DEMOGRAPHY© Volume 24, Number 1 February 1987

CHANGING LIVING ARRANGEMENTS: A HAZARD MODEL OF TRANSITIONS AMONG HOUSEHOLD TYPES

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Consider the records of three people and their familial lives as tracked by the Michigan Panel Study of Income Dynamics (PSID) from 1968 to 1980:

The first is a 48-year-old white man who lives with his wife in 1968. No children or other relatives reside with them. In 1977 he is widowed and lives by himself until 1979, when at age 59, he marries again and establishes a home with his new wife.

The second is a 32-year-old black woman who is separated from her husband and maintains a home for her seven children. In 1977 her mother moves in and stays for two years. In 1979 her mother and three of her children leave and form another household. She stays in her own household with her other four children, the youngest being her 17-year-old son.

The third is a 71-year-old black man who heads a household that includes his wife and a six-year-old grandson. In 1974 he is widowed and continues living with his grandson for five years. In 1979 his daughter moves in with him. A second grandchild is added to the household in the following year.

Even this handful of cases drawn from 13 waves of the PSID[1] illustrates the important demographic factors associated with contemporary shifts in family and household structure: age, sex, race, marriage, divorce, remarriage, births, and deaths. Certain social preferences for living arrangements are also clear. In the varied cases just cited, household composition is a far more fluid and variable matter than it was when the "average American household" (apparently) consisted of father, mother, three or four children, and perhaps a grandmother.

Recent studies of household structure have underscored the transitory nature of several living arrangements, in particular single-parent households (Ross and Sawhill 1975; Hill 1983; Hofferth 1985b; Slesinger 1980; Smith 1980; McLanahan 1983) and extended-family households (Cherlin 1979; Cherlin and McCarthy 1983). The fluidity of household arrangements, sped by economic changes, amply justifies studying the transition events, their rates, and their differentials.

TOWARD A DYNAMIC MODEL OF HOUSEHOLD TRANSITIONS

This paper describes the results of a dynamic statistical model of people's movements among household types. Virtually no study has simultaneously examined the full variety of household types from which individuals may choose, the transitions among these arrangements, and how long individuals spend in a given household type. Methodological interest is on the rise in transforming the current static perspective on household types to a focus on temporal patterns and movement among household types (e.g., McMillen and Herriot 1984; Espenshade and Braun 1982; Teachman 1982; Slesinger 1980). Our aim is to develop a unified strategy that allows for movement from any household type to any other and incorporates the dynamic aspects of these changes. A study of individuals' movements across a full range of household types with longitudinal data can help set the stage for future, more refined analyses of household dynamics. Tsui and White (1986) examined the specific transitions persons make; we extend their work by explicitly taking account of the time pattern of movement and the influence of covariates on that pattern.

Among the available and promising statistical approaches for studying life-course transition are life tables with covariates, generally referred to as hazard models (e.g., Menken et al. 1981; Tuma, Hannan, and Groeneveld 1979; Teachman 1982; Heckman and Singer 1984). Using this approach and data on about 10,000 PSID respondents who began in 1968 and were still in the Panel in 1980, we analyze patterns and determinants of annual changes in their household types. Each person's shifts are classified according to origin and destination types, and their risks of moving among six household types in the 13-year period are compared. We account for the covarying effects of a simple set of demographic characteristics of individuals and aspects of household resources.

Household Transitions

Many of the transitions we study result from common vital events (such as marriage, birth, and divorce), but we are interested in these events only in the context of the changes in household type that follow in their wake. Many of those changes are not due to a vital event at all but, instead, are due to people moving into and out of a household, thereby altering its structure, with the transition types depending on their relation to others in the household. In many cases, several mechanisms can lead to the same observed transition. The purpose of this paper is to analyze the transitions and the resulting changes in household status, not the variety of mechanisms that may produce the observed distribution of households.

An example of a transition that changes the household type is a nuclear family that is joined by a grandmother who previously lived alone. All members of that family thereupon make the transition from nuclear family to other family; the grandmother has made the transition from living alone to other family. An example of a family addition that does not cause a transition is a birth to a couple who already have one or more children: The family remains nuclear. A more complex set of changes may follow a divorce in a nuclear family. Many combinations of new living arrangements are possible and all members of the household will experience a transition. The father may live alone. The mother (and the children who go with her) may form a single-parent household. Older children may move into shared quarters with other young adults (other nonfamily).

It is important to recall that influences on cross-sectional variation do not *necessarily* translate into dynamic influences. We anticipate that increasing age will decrease the hazard in most instances. The household instability among blacks that we infer from cross-sectional analyses and vital events will translate into lower rates of movement into and higher rates of movement out of the traditional nuclear family. Finally, we expect the effects of age to be particular to the individual origin–destination pair. We also expect that net of other effects, household income will operate to reduce family instability (e.g., lower the hazard for movement out of the nuclear family) and raise the hazard of moving out of single-person households.

The following basic questions are addressed: Into which and from which household types do individuals move most often? Have such transitions increased or decreased over the period of observation? How do household resources, both in economic and kin-support terms, affect the shifts? We expect the study to shed light on normative preferences for and stability of particular living arrangements, especially familial ones. In particular, the nature and extent of movement between household types should reflect contemporary patterns in familial organization over this period and residential life styles over the life cycle.

RECENT TRENDS AND DETERMINANTS OF HOUSEHOLD STRUCTURE

Two major trends in the last 20 years have been the proliferation of households and the decline in their average size (Kobrin 1976; Masnick and Bane 1980). There were 16.3 million more households in the U.S. in 1980 than in 1970 (Sweet 1984) and another 4.6 million households were added by 1984 (U.S. Bureau of Census 1984). As that number grew, the mean number of persons in a household dropped from 3.14 to 2.71 in 1984. The household structures that have attracted the greatest research interest are those occupied by lone adults and single parents, the latter households usually being headed by a female. The decline in the proportion of intact married-couple households, especially those with young children (see Hofferth 1985a; Cherlin and McCarthy 1983), and the sharp upswing in the numbers of children experiencing life in single-parent households have been viewed as evidence of growing familial and social disorganization.

Competing explanations have centered on the basic question of whether the living arrangement is a voluntary or involuntary choice. From an economic perspective, income resources have a major association but not a clear determining role. Michael, Fuchs, and Scott (1980) pinpointed rising personal income as a major determinant of lone living; Pampel (1983) agreed but contended that privacy norms may be more important. It is less clear how household resources influence the choice of other types of living arrangements. Finally, sociologists' life-course perspective views the probability of individuals' occupying various living arrangements as centrally related to life-cycle stage. Single-person households are commonplace among young adults and the elderly; family living typifies the middle years of life across a range of child and spouse configurations (Sweet 1984; Glick 1984); and a childless household maintained by a couple or widowed person living alone characterizes the later years of life. There is now evidence that young adults move away from their parental homes at earlier ages and that this may erode their orientation to traditional family living, that there is a decline in the preference for marriage (Goldscheider and Waite 1986; Waite, Goldscheider, and Witsberger 1986.)

APPROACH, DATA, AND METHODS

The PSID is a longitudinal study of individuals and their families (households) in which they reside. It began in 1968 with approximately 5,000 families containing approximately 18,000 members representative of the U.S. population. By 1980 the 13 annual waves had accumulated and the sample size had grown to over 20,000 people in about 6,500 family units. When weighted the PSID closely replicates frequency distributions in other national samples for a variety of characteristics [Institute for Social Research (ISR) 1984].

The structure of the PSID is well suited to the study of transitions. In general the data furnish more extensive information for the head and aggregate family unit (household) than for other household members. Household-level information (including that for the head) is, however, appended to the individual's record. We use observations on only about 10,000 people who began the Panel in 1968 and were followed until 1980.[2] For each successive year, we observe whether the household type is the same or different for each individual. We can then identify the time spent in a household type as a *spell* and the change from one type to another as a *transition*. The spell is our unit of analysis and is characterized by its household type of origin and destination and its duration. The multivariate hazard model chosen has multiple origins and destinations and includes a simple set of measured covariates that describe demographic characteristics and the household's income resources.

Households are difficult to follow over time in any data set. They both merge and divide, and dates of "birth" and "death" are hard to assign (McMillen and Herriot 1984). People are easier: Individuals can be followed from year to year, even if they split off from the stem family. In the PSID every survey wave collects information about each respondent's characteristics and usually those of his or her coresidents, so it is possible to determine the type of household an individual lives in at each point in time (or survey date), whether that household differs from the one preceding or following, and consequently, the duration of the spell in each type.

The 10,000 respondents generated approximately 30,000 spells over our 13-year span—an average of 3 each. In the present scheme, people who began the Panel in large households in 1968 tended to contribute more spells than those from small households. As usual, averages conceal a great deal of variation: some large households consisted of stable nuclear families that contributed a few rather long spells; others, composed of other related or unrelated persons, were comparatively rare in the cross section but tended to form, break up, and regroup readily, thereby producing numerous spells—an advantage for statistical analysis.

Household Type Classification

We use a sixfold classification that enables us to conform approximately to the Census Bureau scheme but deemphasizes marital-status and number-of-children attributes: *Family households*—couple only (Couple), nuclear family (nuclear), single parent (single parent), and other family (other family); *Nonfamily households*—lone adult (alone) and other (other nonfamily). The PSID "household unit," as we define it, is the nearest equivalent to the Census Bureau "household," although the PSID terminology tends to use "family" for household.

People living alone are necessarily household heads. Couple-only households consist of married adults who share the unit with no others.[3] Nuclear households consist of a couple and their children. Single-parent households contain a currently unmarried adult head and his or her children. The final two household types are the most difficult to classify clearly. "Other family" households include at least one person who is related to members of the household but is not a spouse or "own child." Cousins, uncles, aunts, and three-generation families are examples. Generally these can be considered extended or nonnuclear families. "Other nonfamily" households contain no related persons but at least one unrelated (secondary) person. Most of these are roommate situations of varying degrees of attachment.

Covariates

We settled on three demographic variables that strongly differentiate household types in cross-sectional analysis: Age (less than 20, 20–29, 30–39, 40–49, 50 and older); race (nonblack vs. black); and sex. We measured all three of these variables at the start of the spell and treat them as fixed covariates (a proportional hazards model).

Household income—income from all members from all sources—captures the aggregate resources available to the individual and will differentiate levels of socioeconomic status for the residential unit. We anticipate that lower levels of well-being will foster instability in each household type; that is, in our analysis of spells, we should observe higher hazard rates for members of low-income households. (At one point in our analysis, we also included extent of labor force participation—annual hours worked by the individual—as a measure of the household member's self-sufficiency, but we later dropped it because it added little in the models we estimated.)

Economic variables of the PSID can be treated as time-varying covariates; that is, they are observed at one-year intervals in the PSID and can influence the probability of transition in each year. In this case, we need not assume a proportional model and we can allow different values of income as well as different effects of income at each duration. Although we tested these more elaborate models using information on both the individual's and the household's resources at each point, our final choice was a proportional model that uses only information on household income.[4] In every case, the variable included in the analysis of a given year-long interval is measured for the calendar year prior to the start of the interval. In this way, we can be sure that the measured variable precedes the transition; for example, income for calendar year 1975 is used to predict the hazard for the March to March period of 1976–1977.

The Statistical Model

For each household type of origin, movement into any of the remaining five household types is treated as a set of competing risks. The risk of transition is also allowed to vary as a function of duration in the initial household. Since the risk also depends on a set of measured covariates, the statistical approach used is the hazard model with covariates and multiple origins and destinations.

Initial descriptive work is carried out by using the simple model without covariates:

$$h_{ij}(t) = \exp[\alpha_{ij}(t)], \tag{1}$$

where $i, j = 1, \ldots, 6$ index the six household types used; t measures time since the start of the spell; $h_{ij}(t)$ is the risk of moving from household type i to household type j at duration t; and $\alpha_{ij}(t)$ are the parameters to be estimated.

The PSID's structure allows us to observe changes in household type only at discrete points in time one year apart. We therefore define $h_{ij}(t)$ as a step function with six steps and jumps at one, two, three, four, and five years. (Transitions that occur after five years in a spell are grouped together because so few occur at these long durations.) Covariates are then added to the descriptive model in the proportional hazards model:

$$h_{ij}(t) = \exp[\alpha_{ij}(t) + \beta_{ij}X], \tag{2}$$

where $i, j, t, h_{ij}(t)$, and α_{ij} are as before; X is a set of covariates measured at the start of the spell; and β_{ij} is a vector of parameters to be estimated, associated with X.

In equation (2) the covariates measured at the start of the spell simply shift the risk up or down in a manner that does not depend on the time elapsed since the start of the spell.[5]

The six household types used generate a 6×6 transition matrix, of which the 30 cells involving a change in household type are estimated. (The six diagonal cells represent the cases for which no change is observed during the sample period—right-censored cases.) The addition of six time steps produces 180 transition cells.

Table 1.—Distribution of spells begun since 1968 by household type of origin and of destination as a proportion of origin

Origin household type	Destination household type							
	Alone	Couple	Nuclear	Single parent	Other family	Other non-family	No change	Number of observations
Alone	--	.2383	.0789	.0275	.0581	.0707	.5266	2598
Couple	.1189	--	.2908	.0039	.1057	.0058	.4749	2963
Nuclear	.0574	.0380	--	.1150	.1667	.0381	.5847	4475
Single parent	.0661	.0294	.2969	--	.2806	.0825	.3145	2984
Other family	.1266	.2860	.1978	.0642	--	.0253	.3000	5718
Other nonfamily	.0873	.1451	.3231	.1210	.0711	--	.2524	1122

Note: Spells with no change are right-censored.

Source: Panel Study of Income Dynamics Wave XIII, 1980 (documentation Institute for Social Research, University of Michigan, 1981).

Each fixed covariate adds 30 new parameters to be estimated. Consequently, we have kept the number of covariates selected for analysis correspondingly small. It is important to remember that the characteristics measured by these variables (although they pertain to individuals and households) are associated with the spells that form the basis of the analysis.

Descriptive Statistics

Our work with the hazard model deals only with the spells that began after 1968; it therefore describes only transitions made among households formed in the period 1968–1980. Spells that began before 1968 are "left censored" in that we do not know the dates at which persons joined the households in question. In most cases, we know when the spell ended and what type of household the individual entered. To include these spells, however, would produce a length-biased sample. Using only spells that begin after 1968 is unbiased if not absolutely efficient (Heckman and Singer 1984).[6]

Estimation

Our analysis includes all completed and right-censored (ending after 1980) spells that began after 1968. Right-censored spells are easily included in the estimation procedures, and including them gives an unbiased sample of all spells, long and short, that began in the period of observation.[7] An individual may contribute several spells (in different household types) that began after 1968.

Table 1 gives the distribution by origin and destination of these spells. Note that the distribution refers to observed *spells*, not persons; therefore, active transitions or "unstable" household types are more often counted. Those who live alone are most likely to move to couple, and couples are most likely to move to nuclear family. Other-family and single-parent destinations predominate among spells beginning in nuclear families. More nuclear family spells are censored (58 percent) than any other origin, and we shall see later that nuclear families have the longest median survival times. Standard mechanisms such as marriage, divorce, and childbearing predominate in the origins of alone, couple, and nuclear.

For single parents, the likely transitions are evenly divided between nuclear family and other family. The most likely transitions for those living with other relatives are (in decreasing order of likelihood) to couple, nuclear, or alone. Those living with

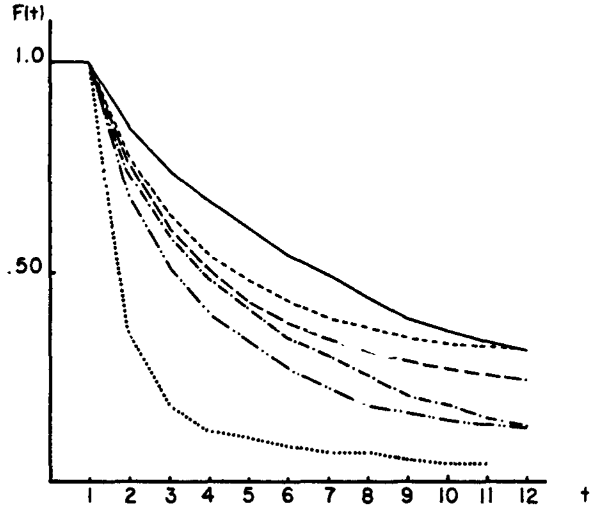

Figure 1. Survival functions for spells in each household type [F(t)]: ----, alone (median survival time, 4.77 years); — —, couple (4.16 years); ——, nuclear (6.94 years); — · —, single parent (3.90 years); — ·· —, other family (3.16 years); ····, other nonfamily (1.78 years)

other unrelated individuals contribute a relatively large number of completed spells, with the most common destinations being nuclear, couple, and single parent.

The last three household types (single parent, other family, other nonfamily) and the nuclear family describe an interesting counterpoint. Single parents move into the nuclear family presumably through cohabitation and remarriage, but they also join forces with an extended family of other relatives. When persons living in extended families make a transition, they typically move to more conventional households. Persons living with unrelated people also move into more conventional household types as well as to single parenthood.

We can get a clear picture of the relative permanence of each household type by looking at the survivor functions graphed in figure 1. The survivor function describes the proportion of spells not yet ended at each duration. Median survival time is the duration at which half of the spells are completed and the survivor function equals 0.50. The rapidity with which persons circulate among household types is perhaps the most interesting feature of this set of results. For most types, median survival times are about three or four years. The longest is for people living in nuclear families: Seven years after the onset of the spell, half of the individuals are still living in nuclear families. By contrast, half of those living with other unrelated persons are no longer doing so after less than two years. It is well known that many children and adults will spend time in a single-parent household at some point in their lives. Our results show further that this status is largely a transitory one that, in 50 percent of spells, ends before four years have elapsed.

RESULTS BY ORIGIN FOR THE HAZARD MODEL WITH COMPETING RISKS

The hazard functions in figure 2, estimated from equation (1), afford a straightforward look at the competing risks as a function of time since the start of the spell. The figures give both the relative rates of movement out of the origin state and into one of the five others (its value on the vertical axis) *and* the change in that hazard with duration (its progress along the horizontal axis). It is possible to compare within a

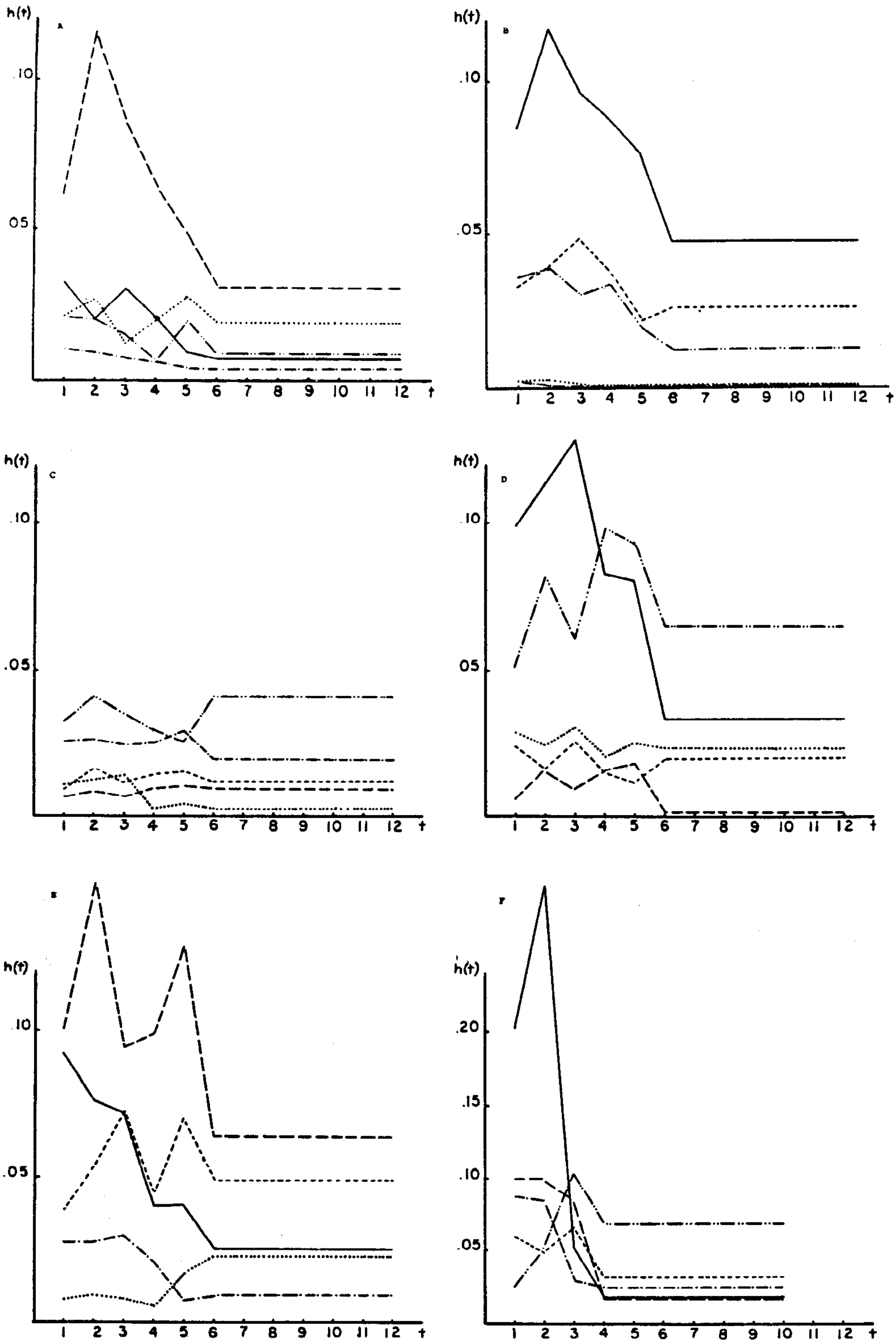

Figure 2.—Hazard functions for competing risks. Destinations: ----, alone; — —, couple; ——, nuclear; — · —, single parent; — ·· —, other family; ····, other nonfamily. Origin: (A) alone; (B) couple; (C) nuclear; (D) single parent; (E) other family; (F) other nonfamily (scale one-half that in A–E)

graph (the risk of various destinations given the origin) as well as across graphs (the time pattern of relative risks of exiting each of the states).

This description of movement is enriched by an analysis of the variables that we anticipate to impinge on these alternative living arrangements. The results appear in table 2. Sex, race, and age characteristics are summarized by a set of categorical variables (defined earlier). Income and the calendar year in which the spell began are continuously measured. The result is a proportional hazards model [as given by eq. (2)], with coefficients that are easily interpreted. Results are grouped by origin into the six subtables. All coefficients are in exponential form; that is, for the covariates, we have provided the value $\exp(\hat{\beta}_{ijk})$ from equation (2), where $\hat{\beta}_{ijk}$ is the estimated coefficient for the transition from origin i to destination j associated with covariate k from the X vector. The duration categories are labeled 1, . . . , 6 or more (years) and are associated with the $\exp[\hat{\alpha}_{ij}(t)]$ terms from equation (2). These give the hazard for the case in which all covariates are zero. Therefore, the reference group is nonblack males who are less than 20 years old at the start of the spell. The risk for any group can be obtained by multiplying the hazard for this omitted group by the appropriate coefficient(s). For example, in the transition from alone to couple, the risk in the reference group (nonblack males under 20) is 0.043 for the first interval, 0.087 for the second, and so on. At each duration, the risk for blacks of moving from alone to couple can be obtained by multiplying the hazard by 0.455. In other words, the risk for blacks is less than half of that for nonblacks, controlling for other demographic factors, household income, and the calendar year in which the spell began. In nearly all cases, adding the covariates does not alter the overall shape of the underlying hazard or the ordering of relative risks among destinations for each origin.

To consider how resources shape transitions among households, we entered the natural logarithm of total household income (in 1967 dollars) measured at the start of the spell[8] into equation (2). In our preliminary analyses, we established that a hazard model with time-varying annual income fit no better (in most instances) than this single proportional entry. In addition, as we pointed out at the outset, a measure of individual labor force participation (annual hours worked) contributed little beyond income. We explored this issue a bit further and found that within household type of origin and destination, income and labor force participation are highly correlated, and from year to year income itself is very highly correlated. These findings suggest (as is often claimed in PSID analyses) that shifts in household type are associated dynamically with the changes in levels of living observed in annual cross sections, since our results show that large changes are uncommon as long as the household structure is stable.

To understand the effect of income better, quantities of the form

$$\exp[\hat{\beta}_{ij}(\bar{X}_i + SD_i)]/\exp[\hat{\beta}_{ij}(\bar{X}_i - SD_i)]$$

have been computed, where $\bar{X}_i$ is the mean income for origin i with standard deviation SD_i and the $\hat{\beta}_{ij}$s used are the appropriate coefficients for each origin–destination combination. These ratios compare the relative risk one standard deviation above and one standard deviation below the mean for each origin and are given in table 3.[9]

Since the 1970s involved such a substantial shift in the aggregate composition of household types, we were interested in assessing whether the rates of transition had themselves changed as a function of the calendar year in which the household was formed. Inferences were being made from comparative cross-sectional data that

Table 2.—Estimates for proportional hazards model[a]

Origin household type and characteristic	Destination household type: Alone	Couple	Nuclear	Single parent	Other family	Other non-family
Alone						
Sex (female)	--	.930	.479*	3.993*	.982	.986
Race (black)	--	.455*	.974	2.335*	2.808*	1.434
Age						
20-29	--	.816	.730	.328*	.334*	.920
30-39	--	.590*	1.047	1.540	.368*	1.184
40-49	--	.485*	.629	.352*	1.158	.449*
50 or over	--	.144*	.075*	.035*	.968	.082*
Year start	--	.911	.890	.954	.894*	1.127
Income	--	1.225*	1.225*	1.118	1.134	1.004
Duration (years)						
1	--	.043*	.030*	.005	.023*	.010*
2	--	.087*	.019*	.005	.019*	.015*
3	--	.060*	.031*	.005	.014*	.008*
4	--	.046*	.021*	.004	.006*	.014*
5	--	.036*	.009*	.003	.015*	.024*
6 or more	--	.024*	.008*	.003	.005*	.022*
Log L	--	-2302	-973	-407	-807	-922
Couple						
Sex (female)	.819*	--	.989	32.120*	.849	1.996
Race (black)	1.666*	--	1.322*	2.131	1.860*	2.481
Age						
20-29	.655*	--	.943	.476	.225*	.721
30-39	.506*	--	.508*	.236	.286*	1.377
40-49	.282*	--	.029*	.00003	.913	.008*
50 or over	.310*	--	.006*	.0002	.594*	.00001
Year start	.957*	--	.953	.852	.911*	1.034
Income	.859*	--	.796*	.386*	1.482*	1.419*
Duration (years)						
1	.354	--	1.689	.0005	.004*	.00009*
2	.443	--	2.621*	b	.004*	.0001*
3	.564	--	2.392*	b	.003*	b
4	.460	--	2.437*	b	.003*	b
5	.280*	--	2.114	b	.002*	b
6 or more	.354	--	2.346*	b	.0008*	b
Log L	-2044	--	-3222	-84	-1809	-158
Nuclear						
Sex (female)	.322*	1.420*	--	2.436*	1.188*	1.582*
Race (black)	1.541*	.695	--	1.438*	1.511*	.989
Age						
20-29	1.017	.289*	--	.399*	.264*	.701*
30-39	.769	.420*	--	.382*	.617*	.816
40-49	.414*	.973	--	.398*	1.820*	.282*
50 or over	.420	1.262	--	.408*	2.611*	.607
Year start	1.061*	.981	--	.979	.962*	1.035
Income	1.083	2.138*	--	.904	1.008	.564*
Duration (years)						
1	.005*	.000009*	--	.070*	.046*	1.466
2	.008*	.00001*	--	.072*	.058*	1.711
3	.006*	.000009*	--	.066*	.050*	1.947
4	.008*	.00001*	--	.069*	.042*	.364
5	.008*	.00001*	--	.078*	.037*	.654
6 or more	.007*	.00001*	--	.053*	.060*	.342
Log L	-1364	-951	--	-2352	-3068	-956

Table 2 (continued)

Origin household type and characteristic	Destination household type: Alone	Couple	Nuclear	Single parent	Other family	Other non-family
Single parent						
Sex (female)	.539*	.808	1.105	--	.884	1.283
Race (black)	.665	.516	.508*	--	1.970*	.798
Age						
20-29	1.781*	2.842*	1.463*	--	.544*	1.638*
30-39	.886	.284	.954	--	.836	1.097
40-49	2.845*	.026	.581*	--	1.882*	.132*
50 or over	2.934*	1.003	.321*	--	3.679*	.060
Year start	1.039*	.841*	.939*	--	.965*	1.140*
Income	1.023	1.856*	1.295*	--	.973	.674*
Duration (years)						
1	.018*	.00009	.017*	--	.070*	.242
2	.013*	.0002*	.019*	--	.109*	.227
3	.020*	.0001	.021*	--	.080*	.317
4	.012*	.0002	.014*	--	.122*	.233
5	.010*	.0002	.013*	--	.112*	.306
6 or more	.018*	.00002	.005*	--	.078*	.333
Log L	-664	-318	-2039	--	-1576	-783
Other family						
Sex (female)	1.527*	.832*	.950	1.759*	--	1.243
Race (black)	.395*	.405*	.782*	1.968*	--	1.558*
Age						
20-29	1.754*	1.660*	.902	.645*	--	.954
30-39	.491*	.621*	1.607*	1.056	--	.617
40-49	.654*	2.279*	.492*	.368*	--	.420*
50 or over	.880	2.489*	.127*	.063*	--	.644
Year start	1.006	.944*	.918*	.999	--	1.067*
Income	.638*	1.383*	.952	.509*	--	.647*
Duration (years)						
1	1.944	.005*	.387*	10.32*	--	.231
2	2.878*	.008*	.316*	9.937*	--	.282
3	3.349*	.005*	.293*	10.66*	--	.240
4	2.412	.005*	.158*	7.591*	--	.158
5	3.802*	.006*	.156*	2.712	--	.572
6 or more	2.744	.003*	.089*	2.899	--	.781
Log L	-2513	-4419	-3336	-1335	--	-696
Other nonfamily						
Sex (female)	.407*	.909	.746*	2.851*	1.063	--
Race (black)	.447*	.471*	.810	1.472	1.427	--
Age						
20-29	2.500*	1.548	.941	1.210	.601	--
30-39	1.145	.111	.898	1.219	.498	--
40-49	1.649	.400	.758	.305*	1.037	--
50 or over	1.605	.176	.111*	.969*	1.766	--
Year start	.989	1.118*	.938*	.876*	.893*	--
Income	.972	.908	1.172*	.553*	1.713*	--
Duration (years)[c]						
1	.084	.075*	.144*	17.03*	.0008	--
2	.080	.097*	.195*	17.47*	.0008	--
3	.119	.076*	.036*	6.442*	.002	--
4 or more	.056*	.024*	.010*	6.129*	.0008	--
Log L	-325	-446	-761	-368	-273	--

[a] Reference group is nonblack males less than 20 years of age at start of spell.
[b] Small sample sizes at long durations preclude estimation of coefficients.
[c] Only four time steps estimated because of small sample sizes at durations longer than 4 years.

* indicates significance at the .05 level

Table 3.—Ratios of the effect of income evaluated at one standard deviation above and below the mean[a]

Origin household type	Alone	Couple	Nuclear	Single parent	Other family	Other non-family
	Destination household type					
Alone	--	1.44	1.44	1.22	1.25	1.04
Couple	.80	--	.72	.33	.52	1.66
Nuclear	1.10	2.56	--	.80	1.01	.49
Single parent	1.03	2.50	1.46	--	.96	.56
Other family	.52	1.59	.93	.38	--	.53
Other nonfamily	.95	.85	1.32	.36	2.54	--

[a] This table is computed from the coefficients in Table 2. If $\overline{X}_i$ is the mean log income for origin i, with standard deviation, SD_i and β_{ij} is the appropriate estimated coefficient for income for origin i, destination j, the ratios are:

$$\frac{\exp\,(\hat{\beta}_{ij}\,(\overline{X}_i + SD_i))}{\exp\,(\hat{\beta}_{ij}\,(\overline{X}_i - SD_i))}$$

and compare the relative risk one standard deviation above and one standard deviation below the mean income for each origin-destination combination.

certain kinds of family configuration were becoming less stable, although it is important to remember that *constant* rates of transition can still produce a change in the distribution of households over the course of a decade. Changes in the underlying demographic structure can further emphasize such shifts. To test for temporal change, we included a variable that indexed the year in which the observed spell began. The value fell between 1 (1969) and 11 (1979). Coefficients for "year start" are in table 2. Values of the coefficient greater than 1 indicate that more *recent* spells tended to terminate more quickly, that is, possessed a higher transition rate. We now turn to a discussion of the results by origin.

Origin: Alone. Among those living alone, the most likely transition is to couple (fig. 2a). This risk is higher than for any other destination at all durations and peaks between durations of one and two years. In addition to lower risk, the duration dependence of the other risks is much less marked and the time pattern is more irregular.

We know from previous work that in the cross section, older women and young adults are most likely to be found living alone. This section answers some questions about the households these people join. Men are more likely to move from alone to nuclear, presumably by forming households with women who are already single parents, and as expected, women are more likely to become single parents. Nonblacks have a higher risk of experiencing the transition to couple, and blacks have a higher risk of experiencing transitions to the nontraditional family types of single parent and other family. Age patterns are complex. The risk of moving from alone to couple diminishes steadily with age, with those over 50 only about one-fourth as likely to form couples as those 30–39. This is consistent with declining marriageability (or desire for such a relationship) with age. The risk of moving into the other household types is usually highest among those 30–39 and lower at the other ages. The peak for the transition to other family is later and declines less in the oldest age group, perhaps pointing to some of the caretaking aspects of this destination.

Higher-income persons presently living alone are more likely to marry, remarry, or cohabit, and the risk for those one standard deviation above the mean is about 1.4 times that for those one standard deviation below the mean, regardless of whether the other partner already has a child. There is little evidence of a time trend for this origin. Persons living alone later in the study period have a somewhat higher risk of moving in with other unrelated persons and a lower risk of moving to other destinations.

Origin: Couple. Turning to couple as origin (fig. 2b), the highest risk at all durations is for the transition to nuclear. Here the hazard describes the risk of first births as a function of time since marriage or cohabitation. The risk peaks at durations of one to two years but is high at durations of less than one year, suggesting that pregnancy may lead to the formation of some unions. (It is clear that marriage does not always result, since transitions from living alone to single parent have a non-zero risk; see fig. 2a.) For couples, the next highest risks are for transitions to living alone and to living with other relatives. The former transition occurs if the couple separates. The latter can occur if either one or more relatives move in with the couple (and the couple remains intact) or one member of the couple moves in with other relatives (and the couple separates).[10]

The risk of moving from couple to alone is highest at durations of two to three years and declines thereafter. The risk of moving from couple to other family declines more or less monotonically after durations of one or two years, suggesting the existence of "host couples" who may occasionally accept other relatives during hard times. More research is needed on temporary living arrangements and the role of the extended family; we obtain some insight here by examining the household types into which the extended family may metamorphose (see below).

Men have a somewhat higher risk of moving to alone, but women have a much higher risk of becoming single parents and of moving into households with other unrelated people. The risk for blacks is higher for all destinations (statistically significant for alone, nuclear, and other family), possibly testifying to the greater instability of black couples. The age profile is similar across the first three transitions (alone, nuclear, and single parent), with the risk decreasing with age—very sharply so in the last case. The risk of moving to other family is highest for those under 20 and for those 40–49. An interesting hypothesis, impossible to test here, is that younger couples move in with relatives during times of stress and older couples may receive other relatives.

We find, interestingly, that income is statistically significant for all transitions. Higher income reduces the risk of moving to alone, nuclear, or single parent (suggesting lower rates of *both* marital dissolution and family formation) and increases the risk of moving to other family and other nonfamily (agreeing with the notion that couples with more resources—and by definition, few dependents—may be able to shelter others, related or unrelated). Differences in relative risk between income groups are largest for those who become single parents, a rare transition in our sample. There is little evidence of a time trend for this origin. Couples formed later in the study period have a slightly lower risk of making the transitions to alone and to other family.

Origin: Nuclear. The nuclear family is the most stable of the household types we consider, as exhibited by the low value of the estimated hazard functions at all durations and for all risks (about half of that of other household types; fig. 2c). The most common transitions are to single parent or to other family. Most transitions to single parent probably result from separation of the parents in the nuclear family. The risk is highest in the first four years after the household is formed and moderate thereafter. The transition from nuclear to other family, like the transition from couple to other family, is more complex and no doubt results from some nuclear families' acquiring relatives and others' dissolving, with their former members' joining other relatives. The transition from nuclear to alone can be the result of either separation of the parents or of a child's growing up and moving out on her or his own (more insights can be gained here when we examine the age profiles). Similarly, the transition to couple occurs either to the parents because the last child leaves home or to the child because the child marries.[11]

The risk of moving to alone is higher for males; but the risk of moving to all other destinations is higher for females, representing the likely arrangements following marital disruption or departure from the parental house. In general, blacks face a higher risk of moving from the nuclear family to less traditional arrangements; correspondingly, nonblacks have a higher risk of moving to couple. The age profile shows that those under 30 face a higher risk of leaving the nuclear family to live alone, whereas the risk of moving to couple increases with age. These offsetting patterns may be the result of the departure of children from the family household, leaving an "empty nest." The risk of moving to single parenthood is 2.5 times as large for females and 1.5 times as high for blacks. The combination of these two variables means that black females are nearly four times as likely to become single parents as white males. The drop in the chance of this transition with age is dramatic: The risk for those 20–29 years old is only 40 percent of that for those under 20. The risks of moving to couple or to other family are strongly U shaped, with the highest risk at the older ages, particularly in the latter case. These results suggest the following scenario: Young males leave the nuclear family (whether of origin or procreation) to live alone, leaving behind some females as single parents, whereas most young girls leave home to marry. The convergence in destinations is more pronounced for blacks. Members of black nuclear families at the extremes of the age range we consider are more likely to join or be joined by other relatives.

High-income persons are much more likely to move from nuclear to couple. Since age has been included among the covariates, some of the life-cycle effects have been removed; nevertheless, those one standard deviation above the mean have a risk of moving from nuclear to couple that is two-and-one-half times that of those one standard deviation below the mean (making this the largest income effect in the table). Despite controls for age, we are probably observing the greater likelihood of the empty nest in more well-to-do, mature households. Conversely, the risk of moving from nuclear to other nonfamily for those with household incomes one standard deviation below the mean is twice that for those one standard deviation above the mean. The income effect for the nuclear-to-alone transition is nearly nil. We expect that this is due to the countervailing forces of youth's home departure, which is positively related to income, and divorce, which is negatively related to income. This is an example of a transition cell in which more than one mechanism contributes flows, which calls for more detailed analyses. There is little evidence of a time trend for this origin. Persons in nuclear families formed later in the study period are somewhat less likely to make the transition to other family and somewhat more likely to make the transition to alone.

Origin: Single Parent. This nontraditional household form has been the focus of attention for some time, but most of the work has been limited to cross-sectional analyses or to tracking economic well-being over time. We know that the median survival time for this status is four years, but who is more likely to move, and where?

We have already noted that spells in single-parent households tend to be brief. The most common transitions are to nuclear and to other family. Both presumably involve joining forces with other adults to assist in childrearing. The time path of these two competing risks is revealing (fig. 2d). The risk of moving from single parent to nuclear is highest at durations under three years, after which it drops to a level close to that of the other competing alternatives, with much lower risks at all durations. That is, most nuclear family reconstitution occurs within a span of 0–4 years; after that, the risk of such reconstitution is only half as large. The risk of moving to other family is moderate at all durations, and it is the highest after durations in single parenthood of five years or more, when other alternatives have relatively low risks. These results underscore the importance of the extended family in helping people cope with family disruption.

Just as race sharply differentiates the probability of entering a single-parent family household, so it differentiates the transitions out of single parent: blacks have a significantly lower risk of entering alone or couple households but have the same risk as nonblacks for moving to other family. This suggests that the choices of household type and the extent of support available from other relatives may be very different for blacks than nonblacks, with blacks choosing less-traditional arrangements.

The age profiles for these transitions are quite complex. The risks of moving to alone or to other family are U shaped. The first case (alone) probably includes younger single parents who have only temporary custody of their children as well as some older children who establish their own households. Correspondingly, older single parents whose children have departed most likely appear in the second part of the U. The second case (other family) is a mixture of young and much older single parents, both joining forces with other relatives, possibly for very different reasons. The risk of moving from single parent to couple or nuclear is higher for those under 30, presumably reflecting remarriage patterns. The risk of moving to other nonfamily is higher for those in the younger age groups.

Income increases the risk of transitions to couple and nuclear and decreases the risk of moving to other nonfamily. The effect is particularly dramatic for the transition to couple, where the risk for those one standard deviation above the mean is two-and-one-half times that for those one standard deviation below the mean. Lower-income single parents (who are also likely to be female and black) stand a much poorer chance of any family reconstitution. There is modest evidence of a time trend for this origin. Persons living in single-parent households formed later in the study are more likely to move to other nonfamily and alone and less likely to move to the other destinations.

Origin: Other Family. Figure 2e shows the flow from other family to more conventional households. The most common transition is to couple, with high risks at durations of up to five years. The next competing risks are to nuclear, particularly at very short durations, and to alone at durations of four years or more. Interestingly, the hazard of transition to nonfamily household increases at long durations, although caution in interpretation is in order, since the number of observations is modest. Taking this together with our earlier results, we can observe the contemporary extended family network operating in the circulation of people in and out of this household type.

Women are not only much more likely to leave other relatives and live as single parents but also more likely to begin living alone. The risk for nonblacks is higher for the transitions to more-conventional household types (alone, couple, and nuclear), whereas the risk for blacks is higher for transitions to single parent and other nonfamily. Younger people are especially more likely to move into single parenthood and other nonfamily arrangements. The risk of moving to couple is very high for the over-40 age group, whereas the risk of moving to nuclear is highest under 40 (especially 30–39), a probable indicator of the timing of remarriage or family reconstitution or both. Taken together, the age patterns for these transitions mesh well with those for the transitions from couple and from nuclear to other family, suggesting considerable circulation in and out of the extended family in the early stages of household and family formation and reformation. Finally, the risk of moving to single parent and to other nonfamily is much higher for those under 20 than for other age groups.

Persons in higher-income households are more likely to make the transition to couple, paralleling the positive association of income with the transition from couple to other family. In contrast, a strong negative effect is found for the transition to single parent (although no symmetric effect is found for the reverse transition) and weaker negative effects for the destinations alone and nonfamily. Perhaps higher-income households are more able to maintain the cushion of support for their non–immediate-family members. There is some evidence of time trend for this origin. Persons living with other relatives later in the study are more likely to move to households with unrelated persons and less likely to move to more-conventional family arrangements.

Origin: Other Nonfamily. The most volatile and most diverse household type considered here is other nonfamily (fig. 2f), for which there is a high risk at short durations for the transition to nuclear. These hazard rates are two to three times higher than those of any other risk studied, yielding a median survival time of under two years. This suggests that some nuclear families may take back a family member after he or she has spent a short spell living with unrelated persons (e.g., roommates). Nevertheless, among all members of nuclear families, the risk of moving to other nonfamily is rather low. The risk of transition from other nonfamily to couple and to single parent is moderate at shorter durations, possibly because some people may marry or cohabit after living in a shared household with other unrelated persons. (It is unlikely to be due to couples' temporarily taking in an unrelated person, since this transition is so rare.) Childbearing may cause some women to leave shared households; moreover, the risk of single parents' joining these households is not negligible (fig. 2d), again suggesting some circulation among alternative living arrangements. At durations of three or more years, the strongest competing risk is to move in with other relatives.

Just as in the origin of other family, women have a much higher risk of moving to single parent or alone, but men are more likely to join other relatives. Nonblacks are more likely to move to the destinations alone and couple. On the other hand, blacks face a risk 1.5 times higher than that of whites of making the transition to single parent. The age pattern is irregular, and differences are often not statistically significant. Those in their 20s and 30s have a higher risk of moving to alone, couple, or single parent than do those in other age groups.

Higher-income nonfamily households are much more likely to jettison a member to another family household, but we do not see an obvious reason for this. They are also slightly more likely to be the origin of transitions to nuclear. As in the case of transitions from other family to single parent, large income differences are observed in the risk of moving from other nonfamily to single parent. Here the risk for those one standard deviation above the mean is less than half of that for those one standard deviation below the mean. There is some evidence of a time trend for this origin. Spells in households formed of unrelated persons begun later in the study period are more likely to terminate with a transition to couple and less likely to terminate with any of the other destinations. All in all, it is difficult to draw strong inferences, since data are so sparse in this case.

SUMMARY AND CONCLUSIONS

In this paper we have used a representative national sample to study transitions among six household types: alone, couple, nuclear, single parent, other family, and other nonfamily. At any point in time, persons in one household type are at risk of moving to any of the others. The choice to examine six types, along with the complexity of the transition matrix considered, has necessarily limited the number of covariates that can be pursued to five: age, race, sex, household income, and the calendar year in which the household was formed. Simple hazard modeling has been applied, in which destination household types are treated as a set of competing risks. Although the proportional model we estimated has provided us with an interesting set of results, future research should explore more complex models. In addition, confining the household transitions studied to a single age group will allow the testing of more refined hypotheses.

Our results confirm some points known (or suspected) from cross-sectional data and add other new findings based on the longitudinal perspective. The relative stability of the six household types has been assessed with survival analysis. Not surprisingly, the nuclear family remains the most stable of all: half of the spells that people spend in them endure for seven or more years. Other nonfamily households, by contrast, are extremely transitory: their median survival time is under two years, and less than a tenth of spells endure more than five years. Median survival times for other types, including single-parent households, range between three and four years.

A number of studies (mentioned at the outset) have commented on the transitory nature of single-parent and extended-family households. Our work has documented the short durations in such arrangements. Moreover, we have helped to fill out the picture. Nuclear family reconstitution is the most probable outcome at short durations, but after just a few years that becomes increasingly unlikely. Conversely, the relative importance of the extended family grows over time. There seem to be host couples as well, who accept other relatives for brief periods of time.

The introduction of covariates into the hazard model has furnished a demographic profile by age, sex, and race and a look at how household resources (income) affect transitions. Our results confirm those of others that young, black, and female individuals, regardless of household origin, face a high risk of becoming single parents. For all origins, except other nonfamily, blacks have a higher risk than nonblacks of moving to other family households. This testifies to the importance of the extended family for this group. Even for nonblacks there is nontrivial circulation among extended family arrangements and more-conventional household types, implying active kin support.

For all origins except other family, those under 40 have a higher risk of moving into households composed of unrelated persons (other nonfamily), suggesting that these may be transitory households composed principally of younger adults. Here too blacks generally have a higher risk than nonblacks of experiencing such household shifts. Although the effects of household resources on the risk of moving from one household type to another are not easily generalized, we did find that higher incomes enable some conventional households to accept additional members and allow less-traditional arrangements to return to more traditional ones. Movements among lone adult, couple, and nuclear households show the expected patterns related to the family life cycle. The increasing fraction of households occupied by a person living alone has caught the eye of many researchers (Kobrin 1976). Rising income levels, norms, and age composition have all been implicated in the discussion of who lives in such households and why they have grown so rapidly (Glick 1984; Michael, Fuchs, and Scott 1980; Pampel 1983; Sweet 1984). We know that living alone is more prevalent among young adults and the elderly. Our results confirm that a U-shaped age pattern in the rates of movement from most household types to lone living exists. We did find that the greater the income of the nuclear family origin, the more likely an individual was to make the transition to living alone, but the effect was slight. More interesting, perhaps, is that higher-income individuals living alone were more likely to depart that state and enter any one of the remaining five types. Labor force independence of the individual did not help predict rates of movement between household types, contrary to our expectations.

Our work brings to light some aspects of household composition change that are new or were previously only inferred indirectly from observation of other processes. Our fundamental source of information is the hazard function itself (fig. 2), the direct product of dynamic analysis. Of course, we find that for a given household type of origin, the hazard shows different levels and different patterns of duration dependence for each destination type. Nevertheless, certain regularities in the time path of the hazard function emerge. In many instances, we find that the hazard rises or begins at a very high level and declines over time. Substantively, such a hazard is likely to be associated with early periods of stress (or undesirability) in states, raising the rate at which people exit. Future analysis might develop parametric models based on more explicit assumptions about the nature of the processes at work.

Differences in composition at points in time (statics) need not translate into differences in the dynamic process. For example, the increase in living alone over the decade may not mean that the rate of exit from other household types to that destination has increased during the decade. Stated another way, constant transition rates can give rise to very different population compositions at the beginning and end of an interval. In light of this, it is interesting that our analysis finds very modest effects for time period on the rates of movement across household types. Such results should be taken hand in hand with those obtained for dynamic analysis of other related processes, particularly marital disruption.

Our approach has also enabled us to identify whether there is any time trend in the transition process itself. If anything, more recent spells have *lower* transition risks—two-thirds of the coefficients are less than one—although most are not statistically significant. The one countervailing trend, interesting in light of the discussion reviewed at the outset, is that the likelihood of an other-nonfamily household as the destination rises with time and is statistically significant in three of the five cases.

The prevalence of single-parent and other-nonnuclear-family living arrangements is frequently taken to be an indicator of social disorganization. Recent research has pointed to the increasing fraction of the young life span spent in nonnuclear living and the adverse effects of such living (Hill 1983; Hofferth 1985a; Smith 1980). Among single-parent origins, we observe statistically significant declines in the movement to the three remaining types of family households during the time span. On the other hand, we find no increase in the rates of movement into nonnuclear family types from other household origins. Nuclear families, on the other hand, show a significant upward trend in generating households of persons living alone (children leaving the nest and marital dissolution) and a statistically insignificant decline in movements to single parenthood and to other-family households.

Thus there is an impressive fluidity with which family household structure responds to needs for material and emotional support to kin. These households are apparently important situations of shared resources for the people who live in them and provide crucial temporary havens for distressed family members. The active level of transitions in and out of complex household types, particularly evident in recent years, is a cue to changing familial and social organization and should be further investigated.

Examining a range of changes simultaneously has broadened the focus of analyses of household structure by shifting the emphasis away from particular vital events (such as marriage or divorce) to examining instead the spectrum of options that people face. To the extent that these options represent alternative choices, our work provides a more realistic and comprehensive view than frameworks that account for only one or two options in isolation. Developing a dynamic perspective on living arrangements is important as well and should be pursued if household formation patterns continue the present fluid pattern.

NOTES

[1] These examples also illustrate some difficulties encountered in using the PSID to construct family and household types, wherein the kinship of another adult, outside of husband or cohabiting male, cannot be determined. See Elder (1985) for further discussion related to life-cycle research.

[2] We wish to have a continuous period of observation on these persons. Those who enter the sample after 1968 are either births that are still young children by 1980 or individuals who join households of sample members and are subsequently dropped if they depart the household. Because of the structure of data released from the ISR, we cannot study transitions of members who died before 1980.

Our sample consists of those who were in the panel in 1968 and remained in it to be reinterviewed (for the 13th time) in 1980. Our results are strictly representative of only that population. Attrition eliminates some, due to death or nonresponse, and we also omit those who are born into the sample. Population groups that entered the U.S. after 1968 (recent immigrants) are also not represented because of the PSID sample design. The ISR (producers of the PSID) revises the sample weights to account for attrition. They are planning to make available a new tape that includes records for those who have been dropped (censored), but this was not available at the time of our research. Our omission of post-1968 births results in fewer observations on children, but since we stratify by age in our analysis, the results of the tables should be little affected. To the extent that post-1968–born children have different life experiences than pre-1969–born children, there is the potential for bias.

[3] The survey procedure treated cohabitators who classified themselves as "permanent friends" as the equivalent of married; these people—few in number, especially in the early years—are treated as couples by us as well. In any case, accurately distinguishing institutional marriage from cohabitation is difficult in a survey (Blanc 1984).

[4] Empirically, we found two things that led to this formulation of household resources. (1) As long as it does not change in structure (type), a household's resources are highly correlated from one year to the next, so allowing year-to-year changes does not increase the information. (2) Once we take into account household resources and individual demographic characteristics, adding information on the individual's labor force participation does not constitute a statistically significant improvement of the model.

[5] We also considered a model with some covariates that are allowed to vary from year to year:

$$h_{ij}(t) = \exp[\alpha_{ij}(t) + \beta_{ij}X + \lambda_{ij}(t)Z(t)],$$

where i, j, t, $h_{ij}(t)$, $\alpha_{ij}(t)$, β_{ij}, and X are as before; $Z(t)$ is a set of covariates that vary as a function of duration; and $\lambda_{ij}(t)$ is a vector of parameters to be estimated that also change as a function of duration and are associated with $Z(t)$. Not only do the values of the covariates $Z(t)$ change as a function of duration, but also their effects on the hazard are allowed to differ at different durations. We found that these models offered little additional explanatory power, however, and these results are not presented.

[6] Each individual contributes exactly one left-censored spell. The distributions of the sample of PSID individuals and of the left-censored spells are identical. As of 1968, the distribution of people by household type was as follows: alone, 4.7; couples, 13.4; nuclear family, 59.6; single parent, 7.0; other family, 14.0; and other nonfamily, 1.3. Comparing left-censored spells with the sample average, we found that women are overrepresented among individuals living alone, among single parents, and among those living with other unrelated persons. Blacks are overrepresented among single parents, those living with other related persons, and those living with other unrelated persons. The mean household income for individuals living in nuclear families is nearly $1,000 above the sample average; that of single parents, $4,000 below average. Older persons (50 and over) and persons 20–29 are overrepresented among those living alone or as couples; persons under 20 are overrepresented among nuclear families and single parents.

[7] We weighted all of our analyses using PSID individual weights. RATE calculates weights so that the

sum of the number of observations is equivalent to that in the original sample. Parameter estimates based on weighted and unweighted samples are extremely close.

[8] Despite our best efforts, the fit between the reference period for the economic measures and the time of transition is imprecise because of the aggregation into one-year intervals. This leads to some difficulties in interpretation, particularly for very short spells. Most likely our effects are biased toward zero.

[9] For mean income, we retain the logarithmic scale and use the mean of the log of total household income for each of the origins (similarly for the values above and below the mean).

[10] In this latter case, both alternatives are treated as equivalent, since using data for individuals from the PSID, it is difficult to discern exactly how changes in household composition come about, whether through additions or subtractions. Some inferences can be drawn from the models with covariates, and some can be drawn by comparing the path of the two risks as a function of duration, since one is likely to be purely due to separations.

[11] This risk may appear to be low in our data because many of the transitions may occur only to families that have already remained intact for long durations (say 18 years).

ACKNOWLEDGMENTS

This research was supported by National Institute of Child Health and Human Development (NICHD) Grant 2-R01-HD11720 (Demographic Models: Estimation and Application) and Rockefeller Foundation Grants 69006 and 70005 (Research in Mathematical Demography). We are especially grateful to Peter A. Morrison for helpful comments and to Will Harriss for editorial assistance, furnished through the Rand Corporation's Population Research Center with support from NICHD Center Grant P50-HD12639.

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