through 6 find the outer rings more attractive.

Unless some of the footnoted ratios based on small numbers of observations are truly significant, the outer-city ring is the most attractive residential environment to movers in nearly all life-cycle stages. The clearest exception is movers in Stage 3 (young couples with young children), who prefer the suburban ring. The very large number of movers in this stage--38 percent of the total--makes them a potent element of population redistribution within the county and helps to explain how Green Bay's suburbs have grown in the face of the generally negative net flows among movers in the other stages of the life cycle.

We suspect that the patterns noted above are closely related to the kinds of housing that predominate in each ring, with neighborhood qualities and locational convenience in second and third place. As we saw earlier, nearly all households in Stage 1 are renters, and nearly half of all the housing in the inner city consists of rental units. As married couples acquire children, they seek single-family homes and are willing to undertake the long-term commitments implied by homeownership. The appropriate housing stock is mostly located in the outer ring of the city and in the suburbs. In the outer city, one is more likely to find rental units, including single-family homes, than in the newly developed suburbs, so the suburbs are less appealing to homeowners in the later stages of the life cycle who want to shift

back to rental tenure or to apartment living and who also want to be close to retail stores, churches, and doctors' offices.

Plans to Move

These comparisons of mobility behavior offer considerable support for the importance of the life-cycle progression as a major factor generating residential mobility in Brown County. They also document the household factors that contribute to the differences in mobility rates between owners and renters. To round out the picture, we now examine the mobility plans of renter households in Brown County. This examination is limited to renters because only 2 percent of all owners plan to move in the next year, in contrast to 34 percent of all renters. The details of renters' plans are given in Table 11. Over 70 percent of the planned moves were to destinations within Brown County and 25 percent were to destinations outside the county. The planned long-distance moves, which are most often motivated by employment changes, follow the expected pattern of monotonic decrease from Stage 1 through Stage 7. On the other hand, local mobility plans follow a step-function, with little difference between the first four life-cycle stages, followed by sharp decreases in Stage 5 and again in Stage 7.

Comparing renters' plans with their performance (Table 10), it is evident that households in the early and late life-cycle stages significantly underestimate the likelihood of future moves. The high proportion of the moves motivated by family circumstance among these households (Table 9) suggests that they are unprepared either for the extent or the timing of the changes in family characteristics, employment, income, and housing needs to which they are subject. For those in the middle stages of the life cycle, for whom changes in household composition and housing needs are better articulated, the correspondence between mobility plans and actual moves is quite close; even though moves are frequent, they do not appear to be unexpected.

SUMMARY AND IMPLICATIONS FOR FUTURE RESEARCH

This description has focused on the life cycle and income as major determinants of the housing consumption and consumption adjustment

Table 11

MOBILITY PLANS OF RENTER HOUSEHOLDS, BY LIFE-CYCLE STAGE:
BROWN COUNTY, WISCONSIN, 1974

Stage in Life Cycle	Percentage Distribution of Households by Mobility Plans for Coming Year[a]						
	Plan to Move, by Expected Destination				Might Move, but Plans Uncertain	Do Not Plan to Move	Total
	Within Brown County	Outside Brown County	Destination Uncertain	Total			
1. Young single head, no children	30.4	16.1	1.4	47.9	9.3	42.8	100.0
2. Young couple, no children	30.0	9.7	2.4	42.1	9.1	48.8	100.0
3. Young couple, young children	29.5	8.6	.5	38.6	11.6	49.8	100.0
4. Young couple, older children	29.3	7.8	1.1	38.2	11.5	50.3	100.0
5. Older couple, older children	15.6	5.6	--	21.2	6.7	72.1	100.0
6. Older couple, no children	14.4	1.0	--	15.4	7.2	77.4	100.0
7. Older single head, no children	5.2	.9	.8	6.9	7.4	85.7	100.0
8. Single head with children	28.9	4.8	.9	34.6	6.8	58.6	100.0
All stages	24.4	8.6	1.1	34.1	9.0	56.9	100.0

SOURCE: Tabulations by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Entries are based on a stratified probability sample of 2,835 renter households. Data base excludes about 7 percent of all renter households living in Brown County in 1974; see text for explanation of exclusions.

[a]Year following interview date.

patterns in Brown County. Our data reveal a regular sequence in the tenure, type, and size of units occupied over the life cycle. Young single individuals typically set up their households in small rental units in large multiunit buildings. As households progress to the middle of the life cycle they adjust their consumption accordingly, moving first to larger rental units (often single-family homes), then buying a home. After peak household size is reached in the middle of the life cycle, households begin to reduce their housing consumption by moving to smaller single-family homes and rental units. Household income affects the timing of this sequence of choices and the level of expenditures more than the size or type of unit occupied.

Although our information on current consumption is based on longitudinal inferences from cross-sectional data, retrospective data on the mobility behavior of individual households support these basic findings as to the frequency, type, and reasons for moving at different stages of the life cycle.

These results provide a useful description of household consumption choices at baseline. However, they are only the first step in analyzing the effects of the allowance program on consumption patterns. Several issues require further development.

First, differences in housing preferences within life-cycle stages are important and must be examined in considerably more detail. Second, tenure and type and size of unit by no means capture the range of variation in the housing stock of Brown County. Further work is needed to identify specific housing attributes and their relative importance in consumer decisions. Third, local mobility and its role in consumption adjustment has only been skimmed in this paper. A more detailed examination of where households move, the differences in their housing at origin and destination, and the role of search procedures is required. Finally, the effect of housing allowances on all of these issues remains to be analyzed.

Appendix

HOUSING TENURE, LIFE-CYCLE STAGE, AND INCOME

Tabulations presented in the main text of this paper indicate that housing tenure varies systematically over life-cycle stages: Ninety-four percent of all households in Stage 1 are renters, but by Stage 5, over 95 percent are owners; in later stages, the proportion of owners decreases nearly to 60 percent.

However, our tabulations also show that several variables that might affect a household's current tenure follow a similar pattern, at first increasing, then decreasing over life-cycle stages. These include household size, number of employed persons, and household income. It is possible that the life-cycle variable acts as a proxy for one or more of these other variables and has little or no independent power to distinguish owners from renters.

To test this hypothesis, we estimated the coefficients of a linear regression model in which the dependent variable is housing tenure, having a value of 1 for homeowners and zero for renters. The independent variables in the model are the household's stage in the life cycle and selected other household characteristics. We used a two-stage generalized least squares (GLS) method to estimate the coefficients of the model; this method is more efficient than ordinary least squares (OLS) for estimating a linear probability function.[9]

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[9] We used a two-step GLS procedure. In the first step, we used OLS to estimate the probability that a household was a homeowner $(\hat{y})$, given the values of the independent variables for each observation. In the second step, we weighted both the dependent and independent variables of each observation by $[\hat{y}(1-\hat{y})]^{-.5}$, then reestimated the coefficients using OLS.

Goldberger [7] shows that this procedure corrects for the heteroscedasticity of the error terms that occurs when the dependent variable is binary. One difficulty with this procedure is that there is no guarantee that the estimated probabilities in the first step will fall in the closed interval [0,1]. We assigned the values .01 and .99 to those estimated probabilities that fell outside this interval. Smith [18] used Monte Carlo methods to evaluate the effects of this assignment rule on the estimators and finds them to be small and to diminish as sample size increases.

Note that the use of a nonlinear estimating procedure such as logit analysis can yield still more efficient estimators than those we present. However, the computational expense of a nonlinear method was not justifiable for this preliminary analysis.

The independent variables used to predict tenure in this model are also binary, with two exceptions. The binary variables include dummy variables identifying the household's life-cycle stage, with Stage 2 as the standard case which is therefore not explicitly included; the employment status of the household head; the employment status of the spouse in households headed by couples; and whether or not the household plans to move during the coming year. As a supplement to the life-cycle classification of households by the presence or absence of children in the household, we have included the number of children as a variable. Finally, household income in 1973 (the year preceding the survey) is included. Two variables describing the education status of the household head--number of years of schooling and current enrollment status--are omitted here because preliminary results indicated that they were of little help in predicting tenure.

The results of this regression are reported in Table 12. They clearly indicate that the life-cycle variables reflect important differences in tenure preferences that are independent of other household characteristics, including income. Except for Stage 8 (disrupted households), the coefficients of the life-cycle variables are all significantly different from zero and generally different from each other;[10] and their values are consistent with our earlier account of the changing pattern of tenure over the life cycle.

The head's employment status has no effect on the probability that the household is currently an owner. This is not surprising, because the effect of income is held constant. On the other hand, the coefficient on the wife's employment status is significant and negative.

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[10]Although Table 12 shows the results of tests for coefficients that are significantly different from zero, it does not show the results of pairwise tests for significant differences between the values of the coefficients for different life-cycle stages. Standard tests indicated significant differences between all pairs except Stages 3 and 7, 5 and 6, and 1 and 8. Recall that the coefficient for Stage 8 is also not significantly different from zero.

Table 12

REGRESSION OF HOUSING TENURE ON HOUSEHOLD CHARACTERISTICS: BROWN COUNTY, WISCONSIN, 1974

Variables	Possible Values	Regression Statistics		
		Coefficient	Standard Error	Value of t
Dependent				
Housing tenure	Owner = 1, renter = 0			
Independent				
Stage in life cycle:				
1. Young single head, no children	Yes = 1, no = 0	-.0207	.0071	2.92*
3. Young couple, young children	Yes = 1, no = 0	.0918	.0195	4.71*
4. Young couple, older children	Yes = 1, no = 0	.3186	.0399	7.99*
5. Older couple, older children	Yes = 1, no = 0	.5121	.0306	16.73*
6. Older couple, no children	Yes = 1, no = 0	.4652	.0298	15.58*
7. Older single head, no children	Yes = 1, no = 0	.0875	.0159	5.50*
8. Single head with children	Yes = 1, no = 0	-.0133	.0155	.86
Employment status:				
1. Male or only head employed	Yes = 1, no = 0	.0042	.0752	.06
2. Wife of male head employed	Yes = 1, no = 0	-.0360	.0103	3.51*
Other variables:				
1. Number of children under 18 years old	Zero or positive integer	.0257	.0052	4.97*
2. Plans to move within a year	Yes = 1, no = 0	-.0713	.0071	9.99*
3. Annual income of household members	Positive continuous ($000)	.0080	.0007	12.04*
Regression constant	1	.0927	.0385	

*Coefficient significantly different from zero at .99 level of confidence.
F = 121.36 with 12, 3206 degrees of freedon.
Adjusted R^2 = .310

SOURCE: Analysis by HASE staff of records of the survey of tenants and homeowners, Site I, baseline.

NOTE: Regression analysis was performed on records for 733 owner households and 2,490 renter households that were complete in all variables listed. Coefficients were estimated by generalized least squares method, with each observation weighted by $[\hat{y}\ (1-\hat{y})]^{-.5}$ in the second stage.

This coefficient may reflect a history of uncertain earnings by the husband that leads the wife to work in order to supplement household income. Such a couple would probably be hesitant to obligate a fixed amount over time to mortgage payments and hence is more likely to rent. On the other hand, working couples may simply prefer the less onerous domestic duties of renters.

The coefficient on the number of minors in the household is positive and significant. An increase in the number of minors may increase the likelihood that the household is a homeowner for either of two reasons. First, a larger family requires more space, and would be more likely to seek a single-family home; and there are indications from other studies that single-family homes are cheaper to own than to rent, at least in terms of out-of-pocket costs. Second, this variable may act as a proxy for the age of the head. Older heads are likely to be more settled and as a consequence to be homeowners; they are also likely to have larger families.

The negative coefficient on the variable that represents the household's near-term mobility plans is difficult to interpret. The variable appears to be endogenous to the equation and therefore simultaneous equations bias may affect the value of the coefficient. Renters are more likely to move than homeowners because they have lower moving costs--they do not have to sell their current residences and pay the transaction costs. In its present form, the coefficient indicates only that renters are more likely to move, not that current mobility plans are a significant indicator of current tenure status.

The relationship between current household income and housing tenure is statistically significant but amazingly small. A family with an income of $16,000 is more likely to own its home than a family with an income of $8,000, but the incremental probability is only .064. We would been less surprised to find a larger coefficient with a larger standard error; while homeownership cannot readily be interpreted as affecting income, neither is it clear that current income had much relevance to the earlier decision to buy; at best, it indicates the household's ability to keep up mortgage payments.

Because nearly all homeowners live in single-family houses, it is reasonable to wonder whether the regression model reported above is misspecified in its dependent variable. That is, we may be observing the factors that influence the probability that a household will occupy a single-family home, rather than its probability of homeownership.

One way to test for such a misspecification is to focus on the sample of renter households, most of whom live in multiple dwellings but about 15 percent of whom live in single-family houses. Using records for renters only, we replaced tenure in the regression model with a binary variable for occupancy of a single-family house, then estimated the coefficients of the altered model. If the coefficients did not change much from those in Table 12, we would conclude that the misspecification was likely.

There was no resemblance between the two sets of coefficients. In the altered model, the only variables with significant coefficients were: life-cycle Stages 1, 4, 5, and 6; number of minors; and plans to move. Differences in household income had no apparent effect on the likelihood that a renter household would occupy a single-family house. We do not think that tenure is acting as a proxy for type of housing in the original model.

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