Point of No Return: How Does the Duration of a Jobless Spell Affect Retirement Timing?

Matthew S. Rutledge
Center for Retirement Research at Boston College

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Abstract

This project uses the Survey of Income and Program Participation to examine the decision to retire after job separation among the increasing number of older individuals who lose a job between 55 and 70, and how this decision varies by labor market conditions and the resources available to the unemployed. Among jobless spells that end in retirement, most do so within a year after separation. The availability of resources like Social Security retirement benefits, high net worth, and defined benefit pensions appear to encourage more rapid labor force exit and retirement, rather than supporting job seekers during a long search. Surprisingly, retirement is only modestly more likely when the unemployment rate is high, and a greater duration of unemployment insurance benefits has little effect on retirement timing. Poor health and work-limiting disabilities are also associated with more rapid labor force exit and retirement. These results suggest little tolerance for long job searches – regardless of labor market prospects – and that those who can afford to retire will do so rather quickly.

Introduction

The Great Recession cut a swath of joblessness through the American workforce that was unprecedented in one important way. In previous recessions, the brunt of the job losses was borne by younger, lower-paid workers, and these workers again suffered the most in this recession. But the Great Recession left older workers more exposed than ever before (Munnell and Rutledge 2013). The unemployment rate among those 55 and older reached a record 7.3 percent in August 2010, surpassing 6 percent for the first time since 1950. Even this record unemployment rate among older workers understates the breadth of the suffering: Farber (2011) finds that 14 percent of individuals over 50 experienced a job loss between 2007 and 2009, surpassing the previous high of 10 percent.

Given the other records set in 2009-2010 – longest average duration of unemployment and highest ratio of unemployed per vacancy – many older unemployed workers grew discouraged, stopped looking for work, and began to consider themselves retired (Coile and Levine 2011a). Others bore down and continued searching, unable to retire due to losses in their financial portfolios and home values, or motivated by the opportunity to maintain as many as 99 weeks of unemployment insurance (UI) benefits (Rothstein 2011). Among people over 55, the labor force participation rate actually increased by a percentage point between 2007 and 2009. But this increase was concentrated in workers who had not yet reached age 62 and were not yet eligible for Social Security retirement benefits (Munnell and Rutledge 2013). Not coincidentally, more than half of the workers who lost jobs after turning 62 left the labor force within nine months of their separations, as opposed to less than 30 percent of workers age 50-61 (Johnson and Butrica 2012).

The difference in the responses to the recession before and after age 62 implies that the decision to leave the labor force and retire depends crucially on the availability of resources to buttress consumption, both during the jobless spell and after retirement. This project investigates the association between retirement timing and the availability of Social Security and UI benefits, financial and pension wealth, and labor market prospects, using high-frequency labor market data from the Survey of Income and Program Participation. This project further investigates how these factors have changed

over time, as pension coverage evolves and older workers' exposure to labor market volatility has increased.

The loss of income – and, potentially, health insurance coverage – makes retiring earlier than one had planned costly in the short run. In the long run, the effects multiply: after a decade-long decline in early claiming, the proportion of 62 year olds claiming Social Security retirement benefits spiked in 2009 (Bosworth and Burtless 2010; Johnson and Mommaerts 2010), decreasing early claimants' benefits by nearly 5 percent each month for the remainder of their lives (Rutledge and Coe 2012).

An extensive literature documents that higher unemployment rates are associated with earlier retirement (Coile and Levine 2007, 2011a, 2011b; von Wachter 2007; Munnell et al. 2008; Friedberg, Owyang, and Webb 2008). Other research focusing on individual job loss finds that separation increases the likelihood that individuals exit the labor force (Chan and Stevens 1999, 2004; Stevens and Chan 2001; Tatsiramos 2010). Less is known, however, about how an individual's job search influences the timing of the retirement decision, due to a combination of data limitations and the context-dependent definition of "retirement." Only Hallberg (2011) investigates the timing of the retirement decision in a hazard model framework, but his work focuses on Sweden, which differs from the United States in the structure of its UI and retirement benefit systems.

This project provides the first estimates of the association between the timing of retirement and unemployment duration in the United States, emphasizing how this relationship is influenced by the availability of social insurance benefits, financial assets, pension coverage, and macroeconomic conditions. Further, this paper analyzes how the retirement responses to unemployment duration and alternative income sources has changed over more than two decades, with particular relevance to the continuing labor market weakness following the Great Recession.

Preliminary estimates indicate that the timing of retirement has only a slight correlation with labor market conditions and the availability of UI benefits. Rather than using resources like financial wealth, Social Security benefits, and defined benefit pensions to make ends meet during a long job search, the availability of these resources is associated with a higher probability of retiring in any given period. Jobless individuals in

poor health or with work-limiting disabilities also retire sooner, and those with working spouses have similar jobless spell durations to those whose spouses have already stopped working. Given that about half of retirements end immediately, and the majority of the remainder retire within a year of job separation, the older unemployed appear to have little desire, or ability, to maintain long job searches.

Data and Methodology

The Survey of Income and Program Participation (SIPP) interviews each individual in a panel of households every four months for a two- to four-year period. The survey covers labor force status, earnings, job characteristics, job search activity among the unemployed, public program participation and benefit levels, health insurance coverage, and household and family structure. These core variables, collected for each month within the four-month wave, are supplemented by routine topical modules regarding assets and liabilities, pension coverage, and health status, among many other topics. New panels begin each year from 1990-1993, plus 1996, 2001, 2004, and 2008.[1]

Though the *Health and Retirement Study* (HRS) is more commonly used for analyses of retirement, SIPP provides several advantages. Most important, though sample windows are shorter in SIPP, data is available for each month with a far shorter recall window (four months instead of two years), with more detailed information on job search activity. SIPP began earlier than HRS, which started in 1992, and has released data through late 2012, so the analysis of trends in retirement behavior includes a longer period.[2]

The sample for this study consists of individuals from the 1990-2008 SIPP panels who are observed leaving a job between the ages of 55 and 70.[3] A job separation occurs at month *t* if individual *i* works all weeks in month *t-1*, fewer than four weeks in month *t*,

[1] Additional panels began each year from 1984-1989; these data are structured differently than more recent panels and have not yet been integrated into the analysis, though I plan to include them in the next draft.
[2] The most substantial advantage that HRS has over SIPP – a long panel lasting up to 18 years for some respondents – is less relevant for this study, because jobless spells among workers 55 and older are likely to end – one way or another – within a year or two of job separation, so relatively few spells are censored.
[3] This study does not differentiate between voluntary and involuntary separations. Because the sample includes only those who do not retire or leave the labor force immediately, the reason for job transitions is irrelevant, even if self-reported reasons for transitions were reliable.

and no weeks in month *t+1*; thus, *i* must have had a job for at least a full month, and the jobless spell must last for at least one month.

In each month following job separation, *i* experiences exactly one of four potential outcomes: (1) continued job search, (2) finding a new job, (3) censoring, or (4) the outcome of interest, either retiring or permanently exiting the labor force. Job search – i.e., continuing the jobless spell – is the base outcome. Re-employment is the reverse of job separation: *i* finds a new job in month *s* if he works zero weeks in month *s-1*, at least one week in month *s*, and all weeks in month *s+1*; re-employment thus requires at least one full month of work at the new job. Censoring occurs when the individual is not interviewed by the SIPP, either because of individual attrition or the scheduled conclusion of the SIPP panel.

Unlike the HRS, SIPP has no single established method of determining whether a respondent is retired. This study uses a combination of variables to derive multiple definitions of retirement, based on a sliding scale of stringency.

The most relevant variable to retirement is based on *i*'s answer to the question, "What is the main reason [the respondent] did not work at a job or business during the reference period?" The strictest definition of retirement requires the individual to answer "retired" for that wave, while ceasing work and job search for the remainder of *i*'s time in the SIPP.[4] The "quasi-strict" definition of retirement also requires "retired" as an answer, but only requires *i* to not work or search for a job for at least a four-month period, thereby allowing the individual to "un-retire."[5] The loose definition of retirement also requires *i* to not work or search for at least four months, but allows other possible answers in addition to "retired": "unable to work because of chronic health condition or disability," "taking care of children/other persons," or "not interested in working at a job."[6]

[4] The respondent is asked the number of weeks he searched for a job in each month of the wave; to qualify as not searching, the number weeks in the month spent looking for a job must be equal to zero.
[5] The four-month moratorium on work or job search need not coincide with a full wave; for example, *i* might search for at least a week during each of the first two months of wave *w*, answer "retired" in the interview month of wave *w*, and then avoid work or search for at least the first two months of the next wave, *w+1*.
[6] The other possible reasons, all of which disqualify someone from being marked as retired in that wave, are being temporarily unable to work because of illness or injury, pregnancy or childbirth, going to school, unable to find work, on layoff (temporary or indefinite), or other.

A similar variable that is of limited use to this study asks the respondent why he left his previous employer. Among those who eventually retire under the definitions in the paragraph above, about half report that they left their job to retire, or answer that they are not working because they are retired in the question discussed in the previous paragraph. Because this study is primarily interested in those who retire only after some period of job search, the regression sample includes only those who do not report retiring at the time they leave their job, and do not consider themselves retired at the first interview month after separation.[7]

An important limitation of this method of defining retirement is that the question about why the respondent is not working was only asked starting in the 1996 panel. In order to compare labor market activity trends among older individuals over a longer period of time (1990-2012), this study also analyzes the decision to permanently exit the labor force. Because some individuals, however, might drift in and out of labor force participation (Elsby, Hobijn, and Sahin 2013), the definition of "permanent" must ensure that one is not considered to have exited the labor force for good just because the panel happened to end during one of these drifts.[8] The respondent is considered to have left the labor force permanently if he has no weeks working or searching for at least the final six months that he is in the SIPP panel. As with retirement, the relevant population "at risk" is those who do not leave the labor force right away, but do so only after a period of unsuccessful job search. The sample, therefore, is limited to individuals who stay in the labor force at least one month after separation, and keeps only those person-months at

[7] This sample exclusion matches the relevant retirement definition: when the potential outcome is retirement under the strict or quasi-strict definition, only those who report leaving their job for "retirement or old age" are excluded. When the potential outcome is, instead, the loose definition of retirement, those who leave their previous job for "retirement or old age," "other family/personal obligations," "own illness," or "own injury" are excluded. In each regression with retirement as a potential outcome, the sample further excludes those who are within four months of censoring, because by definition no one is at risk of retiring by the quasi-strict or loose definitions. Though not required by the strict retirement definition, this restriction eliminates the possibility that the strict retirement definition captures people who are not observed long enough to show up as retired by the other two definitions; otherwise, someone who reports being "retired" with only two more monthly observations before censoring would be marked as "strictly" retired, but not "quasi-strictly," even though he could get a job soon after SIPP stops interviewing him.

[8] Note that permanent labor force exit requires zero weeks of working and searching, while re-employment requires at least one full month of work. This definition will mark individuals with spotty employment experiences – some weeks worked, but never all four or five weeks in a month – during the remainder of the panel as neither fully re-employed, nor fully out of the labor force.

least six months from the end of the individual's sample window, after which any ongoing spells are considered censored.

Table 1 details how the sample is selected for each outcome. Of the 68,000 individuals in the SIPP who work after age 50, 17,000 left a job between ages 55 and 70, inclusive. After excluding those who retire or leave the labor force immediately, and those whose separation occurs too close to the end of their SIPP sample window, the remaining sample includes 6,460 individuals for the strict and quasi-strict retirement regressions, 4,700 individuals for the loose retirement regression, and 3,400 individuals for the labor force exit regression.

The literature on "seam bias" in SIPP suggests that the bulk of job separations will occur in the interview month – the fourth reference month – of the wave. SIPP staggers interviews so that one-quarter of the panel is interviewed in each month. As a result, any given reference month in any given panel occurs in four different calendar months; for example, the first reference month of the first wave of the 2008 panel is May 2008 for the first one-quarter interviewed in that panel, June for another quarter, July for another quarter, and August for the final "rotation group." The rotating nature of the panel should ensure that status transitions – including job separations – occur with approximately equal probability in each reference month. Instead, numerous studies have documented that transitions are overwhelmingly more likely to occur in the fourth reference month, suggesting recency bias on the part of respondents (Ryscavage 1988, Young 1989, Marquis and Moore 1990).

To correct for seam bias, this analysis uses person-waves as the unit of observation after the job separation.[9] The outcome for a jobless spell that is ongoing as of the fourth reference month of wave *w-1* is re-employment, censoring, or labor force exit/retirement, whichever occurs first in wave *w*.[10]

The key independent variables capture the relationship between retirement or labor force exit and the resources available to the jobless individual, both during the

[9] Job separations use information from each month, not just the interview month. The 197 person-waves with two job separation use the latter separation.

[10] A complementary reason to collapse person-months into person-waves is that the variable that identifies retirement varies only by wave, rather than by month. Labor force exit, on the other hand, varies by month, but seam bias concerns prevail: in a multinomial logit of person-months (instead of person-waves), the estimated marginal effect for every fourth month dummy is much larger than the dummies for surrounding months, even after including a dummy for interview month, à la Ham, Li, and Shore-Sheppard (2009).

jobless spell and in retirement. Each regression includes the state unemployment rate to capture labor market prospects; some specifications include interactions with the state unemployment rate to capture the differential labor market prospects by age, remaining UI eligibility, and duration of the jobless spell.

Perhaps the most important independent variable is the jobless individual's age in the wave. Individuals who have reached age 62 can fall back on Social Security retirement benefits, providing a reliable income stream. Delaying benefits further increases benefits at a nearly constant rate, but the FRA is still a noteworthy milestone, both psychologically and practically: benefits are not reduced if the individual earns more than the "earnings test," and for cohorts born before 1937, FRA coincides with Medicare eligibility (Coe, Khan, and Rutledge 2013). The model includes categorical variables for age: (1) not yet reaching age 62 (the omitted condition), (2) two months before or after one's 62nd birthday, (3) after one's 62nd birthday through just before reaching the FRA, (4) two months before or after FRA, and (5) after FRA.[11] The model also controls for a quadratic function of age within these categories.

Unemployment insurance (UI) benefits are one factor that may keep older jobless individuals in the labor force. The regression model includes a categorical variable for remaining UI eligibility: (1) the individual is eligible for UI and does not exhaust his benefits during the interview wave, (2) the individual exhausts benefits at some point during the wave, or (3) the individual is no longer eligible for UI at any point during the wave (the omitted condition). This information is collected from U.S. Department of Labor reports on state UI parameters.[12]

Most higher-net-worth individuals who leave their jobs would not be in the sample, as they are more likely to report leaving their job for retirement, or never spend time searching after a separation, whether or not the job separation was planned well in advance. Among those who do search before declaring themselves retired, wealthier individuals likely retire earlier. Information on net worth is collected as part of annual topical modules, and merged with the person-wave nearest to the wave of collection. The

[11] The model allows for two months before and after the 62nd birthday and FRA because of the person-wave structure of the data, and because Social Security retirement applications can be filed prospectively.
[12] See Rutledge (2012) for more details on the state UI data.

analysis controls for the individual's net worth quintile (by year), omitting the top quintile, as well as a dummy variable for missing wealth information.

Retirement is also easier to manage for those who have employer pensions. SIPP collects information on defined benefit (DB) and defined contribution (DC) pension plans from the current job and any previous jobs as part of a once-per-panel topical module.[13] The model includes two (not mutually exclusive) indicator variables for whether the individual reports any DB or DC pension coverage.

Another important factor is the age and work status of one's spouse. Married couples tend to retire together; Gustman and Steinmeier (2002) estimate that having a retired spouse increases the probability of being retired by as much as being about one year older. Thus the model controls for marital status, and among married couples, an indicator whether the spouse is working, and indicators for whether the spouse has reached age 62 and her FRA.

The model also includes a comprehensive set of demographic variables: gender, race, Hispanic origin, and categorical variables for citizenship, education, and family income as a percent of the Federal poverty line. The model also includes two indicator variables capturing the individual's health status in the interview wave: an indicator variable for whether the individual reports fair or poor health, and an indicator for whether the individual reports being limited or unable to work due to a health condition.[14] Finally, the model controls for whether the individual had employer-sponsored health insurance before job separation; people who had been relying on their employment for health coverage likely will take a new job with health benefits, or fall back on retiree health insurance benefits from a previous job, relatively quickly.

[13] The 2008 panel is the only panel to collect pension information more than once; this information is merged into the closest person-waves. Though the information on DC plans in the current job is quite detailed – including employees' and employers' contributions – information on plans from previous jobs is much more limited, and the only information collected for DB plans is whether the individual participates, so the model includes only the extensive margin of DB and DC coverage. The topical module information is supplemented with information from the core: if the individual reports any pension income in any wave, the individual is considered to have either a DB or DC plan.

[14] The information on work-limiting or work-preventing health conditions is collected each wave in the core. The individual's self-reported health status on a five-point scale is asked multiple times each panel, as part of topical modules on disabilities and health care spending; this information is merged with the nearest interview wave.

Importantly, the model also includes a set of indicators for the number of months since the individual left his job, to control for duration dependence. These indicators, when graphed, display the unexplained retirement, labor force exit, or re-employment hazard pattern. Indicators are grouped in two-month intervals up to 21 months, with grouped indicators for months 22 through 25, 26 through 29, and 30 or more months after job separation.

The model uses SIPP-provided weights that capture the complex survey design. All tables report the marginal effects – i.e., the derivative of the outcome variable with respect to the particular variable, averaged over all individuals in the sample – that take into account the non-linearity of the multinomial logit model, including interactions (Ai and Norton 2003). Standard errors for the marginal effects are calculated by the Delta method.

Results

Table 2 compares the values of the independent variables by the eventual ending of the spell: retirement by any of the three definitions (strict, quasi-strict, and loose), re-employment, and censoring. Table 2 also includes a test of the null hypothesis that each variable's mean is the same between each of the three groups. For reference, the rightmost column also includes the mean for those who exit the labor force.

The mean state unemployment rate between the retirees and re-employed are not statistically significantly different, though each group is significantly below the mean unemployment rate with those who still have active jobless spells when they are censored. Those individuals who exit the labor force also have a high mean unemployment rate. This finding is consistent with the idea that individuals do not classify themselves as retired, but may give up searching for a job when times are tough.

Not surprisingly, older jobless individuals are more likely to retire and/or exit the labor force, though the plurality retires not right at the 62nd birthday, nor at their FRA, but in between, with another 22 percent holding out until after their FRA. These results suggest that the spikes at these two milestones are not substantial.

Jobless individuals who are still eligible for UI benefits are more likely to find re-employment than retire, but 15 percent of retirements occur in the wave in which the individual exhausts his UI benefits, compared to only 12 percent of new jobs.

Retirees are more likely to be found in the highest net worth quintile, and are more likely to have defined benefit pensions, than those who find re-employment. More surprisingly, individuals who find re-employment are statistically significantly more likely to have 401(k) and other DC pension plans than those who retire.

As in the previous literature, retirement appears to be a joint decision between spouses, as only 37 percent of retirees have working spouses, compared to 42 percent of older workers who find re-employment. Retirees' spouses are also more likely to be eligible for Social Security retirement benefits.

Women, native born citizens, and those with less than a college degree are more likely to retire than to find re-employment. There is little difference between the groups in race, Hispanic origin, or family income relative to poverty. Finally, retirees are more likely to report health problems, but are less likely to have had health insurance coverage through their employer before job separation, than those who find new jobs.

Table 3 switches dimensions from Table 2: the proportions reported in each cell are the row proportions, i.e. the probability that someone with that row's characteristic ends their spell in that wave by retiring, finding a new job, or being censored. Each cell also reports the average duration of a spell that ends that way, and tests the statistical significance of the differences between columns; as expected, censored spells last longer, though the differences between spells ending in retirement and re-employment vary.

Over the last sixteen years, fewer spells are ending in retirement, and those that do tend to last longer (Table 3, first panel). During the expansion surrounding the tech bubble, 47 percent of jobless individuals 55 or older who did not retire immediately nonetheless retired after an average delay of 6 months. During the Great Recession, only 35 percent retired, and those that did lasted nearly 9 months.

Among jobless individuals not yet eligible for Social Security, 49 percent find new jobs, while only 15 percent retire (second panel); the difference in the average duration of spells ending in re-employment versus retirement for those under 62 is small but statistically significant. After Social Security benefits become available, more spells

end in re-employment or censoring, but retirement becomes more common. As individuals age, not surprisingly, their time to retirement grows smaller, but the duration before finding re-employment hovers around seven months regardless of age.

Individuals with UI eligibility remaining are most likely to find re-employment; only 19 percent of spells that end before UI is exhausted end in retirement (third panel). But 24 percent of spells ending in the wave that UI is exhausted end in retirement, while the proportion finding re-employment in that wave also climbs. Spells ending in retirement conclude almost one month earlier on average, a statistically significant difference.

While Table 2 shows that the plurality of retirees is from the highest wealth quintile, the relationship between wealth and the probability that a spell ends in retirement is weak: between 17 and 19 percent retire regardless of net worth (Table 3, fourth panel). Re-employment is somewhat less common in the highest quintile than in the other quintiles. The widest gap between retirement and re-employment in the duration of spells is in the middle quintile, where spells ending in retirement last almost 1.5 months longer than spells ending in a job.

Unmarried individuals are more likely to retire than the married, but also have a longer duration before retirement (fifth panel). Consistent with joint retirement decisions, the group with a working spouse is most likely to find re-employment, and with the shortest duration.

The unconditional correlation between retirement and re-employment appears to be non-linear: about 17 percent of spells in the lowest and highest terciles by year retire, while 20 percent from states with middling unemployment rates retire (sixth panel). Retirees in states with a high unemployment rate spend longer searching, however; the average duration is more than a month longer than those who retire in low unemployment states, and 0.7 months longer than residents of similar states who find re-employment.[15]

The proportion that retires is almost identical whether or not the individual has a DB pension, but the time before retirement is 0.8 months longer without a DB plan

[15] High unemployment rate states often have longer UI durations due to extensions. But the state unemployment rate terciles are within a time period, and extensions are highly correlated across states: many extensions are acts of U.S. Congress, and to the extent that the state's unemployment rate is correlated with other states', automatic extensions will also be correlated (Rutledge 2012).

(seventh panel). DC pension holders are more than twice as likely to retire, though they wait half of a month longer on average, and are also more likely to find re-employment that those who don't have a 401(k) plan (eighth panel).

Jobless spells are also more likely to end in retirement – and less likely to end in re-employment – if the individual reports a work limitation or fair or poor health (ninth and tenth panels). In both cases, retirement ends significantly later than spells ending in re-employment.

Table 4 reports the results of three multinomial regressions, where re-employment is one outcome and one of the three definitions of retirement (strict, quasi-strict, and loose) is the other. The top line reports that, in any given wave, between 15 and 20 percent of spells ended in re-employment; this varies by the definition of retirement, as spells can end for one kind of retirement but not another. The probability in a given wave of strict retirement is 8 percent; quasi-strict retirement is 11 percent; and loose retirement is 19 percent, almost matching re-employment.

A higher state unemployment rate is associated with a lower probability of quasi-strict or loose retirement, along with a lower probability of re-employment by any definition. Though the relationship between retirement and local labor market conditions is statistically significant, the estimated magnitude is quite small: a one-percentage-point increase in the state unemployment rate is associated with only a 0.7-percentage-point decrease, or about a four-percent decrease from the mean of 19 percent. The relationship between strict retirement and the unemployment rate is negligible.

Unlike macroeconomic conditions, the relationship between age and retirement is substantial. Compared to individuals 61 and younger, having Social Security retirement benefits available increases the probability of retirement by 3.4 to 11.2 percentage points. The retirement hazard, defined loosely (rightmost column), is one-third (6.3 divided by the mean of 19.0) higher around the 62nd birthday; one-quarter higher between 62 and FRA; three-fifths higher at FRA; and two-fifths higher after FRA than before one's 62nd birthday. Furthermore, within these age categories, retirement increases with age: for example, jobless individuals are 3.3 percentage points more likely to retire at 64 than at 63, all else equal. For the most part, re-employment probabilities are not associated with age.

Despite indications to the contrary in Tables 2 and 3, retirement is not significantly associated with UI eligibility. Re-employment is more common in the months that UI is available than in months after UI has been exhausted, but the estimated magnitudes for retirement are relatively small, inconsistently signed, and have large standard errors.

The picture for wealth is much clearer: as net worth increases, retirement becomes more common in any given wave. Individuals in the highest wealth quintile are 3.4 percentage points more likely to retire (loose definition) in a wave than those in the middle quintile. Having a DB pension plan also increases the retirement hazard: retirement is 3.7 to 6.8 percentage points (or 36 to 55 percent of the mean hazard) more likely if the individual has DB coverage from any previous job. DC plans are associated with a statistically significant but small reduction in the strict retirement hazard; there is no relationship between DC coverage and the other definitions of retirement, while DC coverage is associated with an increase in the re-employment hazard.

The results for strict and quasi-strict retirement accord with previous research that suggests the importance of the joint retirement decision. Married individuals without a spouse working are 1.7 to 5.7 percentage points (20 to 30 percent above the mean) more likely to retire in a given wave than the unmarried. But the spouse working marginal effect almost entirely offsets the married marginal effect for strict and quasi-strict retirement, so that the combined effect is not statistically significantly different from single people, as expected in a joint retirement model. With loose retirement, on the other hand, the spouse working estimate is negligible, so married individuals retire at the same rate regardless of whether their spouses are working or not. In all specifications, spouse's age does not appear to play a role in one's own retirement decision.

Most other variables in the regression are insignificant; there is little difference by education, race, or Hispanic origin.[16] Other results, including those not reported here, are inconsistent; non-citizens and the low-income are less likely to retire by the quasi-strict definition but not the other definitions, and those who obtained health insurance through their former job are less likely to retire in any given wave only by the loose definition. Women (reported here because the results are larger and more significant in the next

[16] Full results are available upon request.

table) are more likely to retire by the loose definition, but less likely to retire by the quasi-strict definition; neither estimate is qualitatively large, but these opposing results are consistent with women retiring to take care of an ailing spouse or elderly parent. Finally, those with work limitations are less likely to retire by the strict definition, but more likely to retire by the loose definition; given that the loose definition includes those who retire for chronic illness or injury, this result is to be expected. Fair or poor health, on the other hand, has a consistently positive correlation with retirement.

Table 5 reports results of similar multinomial regressions where the outcomes are re-employment or labor force exit. Unlike retirement, labor force exit is available for the 1990-1993 panels, so the first two columns report results from all years, while the second pair of columns reports results from the same 1996-2012 period used in the retirement regressions in Table 4. The results are largely similar between the two periods, however: the mean hazard rate is 8 percent in both periods, and most variables have similar magnitudes and qualitative findings.

As with retirement, labor force exit has a small negative though statistically significant (only for the full sample) correlation with the state unemployment rate. The age categories are of a greater magnitude – though not significantly so – than any retirement regression, but the general picture is the same: Social Security benefits allow for a quicker transition to labor force exit. As with retirement, labor force exit is not significantly correlated with UI eligibility, and the probability of leaving the labor force increases with wealth and among those with DB pensions. Similarly, labor force exit is more common for married individuals with non-working spouses, but no more or less common for married individuals with working spouses, compared to single individuals.

The correlations between retirement and gender, and retirement and health, differ by whether the definition includes health-related reasons for not working. The three estimates at the bottom of Table 5 come down on the side of the loose retirement definition. Women are more likely to exit the labor force in any given wave over both samples; the correlation is of a similar magnitude and significance to the loose retirement definition. The relationship between health status and retirement depended on whether the definition included retirement for health reasons; the estimates for labor force exit, which does not have a direct relationship to health, also matches the loose retirement

estimates, suggesting a positive correlation between poor health and leaving the labor force permanently.

Figure 1 displays the unexplained retirement hazard rates – that is, the marginal effect for the indicator variables for months since job separation, relative to 12-13 months after separation, after controlling for other factors. The graph begins four months after separation, since those who left their job for retirement are not in the sample. Not surprisingly, the loose definition of retirement is most common, but the likelihood of retiring (loosely defined) falls rapidly between 6-7 months and 12-13 months after separation. This sharp decline occurs four months earlier for strict and quasi-strict retirement, and is more gradual for labor force exit. Other than loose retirement, the other four series continue to decline until about 16-17 months; after that, there is a slight rebound, and loose retirement is about as common just over two years after separation as it is just under a year after separation. These results suggest that retirement and labor force exit are most likely early in the jobless spell; if an older individual has not retired within the first 8-12 months, they are likely to remain on the fringe of the labor force for another year or more, at which point they are likely to have left the sample.

While the unconditional correlations in Table 3 indicate that retirement and local labor market conditions might be related, the regression results thus far indicate that a higher unemployment rate is associated with at most a slightly delay in retirement.[17] To test the robustness of this finding, additional specifications are estimated that include interactions between the unemployment rate and categories for age, remaining UI eligibility, and months since separation. Table 6 presents the level and interaction effects and standard errors for age and UI eligibility; the level effects for non-interacted variables are largely unchanged.

Only a few of the interaction effects are statistically significantly different from zero; accordingly, the level effects for age are nearly identical to the results from Tables 4 and 5. The previously noisier estimates for UI eligibility, however, exhibit more change: now the early months of UI eligibility are associated with almost half as many retirements (defined loosely) than in the months after UI becomes unavailable, but this

[17] Multinomial regressions where state unemployment rate enters as a quadratic are nearly identical to the results reported in Tables 4 and 5.

result is just barely statistically significant. Mostly, the interactions suggest that retirement and labor force exit are slightly more rapid in waves with higher unemployment rates among people who have just reached their 62nd birthdays.

To get a sense of the magnitude of these interactions, Figures 2a, 2b, and 2c plot the predicted probability of retiring (under the loose definition) in each month after job separation for individuals under 62, around the 62nd birthday, and around reaching FRA, when every variable is at its mean except for the unemployment rate and age. These simulations compare the predicted retirement hazard for these age groups at two different unemployment rates: 5 percent, the average unemployment rate between January 2004 and December 2007 (the expansion), and 8.3 percent, the average unemployment rate from January 2008 to December 2012 (the Great Recession and the beginning of its recovery).

Retirement is three percentage points more likely in the early months for individuals age 55 to 61 with the higher unemployment rate (Figure 2a), and grows to as much as five percentage points higher in months 8-9, though the gap between these predicted retirement hazards shrinks to nothing for all periods after months 14-15. The pattern is nearly identical, though the predicted hazard is higher in each month, for those who are just reaching their 62nd birthdays (Figure 2b). The pattern is similar for those reaching their FRA (Figure 2c), though the gap is larger: the predicted probability of retiring is more than 9 percentage points higher in months 8-9, and remains nearly 5 percentage points higher even 12-13 months after job loss. None of the interaction effects between the unemployment rate and months since job separation are statistically significant, but these results suggest that retirement is slightly more likely in the early months of a jobless spell, especially for older individuals with access to Social Security retirement benefits.

Tables 7 and 8 test the robustness of the retirement and re-employment hazard estimates across three age categories: before age 62, around and after 62 but before FRA, and around FRA and afterward. The magnitude of the negative correlation between unemployment and the loose retirement definition is larger and statistically significant for the latter two age groups, but is still only a small portion (about 5 percent) of the mean hazard rate (Table 7). Retirement (by the loose definition) is also less likely in the waves

when 55- to 61-year-olds are eligible for UI throughout or when UI is exhausted during the wave (with the latter estimate not statistically significant). Interestingly, most of the positive correlation between retirement and net worth, and retirement and DB pension coverage, is due to the group that does not have access to Social Security retirement benefits. The 55-61 group also has the strongest correlation between strict retirement and spouse's work status, and loose retirement and health measures.

As with the full sample, the correlation between labor force exit and the state unemployment rate for the age 55-61 group (in all years) is statistically significant, but the 1.1 percentage point marginal effect represents a larger portion of the 10.3 percent average hazard rate for this group (Table 8). Neither of the older two groups has a substantial correlation with the unemployment rate, however. The positive correlation between labor force exit and both net worth and DB pensions is most statistically significant for the youngest group, though the middle age group has a positive and significant correlation between labor force exit and DB coverage that is slightly larger in magnitude. The positive correlation between exit and poor health is again strongest for the age 55-61 sample.

To test whether the correlations with the retirement hazard has changed over time, the model is also estimated by period: 1996-2000, 2001-2003, 2004-2007, and 2008-2012; these time periods line up with the business cycle, but also coincide with the beginnings and ends of SIPP panels. No group has a statistically significant correlation between strict retirement and the unemployment rate. Only in the tech bubble is there a positive correlation between UI eligibility and retirement; this relationship is quite strong, as the estimates imply that people who still have UI benefits available to them for at least part of the wave are twice as likely to retire. Individuals who have reached Social Security eligibility age are more likely to retire during expansions (1996-2000 and 2004-2007) but not recessions; this correlation could be picking up the effect of financial wealth increases, though only the earliest period exhibits a positive correlation between net worth and retirement. Other effects are consistent between periods: retirement, defined strictly, is more likely with DB coverage and less likely with a working spouse or a work limitation.

Conclusions

Older workers, understanding that their retirement years will be, in all likelihood, longer and less secure than the previous generation, report time and again that they plan to work longer (Munnell and Rutledge 2013). Yet the proportion of older workers finding themselves jobless has increased over time, and in the Great Recession in particular (Farber 2011). This project explores the interaction between these two competing forces, examining how long jobless individuals age 55 and over wait before exiting the labor force and declaring themselves "retired."

The results suggest that among the half of job separations that do not result in an immediate retirement, the number of jobless spells that end in retirement and re-employment are about equal. Among jobless spells that end in retirement, most do so within a year after separation. The availability of resources like Social Security retirement benefits, high net worth, and defined benefit pensions appear to encourage more rapid labor force exit and retirement, rather than supporting job seekers during a long search. Surprisingly, when the unemployment rate is high and new jobs are hard to find, retirement is only modestly more likely, with most of the effect concentrated in those who can claim Social Security benefits at any time, and a greater duration of unemployment insurance benefits has little effect on retirement timing. Finally, poor health and work-limiting disabilities are associated with more rapid labor force exit and retirement.

These results should be interpreted with some caution, because the sample of individuals who find themselves out of work late in their careers and choose not to immediately retire is self-selected. While some of the key variables are exogenous to the individual's retirement or re-employment decision-making – age and the Social Security retirement benefit eligibility, state unemployment rate, and UI benefit duration – others, like net worth and the presence of a working spouse, are endogenous. The results are likely not generalizable to all older workers and should not be interpreted as causal.

The brevity of jobless spells suggests that older individuals have little tolerance for job search, and those who can afford to make a quick exit – falling back on a substantial financial portfolio and annuities from Social Security and previous employers – will do so. The lack of evidence of an association between labor market conditions and

the retirement decision indicates that one's impatience has little to do with the difficulty of the job search. Still, changes in recent decades that have eroded retirement security indicate that coming cohorts of older jobless people will not be able to afford the same haste to retire: defined benefit pensions and retiree health insurance coverage are all but extinct in the private sector, Social Security benefits replace a smaller proportion of income, and 401(k) balances do not make up for the shortfall. On the upside, workers in their 50s and 60s are healthier and better able to continue working, and have more general experience and less firm-specific capital than previous generations that may better position them to take advantage of social networks to find jobs than younger competition. The uptick in average duration of jobless spells portends longer job searches for older unemployed Americans, but their patience and persistence may pay off in rewarding second acts.

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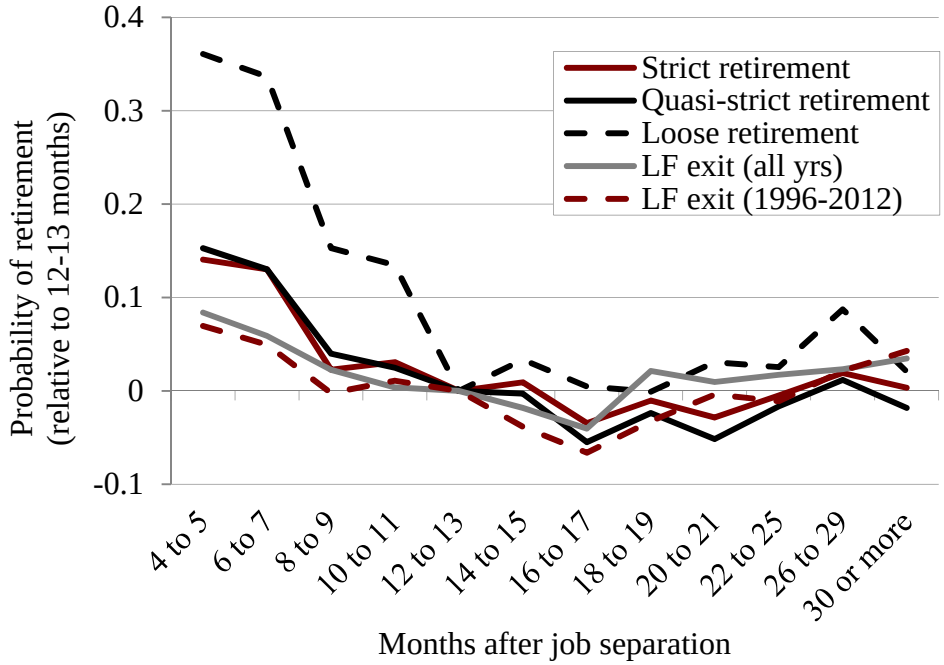
Figure 1. *Unexplained Probability of Retirement and Labor Force Exit by Time since Job Separation*



Source: Author's estimates from the Survey of Income and Program Participation 1990-2008 panels

Figure 2A. *Predicted Probability of Retirement by Time Since Job Separation, Age, and Unemployment Rate, Age 55-61*

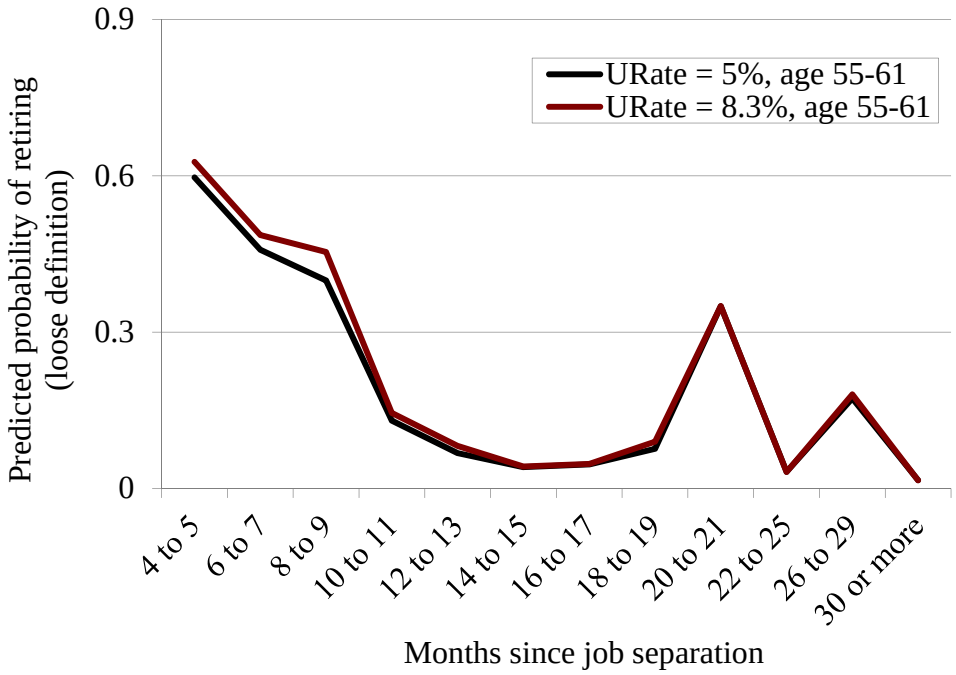


Figure 2B. *Predicted Probability of Retirement by Time Since Job Separation, Age, and Unemployment Rate, Age 62*

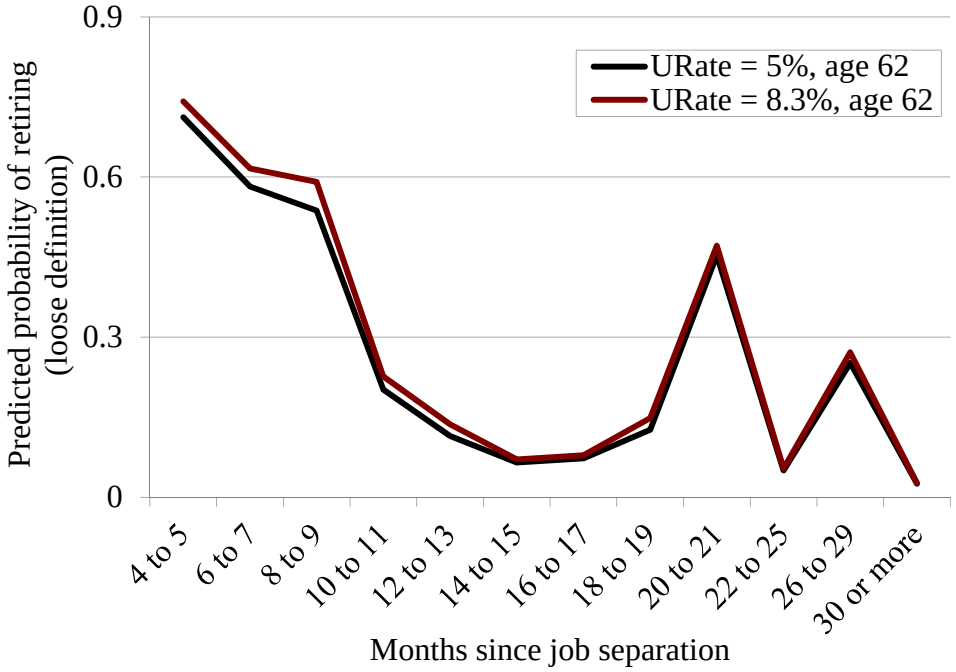
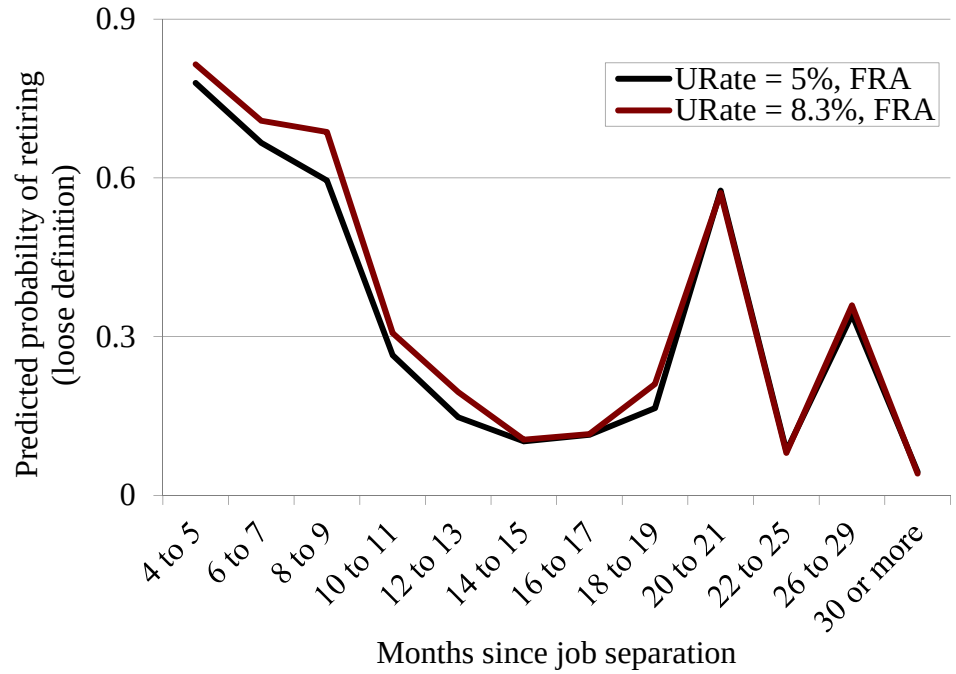


Figure 2C. *Predicted Probability of Retirement by Time Since Job Separation, Age, and Unemployment Rate, Full Retirement Age*



Source: Author's estimates from the *Survey of Income and Program Participation*, 1996-2008 panels.

Table 1. *Sample Selection*

Criterion	Remaining unique persons
SIPP 1990-2008 panels	716,412
Maximum age at least 55	156,276
At least one month of positive weeks worked	68,550
Minimum age at least 50	68,054
At least one job separation	22,441
Age 55 or over at job separation	22,427
Age 70 or under at job separation	17,154
Living in an identifiable state	16,889
Strict and quasi-strict retirement samples	
1996-2008 panels	11,716
Did not immediately retire	6,764
Not within three months of censoring	6,460
Loose retirement sample	
1996-2008 panels	11,716
Did not immediately retire	4,956
Not within three months of censoring	4,702
Labor force exit sample	
In labor force after separation	3,761
Not within five months of censoring	3,405

Source: Author's calculations from *Survey of Income and Program Participation*, 1990-2008 panels.

Table 2. Summary Statistics, *by Spell Ending*

	Any retirement	Ret vs job	Re-Employment	Job vs cens	Censored	Ret vs cens	Labor force exit
State unemployment rate	6.664		6.741***		7.489***		7.322
	(0.076)		(0.076)		(0.134)		(0.128)
Age							
55 - 61y9m	0.475***		0.745***		0.655***		0.467
	(0.011)		(0.010)		(0.022)		(0.022)
61y10m - 62y2m	0.042***		0.025*		0.035		0.052
	(0.003)		(0.002)		(0.005)		(0.006)
62y3m - 3 mos pre-FRA	0.242***		0.126***		0.196**		0.281
	(0.010)		(0.009)		(0.017)		(0.021)
FRA +/- 2 months	0.023***		0.010		0.013***		0.027
	(0.002)		(0.002)		(0.003)		(0.004)
After FRA+2mos	0.217***		0.093		0.101***		0.173
	(0.009)		(0.007)		(0.014)		(0.015)
Age	61.615***		59.376***		60.030***		61.503
	(0.095)		(0.089)		(0.167)		(0.161)
Still on UI	0.798***		0.836***		0.772		0.766
	(0.007)		(0.008)		(0.018)		(0.014)
UI exhausted	0.149***		0.124***		0.097***		0.132
	(0.005)		(0.005)		(0.008)		(0.008)
After UI	0.053*		0.040***		0.130***		0.101
	(0.006)		(0.005)		(0.014)		(0.010)
Net worth quintile							
Lowest	0.103***		0.157*		0.126		0.092
	(0.007)		(0.010)		(0.015)		(0.013)
2nd	0.140		0.155		0.168		0.166
	(0.009)		(0.011)		(0.017)		(0.020)
3rd	0.181		0.181		0.208		0.202
	(0.008)		(0.010)		(0.021)		(0.018)
4th	0.237		0.238		0.231		0.237
	(0.012)		(0.011)		(0.020)		(0.020)
Highest	0.333***		0.265		0.243***		0.302
	(0.014)		(0.010)		(0.021)		(0.021)
N/A	0.006		0.004***		0.025***		0.001
	(0.002)		(0.002)		(0.004)		(0.001)
DB pension coverage	0.471***		0.343		0.316		0.482
	(0.014)		(0.013)		(0.024)		(0.026)
DC pension coverage	0.434***		0.514***		0.473***		0.360
	(0.012)		(0.015)		(0.024)		(0.023)

Table 2. Summary Statistics, *by Spell Ending* (cont'd)

	Any retirement	Ret vs job	Re-employment	Job vs cens	Censored	Ret vs cens	Labor force exit
Married	0.661***		0.612*		0.567***		0.612
	(0.013)		(0.015)		(0.025)		(0.025)
Spouse 62 or older	0.295***		0.157		0.175***		0.261
	(0.011)		(0.009)		(0.018)		(0.020)
Spouse FRA or older	0.167***		0.085		0.095***		0.143
	(0.008)		(0.006)		(0.012)		(0.017)
Spouse working	0.369***		0.417***		0.341		0.338
	(0.013)		(0.013)		(0.020)		(0.021)
Female	0.512***		0.461		0.479		0.494
	(0.012)		(0.013)		(0.019)		(0.022)
White	0.856		0.851		0.833		0.882
	(0.009)		(0.009)		(0.014)		(0.012)
Black	0.090		0.099		0.099		0.085
	(0.007)		(0.008)		(0.010)		(0.010)
Asian	0.030		0.026		0.039		0.016
	(0.004)		(0.005)		(0.009)		(0.004)
Other race	0.024		0.024		0.029		0.017
	(0.004)		(0.004)		(0.008)		(0.005)
Hispanic	0.094		0.107		0.125*		0.094
	(0.009)		(0.010)		(0.016)		(0.012)
Native citizen	0.860**		0.832***		0.772***		0.842
	(0.009)		(0.012)		(0.017)		(0.017)
Noncitizen	0.046**		0.066		0.071*		0.037
	(0.006)		(0.008)		(0.010)		(0.008)
Naturalized	0.066		0.068		0.069		0.072
	(0.007)		(0.007)		(0.010)		(0.011)
Citizenship N/A	0.028		0.035***		0.088***		0.049
	(0.004)		(0.005)		(0.011)		(0.010)
Less than HS	0.157**		0.125		0.137		0.190
	(0.010)		(0.010)		(0.013)		(0.016)
High school graduate	0.272***		0.232		0.262		0.325
	(0.010)		(0.011)		(0.019)		(0.016)
Some college	0.331*		0.355		0.370*		0.282
	(0.010)		(0.012)		(0.021)		(0.015)
College graduate	0.241***		0.288***		0.231		0.202
	(0.011)		(0.013)		(0.017)		(0.014)

Table 2. Summary Statistics, *by Spell Ending* (cont'd)

	Any retirement	Ret vs job	Re-employment	Job vs cens	Censored	Ret vs cens	Labor force exit
Family income/poverty							
< 100 percent	0.066		0.070		0.091		0.053
	(0.005)		(0.007)		(0.014)		(0.011)
100 - 200 percent	0.183*		0.159		0.166		0.187
	(0.011)		(0.010)		(0.015)		(0.018)
200 - 300 percent	0.186		0.183		0.202		0.207
	(0.008)		(0.009)		(0.017)		(0.018)
300 - 400 percent	0.160		0.163		0.160		0.151
	(0.007)		(0.009)		(0.019)		(0.012)
400 percent or more	0.405		0.425*		0.382		0.402
	(0.012)		(0.014)		(0.022)		(0.023)
Work limitation	0.277***		0.116***		0.172***		0.247
	(0.011)		(0.008)		(0.016)		(0.018)
Fair or poor health	0.246***		0.133**		0.176***		0.260
	(0.009)		(0.008)		(0.017)		(0.018)
Employer health insurance at separation	0.548***		0.598		0.604**		0.655
	(0.011)		(0.014)		(0.019)		(0.020)
Number of person-waves	5,576		5,152		2,297		1,941
Number of person-spells	2,335		2,396		904		760

Note: First three columns are mutually exclusive; labor force exit is not.
Source: Author's calculations from *Survey of Income and Program Participation*, 1996-2008 panels.

Table 3. *Proportion and Average Duration of Spells Ending in Retirement, Re-Employment, and Censoring*

	Any retirement	Ret vs job	Re-employment	Job vs cens	Censored	Ret vs cens
Period						
1996-2000	0.471		0.395		0.135	
	6.224***		5.466***		3.874***	
2001-03	0.386		0.384		0.229	
	6.639***		5.907***		4.422***	
2004-07	0.361		0.426		0.213	
	6.747***		5.711		5.211***	
2008-12	0.352		0.385		0.264	
	8.754**		7.831		8.293	
Age						
55 - 61y9m	0.147		0.488		0.365	
	7.362***		6.815***		8.218***	
61y10m - 62y2m	0.234		0.343		0.422	
	9.148		7.725*		9.578	
62y3m - 3 mos pre-FRA	0.227		0.329		0.443	
	7.415*		6.847***		11.500***	
FRA +/- 2 months	0.215		0.333		0.451	
	7.949		7.239**		10.021	
After FRA+2mos	0.198		0.303		0.499	
	6.574**		7.115***		13.828***	
UI Eligibility						
Still on UI	0.190		0.445		0.364	
	6.148***		5.452***		4.238***	
UI exhausted	0.242		0.485		0.273	
	7.492***		8.148***		10.338***	
After UI	0.065		0.190		0.745	
	17.906***		15.308***		21.330***	
Net worth quintile						
Lowest	0.174		0.421		0.405	
	7.314		6.895**		8.275*	
2nd	0.190		0.435		0.374	
	7.354		7.165***		10.444***	
3rd	0.191		0.415		0.394	
	7.957***		6.555***		11.551***	
4th	0.174		0.427		0.400	
	7.175		6.888***		11.438***	
Highest	0.184		0.399		0.416	
	7.006		7.032***		11.356***	
N/A	0.051		0.175		0.775	
	4.593**		5.789***		3.511***	

Table 3. *Proportion and Average Duration of Spells Ending in Retirement, Re-Employment, and Censoring* (cont'd)

	Any retirement	Ret vs job	Re-employment	Job vs cens	Censored	Ret vs cens
Spouse work status						
Unmarried	0.185		0.404		0.411	
	7.673***		6.974***		10.234***	
Spouse working	0.178		0.462		0.361	
	7.073		6.792***		9.190***	
Spouse not working	0.172		0.352		0.476	
	7.061		6.982***		11.849***	
State unemployment rate tercile						
Lowest	0.176		0.414		0.410	
	6.599		6.534***		10.824***	
Middle	0.198		0.414		0.388	
	7.061		6.885***		10.185***	
Upper	0.167		0.402		0.431	
	7.696***		7.062***		10.569***	
DB pension						
No	0.175		0.423		0.403	
	7.670***		6.888***		10.592***	
Yes	0.182		0.393		0.425	
	6.846		6.917***		10.467***	
DC pension						
No	0.139		0.393		0.468	
	7.051		7.030***		11.233***	
Yes	0.294		0.453		0.254	
	7.553***		6.563		6.684***	
Work limitation						
No	0.159		0.442		0.399	
	7.099		6.845***		10.201***	
Yes	0.249		0.280		0.471	
	7.662*		7.239***		11.467***	
Fair or poor health						
No	0.168		0.428		0.404	
	7.038		6.817***		10.023***	
Yes	0.217		0.332		0.451	
	7.948**		7.325***		12.171***	

Note: First number in each cell is the proportion of spells with the row's characteristic ending in the column's way. Second number in each cell is the average number of months that the spell lasts before ending in the column's way. Hypothesis testing is only for average duration.
Source: Author's calculations from *Survey of Income and Program Participation*, 1996-2008 panels.

Table 4. *Multinomial Logit Estimates for Re-Employment and Retirement*

	(1)		(2)		(3)	
Dependent variable	Re-employment	Strict retirement	Re-employment	Quasi-strict retirement	Re-employment	Loose retirement
Mean hazard rate	0.161	0.082	0.149	0.110	0.196	0.190
State unemployment rate	-0.008***	-0.001	-0.007***	-0.005***	-0.013***	-0.007***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)
Around 62nd birthday	-0.018	0.053***	-0.016	0.065***	-0.052*	0.063***
	(0.018)	(0.017)	(0.018)	(0.017)	(0.029)	(0.023)
62 to FRA	-0.019	0.034***	-0.019	0.049***	-0.047**	0.045**
	(0.012)	(0.011)	(0.013)	(0.013)	(0.022)	(0.018)
Around FRA birthday	0.024	0.061***	0.026	0.098***	0.011	0.112***
	(0.033)	(0.023)	(0.035)	(0.027)	(0.057)	(0.038)
After FRA	0.016	0.029	0.026	0.087***	-0.013	0.080**
	(0.022)	(0.018)	(0.028)	(0.025)	(0.044)	(0.031)
Age (quadratic)	0.002	0.043***	0.012	0.051***	0.003	0.033**
	(0.013)	(0.011)	(0.015)	(0.012)	(0.022)	(0.016)
Still on UI	0.053***	0.016	0.068***	0.014	0.046	-0.029
	(0.017)	(0.012)	(0.020)	(0.013)	(0.030)	(0.021)
UI exhausted	0.039***	0.013	0.060***	0.006	0.070**	-0.006
	(0.014)	(0.011)	(0.017)	(0.012)	(0.031)	(0.022)
Net worth quintile						
Lowest	0.053***	-0.033***	0.054***	-0.037***	0.081***	-0.041***
	(0.011)	(0.008)	(0.011)	(0.009)	(0.017)	(0.013)
2nd	0.035***	-0.023***	0.038***	-0.020**	0.033*	-0.040***
	(0.012)	(0.008)	(0.012)	(0.009)	(0.018)	(0.013)
3rd	0.031***	-0.014*	0.036***	-0.019**	0.032**	-0.034***
	(0.010)	(0.007)	(0.011)	(0.008)	(0.016)	(0.011)
4th	0.022**	-0.007	0.023**	-0.010	0.021	-0.027**
	(0.009)	(0.007)	(0.009)	(0.008)	(0.015)	(0.011)
DB pension coverage	0.001	0.037***	0.001	0.061***	0.006	0.068***
	(0.007)	(0.006)	(0.007)	(0.006)	(0.011)	(0.009)
DC pension coverage	0.026***	-0.009**	0.027***	0.000	0.031**	-0.007
	(0.008)	(0.004)	(0.008)	(0.005)	(0.013)	(0.009)

Table 4. *Multinomial Logit Estimates for Re-Employment and Retirement* (cont'd)

	(1)		(2)		(3)	
Dependent variable	Re-employment	Strict retirement	Re-employment	Quasi-strict retirement	Re-employment	Loose retirement
Married	-0.024***	0.017**	-0.024***	0.022**	-0.001	0.057***
	(0.009)	(0.008)	(0.009)	(0.009)	(0.016)	(0.013)
Spouse 62 or older	-0.016	0.004	-0.016	0.002	-0.020	0.001
	(0.010)	(0.008)	(0.011)	(0.008)	(0.018)	(0.013)
Spouse FRA or older	0.026*	-0.009	0.027*	0.000	0.020	-0.004
	(0.014)	(0.008)	(0.016)	(0.009)	(0.023)	(0.014)
Spouse working	0.009	-0.027***	0.010	-0.025***	0.021	-0.007
	(0.008)	(0.006)	(0.009)	(0.007)	(0.015)	(0.009)
Female	-0.043***	-0.002	-0.045***	-0.011**	-0.008	0.037***
	(0.006)	(0.005)	(0.007)	(0.005)	(0.012)	(0.009)
Work limitation	-0.149***	-0.050***	-0.151***	-0.086***	-0.083***	0.083***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.014)	(0.012)
Fair or poor health	-0.039***	0.012*	-0.036***	0.005	-0.045***	0.031***
	(0.008)	(0.006)	(0.009)	(0.006)	(0.014)	(0.010)
Sample size	21,314		20,240		12,127	

Note: Regression also includes educational attainment, race, Hispanic origin, citizenship, family income as a percent of the poverty line, and indicators for months since jobless spell began.
Source: Author's estimates from *Survey of Income and Program Participation*, 1996-2008 panels.

Table 5. *Multinomial Logit Estimates for Re-Employment and Labor Force Exit*

	(1)		(2)	
Dependent variable	Re-employment	LF Exit (1990-2012)	Re-employment	LF Exit (1996-2012)
Mean hazard rate	0.246	0.080	0.230	0.082
State unemployment rate	-0.015***	-0.005**	-0.018***	-0.003
	(0.004)	(0.002)	(0.004)	(0.002)
Around 62nd birthday	0.003	0.085***	-0.018	0.098***
	(0.030)	(0.029)	(0.036)	(0.035)
62 to FRA	-0.030	0.085***	-0.061***	0.090***
	(0.020)	(0.022)	(0.021)	(0.028)
Around FRA birthday	0.072	0.155***	0.066	0.181***
	(0.057)	(0.050)	(0.077)	(0.062)
After FRA	-0.007	0.086**	0.004	0.104**
	(0.044)	(0.043)	(0.057)	(0.049)
Age (quadratic)	-0.019	0.025	0.010	0.030
	(0.027)	(0.017)	(0.029)	(0.019)
Still on UI	0.002	-0.019	0.034	-0.001
	(0.026)	(0.021)	(0.030)	(0.026)
UI exhausted	0.002	0.016	0.040	0.030
	(0.024)	(0.024)	(0.030)	(0.030)
Net worth quintile				
Lowest	0.047**	-0.032**	0.090***	-0.018
	(0.019)	(0.014)	(0.024)	(0.018)
2nd	-0.007	-0.040***	0.034	-0.045***
	(0.019)	(0.011)	(0.023)	(0.012)
3rd	0.020	-0.016	0.036*	-0.010
	(0.015)	(0.012)	(0.018)	(0.014)
4th	0.024	-0.022**	0.033*	-0.013
	(0.015)	(0.011)	(0.018)	(0.014)
DB pension coverage	0.006	0.033***	-0.010	0.036***
	(0.011)	(0.009)	(0.013)	(0.012)
DC pension coverage	0.029**	-0.007	0.018	-0.002
	(0.013)	(0.010)	(0.014)	(0.010)
Married	0.043**	0.031**	0.033*	0.040**
	(0.017)	(0.015)	(0.019)	(0.018)
Spouse 62 or older	-0.038**	-0.001	-0.021	0.003
	(0.017)	(0.012)	(0.019)	(0.015)
Spouse FRA or older	-0.004	-0.017	-0.014	-0.027*
	(0.027)	(0.014)	(0.027)	(0.016)
Spouse working	0.011	-0.023**	-0.004	-0.027**
	(0.014)	(0.010)	(0.015)	(0.011)

Table 5. *Multinomial Logit Estimates for Re-Employment and Labor Force Exit* (cont'd)

	(1)		(2)	
Dependent variable	Re-employment	LF Exit (1990-2012)	Re-employment	LF Exit (1996-2012)
Female	0.004	0.036***	0.011	0.025**
	(0.012)	(0.011)	(0.013)	(0.011)
Work limitation	-0.039**	0.071***	-0.065***	0.086***
	(0.016)	(0.014)	(0.016)	(0.017)
Fair or poor health	-0.038***	0.036***	-0.050***	0.031**
	(0.013)	(0.010)	(0.016)	(0.013)
Sample size	9,443		6,973	

Note: Regression also includes educational attainment, race, Hispanic origin, citizenship, family income as a percent of the poverty line, and indicators for months since jobless spell began.
Source: Author's estimates from *Survey of Income and Program Participation*, 1990-2008 panels.

Table 6. *Multinomial Logit Estimates for Retirement/LF Exit with Unemployment Rate Interactions*

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Strict retirement	Quasi-strict retirement	Loose retirement	LF Exit (1990-2012)	LF Exit (1996-2012)
Mean hazard rate	0.081	0.110	0.190	0.080	0.082
State unemployment rate	-0.002	-0.006	-0.008	-0.006	-0.002
	(0.008)	(0.009)	(0.015)	(0.010)	(0.012)
Around 62nd birthday	0.051**	0.065***	0.059**	0.074**	0.082*
	(0.022)	(0.022)	(0.029)	(0.038)	(0.045)
62 to FRA	0.034***	0.049***	0.044**	0.085***	0.089***
	(0.013)	(0.014)	(0.019)	(0.026)	(0.031)
Around FRA birthday	0.065**	0.102***	0.116**	0.156***	0.183**
	(0.028)	(0.032)	(0.046)	(0.060)	(0.076)
After FRA	0.029	0.086***	0.079**	0.088*	0.113**
	(0.020)	(0.026)	(0.032)	(0.047)	(0.055)
Age (quadratic)	0.043***	0.050***	0.033**	0.027	0.035*
	(0.011)	(0.012)	(0.016)	(0.017)	(0.019)
Still on UI	-0.005	0.000	-0.086*	-0.047	-0.063
	(0.019)	(0.023)	(0.047)	(0.034)	(0.046)
UI exhausted	-0.011	-0.012	-0.063	-0.017	-0.020
	(0.018)	(0.020)	(0.044)	(0.038)	(0.062)
State unemployment rate ×					
Still on UI	-0.001	0.003	0.000	-0.017	-0.021
	(0.003)	(0.006)	(0.016)	(0.027)	(0.029)
UI exhausted	-0.002	-0.007	-0.005	-0.028	-0.006
	(0.003)	(0.008)	(0.014)	(0.028)	(0.024)
Around 62nd birthday	0.004**	0.003	0.003	0.012***	0.008***
	(0.002)	(0.006)	(0.008)	(0.004)	(0.003)
62 to FRA	0.003***	0.004	-0.004	0.001	0.003
	(0.001)	(0.003)	(0.005)	(0.008)	(0.008)
Around FRA birthday	0.004	-0.005	-0.002	-0.019	-0.012
	(0.003)	(0.011)	(0.013)	(0.027)	(0.031)
After FRA	0.003*	-0.001	-0.002	0.010**	0.009
	(0.001)	(0.006)	(0.007)	(0.005)	(0.007)
Sample size	21,314	20,240	12,127	9,443	6,973

Note: The other outcome in each regression is re-employment, and each regression includes same controls as previous tables.
Source: Author's estimates from *Survey of Income and Program Participation*, 1996-2008 panels.

Table 7. *Multinomial Logit Estimates for Re-Employment and Retirement, by Age*

	(1)	(2)	(3)	(4)	(5)	(6)
Age group	55 - 61y9m		61y10m - 3 mo before FRA		2 mo before FRA and older	
Dependent variable	Strict retire	Loose retire	Strict retire	Loose retire	Strict retire	Loose retire
Mean hazard rate	0.268	0.280	0.149	0.301	0.125	0.376
State unemployment rate	-0.007	-0.006	-0.002	-0.015**	0.001	-0.020**
	(0.005)	(0.005)	(0.004)	(0.008)	(0.005)	(0.009)
Still on UI	0.005	-0.096**	0.033	0.008	0.022	0.050
	(0.032)	(0.038)	(0.035)	(0.051)	(0.032)	(0.057)
UI exhausted	0.022	-0.057	0.027	0.027	-0.002	0.065
	(0.028)	(0.037)	(0.032)	(0.049)	(0.024)	(0.055)
1st wealth quintile	-0.120***	-0.071***	-0.020	-0.059	-0.014	-0.014
	(0.025)	(0.026)	(0.023)	(0.039)	(0.022)	(0.043)
2nd wealth quintile	-0.067***	-0.074***	-0.016	-0.052	-0.035*	-0.050
	(0.022)	(0.023)	(0.023)	(0.034)	(0.020)	(0.043)
3rd wealth quintile	-0.032	-0.061***	-0.027	-0.007	-0.006	-0.080**
	(0.020)	(0.021)	(0.020)	(0.030)	(0.021)	(0.038)
4th wealth quintile	-0.055***	-0.049**	0.027	-0.033	-0.008	-0.024
	(0.016)	(0.019)	(0.020)	(0.027)	(0.015)	(0.031)
DB pension coverage	0.126***	0.131***	0.043***	0.076***	0.016	0.021
	(0.014)	(0.016)	(0.014)	(0.020)	(0.014)	(0.027)
DC pension coverage	-0.019	-0.013	-0.012	-0.023	-0.019	0.004
	(0.014)	(0.018)	(0.013)	(0.020)	(0.014)	(0.023)
Married	0.058***	0.088***	0.009	0.047	-0.032	-0.001
	(0.020)	(0.024)	(0.024)	(0.038)	(0.027)	(0.049)
Spouse 62 or older	0.007	-0.031	0.033*	-0.005	0.011	0.063
	(0.024)	(0.029)	(0.018)	(0.027)	(0.027)	(0.043)
Spouse FRA or older	0.008	0.023	-0.017	-0.021	0.006	-0.018
	(0.030)	(0.037)	(0.021)	(0.030)	(0.023)	(0.036)
Spouse working	-0.055***	-0.007	-0.043**	0.005	-0.018	-0.008
	(0.015)	(0.019)	(0.018)	(0.025)	(0.018)	(0.031)
Female	0.006	0.087***	-0.023	0.029	-0.026**	-0.033
	(0.013)	(0.016)	(0.015)	(0.026)	(0.012)	(0.020)
Work limitation	-0.112***	0.176***	-0.083***	0.029	-0.037**	0.015
	(0.016)	(0.017)	(0.013)	(0.028)	(0.015)	(0.026)
Fair or poor health	0.006	0.048***	0.016	0.039	0.034**	0.025
	(0.014)	(0.018)	(0.019)	(0.027)	(0.015)	(0.022)
Sample size	60919	55528	68190	66006	63481	61869

Note: The other outcome in each regression is re-employment, and each regression includes same controls as previous tables.
Source: Author's estimates from *Survey of Income and Program Participation*, 1996-2008 panels.

Table 8. *Multinomial Logit Estimates for Re-Employment and Labor Force Exit, by Age*

	(1)	(2)	(3)
Age group	55 - 61y9m	61y10m - 3 mo before FRA	2 mo before FRA and older
Dependent variable	LF Exit	LF Exit	LF Exit
Mean hazard rate	0.103	0.138	0.160
State unemployment rate	-0.011**	-0.005	-0.005
	(0.005)	(0.006)	(0.008)
Still on UI	-0.034	-0.052	0.032
	(0.034)	(0.045)	(0.071)
UI exhausted	0.014	-0.013	0.077
	(0.037)	(0.052)	(0.076)
1st Wealth Quintile	-0.081***	-0.014	-0.043
	(0.026)	(0.038)	(0.051)
2nd Wealth Quintile	-0.062***	-0.068***	-0.107***
	(0.022)	(0.026)	(0.035)
3rd Wealth Quintile	-0.043*	0.030	-0.094***
	(0.023)	(0.037)	(0.031)
4th Wealth Quintile	-0.073***	0.015	-0.054*
	(0.019)	(0.031)	(0.029)
DB pension coverage	0.049***	0.058**	0.035
	(0.018)	(0.023)	(0.029)
DC pension coverage	-0.005	-0.010	-0.046*
	(0.020)	(0.022)	(0.028)
Married	0.039	0.010	0.042
	(0.024)	(0.031)	(0.042)
Spouse 62 or older	0.011	0.006	-0.013
	(0.030)	(0.030)	(0.047)
Spouse FRA or older	-0.047	-0.020	-0.011
	(0.035)	(0.035)	(0.044)
Spouse working	-0.027	-0.038*	-0.012
	(0.018)	(0.022)	(0.032)
Female	0.065***	-0.003	0.067**
	(0.021)	(0.026)	(0.029)
Work limitation	0.125***	0.067**	0.059
	(0.023)	(0.032)	(0.037)
Fair or poor health	0.070***	0.022	0.044
	(0.021)	(0.029)	(0.034)
Sample size	54,356	65,021	60,380

Note: The other outcome in each regression is re-employment, and each regression includes same controls as previous tables.

Source: Author's estimates from *Survey of Income and Program Participation*, 1990-2008 panels.

Table 9. *Multinomial Logit Estimates for Re-Employment and Retirement, by Period*

	(1)	(2)	(3)	(4)
Period	1996-2000	2001-2003	2004-2007	2008-2012
Dependent variable	Strict retire	Strict retire	Strict retire	Strict retire
Mean hazard rate	0.195	0.161	0.113	0.118
State unemployment rate	-0.001	-0.011	0.004	-0.001
	(0.009)	(0.010)	(0.006)	(0.002)
Around 62nd birthday	0.231**	0.006	0.070	-0.001
	(0.099)	(0.066)	(0.070)	(0.062)
62 to FRA	0.015	0.000	0.166***	0.065**
	(0.053)	(0.052)	(0.055)	(0.033)
Around FRA birthday	0.032	0.057	0.053*	0.056*
	(0.034)	(0.040)	(0.027)	(0.029)
After FRA	0.067	0.026	0.225**	0.048
	(0.069)	(0.063)	(0.088)	(0.045)
Age (quadratic)	0.085**	0.129***	0.000	0.094***
	(0.042)	(0.039)	(0.028)	(0.029)
Still on UI	0.206**	-0.011	-0.063	0.003
	(0.087)	(0.057)	(0.062)	(0.052)
UI exhausted	0.165*	-0.044	-0.039	0.017
	(0.100)	(0.044)	(0.062)	(0.055)
1st wealth quintile	-0.110***	-0.009	-0.053***	-0.021
	(0.033)	(0.030)	(0.019)	(0.019)
2nd wealth quintile	-0.088***	-0.047	-0.024	0.005
	(0.026)	(0.032)	(0.022)	(0.018)
3rd wealth quintile	-0.010	-0.040	-0.021	-0.008
	(0.025)	(0.033)	(0.018)	(0.015)
4th wealth quintile	-0.060**	-0.020	0.003	0.012
	(0.025)	(0.025)	(0.019)	(0.014)
DB pension coverage	0.059***	0.084***	0.035**	0.057***
	(0.017)	(0.023)	(0.016)	(0.012)
DC pension coverage	-0.002	-0.012	-0.009	-0.010
	(0.021)	(0.021)	(0.015)	(0.011)
Married	0.006	0.016	0.029	0.024
	(0.028)	(0.030)	(0.022)	(0.019)
Spouse 62 or older	0.009	0.011	0.004	0.003
	(0.030)	(0.031)	(0.020)	(0.018)
Spouse FRA or older	-0.052*	-0.026	-0.005	0.011
	(0.031)	(0.033)	(0.023)	(0.019)
Spouse working	-0.066***	-0.044**	-0.028	-0.027**
	(0.023)	(0.021)	(0.019)	(0.012)

Table 9. *Multinomial Logit Estimates for Re-Employment and Retirement, by Period* (cont'd)

	(1)	(2)	(3)	(4)
Period	1996-2000	2001-2003	2004-2007	2008-2012
Dependent variable	Strict retire	Strict retire	Strict retire	Strict retire
Female	-0.011	0.009	0.002	-0.012
	(0.021)	(0.023)	(0.015)	(0.010)
Work limitation	-0.136***	-0.076***	-0.066***	-0.049***
	(0.021)	(0.019)	(0.011)	(0.010)
Fair or poor health	0.002	-0.036*	0.056***	0.017
	(0.022)	(0.021)	(0.021)	(0.013)
Sample size	71,202	76,347	75,641	71,781

Note: The other outcome in each regression is re-employment, and each regression includes same controls as previous tables.
Source: Author's estimates from *Survey of Income and Program Participation*, 1996-2008 panels.