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# 1      Aging, Moving, and Housing Wealth

Steven F. Venti and David A. Wise

It is often claimed that the elderly live in inappropriate housing. Indeed the claim is that many would like to live elsewhere and would, were it not for the large transaction costs associated with moving. These costs are understood to include not only direct monetary costs, but also the psychic costs inherent in changing neighborhoods, losing contact with longtime friends, and the like. This has been the rationale for the belief that reverse mortgage schemes would be of benefit to the elderly were the market for them easily accessible. This paper is the first stage of research directed ultimately to the analysis of the transaction costs associated with moving for the elderly. It concentrates on the empirical description of the relationship between moving and housing expenditures of the elderly.

There are three themes in the paper. The first is directly motivated by the hypothesis that a significant number of the elderly would like to use housing equity to finance current consumption were that possible without having to incur the large transaction costs of moving. The

Steven F. Venti is Associate Professor of Economics at Dartmouth College and Faculty Research Fellow of the National Bureau of Economic Research. David A. Wise is John F. Stambaugh Professor of Political Economy at the John F. Kennedy School of Government, Harvard University, and a Research Associate of the National Bureau of Economic Research.

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proposition is not that the elderly live in housing that is inappropriate for them and that they ought to move. It is not, for example, that an elderly couple living in a large house that they want to leave to their children have made an inappropriate housing choice. Rather the question is whether the couple would like to use the housing resources for other purposes. If this were the case, one might expect that when moves occur wealth would be taken out of housing and used to finance current consumption.

A second theme is the extent to which the elderly more generally decrease housing equity as they age. It is well known that a very large proportion of savings is in the form of housing and that many of the elderly have essentially no other assets. Venti and Wise (1986) report that the median level of financial assets among respondents to the 1983 Survey of Consumer Finances was about \$1,300. The median level of all assets (excluding Social Security and firm pension plans) was \$22,900, the vast majority of which was in housing. Evidence on the assets of the elderly is reported in Hurd and Shoven (1983), Diamond and Hausman (1984), and in Hurd and Wise (ch. 6, in this volume). Diamond and Hausman, for example, report that 20 percent of those aged 45 to 59 had essentially no nonpension personal wealth in 1966. Nearly 50 percent had nonhousing assets of less than \$1,000. Given that such a large proportion of personal savings is in the form of housing, one is led to ask whether it is used, as the life-cycle theory would predict, to finance consumption in old age.

The third theme presented here is a descriptive analysis that will serve as the first stage of a more detailed analysis of moving transaction costs among the elderly. It sets forth the empirical regularities with which more formal modeling and analysis must be consistent.

The analysis in this paper is based on the Retirement History Survey (RHS). This ten-year survey follows families headed by persons who were between 58 and 63 years old in 1969. They were reinterviewed every two years until 1979. Data were collected on a wide variety of socioeconomic measures, including income, wealth by detailed asset category, retirement, health status, and many others. Merrill (1984) used data from the 1969 and 1977 RHS interviews to study the home equity of the elderly. The focus of her work is similar to ours, although the details of the two analyses are quite different. In particular, we use each of the six RHS interviews to analyze the moving and housing choices of the elderly. By considering changes in each two-year interval, we are able for the most part to associate changes in housing equity with individual moves. By considering changes over short time intervals, we also minimize the potential effects of attrition from the sample. While our methods differ from hers, her basic conclusions are supported by our findings.

Section 1.1 of this paper describes the frequency of moving by type of housing and by the wealth and income of respondents. Section 1.2 considers the correlates of moving. Who moves? In particular, retirement and death of a spouse are emphasized. In addition, we consider the relationship between income and housing equity, on the one hand, and moving, on the other. The desire to sell a house to finance current consumption might be expected to be concentrated among persons with low current income and relatively higher housing equity. We consider whether there is in fact a concentration of moving among persons in this income-housing-wealth group. Section 1.3 compares changes in housing value, housing equity, and user cost over time for movers compared to nonmovers (stayers). Nonhousing bequeathable wealth is also traced. If wealth is withdrawn from housing at the time of a move, it should show up as an increase in nonhousing bequeathable wealth after the move.

The conclusions of the paper may be summarized briefly:

- The elderly typically do not use saving in the form of housing equity to finance current consumption as they age, contrary to the usual life-cycle theory. Indeed, as Bernheim (1984) and Merrill (1984) have reported, housing equity increased with age over the period of the RHS.
- When the elderly move, they are as likely to increase as to decrease housing equity. This suggests that the reason for the virtual absence of a reverse mortgage market may be the lack of demand for such financial arrangements. Even if the transaction costs associated with moving deter many elderly from changing housing, these costs are apparently not what is causing the absence of consumption of housing equity by the elderly. Those who do move do not, on average, withdraw wealth from housing. Thus the typical mover is apparently not liquidity constrained.
- Many of the elderly with little current income also have little housing equity, so that little could be gained by converting it to an annuity, even at an actuarially fair rate. This is consistent with the findings of Manchester (1987) based on data from the Panel Survey of Income Dynamics. That annuity rates are much less than actuarially fair, as shown by Friedman and Warshawsky (1985), may be a further deterrent.
- The attachment to past living arrangements and the maintenance of housing equity may be motivated by a bequest motive, although this explanation is brought into question by the absence of a significant relationship between change in housing equity and whether the family has children, consistent with the findings of Hurd (1986) for nonhousing bequeathable wealth.

- The elderly with high income and low housing equity are the most likely to move; those with low income and high housing equity are less likely to move than the former group but more likely than other elderly families. One may conclude that moving by the elderly is just as likely to be motivated by the desire to reallocate more income to housing as to use housing wealth to finance current consumption. However, among homeowners who move, those with low income and high housing equity reduce housing equity the most; those with high income and low housing equity increase housing wealth the most.
- Moving is strongly related to retirement and to precipitating shocks such as change in marital status, in particular the death of a spouse.

## 1.1 Background

### 1.1.1 The Frequency and Nature of Moves

Much of the data that will be presented pertains to changes in housing between two survey periods. Where the changes do not vary greatly over the five possible comparisons—1969 to 1971, 1971 to 1973, etc.—we typically present data for the 1973 to 1975 interval.

The likelihood that a family moves during a two-year interval depends on housing type, for example:

<u>1973 Housing</u>	<u>% of Sample</u>	<u>% Move</u>
<i>Own</i>	71.4	9.1
<i>Rent</i>	21.0	25.8
<i>Other</i>	7.6	26.5

Those who rent are almost three times as likely to move as those who own. The “other” category includes persons living with relatives, living in homes owned by others, or paying no cash rent. Most moves are between the same housing type. This is shown by the following transition matrix for those who moved between 1973 and 1975:

	<u>Own</u>	<u>Rent</u>	<u>Other</u>
<i>Own</i>	78.2	15.4	6.4
<i>Rent</i>	17.0	69.9	13.1
<i>Other</i>	22.6	41.2	36.2

Almost 80 percent of homeowners who move move to another house. Change in housing tenure occurs mostly among the elderly who live in other situations. Thus, when we consider changes in housing type from one period to the next, we find that the vast majority of people are in the same type of housing, except the small proportion of the elderly

who are in the "other housing" category at the beginning of the period, as shown below in a transition matrix for all families:

	<u>Own</u>	<u>Rent</u>	<u>Other</u>
<i>Own</i>	96.7	1.8	1.5
<i>Rent</i>	6.5	86.2	7.3
<i>Other</i>	15.1	20.1	64.8

Finally, some people who do not move do in fact change housing tenure. Some rent the housing they used to own or vice versa. Others may transfer ownership to children or to other relatives. In still other cases someone else may assume the rent obligation. Change in tenure without moving is especially common among those in the "other" category.<sup>1</sup> This can be seen in the following transition matrix for stayers (nonmovers):

	<u>Own</u>	<u>Rent</u>	<u>Other</u>
<i>Own</i>	98.5	0.5	1.0
<i>Rent</i>	2.8	91.9	5.3
<i>Other</i>	12.4	12.4	75.2

The transition matrices for the other years look similar to those for the 1973-75 period. The transition probabilities for movers vary with age, however. The RHS respondents were 62 to 67 years old in 1973. In the 1973-75 interval, renters were more likely to change to owning than owners were to change to renting. Transition probabilities for movers by age can be calculated from the RHS by combining data from all of the survey years. Only for the ages 60 through 65 (but not 63) is the transition probability from renting to owning greater than the probability from owning to renting; for all other ages from 58 to 71 the reverse is true. In this respect the RHS data appear to be consistent with evidence from the Annual Housing Survey (AHS).<sup>2</sup>

An indication of the cumulative effect of these transition probabilities over the ten-year period of the RHS is provided by the likelihood of moving between 1969 and 1979 for those who responded in both years. The percentage of respondents who moved at least once during this period is:

<u>Housing in 1969</u>	<u>% Move by 1979</u>
<i>Own</i>	27.0
<i>Rent</i>	63.6
<i>Other</i>	53.4

Many movers, especially renters, moved more than once. Of the original owners who moved and were in the sample in 1979, 73 percent moved once, 18 percent twice, and 9 percent more than twice. Of the original renters who moved, 50 percent moved once, 24 percent twice, and 26 percent more than twice. The following transition matrix for all

respondents describes the net result of these moves over the ten-year period:

	<i>Own</i>	<i>Rent</i>	<i>Other</i>
<i>Own</i>	90.3	6.6	3.1
<i>Rent</i>	23.0	68.3	8.7
<i>Other</i>	26.6	31.8	41.6

There is considerably more movement from renting to owning than from owning to renting. Most of the original owners still own; 7 percent rent. But 23 percent of original renters own at the end of the period. The reason is that renters are much more likely than owners to move, not that when renters move they are more likely than owners to switch tenures, as explained above. Some of the initial respondents died, and others dropped out of the sample for other reasons. This attrition may have some effect on the recorded transition probabilities. Renters, for example, are more likely than owners to drop out of the sample. We do not believe, however, that attrition seriously confounds the interpretation of the data.

Persons who buy often move out of state; renters are much less likely to leave the state. The RHS provides limited information on the distance of moves in the 1973–75 period. For initial owners and renters, distance of moves is indicated in table 1.1. Half of all moves are within the same city, and three-fourths are within the same state.<sup>3</sup> Almost 90 percent of moves from one rental unit to another are within the same state.

### 1.1.2 Income and Wealth

Income and wealth by tenure are shown for 1969 and 1979 in tables 1.2A and 1.2B. Since a large proportion of personal wealth is in housing, it is not surprising that homeowners have much more wealth than renters. Owners also have much higher incomes, much more non-housing bequeathable wealth, and more Social Security wealth, the latter reflecting higher lifetime earnings.

The extent to which housing equity could be used to increase current consumption depends of course on how much housing equity there is. The extent to which individuals might wish to do that may depend on

**Table 1.1** Percent Distribution of the Distance of Moves, 1973–75

Type of Move	Same City	Same State	Out of State	Other	All
Own to own	35.8	29.2	22.6	12.3	43.2
Rent to rent	69.9	17.9	8.8	3.4	36.6
Own to rent	44.7	32.9	14.1	8.2	10.5
Rent to own	33.3	34.6	21.8	10.3	9.7
All	49.0	26.0	16.6	8.4	100.0

Table 1.2A Income by Tenure, 1969 and 1979<sup>a</sup>

Category	Tenure					
	Owners		Renters		Other	
	Mean	Median	Mean	Median	Mean	Median
1969						
Capital income	\$ 1,008	\$ 59	\$ 558	\$ 0	\$ 467	\$ 0
Social Security	432	0	418	0	475	0
Pension	653	0	444	0	422	0
Wages	14,951	13,210	10,203	8,448	5,269	2,166
Other	986	119	632	67	541	55
Total	18,030	14,810	12,254	9,484	7,173	4,049
N	6,616		2,426		792	
1979						
Capital income	1,741	223	895	0	426	0
Social Security	3,829	3,700	3,064	3,011	2,543	2,436
Pension	1,980	0	1,375	0	640	0
Wages	2,389	0	1,232	0	973	0
Other	954	120	572	45	487	36
Total	10,892	8,140	7,138	5,014	5,070	3,507
N	5,228		1,526		569	

<sup>a</sup>All figures are in 1979 dollars.

housing equity compared to current income. For example, persons with low income but large housing equity stand to gain the most by converting housing equity into current consumption. An indication of the potential for such transfers is provided by the distribution of housing equity by income<sup>4</sup> as shown in table 1.3. Over 40 percent of those in the lowest income quartile also are in the lowest housing equity quartile.

Thus a reverse mortgage may not expand by much the opportunity for this group to increase current consumption. For example, consider a family with housing wealth of \$16,334, the maximum in the lowest housing equity quartile (1979 dollars). Assume approximate average male life expectancy at 65 of 15 years. Suppose that the household obtains a loan for the value of the house and uses the proceeds from the loan to buy an annuity. If both the mortgage rate and the annuity "yield" are 10 percent, the annual income from the reverse annuity mortgage would be only \$548. In fact, this is an overestimate. The annuity yield is typically much lower than the mortgage rate. In 1979, the average mortgage rate was 10.8 percent and the average annuity yield was 4.8 percent (Friedman and Warshawsky 1985). With these rates, the income from the reverse annuity mortgage would be *negative*, -\$212 per annum.



**Table 1.2B** Wealth by Tenure, 1969 and 1979 <sup>a</sup>

Category	Tenure					
	Owners		Renters		Other	
	Mean	Median	Mean	Median	Mean	Median
1969						
Nonhousing bequeathable	\$ 69,008	\$ 25,912	\$32,265	\$ 8,690	\$16,238	\$ 4,221
Housing	31,026	25,739	0	0	0	0
Social	39,274	44,535	30,087	29,705	21,130	19,499
Security	16,222	0	16,776	0	14,949	0
Pension	6,274	0	3,118	0	5,520	0
Other	161,806	110,454	82,248	52,762	57,837	37,732
Total						
N	6,616		2,426		792	
1979						
Nonhousing bequeathable	46,262	17,476	21,480	4,710	13,919	3,116
Housing	41,735	33,000	0	0	0	0
Social	45,078	44,528	31,319	29,556	24,779	23,464
Security	7,220	0	5,564	0	2,629	0
Pension	12,468	0	4,518	0	5,774	0
Other	152,763	115,365	62,881	43,309	47,102	33,365
Total						
N	5,228		1,526		569	

<sup>a</sup>All figures are in 1979 dollars.

**Table 1.3** Distribution of Housing Equity by Income, 1973

Income	Housing Equity			
	low	2nd	3rd	4th
low	41.0	26.0	18.3	14.8
2nd	26.5	27.0	26.7	19.8
3rd	18.6	27.3	31.0	23.1
4th	8.9	19.7	28.4	43.0

Housing equity together with other wealth is possibly a better measure of consumption possibilities. Their joint distribution is shown in table 1.4. Again, those with little nonhousing wealth tend to have little housing equity as well. Close to half of those in the lowest nonhousing wealth quartile are also in the lowest housing equity quartile, and almost three-quarters are in the lowest half. Data for other years look very similar to those for 1973.

**Table 1.4** Distribution of Housing Equity by Other Wealth, 1973

Other Wealth	Housing Equity			
	low	2nd	3rd	4th
low	45.6	27.6	18.1	8.8
2nd	28.4	30.2	26.3	15.2
3rd	14.7	26.0	33.2	26.2
4th	6.4	16.2	26.8	50.2

## 1.2 Who Moves?

### 1.2.1 Descriptive Data

The likelihood of moving is highest for those with an apparent imbalance in income versus housing equity. The percentage that moved during the 1973–75 period by income and housing equity quartiles is shown for homeowners in table 1.5. The most striking feature of these data is that persons who have relatively high nonhousing wealth but low housing equity are the most likely to move. Persons in the highest nonhousing wealth quartile are more than twice as likely to move if they have low rather than high housing equity. Families with low nonhousing wealth but high housing equity are not unusually likely to move, contrary to what would be expected if moving typically were

**Table 1.5** Percentage of Homeowners Who Moved

A. By Income and Housing Equity, 1973–75					
Income	Housing Equity				All
	low	2nd	3rd	4th	
low	12	7	10	16	11
2nd	8	7	10	8	8
3rd	10	7	7	8	8
4th	16	8	8	10	10
All	11	7	9	10	9

B. By Other Wealth and Housing Equity, 1973–75					
Other Wealth	Housing Equity				All
	low	2nd	3rd	4th	
low	10	6	10	9	9
2nd	9	7	8	11	8
3rd	11	8	9	9	9
4th	20	9	8	10	10
All	11	7	9	10	9

used to withdraw wealth from housing and reallocate it to current consumption.

According to table 1.5A, however, families with high housing equity but low income are about as likely to move as families with high income but low housing equity. Persons with high incomes but devoting relatively little of it to housing may move to reallocate more of their income to housing. This may simply reflect optimal adjustment to desired housing expenditure, given current circumstances. But it may also be a response in part to government policies. Medicaid rules, for example, often require virtual exhaustion of nonhousing wealth, but not housing equity, before nursing home expenses are paid. Families with low income but high housing equity may move to withdraw wealth from housing because they are liquidity constrained. The evidence in the section 1.3 supports these presumptions.

In principle, homeowners could withdraw wealth from housing by increasing the mortgage on the house. Presumably those with the most housing wealth would be in the best position to do this. And indeed housing equity could be increased by paying off a mortgage. But change in the amount of home mortgages has been rare in the absence of a move. Thus, in practice it would appear that moving is typically the mechanism by which housing wealth has been increased or decreased. Recent tax legislation that eliminates the tax deductibility of interest on consumer borrowing other than mortgages may change the frequency of home equity loans, however.

The probability of a renter moving shows little relationship to income, wealth, or rent. In particular, it does not appear that families with high rent and low income, or with high income and low rent, are more likely than others to move. The percentage of renters who move is shown by income and total wealth quartile and by income and rent quartile in table 1.6.

Moving is often associated with job change. Among the elderly, it is more likely to be associated with retirement. It is also strongly associated with precipitating shocks, particularly the death of a spouse. The relationship of moving to retirement is shown in table 1.7 and to the death of a spouse in table 1.8.<sup>5</sup> Homeowners are slightly less than twice as likely to move if the respondent retires during the two-year interval than if retirement does not occur.<sup>6</sup> The difference is also substantial, although somewhat less, for renters. The death of the respondent almost doubles the likelihood that homeowners and renters move during many of the two-year intervals. (The effect of change in family size is shown in appendix table 1.A. The numbers are close to those pertaining to death of a spouse in table 1.8, although change in family size could occur for many reasons besides death of the respondent.)

Possibly the most informative description of the relationship between age and moving is the empirical hazard rate, the percentage of families

**Table 1.6** Percentage of Renters Who Moved

A. By Income and Total Wealth, 1973-75					
Income	Total Wealth				
	low	2nd	3rd	4th	All
low	26	25	35	15	26
2nd	35	25	26	10	27
3rd	30	30	23	31	27
4th	29	19	18	26	23
All	29	26	24	25	26

B. By Income and Rent, 1973-75					
Income	Rent				
	low	2nd	3rd	4th	All
low	24	28	29	24	26
2nd	27	25	27	30	27
3rd	32	22	24	33	27
4th	24	15	23	26	23
All	26	24	25	28	26

who move in the next two-year interval, given that they have not moved before that. These calculations are shown in table 1.9, by survey year and by age. For example, 7.2 percent of the homeowners who were 58 in 1969 moved in the next two years, by 1971. Looking down the last column, there appears to be a slight increase in the probability of moving at the peak retirement years, 60 to 65, and possibly some decline with age, although both effects are slight. There appear to be no important cohort effects, judging by the similarity of the percentages for

**Table 1.7** Percent That Moves, by Retirement, Tenure, and Year

	All	Owners <sup>a</sup>	Renters <sup>a</sup>
Retired: 1969-71	21.5	12.9	38.5
Did not retire: 1969-71	12.7	6.7	26.5
Retired: 1971-73	18.4	12.6	35.1
Did not retire: 1971-73	14.5	8.8	28.5
Retired: 1973-75	18.3	12.4	33.8
Did not retire: 1973-75	13.0	8.3	24.1
Retired: 1975-77	16.1	9.2	33.8
Did not retire: 1975-77	12.2	7.6	25.0
Retired: 1977-79	14.7	11.1	26.3
Did not retire: 1977-79	10.9	7.2	20.5

<sup>a</sup>In base year.

**Table 1.8** Percent That Move, by Death of Spouse, Tenure, and Year

	All	Owners <sup>a</sup>	Renters <sup>a</sup>
Death of original respondent: 1969-71	22.5	16.4	42.0
No death: 1969-71	14.3	7.7	28.8
Death of original respondent: 1971-73	23.0	17.4	43.5
No death: 1971-73	15.1	9.5	29.6
Death of original respondent: 1973-75	20.8	12.2	50.0
No death: 1973-75	13.7	9.0	25.2
Death of original respondent: 1975-77	18.5	11.9	50.0
No death: 1975-77	12.5	7.6	25.5
Death of original respondent: 1977-79	15.8	13.2	29.3
No death: 1977-79	11.0	7.3	20.7

<sup>a</sup>In base year.**Table 1.9** Hazard Rates for Homeowners

Age	Year at the Beginning of the Interval					All
	1969	1971	1973	1975	1977	
58	7.2					7.2
59	7.4					7.4
60	9.3	7.9				8.6
61	7.7	9.7				8.6
62	7.9	7.9	7.8			7.9
63	8.1	9.0	7.4			8.2
64		8.8	8.9	7.5		8.4
65		9.9	8.2	6.1		8.3
66			7.0	6.4	7.6	7.0
67			6.5	6.5	4.7	6.0
68				6.2	5.7	6.0
69				6.3	4.5	5.4
70					7.0	7.0
71					6.3	6.3
All	7.9	8.8	7.7	6.6	6.0	7.6

people of the same age in different years. One might expect that not moving for several years would tend to identify stayers versus movers. If this selection effect exists, it should be revealed by declining moving probabilities along the diagonals that pertain to the same cohort as it ages. Those who enter each successive calculation have not moved for longer and longer periods of time. For all cohorts this effect is summarized in the bottom row. Any such effect does not show up strongly in this tabulation, although it is possibly indicated by the decline from around 8 percent in 1971 to about 6 percent in 1977. Whatever this

effect is, it may be indistinguishable from the effect of age. Calculations in section 1.2.2 will help to make the distinction clearer, however.

Comparable data for renters are shown in table 1.10. The data suggest a rather strong selection of stayers in the sample after successive periods without moving. There is on average a substantial decline in the probability of moving as the number of years without moving increases, summarized in the bottom row.<sup>7</sup> On the other hand, there seems to be little effect of age, judged by looking down the columns.

### 1.2.2 Parameterization of Hazard Rates

Finally, these hazard rates are parameterized as simple functions of age, retirement, family status, health status, and income-housing equity quartiles. Given that a person has not yet moved at the time of a survey, the probability of moving by the next survey is estimated as a function of these variables, using a probit functional form. Those who move in a given interval are deleted from the calculations for subsequent intervals. The use of the probit form for the interval probability of moving is consistent with a Brownian motion formulation of a continuous time hazard model.<sup>8</sup>

The Brownian motion version of a hazard model may be described briefly. Suppose that at age  $t$  there is a gain  $G(t)$  that could be obtained by moving. It may be thought of as  $G(t) = M(t) - S(t)$ , where  $M(t)$  is the utility associated with moving to the best available alternative housing, and  $S(t)$  is the utility associated with staying in the present location. The probability of moving is given by  $\Pr[G(t) = M(t) - S(t) > 0]$ .

**Table 1.10 Hazard Rates for Renters**

Age	Year at the Beginning of the Interval					All
	1969	1971	1973	1975	1977	
58	24.1					24.1
59	29.1					29.1
60	31.5	24.8				28.5
61	28.8	26.0				27.7
62	29.8	23.0	14.1			24.7
63	32.0	24.9	15.6			26.1
64		19.0	24.6	20.9		20.9
65		26.0	23.8	12.5		21.8
66			19.3	18.5	17.8	18.7
67			20.6	14.7	15.8	17.3
68				22.0	11.6	19.8
69				14.4	13.9	19.1
70					16.5	16.5
71					25.4	25.4
All	29.1	23.8	19.4	17.5	16.7	23.7

That  $G(t)$  follows a Brownian motion (Weiner) process with drift  $u$  means that:

- Every increment  $G(t + d) - G(t)$  is normally distributed with mean  $ud$  and variance  $c^2d$ ; and
- The increments for every pair of disjointed time intervals are independent.

Because the increments are assumed to be independent, given  $G(t)$ ,  $G(t + d)$  is a function only of  $G(t)$  and the drift  $u$ .

If moving is not an absorbing state, meaning that a person could move and then move back again—not a realistic possibility in our case—the probability that a person who has not moved by age  $t$  will move by age  $t + d$  is given by

$$(1) \quad \Pr[G(t + d) > 0 \mid G(t) = g(t)] = F\{[g(t) + ud]/cd^{1/2}\}$$

where  $F$  is a cumulative normal distribution function. This is an interval hazard rate with a simple probit functional form.

If moving is an absorbing state, a family could not be in the same house at the beginning and at the end of the period but have moved during the interval. In this case, the interval hazard<sup>9</sup> becomes:

$$(2) \quad \Pr[G(t + d) > 0 \mid G(t) = g(t)] = F\{[g(t) + ud]/cd^{1/2}\} \\ + \exp[2ug(t)/c^2] \cdot F\{[g(t) - ud]/cd^{1/2}\}.$$

In our case,  $d$  is two years, and the starting point  $g(t)$  must be estimated. We parameterize  $u$  as a function of age; of housing equity and current income; and of changes in retirement, family, and health status. If the interval  $d$  is defined to be 1 and  $c$  is set to 1, equation (1) is in the form of a standard probit specification. (The variance  $c$  is not identified if there is no variation in  $d$ .) The results for the absorbing-state version of the hazard tell the same story as those using the simple model and are not presented.

An advantage of estimating the interval hazards period by period is that the effect of each variable is allowed to vary freely as persons age. The results for the simple probit are reported in tables 1.11A and 1.11B. Table 1.11A is based on all intervals combined, while table 1.11B presents estimates for selected intervals separately. The last column of the tables shows the change in the probability of moving due to each of the attributes. The change is evaluated at the mean of all the other attributes. For example, if the sixteen variables describing home equity and income in table 1.11A are set to zero—identifying a family with high income and high housing equity—and all of the others are set at their means, the probability of moving is 0.084. If instead of high housing and high income, the family had low housing equity and high income, the probability of moving would be  $0.084 + 0.047 = 0.131$ , or 0.047 higher.

**Table 1.11A** Probit Estimates of Interval Hazards for Homeowners, All Intervals Combined<sup>a</sup>

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
<i>Age at Beginning of Period</i>			
58	0.0	—	0.075 <sup>b</sup>
59	0.018	0.085	0.003
60	0.015	0.074	0.002
61	0.016	0.075	0.002
62	-0.035	0.074	-0.005
63	-0.069	0.074	-0.009
64	-0.030	0.083	-0.004
65	-0.030	0.084	-0.004
66	-0.050	0.093	-0.007
67	-0.129	0.095	-0.017
68	-0.095	0.107	-0.013
69	-0.154	0.110	-0.020
70	0.017	0.131	0.002
71	-0.040	0.135	-0.005
<i>Year at Beginning of Period</i>			
1969	0.0	—	0.078 <sup>b</sup>
1971	0.008	0.041	0.001
1973	-0.069	0.051	-0.010
1975	-0.141	0.065	-0.019
1977	-0.187	0.080	-0.024
<i>Home Equity–Income Quartile</i>			
low–low	-0.124	0.056	-0.018
low–2nd	-0.049	0.059	-0.007
low–3rd	-0.034	0.067	-0.005
low–4th	0.255	0.081	0.047
2nd–low	-0.242	0.066	-0.031
2nd–2nd	-0.142	0.062	-0.020
2nd–3rd	-0.222	0.064	-0.029
2nd–4th	-0.090	0.071	-0.013
3rd–low	-0.128	0.070	-0.018
3rd–2nd	-0.183	0.064	-0.025
3rd–3rd	-0.219	0.060	-0.029
3rd–4th	-0.049	0.059	-0.007
4th–low	0.079	0.073	0.013
4th–2nd	-0.103	0.068	-0.015
4th–3rd	-0.081	0.061	-0.012
4th–4th	0.0	—	0.084 <sup>b</sup>
<i>Retirement Status</i>			
no → no	0.0	—	0.046 <sup>b</sup>
yes → no	0.341	0.074	0.044
no → yes	0.409	0.036	0.055
yes → yes	0.285	0.036	0.035

(continued)



**Table 1.11A** (continued)

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
<i>Family Status</i>			
single $\rightarrow$ single <sup>c</sup>	0.0	—	0.066 <sup>b</sup>
married $\rightarrow$ married	-0.004	0.033	-0.000
married $\rightarrow$ widowed	0.322	0.056	0.052
other change	1.319	0.089	0.360
<i>Health Status</i>			
same	0.0	—	0.067 <sup>b</sup>
better	0.133	0.037	0.019
worse	0.006	0.030	0.001
Intercept	-1.522	0.074	0.076 <sup>b</sup>
Number of observations = 22,914			
Log-likelihood = -5864.32			

<sup>a</sup>The standard errors have not been adjusted for repeated observations for the same person.

<sup>b</sup>The probability of moving in the base case. It is calculated by evaluating all variables within the category (age, home equity and income, retirement status, family status, or health status) at zero and all other variables at their means. The  $\Delta$  probability for other attributes is the increase or decrease relative to this base. For example, the probability that a move occurs if a person retires is 0.046 + 0.055. The probability associated with the intercept is the probability of moving when all variables are set to their sample means.

<sup>c</sup>Includes single to single, divorced to divorced, and widowed to widowed.

**Table 1.11B** Probit Estimates of Interval Hazards for Homeowners, by Interval: 1969-71, 1973-75, 1977-79<sup>a</sup>

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
		1969-71	
<i>Age in 1969</i>			
58	0.0	—	0.071 <sup>b</sup>
59	0.017	0.086	0.002
60	0.068	0.084	0.010
61	-0.047	0.085	-0.006
62	-0.026	0.087	-0.003
63	-0.080	0.088	-0.010
<i>Home Equity-Income Quartile</i>			
low-low	-0.082	0.108	-0.012
low-2nd	-0.001	0.111	-0.000
low-3rd	0.184	0.117	0.032
low-4th	0.306	0.148	0.058
2nd-low	-0.257	0.125	-0.033
2nd-2nd	-0.173	0.127	-0.024

Table 1.11B (continued)

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
2nd-3rd	-0.296	0.128	-0.037
2nd-4th	0.102	0.132	0.017
3rd-low	-0.162	0.141	-0.022
3rd-2nd	-0.368	0.141	-0.044
3rd-3rd	-0.242	0.125	-0.032
3rd-4th	-0.200	0.125	-0.027
4th-low	0.145	0.135	0.025
4th-2nd	-0.342	0.152	-0.042
4th-3rd	0.003	0.116	0.001
4th-4th	0.0	—	0.085 <sup>b</sup>
<i>Retirement Status</i>			
no → no	0.0	—	0.054 <sup>b</sup>
yes → no	0.280	0.168	0.038
no → yes	0.426	0.061	0.065
yes → yes	0.283	0.074	0.039
<i>Family Status</i>			
single → single <sup>c</sup>	0.0	—	0.062 <sup>b</sup>
married → married	0.029	0.068	0.004
married → widowed	0.505	0.118	0.089
other change	1.434	0.164	0.397
<i>Health Status</i>			
same	0.0	—	0.064 <sup>b</sup>
better	0.179	0.072	0.026
worse	0.078	0.058	0.010
Intercept	-1.592	0.109	0.079 <sup>b</sup>
Number of observations = 6,121			
Log-likelihood = -1581.52			
1973-75			
<i>Age in 1969</i>			
58	0.0	—	0.079 <sup>b</sup>
59	-0.058	0.101	-0.008
60	-0.020	0.098	-0.003
61	-0.066	0.100	-0.009
62	-0.131	0.102	-0.017
63	-0.177	0.107	-0.023
<i>Home Equity-Income Quartile</i>			
low-low	-0.181	0.121	-0.028
low-2nd	-0.269	0.141	-0.039
low-3rd	-0.309	0.160	-0.044
low-4th	0.103	0.193	0.019

(continued)

Table 1.11B (continued)

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
2nd-low	-0.360	0.147	-0.049
2nd-2nd	-0.165	0.133	-0.026
2nd-3rd	-0.426	0.145	-0.055
2nd-4th	-0.335	0.162	-0.046
3rd-low	-0.049	0.160	-0.008
3rd-2nd	-0.245	0.155	-0.036
3rd-3rd	-0.364	0.160	-0.049
3rd-4th	-0.046	0.146	-0.008
4th-low	-0.100	0.159	-0.016
4th-2nd	-0.221	0.140	-0.033
4th-3rd	-0.104	0.126	-0.017
4th-4th	0.0	—	0.099 <sup>b</sup>
<i>Retirement Status</i>			
no → no	0.0	—	0.036 <sup>b</sup>
yes → no	0.538	0.162	0.068
no → yes	0.465	0.092	0.055
yes → yes	0.413	0.079	0.047
<i>Family Status</i>			
single → single <sup>c</sup>	0.0	—	0.077 <sup>b</sup>
married → married	-0.109	0.072	-0.015
married → widowed	-0.138	0.146	-0.018
other change	1.457	0.207	0.436
<i>Health Status</i>			
same	0.0	—	0.069 <sup>b</sup>
better	0.034	0.088	0.005
worse	-0.028	0.069	-0.004
Intercept	-1.462	0.127	0.077 <sup>b</sup>
Number of observations = 4,461			
Log-likelihood = -1141.51			
1977-79			
<hr/>			
<i>Age in 1969</i>			
58	0.0	—	0.064 <sup>b</sup>
59	-0.227	0.131	-0.024
60	-0.120	0.127	-0.014
61	-0.245	0.134	-0.025
62	-0.020	0.122	-0.002
63	-0.060	0.130	-0.007
<i>Home Equity-Income Quartile</i>			
low-low	-0.456	0.183	-0.050
low-2nd	-0.191	0.179	-0.025
low-3rd	-0.638	0.279	-0.061
low-4th	-0.129	0.290	-0.018

Table 1.11B (continued)

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
2nd-low	-0.474	0.215	-0.051
2nd-2nd	-0.281	0.183	-0.035
2nd-3rd	-0.074	0.180	-0.011
2nd-4th	-0.135	0.199	-0.019
3rd-low	-0.482	0.224	-0.052
3rd-2nd	-0.092	0.162	-0.013
3rd-3rd	-0.278	0.155	-0.035
3rd-4th	-0.086	0.158	-0.012
4th-low	-0.310	0.253	-0.038
4th-2nd	-0.036	0.192	-0.005
4th-3rd	-0.442	0.201	-0.049
4th-4th	0.0	—	0.083 <sup>b</sup>
<i>Retirement Status</i>			
no → no	0.0	—	0.022 <sup>b</sup>
yes → no	0.467	0.212	0.039
no → yes	0.730	0.171	0.077
yes → yes	0.412	0.146	0.032
<i>Family Status</i>			
single → single <sup>c</sup>	0.0	—	0.054 <sup>b</sup>
married → married	0.098	0.099	0.010
married → widowed	0.394	0.145	0.058
other change	1.468	0.314	0.390
<i>Health Status</i>			
same	0.0	—	0.049 <sup>b</sup>
better	0.212	0.111	0.026
worse	-0.025	0.093	-0.003
Intercept	-1.656	0.194	0.060 <sup>b</sup>
Number of observations = 3,266			
Log-likelihood = 695.06			

<sup>a</sup>The standard errors have not been adjusted for repeated observations for the same person.

<sup>b</sup>The probability of moving the the base case. It is calculated by evaluating all variables within the category (age, home equity and income, retirement status, family status, or health status) at zero and all other variables at their means. The  $\Delta$  probability for other attributes is the increase or decrease relative to this base. For example, the probability that a move occurs if a person retires in the 1977-79 interval is 0.022 + 0.077. The probability associated with the intercept is the probability of moving when all variables are set to their sample means.

<sup>c</sup>Includes single to single, divorced to divorced, and widowed to widowed.

The estimates support several conclusions. First, as indicated in tables 1.7 and 1.8, moving is often related to retirement and is often precipitated by the death of a spouse or by other changes in family status. For example, based on the estimates for all intervals combined, in table 1.11A the probability that a homeowner moves increases from 0.046 to 0.101 ( $0.046 + 0.055$ ) if the head retires. The probability that the typical married couple moves is 0.066. If the husband dies during the interval, the probability is 0.118. Other changes in family status, like divorce or marriage, are much more likely to be associated with a move. In these cases, the probability of a move is 0.426 ( $0.066 + 0.360$ ).<sup>10</sup>

The estimated coefficients on the income–housing equity indicators in table 1.11A show that the probability of moving is greatest for families with the greatest apparent imbalance in income versus housing equity. The estimated hazard rates for the four home equity and income levels distinguished in the probit specification, assuming other attributes at their sample means are shown in table 1.12. The average hazard rate is 7.6 percent. Holding other attributes constant, the hazard rate for families with high income and low housing equity is 13.1 percent. Those with low income and high housing equity are somewhat less likely to move, although they are more likely than the average. These estimates provide no evidence that homeowners typically use housing wealth to increase current consumption. The results in this section together with those below suggest that persons with high incomes and low housing equity are likely to move to increase housing expenditure, while those with low income and high housing equity tend to reduce housing equity when they move. However, the data in section 1.3 show that movers in general do not reduce housing equity.

Change in health status has little effect on the probability of moving, according to our measures (see table 1.11A). An improvement in health is associated with a 0.019 increase in the probability of moving, from 0.067 to 0.086. A worsening of health status is associated with a 0.001 decline in the probability of moving.

**Table 1.12** Estimated Hazard Rates for Homeowners, by Income and Home Equity

Income	Housing Equity			
	low	2nd	3rd	4th
low	6.6	5.2	6.6	9.7
2nd	7.7	6.4	5.9	6.9
3rd	7.9	5.5	5.5	7.2
4th	13.1	7.1	7.7	8.4

The parameter estimates show no effect of age on moving. That is, age at the beginning of a two-year period is unrelated to the probability of moving. Note that these variables indicate ages that are two years greater with each successive interval, beginning with 58 at the beginning of the 1969–71 interval. The year effects, indicated by the first year of each of the two-year intervals, are small but declining consistently. They reflect the increasing selection of stayers as the number of years without a move increases. The estimates indicate that those who have not moved before 1977 are 0.024 less likely to move in the subsequent two-year interval than the typical person in the sample in 1969 is likely to move by 1971.

Estimates of the effect of individual attributes on the hazard rates of renters are shown in table 1.13 for all survey intervals combined. As with homeowners, retirement and changes in family status have substantial effects on the probability of moving. There is no age effect. Unlike homeowners, however, there are substantial year effects on the probability that renters move, indicating substantial and increasing selection of stayers as the number of years without a move increases.

**Table 1.13** Probit Estimates of Interval Hazards for Renters, All Intervals Combined<sup>a</sup>

Variable	Coefficient	Asymptotic Standard Error	Δ Probability
<i>Age of Beginning of Period</i>			
58	0.0	—	0.195 <sup>b</sup>
59	0.135	0.101	0.040
60	0.196	0.095	0.058
61	0.118	0.094	0.034
62	0.075	0.092	0.021
63	0.091	0.093	0.026
64	0.098	0.115	0.028
65	0.129	0.117	0.037
66	0.149	0.135	0.044
67	0.117	0.142	0.034
68	0.207	0.164	0.062
69	0.035	0.176	0.010
70	0.219	0.225	0.066
71	0.398	0.235	0.127
<i>Year at Beginning of Period</i>			
1969	0.0	—	0.294 <sup>b</sup>
1971	-0.197	0.056	-0.064
1973	-0.345	0.080	-0.106
1975	-0.426	0.106	-0.127
1977	-0.492	0.132	-0.143

(continued)

Table 1.13 (continued)

Variable	Coefficient	Asymptotic Standard Error	$\Delta$ Probability
<i>Home Equity–Income Quartile</i>			
low–low	0.131	0.077	0.040
low–2nd	0.157	0.080	0.048
low–3rd	–0.009	0.111	–0.003
low–4th	–0.006	0.164	–0.002
2nd–low	0.209	0.090	0.066
2nd–2nd	0.044	0.085	0.013
2nd–3rd	–0.006	0.089	–0.002
2nd–4th	–0.236	0.122	–0.062
3rd–low	0.107	0.103	0.032
3rd–2nd	0.049	0.096	0.015
3rd–3rd	0.027	0.082	0.008
3rd–4th	0.099	0.084	0.030
4th–low	0.139	0.130	0.043
4th–2nd	0.069	0.110	0.021
4th–3rd	0.111	0.087	0.034
4th–4th	0.0	—	0.212 <sup>b</sup>
<i>Retirement Status</i>			
no → no	0.0	—	0.189 <sup>b</sup>
yes → no	0.179	0.129	0.052
no → yes	0.378	0.051	0.118
yes → yes	0.160	0.053	0.046
<i>Family Status</i>			
single → single <sup>c</sup>	0.0	—	0.209 <sup>b</sup>
married → married	0.090	0.042	0.027
married → widowed	0.414	0.096	0.137
other change	1.187	0.138	0.438
<i>Health Status</i>			
same	0.0	—	0.212 <sup>b</sup>
better	0.200	0.056	0.062
worse	0.108	0.044	0.033
Intercept	–0.982	0.087	0.237
Number of observations = 5,637			
Log-likelihood = –2954.0			

<sup>a</sup>The standard errors have not been adjusted for repeated observations for the same person.

<sup>b</sup>The probability of moving in the base case. It is calculated by evaluating all variables within the category (age, home equity and income, retirement status, family status, or health status) at zero and all other variables at their means. The  $\Delta$  probability for other attributes is the increase or decrease relative to this base. For example, the probability that a move occurs if a person retires is 0.189 + 0.118. The probability associated with the intercept is the probability of moving when all variables are set to their sample means.

<sup>c</sup>Includes single to single, divorced to divorced, and widowed to widowed.

The hazard rate declines from 0.294 in the 1969–71 interval to 0.151 in the 1977–79 interval. As shown in table 1.14, low-income families are somewhat more likely to move, but there is no relationship between rent and the likelihood of moving.

### 1.3 Moving, Housing Value, and User Cost

It has been shown that only about 8 or 9 percent of homeowners move in any two-year period, and that only about 25 percent moved over the entire ten-year period. Renters are much more likely to move: about a quarter move in any two-year period, and almost 65 percent of initial renters had moved at least once by 1979. Retirement and death of a spouse are strong precipitating factors associated with moving.

In this section we consider how housing equity and user cost change with moving. In particular, we analyze the extent to which wealth is withdrawn from housing at the time of moving. The market value of housing and housing equity are the principle measures that are analyzed for homeowners.

In addition, we consider the change in nonhousing bequeathable wealth. If wealth is withdrawn from housing at the time of a move, it should show up as an increase in nonhousing bequeathable wealth. This provides a check on the housing equity data. For example, persons may undervalue their houses, especially during a period of increasing housing prices. When the person moves and a new house is bought, its actual market value is revealed. The difference between this value and the estimated value of the previous house could exaggerate the increase in housing value at the time of a move. The change in nonhousing bequeathable wealth would not be subject to this potential bias however.<sup>11</sup> If the elderly typically have more wealth in housing than they would like, we would expect to see a fall in housing equity and an increase in nonhousing bequeathable wealth among those who move.

Change in rent is determined for renters. In addition, we follow the change in the user cost of housing for both homeowners and renters. This provides a measure that is comparable for both groups. It also is

**Table 1.14** Estimated Hazard Rates by Income and Rent Quartile, for Renters

Income	Rent			
	low	2nd	3rd	4th
low	25.2	27.8	24.5	25.5
2nd	26.1	22.5	22.7	23.3
3rd	21.0	21.1	22.0	24.6
4th	21.1	15.1	24.2	21.2



a direct indicator of the extent to which the elderly move to reduce such expenditures. We find that the typical move is just as likely to be associated with an increase as a decrease in housing equity and that user cost is also just as likely to increase as to decrease.

### 1.3.1 Housing Value, Equity, and Nonhousing Bequeathable Wealth

Two types of analysis are discussed. The first is based on changes between adjacent survey years. In this case, the sample includes all homeowners in the sample in each of the two survey periods. The second is based only on respondents who remained in the sample over the entire period of the RHS. This has the advantage of providing data on families both before and after a move. On the other hand, effects of attrition may have a more substantial effect on the calculations when only those who remain in the survey for ten years are included in the analysis. Attrition is unlikely to have an important effect on the calculations based on two-year intervals.<sup>12</sup>

Table 1.15 shows the change in the market value of housing, housing equity, and nonhousing bequeathable wealth for movers and stayers over each two-year interval of the RHS. The comparison with stayers provides a control for economy-wide changes during each interval. In two of the six intervals, the change in housing value for movers is greater than for stayers. In four of the five intervals, more than half of the changes for movers were positive. The equity value of housing was also as likely to increase as to decrease when a move occurred. The median change in equity value was usually somewhat less for movers than for stayers, however, on the order of \$1,500 or \$2,000. In four of the five periods, the *fall* in nonhousing bequeathable wealth was greater for movers than for stayers. This may be the clearest evidence that wealth is not typically withdrawn from housing at the time of a move. The percentage with a fall in nonhousing bequeathable wealth was typically almost the same for movers as for stayers.

An alternative description of these measures is presented in appendix table 1.B. It shows housing value, housing equity, and nonhousing bequeathable wealth for those who were homeowners during the entire period of the RHS. The data distinguish families by whether they moved or stayed during a particular two-year interval and show the values in each of the other years of the survey as well. Illustrative findings are graphed in figures 1.1a, 1.1b, and 1.1c. The first of each pair of graphs distinguishes those who moved between 1969 and 1971 from those who did not move. Persons in either of these mover or stayer groups may have moved *or* stayed in subsequent years. The second of each pair distinguishes movers and stayers in the 1975–77 interval. Median home value increased over the RHS period for both movers and stayers (fig. 1.1a). Movers typically had greater housing value than stayers. The

**Table 1.15** Median Housing Value, Equity, and (Nonhousing) Bequeathable Wealth, by Stay versus Move and by Year, for Homeowners\*

Year and Measure	Housing Value		Housing Equity		Bequeathable Wealth	
	Stay	Move	Stay	Move	Stay	Move
Median, 1969	\$29,699	\$33,659	\$25,740	\$25,740	\$25,864	\$33,826
Median, 1971	28,804	32,261	26,884	26,884	25,011	34,039
Median Change	-503	363	378	558	-544	-1,376
% Change > 0	0.46	0.53	0.54	0.54	0.45	0.45
Median, 1971	30,468	31,364	26,884	26,884	23,772	25,085
Median, 1973	32,667	32,667	29,401	24,500	21,604	22,620
Median Change	839	526	1,405	-139	-632	-739
% Change > 0	0.61	0.55	0.63	0.50	0.31	0.28
Median, 1973	32,667	32,667	28,584	29,401	22,254	26,210
Median, 1975	31,693	33,716	26,973	25,900	19,964	25,995
Median Change	-712	-1,758	-217	-2,323	-1,135	-1,240
% Change > 0	0.43	0.43	0.48	0.42	0.42	0.42
Median, 1975	29,670	33,716	26,973	31,019	20,230	28,052
Median, 1977	33,538	35,934	29,945	29,945	19,644	28,452
Median Change	1,569	787	2,078	585	-391	-2,695
% Change > 0	0.62	0.51	0.64	0.51	0.45	0.40
Median, 1977	31,143	35,934	29,945	35,934	19,173	31,657
Median, 1979	35,000	39,000	33,900	32,000	17,191	34,012
Median Change	1,044	1,464	1,615	-528	-386	1,322
% Change > 0	0.63	0.55	0.65	0.49	0.45	0.56

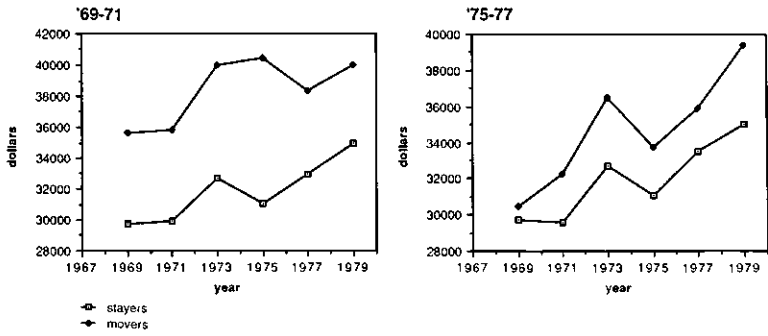
\*All figures are in 1979 dollars. Sample: All homeowners in the sample in adjacent years.

median home value of movers always increased at the time of the move. The median home equity always declines somewhat at the time of the move, but increases thereafter (fig. 1.1b). Movers have more housing equity than stayers, based on these data for those who remained in the survey for its duration.<sup>13</sup> And the difference is typically about as large at the end of the RHS period as at the beginning.

Median nonhousing bequeathable wealth declines continuously for both movers and stayers, and at approximately the same rate (fig. 1.1c). At the time of the move it is as likely to decrease as to increase. (It decreases in both of the graphs shown.) Again, the typical elderly mover appears to withdraw little if any housing equity at the time of the move.<sup>14</sup>

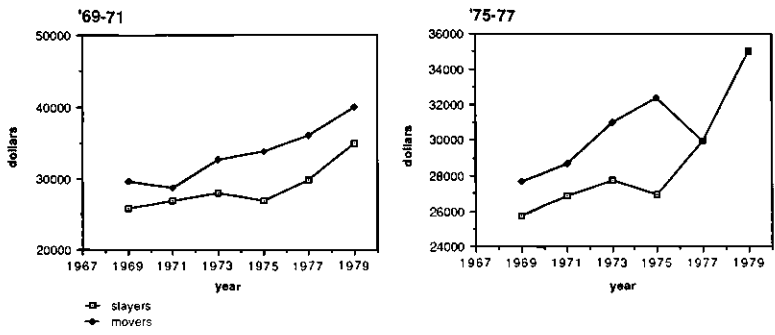
Finally, in table 1.16 we have estimated by linear regression the relationship between family attributes and the change in home equity when the family moves (to another owner-occupied dwelling). The variables are the same as those used to estimate the interval hazard rates in tables 1.11 and 1.13 above. We emphasize the relationship

**Med. Home Value, Movers and Stayers**



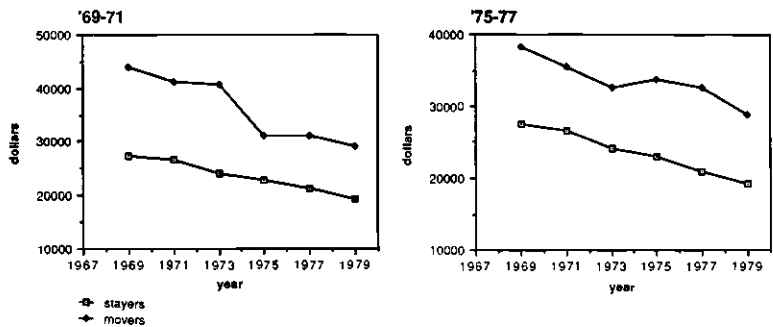
**Fig. 1.1a**

**Med. Home Equity, Movers and Stayers**



**Fig. 1.1b**

**Med. Eq. Wealth, Movers and Stayers**



**Fig. 1.1c**

**Table 1.16 OLS Estimates of Change in Housing Equity for Homeowners, All Intervals Combined\***

Variable	All Homeowners		Addition for Movers	
	Coefficient	Standard Error	Coefficient	Standard Error
<i>Age at Beginning of Period</i>				
58	—	—	—	—
59	-491	833	187	3,669
60	261	612	1773	2,565
61	-1	629	-2,772	2,550
62	-33	511	1,123	2,095
63	-600	527	5,841	2,236
64	329	514	554	2,088
65	-601	533	161	2,237
66	-289	1,093	4,182	4,912
67	1,147	841	-5,060	4,110
68	567	734	-2,509	3,521
69	635	752	4,954	3,783
70	673	1,065	-1,189	5,240
71	-1,675	1,092	-2,076	5,467
<i>Year at Beginning of Period</i>				
1969	—	—	—	—
1971	446	384	1,698	1,590
1973	-1,651	341	-3,534	1,437
1975	1,222	410	274	1,838
1977	1,365	552	-440	2,609
<i>Home Equity–Income Quartile</i>				
low–low	966	491	4,683	2,299
low–2nd	1,750	557	5,219	2,473
low–3rd	3,593	692	5,393	2,872
low–4th	6,182	1,033	8,396	3,211
2nd–low	5	598	3,007	2,781
2nd–2nd	145	571	2,683	2,526
2nd–3rd	1,560	579	1,381	2,783
2nd–4th	1,384	718	9,375	2,821
3rd–low	-1,087	671	2,114	3,154
3rd–2nd	-870	561	1,916	2,566
3rd–3rd	-396	516	-4,236	2,360
3rd–4th	1,374	565	4,218	2,376
4th–low	-6,005	813	-16,377	2,885
4th–2nd	-3,616	667	-13,790	3,160
4th–3rd	-2,742	604	-949	2,324
4th–4th	—	—	—	—
<i>Retirement Status</i>				
no → no	—	—	—	—
yes → no	278	665	-2,535	2,487

(continued)

Table 1.16 (continued)

Variable	All Homeowners		Addition for Movers	
	Coefficient	Standard Error	Coefficient	Standard Error
no → yes	-257	370	-425	1,353
yes → yes	-189	312	2,084	1,206
<i>Family Status</i>				
single → single <sup>b</sup>	—	—	—	—
married → married	1,834	334	-1,025	1,149
married → widowed	1,149	683	-3,577	2,279
other change	-4,249	939	9,251	2,401
<i>Health Status</i>				
same	—	—	—	—
better	18	301	1,087	1,184
worse	-592	247	-1,005	1,062
<i>Children</i>				
no	—	—	—	—
yes	463	195	-3,172	855
Intercept	—	—	—	—
Number of observations = 21,224				

<sup>a</sup>The standard errors have not been adjusted for repeated observations for the same person.

<sup>b</sup>Includes single to single, divorced to divorced, and widowed to widowed.

between the change in housing equity, on the one hand, and initial income versus housing equity, on the other.

Because of reporting errors, there is a tendency for those who report an unusually high level of income or home equity in one survey year to report a lower level in the next. In other words, errors in variables create a regression toward the mean. To correct for this, we estimate the change in housing equity for all homeowners, identifying separately those who move. Thus, for example, the estimated reduction in home equity for families who move and who report low income and high home equity in the first year of a two-year interval is the difference between the reduction for movers and the reduction for stayers; the regression toward the mean is netted out. The *mean* change in home equity for movers is shown in table 1.17.

Families with low income and high housing wealth reduce housing equity when they move. On the other hand, families with high income and low housing wealth, increase equity substantially at the time of the move. Overall, movers are as likely to increase as to decrease housing equity.

Homeowners apparently do not typically move to withdraw wealth from housing. They do not, in general, move to relieve a liquidity

**Table 1.17** Mean Change in Home Equity for Movers, by Income and Home Equity

Income	Housing Equity Quartile			
	Low	2nd	3rd	4th
Low	\$4,683	\$3,007	\$2,114	-\$16,377
2nd	5,219	2,683	1,916	-13,790
3rd	5,393	1,381	-4,236	-9,479
4th	8,396	9,375	4,218	-4,503

constraint, although some apparently do. Indeed, there is a somewhat greater tendency for moves to be associated with high-income elderly who want to spend more on housing than with low-income families with high housing wealth who want to withdraw wealth from housing.

Like the housing equity of stayers, the equity of movers tends to increase from year to year before and after the move. Of course, the increase in home value in the absence of a move reflects the economy-wide trend in housing prices over the period of the RHS, not necessarily a conscious decision to increase saving through housing equity. The change at the time of a move presumably does reflect conscious intention. Nonhousing bequeathable wealth fell over time, usually more for movers than for stayers. In considering life-cycle theories of saving, housing equity is usually thought of jointly with other forms of saving, presumably to be consumed in old age. These data suggest that this view is not correct. Nonhousing bequeathable wealth is observed to fall with age. Most housing equity will apparently be left as a bequest, judging by the behavior of the RHS respondents through age 73.

This does not necessarily suggest that the reason housing equity is not consumed is in order to leave a bequest. Indeed the change in housing equity at the time of a sale by elderly persons without children is about the same as the change for those with children. Housing equity increases for about half of movers in each group. The same is true for the market value of housing. There is some evidence that nonhousing bequeathable wealth falls less for movers with children than for those without children. The differences are not substantial however. This suggests that the elderly may well be attached to their homes for reasons other than or in addition to the bequest motive.<sup>15</sup>

### 1.3.2 Moving and Rent

The rent of stayers typically declines over time, as shown in table 1.18. On the other hand, the median rent of movers usually increases. The initial rent of movers and stayers is about the same. An alternative description of the data is presented in appendix table 1.C. Like comparable tables for owners, it distinguishes movers and stayers in each

**Table 1.18** Median Rent, by Stay versus Move and by Year, Adjacent Year Renters<sup>a</sup>

Year and Measure	Stay	Move
Median, 1969	\$ 140	\$ 132
Median, 1971	134	134
Median Change	-4.69	1.07
% Change > 0	0.34	0.51
Median, 1971	134	131
Median, 1973	131	139
Median Change	-6.36	5.89
% Change > 0	0.34	0.58
Median, 1973	131	136
Median, 1975	121	135
Median Change	-15.66	-8.00
% Change > 0	0.15	0.42
Median, 1975	121	121
Median, 1977	120	139
Median Change	-4.66	4.77
% Change > 0	0.35	0.56
Median, 1977	132	132
Median, 1979	120	125
Median Change	-10.60	-1.54
% Change > 0	0.21	0.48

<sup>a</sup>All figures are in 1979 dollars. Sample: All renters in adjacent surveys.

two-year interval, but it also shows rents in each of the other years of the RHS as well. The respondents used in this table rented in each of the years. Median rents are graphed in figure 1.2. Those who do not move have declining rents. Thus there appears to be a substantial benefit to remaining in the same rental unit. Rent increases of stayers do not keep up with the rate of inflation. Indeed this apparent rent advantage to continuing renters may provide an incentive not to move.

The rent of movers increases at the time of the move, but typically declines in other years, reflecting the lower price faced by sitting tenants. For example, the rents of those who moved between 1971 and 1973 declined somewhat between 1969 and 1971, then increased sharply at the time of the move, and declined thereafter. Of course, both the movers and stayers in the 1969-71 period could have moved in subsequent or in earlier years.

### 1.3.3 User Cost

User cost provides a measure that is comparable for both owners and renters. It includes rent, mortgage payments, heat, electricity, gas, water, and trash removal. The change in user cost by tenure and move

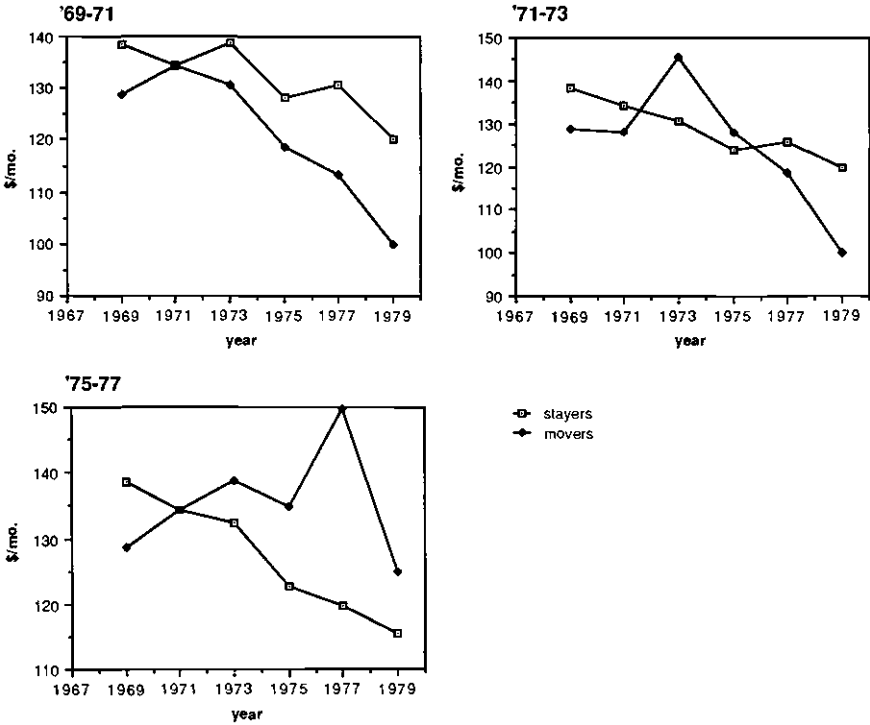


Fig. 1.2

type is shown in table 1.19.<sup>16</sup> The median change in the user cost of movers who own in both years is typically small and close to the change for nonmovers. Consistent with the rent data in section 1.3.2, the change in user cost for renters who move is usually positive and is always greater than the change for stayers. The median increase in user cost for those who move from owner-occupied to rental housing is in the neighborhood of \$800 per year. Between 60 and 70 percent of the increases are positive for this group. The median change for those who move from rental to owner-occupied housing is negative in each interval, but much smaller than the increase for those who make the reverse move. Positive changes are almost as likely as negative ones.

User cost in each year of the survey is shown in figure 1.3 by move status in selected two-year intervals. It is easy to see that median user cost increases at the time of the move. In most other years user cost declined for both movers and stayers. Again, it is important to keep in mind that members of either group could have moved or stayed in intervals other than the one used for classification.



Table 1.19 Annual User Cost by Tenure Change<sup>a</sup>

Year and Measure	Own to Own		Rent to Rent		Own to Rent	Rent to Own
	Stay	Move	Stay	Move	Move	Move
Median, 1969	\$ 931	\$1,188	\$1,663	\$1,616	\$1,544	\$1,901
Median, 1971	1,577	1,574	1,936	1,936	2,217	1,523
Median Change	655	551	284	351	872	-167
% Change > 0	0.81	0.63	0.77	0.68	0.68	0.46
Median, 1971	1,542	1,642	1,905	1,799	1,692	2,194
Median, 1973	1,512	1,397	1,849	1,862	2,801	2,107
Median Change	-13	-26	-74	21	715	-93
% Change > 0	0.47	0.47	0.38	0.52	0.59	0.48
Median, 1973	1,506	1,716	1,882	1,888	2,042	1,895
Median, 1975	1,485	1,738	1,780	1,904	3,149	1,653
Median Change	-73	3	-152	-53	949	-39
% Change > 0	0.42	0.50	0.29	0.47	0.66	0.48
Median, 1975	1,462	1,605	1,813	1,767	1,749	2,239
Median, 1977	1,492	1,738	1,803	1,869	2,381	1,885
Median Change	39	50	-28	53	758	-406
% Change > 0	0.56	0.52	0.44	0.54	0.67	0.46
Median, 1977	1,484	1,702	1,869	1,928	2,060	2,300
Median, 1979	1,400	1,676	1,764	1,937	2,492	2,084
Median Change	-98	-55	-129	-32	550	-321
% Change > 0	0.39	0.45	0.28	0.46	0.64	0.40

<sup>a</sup>All figures are in 1979 dollars. Sample: Families in the sample in adjacent years.

#### 1.4 Summary and Conclusions

We have described the relationships between family attributes and moving and between moving and change in housing wealth. Moving is often associated with retirement and with precipitating shocks, such as the death of a spouse or by other changes in family status. Median housing wealth increases as the elderly age. Even when the elderly move, housing equity is as likely to increase as to decrease. (Although the RHS only follows persons through age 73, Garber [ch. 9, in this volume] reports no decline [in fact an increase] from age 70 through age 95 for noninstitutionalized households, based on the National Long-Term Care Survey.) The user cost of housing typically increases for both homeowners and renters when they move. Holding other attributes constant, families with high income and low housing wealth are as likely to move as those with low incomes and high housing wealth. The median housing equity of families in the first group increases when they move and the median of the second group decreases. Thus, the typical mover is not liquidity constrained, although apparently some are. High transaction costs associated with moving are apparently not

Med. User Cost, Movers and Stayers

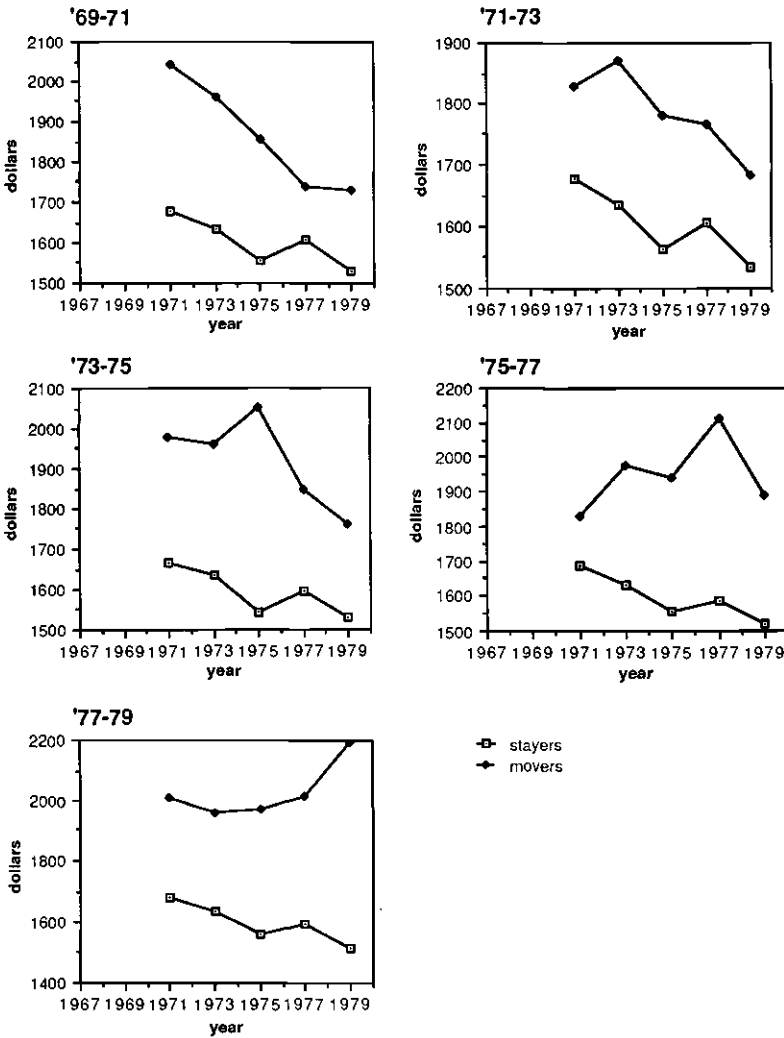


Fig. 1.3

the cause of the increase in housing wealth as the elderly age. Apparently, the absence of a well-developed market for reverse mortgages may be explained by a lack of demand for these financial instruments. The evidence suggests that the typical elderly family does not wish to reduce housing wealth to increase current consumption. For whatever reason, there is apparently a considerable attachment among homeowners to their habitual housing.

While our analysis is based on quantitative data, the conclusions are also consistent with qualitative information from the RHS. When asked why they moved, only 9 to 14 percent of homeowners and 15 to 17 percent of renters indicated that the reason for moving was "to save money." Only 11 percent of homeowners and 12 percent of renters gave as a reason for *wanting* to move that they would like to "reduce cost and work of upkeep." Observed choices when moves were made confirm these stated preferences; indeed, saving money was not pervasive.

## Appendix

**Appendix  
Table 1.A**      **Percent That Move, by Change in Family Size,  
Tenure, and Interval**

Category	All	Owners <sup>a</sup>	Renters <sup>a</sup>
Δ in Household Size, 1969–71	23.2	11.9	44.0
No Δ in Household Size, 1969–71	11.6	6.7	24.6
Δ in Household Size, 1971–73	22.8	13.2	46.2
No Δ in Household Size, 1971–73	13.1	8.7	25.4
Δ in Household Size, 1973–75	23.5	14.0	42.9
No Δ in Household Size, 1973–75	11.5	7.8	21.6
Δ in Household Size, 1975–77	21.5	12.1	44.2
No Δ in Household Size, 1975–77	10.6	6.8	22.1
Δ in Household Size, 1977–79	20.5	12.1	40.5
No Δ in Household Size, 1977–79	9.2	6.4	17.3

<sup>a</sup>In base year.

**Appendix  
Table 1.B**      **Median Housing Value, Equity, and Nonhousing Bequeathable  
Wealth, by Stay versus Move and by Year, Continuous  
Homeowners\***

Year	Housing Value		Housing Equity		Bequeathable Wealth	
	Stay in * Years	Move in * Years	Stay in * Years	Move in * Years	Stay in * Years	Move in * Years
1969*	\$29,699	\$35,639	\$25,740	\$29,699	\$27,349	\$44,023
1971*	29,871	35,845	26,884	28,676	26,525	41,138
1973	32,667	40,017	28,094	32,667	24,097	40,709
1975	31,019	40,459	26,973	33,716	22,927	31,009
1977	32,939	38,330	29,945	35,934	21,261	31,168
1979	35,000	40,000	35,000	40,000	19,408	29,230
1969	29,699	31,679	25,740	25,740	27,920	30,274
1971*	30,244	31,364	26,884	26,884	26,834	30,729
1973*	32,667	32,667	28,584	26,134	24,488	27,442
1975	32,367	32,367	27,160	26,973	23,148	27,647
1977	33,538	33,538	29,945	29,945	21,422	24,126
1979	35,000	35,000	35,000	33,000	19,358	23,684
1969	29,699	31,679	25,740	25,938	27,349	36,801
1971	29,572	35,845	26,884	28,497	26,525	34,607
1973*	32,667	32,667	28,584	28,584	24,052	31,690
1975*	32,199	33,716	26,973	26,973	22,627	36,303
1977	33,538	35,634	29,945	29,945	20,898	29,284
1979	35,000	37,500	35,000	35,000	19,210	27,309
1969	29,699	30,491	25,740	27,719	27,502	38,379
1971	29,572	32,261	26,884	28,676	26,601	35,439
1973	32,667	36,524	27,767	31,034	24,147	32,626
1975*	31,019	33,716	26,973	32,367	22,927	33,716
1977*	33,538	35,934	29,945	29,945	20,898	32,684
1979	35,000	39,418	35,000	35,000	19,280	28,937
1969	29,699	33,659	25,740	27,125	27,309	45,206
1971	29,572	33,157	26,884	28,676	26,443	42,949
1973	32,667	32,667	28,003	30,707	23,948	38,710
1975	31,732	35,065	26,973	31,019	22,859	37,897
1977*	32,939	35,934	29,945	35,934	20,898	36,373
1979*	35,000	40,000	35,000	35,000	19,020	40,090

\*All figures are in 1979 dollars.

**Appendix**                      **Median Rent, by Stay versus Move and by Year,**  
**Table 1.C**                      **Continuous Renters<sup>a</sup>**

Year	Stay in * Years	Move in * Years
1969*	\$139	\$129
1971*	134	134
1973	139	131
1975	128	119
1977	131	113
1979	120	100
1969	139	129
1971*	134	128
1973*	131	145
1975	124	128
1977	126	119
1979	120	100
1969	139	137
1971	134	134
1973*	131	146
1975*	121	148
1977	120	134
1979	110	127
1969	139	129
1971	134	134
1973	132	139
1975*	123	135
1977*	120	150
1979	116	125
1969	139	139
1971	134	131
1973	136	131
1975	128	115
1977*	126	120
1979*	115	125

<sup>a</sup>All figures are in 1979 dollars.

**Appendix  
Table 1.D**      **Median User Cost by Stay versus Move, by Classification  
Interval, All Owners and Renters<sup>a</sup>**

Year	Stay in * Years	Move in * Years
1969*	\$1,138	\$1,663
1971*	1,678	2,043
1973	1,633	1,960
1975	1,558	1,857
1977	1,610	1,739
1979	1,530	1,730
1969	1,129	1,544
1971*	1,678	1,828
1973*	1,633	1,870
1975	1,564	1,780
1977	1,607	1,707
1979	1,533	1,682
1969	1,142	1,544
1971	1,667	1,979
1973*	1,633	1,960
1975*	1,544	2,051
1977	1,594	1,847
1979	1,529	1,760
1969	1,152	1,544
1971	1,690	1,828
1973	1,633	1,976
1975*	1,554	1,941
1977*	1,588	2,113
1979	1,522	1,892
1969	1,142	1,782
1971	1,678	2,011
1973	1,633	1,960
1975	1,562	1,969
1977*	1,594	2,016
1979*	1,513	2,196

<sup>a</sup>All figures are in 1979 dollars.

## Notes

1. There may, of course, be response and coding errors in the data, and they may be concentrated among respondents reported to be in the "other" category.

2. According to the 1973 AHS, 23 percent of owners with heads aged 62 to 64 who moved changed to renting; 32 percent of renters who moved changed to owning. Of those aged 65 and older, the percentages were 39 and 15, respectively (see U.S. Department of Housing and Urban Development [1979], table a-7). Excluding the "other" category, apparently making the data more comparable with the AHS, the percentages by age based on the RHS are as follows:

<u>Age</u>	<u>Own→Rent</u>	<u>Rent→Own</u>
62	17.5	25.1
63	23.0	21.9
64	16.6	28.2
65	20.0	21.4
66	25.8	17.9
67	19.1	19.0
68	28.1	12.2
69	19.6	9.5
70	31.6	11.3
71	25.9	20.0

Although the RHS samples families and the AHS samples structures, the data from the two surveys do not appear to be inconsistent.

3. The "same state" percentages in the tabulation exclude the "same city."

4. Income includes wages, capital income, pension income, and Social Security income. The income quartiles are: <\$5,400; \$5,400–\$10,651; \$10,651–\$17,902; and \$17,902+. The housing equity quartiles are: <\$16,334; \$16,334–\$27,767; \$27,767–\$45,407; and \$45,407+. The nonhousing wealth quartiles are: <\$64,254; \$64,254–\$101,599; \$101,599–\$152,731; and \$152,731+.

5. Respondents are defined as being retired if they report that they are retired or that they are partially retired but are neither working nor looking for work.

6. In the beginning of the ten-year RHS period, most of those who do not retire during a two-year interval are still working, while by the end of the period most who do not retire are already retired. The data in table 1.7 show that the probability of moving is about the same for both groups, judging from the percentages in the 1969–71 and 1977–79 intervals, for example—6.7 and 7.2, respectively.

7. To the extent that this progressive selection of stayers versus movers is important, a more formal analysis should account for it. It must also recognize that persons are observed in mid-tenure at the beginning of the survey: some have moved recently, while others have been in the same dwelling for many years, sometimes referred to as left censoring.

8. Strictly speaking, this is only true if a move is "nonabsorbing." In our case it is absorbing. The probit estimates, however, provide accurate descriptions of the hazard rates over the two-year intervals. See, for example, Hausman and Wise (1985).

9. See Cox and Miller (1965).

10. Other studies also report substantial increases in mobility associated with these demographic shocks. See Feinstein and McFadden (ch. 2, in this volume) who report the effects of both retirement and changes in family composition, and Merrill (1984) who reports the effects of retirement, also based on the RHS.

11. In addition, housing value and other wealth measures have been imputed when they are missing. To the extent that this introduces error in the measurements used here, the error should be less for bequeathable wealth, which is composed of several individually reported categories. We also calculated the change in the housing equity and housing value of movers based only on the reported values of those who responded to the relevant questions. The results were virtually the same as those obtained using imputations for the missing values. We are indebted to Michael Hurd for putting together a very complete and detailed asset tape from the RHS original data.

12. Merrill (1984) used only families in the sample in both 1969 and 1977.

13. The analysis based on adjacent survey years indicates the opposite.

14. An apparent anomaly in the data is that among the few homeowners who are reported to move to rental housing, there is no appreciable increase in nonhousing bequeathable wealth, although the medians are positive. Indeed, the sum of the change in housing wealth and the change in nonhousing bequeathable wealth is negative, at the median, for this group. In part, the moves are associated with the death of a husband, and we know from Hurd and Wise (ch. 6, in this volume) that substantial wealth is lost at the death of the husband. In addition, some wealth may be transferred to children. Symmetrically, there is an increase in the reported sum of the changes in these two categories among families who move from renting to owning. We have been unable to find a complete explanation.

15. See similar evidence in Hurd (1986) that pertains to nonhousing bequeathable wealth. On the surface at least, this evidence appears to be inconsistent with Bernheim, Shleifer, and Summers (1985).

16. Because of a change in the wording of some of the survey questions used to calculate user cost, the 1969 data are inconsistent with data for subsequent years. For this reason 1969 figures are deleted from the graphs in figure 1.3.

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## Comment James M. Poterba

Two issues have guided recent policy debates about housing and the elderly. The first concerns the higher incidence of substandard housing among elderly households than the population at large. The second concern, and the motivation for the current paper, is the possibility that some elderly households with low incomes have significant housing but they cannot use it to finance current consumption because of capital market imperfections. The existence of such households may justify government programs to promote or to provide home equity loans.

In this paper, Venti and Wise uncover a variety of stylized facts about the housing behavior of the elderly, particularly regarding financial matters. Their findings provide a useful background for policy discussions on both reverse annuity mortgages and home equity loans. Most of the chapter is devoted to an exploratory data analysis of the housing choices of elderly households in the Retirement History Survey (RHS). Related tabulations are reported in Merrill (1984). The most important finding is that reverse-annuity mortgages are of limited value

as a policy tool for helping the indigent elderly, because most low-income elderly households have relatively little housing equity.

I agree with the majority of the conclusions drawn by the authors, but I am skeptical of three of their findings. My reservations, which arise principally from limitations of the RHS data set and not from the analysis, are detailed below.

1. *Tenure switching by elderly households.* Venti and Wise tabulate the probabilities of tenure transitions, conditional upon a move, and find relatively little evidence for movement from owner-occupation to rental accommodation. Their results, aggregating the "Rent" and "Other" categories from their table on page 12, are shown below:

Previous Tenure	New Tenure	
	Own	Rent
Own	0.78	0.22
Rent	0.17	0.83.

A panel data set like the RHS is subject to attrition bias (nearly 20 percent of the sample households were lost between 1969 and 1979). Households that move, especially those that move significant distances, are particularly likely to disappear from the survey. The resulting oversampling of stayers and short distance movers, as well as the other sampling biases induced by data "cleaning" procedures that further reduce the sample size, may make the RHS sample unrepresentative of the elderly population at large.

These biases are difficult to evaluate. One natural check is to compare the RHS results with those from other cross-sectional household surveys. Tabulations from the 1973 Annual Housing Survey (AHS), reported in U.S. Department of Housing and Urban Development (1979, table A-7), indicate that owner-occupants aged 65+ who move are much more likely to switch to rental accommodations than the RHS data suggest. The AHS data are shown below:

Previous Tenure	New Tenure	
	Own	Rent
Own	0.61	0.39
Rent	0.15	0.85

The conditional probability that owners switch tenures given that they move ( $\hat{P}_{OR}$ ) is twice as large as in the Venti-Wise data.

The two sets of transition probabilities may not be directly comparable however. The AHS estimates are transition rates over a one-year time span, while those from the RHS are necessarily separated by two

years. This should not matter a great deal if most individuals experience at most one housing transition every few years. If elderly households tend to move from one area to another, however, and rent for a brief period after arriving in the new location until they find a suitable house for purchase, then the one- and two-year transition rates may show radically different patterns. This view implies that the one-year mobility rate should show a much greater propensity to enter the rental tenure than the longer-horizon transition rates. Further noncomparabilities arise because the RHS asks respondents only about their current behavior, while the AHS asks about behavior over a twelve-month period. Finally, the RHS respondents are younger than those covered by the AHS table, and the AHS data suggest that the conditional probability of tenure switching rises after age 65.

Data sets other than the 1973 AHS also suggest that the RHS results are unusual. Feinstein and McFadden (ch. 2, in this volume) estimated tenure transition rates in the Panel Survey of Income Dynamics and found  $\hat{P}_{OR} = 0.373$ , compared to 0.39 in the AHS and 0.22 in the RHS. Stahl's (ch. 3, in this volume) analysis of the Annual Housing Surveys for the 1970s and early 1980s also shows lower values of this probability and also indicates a trend with age. For 60 to 64 years olds,  $\hat{P}_{OR} = 0.35$ . For those ten years older, however,  $\hat{P}_{OR} = 0.65$ . This evidence suggests that the Venti-Wise estimates of tenure transition rates may understate tenure changes toward renting, but it does not dispute the general point that the incidence of all types of moves is very low for elderly households.

2. *The slope of the age-moving hazard.* The second aspect of behavior which the paper may not adequately capture is the age trajectory of the probability of moving. The authors conclude that moving rates exhibit little if any tendency to decline with age. This conclusion is limited, however, to the "young elderly" who appear in the RHS sample. The survey provides a detailed record of the housing choices of individuals in their sixties. Only one sample wave, 1979, includes a significant fraction of individuals in their seventies. Much of the policy concern, however, centers on the housing choices of the "extreme aged," those aged 80 and above, and on the mobility patterns of households in their seventies.

The limited evidence on mobility rates based on Census and other surveys suggests a decline after age 75. The U.S. Department of Commerce, Bureau of the Census (1979) calculated mobility rates for different age groups and found a falling mobility rate with age:

<u>Age Group</u>	<u>Moving Rate (3-Year horizon)</u>
55-64	0.059
65-74	0.049
75 +	0.041

The unconditional probability of moving declines by 50 percent between age 55 and age 75. Other survey evidence also bolsters the declining hazard view. Feinstein and McFadden (ch. 2) report that the moving hazard rate declines from age 55 to age 72, but turns up thereafter, and Stahl (ch. 3) finds a declining hazard over most age ranges.

3. *Downsizing decisions by elderly homeowners.* The most striking finding in this paper is that elderly homeowners do not reduce their housing equity when they move. The conclusion that those who do not move accumulate rather than decumulate equity is not surprising, especially given the rapid increase in real home prices during the 1970s. The finding that movers do not reduce their equity is more troubling. One could construct explanations of why movers might not experience changes in liquid assets. They may change tenures without selling their original house, or they may move to a new rental unit while their home is still on the market. Still other explanations could explain the small increase in liquid assets for movers. They may give the proceeds to their children, or they may transfer the entire house to a charity or another beneficiary. Medical emergencies may catalyze the decision to move and also place heavy financial burdens on the household, leading to a small net change in financial status. If this finding proves robust when examined using other data sets, it will constitute an important puzzle to be explained in future research on the economic behavior of the elderly.

Inferences about the trajectory of housing equity among elderly homeowners must be viewed with caution however. Some findings, such as the tendency of households that move within the owning tenure to increase their housing equity, may be due to data limitations rather than economic decisions. My skepticism arises in part from the rapid change in real house prices that occurred during the RHS sample period. The following table shows the percentage changes in the Census Bureau's "constant quality" new house price index divided by the GNP deflator between the second quarter of various RHS sample years:

<i>Years</i>	<i>Real House Price Change</i>
1969-71	- 3.3%
1971-73	+ 3.9%
1973-75	+ 1.5%
1975-77	+ 7.1%
1977-79	+ 13.5%

Near the end of the sample, when the chances of downsizing should have been greatest, rapid real house price increases may confound the analysis.

Elderly homeowners may misperceive the value of their houses. In a rising market, they may undervalue their homes by substantial amounts. Figure 1.4 shows how this can bias the estimated effects of moving on housing equity. In the years prior to its move, the household reports home values along the dotted segment, although the actual value of the house is growing along the solid segment. When the household moves, it learns that its home is in fact worth  $P_0$ , and decides to downsize to a home valued at  $P_1$ . Perceived home value after the transition continues to grow more slowly than true values. Because the survey data on home equity is based on self-reported housing values, however, the measured change in home equity between the survey dates 1 and 2 will show an increase when the household moved. In fact, the household reduced its housing consumption through the move. The difficulty in analyzing estimated asset values arises from the coincidence of behavioral changes, such as moving, and the arrival of information that eliminates measurement error.

It is difficult to gauge the importance of these biases. Validation studies of self-reported asset values find substantial error rates. Broida's (1962) study of auto purchases and auto loans, for example, showed that 18 percent of the respondents in a 1955 Federal Reserve Board

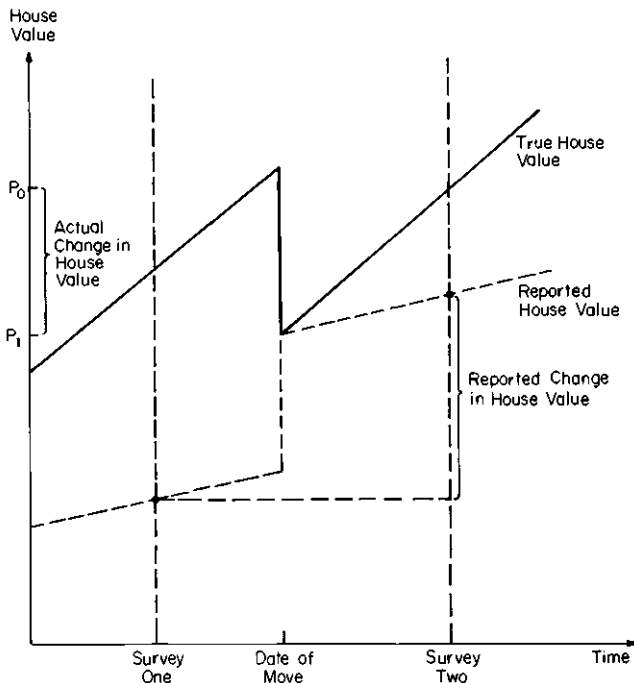


Fig. 1.4

Time paths of actual reported housing wealth

survey misreported their loan principal by more than 20 percent, while over a third made errors of more than 10 percent. I am not aware of any direct studies of the quality of housing data in wealth surveys. The bias of home equity changes is complicated by the tendency of households to undervalue their outstanding loans. An elderly homeowner who decides to sell his house may discover both that it is worth more than he thought and that he owes more than he thought. These biases suggest caution in interpreting results such as the absence of equity changes for homeowners who become renters.

Despite the three reservations just described, this paper provides a wealth of useful statistics on housing behavior by elderly households. In interpreting them, it is important to distinguish two questions: Why do elderly homeowners move so infrequently? Why do those homeowners with substantial equity stakes but low incomes fail to borrow against their houses to raise current consumption?

Many reasons could be advanced to explain elderly homeowners' reluctance to leave their homes. The transaction costs associated with moving are substantial, and for households with a relatively short time horizon, the present value of the gains from reoptimizing the housing bundle may be small. The tax code in force during the 1970s placed a sizeable capital gains tax burden on homeowners who realized accumulated gains on their homes; subsequent legislative changes have reduced this source of lock-in. Even the provisions of some welfare and medical assistance programs, which condition eligibility on non-housing wealth, may encourage elderly households to hold their wealth in the form of housing.

The greater puzzle is why households that have substantial accumulated equity in their homes, but low current income, do not seek ways to liquify their housing wealth. The available evidence on this question suggests that households (1) do not like to annuitize their houses and (2) are concerned about the bequests they leave. The results of the Buffalo Home Equity Loan Program, described in Weinrobe (1984), support models of bequest behavior such as those in Bernheim, Shleifer, and Summers (1985). The initial program in Buffalo permitted homeowners in low-income neighborhoods to obtain annuity payments collateralized by their house. The program was supported by a federal Community Development Block Grant, but despite substantial marketing and outreach efforts it did not command great interest among eligible homeowners. In a second stage of the program, households were allowed to apply for a single lump-sum payment instead of an annuity stream. Virtually all of the households that took advantage of the program after this choice was available opted for the single lump-sum payment. Although the actuarial value of the two plans has not yet been analyzed (Weinrobe 1984 is the most detailed discussion available), these results may suggest

that household demand for annuities is simply not very large. Related evidence is provided by the "property tax circuit-breaker" programs that have been enacted in various states. Some programs, such as Oregon's, provide interest-free loans to qualified elderly homeowners that permit them to defer their property taxes until they die or sell their homes. Despite the financial attraction of this offer, Bowman (1980) reports that only a few hundred homeowners in Oregon took advantage of the program.

My final comment on this paper concerns whether the results are likely to apply to the elderly households that retire in the late 1980s and early 1990s. The last five years have witnessed dramatic growth in second mortgages and reverse annuity mortgages of various types. These mortgage instruments have grown from an \$80 billion household liability at the beginning of 1982 to more than \$300 billion at the beginning of 1987. Data on the demographic characteristics of households using second mortgages are not yet available, but they are likely to include households relatively late in the life cycle with significant accumulated housing equity. If these households take on new mortgages, they will reduce still further the potential of policies targeted at helping elderly homeowners by unlocking home equity.

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