Health and Family Labor Force Transitions

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*We examine the labor force participation responses of older families to changes in the health of family members in the U.S. using the **Health and Retirement Study**. We estimate transitions among four labor force states for married couples: both working, husband working, wife working, and neither working. We find evidence that the onset of health problems increases the probability that the affected individual leaves the labor market. The unaffected spouse is likely to continue working if originally working, but is not likely to enter the labor market if not originally working following the onset of health problems of the spouse. Comparing our results to previous studies suggests that family responses to health changes have remained fairly stable over time in the U.S. In contrast, differences exist in family responses to health changes in the U.S. and Germany, possibly reflecting differences in the institutional environments in the two countries.*

Introduction

Changes in the health of family members are likely to significantly affect labor market decisions made within families. As labor forces age, understanding the effects of these health changes on labor market decisions will become even more important. While Currie and Madrian (1999) review a large number of studies on the effects of health on individual labor market outcomes, they cite only a smattering of studies that examines the effects of changes in the health of family members on the labor market decisions of other family members.

Consider the example of a married couple household. The health of one spouse can influence the labor market decisions of the other spouse in at least two ways

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(Parsons, 1977). First, poor health may limit or eliminate an individual's ability to participate in the workforce. Therefore, families with individuals in poor health may face reduced potential earned income. Consequently, a healthy family member may choose to remain in or enter the workforce to compensate for the lost earning power in the household. At the same time, poor health may increase health care expenses, again inducing healthy family members to remain or start working. Second, changes in health may alter the value and/or use of non-market time. For example, having an unhealthy family member may lead healthy family members to exit the labor force to provide care for the unhealthy family member, increase other forms of household production, or perhaps undertake household production formerly the responsibility of the ill family member.

Additionally, unobservable preferences related to how the individual and couple spend their time may play a role in partners' labor market decisions. For example, there is a growing body of literature that suggests that couples time their retirements together, implying that there is complementarity of the leisure time of husbands and wives (e.g., Blau, 1997, 1998; Blau and Riphahn, 1999; Gustman and Steinmeier, 1986, 2000; Henretta and O'Rand, 1983; Henretta, O'Rand, and Chan, 1993; Hurd, 1990; Maestas, 2001; Pozzebon and Mitchell, 1989). This complementarity could provide an added reason why one might see one spouse dropping out of the labor market in response to the onset of bad health of the other spouse, unless the complementarity of leisure is conditional upon good health of both spouses. Examining family responses to health changes offers another opportunity to evaluate the potential strength of the leisure complementarity effect found in previous studies.

In this paper, we look at how married couples coordinate and/or distribute their time within the labor market. Our approach is to consider each married couple as having four possible employment states: (1) husband employed and wife not employed; (2) wife employed and husband not employed; (3) both employed; and (4) both not employed. Recent U.S. data from the Health and Retirement Study (HRS) are used to estimate transition probabilities and to determine how the effects of health problems of husbands and wives affect movements from one employment state to another. In this way, we can better understand the role of changing health in family labor market decisions.

Previous Evidence on Health and the Labor Market Decisions of Older Families

Early studies of the effects of one family member's health problems on the labor force participation of other family members mainly used cross-sectional data. Parsons (1977) looks at the labor supply decisions of wives when husbands become ill. Parsons finds little empirical evidence of the husbands' health having an impact on the wives' labor supply. Parsons suggests, however, that the lack of a substantial

economic impact is a consequence of the income effect being cancelled by the increase in home production responsibilities that the wife faces.

Using *Current Population Survey* data, Berger (1983) finds that a husband's disability has a positive effect on the labor force participation and hours worked of the wife. Similarly, using the *National Longitudinal Survey*, Berger and Fleisher (1984) find that a husband's health problems have a positive effect on the labor force participation and hours worked of the wife. On the other hand, Berger (1983) finds negative effects of a wife's disability on the labor force participation and hours worked of the husband.

More recent studies have used panel data to investigate the impact of own and spouse's health on labor market participation. For example, Blau (1998) uses panel data from the *Retirement History Survey* for the cohort of individuals age 55 and over from 1969 to 1979 to estimate multivariate probit models of the labor force dynamics of older couples. Blau follows older couples movement among the four employment states (both employed, husband only employed, wife only employed, or neither employed) as we described earlier. Blau (1998) finds poor health of a given spouse to have large negative effects on the individual's entry rate and large positive effects on the individual's exit rate. This own health effect is larger for husbands than for the wives. Blau states that "(a)n important task of future research will be to determine whether the patterns of behavior documented in this article are still prevalent, or whether other patterns have developed." (p. 622). We use the HRS data in this study to examine just this question. In addition, Blau argues his results suggest that the health insurance provided by the wife's employer may be important to the couple, given the employment state of the couple. While Blau does not include any measures for employer-provided health insurance in his model, the HRS data allow for such measures to be included.

Blau and Riphahn (1999) use the *German Socio-Economic Panel*, a German survey of households interviewed annually from 1984 to 1994. They use these data to model the labor force transitions of married couples with at least one spouse in the age range of 50-69. Transitions among employment states (both employed, husband only employed, wife only employed, or neither employed) are estimated using a discrete time, competing risk hazard model. Economic variables, education and household characteristics, and health are used as explanatory variables. We compare our results using the HRS data with those obtained by Blau and Riphahn (1999) to determine whether family labor force decisions in response to health problems are similar in Germany and the U.S.

Two recent studies have looked at labor force transitions of married individuals using the same HRS data that we use in this study. Pienta (2003) uses panel data from the first two waves of the HRS to estimate multinomial logits of labor force transitions of married men and women. While the model is based on the individual and therefore does not completely characterize the labor force choices facing a fam-

ily, she does include spouse's health and demographic characteristics in the estimated logistic models of the outcomes of retirement (out of the labor force), in the labor force, and disabled at the time of the second wave of the HRS.[1] She finds married individuals are less likely to be observed as retired if their spouse reported a disability than if the spouse were not disabled.

Similarly, Johnson and Favreault (2001) find using data from the 1992-1998 waves of the HRS that when the spouse is in good health, husbands and wives are more likely to retire if their spouse is not working compared to those with working spouses. Women delay retirement when their husband reports having a health problem or is disabled. Again, while they control for demographic, health, and retirement characteristics of the spouse as well as the individual, they do not estimate the work decision as a joint decision, but rather as separate equations for the husbands and the wives including some spouse characteristics.

We believe it is important to jointly characterize family labor market decisions in order to obtain a more complete picture of responses to health problems. Previous work suggesting couples time their retirements together and couples enjoy complementarity of leisure time imply the importance of the joint modeling of family labor market decisions in the presence of health problems of the husband or the wife. We pursue a joint modeling strategy in this paper. Specifically, we estimate multinomial logit models within a family framework to provide estimates of the effects of health on labor force decisions within the family. Unlike previous work, we distinguish between health problems that are present when the analysis begins and those that are new health problems. In addition, we include measures for duration of illness. As stated earlier, we are also able to examine whether health insurance being provided for by the employer plays a role in the labor market transitions of couples. Last, we can compare our results to those of earlier studies for the U.S. and to those obtained using German data.

Empirical Methodology

We consider only married households and examine the couple's labor force participation decision. For husband-wife households, there are four possible beginning states:

1. Both spouses are employed.
2. The husband is employed, the wife is not employed.
3. The wife is employed, the husband is not employed.
4. Neither spouse is employed.

Over time, households either stay in their original state or transition to one of the other three states.

[1] Pienta (2003) defines *disabled* as those individuals who either self-report themselves as being disabled or who receive disability income.

We first divide our sample according to the initial (or beginning) employment state that they are first observed as of Wave 1 of the *Health and Retirement Survey*. We then follow the couples until one of the spouses change employment states or until Wave 2 of the survey if neither spouse changed employment states (the earlier of the two is referred to as the *end state* hereafter).

We use a multinomial logit to estimate the transition probabilities. We estimate the probability that couple k makes a transition from state i to state j,

$$P_{ijk} = \frac{\exp(\beta'_j x_k)}{\sum_{r=1, r\neq j(i)}^{4} \exp(\beta'_r x_k)}. \quad (1)$$

Further, j(1) = 4, j(2) = 3, j(3) = 2, j(4) =1, and r ≠ j( ) denotes the absence of both spouse's making a transition in the same month as described above. The model then consists of four multinomial logit equations for transitions from the four employment states defined above, with three possible end states due to the husband changing employment states, the wife changing employment states, or neither spouse changing employment states.

As such, our approach requires the estimation of four transition probabilities from each of the four beginning states, where each of the transition probabilities depends on the couples' characteristics and includes a measure of the duration of time spent in the current state. Separate equations are estimated for each initial employment state in order to completely characterize the set of potential transitions among labor force states. Thus, there are potentially 16 transition probabilities to be estimated.[2] Households rarely make the most extreme switch within a given month: for example, a switch from both working to both not working, or moving from the original state of husband working but not the wife to the state of the wife working but not the husband.[3] Thus, our estimation includes only 12 of the 16 transition probabilities.

We then modify our model slightly. We want to allow for husbands and wives to coordinate their transitions in and out of the labor market in the spirit of the literature on joint retirement decisions, but realize that couples may not be able to coordinate their transitions to the exact month. Furthermore, if the unhealthy spouse generally makes the first transition, we likely underestimate the impact of health on the other

[2] In other words, there are four transition probabilities to estimate for each of the four beginning states for a total of 16 probabilities.

[3] Both spouses switching in the same month is rare, happening in less than 2 percent of the couples in our sample. For these couples we treat the end state as a switch where the husband made the switch first. For example, if the original state is both working and both spouses exit the labor market in the same month, the end state will become wife working, husband not working. If the original state is husband work, wife not working and they both switch employment states in the same month, the end state will be neither work. This is similar to how Blau and Riphahn (1999) treat both spouses switching.

spouse's transition. Therefore, we modify our end state. In the first model, we treat the end state as the month in which the first spouse changes their employment state. In our second model, we determine the end state by looking at the employment state of the couple 12 months after the first spouse changes their employment status. Including these types of transitions allows for all 16 transition probabilities to be estimated.

We allow the transition probabilities to be functions of the length of stay in the current state as well as other variables that affect the probability of transitioning between states. Toward that end, we include a second order polynomial of the duration in the current state, the couples' ages, health statuses, labor market experiences, pension eligibility, education level, and races.

It is worth noting that while we define and are interested in transitions similar to those examined in Blau (1998) and Blau and Riphahn (1999), we do not use the exact same methodology. Blau (1998) and Blau and Riphahn (1999) use much longer panels in their analysis. Their longer panels lend themselves well to the competing risks/hazard rate approach taken in their papers. Given that we are using only the first two waves of the *Health and Retirement Study* (HRS), the multinomial logit approach is more reasonable. The multinomial approach is simpler and more to the point of what is of interest. In this paper, we are more concerned in how health affects a couple's transition from one state to another rather than the pattern of duration dependence. For this reason, we use the multinomial logit model and simply include the length of the ongoing spell (and its square) as explanatory variables.

Data

The *Health and Retirement Study* is used to estimate labor force transitions of couples in this study. The targeted respondents of the HRS are the non-institutionalized men and women born between 1931 and 1941 residing in the United States. Partners (spouses or live-ins) of the original targeted sample are also interviewed, even if not initially age eligible. The first wave was conducted in 1992-1993. The second wave was administered approximately two years later.[4] The sample includes 3,163 couples who were married in the first two waves of the HRS, were under the age of 62 in 1993, and did not have missing values for any of the variables used in the analysis.[5]

[4] A more comprehensive description of the HRS can be found in Juster and Suzman (1995).

[5] There were 4,746 married couples in Wave 1 of the HRS. This initial sample was reduced by 1,583 to reach our sample of 3,163 for the following reasons. We lost 621 couples because of incomplete or missing interviews in Wave 2. Of these 154 involved deaths and 13 involved divorces. Of the completed interviews, we lost 54 additional couples due to divorce, 679 couples because at least one spouse was over age 62 at the beginning of the HRS, and 229 due to missing values on the variables included in the analysis.

Information regarding both past and current health conditions is collected in the survey. Respondents are asked about any health conditions that interfere with the type of work they can do or their ability to work and the dates when the health conditions first bothered the individual.[6] In the HRS, coded conditions include cancers, tumors, and skin conditions; musculoskeletal system and connective tissue conditions; heart, circulatory, and blood conditions; respiratory system conditions; endocrine, metabolic, and nutritional conditions; digestive system conditions; neurological and sensory conditions; reproductive system and prostate conditions; emotional and psychological conditions; and miscellaneous conditions such as Alzheimer's Disease, HIV, narcolepsy, and chronic fatigue syndrome.

Given that we are using self-reported health data from the HRS, it is worth discussing the issue of justification bias and the potential endogeneity of self-reported health in estimates of labor force participation decisions. The concern that has been raised in the literature is that individuals may report a health problem to justify the fact that they are not working. If this is a problem, then our estimates of health effects on the various labor force transitions between working and not working are overstated. McGarry (2002) points out that there is a disagreement in the recent literature on this issue. Even among studies using the HRS, Benitez-Silva et al. (2000) and Dwyer and Mitchell (1998) do not find evidence of biased self-reports of health while Kreider (1999) and Kreider and Pepper (2002) find evidence that non-workers tend to over-report disabilities. But Bound (1991) argues that self-reported health measures have two biases that likely cancel each other–measurement errors in self-reported health biases the estimated health effect downward while the endogeneity of self-reported health may bias the estimated effect upward. Given this conflicting evidence, we are persuaded to follow Bound, Schoenbaum, Stinebrickner, and Waidman (1999) who state "(w)hile there is a large literature that treats health as a form of human capital and thus endogenous, the literature on the effect of health on labor force behavior has, in general, done as we do and treated health as exogenous." The two studies most closely related to this study and to which we compare our estimates, Blau (1998) and Blau and Riphahn (1999), both treat health as exogenous. Even if one still believes that endogeneity bias is a problem, but that the problem is relatively constant over time and across countries, then comparisons of our estimates with those of Blau (1998) and Blau and Riphahn (1999) will still be valid.

The HRS also provides detailed information about respondents' employment experience.[7] The employment data are used to compile a lifelong profile of an

[6] For an overview of the health measures included in the HRS, see Wallace and Herzog (1995).

[7] Respondents are asked questions regarding the characteristics of their job if they are currently working. If not currently working, but employed some time in the past, individuals are asked similar questions about that employer. All individuals are asked details of at most three previous jobs that lasted at least five years each or had a pension plan option as well as the

individual's labor market experience. This profile is used to construct a measure of actual experience. The last spell of employment is the focus of the labor force transition used in the analysis. The initial state used in the analysis is the state in which the couple reports being at the first interview. The second wave is the end of the panel used in the analysis. We do not add new couples between waves 1 and 2 so no new spells begin during the interval between interviews.

The dependent variable is the end state of employment for the couple. If one member of the couple changes employment status, the month that change occurs is the last month the couple is observed for our purposes, and the end state is the new employment state. If neither spouse changes employment status, the last month the couple is observed is when Wave 2 is administered and the employment end state remains the initial employment state.

To control for demographic characteristics, variables measuring education of each spouse and race of each spouse are included in the analysis. Ages of the husbands and wives at the time of the end state as well as the labor market experience of each using the actual experience variables as described above are also included as explanatory variables. We also construct and include a variable to measure the length of the ongoing employment spell (and its square) as explanatory variables. A pair of variables controlling for whether each spouse is covered by a pension and a pair of variables controlling for whether each spouse has ever been offered early retirement are included in the estimation. Three variables are included to measure family impact on the labor force transitions. Length of marriage in months, a dummy variable for any kids under of the age of 18 in the household, and a variable for the number of children under the age of 18 are included in the analysis.[8]

We include three health measures for each spouse. The health conditions in this analysis do not include illnesses that are considered temporary by the respondent, but are assumed to be long-lasting or permanent health problems. A health condition that was present when the couple begins the initial employment state may have a much different impact on the transition and the timing of the transition than a new health problem or a health shock that presents itself after the initial employment state begins. For this reason we include a measure called *ongoing health problem* that controls for the health at the beginning of the original employment state. This variable takes on a value of 1 if the individual reports a health condition present at the time the couple enters the beginning employment state and 0 if not. We then include a new health problem variable to control for health shocks that takes a value of 0 if

spell of employment immediately before and after the onset of illness if they did not otherwise provide information about that employer. Some labor market experience (especially early in the career) could be missed if individuals change jobs frequently or work for relatively short periods of time at jobs without a pension plan.

[8] We divide age and all duration variables (experience, length of marriage, and length of time in initial state) by 10 for scaling reasons.

no health condition is ever reported or if the health condition was present at the beginning of the original employment state. The new health condition switches to 1 if a health condition has been reported with the onset of the health problem occurring after the original employment spell began but before or during the month the end state occurs. [9] In other words, *ongoing health problem* and *new health problem* are mutually exclusive as used in this analysis. Last, we include a variable controlling for the duration of the illness, and its square. The duration of illness variable controls for the number of months the health condition has been present.[10]

From the HRS we can determine whether an individual receives health insurance from a current or previous employer at the time of the survey. While we would like to know whether health insurance is from the current or previous employer, this information is not available. Therefore, we use a variable measuring whether a spouse has employer-provided health insurance from either a current or previous employer at the time of the first survey.

Table 1 shows the mean values of the variables for all couples in the initial monthly observation used in the analysis as well as by couple employment state in the initial monthly observation used in the analysis. The demographic variables are similar across employment states of couples. The proportion of wives who have a health problem differs for those who are working and those who are not working. For example, 35 percent to 43 percent of wives not working initially reported ongoing health conditions compared to 16 percent to 18 percent of working wives. Similarly, 57 percent to 66 percent of husbands not working initially reported ongoing health conditions compared to 17 percent of working husbands. Of the wives who were working initially, 59 percent to 65 percent reported having a pension, while less than half of that proportion of the wives who were not working initially reported having a pension.

Results

Table 2 shows the raw transition rates between labor force states reported in Wave 1 of the HRS and the end state for our sample of 3,163 married couples. In Wave 1, both spouses working formed 57.4 percent of all couples in our sample, the largest share of any of the four labor force states. In 26.1 percent of the families, only the husband worked, while in 9.5 percent of the families only the wife worked. In the remaining 7.0 percent of the families, neither the husband nor the wife worked.

[9] While specific conditions are reported in the HRS so that in theory one could examine the effects on specific conditions on the labor force decisions of couples, in practice there are not enough observations for specific health conditions to be able to individually identify their effects.

[10] Duration of illness is divided by 10 for scaling purposes.

Table 1—Summary Statistics of Variables Used In Analysis

	One Observation Per Couple at Initial Month and State of Analysis				
Independent Variables	All Couples	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Wife Age	53.33	52.90	53.82	53.68	54.57
Wife Not White	0.17	0.14	0.22	0.22	0.16
Wife Years of Education	12.43	12.89	11.63	12.39	11.60
Wife Actual Years of Work Experience	14.54	17.99	6.90	17.86	10.16
Wife Ongoing Health Problem	0.23	0.16	0.35	0.18	0.43
Wife New Health Problem	0.03	0.03	0.03	0.03	0.01
Duration of Wife's Health Problem (in months)	33.50	22.30	53.69	27.66	58.14
Wife Pension	0.51	0.65	0.21	0.59	0.34
Wife Offered Early Retirement	0.04	0.04	0.01	0.07	0.05
Wife Health Insurance through Employer	0.16	0.21	0.03	0.25	0.08
Husband Age	56.81	56.56	56.82	57.62	57.79
Husband Not White	0.17	0.15	0.21	0.22	0.17
Husband Years of Education	12.49	12.87	12.15	11.89	11.33
Husband Actual Years of Work Experience	26.63	27.27	27.22	23.11	23.93
Husband Ongoing Health Problem	0.25	0.18	0.17	0.66	0.57
Husband New Health Problem	0.03	0.04	0.03	0.01	0.03
Duration of Husband's Health Problem (in months)	39.54	27.48	25.75	106.14	99.42
Husband Pension	0.77	0.79	0.74	0.77	0.72
Husband Offered Early Retirement	0.12	0.12	0.11	0.12	0.12
Husband Health Insurance through Employer	0.45	0.47	0.49	0.28	0.33
Number of Kids Under Age 18	0.23	0.22	0.28	0.18	0.23
Length of Marriage (in months)	331.65	325.60	343.83	327.16	342.04
T (length of spell in months)	101.11	106.03	121.94	50.43	51.92
N	3163	1816	825	301	221

We then followed these four groups until one of the spouses changed employment states or until Wave 2 of the survey if neither spouse changed employment states. (The earlier of the two is referred to as the *end state*.) In each case, families were most likely to be in the same state as they were in Wave 1. But there were some movements across states as well. For example, among couples in which both spouses worked at the time of the first interview, 18.6 percent had only the husband working in the end state, while 19.6 percent had only the wife working. In couples in which only the husband worked in Wave 1, the movement was similar to both working (17.4 percent) and neither working (21.6 percent). Similarly, in couples in which only the wife worked in Wave 1, the movement was similar to both working and neither working (22.9 percent and 23.6 percent, respectively). Among couples in which neither spouse was working in Wave 1, there was approximately equal movement to the states in which either the wife (17.7 percent) or the husband (16.3 percent) enters the workforce.

Table 2—Distribution of Couples' Transition across States

	Transition into State:				
Origin State	Both Work	Only Husband Works	Only Wife Works	Neither Work	Total
Both Work	1165	335	316	----	1816
	(61.9)	(18.6)	(19.6)		(100.0)
Only Husband Works	144	503	----	178	825
	(17.4)	(61.0)		(21.6)	(100.0)
Only Wife Works	69	----	161	71	301
	(22.9)		(53.5)	(23.6)	(100.0)
Neither Works	----	36	39	146	221
		(16.3)	(17.7)	(66.0)	(100.0)
Total					3163

In order to determine if own and spouse health has an impact on the rate at which the transitions occur, a multinomial logit model is needed controlling for health and other relevant factors. The dependent variable is the state of employment for the couple in the end state month as defined above. Separate multinomial logit models are estimated for each initial employment state in order to completely characterize the set of potential transitions among labor force states.

The entire set of estimated average marginal effects is shown in Tables 3 through 6.[11] (Statistical significance is denoted at the .10 level by *, at the .05 level by **, and at the .01 level by *** for a two-tailed test in Tables 3 through 8.) Summary results of the health impacts in these models are found in Table 7.

If both spouses are initially working, the wife originally having a health problem significantly reduces the probability of both continuing to work by .23 while the wife experiencing the onset of a new health condition does not significantly reduce the probability both continue to work. The opposite holds true for men. The husband having a new health problem is associated with a significant .28 reduction in the probability of both continuing to work while a health condition present when both entered the labor market does not have a significant impact. The wife having a health condition increases the likelihood she will exit the labor market while her husband continues to work, with a new health problem having a larger significant impact than a health condition that was ongoing (.19 and .15, respectively). Similarly, a new health problem increases the probability the husband leaves the labor market while his wife continues to work by a larger magnitude than an ongoing health problem (.35 and .18, respectively). For husbands and wives alike, the longer the duration of the health problem, the less likely the spouse with the health condition drops out of the labor market while the other spouse remains in the workforce. Perhaps the longer

[11] Average marginal effects are estimated using a program called *margin* written by Tamas Bartan, http://www.bkae.hu/bartus. *Margin* calculates the average of partial and discrete changes over the observations. The standard errors for marginal effects are calculated using the delta method. Greene (2003) states "Current practice favors averaging marginal effects when it is possible to do so" (p. 816).

Table 3—Average Marginal Impacts of Multinomial Logit, Initially Both Husband and Wife Working (z-scores in parentheses)

Independent Variables	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work
Wife Age	0.1210	-0.1953	0.0743
	(0.17)	(-0.98)	(0.33)
Wife Age Squared	-0.0127	0.0212	-0.0085
	(-0.18)	(1.08)	(-0.39)
Wife Not White	-0.0886	0.0437	0.0449
	(-0.51)	(0.67)	(0.56)
Wife Years of Education	-0.0052	0.0002	0.0050
	(-0.34)	(0.04)	(1.07)
Wife Actual Years of Work Experience	-0.0070	-0.0158	0.0228
	(-0.05)	(-0.45)	(0.54
Wife Actual Years of Work Experience Squared	0.0072	0.0030	-0.0102
	(0.22)	(0.33)	(-0.98)
Wife Ongoing Health Problem	-0.2334**	0.1455**	0.0879
	(-2.09)	(2.54)	(1.59)
Wife New Health Problem	-0.0757	0.1943*	-0.1186***
	(-0.41)	(1.72)	(-3.56)
Duration of Wife's Health Problem	0.0163	-0.0081*	-0.0082
	(0.90)	(-1.75)	(-1.33)
Duration of Wife's Health Problem Squared	-0.0002	0.0002*	0.00006
	(-0.60)	(1.80)	(0.44)
Wife Pension	0.0250	-0.0484**	0.0234
	(0.34)	(-2.19)	(1.00)
Wife Offered Early Retirement	-0.2202**	0.1888***	0.0314
	(-2.15)	(2.84)	(0.67)
Wife Health Insurance Through Employer	0.0429	-0.0512**	0.0083
	(0.42)	(-2.16)	(0.29)
Husband Age	0.3927	-0.4373	0.0446
	(0.25)	(-1.41)	(0.16)
Husband Age Squared	-0.0314	0.0356	-0.0042
	(-0.22)	(1.25)	(-0.16)
Husband Not White	0.0803	-0.0037	-0.0766
	(0.35)	(-0.07)	(-1.40)
Husband Years of Education	0.0067	-0.0046	-0.0021
	(0.50)	(-1.27)	(-0.54)
Husband Actual Years of Work Experience	0.1246	0.0275	-0.1521***
	(0.77)	(0.63)	(-3.31)
Husband Actual Years of Work Experience Squared	-0.0212	-0.0028	0.0240***
	(-0.66)	(-0.33)	(2.58)
Husband Ongoing Health Problem	-0.1551	-0.0253	0.1804***
	(-1.33)	(-0.62)	(2.92)
Husband New Health Problem	-0.2831***	-0.0681*	0.3512***
	(-3.36)	(-1.62)	(4.34)
Duration of Husband's Health Problem	0.0099	0.0004	-0.0103**
	(0.66)	(0.11)	(-2.42)
Duration of Husband's Health Problem Squared	-0.0002	0.000006	0.0002**
	(-0.63)	(0.12)	(2.43)
Husband Pension	-0.0351	0.0097	0.0254
	(-0.38)	(0.41)	(1.02)

Table 3 (continued)—Average Marginal Impacts of Multinomial Logit, Initially Both Husband and Wife Working (z-scores in parentheses)

Independent Variables	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work
Husband Offered Early Retirement	-0.0392	-0.0497**	0.0889**
	(-0.40)	(-1.93)	(2.21)
Husband Health Insurance Through Employer	0.0516	0.0116	-0.0632***
	(0.73)	(0.59)	(-2.84)
Number of Kids Under the Age of 18	-0.0115	0.0008	0.0107
	(-0.20)	(0.05)	(0.59)
Length of Marriage	0.0021	-0.0010	-0.0011
	(0.67)	(-1.11)	(-1.25)
Length of Time in Initial Employment State	0.0372***	-0.0268***	-0.0104***
	(2.53)	(-7.84)	(-3.02)
Length of Time in Initial Employment State Squared	-0.0009**	0.0006***	0.0003***
	(-2.15)	(6.18)	(3.49)

the duration of the health problem, the more likely the individual has already adapted to the condition or the less the health interferes with the job requirements. A new health condition experienced by the wife significantly reduces the probability by .11 she remains in the workforce but her husband drops out. Similarly, a new health condition experienced by the husband significantly reduces the probability he remains in the workforce but his wife drops out but by a smaller magnitude, .07.

If the husband is working initially but the wife is not, the husband having an ongoing health problem is associated with a .14 greater likelihood the husband leaves the labor market. The husband having a new health condition significantly decreases the likelihood his wife joins him in the labor market by approximately .15. The longer the wife has a health problem the less likely she enters the workforce. The wife having a health problem has no significant impact on the transition rate of the husband. Therefore, the results imply that when the husbands are the sole breadwinner of the family, husbands do not drop out of the labor market to increase their household or care-taking responsibilities when their wife becomes ill. Husbands do transition out of the labor force, however, when they are ill. Furthermore, the wives of the unhealthy are not likely to return to work in an attempt to replace lost income or contribute to increased medical expenditures.

If the wife is working initially but the husband is not, the husband having an ongoing or a new health problem significantly reduces the probability of the husband transitioning into work by approximately .22 and .23, respectively. Furthermore, the husband experiencing a new health problem significantly reduces the likelihood (.24) the wife drops out of the labor market. The wife having a new health problem reduces the likelihood the husband transitions into work by .23. The wife having an ongoing health problem is associated with a .23 greater likelihood the wife leaves the labor market. Therefore, the results imply that wives do not drop out of the labor market to increase their household or care-taking responsibilities when their husband

Table 4—Average Marginal Impacts of Multinomial Logit, Initially Husband Works, Wife Does Not Work (z-scores in parentheses)

Independent Variables	Both Work	Husband Works, Wife Does Not Work	Neither Work
Wife Age	0.5143**	-0.3461	-0.1682
	(2.09)	(-0.36)	(-0.60)
Wife Age Squared	-0.0652***	0.0436	0.0216
	(-2.59)	(0.46)	(0.77)
Wife Not White	0.0129	-0.0506	0.0377
	(0.22)	(-0.27)	(0.60)
Wife Years of Education	-0.0011	0.0033	-0.0022
	(-0.21)	(0.16)	(-0.35)
Wife Actual Years of Work Experience	0.0663	0.0047	-0.0710
	(1.33)	(0.03)	(-1.31)
Wife Actual Years of Work Experience Squared	-0.0168	-0.0075	0.0243
	(-0.99)	(-0.13)	(1.37)
Wife Ongoing Health Problem	-0.0363	0.0401	-0.0038
	(-0.82)	(0.23)	(-0.07)
Wife New Health Problem	-0.0545	0.1066	-0.0521
	(-0.67)	(0.26)	(-0.58)
Duration of Wife's Health Problem	-0.0122**	0.0067	0.0055
	(-2.20)	(0.43)	(1.12)
Duration of Wife's Health Problem Squared	0.0002***	-0.0001	-0.0001
	(2.18)	(-0.43)	(-1.23)
Wife Pension	0.0009	0.0231	-0.0240
	(0.02)	(0.17)	(-0.61)
Wife Offered Early Retirement	0.1571	-0.0825	-0.0746
	(0.96)	(-0.20)	(-0.62)
Wife Health Insurance Through Employer	0.1002	-0.1129	0.0127
	(1.10)	(-0.59)	(0.16)
Husband Age	0.1310	-0.1756	0.0446
	(0.48)	(-0.15)	(0.14)
Husband Age Squared	-0.0145	0.0220	-0.0075
	(-0.55)	(0.20)	(-0.24)
Husband Not White	-0.0499	0.0663	-0.0164
	(-0.98)	(0.29)	(-0.26)
Husband Years of Education	-0.0053	0.0059	-0.0006
	(-1.08)	(0.33)	(-0.10)
Husband Actual Years of Work Experience	0.0441	0.0154	-0.0595
	(0.79)	(0.08)	(-1.01)
Husband Actual Years of Work Experience Squared	-0.0097	-0.0018	0.0115
	(-0.82)	(-0.05)	(0.94)
Husband Ongoing Health Problem	0.0532	-0.1942	0.1410*
	(0.81)	(-1.22)	(1.66)
Husband New Health Problem	-0.1510***	0.0861	0.0649
	(-5.07)	(0.30)	(0.71)
Duration of Husband's Health Problem	-0.0007	0.0032	-0.0025
	(-0.10)	(0.13)	(-0.31)
Duration of Husband's Health Problem Squared	-0.00002	0.00005	-0.00003
	(-0.13)	(0.10)	(-0.18)
Husband Pension	-0.0408	0.0472	-0.0064
	(-1.12)	(0.42)	(-0.17)

Table 4 (continued)—Average Marginal Impacts of Multinomial Logit, Initially Husband Works, Wife Does Not Work (z-scores in parentheses)

Independent Variables	Both Work	Husband Works, Wife Does Not Work	Neither Work
Husband Offered Early Retirement	0.0087	-0.2217**	0.2130***
	(0.20)	(-2.34)	(3.69)
Husband Health Insurance Through Employer	0.0032	-0.0036	0.0004
	(0.11)	(-0.04)	(0.01)
Number of Kids Under the Age of 18	0.0121	-0.0157	0.0036
	(0.63)	(-0.22)	(0.16)
Length of Marriage	-0.0012	0.0020	-0.0008
	(-0.94)	(0.45)	(-0.58)
Length of Time in Initial Employment State	-0.0114***	0.0373**	-0.0259***
	(-2.95)	(2.20)	(-6.07)
Length of Time in Initial Employment State Squared	0.0003***	-0.0008**	0.0005***
	(3.01)	(-2.14)	(5.73)

becomes ill. Rather, they stay in the labor market to maintain or replace the earnings of the family. Wives do transition out of the labor market when they become ill.

Last, we look at the effect of health on couples when initially neither spouse is working. Either spouse being of ongoing poor health significantly increases the likelihood that the ill spouse remains out of the labor force and decreases the probability the spouse in poor health enters the labor force. The husband having a new health condition decreases the likelihood that the wife returns to work by .18. Surprisingly, the wife experiencing a new health condition increases the probability by .15 that the husband returns to work. Perhaps husbands enter the labor force to recoup savings or earn income to pay for unexpected medical expenditures. Alternatively, the value of leisure of the couple may change with the wife's health. Except for this one case, having a health problem simply does not induce a spouse to enter the labor market.

Employer-provided health insurance of the husband and wife is only a factor in one of the initial employment states, when both spouses are employed. In this case, the wife having employer-provided health insurance decreases the probability she leaves the workforce while her husband continues to work by .05. The husband having employer-provided health insurance decreases the probability he leaves the workforce while his wife remains in the labor market by .06. The effect of health insurance when both are working is of similar magnitude for husbands and wives.

We also estimate a second specification in which the end state is the employment state of the couple that is observed 12 months after the first transition of a spouse.[12] Summary results for the health impacts for this specification are shown in

[12] For example, if both husband and wife are working initially and the wife transitions out of the labor market in July 1992 the new employment state at the last monthly observation will be husband working and wife not working. If the husband then transitions out of the labor market in September 1992 in this new specification, the new employment state at the last monthly observation will be neither husband nor wife working.

Table 5—Average Marginal Impacts of Multinomial Logit, Initially Wife Works, Husband Does Not Work (z-scores in parentheses)

Independent Variables	Both Work	Wife Works, Husband Does Not Work	Neither Work
Wife Age	0.2430	1.1269	-1.3699**
	(0.39)	(0.54)	(-2.14)
Wife Age Squared	-0.0301	-0.1072	0.1373**
	(-0.51)	(-0.53)	(2.23)
Wife Not White	-0.0286	0.0345	-0.0059
	(-0.26)	(0.08)	(-0.05)
Wife Years of Education	-0.0077	0.0175	-0.0098
	(-0.77)	(0.45)	(-0.90)
Wife Actual Years of Work Experience	0.0447	-0.0612	0.0165
	(0.44)	(-0.19)	(0.15)
Wife Actual Years of Work Experience Squared	-0.0069	0.0153	-0.0084
	(-0.28)	(0.20)	(-0.31)
Wife Ongoing Health Problem	0.0680	-0.2942	0.2262*
	(0.55)	(-1.18)	(1.84)
Wife New Health Problem	-0.2309***	0.0018	0.2291
	(-11.84)	(-0.01)	(1.52)
Duration of Wife's Health Problem	-0.0039	0.0114	-0.0075
	(-0.42)	(0.23)	(-0.62)
Duration of Wife's Health Problem Squared	0.0001	-0.0002	0.0001
	(0.46)	(-0.19)	(0.49)
Wife Pension	0.0692	0.0172	-0.0864
	(1.48)	(0.09)	(-1.36)
Wife Offered Early Retirement	-0.0707	-0.1657	0.2364**
	(-0.99)	(-0.81)	(1.96)
Wife Health Insurance Through Employer	-0.0027	-0.0005	0.0032
	(0.05)	(0.01)	(0.04)
Husband Age	-0.7125	-0.2828	0.9953
	(-0.54)	(-0.04)	(0.51)
Husband Age Squared	0.0552	0.0460	-0.1012
	(0.47)	(0.07)	(-0.59)
Husband Not White	0.0177	-0.0334	0.0157
	(0.16)	(-0.08)	(0.13)
Husband Years of Education	0.0079	-0.0051	-0.0028
	(1.08)	(-0.16)	(-0.31)
Husband Actual Years of Work Experience	0.0080	0.1652	-0.1732**
	(0.12)	(0.56)	(-2.03)
Husband Actual Years of Work Experience Squared	-0.0009	-0.0376	0.0385*
	(-0.06)	(-0.56)	(1.97)
Husband Ongoing Health Problem	-0.2177**	0.3089	-0.0912
	(-2.51)	(1.41)	(-1.01)
Husband New Health Problem	-0.2334***	0.4703	-0.2369***
	(-11.97)	(0.48)	(-10.47)
Duration of Husband's Health Problem	0.0103	-0.0156	0.0053
	(1.57)	(-0.54)	(0.65)
Duration of Husband's Health Problem Squared	-0.0002	0.0004	-0.0001
	(-1.64)	(0.56)	(-0.76)

Table 5 (continued)—Average Marginal Impacts of Multinomial Logit, Initially Wife Works, Husband Does Not Work (z-scores in parentheses)

Independent Variables	Both Work	Wife Works, Husband Does Not Work	Neither Work
Husband Pension	-0.0131	-0.0483	0.0614
	(-0.27)	(-0.20)	(0.99)
Husband Offered Early Retirement	-0.0770	0.1725	-0.0955
	(-1.32)	(0.47)	(-1.41)
Husband Health Insurance Through Employer	-0.0661	0.0011	0.0650
	(-1.36)	(0.01)	(0.95)
Number of Kids Under the Age of 18	0.0015	-0.0067	0.0052
	(0.04)	(-0.03)	(0.11)
Length of Marriage	-0.0012	0.0008	0.0004
	(-0.66)	(0.10)	(0.17)
Length of Time in Initial Employment State	-0.0893***	0.0791	0.0102
	(-8.30)	(1.31)	(0.71)
Length of Time in Initial Employment State Squared	0.0031***	-0.0018	-0.0013
	(6.86)	(-0.64)	(-1.55)

Table 8. Given the additional 12 months for second spouse transition to occur, this specification gives us enough observations to identify the effects of health of the husband and the wife on all 16 transitions, unlike our first specification.[13] If the unhealthy spouse generally drops out first, we likely underestimate the impact of health on the other spouse's transition into or out of the labor market in our first specification (i.e., the cross-effect is likely underestimated). We do not present the results for the case where neither spouse is working initially. In this case, both spouses returning to work rarely occurs. In general, the results are similar to those obtained using the original specification. One notable addition is that we find evidence that among couples with only one spouse initially working, a health problem experienced by either spouse significantly reduces the probability that both members of the couple change employment states (i.e., the spouse initially working exits while the spouse initially not working enters the market). This is the only estimated effect that is statistically significant among the eight new effects of health on employment transitions that we are able to identify with our second specification.

Our Results Compared with Blau (1998) and Blau and Riphahn (1999)

Both Blau (1998) and Blau and Riphahn (1999) estimate transitions among family labor force states as a function of the health of family members, so it is worthwhile to compare and contrast our results with theirs. Blau uses 1969-1979 data

[13] In other words, we are able to identify the effects of changes in the health of the wife on all 16 transition probabilities and changes in the health of the husband on all 16 transition probabilities, for 32 estimated effects. Our first specification only identified 24 health effects (12 each for changes in the health of the husband and the wife).

Table 6—Average Marginal Impacts of Multinomial Logit, Initially Neither Husband or Wife Works (z-scores in parentheses)

Independent Variables	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Wife Age	0.6357	-0.3867	-0.2490
	(0.94)	(-0.72)	(-0.32)
Wife Age Squared	-0.0632	0.0311	0.0321
	(-0.91)	(0.59)	(0.42)
Wife Not White	-0.0568	-0.0634	0.1202
	(-0.61)	(-0.57)	(1.40)
Wife Years of Education	0.0035	0.0139	-0.0174**
	(0.42)	(1.51)	(-2.42)
Wife Actual Years of Work Experience	0.0951	-0.0916	-0.0035
	(0.90)	(-1.02)	(0.03)
Wife Actual Years of Work Experience Squared	-0.0147	0.0211	-0.0064
	(-0.51)	(0.74)	(-0.27)
Wife Ongoing Health Problem	-0.0435	-0.0950	0.1385**
	(-0.42)	(-1.10)	(2.41)
Wife New Health Problem	0.1517*	-0.1775***	0.0258
	(1.65)	(-9.19)	(0.28)
Duration of Wife's Health Problem	0.0019	-0.0062	0.0043
	(0.16)	(-0.65)	(0.49)
Duration of Wife's Health Problem Squared	-0.00006	0.0002	-0.0002
	(0.22)	(0.82)	(-1.17)
Wife Pension	-0.0549	-0.0155	0.0704
	(-0.70)	(-0.22)	(0.89)
Wife Offered Early Retirement	-0.1132**	0.1356	-0.0224
	(-2.22)	(1.44)	(-0.32)
Wife Health Insurance Through Employer	0.1550**	-0.0873	-0.0677
	(1.99)	(-1.37)	(-1.04)
Husband Age	-0.6031	-0.3043	0.9074
	(-0.97)	(-0.33)	(0.80)
Husband Age Squared	0.0366	0.0275	-0.0641
	(0.63)	(0.33)	(-0.64)
Husband Not White	0.1472	0.0213	-0.1685
	(0.81)	(0.13)	(-1.22)
Husband Years of Education	0.0097	-0.0046	-0.0051
	(1.12)	(-0.50)	(-0.56)
Husband Actual Years of Work Experience	-0.1524**	0.1508*	0.0016
	(-2.22)	(1.85)	(0.02)
Husband Actual Years of Work Experience Squared	0.0181	-0.0414**	0.0233
	(1.03)	(-2.02)	(1.28)
Husband Ongoing Health Problem	-0.2236***	0.0501	0.1735***
	(-3.01)	(0.73)	(2.70)
Husband New Health Problem	0.0824	-0.1835***	0.1011
	(1.09)	(-9.31)	(1.34)
Duration of Husband's Health Problem	0.0112	0.0115	-0.0227**
	(1.20)	(1.04)	(-2.51)
Duration of Husband's Health Problem Squared	-0.0001	-0.0005*	0.0006***
	(-0.69)	(-1.74)	(2.78)
Husband Pension	0.0646	0.0066	-0.0712
	(1.08)	(0.10)	(-1.07)

Table 6 (continued)—Average Marginal Impacts of Multinomial Logit, Initially Neither Husband or Wife Works (z-scores in parentheses)

Independent Variables	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Husband Offered Early Retirement	0.0663	0.0495	-0.1158*
	(0.75)	(0.63)	(-1.85)
Husband Health Insurance Through Employer	0.0093	-0.0542	0.0449
	(0.19)	(-1.22)	(0.97)
Number of Kids Under the Age of 18	-0.0032	-0.0005	0.0037
	(-0.12)	(-0.02)	(0.14)
Length of Marriage	-0.0015	-0.0017	0.0032**
	(-0.77)	(-0.92)	(2.20)
Length of Time in Initial Employment State	-0.0332***	-0.0517***	0.0849***
	(-2.81)	(-4.97)	(6.47)
Length of Time in Initial Employment State Squared	0.0009**	0.0017**	-0.0026***
	(2.15)	(3.99)	(-5.53)

from the *Retirement History Survey* while Blau and Riphahn use 1984-1994 *German Socio-Economic Panel* data. The average demographic composition of our HRS sample, the *Retirement History Survey* sample, and the *German Socio-Economic Panel* sample are similar. Blau (1998) uses a self-rated poor health measure, Blau and Riphahn (1999) use reports of any chronic disease, while we use health conditions that limit the type or amount of work. The incidence of health problems in the Blau (1998) sample (.188 for husbands and .164 for wives) is lower but closer to the incidence rates of the ongoing health problems in our HRS sample (.25 for husbands and .23 for wives) than are the higher incidence rates in the Blau and Riphahn (1999) sample (.467 for husbands and .417 for wives). The higher incidence rates in the Blau and Riphahn (1999) probably reflect the fact that any chronic condition is reported, whether or not it interferes with work activities.

Because Blau (1998) is able to identify all 32 health effects, we compare the results from our second specification that also identifies all 32 health effects. We compare our results from our first specification with those of Blau and Riphahn (1999) because both sets of estimates identify 24 health effects. Table 9 presents the reported health transition rate effects of Blau (1998) and Blau and Riphahn (1999) and provides a comparison with our results. The estimates shown in bold with an x indicate that the estimated effects of the ongoing health condition or new health condition (or both) in this study are of the opposite direction and are statistically significant at least at the .10 level in a two-tailed test.

The directions of our estimated marginal health effects align closely with Blau (1998). We do not compare the magnitude of the estimated responses to changes in health in the U.S. because the definitions of variables, specifications of the model, estimation methods, and panel length are not the same. In only two of 32 cases are the estimated marginal effects statistically significant and the opposite direction of that estimated by Blau (1998). Blau finds that when only one spouse is originally

Table 7—Summary of Average Marginal Impacts Health Variables (z-scores in parentheses)

	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Initially Both Work				
Wife Ongoing Health Problem	-0.2334**	0.1455**	0.0879	
	(-2.09)	(2.54)	(1.59)	
Wife New Health Problem	-0.0757	0.1943*	-0.1186***	
	(-0.41)	(1.72)	(-3.56)	
Duration of Wife's Health Problem	0.0163	-0.0081*	-0.0082	
	(0.90)	(-1.75)	(-1.33)	
Duration of Wife's Health Problem Squared	-0.0002	0.0002*	0.00006	
	(-0.60)	(1.80)	(0.44)	
Husband Ongoing Health Problem	-0.1551	-0.0253	0.1804***	
	(-1.33)	(-0.62)	(2.92)	
Husband New Health Problem	-0.2831***	-0.0681*	0.3512***	
	(-3.36)	(-1.62)	(4.34)	
Duration of Husband's Health Problem	0.0099	0.0004	-0.0103**	
	(0.66)	(0.11)	(-2.42)	
Duration of Husband's Health Problem Squared	-0.0002	0.000006	0.0002**	
	(-0.63)	(0.12)	(2.43)	
Initially Husband Works, But Wife Does Not				
Wife Ongoing Health Problem	-0.0363	0.0401		-0.0038
	(-0.82)	(0.23)		(-0.07)
Wife New Health Problem	-0.0545	0.1066		-0.0521
	(-0.67)	(0.26)		(-0.58)
Duration of Wife's Health Problem	-0.0122**	0.0067		0.0055
	(-2.20)	(0.43)		(1.12)
Duration of Wife's Health Problem Squared	0.0002***	-0.0001		-0.0001
	(2.18)	(-0.43)		(-1.23)
Husband Ongoing Health Problem	0.0532	-0.1942		0.1410*
	(0.81)	(-1.22)		(1.66)
Husband New Health Problem	-0.1510***	0.0861		0.0649
	(-5.07)	(0.30)		(0.71)
Duration of Husband's Health Problem	-0.0007	0.0032		-0.0025
	(-0.10)	(0.13)		(-0.31)
Duration of Husband's Health Problem Squared	-0.00002	0.00005		-0.00003
	(-0.13)	(0.10)		(-0.18)

working, when the working spouse has a health problem, it is more likely that the unhealthy spouse drops out of the labor market and the other spouse enters the workforce. Using the HRS we find the spouse that was not working originally is less likely to enter the labor market when the working spouse becomes ill. This difference could be due to an increase in public and private disability programs in the United States crowding out the need for the healthy spouse to try to recoup lost earnings or generate income for medical expenditures. The signs matching on the

Table 7 (continued)—Summary of Average Marginal Impacts Health Variables (z-scores in parentheses)

	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Initially Wife Works, But Husband Does Not				
	0.0680		-0.2942	0.2262*
Wife Ongoing Health Problem	(0.55)		(-1.18)	(1.84)
	-0.2309***		0.0018	0.2291
Wife New Health Problem	(-11.84)		(-0.01)	(1.52)
	-0.0039		0.0114	-0.0075
Duration of Wife's Health Problem	(-0.42)		(0.23)	(-0.62)
	0.0001		-0.0002	0.0001
Duration of Wife's Health Problem Squared	(0.46)		(-0.19)	(0.49)
	-0.2177**		0.3089	-0.0912
Husband Ongoing Health Problem	(-2.51)		(1.41)	(-1.01)
	-0.2334***		0.4703	-0.2369***
Husband New Health Problem	(-11.97)		(0.48)	(-10.47)
	0.0103		-0.0156	0.0053
Duration of Husband's Health Problem	(1.57)		(-0.54)	(0.65)
	-0.0002		0.0004	-0.0001
Duration of Husband's Health Problem Squared	(-1.64)		(0.56)	(-0.76)
Initially Neither Work				
		-0.0435	-0.0950	0.1385**
Wife Ongoing Health Problem		(-0.42)	(-1.10)	(2.41)
		0.1517*	-0.1775***	0.0258
Wife New Health Problem		(1.65)	(-9.19)	(0.28)
		0.0019	-0.0062	0.0043
Duration of Wife's Health Problem		(0.16)	(-0.65)	(0.49)
		-0.00006	0.0002	-0.0002
Duration of Wife's Health Problem Squared		(0.22)	(0.82)	(-1.17)
		-0.2236***	0.0501	0.1735***
Husband Ongoing Health Problem		(-3.01)	(0.73)	(2.70)
		0.0824	-0.1835***	0.1011
Husband New Health Problem		(1.09)	(-9.31)	(1.34)
		0.0112	0.0115	-0.0227**
Duration of Husband's Health Problem		(1.20)	(1.04)	(-2.51)
		-0.0001	-0.0005*	0.0006***
Duration of Husband's Health Problem Squared		(-0.69)	(-1.74)	(2.78)

majority of the health measures (30 of 32) suggest that the effects of health changes on the labor force participation decisions of older households in the U.S. have been stable over the last twenty years, even given the relatively large increases in the labor force participation rates of older women and the concomitant decreases in the labor force participation rates of older men. While the pattern of labor force participation of older households has changed and along with it the public policy environment

Table 8—Summary of Average Marginal Impacts Health Variables of Multinomial Logit, with all Transition States Possible (z-scores in parentheses)

	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Initially Both Work				
	-0.1782	0.1745***	0.0242	-0.0205
Wife Ongoing Health Problem	(-1.19)	(2.49)	(0.42)	(-1.06)
	-0.2015	0.2968**	-0.0925***	-0.0028
Wife New Health Problem	(-1.33)	(2.33)	(-2.83)	(-0.11)
	0.0049	-0.0092*	-0.0019	0.0062*
Duration of Wife's Health Problem	(0.24)	(-1.93)	(-0.26)	(1.67)
	0.000008	0.00019*	-0.000017	-0.00019*
Duration of Wife's Health Problem Squared	(0.02)	(1.86)	(0.10)	(-1.43)
	-0.1072	-0.0524	0.1298*	0.0298
Husband Ongoing Health Problem	(-0.64)	(-1.37)	(1.69)	(0.98)
	-0.3120**	-0.0549	0.3413**	0.0256
Husband New Health Problem	(-2.49)	(-1.29)	(2.19)	(0.79)
	0.0038	0.0024	-0.0042	-0.0020
Duration of Husband's Health Problem	(0.23)	(0.65)	(-0.98)	(-1.05)
	-0.00008	-0.0000004	0.00005	0.00004
Duration of Husband's Health Problem Squared	(-0.29)	(-0.07)	(0.73)	(1.40)
Initially Husband Works, But Wife Does Not				
	-0.0222	0.1053	-0.1043	0.0212
Wife Ongoing Health Problem	(-0.18)	(0.14)	(-1.58)	(0.11)
	0.0177	-0.0286	-0.0105	0.0214
Wife New Health Problem	(0.17)	(-0.06)	(-1.12)	(0.14)
	-0.0116	0.0019	0.0069**	0.0028
Duration of Wife's Health Problem	(-0.75)	(0.03)	(2.35)	(0.15)
	0.00022	-0.000006	-0.00015**	-0.00006
Duration of Wife's Health Problem Squared	(0.68)	(-0.01)	(-2.45)	(-0.17)
	0.0125	-0.1508	0.0368	0.1015
Husband Ongoing Health Problem	(0.10)	(-0.27)	(0.70)	(0.48)
	-0.1124*	-0.0347	0.0099	0.1372
Husband New Health Problem	(-1.87)	(-0.06)	(0.29)	(0.46)
	0.0026	-0.0049	-0.0019	0.0042
Duration of Husband's Health Problem	(0.17)	(-0.07)	(-0.71)	(0.21)
	-0.00008	0.0002	0.00003	-0.0001
Duration of Husband's Health Problem Squared	(-0.27)	(0.15)	(0.67)	(-0.41)

may have changed, the direction of their responses to health changes within the household apparently has not.

Our estimated marginal effects of health on couple employment transitions are statistically significant and opposite those of Blau and Riphahn (1999) in five of 24 cases. These cases illustrate some of the important differences between our findings and those of Blau and Riphahn (1999). In the case where both spouses are initially working, we find that the onset of a health condition for either the husband or the wife lowers the probability that both spouses remain working. Blau and Riphahn

Table 8 (continued)—Summary of Average Marginal Impacts Health Variables of Multinomial Logit, with all Transition States Possible (z-scores in parentheses)

	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Initially Wife Works, But Husband Does Not				
	-0.0365	-0.0782***	-0.2074	0.3221**
Wife Ongoing Health Problem	(-0.35)	(-2.69)	(-0.99)	(2.47)
	-0.0001	-0.0517***	-0.1215	0.1733
Wife New Health Problem	(0.01)	(-4.74)	(-0.47)	(1.29)
	0.0235	0.0162**	-0.0167	-0.0231
Duration of Wife's Health Problem	(1.14)	(2.25)	(0.35)	(-1.51)
	-0.0010	-0.0003	0.0006	0.0007*
Duration of Wife's Health Problem Squared	(1.45)	(-1.52)	(0.52)	(1.70)
	-0.1274*	-0.1078*	0.3379	-0.1026
Husband Ongoing Health Problem	(-1.89)	(-1.71)	(1.61)	(-1.26)
	-0.2116***	-0.0532***	0.1189	0.1459
Husband New Health Problem	(10.10)	(-4.75)	(0.21)	(0.76)
	-0.0061	0.0048	-0.0078	0.0091
Duration of Husband's Health Problem	(1.28)	(0.74)	(-0.35)	(1.28)
	0.0001	-0.0001	0.0002	-0.0002
Duration of Husband's Health Problem Squared	(1.39)	(-0.85)	(0.37)	(-1.32)

(1999) find just the opposite: chronic health conditions experienced by either the husband or the wife raise the probability that both spouses remain working. In the case in which only the husband is working and the husband experiences a health condition, we find a reduced probability of a transition to a situation in which both spouses are working. Blau and Riphahn (1999) find an increased probability of both spouses working. In the case in which only the wife is working and the husband experiences a health problem, we find a reduced probability that neither spouse is working while Blau and Riphahn (1999) find an increased probability of neither spouse working. Finally, in the case in which neither spouse is working and the wife experiences a health problem, we find an increase in the probability that the husband returns to work while Blau and Riphahn (1999) find a decreased probability of the husband returning to work.

Perhaps differences in social welfare programs and employment law in Germany and the U.S. explain these differences. Individuals who experience health problems may be better able to retain their jobs in Germany than in the U.S. through more generous employment leave policies. At the same time, more generous social welfare programs may make it possible for wives to leave the labor market to care for ailing husbands. The movement to both spouses working after the onset of a chronic health condition of the husband is more difficult to explain in this light. It is still likely that differences in institutional arrangements in Germany and the U.S. help explain the differences in the results found here and in Blau and Riphahn (1999).

Table 9—Comparison of Marginal Effects of Health across Studies

	End State			
	Both Work	Husband Works, Wife Does Not Work	Wife Works, Husband Does Not Work	Neither Work
Initially Both Work				
Blau and Riphahn (1999)				
Wife Chronic Disease	**0.0005 x**	0.0002	-0.0007	
Husband Chronic Disease	**0.0001 x**	-0.0002	0.0001	
Blau (1998)				
Wife Health Poor	-0.0102	0.0102	**0.0005 x**	-0.0005
Husband Health Poor	-0.0206	-0.0002	0.0168	0.0040
Initially Husband Works, Wife Does Not Work				
Blau and Riphahn (1999)				
Wife Chronic Disease	0.0032	-0.0014		-0.0018
Husband Chronic Disease	**0.0001 x**	-0.0004		0.0003
Blau (1998)				
Wife Health Poor	-0.0027	0.0052	-0.0003	-0.0022
Husband Health Poor	-0.0003	-0.0209	0.0004	0.0208
Initially Wife Works, Husband Does Not Work				
Blau and Riphahn (1999)				
Wife Chronic Disease	-0.0009		-0.0008	0.0017
Husband Chronic Disease	-0.0066		0.0030	**0.0036 x**
Blau (1998)				
Wife Health Poor	-0.0057	**0.0030 x**	-0.0096	0.0123
Husband Health Poor	-0.0229	-0.0022	0.031	-0.0059
Initially Neither Works				
Blau and Riphahn (1999)				
Wife Chronic Disease		**-0.0007 x**	-0.0010	0.0017
Husband Chronic Disease		-0.0024	-0.0004	0.0028
Blau (1998)				
Wife Health Poor	0.0001	0.0001	-0.0031	0.0029
Husband Health Poor	-0.0019	-0.0130	0.0004	0.0145

Note: **Bold** coefficient with an **x** next to it indicates that the corresponding estimate in this study is in the opposite direction and is statistically significant at least at the .10 level in a two-tailed test.

Conclusions

In this paper, we examine family labor market transitions over time within a multinomial logit model framework. Using data from the *Health and Retirement Study*, we find that family models provide a more complete picture of labor market decisions than individual models and that in dynamic family models the transitions that are observed depend on the family's original state. For example, if both spouses are working and one spouse experiences a health problem, we see that the other spouse is likely to remain working while the spouse with the health problem is likely to drop out of the labor force. If neither is working and one spouse experiences a health problem, the other spouse is unlikely to return to work. If the husband is

working and the wife is not and the husband encounters a health problem, it is likely that the wife will remain out of the labor force. Finally, if the wife is working and the husband is not and the husband gets a health problem, it is most likely that she will stay working. If the wife suffers a health problem, it is most likely that she will drop out of the labor force and the husband will remain out of the labor force.

In any case, it is clear that modeling within a family decision-making framework is necessary for a more complete understanding of the forces behind labor force responses to changes in health within families. When confronted with deteriorating health of one spouse, the other spouse is likely to remain working if he or she is already working, suggesting a response to declining earning power or increased health expenses in the family. On the other hand, if the healthy spouse is not working when the health of the other spouse deteriorates, he or she is unlikely to respond by entering the labor market, suggesting a response to increased household production needs in the household.

Our estimated transition probabilities are similar to the simulated transition probabilities of Blau (1998) using the earlier *Retirement History Survey*. Thus, it appears that family labor force decisions have remained relatively stable over time in the U.S. There are differences between our results and those obtained by Blau and Riphahn (1999) using German data, suggesting that differences in the institutional environment in the two countries could have a role in explaining the different labor force responses by families in the U.S. and Germany to deterioration in the health of a family member.

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