Popul Res Policy Rev
DOI 10.1007/s11113-009-9173-2

The Retirement Life Course in America at the Dawn of the Twenty-First Century

David F. Warner · Mark D. Hayward · Melissa A. Hardy

Received: 15 August 2009 / Accepted: 18 December 2009

Abstract As the baby boom cohorts expand the number of U.S. retirees, population estimates of the employment, withdrawal and reentry behaviors of older Americans' remain scarce. How long do people work? How frequently is retirement reversed? How many years are people retired? What is the modal age of retirement? And, how do the patterns for women compare to those for men? Using the 1992–2004 *Health and Retirement Study*, we estimate multistate working life tables to update information on the age-graded regularities of the retirement life course of men and women in the United States. We find that at age 50 men can expect to spend half of their remaining lives working for pay, while women can expect to spend just one-third. Half of all men and women have left the labor force by ages 63 and 61, respectively. Although the majority of retirement exits are final, variation in the nature and duration of the retirement process is substantial, as about a third of men's and women's exits are reversed. By quantifying these patterns for men and women, we provide a sound empirical basis for evaluating policy designed to

A previous version of the paper was presented at the Annual Meeting of the American Sociological Association, Boston, MA, August 2008.

D. F. Warner (✉)
Department of Sociology, Case Western Reserve University, Cleveland, OH 44106, USA
e-mail: david.warner@case.edu

D. F. Warner
Center for Family and Demographic Research, Bowling Green State University, Bowling Green, OH 43403, USA

M. D. Hayward
Department of Sociology, The Population Research Center, The University of Texas at Austin, Austin, TX 78712, USA

M. A. Hardy
Department of Sociology, Center for Life Course, Health, and Aging Research, The Pennsylvania State University, University Park, PA 16802, USA

Published online: 08 January 2010

address the financial pressures population aging places on public and private pension systems.

Keywords Retirement · Disability · Labor force · Life course · Gender · Multistate life tables

Through the mid-twentieth century retirement was relatively uncommon (Costa 1998), an event replete with uncertainties—higher risks of poverty, morbidity and vague expectations of disengagement. However, automatic adjustment of Social Security benefits and wage-indexing of earnings histories, coupled with mandatory retirement ages and the growth of defined-benefit pension plans, solidified retirement as a clearly defined normative phase of the life course (Atchley 1982; Guillemard and Rein 1993; Henretta 1992; Wise 2004).

As the twentieth century closed, however, the institutional uniformity of retirement had weakened. The abolition of mandatory retirement ages, proliferation of employer defined-benefit pension plans and one-time early retirement incentives, and secular improvement in financial standing that made retirement more affordable, all combined to shift the risks of old age economic security back toward individuals (Han and Moen 1999; Henretta 1992; Shuey and O'Rand 2004). Indeed, uncertainty is again a ubiquitous feature of retirement (Blossfeld et al. 2006; Hardy 2006). With retirement loosened from institutional schedules, and firmly entrenched as a phase of the life course (Costa 1998; Hardy 2002), variability in late career employment patterns has increased. The result is increased heterogeneity in the timing, permanency, and duration of the retirement life course.

Despite recognition that retirement is increasingly individualized (Guillemard and Rein 1993; Han and Moen 1999), as described by numerous studies analyzing individual-level retirement behavior, scholarly attention to documenting the ensuing demographic regularities of older American's work and retirement behavior *at the population-level* (Sullivan 2005) is more sparse. Those few studies are limited in their level of detail about retirement dynamics in that assessments typically rely on net-change indices, such as labor force participation rates, fail to examine health-mandated exits, and devote little attention to women's experiences compared to men. Many prior studies are also based on cohorts that worked and retired in different economic and institutional regimes. The result is that our understanding of the retirement life course is outdated, and answers to some key questions are not readily available:

- How many people remain in the labor force at a given age, and how closely are declining rates in participation linked to entitlement ages for Social Security?
- How tightly clustered is retirement around Social Security eligibility ages?
- Is retirement a single, irreversible event for most workers or do a significant proportion of workers exit and reenter multiple times?
- How many years can people expect to be in the labor force, work-disabled, and retired over their lifetimes?
- How similar or different is the retirement life course of men and women?

In the present study we develop a demographic model that provides answers to these questions, and thereby update information about the age-graded regularities that emerge from the complex transition processes that define the retirement life course. More detailed attention to the implications of the shifting retirement life course is essential given the changes in age structure anticipated with the aging of the baby boom cohorts and the consequences for both private and public pension systems (Hardy 2006; Kingson and Williamson 2001).

Prior Studies of the Retirement Life Course

The retirement life course refers to the demographic regularities of retirement—the average timing and permanency of labor force withdrawal and the expectation of remaining life in retirement, defined by the interplay of multiple and recurrent labor force events and mortality, in the population. The few recent population-level studies of retirement (e.g., Cieka et al. 1995, 1999–2000) have documented the onset of the retirement life course using labor force participation rates (LFPRs). While yielding information about net changes in labor force attachment, LFPRs provide no direct information about transitions—the movements in and out of the labor force—responsible for LFPRs. Indeed, stability in LFPRs can belie substantial changes in underlying exits and reentry. For example, the 1980s trend toward earlier ages of retirement also corresponded to increasing reentry (Hayward et al. 1994). It is unclear whether this pattern has continued and for whom, despite scholarly interest in 'bridge' jobs (Kim and Feldman 2000; Quinn and Kozy 1996).

Few recent studies have also gauged the length of life spent in retirement, which requires information both about movements into and out of the labor force as well as mortality. Available studies of retirement life expectancy are primarily based on decades-old data (e.g., Hayward and Grady 1990; Lee 2001) and are of limited use for describing the end of the work career today given changes in the economy and advances in life expectancy. For example, while increased longevity may or may not lead to a lengthening of work life (Quinn and Burkhauser 1994), the expansion of longevity raises the potential for reentry and multiple exits—a change that prolongs the time period over which retirement may (gradually) take place and increases the heterogeneity of retirement (Cahill et al. 2005; Mutchler et al. 1997).

Prior studies of the retirement life course, often because of the lack of data, provide few insights into the mode of labor force exits, assuming monolithic non-participation (Cieka et al. 1995, 1999–2000; Hayward et al. 1988; Lee 2001). Yet, there are several competing pathways out of the labor force—retirement and work-disability being the most prominent (Brown and Warner 2008; Henretta 1992). Indeed, studies of men who exited in the 1970s and 1980s found that whether workers exited through retirement or work-disability had profound consequences (Bound et al. 1999; Hayward and Grady 1990) for the retirement life course. The degree to which the mode of exit continues to influence the retirement life course is uncertain.

How men and women differ in the timing, length, and permanency of the retirement life course is also unknown. Prior demographic studies of retirement and working life have largely focused on men (Hayward et al. 1994; Lee 2001).

Although increases in women's education and lifelong labor force attachment have narrowed the gap between men's and women's work experiences, the continued gender-segregation of the labor market, greater family-related contingencies in women's careers (Moen and Han 2001), and higher rates of physical disability (Laditka and Laditka 2002), caution against the presumption of gender symmetry in the retirement life course. Prior individual-level studies suggest that women face higher retirement risks and lower rates of work-disability than men (Han and Moen 1999; Warner and Hofmeister 2006), which, when combined with their greater longevity, suggests that women's retirement life expectancy will be greater than that for men. Here, we provide new evidence about the timing, length, and permanency of women's retirement life course compared to that for men.

A Multistate Model of the Retirement Life Course

Our demographic model of the retirement life course draws on Markov-based multistate life tables (MSLTs) to summarize expected *lifetime* labor force experiences that result from the complex interplay of exit, entry, and mortality risks (Schoen 1988), assuming that these risks persist into the future. MSLTs are useful in identifying those ages where the bulk of retirement and work-disability events occur, the expected lifetime number of labor force events, the expected frequency of their reversal, and the extent to which reentry prolongs the work career. We use data from the *Health and Retirement Study* (HRS), the largest nationally representative longitudinal panel of older Americans over age 50, to estimate sex-specific working life tables and document similarities and differences in the retirement life course of men and women. We include self-defined work-disability as a distinct pathway out of the labor force (Henretta 1992) to assess one major way in which non-working life expectancy is differentiated by health-mandated exits and whether this differs for men and women.

Thus, our demographic model of the retirement life course is based on the movement of individuals over age 50 between three mutually exclusive labor force "states"— in the labor force, out of the labor force because of disability (i.e., work-disabled), out of the labor force but not disabled (i.e., retired)—and death. The model assumes that individuals carry their exit status—retired or work-disabled—forward in time until they experience either reentry or mortality, so no transitions were permitted between the retirement and work-disability. We made this restriction because shifts between the self-defined work-disability and retirement states likely reflect changing identities based on social desirability and age-graded social insurance eligibility (e.g., from work-disability to retirement) or in health (e.g., from retirement to work-disability), rather than actual changes in labor force behavior. Moreover, the low frequency of such transitions in the *HRS* (<5%) precluded reliable estimation of age-specific transition parameters. We assumed that after age 65 individuals only exit the labor force via retirement (Hayward and Grady 1990) as, programmatically, once individuals reach the full-benefit eligibility age, Social Security does not differentiate between disabled- and retired-worker benefits. Perhaps indicative of this fact, more than 91% of work-disability transitions occur

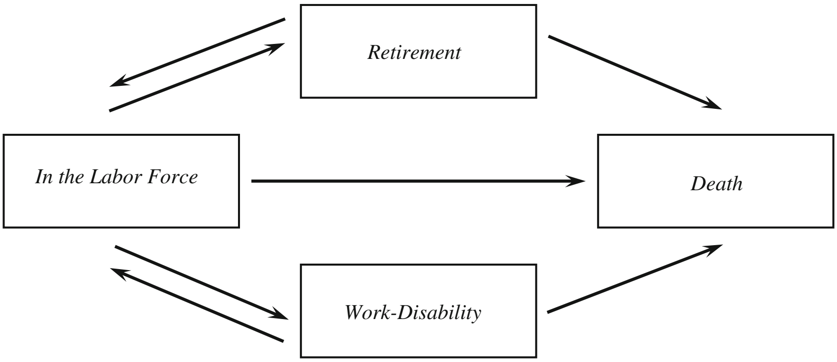

Fig. 1 Multistate life table model of the retirement life course. Note: There are 3 model states, 1 absorbing state (death), and 7 possible transitions between these statesas denoted by the *arrows*

before age 65 in the HRS. In all, seven transitions are used to define the retirement life course as individuals may make multiple transitions between labor force activity and the two non-participation states and from all three states to death (see Fig. 1).

Data and Methods

Analytic Sample

The *Health and Retirement Study* is a nationally representative panel of non-institutionalized persons over 50 years of age (see HRS 2008 for study design details). We used the cleaned RAND (2006) HRS data, in combination with the public-use files, from the 1992–2004 waves to construct a person-interval file containing labor force histories and mortality events for persons born 1947 or earlier. We pooled the seven observation waves to create a synthetic cohort centering on 1998. We analyzed both respondents and their birth cohort-eligible spouses to increase the density of transitions. Including both respondents and birth cohort-eligible spouses does not affect the estimation of standard errors within our sex-stratified modeling approach (described below), nor does the analysis of person-intervals as individual observations (Allison 1995). We applied time-varying respondent-level weights to retain the representative quality of the data (see HRS 2000).[1] The analytic sample was restricted to men less than age 90 and women less than age 100 to minimize data-sparseness. Our total analytic sample contained

[1] To gauge the representativeness of the HRS for describing the retirement life course, in preliminary analyses we calculated sex-specific total life expectancies and 5-year labor force participation rates. These HRS calculations largely matched U.S. Government estimates with two exceptions—our calculated life expectancies were marginally greater (<1 year) for women and the observed LFPRs were slightly higher (3–4%) for respondents over 60 than those reported in the U.S. Vital Statistic and Current Population Survey, respectively. These differences are to be expected given that the HRS sampled the non-institutionalized population and higher panel attrition among non-working respondents. Overall, we are confident in the representativeness of the HRS for examining the retirement life course.

24,273 persons, who contributed 91,933 person-intervals. Women contributed approximately 56% of the total person-intervals.

Measures

Labor Force Status

The work behavior of older adults is notoriously difficult to categorize (see Ekerdt and DeViney 1990). Here, we classified behavior in terms of three mutually exclusive self-defined labor force states to link our results with prior research as well as national data-monitoring systems that use LFPRs (see Fig. 1). Thus, respondents were *in the labor force* if they were "working for pay now;" "temporarily laid off, on sick or other leave;" or "unemployed and looking for work." Respondents were *work-disabled* if they identified as " disabled and unable to work" or reported that they were "retired" but had a health condition expected to last at least 3 months that prevented them from "working altogether" (see Burkhauser et al. 2002).[2] The remaining respondents were categorized as *retired*.[3] Unfortunately, respondents aged 70 years and older in the 1993 interview were asked only if they were working for pay, so persons not in the labor force were assigned to the retired and work-disabled states using the procedures outlined in Appendix A. Notwithstanding these cases, no other respondents were missing on labor force status (RAND 2006). Labor force transitions were detected by changes in work status across adjacent interviews.[4] Respondents were identified as deceased by proxy respondents or a probabilistic match in the National Death Index (HRS

[2] This reclassification distinguished between exits prompted by significant health concerns and those motivated by other reasons. Work-disabled persons may adopt the retiree identity because it is socially desirable, especially given that few respondents primarily identified as work-disabled (<4%). Also, RAND (2006) privileged retirement over work-disability in reconciling multiple labor force statuses obscuring self-defined health-mandated exits given that a sizeable minority of respondents classified by RAND as retired also indicated that their health limits their ability to work (20%). Defining respondents as work-disabled if a health limitation *prevents* them from working is consistent with prior studies. Moreover, ancillary analyses indicated that persons defined as work-disabled in this manner had *four* times the number of functional limitations as those defined as retired (not shown).

[3] Retired includes respondents who explicitly state that they were "retired," as well as "homemakers" and those of some "other" status. Discouraged workers—those who would like to be working, but have stopped looking for a job—are unable to be identified in the HRS and are also included with retired workers (consistent with the BLS classification of discouraged workers as out of the labor force). In practical terms, the number of potential discouraged workers was very low; depending on the interview, 10–13% of respondents identified as something other than working, unemployed, work-disabled, or retired and almost all of these (>90%) were women who identified as homemakers. Many older women are reluctant to identify as retired given gendered notions about careers even when they have substantial work histories (Szinovacz and DeViney 1999). We retained these respondents so that our results are directly comparable to estimates from national labor force monitoring agencies.

[4] Defining transitions between interviews does not appear to bias state-specific life expectancy calculations, but potentially underestimates the absolute volume of transitions in multistate life tables (Wolf and Gill 2009). Here, we have no reason to suspect that this observation window fails to detect one transition (e.g., working to retired) more than another (e.g., retired to working) or differentially captures the movements of men and women.

2008). We assumed that all transitions between labor force states occurred midway between interviews. Information about the date of death allowed us to determine the exact timing of mortality. Respondents were right-censored if they experienced a competing transition including attrition. A table presenting the distribution of labor force events, including death and attrition, can be found in Appendix B.

Age Parameters

We measured the exact *Age* of the respondent based on the difference between the respondent's interview and birth dates. We randomly assigned June or July to 106 respondents missing their birth month. Dummy variables coded one for *Age 62* and *Age 65* captured institutional exit pressures at the Social Security eligibility ages (Wise 2004).

Methodological Approach

The multistate life table model of the retirement life course rests on age-specific instantaneous transition rates governing the movements between the labor force states and death depicted in Fig. 1. These rates were defined as:

$$m_{ij}(x) = \lim_{\Delta x \to 0} \frac{p_{ij(x,x+n)}}{n} = m_{ijx},\ i \neq j \tag{1}$$

where $m_{ij}(x)$, is the probability of moving from state i to state j in the interval x to $x+n$, given *only* that an individual is in state i at exact age x. We estimated these transition rates separately for men and women using discrete-time hazard models.[5] These models had the general form:

$$\ln m_{ijx} = \beta_{ij0} + \gamma_{ij1}\mathrm{Age}_x \tag{2}$$

where β_{ij0} is a constant for all persons and $\gamma_{ij1}\mathrm{Age}_x$ is a vector of time-varying age polynomials and dummy variables for ages 62 and 65. For each of the seven transitions, we determined the functional form by entering age polynomials sequentially and comparing likelihood ratios between models to assess model fit. All equations for the transition between labor force states included terms for age 62 and age 65 (retirement only) irrespective of statistical significance.[6]

We used the parameter estimates to calculate age-specific transition rates—the inputs for the MSLTs. The life tables were calculated for men and women ages 50 to 100 using the linear method outlined by Schoen (1988) with a SAS® Macro written at the Penn State Population Research Institute. We allocated the life table radix of

[5] In preliminary analyses, we estimated a single model for each transition rate to verify gender non-proportionalities in *Age* and found substantial evidence of such non-proportionality in four of the seven transitions (not shown).

[6] To verify the functional form of each transition, we also estimated each hazard rate using a piecewise constant model and plotted the results. These estimates closely conformed to those presented here (not shown).

100,000 persons across the labor force states at age 50 based on the observed prevalence at ages 50–54.[7]

We characterize the retirement life course using four summary measures (see Schoen (1988) for calculation details). The first is the survivor function (l_{ix}), which indicates how many persons in the life table cohort can expect to be in each state i at a given age x, divided by the radix population and expressed as a proportion (i.e., l_{ix}/l_{50}). Age-related changes in the survivor function reflect net changes in labor force composition.

The decrement function (d_{ix}) summarizes the mobility experiences of the life table cohort in terms of the expected number of work-disability, retirement and reentry events, as well as the deaths in each state. As the number of decrements arbitrarily depends on the radix size, we divided the cumulative number of decrements by the number of persons alive at the beginning of the interval (i.e., $\sum d_x/l_{ix}$) to depict mobility in terms of the average number of future events a person alive at a given age is expected to experience. We graphed the decrement function to document the distribution of events surrounding important ages such as 62 and 65, assessing the influence of institutional timetables. A cautionary note is that we are likely undercounting decrements for moves between the labor force states, as events are inferred based on changes in labor force status between interviews, and multiple moves potentially occur (See Footnote 4).

The third measure, state-specific life expectancy (e_{ix}) partitions total life expectancy at a given age across the labor force states. This lets us gauge the number of years the average person can expect to spend in the labor force, work-disabled and retired, and thus the length of time over which the average person must allocate and consume savings and pensions. Because the state expectancies sum to the overall life expectancy, we can evaluate not only absolute gender differences in state-specific life expectancies but also the proportion of remaining expected life in each labor force state, thus adjusting for the sex disparity in mortality.

Finally, we present the implied labor force participation rate, which gauges the labor force attachment of surviving members of the life table cohort. We note the ages when three-quarters and one-quarter of surviving cohort members remain in the labor force. The length of time it takes the life table cohort to move from a 75 to 25% LFPR—the Interquartile Range—is a key measure of variability in the retirement life course (Henretta 1992).

Findings

What does the retirement life course look like for older men and women and how does it differ by gender? We begin with an overview of how age is associated with the transitions rates defining our multistate working life table model. We then examine the implication of these transition rates for the retirement life course of older Americans as indicated by the multistate life table results.

[7] We calculated the prevalence rate by pooling persons ages 50 to 54 to ensure an adequate number of cases in each origin state. The multistate life table results were relatively invariant to alternate radix allocations based on the prevalence rates at ages 50 to 53 or 50 to 55 (not shown).

Hazard Model Results

The age patterning of transition rates defining the retirement life course is highly variable and differs in important ways for men and women. As it is difficult to compare parameter estimates across models with different functional forms, we use graphical presentations to depict gender differences in the underlying forces defining the retirement life course. The mortality risks across the labor force states were as expected, so we do not discuss them. The hazard model estimates for men and women are reported in Appendix C Tables 4 and 5, respectively.

Men

The risk of work-disability is initially quite low, especially relative to the alternative pathway of retirement, and declines with age (see Fig. 2). Early-eligibility at age 62 does not significantly affect the risk of work-disability. In contrast, men's risk of retirement fluctuates considerably with age. The risk increases through the mid-60s and levels out though the late-70s before a dramatic rise and then a precipitous decline to almost zero at the oldest ages. We urge the reader to use caution in interpreting the retirement risks beyond the 70s. As shown below, few men remain in the labor force at these ages so the impact of this high risk on our summary measures is small. Not surprisingly, we see significant spikes in the retirement risk at the Social Security eligibility ages with the increase most dramatic at early-eligibility: at age 62 the risk of retirement is about 1.63 times greater than otherwise expected [$e^{(0.4487)} = 1.63$], while at age 65 the risk is about 1.24 times greater[$e^{(0.2187)} = 1.24$] (see Appendix C Table 4).

Among non-participants, the risk of reentry for work-disabled men is low at age 50 and declines with age. In contrast, retired men face a substantial risk of reentry in their early 50s, slightly more than three times that for reentry from work-disability. However, the risk of reentry from retirement also declines quickly with age and is effectively zero by age 70. There appears to be no systematic connection between Social Security eligibility ages and the risk of reentry from either work-disability or retirement (see Fig. 3).

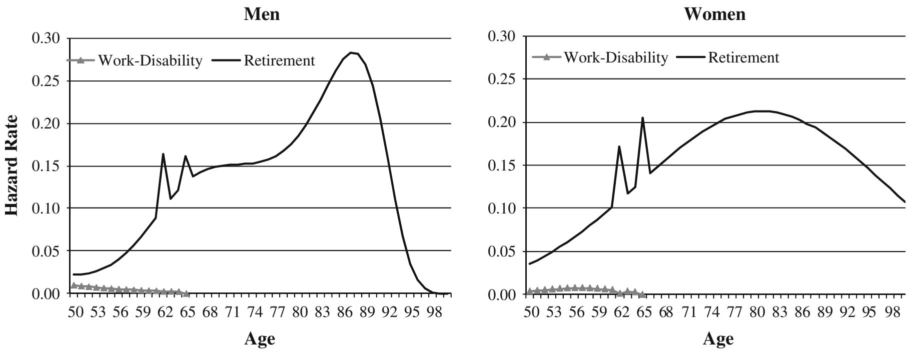

Fig. 2 Age-specific risk of *exiting* the labor force, hazard model estimates for men and women

Women

The risk of work-disability for women is generally low, although non-linear as the risk increases marginally until about age 57 and then declines (see Fig. 2). We find some evidence that the benefit structure of Social Security temporarily lowers the risk of work-disability at age 62 by about 85% more than expected from the overall age trend.

The age pattern for women's retirement risk differs somewhat from that shown for men, as indicated by the absence of multiple peaks and troughs. Women's retirement risk begins to rise in the 50s with substantial increases at the Social Security eligibility ages. The risk of retirement for women is 1.57 times higher at age 62 [$e^{(0.4636)} = 1.57$] and 1.55 times higher at age 65 [$e^{(0.4366)} = 1.55$] than otherwise expected (see Appendix C Table 5). Again, beyond age 70 few women are in the labor force so the elevated risks have little impact on our summary measures.

Older women face relatively low risks of reentry regardless of their exit mode (see Fig. 3). For reentry from work-disability, the risk is low at age 50 and quickly declines thereafter so that by age 65 it is effectively zero. Women's risk of reentry from retirement is substantially higher than that from work-disability—about two and a half times so at age 50—similar to men. Still, at age 50 retired women face just a 15% risk of reentry.

How do the schedules of risks for women compare to those for men overall? Women face a higher risk of retirement than do men but men face higher work-disability and mortality risks than women. Men also experience higher risks of reentry from retirement, while the risks of reentry from work-disability are similar. As to institutional pressures, while early-eligibility for Social Security at age 62 influences the risk of retirement for men and women, women who remain in the labor force are more responsive to the age 65 full-eligibility threshold than men.

Multistate Life Table Results

Our life tables show how the transition rates interact to define the demographic regularity of the retirement life course. We first present three summary measures—

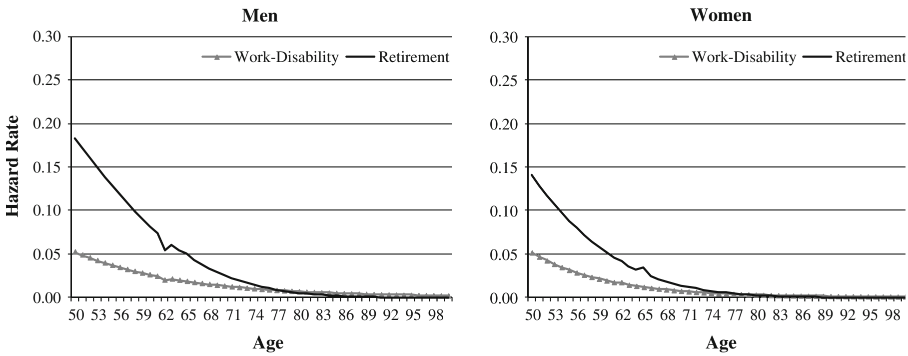

Fig. 3 Age-specific risk of *reentering* the labor force, hazard model estimates for men and women

survivorship, the volume of labor force accessions and separations, and state-specific life expectancies—at selected ages (complete multistate life tables are available from the first author). We separately describe, but do not present, the implied labor force participation rates (LFPRs) and associated summary indicators to contextualize the labor force attachment of the life table cohort. The results are displayed in Tables 2 and 3 for men and women.

Men

About 89% of men age 50 are in the labor force, 6% are work-disabled and 5% are retired (see Column 1, Table 1). By age 60—2 years before early-eligibility for Social Security—8% of the life table cohort has died, the percent in the labor force has already dropped to 66%, and the proportion retired has risen from 5% to 18%. By age 62, 11% have died and only 58% of the cohort alive at age 50 is in the labor force; this percentage drops rapidly to 42% by age 65. More than half of all men alive at age 50 have left the labor force by age 63, 2 years before the institutional "normal" retirement age (not shown).

As is evident from the volume of events (see Column 2, Table 1), men at age 50 are highly mobile. Most men can expect to retire at least once (1.01) but can expect just 0.06 work-disability exits. Few men will die in the labor force (16%). Retirement is by far the most common event accounting for 89% of men's exits.

Table 1 Summary measures from multistate working life tables for men over age 50, selected ages

	Survivorship (l_{ix}/l_{50})[a]			Number of events $(\sum d_x/l_{ix})$[b]							Life expectancy (e_{ix})			
				From ILF to			From DIS to		From RET to			State expectancies		
Age	ILF	DIS	RET	DIS[c]	RET	MT	ILF	MT	ILF	MT	Total	ILF	DIS	RET
50	0.89	0.06	0.05	0.06	1.01	0.16	0.04	0.08	0.29	0.76	27.11	13.78	2.27	11.06
55	0.80	0.08	0.09	0.03	0.94	0.15	0.03	0.07	0.26	0.78	23.01	9.90	1.99	11.12
60	0.66	0.08	0.18	0.01	0.82	0.13	0.02	0.07	0.21	0.80	19.20	6.44	1.67	11.09
62	0.58	0.08	0.23	0.00	0.74	0.12	0.02	0.07	0.19	0.81	17.80	5.25	1.55	10.99
65	0.42	0.07	0.34	—	0.56	0.10	0.01	0.07	0.15	0.82	15.88	3.85	1.39	10.64
70	0.24	0.06	0.42	—	0.34	0.08	0.01	0.07	0.08	0.85	13.02	2.23	1.17	9.63
75	0.13	0.05	0.41	—	0.20	0.06	0.00	0.07	0.04	0.87	10.45	1.20	0.99	8.26
80	0.06	0.04	0.34	—	0.11	0.04	0.00	0.08	0.02	0.88	8.13	0.56	0.85	6.71
85	0.02	0.03	0.24	—	0.05	0.02	0.00	0.09	0.01	0.89	6.08	0.22	0.77	5.09
90	0.00	0.02	0.13	—	0.01	0.02	0.00	0.11	0.00	0.88	4.40	0.11	0.78	3.52

Notes: full life tables are available from the first author on request. Labor force states are abbreviated: *ILF* in the labor force, *DIS* work-disability, *RET* retirement, *MT* death

[a] Proportion of persons alive at age 50 who are in a given state at age x. Numbers may not sum to 100 due to rounding error

[b] The cumulative number of a given event that an average individual can expect between age x and 100

[c] Cells contain a — when the transition probability is defined to be zero; see Fig. 1

Comparing the volume of transitions in the life table cohort alongside the transition rates at each age confirms that most retirement events occur before age 65 (see Fig. 4). While the absolute rates at age 62 and age 65 are similar, their relative impact on the number of events is not. For men, 62 is the modal age of retirement—not 65. Moreover, more than one-third (35%) of all retirements occur prior to age 62, at least partially reflecting the earlier availability of private employer-sponsored pensions and other forms of wealth. While retirement before age 62 is often "early" with respect to benefit eligibility, retirement before achieving full benefits is early retirement under the Social Security framework; approximately 54% of men's retirements occur prior to the institutional benchmark of age 65. However, it is also evident that a substantial amount of retirement is "late," as approximately 41% of retirement events occur after age 65. It is perhaps most striking to consider that almost 76% of men's retirement events occur outside of the Social Security eligibility window either before age 62 or after age 65.

The relatively high expectation of retirement, given the number of competing events, also reflects the fact that a sizeable number of men reenter the labor force. Roughly 29% of all retirement events among men are eventually reversed [0.29/1.01 = 0.29], as are two-thirds of work-disability exits. Not surprisingly, reentry among retired men is more likely at younger ages. About 42% of all retirements by age 60 are eventually reversed [(0.29–0.21)/(1.01–0.82) = 0.42], compared to 37% of retirements by age 62 and 31% by age 65. Yet, men continue to reenter the labor force even at older ages. More than a quarter of retirement events at or after age 65 are eventually reversed [(0.15/0.56) = 0.27].

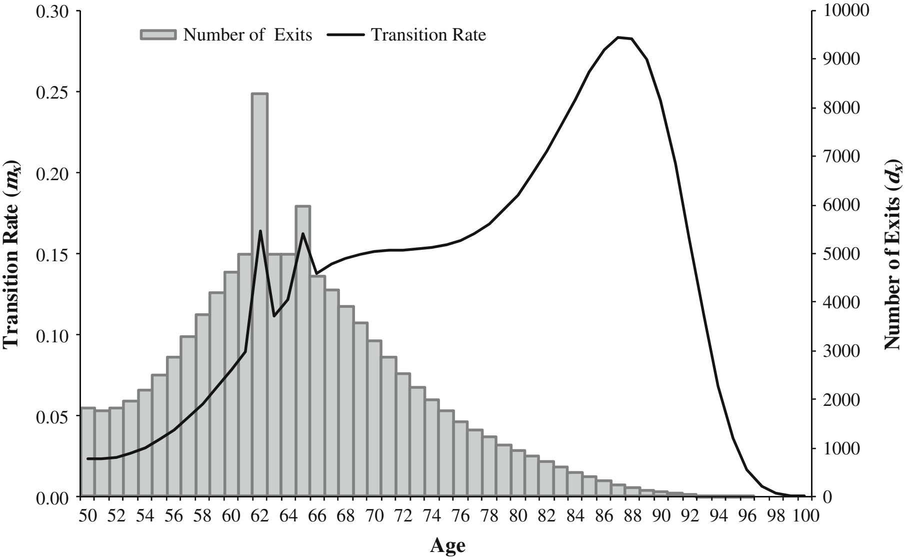

Fig. 4 Comparison of the age-specific retirement transition rates to the volume of retirement exits implied by the multistate working life table model, men

To get a handle on the role of reentry in shaping men's retirement life course, we calculated a multistate life table assuming there was no reentry, restricting the risk of reentry from both retirement and work-disability to be zero (results not shown). This allowed us to simulate how different men's experiences would be if all exits were final (assuming independence of the events). Our simulation showed that the average age at retirement for men would decline from 65.1 to 62.8 years, a difference of about 2 years and 4 months (for calculation details, see Schoen 1988, p. 95). It is important to emphasize that, despite the volume of reentry, the life table results indicate that most retirements are *not* reversed; the majority of men exit the labor force once and they do so well-before the of Social Security full-eligibility age. Nonetheless, it is evident that reentry is an important facet of men's retirement life course.

The combined impact of the exit, reentry and mortality forces on men's expected life in and out of the labor force is shown in the final column of Table 1. On average, men at age 50 can expect to spend about 13.78 years—or one-half of their remaining years (51%)—in the labor force. Most of men's non-working years are spent in retirement: about 41% of remaining life can be expected to be spent retired (11.06 years) and just 8% work-disabled (2.27 years). Not surprisingly, both the absolute level and proportion of expected life spent in the labor force decline with age. More surprising, though, is the length of expected working life at ages 62 and 65 (5.25 and 3.85 years, respectively). Despite institutional pressures to retire, the expected length of working life at older ages suggests a relatively strong labor force attachment.

Indeed, the labor force participation rates (LFPRs) implied by our working life tables demonstrate considerable attachment to paid work even in the late 60s (not shown). More that 60% of men alive at age 62 and a little less than half of the men alive at age 65 are estimated to still be in the labor force. This relatively high level of attachment, however, obscures tremendous variability in the retirement life course; we estimate that it would take almost 15 years (IQR = 14.7), given current transitions forces, for the life table cohort to decline from a 75% LFPR at age 58.3 to a 25% LFPR at age 73.0. The interquartile range is almost twice as long as period estimates from the 1980s (Henretta 1992) and largely reflects a substantial increase in the age by which just 25% of surviving men remain in the labor force. For a significant minority of men, it appears that working life has expanded well into old age.

Women

At age 50, a quarter of women are not in the labor force with 7% work-disabled and 18% retired (see Column 1, Table 2). By age 60, only 53% of the original cohort is in the labor force, 8% are work-disabled, and the proportion retired has almost doubled to 33% (6% of the cohort has died). Few women at age 50 are in the labor force at the Social Security eligibility ages: less than half (46%) are at age 62 and just one-third (34%) are at age 65.

Women at age 50 exhibit a weaker attachment to the labor force, moving more quickly into retirement than men (see Column 2, Table 2). Women can expect to

Table 2 Summary measures from multistate working life tables for women over age 50, selected ages

	Survivorship (l_{ix}/l_{50})[a]			Number of events $(\sum d_x/l_{ix})$[b]							Life expectancy (e_{ix})			
				From ILF to			From DIS to		From RET to			State Expectancies		
Age	ILF	DIS	RET	DIS[c]	RET	MT	ILF	MT	ILF	MT	Total	ILF	DIS	RET
50	0.75	0.07	0.18	0.05	1.02	0.07	0.04	0.08	0.36	0.84	32.34	11.30	2.73	18.31
55	0.68	0.07	0.22	0.03	0.89	0.07	0.02	0.08	0.26	0.85	27.99	7.84	2.44	17.71
60	0.53	0.08	0.33	0.01	0.70	0.05	0.01	0.08	0.18	0.86	23.83	4.86	2.10	16.87
62	0.46	0.08	0.38	0.00	0.61	0.05	0.01	0.08	0.15	0.87	22.24	3.88	1.96	16.41
65	0.34	0.08	0.48	—	0.46	0.04	0.01	0.08	0.11	0.88	19.97	2.70	1.75	15.51
70	0.19	0.07	0.57	—	0.25	0.03	0.00	0.08	0.06	0.89	16.44	1.40	1.43	13.61
75	0.09	0.06	0.58	—	0.13	0.02	0.00	0.08	0.03	0.89	13.24	0.67	1.15	11.42
80	0.04	0.05	0.52	—	0.06	0.01	0.00	0.09	0.01	0.90	10.37	0.31	0.90	9.16
85	0.01	0.04	0.41	—	0.02	0.01	0.00	0.09	0.00	0.90	7.86	0.15	0.68	7.03
90	0.01	0.03	0.27	—	0.01	0.01	0.00		0.00	0.91	5.74	0.08	0.50	5.15

Notes: full life tables are available from the first author on request. Labor force states are abbreviated: *ILF* in the labor force, *DIS* work-disability, *RET* retirement, *MT* death

[a] Proportion of persons alive at age 50 who are in a given state at age *x*. Numbers may not sum to 100 due to rounding error

[b] The cumulative number of a given event that an average individual can expect between age *x* and 100

[c] Cells contain a — when the transition probability is defined to be zero; see Fig. 1

retire slightly more than once—1.02 times, but few become work-disabled (5%) or die while in the labor force (7%). Thus, retirement is by far the modal event for women and even more predominant than for men. Almost 90% of women's labor force exits occur via retirement compared to 82% of men's exits. Men are also 1.2 times more likely to experience a work-disability exit and more than twice as likely to die in the labor force as women, pointing to gender differences in the role of health-mandated exits in defining the retirement life course.

The expected volume of retirement for women is quite high. In fact, Fig. 5 shows that for women 45% of retirements occur before age 62 and 60% occur before age 65. Recall that 35% and 54% of men's retirements occur by ages 62 and 65, respectively. The concentration of retirement events before the Social Security eligibility ages likely reflects not simply the availability of alternative income sources (as with men), but also joint retirement preferences between women and their (older) husbands and/or the competing family demands (O'Rand et al. 1992; Warner and Hofmeister 2006). Still, a considerable amount of "late" retirement is evident; 34% of all women's retirement events occur after age 65. This level of "late" retirement is considerably lower than that of men, but nonetheless substantial. Overall, almost 80% of women's retirement events occur outside the Social Security age-eligibility window—only slightly higher than for men (76%) (calculations not shown).

The high volume of retirement is partially fuelled by women's reentry behavior as about 35% of retirement exits are eventually reversed, as are 80% of work-

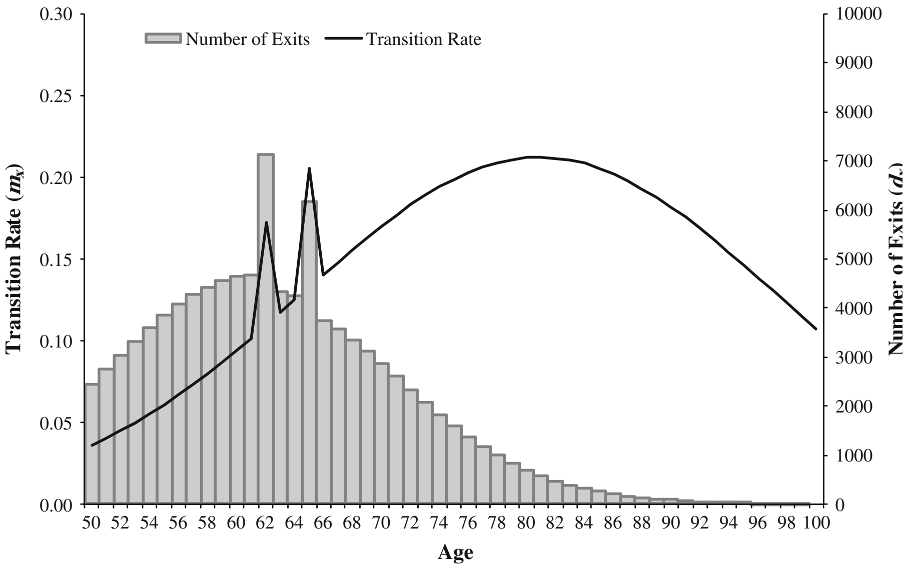

Fig. 5 Comparison of the age-specific retirement transition rates to the volume of retirement exits implied by the multistate working life table model, women

disability exits. Reentry is more common among women at younger ages—56% of all retirements by age 60 are eventually reversed, compared to 50% by age 62 and 44% by age 65. Only one-quarter of retirements after age 65 are ever reversed. Overall, women are more likely than men to reenter the labor force, as among men only 29% of retirement and 67% of work-disability events are reversed.

Although most women's retirement events are not reversed, reentry plays a prominent role in shaping women's retirement life course. Simulating the risk of reentry to be zero and recalculating the multistate life table shows that the average age of retirement would be two and a half years younger for women, declining from 63.7 to just 61.2 (results not shown). Thus, the relative impermanence of labor force exits is important for prolonging the work career.

The final column of Table 2 presents estimates for women's life expectancies and demonstrates how the exit, reentry, and mortality forces give rise to these. At age 50, women can expect to spend 11.31 years in the labor force—about 35% of remaining life. Women can expect to spend the majority of their non-working years retired, about 57% (18.31 years) compared to only 8% (2.73 years) work-disabled. While the proportion of expected life in retirement increases with age, and that spent in the labor force decreases, the expectation of life in work-disability remains relatively constant. Compared to men, expected life in retirement is greater in both absolute and relative terms for women, reflecting both their higher risks of retirement and longer total life expectancies.

Older women's relatively short working life expectancy is a function of their low attachment to the labor force; the implied LFPR of women is slightly less than 75% at age 50 and declines steadily with advancing age to just 47% and 35% at the

Social Security eligibility ages, respectively (not shown). This level of attachment is substantially lower than that of men. However, women exhibit greater variability in the retirement life course than men. We estimate that it would take 18.5 years for the LFPR of women in the life table cohort to decline from 75% to 25%, between ages 50 and 68.5. Recall, that the same decline for men, while starting much later (age 58.3), occurs in just 15 years. This high level of variability and relatively early onset suggests that, despite notable sensitivity to Social Security age-eligibility, the timing of retirement for many women does *not* coincide with government timetables.

Discussion

While retirement is a prominent and normative phase of the American life course, it has become less tightly coupled with institutional schedules (Guillemard and Rein 1993; Han and Moen 1999; Henretta 1992), producing considerable uncertainty in the timing, permanence, and duration of retirement (Blossfeld et al. 2006). Prior studies have devoted relatively limited empirical attention to documenting key aspects of the retirement life course as institutional regularities have waned and individual variability has increased. An improved understanding of the retirement life course can anchor policy efforts to address the pressures that population aging, as well as changing behavior, is placing on both private and public pension systems. Because the Baby Boom cohort is on the cusp of retirement, our goal in this paper has been to document the demographic regularity of the retirement life course, providing answers to a number of key questions about the employment, work-disability and retirement behavior of older men and women. To summarize our findings, we return to the questions posed in the introduction.

How many people remain in the labor force at a given age, and how closely are declining rates in participation linked to entitlement ages for Social Security? The majority of men and women are working for pay as they enter the later years. At age 50, 89% of men and 75% of women are in the labor force. However, the number of workers declines swiftly with exit pressures mounting as they age through their mid-60s. Retirement exits jump dramatically at the Social Security eligibility ages of 62 and 65. These exit pressures are so pervasive that a majority of men and women alive at age 50 have left the labor force by ages 63 and 61, respectively.

How closely clustered is retirement around the Social Security eligibility ages? A substantial amount of retirement behavior occurs both "early" and "late"—outside the Social Security age-eligibility window from ages 62 to 65. A little more than three-quarters of men's retirements are "off time"—35% of men's retirements occur before age 62 and 41% after age 65. Early retirement is more pronounced among women and late retirement is less pronounced. Nonetheless, 79% of women's retirements are "off time" in terms of Social Security eligibility criteria, signaling an even looser coupling of women's work behavior with this institutional timetable. The interquartile range of the implied LFPRs further demonstrates this variability. For men, it takes slightly less than 15 years for the LFPR to decline from 75% to 25%; it takes about 18.5 years to see a parallel decline in women's LFPR.

Overall these results indicate that while the experience of retirement is near universal, the timing is highly variable, and at least for men this variability has increased (Hayward et al. 1988; Henretta 1992).

Is retirement a single, irreversible event for most workers or do a significant proportion of workers exit and reenter multiple times? Consistent with a traditional view of retirement, the multistate life tables show that most men and women can expect to exit the labor force only once; however, we also find evidence of diversification of the retirement process. As in prior studies (Cahill et al. 2005; Mutchler et al. 1997), we document the reversal of a substantial minority of retirements—about 29% for men and 35% for women. Moreover, and contrary to popular belief, we found high rates of reentry among those reporting they were work-disabled as 67% of men's and 80% of women's work-disability events are eventually reversed.[8] Not surprisingly, reentry is more common for younger members of the population. Thus, while a single exit from paid work remains the normative experience, the repeated departures and reentries of a sizeable minority of workers prolong the length of the average work career considerably. Indeed, our simulation shows that without reentry the average age at retirement would be about 2.3 years earlier for men and 2.5 years earlier for women.

How many years can people expect to be in the labor force, work-disabled, and retired over their lifetimes? On average, at age 50 men can expect to spend just half of their remaining life in the labor force and, with very few years work-disabled, about 41% of their remaining life retired. By age 55, the majority of remaining life is expected to be spent in retirement (not shown). For women the expectation of retirement is greater than for men, consistent with their higher risks of exiting and lower labor force participation. Women can expect to spend 57% of their remaining years retired, on average, and spend just 35% of their remaining life in the labor force and 7% work-disabled.

Overall, we find that the majority of older Americans exit the labor force prior to reaching the institutional "normal" retirement age of 65 (for the cohorts studied here)—even in the face of a relatively high level of reentry behavior—and spend a substantial portion of their later years retired. We also find that the retirement life course is quite variable for both men and women and unfolds over a lengthy range of ages. However, the labor force behavior and retirement expectations of men and women differ substantially from one another, even as the working lives of cohorts entering the labor force since 1960 have converged, with women's retirement life course characterized by earlier withdrawal and higher reentry unfolding over a greater number of years compared to men.

Although these results add substantial clarity to understanding men's and women's retirement life course, some caution is warranted in interpreting our findings. For example, our analysis is based on a synthetic cohort created by pooling

[8] It is important to keep in mind we defined work-disability based on self-identification or having a health condition expected to last at least at least 3 *months*. We would expect little reentry among those receiving Social Security Disability Insurance benefits given the stringent requirements for qualification, including that the health condition is expected to last at least 1 year. Social Security Disability Insurance eligibility is thus structured in a way that explicitly excludes the shorter-term—though clearly important—health-mandated exits identified here.

information from several birth cohorts. Thus, our multistate working life tables are period estimates and reflect the expected lifetime labor force experiences of older adults *if the current transition rates remain stable*. This is an unrealistic expectation. However, in the face of foreseeable changes in these rates we believe that our findings about the absolute and relative length of the retirement life course are somewhat conservative. Two examples illustrate this point.

Assuming that the trend toward earlier retirement has indeed reversed (McDermott 1999) and older adults begin working later, one might then argue that we portray the retirement life course under conditions of low labor force participation by older adults and thus have underestimated the length of the work life. However, if anything, our results are slightly biased toward a later retirement age and more years spent working because the labor force participation rates observed in the HRS for those over 60 are higher than in the general population (not shown; see Footnote 1). In fact, our results suggest a substantial expansion of the working years and slower declines in the LFPR of older men with age relative to earlier estimates (Henretta 1992).

Expected advances in overall health and declines in mortality would also challenge the period based assumption of our model. Such improvements will likely delay or decrease the number of health-mandated exits to some extent. Yet, given the relatively low volume of work-disability events relative to retirement events, the impact of such a shift on the average timing in the population would likely be minimal and would not change the overall expansion of the retirement years that would result from a decline in mortality.

Our study also leaves unaddressed several important potential sources of heterogeneity in the retirement life course. First, in order to link the results with LFPRs calculated by national data-monitoring agencies, we defined retirement as the cessation of paid work. This conceptualization masks unemployment as an involuntary pathway out of the labor force (Hardy 2006; Henretta 1992; Ohlemacher 2009), nor does it consider that a growing number of older workers are pursuing partial retirement strategies, including reduction in hours and non-career “bridge” jobs (Cahill et al. 2005; Mutchler et al. 1997). The prevalence of such experiences in the population and the extent to which they differentiate the retirement life course is unclear.

Second, the present analysis does not speak to the fact that many more men and women are currently entering and are projected to enter their later years never married or divorced. As the traditional predictors of retirement—wealth and health—are related to marriage (Warner and Hofmeister 2006), shifts in the marital status composition of the older population will generate additional variation in the retirement life course. Marriage differences in the retirement life course will likely be especially pronounced for women given their reliance on spousal entitlement to private and public pension systems (Harrington et al. 2006).

Third, considerable racial/ethnic heterogeneity likely exists in the retirement life course of men and women. Prior studies consistently document that Blacks and Hispanics face more tenuous labor force prospects across the life course and exit at earlier ages than whites (Flippen 2005) and are at greater risk of work-disability (Brown and Warner 2008; Hayward et al. 1996). The expected growth in the racial/

ethnic heterogeneity of the aged population necessitates understanding how such racial/ethnic differences in labor force transitions will combine to differentiate the retirement life course.

Fourth, the ongoing change in employer-sponsored pensions is unaddressed by the present study. The movement away from defined benefit (DB) in favor of defined contribution (DC) pension plans can provide older workers with more flexibility to change jobs, to adjust work schedules, and to move in and out of retirement, assuming employers grant them that flexibility (Hardy 2006, 2008). However, increased reliance on defined contribution plans and declines in stock values constrain the flow of retirement income, introduce additional uncertainty into the timing of retirement (Blossfeld et al. 2006; Munnell et al. 2009) and redistribute the risk of mistiming retirement primarily to workers and their families (Shuey and O'Rand 2004). Moreover, whereas DB plans often promised retirement health insurance coverage to retirees, a promise that employers find it increasingly hard to keep, DC plans are silent on health insurance, leaving many older workers with chronic diseases depending on their jobs for continued health care coverage until they qualify for Medicare. Future studies need to examine how the shifting mix of employer-sponsored pensions will result in further differentiation of the retirement life course.

Finally, while we have documented gender differences in the demographic regularity of the retirement life course, the mechanisms that generate these patterns remain ambiguous. While there is an extensive literature on later-life labor force behavior and retirement (for reviews, see Henretta 2001; Warner and Hofmeister 2006), our understanding of women's retirement behavior remains limited because prior research has tended to study women's work and retirement behavior by applying models established on samples of men (Calasanti 1996). Despite the fact that women increasingly enter old age with substantial work histories, women's work experiences—and by extension retirement experiences—differ from men's given that they unfold in a gendered context (Moen 2001; Moen and Han 2001). Future research should apply a gendered life course perspective and investigate the factors that lead to the different constructions of the retirement life course for women and men.

Understanding the retirement life course is essential for policy analysts to gauge demand for public and private pension benefits and their resulting short- and long-term financial liabilities. Indeed, notwithstanding the limitations described above, our findings provide important information for public policy makers debating solutions to the long-term financial challenges of population aging. Perhaps most significantly, our findings suggest that the retirement life course unfolds in complicated ways relative to public pension entitlement ages. Other meso-level institutions, such as the firm (Hardy et al. 1996; Warner and Hofmeister 2006) and family (Harrington Meyer et al. 2006; O'Rand et al. 1992), also govern the labor force behavior of older Americans. The timetables of these institutions, along with individual preferences and circumstances, do not necessarily coincide with those of Social Security. In fact, during the latter part of the twentieth century, as federal policy was changed to try to discourage early retirement and provide financial incentives for delayed retirement, firms were offering early retirement incentives to reduce their internal labor forces.

Therefore, reform efforts must explicitly address the fact that the retirement life course is not solely defined by Social Security benefit entitlement, employer pensions or individual circumstance, but by the complex interplay of all three within the context of a changing economy (Coile and Levine 2009). Failure to examine the interconnections of these factors can result in policy reforms that may be either ineffective or which have considerable unintended consequences (O'Rand 2005). For example, the increase in age of full-benefit eligibility for Social Security benefits coupled with an easing of the earnings test after full retirement age (FRA) provide financial incentives for continued employment at older ages. But whether and how continued employment (and earnings-related tax payments) offset or simply supplement benefit payments is difficult to predict. And the earnings test still applies at younger ages, which discourages workers from combining Social Security 'early' retirement benefits with earnings as an income maintenance strategy (Friedberg 1998; Gruber and Orszag 2000) At the present time, the increase in the FRA is not accompanied by an increase in the early retirement age of 62, which means a larger actuarial reduction for workers who begin collecting benefits before the FRA on the premise that early benefit receipt is motivated by leisure preferences (Bould 1986). However, workers elect to receive early "retirement" benefits for a number of reasons (Bould 1986). Thus, to the extent that the combination of earnings and early retirement pension income could help low wage workers, those in more physically demanding jobs at risk of work-disability, and those who are at risk of long-term unemployment (Bould 1986; Coile and Levine 2009; Hirsch et al. 2000; Ohlemacher 2009)—workers who are disproportionately women and racial/ethnic minorities—enforcement of an earnings test prior to the FRA combined with an increased actuarial reduction in benefits imposes a significant penalty on those workers who can least afford it.

In this paper we have begun documenting the demographic regularity of the retirement life course, providing important benchmarks as to the timing, permanency, and duration of retirement that results from the interplay of multiple and recurrent labor force events and mortality. However, more detailed work remains. Studies such as ours rely on indicators such as labor force status and self-reported illness to provide comparability in designations across time, but we cannot assume uniformity of employment opportunities, the consequences of illness, or the capacity for recovery or improvement in functional status. As we move into the twenty-first century, the social organization of work and retirement is changing, as the structure of occupations and industries continues to shift toward service sector jobs and, at least until the current recession, the market for older workers is expanding. The mix of employer-sponsored pension plans and individual retirement savings mechanisms is also in flux. With earlier diagnoses, better treatment options and more successful disease management, chronic illness episodes can be followed by prolonged periods of stability. The policy word currently en vogue is 'flexibility'—employers' flexibility to adjust their workforces as needed and employees' flexibility to combine work with family and personal development—but how the advantages versus the disadvantages of flexibility and the individualized risks and uncertainty it necessarily entails (Blossfeld et al. 2006; Shuey and O'Rand 2004) will accrue to workers in different sorts of jobs or from different demographic groups remains unknown. Thus, how these changes may reorganize the working life course is an empirical question. However, the extent that workers' tenure with any given employer declines, mobility between jobs or employers, in-and-out of the labor force, and in-and-out of retirement is likely to increase, leading to even more heterogeneity in the retirement life course.

Acknowledgements Research support was provided to D.F. Warner through National Institute on Aging grants T32AG00048 and T32AG00155 and the National Institute of Child Health and Human Development grant T32HD007514. Research support was provided to M.D. Hayward through National Institute on Aging grant R01AG013810. Additional support was provided by grants R01AG11758 and R55AG09311 from the National Institute on Aging and by grants 1R24HD041025 and 5P30HD28263 from the National Institute of Child Health and Human Development. We thank Don Gensimore for technical assistance and Alan Booth, Tyson H. Brown, Matthew E. Dupre, Glen H. Elder, Jr., Arie Kapteyn, Jessica Kelley-Moore, Valarie King, Diane McLaughlin, and Tara D. Warner for comments on earlier drafts.

Appendix A: Measurement of Labor Force Status in the 1993 Ahead

Respondents over the age of 70 were first interviewed in 1993 as part of the *Assessment of Health Dynamics among the Oldest Old* (AHEAD) study, initiated as a companion to the original HRS. Unfortunately, the 1993 AHEAD interview asked only whether the respondent was working for pay; it was not until 1995, after the decision to merge the AHEAD with the HRS (see HRS 2008), that other labor force statuses were ascertained. While RAND (2006) backfilled information to make Wave 1 classifications, the 1993 labor force status of 3,111 non-working AHEAD respondents remained unknown because they died (n = 786), attrited (n = 347), or had "not worked in the last 2 years" (n = 1,978). Excluding these AHEAD respondents eliminated a disproportionate number of death events and biased the multistate life table expectancies upward. Likewise, assuming these respondents exited via retirement as suggested by RAND (2006), and that consequently none exited through work-disability, upwardly biased the multistate life expectancies. As single-decrement life expectancy estimates were realistic in comparison to U.S. Vital Statistics reports, and the constituent state-specific life expectancies sum to the total life expectancy in the MSLT, it was apparent that the allocation of these AHEAD respondents between the non-working origin states in 1993 was driving the bias in the preliminary multistate life table estimates.

To achieve accurate life expectancy estimates, we assigned an initial labor force status to AHEAD respondents who were out of the labor force in 1993 based on their responses to related sorts of questions. For example, the 1,987 respondents who in 1995 reported that they had not worked in the past 2 years and identified as retired or work-disabled were assigned this status in 1993. We categorized the remaining respondents, who were working, deceased or had attired at the second interview (n = 1,133), as work-disabled or retired depending on their difficulty with five dichotomous indicators of activities of daily living (ADL) in 1993 (i.e., walking one block, climbing a flight of stairs, lifting ten pounds, pushing or pulling a large item, and picking up a dime). We assumed that ADL limitations were a proxy for whether a health condition prevented the respondent from working because a direct measure was not available in 1993. Initially, we categorized respondents as work-disabled in 1993 if they were in the top 10% of the distribution on a summary measure of five standard ADL impairments (four or more impairments for men, five impairments for women), which corresponded to the prevalence of work-disability among AHEAD respondents with a known labor force status. However, this resulted in too few cases in the retired state (given the increase in impairments with age), and a low mortality rate and elevated life expectancy estimates. Thus, we limited work-disability classifications to respondents less than 85 years of age, which yielded accurate life expectancies. We assigned the remaining respondents as retired. Alternative strategies for making these categorizations, including a probabilistic model, did not fit the data as well.

Appendix B: Distribution of Labor Force Events

See Table 3.

Table 3 Distribution of events in the multistate working life table model by sex

	Men							Women					
	Origin state (%)	Destination states (%)						Origin state (%)	Destination states (%)				
		ILF	DIS	RET	MT	Attrit			ILF	DIS	RET	MT	Attrit
ILF	50.13	77.60	0.70	15.06	1.82	4.82	ILF	34.61	75.59	0.84	17.92	0.97	4.68
DIS	8.41	4.05	87.27	—	4.30	4.38	DIS	9.88	3.01	90.88	—	2.71	3.39
RET	41.47	4.84	—	79.50	12.37	3.28	RET	55.51	3.94	—	84.83	7.49	3.75
Total		41.25	7.69	40.52	6.40	4.15	Total		28.62	9.27	53.29	4.76	4.04

Notes: *N* = 39,584 weighted person-intervals for men, *N* = 52,349 weighted person-intervals for women

The distribution of events refers to the percentage of person-intervals observed in a given labor force category (origin state) at the beginning of the interval that are in a given labor force category at the end of the interval (destination state).; rows may not sum to 100 due to rounding error

Labor force states are abbreviated: *ILF* in the labor force, *DIS* work-disability, *RET* retirement, *MT* death, *Attrit* panel attrition

Appendix C: Hazard Model Estimates

See Tables 4, 5.

Table 4 Hazard model estimates for age-specific labor force transition rates, men over 50 in the Health and Retirement Study (HRS), 1992–2004

Origin state	From ILF to			From DIS to		From RET to	
Destination state	DIS	RET	MT	ILF	MT	ILF	MT
Age parameters							
Age	−0.1029***	−91.3031**	0.0842***	−0.0693***	0.0612***	0.1193	−0.1948***
Age^2		2.6934**				−0.0018**	0.0016***
Age^3		−0.0392**					
Age^4		0.0003**					
Age^5		<−0.0001**					
Age 62	−0.1224	0.4887***		−0.1219		−0.2037	
Age 65		0.2187**				0.0535	
Constant	0.5538	1215.4381**	−9.8524***	0.5065	−7.7954***	−3.1258	2.5476*
N of person-intervals	16438	19317	19325	3512	3512	16209	16209
N of events	153	2919	354	142	164	796	2058
Log likelihood	−858.93	−9452.88	−1865.93	−693.45	−748.20	−3325.10	−7656.56

Notes: labor force states are abbreviated: *ILF* in the labor force, *DIS* work-disability, *RET* retirement, *MT* death

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests)

Table 5 Hazard model estimates for age-specific labor force transition rates, women over 50 in the Health and Retirement Study (HRS), 1992–2004

Origin state	From ILF to			From DIS to		From RET to	
Destination state	DIS	RET	MT	ILF	MT	ILF	MT
Age parameters							
Age	1.9231**	0.3044***	0.0790***	−0.1031***	0.0950***	0.0563	−0.0655*
Age^2	−0.0170**	−0.0019***				−0.0014**	0.0009***
Age 62	−1.9231**	0.4536***		0.0910		0.0420	
Age 65		0.4366***				0.2230*	
Constant	−59.2438**	−13.8329***	−10.0631***	2.2143*	−10.7009***	−1.2109	−3.5297**
N of person-intervals	15646	17763	17763	5495	5495	28024	28024
N of events	160	3205	173	165	161	1138	2143
Log likelihood	−916.14	−10020.62	−100.58	−842.63	−788.72	−4756.73	−8893.82

Notes: labor force states are abbreviated: *ILF* in the labor force, *DIS* work-disability, *RET* retirement, *MT* death

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests)

References

Allison, P. D. (1995). *Survival analysis using the SAS® system: A practical guide*. Cary, NC: SAS Institute Inc.
Atchley, R. C. (1982). Retirement as a social institution. *Annual Review of Sociology, 8*, 263–287.
Blossfeld, H.-P., Buchholz, S., & Hofäcker, D. (Eds.). (2006). *Globalization, uncertainty and late careers in society*. London: Routledge.
Bould, S. (1986). Factors influencing the choice of Social Security early retirement benefits. *Population Research and Policy Review, 5*, 217–236.
Bound, J., Schoenbaum, M., Stinebrickner, T. R., & Waidmann, T. (1999). The dynamic effects of health on the labor force transitions of older workers. *Labour Economics, 6*, 179–202.
Brown, T. H., & Warner, D. F. (2008). Divergent pathways? A life course study of racial/ethnic differences in women's labor force withdrawal. *Journal of Gerontology: Social Sciences, 63B*(3), S122–S134.
Burkhauser, R. V., Daly, M. C., Houtenville, A. J., & Nargis, N. (2002). Self-reported work-limitation data: What they can and cannot tell us. *Demography, 39*(3), 541–555.
Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2005). *Are traditional retirements a thing of the past? New evidence on retirement patterns and bridge jobs* (Boston College Working Papers in Economics No. 626). Chestnut Hill, MA: Boston College.
Calasanti, T. M. (1996). Incorporating diversity: Meaning, levels of research, and implications for theory. *The Gerontologist, 36*, 147–156.
Cieka, J., Donley, T., & Goldman, J. (1995). A Markov process model of work-life expectancies based on labor market activity in 1992–93. *Legal Economics, 5*, 17–41.
Cieka, J., Donley, T., & Goldman, J. (1999–2000). A Markov process model of work-life expectancies based on labor market activity in 1997–98. *Legal Economics, 9*(Winter), 33–68.
Coile, C., & Levine, P. B. (2009). *The market crash and mass layoffs: How the current economic crisis may affect retirement* (NBER Working Papers No. 15395). Cambridge, MA: National Bureau of Economic Research, Inc.
Costa, D. L. (1998). *The evolution of retirement: An American economic history, 1880–1990*. Chicago: University of Chicago Press.
Ekerdt, D. J., & DeViney, S. (1990). On defining persons as retired. *Journal of Aging Studies, 4*(3), 211–229.
Flippen, C. A. (2005). Minority workers and pathways to retirement. In R. Hudson (Ed.), *The new politics of old age policy* (pp. 129–157). Baltimore, MD: Johns Hopkins University Press.
Friedberg, L. (1998). *The labor supply effects of the Social Security earnings test* (NBER Working Papers No. 7200). Cambridge, MA: National Bureau of Economic Research, Inc.
Gruber, J., & Orszag, P. (2000). *Does the social security earnings test affect labor supply and benefits receipt?* (Working Paper, No. 2000-07). Chestnut Hill, MA: Center for Retirement Research, Boston College.
Guillemard, A.-M., & Rein, M. (1993). Comparative patterns of retirement: Recent trends in developed societies. *Annual Review of Sociology, 19*, 469–503.
Han, S.-K., & Moen, P. (1999). Clocking out: Temporal patterning of retirement. *American Journal of Sociology, 105*, 191–236.
Hardy, M. A. (2002). The transformation of retirement in twentieth-century America: From discontent to satisfaction. *Generations, 26*(2), 9–16.
Hardy, M. (2006). Older workers. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (6th ed., pp. 202–218). Burlington, MA: Academic Press.
Hardy, M. A. (2008). *Making work more flexible: Opportunities and evidence* (Insight on Issues, No. 11). Washington, DC: AARP Public Policy Institute.
Hardy, M. A., Hazelrigg, L., & Quadagno, J. (1996). *Ending a career in the auto industry: "30 and out"*. New York: Plenum Press.
Harrington Meyer, M., Wolf, D. A., & Himes, C. L. (2006). Declining eligibility for social security spouse and widow benefits in the United States? *Research on Aging, 28*(2), 240–260.
Hayward, M. D., & Grady, W. R. (1990). Work and retirement among a cohort of older men in the United States, 1966–1983. *Demography, 27*, 337–356.
Hayward, M. D., Grady, W. R., & McLaughlin, S. D. (1988). Changes in the retirement process among older men in the United States: 1972–1980. *Demography, 25*, 371–386.

Hayward, M. D., Crimmins, E. M., & Wray, L. (1994). The relationship between retirement life cycle changes and older men's labor force participation rates. *Journal of Gerontology: Social Sciences, 49*, S219–S230.

Hayward, M. D., Friedman, S., & Chen, H. (1996). Race inequities in men's retirement. *Journal of Gerontology: Social Sciences, 51*, S1–S10.

Henretta, J. C. (1992). Uniformity and diversity: Life course institutionalization and late-life work exit. *The Sociological Quarterly, 33*(2), 265–279.

Henretta, J. C. (2001). Work and retirement. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (5th ed., pp. 255–272). San Diego: Academic Press.

Hirsch, B. T., MacPherson, D. A., & Hardy, M. A. (2000). Occupational age structure and access for older workers. *Industrial and Labor Relations Review, 53*(3), 401–418.

HRS. (2000). Sampling weights: Revised for Tracker 2.0 and beyond. http://hrsonline.isr.umich.edu/sitedocs/wghtdoc.pdf. Retrieved 2 Sept 2004.

HRS. (2008). Survey design. http://hrsonline.isr.umich.edu/sitedocs/surveydesign.pdf. Retrieved 20 Apr 2009.

Kim, S., & Feldman, D. C. (2000). Working in retirement: The antecedents of bridge employment and its consequences for quality of life in retirement. *Academy of Management Journal, 43*(6), 1195–1210.

Kingson, E. R., & Williamson, J. B. (2001). Economic security policies. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (5th ed., pp. 369–386). San Diego: Academic Press.

Laditka, S. B., & Laditka, J. N. (2002). Recent perspectives on active life expectancy for older women. *Journal of Women and Aging, 14*(1/2), 163–184.

Lee, C. (2001). The expected length of male retirement in the United States, 1850–1990. *Journal of Population Economics, 14*(4), 641–650.

McDermott, D. (1999, July 12). Are baby boomers likely to retire early?—Two economists draw opposite conclusions from data. *Wall Street Journal,* p. A.2.

Moen, P. (2001). The gendered life course. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (5th ed., pp. 179–196). San Diego: Academic Press.

Moen, P., & Han, S.-K. (2001). Gendered careers: A life-course perspective. In R. Hertz & N. L. Marshall (Eds.), *Working families: The transformation of the American home* (pp. 42–57). Berkeley, CA: University of California Press.

Munnell, A., Webb, A., & Golub-Sass, F. (2009). *The national retirement risk index: After the crash* (Issue in Brief, No. 9-22). Chestnut Hill, MA: Center for Retirement Research, Boston College.

Mutchler, J. E., Burr, J. A., Pienta, A. M., & Massagli, M. P. (1997). Pathways to labor force exit: Work transitions and work instability. *Journal of Gerontology: Social Sciences, 52B*(1), S4–S12.

O'Rand, A. M. (2005). When old age begins: Implications for health, work and retirement. In R. Hudson (Ed.), *The new politics of old age policy* (pp. 109–128). Baltimore, MD: Johns Hopkins University Press.

O'Rand, A. M., Henretta, J. C., & Krecker, M. L. (1992). Family pathways to retirement. In M. Szinovacz, D. J. Ekerdt, & B. H. Vinick (Eds.), *Families and retirement* (pp. 81–98). Newbury Park, CA: Sage Publications.

Ohlemacher, S. (2009, September 28). Seniors' job losses, early retirements hurt Social Security: US sees 23% rise in applications. *Boston Globe*. http://www.boston.com. Retrieved 30 Sept 2009.

Quinn, J. F., & Burkhauser, R. V. (1994). Retirement and labor force behavior of the elderly. In L. G. Martin & S. H. Preston (Eds.), *Demography of aging* (pp. 50–101). Washington, DC: National Academy Press.

Quinn, J. F., & Kozy, M. (1996). The role of bridge jobs in the retirement transition: Gender, race and ethnicity. *The Gerontologist, 36*(3), 363–372.

RAND. (2006). *RAND HRS Data documentation, Version F*. Santa Monica, CA: RAND Center for the Study of Aging.

Schoen, R. (1988). *Modeling multigroup populations*. New York: Plenum Press.

Shuey, K. M., & O'Rand, A. M. (2004). New risks for workers: Pensions, labor markets, and gender. *Annual Review of Sociology, 30*(1), 453–477.

Sullivan, T. A. (2005). Labor force. In D. L. Poston & M. Micklin (Eds.), *Handbook of population* (pp. 209–225). New York: Springer.

Szinovacz, M. E., & DeViney, S. (1999). The retiree identity: Gender and race differences. *Journal of Gerontology: Social Sciences, 54B*, S207–S218.

Warner, D. F., & Hofmeister, H. (2006). Late career transitions among men and women in the United States. In H.-P. Blossfeld, S. Buchholz, & D. Hofäcker (Eds.), *Globalization, uncertainty and late careers in society* (pp. 141–181). London: Routledge.

Wise, D. A. (2004). Social security provisions and the labor force participation of older workers. *Population and Development Review, 30, Supplement*(Aging, Health, and Public Policy), 176–205.

Wolf, D., & Gill, T. M. (2009). Modeling transition rates using panel current-status data: How serious is the bias? *Demography, 46*(2), 371–386.