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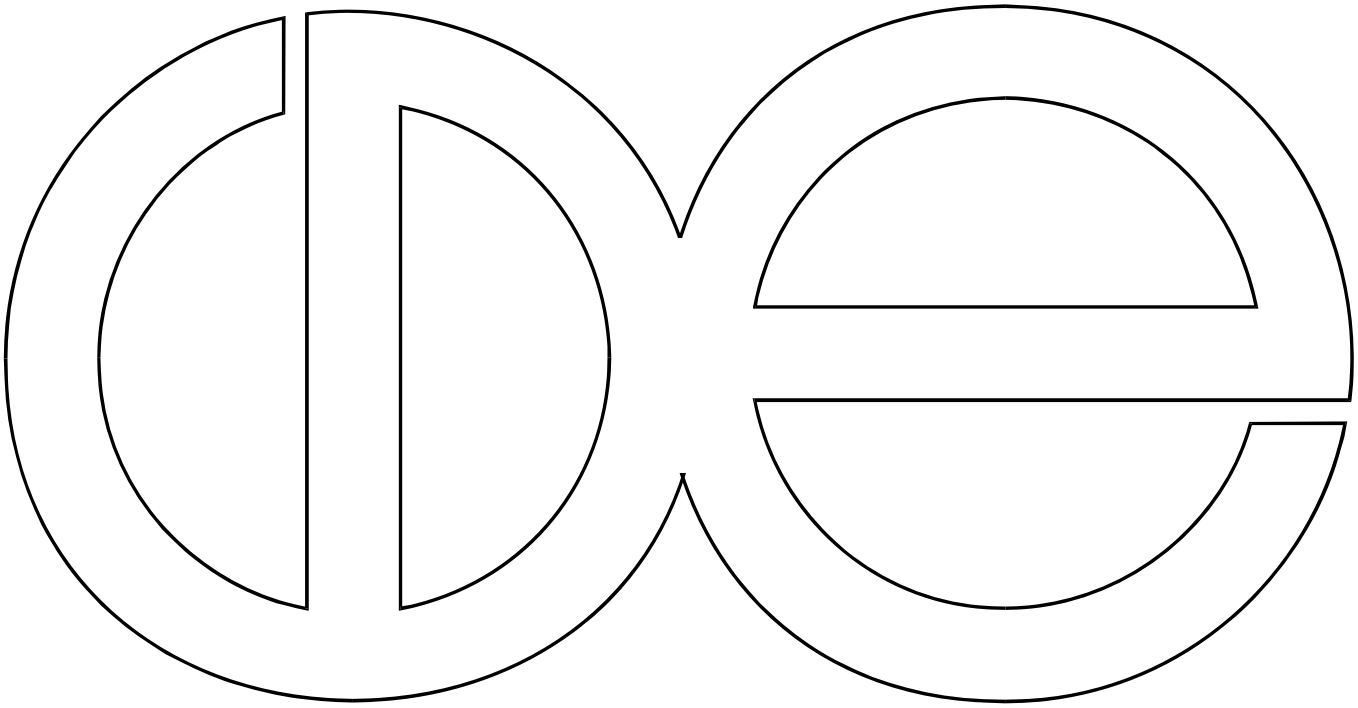

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Abstract

In the rapidly changing context of retirement, it is important to reevaluate theoretical and empirical linkages between individual life histories and patterns of work in later-life. In this study, we use data from the Wisconsin Longitudinal Study to examine relationships between multiple measures of mid-life work experiences and the timing and nature of first retirement. We show that employment stability, occupational mobility, self-employment, and union membership across the life course are all associated with the timing of first retirement. We also demonstrate that characteristics of mid-career employment are associated with the relative likelihood of retiring for health reasons and reemployment following retirement. Consistent with earlier research, we find that these relationships between work histories and retirement outcomes are mediated to some extent by pre-retirement differences in economic circumstances and private pension eligibility. Importantly, however, several aspects of work histories remain significantly related to retirement timing and pathways even after controlling for a wide array of established correlates.

The aging of the large baby boom cohorts is a source of growing concern about potential labor shortages, threats to the viability of Social Security and Medicare, and changes in the well-being of the elderly population. These concerns reflect not only projected changes in population age structure but also long-term trends toward earlier retirement and lower rates of labor force participation at older ages. It is clear, however, that these trends in later-life employment have slowed or reversed over the past twenty years and that the nature of retirement is changing in important ways. Crisp, unidirectional exits from the labor force concentrated at ages 62 and 65 have become less common as more older workers either choose or find it necessary to reduce work commitment gradually, seek employment in "bridge jobs," or return to the labor force following retirement (Maestas 2004; Mutchler, Burr, Pienta, and Massagli 1997; Quinn and Kozy 1996; Ruhm 1990). Collectively, these changes have been described as a "deinstitutionalization" or "individualization" of retirement (Guillemard and Rein 1993; Guillemard and van Gunsteren 1991; Han and Moen 1999; Moen and Altobelli 2007) or as a "new retirement paradigm" (Clark and Mitchell 2005).

In this context, efforts to understand variation in the timing and nature of retirement will require increased theoretical emphasis on the roles of planning, preparation, and individual characteristics such as attitudes, health, wealth, jobs, and family circumstances in late mid-life. At the same time, increasing variability in work and family experiences across the life course is contributing to growing heterogeneity in these individual correlates of retirement (O'Rand and Henretta 1999). Together, these two trends highlight the potential value of a life course approach to the study of the retirement process. Of particular relevance is emphasis on processes of "cumulative stratification" (O'Rand 1996a, 1996b) or "cumulative contingencies" (Elder 1995)

that link important temporally proximate antecedents of retirement processes to individual choices, experiences, and exposures across the life course.

Earlier studies of linkages between work experiences and variation in retirement outcomes (e.g., Hayward 1986; Hayward, Friedman, and Chen 1998; Hayward et al. 1989; O'Rand and Henretta 1982; O'Rand and Landerman 1984) are limited in their reliance on older surveys such as the National Longitudinal Surveys of the late 1960s, their focus on men, and their consideration of relatively limited aspects of both work histories (e.g., characteristics of longest job) and retirement outcomes (e.g., voluntary retirement or disability). Many of these limitations were addressed in a study by Han and Moen (1999) who documented strong associations between innovative summary measures of work trajectories and retirement planning, retirement timing, and post-retirement reemployment.

Although Han and Moen's (1999) work provided a valuable update and extension of previous research, it was also limited in important ways. First, it was based on data from a single cross-sectional survey in which information about work experiences across the life course was collected after respondents had already retired. Second, it did not consider links between work trajectories and reasons for retirement (i.e., voluntary vs. involuntary, health reasons vs. other reasons).[1] Most important, their study did not examine the mechanisms linking work histories to retirement. Thus, it did not provide evidence on the extent to which findings from earlier studies continue to hold for more recent cohorts retiring in a rapidly changing context. Is it the case that, as in previous cohorts, earlier work experience influences retirement outcomes primarily via late mid-life characteristics such as health, pensions, and job characteristics? Or is there evidence

[1] Han and Moen (1999) did, however, examine relationships between work trajectories and the likelihood of taking an early retirement incentive.

that, in the changing context of retirement, work histories now influence retirement in other ways that have yet to be adequately theorized? For example, changing attitudes toward work and leisure in later life, differential access to opportunities for continued employment, and mismatches between the types of work that older workers desire and the types of work that are available are all relevant features of the increasingly individualized context of retirement that may be related both to work experiences across the life course and to retirement outcomes but are rarely measured or analyzed.

Our objective in this paper is to address these limitations and extend our understanding of linkages between work experiences across the life course and first retirement outcomes using data from the Wisconsin Longitudinal Study (WLS). As the only large, longitudinal survey of older Americans to provide information on participants from adolescence to the retirement years, the WLS presents a unique opportunity to advance our understanding of the influence of earlier work experiences on the retirement process and to establish an empirical basis for subsequent evaluation of the experiences of the large, heterogeneous baby boom cohorts now approaching retirement. In addition to detailed information on all jobs that respondents have held since age 35-36, information on reasons for retirement allow us to examine relationships between earlier work experiences and retirement pathways. Detailed information on individual and family circumstances in late mid-life allows us to reevaluate earlier findings about the extent to which linkages between work histories and retirement outcomes are mediated by well-established, temporally proximate antecedents of retirement.

Background

The changing context of retirement

Beginning in the 1950s, a combination of institutional, economic, and social forces contributed to the emergence of a highly institutionalized retirement process for American men (Atchley 1982; Han and Moen 1999; Moen and Roehling 2005). The mean age of retirement for men declined steadily from 70 in 1950 to 63 after 1985 (Burtless and Quinn 2002), with large peaks at 62 and 65, the ages for early and full Social Security eligibility. Corresponding declines in rates of labor force participation at older ages were dramatic (Costa 1998). These trends reflected mandatory retirement policies, increasing pension wealth, and strong incentives to retire at specific ages that were incorporated in both private, defined benefit pension plans and Social Security (Quadagno and Quinn 1997). At the same time, clear societal and workplace norms about appropriate retirement ages emerged (Ekerdt 1998; Settersten and Hagestad 1996), with retirement becoming a widely anticipated, normative stage in the life course (Ekerdt, Kosloski, and DeViney 2000; Kohli 1986). During this period, retirement came to be viewed as a "one-time, one-way exit from the world of work to the golden years of full-time leisure" (Moen and Altobelli 2007:61).

This description of retirement has become progressively less accurate over the past twenty years. The elimination of mandatory retirement from most occupations, rapid growth in defined contribution pension plans (Beller and Lawrence 1992; Munnell and Perun 2006), increases in job insecurity and early retirement incentives (Moen and Roehling 2005), increases in self-employment (Karoly and Zissimopolous 2003), and couples' increasing tendency to coordinate retirements (Blau 1998) have all contributed to a decline in crisp, unidirectional retirements (primarily for men) concentrated at specific ages. Retirement is an increasingly

complex process, characterized by greater variability in both the timing and pathways out of the labor force (Cahill, Giandrea, and Quinn 2006; Mutchler, Burr, Pienta, and Massagli 1997; Wiatrowski 2001). For a large proportion of Americans, this process involves "partial retirement" characterized by reductions in work hours or commitment, often in "bridge jobs" in a different industry or with a different employer (Ruhm 1990). For many, retirement from career jobs is followed by "second acts" (Moen and Roehling 2005) in jobs with more flexible schedules and lesser responsibility, often in self-employment (Haider and Loughran 2001). For some retirees who are receiving full-pension benefits, the opportunity to "double-dip" provides another incentive for post-retirement reemployment.

There are several reasons to expect continued increases in the heterogeneity of retirement timing and pathways. For example, weakening links between seniority and job security (Hardy, Hazelrigg, and Quadagno 1996), declining participation in labor unions (Baldwin 2003), and increases in job displacement at older ages (Hipple 1999) all suggest that unanticipated exit from career jobs will continue to play an important role in the retirement process of many older Americans. At the same time, extended labor force attachment at older ages is being encouraged by public and private policy efforts to reduce pension burden and better utilize the human capital of an aging workforce (e.g., Ernst & Young 2006; Morton, Foster, and Sedlar 2005; Wiatrowski 2001) and necessitated by macroeconomic fluctuations including the "dot-com bust," which the WLS cohort experienced just as it approached the age of early Social Security eligibility. Changes in attitudes toward retirement and leisure at older ages are also expected to contribute to changes in the timing and pathways to retirement. Recent surveys indicate that a majority of baby boomers plan to work in retirement (AARP 2004; Merrill Lynch 2006), with many interested in reduced hours prior to retirement, phased retirement, and part-time work after

retirement (U. S. General Accounting Office 2001). Growing expectations of post-retirement employment likely reflect inadequate financial preparation for retirement (Moore and Mitchell 2000; Munnell, Golub-Sass, and Webb 2007) as well as financial incentives to "double-dip" and an increasing desire to remain physically active and productive at older ages (Pitt-Catasouphes and Smyer 2005).

Work experiences across the life course and retirement

As institutional and normative scripts become less relevant and more workers retire "under terms of their own and at their own pace" (Han and Moen 1999:196), several scholars have stressed the increasing value of a life course approach to studying the retirement process (e.g., Moen 2004). A particularly relevant feature of a life course approach to retirement is recognition that later-life variation in economic circumstances, health, job characteristics, and other established individual correlates of retirement are not assigned exogenously in mid-life but reflect the cumulation of experiences across the life course. This process of "cumulative stratification" (O'Rand 1996a; O'Rand and Henretta 1999) and the resulting growth in variation in life circumstances at older ages may be particularly important for cohorts that are now approaching an increasingly individualized retirement process with increasingly heterogeneous work histories (AARP 2004; Han and Moen 1999; Hughes and O'Rand 2004; Moen and Roehling 2005).

Heterogeneity and inequality in work experience has increased at all stages of the life course, including the transitions from school to work and to stable employment (e.g., Kerckhoff 2002), but mid-life work experiences are particularly relevant for studies of retirement (Moen 2004; Moen and Roehling 2005). Existing studies of mid-career influences on retirement have focused primarily on characteristics of the longest occupation (or "career job") to describe linkages between key aspects of work experiences across the life course and the timing and

nature of retirement. This work has placed particular emphasis on the ways in which the stability of employment, occupational mobility, and employment circumstances across the life course influence retirement via well-established antecedents such as economic resources and benefits, health, job characteristics, and family circumstances. We discuss each of these aspects of work histories in turn.

Employment stability

There is a great deal of variation in employment stability across the life course. While many follow an orderly career, progressing through the ranks of a single employer, mid-life work trajectories characterized by multiple transitions in and out of the labor force and work with many different employers are also common (Han and Moen 1999; Hayward, Friedman, and Chen 1998; Moen and Spencer 2006). Because Social Security and private pension eligibility and benefits are related to years worked, full-time employment across the life course is associated with a higher likelihood of pension coverage and the accumulation of pension wealth (O'Rand and Shuey 2007). Job change is also associated with lower levels of pension wealth, especially in defined contribution pension plans (Mehdizadeh and Luzadis 1994). These relationships contribute to earlier retirement for those with stable careers relative to those who experienced intermittent employment and frequent job changes earlier in the life course (e.g., Han and Moen 1999). Previous studies have shown that career interruptions during prime childbearing years are particularly important in predicting lower pension wealth accumulation and later retirement for women (O'Rand, Henretta, and Krecker 1992; Pienta, Burr, and Mutchler 1994; Yabiku 2000). It may also be that increasingly unstable work histories across the life course are part of the explanation for the high proportions of baby boom cohorts who are

approaching retirement without adequate financial resources and expecting that they will need to continue working after retirement (AARP 2004; Munnell, Golub-Sass, and Webb 2007).

Other studies have found that unstable careers and spells of unemployment across the life course are associated with earlier retirement for men via higher rates of disability as well as weaker attachment to work and a lower likelihood of engagement in rewarding work (Hayward, Friedman, and Chen 1998). Those who have experienced unstable careers may also be more likely to have experienced unforeseen events such as health decline or job loss that result in relatively early, and perhaps involuntary, retirement (Dwyer 2001; Williamson and McNamara 2002).

Occupational mobility

In contrast to popular images of careers, mid-life is a period of substantial occupational mobility. Hayward, Friedman, and Chen (1998) discuss two distinct patterns – career building and career unraveling. The former involves steady progression to jobs that involve higher pay, greater responsibility and higher occupational status whereas the latter involves transition to lower status employment, often prompted by involuntary job loss, health problems, or family needs. Several studies have found that rates of retirement are lower among men who had careers in higher status occupations characterized by jobs with greater substantive complexity (Hayward 1986; Hayward, Friedman, and Chen 1998; Hayward, Grady, Hardy, and Sommers 1989). This may reflect a desire to remain involved in rewarding work, greater opportunities for continued employment at older ages, higher earnings and thus higher opportunity costs of retiring, and a lower likelihood of experiencing unexpected job loss or health decline. In contrast, downward mobility and employment in jobs characterized by low autonomy, repetitive or dangerous work conditions, and physically demanding work is expected to result in earlier retirement. However,

in contrast to these earlier findings, Han and Moen (1999) found no relationship between occupational mobility and retirement timing among more recent cohorts of men and women.

Employment circumstances

Relationships between retirement timing and employment sector are well-established. Of particular note is relatively late retirement among the self-employed and relatively early retirement among those employed in the public sector or in large, bureaucratic firms (Elder and Pavalko 1993; Han and Moen 1999; Hayward, Friedman, and Chen 1998). These patterns are thought to reflect differences in job flexibility, job rewards, economic resources, and institutional incentives to retire at specific ages. For example, the lack of private pension coverage across the life course should result in later retirement for those who have spent much of their career self-employed, while continuous pension coverage and established norms regarding retirement age should result in earlier retirement for those who have spent much of their career working in the public sector or in unionized jobs (Hardy, Hazelrigg, and Quadagno 1996). For these same reasons, we also expect that the likelihood of involuntary retirement should also be lower for those who have worked in the public sector or unionized jobs (unless those jobs have been eliminated). Given the relative stability of employment sector across individual careers, we expect that these relationships will be explained to a large extent by employment circumstances prior to retirement. For example, those who spent more time in self-employment across the life course are more likely to be self-employed in late mid-life. We also note, however, that Hayward, Friedman, and Chen (1998) found that ever having been self-employed is a strong predictor of later retirement, net of pre-retirement employment sector.

To summarize, previous research has shown that stable employment, occupational mobility, and employment circumstances across the life course influence the timing of

retirement. Stable employment, downward occupational mobility (career unraveling), employment in lower status occupations, employment in public sector jobs or unionized jobs have all contributed to earlier first retirement in previous cohorts. In contrast, intermittent employment, upward mobility (career development), employment in higher status occupations, and self-employment have contributed to later first retirement.

In this paper, we examine relationships between these same aspects of mid-life work experiences and the timing of first retirement using information on the occupational life course of a large cohort of Americans currently in the midst of the retirement process. We also examine relationships between work experiences across the life course and the nature of first retirement. The preceding discussion of the changing context of retirement highlights the importance of distinguishing crisp retirement from blurred retirement, voluntary from involuntary retirement, and retirement for health reasons from retirement for other reasons. A small body of existing research on linkages between earlier work experiences and retirement pathways has shown that certain characteristics of the longest job hasten retirement by increasing the likelihood of disability (Hayward et al. 1998) and that unstable labor force attachment across the life course is associated with a relatively high likelihood of post-retirement employment, especially for women (Han and Moen 1999). To what extent does careful attention to different pathways to retirement enhance our understanding of linkages between work experiences across the life course and retirement for men and women currently in the midst of the retirement process?

Data

Sample

We use data from the Wisconsin Longitudinal Study (WLS), a long-term study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957. In

addition to the original 1957 survey and a brief, 1964 mail survey of their parents, the graduates were reinterviewed in 1975, 1993, and 2004. The WLS has collected detailed information on most jobs that respondents have held thus allowing us to measure work histories in greater detail than in previous studies. Rich information on financial, health, work, and family circumstances at multiple points in late mid-life allows us to construct a comprehensive set of established temporally proximate correlates of first retirement. Detailed employment histories through ages 64-65 facilitate identification of post-retirement returns to the labor force, and open-ended responses regarding reasons for retirement allow us to identify involuntary retirements and retirements for health reasons. Furthermore, because the WLS cohort is one of the first in which significant numbers of women have worked throughout the life course, we are able to shed new light on gender differences in relationships between earlier work experiences and retirement. Their experiences preface the dramatic changes in the work and family histories of the slightly younger baby boom cohorts. Are gender differences identified in earlier studies, including the strong link between intermittent employment across the life course and later retirement for women, similar for women in the WLS?

We use data from multiple rounds of the WLS but draw primarily on the surveys conducted in 1993 and 2004, both of which included a telephone interview (response rates of 87% in 1993 and 85% in 2004) and a mail questionnaire (response rates of 70% in 1993 and 75% in 2004). Our base sample consists of the 5,976 participants who completed both components of the 1993 survey (when they were 53-54 years old) and the 2004 phone interview (when they were 64-65 years old). We limit our focus to respondents who were at risk of first retirement at age 53-54 by eliminating those who reported that they had already retired from a job (n = 687) or were not working (n = 446) at the time of the 1993 survey. Further eliminating those with

missing data for the employment history module (n = 56) reported at age 64-65 or any of other the variables used in the analysis (n = 381) results in an analytic sample of 4,406 participants.

Retirement timing

Reflecting the complexity of the retirement process, retirement can be defined in many ways (Gustman and Steinmeier 2000b). In this paper, we focus on the age of first self-stated retirement, as reported in the employment history data collected at age 64-65. In the WLS surveys, a respondent's employment history is a sequence of "employment spells" which are defined as uninterrupted periods of time working for the same employer, including self-employment. For each spell, the survey ascertained the date respondents began working for that employer; the date they stopped working for that employer; and the reason for ending that employment spell. Regardless of the stated reason for ending an employment spell, respondents were also explicitly asked (a) whether each spell ended for health reasons and (b) whether the respondents considered themselves retired when each spell ended. If respondents reported retiring at the end of an employment spell, they were asked to provide the main reason(s) for retiring. We define age at first retirement as respondents' age at the end of the first employment spell from which they considered themselves to have retired.

We begin by constructing a data file comprised of person-year records in which each respondent contributes one observation per year from age 53-54 through the year of first self-stated retirement or the 2004 survey, whichever comes first.[2] Constructing person-year data allows us to easily incorporate time-varying information on job characteristics, family transitions, and health status collected at age 64-65 while also facilitating flexible specification

[2] A small number of respondents (n = 144) who left an employment spell prior to 2004 without retiring and did not return to the labor force by 2004 are censored at the time of labor force exit.

of the baseline hazard of retirement in discrete-time event history models. Based on the results of preliminary descriptive analyses, we specify the baseline hazard of retirement as a linear spline with knots at ages 56, 58, and 62. As in other studies using different data and different methods, we find that the risk of retirement rises through age 56, is relatively flat through age 58, increases rapidly to a peak at age 62, and declines subsequently. The typical second peak at age 65 is not yet visible in the WLS given that most respondents were age 64-65 at the time of the 2004 survey.

To reflect increasing variability in the timing and nature of retirement, we construct four different measures of first retirement. The first is a dichotomous indicator equal to zero during all person-years prior to respondents' first self-stated retirement and one in the year of retirement. Additional measures distinguish voluntary from involuntary retirement, retirement for health reasons from retirement for other reasons, and crisp retirement from retirement followed by reemployment. Involuntary retirements are defined as cases in which respondents stated that the main reason for retirement was one of the following: contract changes, business closing or relocation, downsizing, and layoff, forced to leave, or mandatory retirement. Retirements for health reasons are defined as cases in which respondents also reported that health influenced the decision to stop the employment spell from which they retired. Crisp retirement is defined as retirement after an employment spell that is not followed by a subsequent employment spell (before the end of the observation period).[3]

[3] This measure overstates the prevalence of crisp retirement to the extent that some respondents in this category will return to employment subsequent to the 2004 survey. The extent of this overstatement cannot be assessed until data are available from the next survey to be conducted in 2009.

As shown in the first row of Table 1a, 68% of men and 62% of women who were at risk of first retirement at age 53-54 reported retiring by age 64-65. The subsequent rows show that involuntary retirement and retirement for health reasons were both relatively uncommon and were experienced by similar proportions of men and women. Retirement followed by reemployment is much more common, with 26% of men and 17% of women in this category.

Mid-life work experiences

We construct seven measures of mid-life work experiences based on the occupational history data collected at age 53-54 and employment information collected in the 1975 survey when participants were 35-36 years old. Like the 2004 survey, the 1993 survey collected detailed information about employment spells since the previous survey in 1975. These data provide information on the number, sequencing, and characteristics of jobs held between ages 35-36 and 53-54. Questions about each reported employment spell ascertained whether respondents worked full- or part-time; information sufficient to determine the industry, occupation, and class of worker for the job they held when they began working for that employer; health insurance coverage; and pension coverage.

We measure the stability of employment using a dichotomous indicator of discontinuous employment between ages 35-36 and 53-54. Respondents who were employed for the entire inter-survey period are coded as zero and those who were out of the labor force for one or more years are coded as one. A second measure of stability indicates whether respondents ever left a job involuntarily between ages 35-36 and 53-54. This measure is constructed based on open-ended responses to questions asking the reason for ending each reported employment spell between ages 35-36 and 53-54 (see Brand 2006). As shown in Table 1a, discontinuous employment is relatively uncommon for men but not for women. Only 10% of men, but 45% of

women, were out of the labor force for at least one year during the 18-year period between ages 35-36 and 53-54. Roughly one out of six men and women reported involuntary job loss between the two surveys.

To operationalize Hayward et al.'s (1998) concept of career development or career unraveling, we calculate the difference between occupational status of the job held at the time of the 1993 survey and occupational status of the job held in 1970 (when respondents were 30 years old).[4] We use two different indicators of occupational status – occupational education and occupational earnings. For a given combination of occupation, industry, and class-of-worker, the former refers to the percentage of persons in each occupation in the 1990 Census who completed one year of college or more and the latter refers to the percentage of persons in each occupation in the 1990 Census who earned at least $14.30 per hour in 1989 (Hauser and Warren 1997). Higher positive values reflect more successful career development whereas lower negative values reflect a greater degree of career unraveling across mid-life. We present results based on a standardized measure of change in occupational earnings. To measure average mid-career occupational status, we also include a measure of the mean value of occupational education for the jobs held at each year between ages 35-36 and 53-54. Table 1a shows that mean occupational education was similar for men and women while men experienced a greater increase in occupational earnings across mid-life.

[4] For those who were not employed in 1970, we use occupational status in 1974. If the respondent was not employed in 1974, we use occupational status of the job held prior to marriage (for women) or occupational status of the first job (for both men and women). All of this information on earlier jobs was collected in the 1975 survey.

To distinguish those with and without exposure to well-defined structural and normative incentives to retire, we calculated the proportion of years between ages 35-36 and 53-54 that respondents were (a) self-employed and (b) working for an employer that provided health insurance. A final measure of job characteristics associated with structural and normative incentives to retire is a dichotomous indicator of union membership. Because the occupational history questions did not ask about union membership, this variable refers to the job at age 53-54 and the job held at age 30. On average, men spent a greater proportion of mid-career in self-employment (.15) than women (.10) and also spent more time employed in jobs that provide health insurance and were more likely to report ever belonging to a labor union.

Temporally proximate correlates of retirement

As discussed above, previous studies have concluded that earlier work experiences influence retirement primarily via preretirement circumstances. We therefore draw upon recent studies of retirement timing to construct a comprehensive set of established temporally proximate correlates including economic circumstances, private pension and health insurance coverage and benefits, physical and mental health, job characteristics, and family characteristics. Descriptive statistics are presented in Table 1a for time-invariant characteristics and in Table 1b for time-varying characteristics. The figures in Table 1a are based on values at the time of the 1993 survey and those in Table 1b are based on all observed values (person-years) prior to retirement or censoring.

Measures of economic circumstances include logged values of hourly wages and net worth reported at age 53-54. Measures of benefits include an estimated value of monthly private pension benefits (logged) and time-varying indicators of both health insurance coverage and private pension benefit eligibility. Estimated pension benefits are calculated by adding monthly

benefits that respondents reported receiving at age 64-65 to the monthly benefits that they reported being eligible for but were not yet receiving. For the 19% of our sample that has missing data on these questions, we imputed values using gender-specific means and included a dichotomous indicator of missingness. This definition requires us to assume that the value of private pension benefits is both time-invariant and known to respondents at age 53-54. We constructed time-varying indicators of health insurance coverage and private pension eligibility between ages 53-54 and 64-65 using the occupational history data collected in the 2004 survey. Health insurance coverage distinguishes those participating in a company sponsored health insurance plan from those who are not. Unfortunately, we do not have information on whether this health insurance coverage continues after retirement. Pension eligibility is a time-varying trichotomous variable distinguishing those who are eligible for private pension benefits at a given age from those who are not yet eligible or who are not covered by a company-sponsored pension plan.

We include three different measures of health. Self-rated health at age 53-54 is a three-category measure (excellent, good, and fair/poor/very poor) and emotional health at age 53-54 is measured using the natural log of the CES-D score. The CES-D score is the sum of responses to 20 questions asking respondents how many days during the past week they felt a particular way (e.g., lonely, sad, depressed) and ranges in value from 0-140. The third measure of health is a time-varying indicator experience of serious illnesses or health events after age 53-54. This measure is based on information in the 2004 survey on the diagnosis of cancer, heart disease, and stroke and is equal to zero in person-years prior to the experience of any of the three illnesses and equal to one in the year at which the first event was experienced and in all subsequent years prior to retirement or censoring.

We include five time-varying indicators of respondents' job characteristics from age 53-54 onward and two time-invariant characteristics of the job held at age 53-54. Occupational sector distinguishes those in private sector employment from those working in the public sector and those who were self-employed. Weekly hours of work is a continuous measure ranging from 0 to 60.[5] Occupational status is measured using a time-varying dichotomous indicator of whether the respondents' current occupation (after age 53-54) is above the median value of occupational earnings. To measure pre-retirement job changes, we include a time-varying indicator of the number of the current employer job spell; we expect that more job spells will be associated with lower levels of retirement (to the extent that higher-order spells are bridge jobs that allow respondents to delay retirement). Because there were very few person-years after age 53-54 in which respondents worked for a third or higher employer, we topcode this variable at two. The three categories are first job with first employer, second job with first employer, and all jobs with a second or higher-order employer.[6] A related measure of pre-retirement job change indicates whether or not the current job was entered after a one-year or longer exit from the labor force.[7]

We also include measures of job satisfaction and employment security based on information about the job held at age 53-54. Job satisfaction is a dichotomous measure

[5] We topcode responses for a small proportion of respondents who reported weekly work hours greater than 60.

[6] Questions about each employment spell allowed respondents to report two different jobs for the same employer.

[7] Person-years during which respondents were not employed are not included in the analyses because our definition of retirement precludes the possibility of retiring during a spell of non-employment.

distinguishing those who report being "very satisfied" with their job from those who report lower levels of satisfaction. Job security measures respondents' perceived likelihood of losing their job within the next two years. The wording of the question was – "On a scale from zero to ten, what chance do you think there is that you will lose your job completely in the next two years?" Based on the results of preliminary analyses, we recode this variable into three categories – 0 (no chance), 1-5, and 6-10.

Other temporally proximate antecedents of retirement were selected based on evidence that retirement behavior is strongly influenced by spouse's characteristics and family circumstances (Coile 2003; Gustman and Steinmeier 2000a; Szinovacz and DeViney 2000). We first include a measure of spouses' estimated private pension benefits, constructed in the same manner as the corresponding measure for respondents. The value of this and other indicators of spouses' characteristics is zero for those who did not have a spouse at age 53-54. A dichotomous indicator of health insurance coverage distinguishes respondents who had a spouse with employer-provided insurance at age 53-54 from those who did not. Unlike the measure for respondents' own health-insurance coverage, this is not a time-varying characteristic. A dichotomous indicator of poor spousal health distinguishes those with a spouse in fair/poor/very poor health from others. Spouse's health was reported by the respondent in the 1993 survey and is thus assumed to be constant over time. A trichotomous, time-varying indicator of spouse's retirement status distinguishes person-years in which the spouse has not yet retired (or respondent does not have a spouse) from the person years in which the spouse retires and those after s/he has retired. Time-varying indicators of change in marital status identify years in which respondents lost their spouse to divorce or widowhood.

Based on the findings of Raymo and Sweeney (2006), we also include indices of perceived levels of work-to-family conflict and family-to-work conflict based on questions asking respondents the extent to which they agree or disagree with statements like "family worries or problems distract me from my work" and "problems at work make me irritable at home." Each index is based on three questions and ranges in value from 3 to 15, with higher values corresponding to a higher degree of perceived conflict at age 53-54. We expect higher levels of work-family conflict to be associated with earlier retirement and perhaps a lower likelihood of postretirement employment. We also include a measure of positive work-family enhancement (Marks 1998) which we expect to be related to later retirement.

Models

We examine relationships between earlier work experiences and the transition to first retirement by estimating discrete-time event history models using logistic regression. Discrete-time hazard models based on the person-year data described above may be expressed generally as:

$$\ln[p_{it}^{j}/1-p_{it}^{0}] = \alpha^{j} + X_{it}\beta_{k}^{j} + Y_{it-a}\beta_{l}^{j} + \varepsilon_{it}^{j} \quad (1)$$

$$\ln[p_{it}^{j}/1-p_{it}^{0}] = \alpha^{j} + X_{it}\beta_{k}^{j} + Y_{it-a}\beta_{l}^{j} + Z_{it}\beta_{m}^{j} + \varepsilon_{it}^{j}, \quad (2)$$

where p_{it}^{0} is the probability that the i^{th} respondent remains "never retired" at age t and p_{it}^{j} is the probability that i transitions from never retired to retirement type j at age t, conditional on having never retired at age t-1. In the first set of models, j has only one category and (1) and (2) simplify to binary logistic regression models. In the competing risks models, j distinguishes voluntary from involuntary retirement, retirement for health reasons from retirement for other reasons, and crisp retirement from retirement followed by reemployment. X_{it} includes the age spline and educational attainment (an established correlate of retirement outcomes that is typically established prior to mid-life work experiences) and Y_{it-a} includes the work history measures of

central interest. The subscript t-a indicates that all of these measures refer to work experiences prior to initial exposure to the risk of first retirement at age 53-54. We estimate these models separately for men and women in light of substantial gender differences in work experiences across the life course.

Extending Model 1 to include the temporally proximate characteristics described above (Z_{it} in Model 2) allows us to reevaluate the general conclusion from earlier studies that relationships between earlier work experiences and retirement are largely mediated by established correlates of retirement timing. In the rapidly changing context of retirement, it is important to understand whether previously documented mechanisms continue to link work histories and retirement outcomes or whether it is necessary to expand our focus beyond institutional incentives and other established correlates of retirement outcomes to further theorize linkages between increasingly heterogeneous individual life histories and the retirement process**.**

Findings

Retirement timing

Tables 2a and 2b present the estimates (as odds ratios) of five discrete-time event history models for the transition to first retirement for men and women, respectively. Model 1 includes only age, educational attainment, and the seven measures of earlier work experiences. In this model, the risk of retirement was significantly associated with all seven work history measures for men and with five of the seven measures for women. In most cases, the direction of significant coefficients was consistent with findings from the earlier studies summarized above. Mid-career instability was associated with later retirement. Men who were not continuously employed between the 1975 and 1993 surveys were 25% less likely to retire in a given year than those who were continuously employed, and experience of involuntary job loss in mid-career was also

associated with 41% lower odds of retirement. Among women, discontinuous employment was not related to the risk of retirement but the odds of retirement were 21% lower among those who experienced involuntary mid-career job loss.

For men, increases in occupational status in mid-career and mean occupational status were both associated with a significantly higher likelihood of retiring. This pattern contrasts with the findings of earlier studies (e.g., Hayward, Friedman, and Chen 1998), making it important to examine the extent to which these relationships between higher occupational status and earlier retirement are mediated by the characteristics included in subsequent models and the extent to which they differ across alternative pathways to retirement. For women too, higher mean occupational status was associated with earlier retirement, but career mobility was unrelated to the risk of retirement. The characteristics of jobs held across mid-career were also strongly related to retirement timing. The proportion of mid-career years spent in self employment was associated with a substantially lower risk of retirement, whereas the proportion of years working in jobs that provided health insurance and union membership in either 1975 or 1993 were both positively associated with the risk of retirement. These relationships were observed for both men and women but the magnitude of the coefficients was somewhat larger for men.

To provide a better sense of the substantive magnitude of these differences, we used predicted probabilities from Model 1 to construct life table measures of the cumulative proportion retired by a given age. For purposes of illustration, we limit our attention to a single measure - the experience of involuntary job loss. In Figure 1, we plot the cumulative proportion ever retired for men and women with and without experience of involuntary mid-life job loss and with mean or modal values for all other variables in Model 1. This figure shows that retirement trajectories were quite similar by age 65 among men and women who did not experience

involuntary loss, though such women tended to retire somewhat earlier than men. Those who did experience involuntary job loss retired at a slower rate than those who did not, and the relationship between earlier job loss and retirement timing was stronger for men than for women. The predicted cumulative proportion ever retired by age 65 was 16 percentage points lower among men and 8 percentage points lower among women who experienced involuntary job loss between ages 35-36 and 53-54.

Model 2 shows that economic circumstances play a role in partially mediating relationships between mid-career work trajectories and retirement timing. After controlling wages and net worth (measured in 1993), estimated pension benefits, and time-varying indicators of health insurance coverage and pension eligibility, the coefficients of discontinuous work, mean occupational status, and proportion of years covered by health insurance were no longer significantly different from zero in the model for men. Models that introduce the economic characteristics in a stepwise manner (not presented) indicated that private pension eligibility (rather than the amount of pension benefits) is most important in mediating relationships between retirement timing and these three measures of work trajectories. For women, the negative coefficient for the percent of time in self-employment and the positive coefficient for mean occupational education were no longer significant. As with men, stepwise models indicated that eligibility for private pension benefits plays the most important role in explaining the relationship between self-employment and later retirement. Net of the fact that women who spent more time self-employed were less likely to be eligible for private pension benefits, self-employment during mid-career was no longer significantly associated with later retirement.

Controlling for multiple measures of health status in Model 3 did nothing to alter estimated relationships between earlier work experiences and first retirement timing. Adding job

characteristics in Model 4 also did little to change the estimated coefficients of earlier work experiences. In fact, the coefficients for proportion of years covered by health insurance and discontinuous employment reached statistical significance (at $p < .10$) in the models for men and women, respectively. The former reflects the correlation between mid-career health insurance coverage and employment sector in late mid-life, and the latter reflects correlation between discontinuous work across mid-career and multiple employer spells in late career (i.e., after age 53-54) – a strong predictor of later retirement. Interestingly, the coefficient of the proportion of years in self-employment for women reversed sign and reached statistical significance at $p < .10$. This reflects the correlation between mid-career self-employment and late-career self-employment – a strong predictor of later retirement. A similar pattern was not observed among men, however.

Several of the family characteristics in Model 5 were significantly related to the risk of retirement. Spouse's retirement, in particular, was a strong correlate of retirement for both men and women. But their inclusion did little to alter the relationships between mid-career work experiences and retirement timing for either men or women. For men, coefficients indicating earlier retirement among those who experienced greater upward job mobility and those who belonged to a labor union and later retirement among those who experienced involuntary job loss and those who spent more time in self-employment remained statistically significant. The proportion of years covered by health insurance also remained significantly associated with earlier retirement at $p < .10$. For women, there was no change in the negative association between the risk of retirement and involuntary mid-career job loss or the positive associations between the risk of retirement and self-employment, health insurance coverage, and union membership across mid-career.

In sum, Tables 2a and 2b show that, consistent with the conclusions of earlier studies, there is some evidence that the temporally proximate correlates of retirement mediate relationships between mid-career work experiences and the risk of first retirement. Eligibility for private pension benefits appears to be particularly important. However, the most striking and important finding from these models is that several measures of mid-life work experiences remained significantly associated with the risk of retirement after controlling for a wide range of more temporally proximate correlates of retirement timing. Importantly, some of these relationships differ from the findings reported in earlier studies. In particular, we found that involuntary job loss between the ages of 35-36 and 53-54 was associated with a significantly lower risk of retirement for both men and women while upward occupational mobility across mid-life was robustly associated with earlier retirement. While our analyses cannot identify reasons for these discrepancies between our results and earlier findings, the changing context of retirement does provide some insights that should be explored in subsequent work. For example, it may be that the shift from defined benefit to defined contribution pension plans has resulted in stronger relationships between work experiences across the life course and the financial capacity to retire. The attenuation of relationships between mid-life work experiences and the risk of retirement in Model 2 is partially consistent with this explanation. Another related possibility is that long-term planning and preparation is increasingly required for early retirement and that stable, upwardly mobile trajectories of employment across the life course are positively associated with the ability and propensity to plan for retirement. These potential explanations for the differences between our findings and the results of earlier research are consistent with an increasing individualization of the retirement process and merit further investigation.

We also found relationships between characteristics of jobs held earlier in the life course and retirement timing that were consistent with patterns observed in earlier research. For both men and women, the proportion of time spent in jobs covered by health insurance was associated with earlier retirement net of health insurance coverage in jobs subsequent to the 1993 survey. We also found that the proportion of time spent in self-employment was associated with later retirement among men even after controlling for employment status just prior to retirement. Surprisingly, however, more time in self-employment was associated with earlier retirement among women. This might reflect lower career commitment and fewer disincentives to retirement among women who moved from self-employment in mid-career to wage employment in late-midlife.

Pathways to retirement

To what extent do the relationships between mid-life work experiences and first retirement timing documented in Tables 2a and 2b depend upon the pathway to retirement? For example, are employment stability and upward occupational mobility associated with a lower likelihood of retiring involuntarily or retiring for health reasons? Are these relationships mediated by more temporally proximate measures of job security and health, as suggested by research on cumulative stratification of the life course (e.g., O'Rand 1996a)? To address these questions, we present the results for three competing-risks models of retirement in Tables 3a and 3b. Starting from the top of the table, these models compare voluntary with involuntary retirement, retirement for reasons other than health with health-motivated retirement, and crisp retirement with retirement followed by reemployment. For the sake of brevity, we have presented only the

odds-ratios associated with the seven measures of mid-life work experiences.[8] In addition to the usual indicators of statistical significance for comparison with the reference outcome (remaining not retired), we also indicate significant differences in coefficients for the two different types of retirement (denoted with †). It is these indicators of relationships between work histories and pathways to retirement that are of primary interest in these models. As in Tables 2a and 2b, we present the results of five models that sequentially add established temporally proximate antecedents of retirement.

The results of the first set of models suggest that mid-career work experiences were largely unrelated to the relative risk of involuntary retirement. The only significant difference across the two contrasts indicated that women who belonged to a labor union were significantly less likely to experience involuntarily retirement. This difference was no longer significant in Model 4, reflecting the fact that many respondents who were ever in a labor union were in public sector employment in late mid-life, an employment status from which involuntary retirement was relatively uncommon.

The second set of models indicates a stronger relationship between mid-career work experiences and the relative risk of retirement for health reasons among men. In Model 1, earlier experience of involuntary job loss was associated with a higher relative likelihood of retirement for health reasons. In contrast, higher mean occupational status and the proportion of time spent in jobs that provided health insurance coverage were associated with a substantially lower likelihood of health-related retirement. For women, differences were less pronounced. As with men, the duration of time spent in jobs that provided health insurance coverage was associated

[8] Full tables containing coefficient estimates for temporally proximate characteristics are available upon request.

with a lower likelihood of retiring for health reasons, and women who ever belonged to a labor union were relatively more likely to retire for health related reasons.

The results of Model 2 show that differences in pre-retirement financial circumstances and benefits do not explain differences in the relative likelihood of health-related retirement. Adding measures of health status in Model 3 did not alter estimated coefficients for men's mid-life work trajectories but the relatively higher likelihood of retirement for health reasons among women who reported belonging to a labor union was no longer significant. This reflects the somewhat higher representation of labor union members among those who reported being in fair, poor, or very poor health at age 53-54. For men, differences in job characteristics explained the relatively low likelihood of health related retirement among those who had lower mean occupational status across mid-life. This reflects the fact that higher mid-career occupational status was associated with higher late-career occupational status which, in turn, was associated with a lower relative likelihood of retiring for health reasons. Further controlling for family characteristics and family changes beyond age 53-54 did not alter estimated relationships between measures of work histories and the relative likelihood of retirement for health reasons. Men who experienced involuntary mid-life job loss remained significantly more likely to report retiring for health reasons, and health-related retirement also remained less likely for men and women who spent more time in jobs that provided health insurance coverage. The latter finding suggests that increasing health care costs and the associated decline in employer-provided health insurance coverage may have potentially important, yet understudied, implications for later-life outcomes. To the extent that retirement for health reasons is associated with lower levels of subsequent financial and emotional well-being (e.g., Herzog, House, and Morgan 1991), growing heterogeneity in access to health care across the life course may be an increasingly important

mechanism of stratification at older ages. Subsequent research should test our findings and further explore the implications of relationships between health care coverage across the life course and later-life well-being.

Turning to the comparison of crisp retirement with post-retirement reemployment, Model 1 indicates that men and women who ever belonged to a labor union were more likely to experience crisp retirement whereas women who spent a greater proportion of mid-career in self-employment were relatively more likely to return to work following retirement. For women, both of these differences were explained by pre-retirement job characteristics. To a large extent, this reflects the relatively low likelihood of reemployment among women who retired from public sector jobs (the most common pre-retirement employment status for those who belonged to a labor union) and the higher relative likelihood of reemployment among those who retired from self-employment (which is strongly related to self-employment across mid-life). For men, however, the higher relative likelihood of crisp retirement among those who belonged to a labor union and the relatively high likelihood of reemployment among those who spent more time in self-employment remained statistically significant after controlling the temporally proximate correlates of retirement outcomes.

Discussion

Increasing individualization of both the life course and the retirement process highlights the value of a life course approach to research on retirement timing and pathways. In this paper, we have used uniquely rich data collected across the lives of a large cohort of older American men and women to reevaluate and extend research on linkages between work experiences across the life course and retirement outcomes.

Results of baseline models indicated that measures of employment stability, career mobility, and employment characteristics across mid-life were significantly related to retirement timing. Consistent with expectations derived from theoretical emphases on processes of cumulative stratification and the findings of earlier studies, several of these relationships were mediated by established temporally-proximate correlates of retirement timing. Private pension eligibility, in particular, played an important role in explaining linkages between earlier work experiences and retirement timing. One important departure from earlier findings was evidence that employment in higher status occupations and upward occupational mobility across midlife is associated with earlier, rather than later, retirement. One possible explanation for this pattern is that those with greater occupational and socioeconomic resources are able to utilize those resources to extend employment in rewarding work when retirement is a highly institutionalized transition whereas those with limited resources are least able to withdraw from paid employment when the retirement process is far less institutionalized.

Our most important finding, however, is that several measures of mid-life work experiences remained significantly related to retirement timing after controlling for a wide array of established temporally proximate correlates. For both men and women, involuntary mid-career job loss was associated with later retirement, while labor union membership and the proportion of mid-career spent in jobs that provided health insurance remained associated with earlier retirement. For men, upward occupational mobility in mid-life was also associated with earlier retirement, while the proportion of years spent in self-employment was associated with later retirement. All of these relationships remained statistically significant net of established economic, health, job-related, and family-related correlates of retirement timing. One interpretation of these results is that we have not adequately measured the temporally proximate

characteristics that have been theoretically or empirically identified as important mediators of relationships between earlier work experiences and retirement outcomes. Another possible interpretation is that, in the changing context of retirement, retirement outcomes may be linked to earlier work experiences via other mechanisms that have yet to be identified. Potentially fruitful areas for further investigation along these lines include individual variation in planning and preparation for retirement, attitudes toward work and leisure, and access to attractive work opportunities at older ages.

Our analyses of pathways to retirement produced similar findings. Several measures of mid-life work experiences were related to the relative likelihood of both health related retirement and reemployment following retirement. Again, these differences were partially, but not fully, mediated by established correlates of retirement timing and pathways. For men, involuntary mid-career job loss remained associated with a higher likelihood of retirement for health reasons, while the proportion of time spent in jobs providing health insurance was associated with a lower relative likelihood of health-related retirement. This latter relationship was also observed for women. We also found that men who spent more time in self-employment were more likely to return to work following retirement, whereas those who reported labor union membership were less likely to return to work. In general, variation in individual and family characteristics in late mid-life explained linkages between mid-life work experiences and pathways to retirement more fully for women than for men.

There are many ways in which the work presented here can be improved and extended. We have used only a small portion of the rich information in the WLS on work experiences across the life course, and subsequent work should explore other potentially relevant measures of individual work histories. It should also build on the life course notion of overlapping spheres to

incorporate information on earlier experiences in other life domains such as family and health. Because the WLS underrepresents some growing subpopulations of older Americans, it would be useful to calibrate our findings, to the extent possible, with results from nationally representative surveys such as the Health and Retirement Study. Finally, it is important to note that we have observed the transition to first retirement for only two-thirds of the WLS sample. It will be important to confirm our findings with data from the next round of the survey – to be conducted in 2009 when respondents are approximately 70 years old. That survey will also provide a wider temporal window in which to observe post-retirement returns to the labor force, a possibility that looms large in light of the recent economic downturn.

Refining analyses in these ways to further our understanding of retirement outcomes in the context of the life course is of potentially great value for understanding variation in the retirement process of the large baby boom cohorts. Relative to the WLS cohort and preceding cohorts, the baby boom cohorts are approaching an increasingly unscripted retirement process with very heterogenous life experiences and retirement plans and provisions. A better understanding of life course influences on retirement outcomes is valuable not only for social scientists, but also individuals contemplating and planning for their own retirement and for those involved in the formulation of retirement policies. Social scientists have discussed and documented the deinstitutionalization or individualization of retirement, but they have yet to fully explore the ways in which experiences across the life course influence retirement outcomes in this new context. As more individuals approach retirement with plans for extended employment including part-time work or phased retirement (AARP 2004; Moen and Roehling 2005), effective planning and preparation may be enhanced by a fuller understanding of the ways in which earlier work experiences are associated with the likelihood of experiencing different

types of retirement trajectories. Similarly, the efforts of individual firms and policy makers to implement policies designed to facilitate extended labor force participation will benefit from an understanding, not only of the prevalence and nature of plans for work at older ages, but also of the ways in which individual life experiences contribute to variation in when and how older workers leave the labor force.

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Table 1a: Descriptive statistics for time-constant variables, by gender: Wisconsin Longitudinal Study

	Men		Women	
Variable	mean	s.d.	mean	s.d.
Retired	0.68		0.62	
Retired involuntarily	0.05		0.04	
Retired for health reasons	0.08		0.08	
Retirement followed by reemployment	0.26		0.17	
Mid-life work experiences				
Discontinous employment 1975-93	0.10		0.45	
Involuntary job exit 1975-93	0.16		0.17	
Change in occupational earnings 1975-93[a]	7.90	19.99	3.22	18.61
Mean occupational education 1975-93	64.9	24.9	64.0	21.9
Proportion years self-employed 1975-93	0.15	0.32	0.10	0.26
Proportion years covered by health insurance 1975-93	0.88	0.29	0.67	0.41
Union membership	0.33		0.25	
Economic circumstances and benefits				
Wages ($/hour)[b]	25.91	55.49	12.68	17.06
Net worth ($1,000)[b]	319.3	414.6	216.9	303.3
Estimated value of monthly pension benefits[b]	2174	2204	869	1207
Missing monthly pension benefits	0.18		0.21	
Health				
Self-rated health				
Fair/poor/very poor	0.09		0.09	
Good	0.62		0.59	
Excellent	0.29		0.32	
CES-D[b]	14.74	13.54	17.05	16.06
Job characteristics				
Very satisfied with job	0.52		0.55	
Perceived likelihood of losing job				
No chance	0.44		0.51	
50% or less	0.49		0.43	
Greater than 50%	0.07		0.06	
Family characteristics				
Estimated value of monthly pension benefits for spouse[b]	540	997	924	1573
Missing monthly pension benefits for spouse	0.12		0.17	
Spouse covered by health insurance 1993	0.23		0.50	
Spouse in fair to poor health 1993	0.07		0.09	
Perceived work-to-family conflict	8.15	2.40	7.74	2.49
Perceived family-to-work conflict	6.59	2.02	6.47	2.14
Perceived work-family enhancement	7.28	1.97	7.88	1.84
Educational Attainment				
High school	0.49		0.58	
Some college	0.16		0.16	
BA	0.15		0.14	
Graduate degree	0.20		0.12	
N (respondents)	2,291		2,142	

Notes: (a) this variable is standardized for use in the models presented in Tables 2 and 3.
(b) the natural log of these variables is used in the models presented in Tables 2 and 3.

Table 1b: Descriptive statistics for time-varying variables, by gender: Wisconsin Longitudinal Study

	Men		Women	
Variable	mean	s.d.	mean	s.d.
Age	58.1	3.3	58.1	3.4
Economic circumstances and benefits				
Eligible for private pension				
Not yet	0.40		0.42	
Yes	0.36		0.24	
Not covered	0.24		0.33	
Covered by health insurance	0.73		0.63	
Health				
Serious illness	0.11		0.07	
Job characteristics				
Work hours	44.7	13.2	36.1	13.3
Occupational sector				
Private	0.63		0.64	
Public	0.16		0.26	
Self-employed	0.21		0.10	
Occupational earnings	40.5	19.3	24.3	18.0
Job spell				
First job	0.72		0.69	
Second job, first employer	0.16		0.18	
Second or later employer	0.12		0.13	
Employed after labor force exit	0.01		0.01	
Family characteristics				
Spouse's retirement status				
Spouse not retired	0.79		0.76	
Spouse retirement year	0.02		0.03	
Spouse already retired	0.19		0.21	
Divorced	0.003		0.002	
Widowed	0.003		0.010	
N (person-years)	19,509		18,432	

Table 2a: Odds ratios from discrete-time hazard model of first retirement, men

Variable	Model 1 OR	Model 2 OR	Model 3 OR	Model 4 OR	Model 5 OR
Age spline					
52-56	1.55 **	1.42 **	1.42 **	1.44 **	1.44 **
56-58	1.14 *	1.14 *	1.15 *	1.16 **	1.18 **
58-62	1.40 **	1.34 **	1.34 **	1.39 **	1.38 **
62-65	0.71 **	0.71 **	0.71 **	0.73 **	0.75 **
Educational Attainment(a)					
Some college	0.96	0.95	0.95	0.98	0.98
BA	1.04	1.01	1.02	0.99	0.98
Graduate degree	0.89	0.87	0.88	0.71 **	0.71 **
Mid-life work experiences					
Discontinous employment 1975-93(b)	0.75 **	0.84	0.84	0.92	0.89
Involuntary job exit 1975-93(b)	0.59 **	0.67 **	0.67 **	0.73 **	0.73 **
Change in occupational earnings 1975-93	1.09 **	1.08 *	1.08 *	1.08 *	1.09 **
Mean occupational education 1975-93	1.07 #	1.01	1.01	1.01	1.03
Proportion years self-employed 1975-93	0.32 **	0.44 **	0.45 **	0.66 *	0.70 *
Proportion years covered by health ins. 1975-93	1.64 **	1.22	1.21	1.27 #	1.27 #
Union membership(b)	1.79 **	1.54 **	1.55 **	1.40 **	1.38 **
Economic circumstances and benefits					
Wages ($/hour)		0.99	1.00	1.09 #	1.11 *
Net worth (log)		1.02 #	1.03	1.03	1.03
Covered by health insurance(b)		1.51 **	1.49 **	1.10	1.10
Eligible for private pension benefits(b)		2.15 **	2.17 **	2.05 **	2.02 **
Estimated value of monthly pension benefits (log)		1.01	1.01	1.00	1.00
Missing monthly pension benefits(b)		0.87 #	0.88 #	0.90	0.89
Health					
Self-rated health(c)					
Fair/poor/very poor			1.08	1.10	1.11
Excellent			0.85	0.98	0.98
CES-D (log)			1.08 **	1.07 *	1.11 **
Serious illness1993-2004(b)			1.26 **	1.20 *	1.18 #
Job characteristics					
Hours worked per week				1.02 **	1.03 **
Occupational sector(d)					
Public				1.60 **	1.61 **
Self-employed				0.56 **	0.57 **
High occupational education(b)				1.00	0.98
Very satisfied with job(b)				0.82 **	0.80 **
Perceived liklihood of losing job(e)					
1-50% or less				0.91	0.93
Greater than 50%				1.08	1.12
Job spell(f)					
Second job, first employer				1.07	1.05
Second or later employer				0.57 **	0.59 **
Employed after labor force exit(b)				0.91	0.88
Family characteristics					
Spouse covered by health insurance 1993(b)					1.04
Estimated value of monthly pension benefits for spouse (log)					0.98 *
Missing monthly pension benefits for spouse(b)					1.05
Spouse's retirement status(b)					
Spouse retirement year					3.24 **
Spouse already retired					1.27 **
Spouse in fair to poor health 1993(b)					0.85
Perceived work-to-family conflict					0.96 **
Perceived family-to-work conflict					0.99
Perceived work-family enhancement					1.01
Divorced(b)					0.53
Widowed(b)					3.07 **
N	19,497	19,497	19,497	19,497	19,497
df	14	20	24	34	45
log-likelihood	-4,935	-4,827	-4,817	-4,733	-4,686
p for LR test		0.00	0.00	0.00	0.00

notes: **p<.01, *p<.05, #p<.10

Reference categories: (a) High school, (b) No, (c) Good, (d) Private, (e) No chance, (f) First job

Table 2b Odds ratios from discrete-time hazard model of first retirement, women

Variable	Model 1 OR	Model 2 OR	Model 3 OR	Model 4 OR	Model 5 OR
Age spline					
52-56	1.45 **	1.39 **	1.39 **	1.41 **	1.42 **
56-58	1.11 #	1.12 *	1.12 *	1.14 *	1.15 *
58-62	1.30 **	1.26 **	1.26 **	1.30 **	1.31 **
62-65	0.62 **	0.60 **	0.60 **	0.62 **	0.63 **
Educational Attainment(a)					
Some college	0.82 *	0.83 *	0.84 *	0.84 #	0.86 #
BA	0.83 #	0.84 #	0.85	0.80 *	0.80 *
Graduate degree	0.77 **	0.77 *	0.79 *	0.73 **	0.75 *
Mid-life work experiences					
Discontinous employment 1975-93(b)	0.95	1.03	1.03	1.05 #	1.02
Involuntary job exit 1975-93(b)	0.79 **	0.84 *	0.82 *	0.83 *	0.83 *
Change in occupational earnings 1975-93	0.98	0.97	0.97	0.97	0.97
Mean occupational education 1975-93	1.15 **	1.07	1.07 #	1.06	1.06
Proportion years self-employed 1975-93	0.76 *	0.84	0.84	1.35 #	1.45 *
Proportion years covered by health ins. 1975-93	1.32 **	1.24 *	1.25 *	1.25 *	1.29 **
Union membership(b)	1.47 **	1.38 **	1.37 **	1.23 **	1.20 *
Economic circumstances and benefits					
Wages ($/hour)		1.11 #	1.11 #	1.10	1.13 #
Net worth (log)		1.07 **	1.08 **	1.08 **	1.05 *
Covered by health insurance(b)		0.85 *	0.85 *	0.63 **	0.71 **
Eligible for private pension benefits(b)		1.79 **	1.79 **	1.72 **	1.72 **
Estimated value of monthly pension benefits (log)		1.01	1.01	1.01	1.00
Missing monthly pension benefits(b)		0.95	0.95	0.98	0.97
Health					
Self-rated health(c)					
Fair/poor/very poor			1.23 *	1.21 #	1.26 *
Excellent			0.88 #	0.86 *	0.86 *
CES-D (log)			0.99	0.97	0.97
Serious illness1993-2004(b)			1.06	1.07	1.07
Job characteristics					
Hours worked per week				1.02 **	1.03 **
Occupational sector(d)					
Public				1.16 #	1.15 #
Self-employed				0.49 **	0.54 **
High occupational education(b)				1.03	1.02
Very satisfied with job(b)				0.83 **	0.84 **
Perceived liklihood of losing job(e)					
1-50% or less				0.91	0.90 #
Greater than 50%				1.08	1.08
Job spell(f)					
Second job, first employer				1.01	1.02
Second or later employer				0.56 **	0.56 **
Employed after labor force exit(b)				1.40	1.44
Family characteristics					
Spouse covered by health insurance 1993(b)					1.22 **
Estimated value of monthly pension benefits for spouse (log)					1.02 #
Missing monthly pension benefits for spouse(b)					1.01
Spouse's retirement status(b)					
Spouse retirement year					2.85 **
Spouse already retired					1.14
Spouse in fair to poor health 1993(b)					0.78 *
Perceived work-to-family conflict					1.02
Perceived family-to-work conflict					0.97 *
Perceived work-family enhancement					1.05 **
Divorced(b)					0.66
Widowed(b)					1.59
N	18,402	18,402	18,402	18,402	18,402
df	14	20	24	34	45
log-likelihood	-4,498	-4,442	-4,438	-4,364	-4,308
p for LR test		0.00	0.09	0.00	-4,308

notes: **p<.01, *p<.05, #p<.10

Reference categories: (a) High school, (b) No, (c) Good, (d) Private, (e) No chance, (f) First job

Table 3a: Odds ratios from competing risk discrete-time hazard model of first retirement, men

Involuntary retirement	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary
Discontinous employment 1975-93	0.75 **	0.72	0.85	0.77	0.85	0.75	0.92	0.78	0.90	0.72
Involuntary job exit 1975-93	0.60 **	0.53 *	0.68 **	0.56 #	0.68 **	0.55 *	0.74 **	0.53 *	0.74 **	0.54 *
Change in occupational earnings 1975-93	1.09 **	1.11	1.08 *	1.10	1.08 *	1.12	1.08 *	1.10	1.08 *	1.11
Mean occupational education 1975-93	1.06	1.26 #	1.00	1.21	1.00	1.21	1.00	1.14	1.01	1.17
Proportion years self-employed 1975-93	0.33 **	0.24 **	0.45 **	0.30 *	0.46 **	0.30 *	0.63 **	1.01	0.66 *	1.06
Proportion years covered by health insurance 1975-93	1.58 **	3.20 #	1.15	3.00 #	1.14	2.97 #	1.21	2.68	1.21	2.58
Union membership	1.83 **	1.35	1.57 **	1.24	1.58 **	1.26	1.39 **	1.61 #	1.37 **	1.55
Health-related retirement										
Variable	Other	Health	Other	Health	Other	Health	Other	Health	Other	Health
Discontinous employment 1975-93	0.78 *	0.60 #	0.90	0.57 #	0.90	0.57 #	0.96	0.68	0.93	0.66
Involuntary job exit 1975-93	0.52 **	1.20 ††	0.60 **	1.25 ††	0.59 **	1.37 # ††	0.64 **	1.46 * ††	0.64 **	1.45 * ††
Change in occupational earnings 1975-93	1.10 **	1.04	1.08 *	1.05	1.09 **	1.04	1.09 *	1.05	1.09 **	1.06
Mean occupational education 1975-93	1.12 **	0.77 * ††	1.05	0.78 * ††	1.05	0.78 * ††	1.03	0.87	1.05	0.87
Proportion years self-employed 1975-93	0.30 **	0.44 *	0.43 **	0.54 #	0.43 **	0.58 #	0.65 *	0.77	0.68 *	0.81
Proportion years covered by health insurance 1975-93	1.93 **	0.81 ††	1.36 *	0.77 †	1.36 *	0.73 †	1.43 *	0.76 ††	1.42 *	0.77 †
Union membership	1.80 **	1.73 **	1.52 **	1.75 **	1.53 **	1.77 **	1.39 **	1.64 **	1.37 **	1.61 **
Retirement followed by reemployment										
Variable	No return	Return	No return	Return	No return	Return	No return	Return	No return	Return
Discontinous employment 1975-93	0.79 #	0.67 *	0.92	0.72	0.92	0.72 #	1.00	0.77	0.96	0.77
Involuntary job exit 1975-93	0.60 **	0.57 **	0.69 **	0.62 **	0.69 **	0.61 **	0.80 **	0.66 **	0.76 *	0.65 *
Change in occupational earnings 1975-93	1.09 *	1.10 *	1.07 #	1.10 *	1.07 #	1.11 *	1.07 #	1.10 *	1.08 *	1.10 *
Mean occupational education 1975-93	1.05	1.12 #	0.98	1.08	0.97	1.08	1.01	1.02	1.02	1.02
Proportion years self-employed 1975-93	0.28 **	0.40 **	0.39 **	0.53 **	0.40 **	0.53 **	0.52 **	0.95 †	0.54 **	0.99 †
Proportion years covered by health insurance 1975-93	1.72 **	1.51 *	1.19	1.26	1.17	1.26	1.24	1.32	1.24	1.31
Union membership	2.06 **	1.44 ** ††	1.73 **	1.26 * ††	1.74 **	1.28 * ††	1.56 **	1.18 ††	1.52 **	1.18 †

notes:

A) Model 2 adds economic characteristics and benefits, Model 3 adds health, Model 4 adds job characteristics, Model 5 adds family characteristics, and Model 6 adds life events.

B) For comparisons with reference outcome (no retirement) **p<.01, *p<.05, #p<.10.

C) For comparisons across retirement types ††p<.05, †p<.10.

D) The number of cases for each outcome is: no retirement=727, voluntary=1448, involuntary=116, reasons other than health=1384, health reasons=180, no return to employment=963, return to employment=601

Table 3b: Odds ratios from competing risk discrete-time hazard model of first retirement, women

Involuntary retirement	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary	Voluntary	Involuntary
Discontinous employment 1975-93	0.95	0.98	1.02	1.07	1.02	1.07	1.04	1.14	1.01	1.15
Involuntary job exit 1975-93	0.78 **	0.85	0.83 *	0.91	0.82 *	0.87	0.84 *	0.73	0.84 *	0.73
Change in occupational earnings 1975-93	0.98	0.96	0.97	0.96	0.97	0.96	0.97	0.99	0.97	0.98
Mean occupational education 1975-93	1.15 **	1.12	1.07	1.02	1.07 #	1.03	1.05	1.13	1.05	1.11
Proportion years self-employed 1975-93	0.80	0.38 #	0.88	0.44	0.88	0.44	1.33	1.93	1.42 #	2.07
Proportion years covered by health insurance 1975-93	1.35 **	1.09	1.28 **	0.90	1.28 **	0.91	1.28 **	0.85	1.34 **	0.89
Union membership	1.53 **	0.78 ††	1.44 **	0.72 ††	1.43 **	0.71 ††	1.25 **	0.92	1.22 *	0.88
Health-related retirement										
Variable	Other	Health	Other	Health	Other	Health	Other	Health	Other	Health
Discontinous employment 1975-93	0.95	0.94	1.03	0.98	1.04	0.94	1.07	0.98	1.03	0.95
Involuntary job exit 1975-93	0.80 *	0.70 #	0.87	0.68 #	0.86 #	0.60 *	0.86 #	0.63 *	0.85 #	0.64 #
Change in occupational earnings 1975-93	0.98	0.96	0.97	0.96	0.97	0.94	0.97	0.94	0.98	0.94
Mean occupational education 1975-93	1.15 **	1.19 #	1.05	1.17	1.05	1.24 *	1.04	1.19	1.04	1.17
Proportion years self-employed 1975-93	0.74 *	0.85	0.81	0.92	0.81	0.97	1.36	1.20	1.44 #	1.33
Proportion years covered by health insurance 1975-93	1.41 **	0.88 ††	1.33 **	0.83 ††	1.34 **	0.84 †	1.33 **	0.85 †	1.38 **	0.89 †
Union membership	1.40 **	1.98 ** †	1.32 **	1.90 ** †	1.32 **	1.76 **	1.20 *	1.57 *	1.17 #	1.55 *
Retirement followed by reemployment										
Variable	No return	Return	No return	Return	No return	Return	No return	Return	No return	Return
Discontinous employment 1975-93	0.94	0.98	1.02	1.05	1.02	1.04	1.04	1.08	1.00	1.06
Involuntary job exit 1975-93	0.79 *	0.77 #	0.85 #	0.81	0.83 #	0.80	0.86	0.77 #	0.86	0.76 #
Change in occupational earnings 1975-93	0.95	1.04	0.94	1.03	0.94 #	1.03	0.94	1.03	0.95	1.03
Mean occupational education 1975-93	1.16 **	1.13 #	1.06	1.07	1.07	1.08	1.05	1.09	1.05	1.07
Proportion years self-employed 1975-93	0.61 **	1.20 ††	0.66 *	1.36 ††	0.66 *	1.37 ††	1.19	1.72 #	1.26	1.85 *
Proportion years covered by health insurance 1975-93	1.25 *	1.54 **	1.17	1.47 *	1.18	1.47 *	1.20 #	1.38 *	1.26 *	1.40 *
Union membership	1.58 **	1.21 †	1.49 **	1.13 †	1.48 **	1.12 †	1.27 **	1.14	1.25 *	1.10

notes:

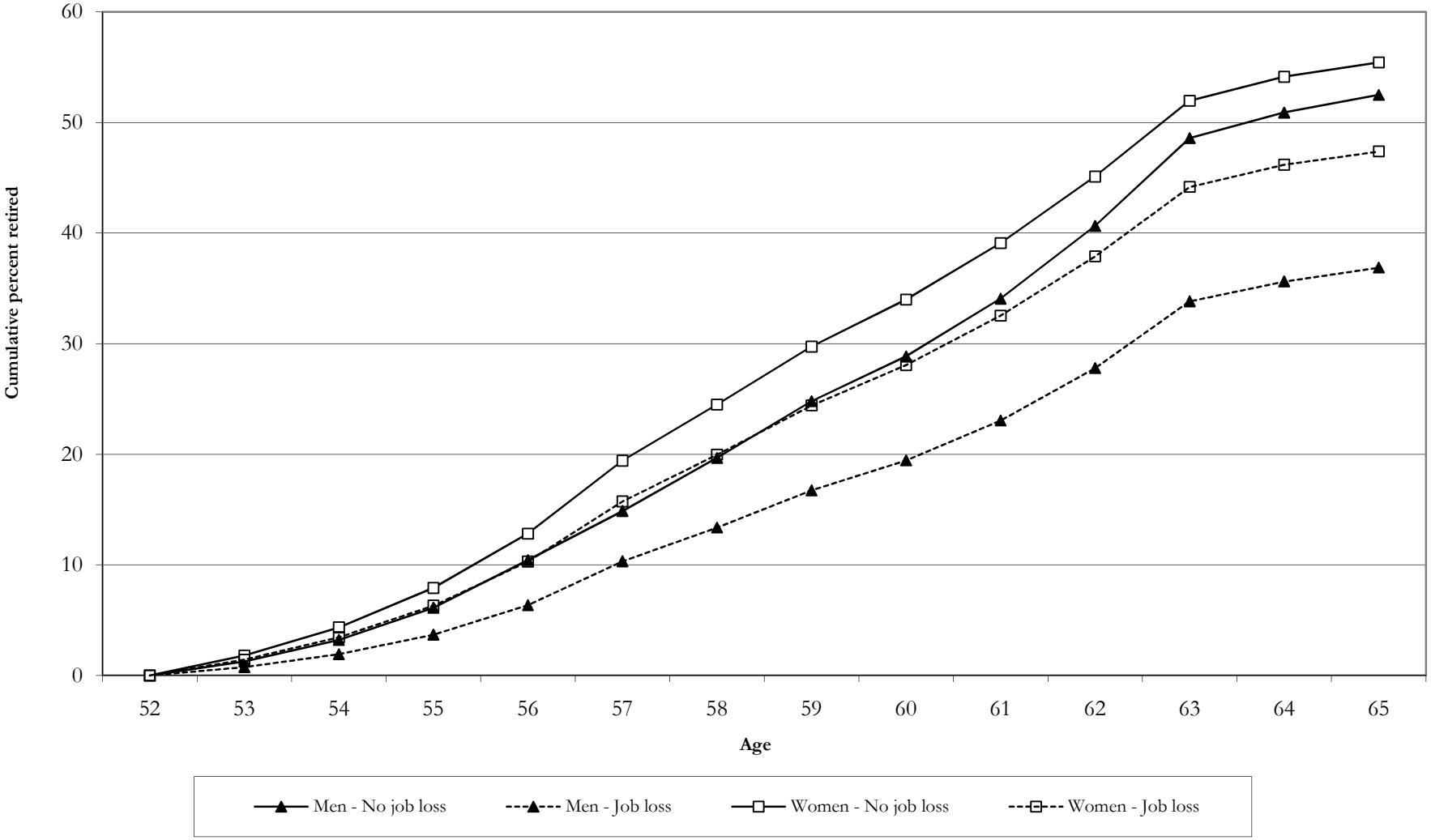
A) Model 2 adds economic characteristics and benefits, Model 3 adds health, Model 4 adds job characteristics, Model 5 adds family characteristics, and Model 6 adds life events.

B) For comparisons with reference outcome (no retirement) **p<.01, *p<.05, #p<.10.

C) For comparisons across retirement types ††p<.05, †p<.10.

D) The number of cases for each outcome is: no retirement=818, voluntary=1231, involuntary=93, reasons other than health=1146, health reasons=178, no return to employment=952, return to employment=372

Figure 1: Predicted percent ever retired, by age, gender, and experience of involuntary mid-career job loss



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