Identifying Local Differences in Retirement Patterns

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I. INTRODUCTION

Postponing retirement is frequently touted as a solution to numerous concerns related to well-being in old age – including inadequate retirement saving, post-retirement gaps in health insurance coverage, and underfunding of Social Security and Medicare. Moreover, at least half of workers state a desire to undertake a gradual transition from a full time career job into retirement (U.S. GAO 2002, Hutchens 2007). However, the rate of involuntary severance from career jobs has increased, and gradual retirement frequently necessitates a change of employer. Therefore, the ability of employees to exit the labor force at an age and in a manner of their choosing has come to depend increasingly on their ability to find employment at older ages, which depends on local labor market conditions.

This paper investigates how local labor market and other economic conditions affect retirement transitions, a question that has until recently been overlooked in the retirement literature. In particular, local unemployment rates will affect both involuntary exits from jobs and the opportunity after either voluntary or involuntary exits to find bridge jobs that allow phased retirement. As another example, low or declining house prices may restrict a worker's ability to relocate. To study this, we use data from the HRS, which is the first data set to offer both a lengthy panel and also rich local identifiers on a restricted basis.[1]

The paper makes additional contributions to both the retirement and local effects literatures. One of our ultimate contributions to the retirement literature will be methodological, as we plan to compare different approaches to controlling for local effects and also classical and Bayesian estimation methods. Throughout this paper, we will estimate multinomial logits to explain job transitions for aging workers in the Health and Retirement Study (HRS). The multinomial logit approach recognizes the richness of retirement transitions while maintaining a relatively parsimonious and flexible estimation approach.

In the recent local effects literature, researchers have used sophisticated methods to identify local effects in economic growth (Owyang et al 2005; Owyang et al

[1] The HRS geographic identifiers are available to qualified researchers on conditions that prevent identification of the particular MSAs.

forthcoming). However, local differences in labor market outcomes have not been studied much in this context. Moreover, retirement-age workers rarely consider moving to other labor markets, so there is little concern about an important source of bias that arises when looking at younger workers (Topel 1986). Lastly, it will be possible to make a methodological advance by applying the non- or semi-parametric framework of Koop and Tobias (2006) in a multinomial setting, since this is a richer way to model retirement than with a binary outcome variable.

II. BACKGROUND

While labor economists have focused on the unemployment rate as a key local characteristic of interest, studies of retirement have generally ignored local labor markets as well as other local variables until recently. To give an example of what can be learned by considering these concerns jointly, recent work by Black et al (2007) finds that variation in commuting time helps explain large differences in married women's labor force participations rates across locations – even for women with the same number of children and levels of education. While retirement models have grown extraordinarily complex, the richness arises in modeling individual budget constraints and preferences, rather than local conditions.

There are a few recent exceptions that have directly or indirectly considered local labor markets. Black and Liang (2005) studied the impact on older workers of shocks to the steel and coal industries in particular counties and shocks to cities with high levels of manufacturing. Their studies took the form of natural experiments rather than retirement models, in part because their data from the U.S. Census and Social Security Administration lack the rich set of covariates available in the HRS.

von Wachter (2007) analyzed labor force participation of older males in response to state- and industry-level wage and employment shocks in the 1970s and 1980s. He used data from the Current Population Survey, which has some but not all of the covariates available in the HRS and a very short panel. Lastly, Haardt (2006) uses British panel data and estimates a hazard model to explain when people fully retire, while controlling for the regional unemployment rate; our estimation approach is richer, and our unit of geography is more localized.

III. EMPIRICAL STRATEGY

Our approach will involve estimation of a multinomial logit explaining birthday-to-birthday job transitions for aging workers in the HRS. The emphasis in the literature on the heterogeneity in retirement transitions explains our multichotomous approach (Ruhm 1990, Gustman and Steinmeier 1986). The outcomes in the model are the following: staying in a job, leaving a job involuntarily to another job, leaving a job voluntarily to another job, leaving a job involuntarily to retirement, and leaving a job voluntarily to retirement. This approach is preferable to common specifications that pick a single binary definition of retirement (leaving a career job, describing oneself as retired, working zero hours, etc).

Thus, we will seek to explain the probability of observing outcome $y_{ntk} = 1, 2, \ldots K$ for each individual n in each year t, where the $K = 5$ outcomes were just noted. Ignoring for now possible serial correlation of the error terms for now, we can write $y_{ntk} = y_{ik}$. The probability that a particular y_{ik} is observed, conditional on observables x_{nt}, can be expressed as

$$Pr[\, y_{ik} = j \mid x_i \,] = \frac{exp(\, x_i' \beta_j \,)}{1 + \sum_{j=1}^{K} exp(\, x_i' \beta_j \,)} \qquad (1)$$

As is usual in the multinomial formulation, the coefficient on a particular covariate is identified for $K-1$ of the outcomes.

Relative to the frontier of the structural retirement literature, this approach involves some simplifications, which will ultimately enable us to use Bayesian estimation methods. We do not specify underlying preferences or capture the full dynamics involved in the evolution of some parts of the budget constraint. Instead, we will control for public and private pension characteristics associated with the gains to delaying retirement (Coile and Gruber 2007, Friedberg and Webb 2005). We will also control for other job and individual characteristics and allow for arbitrary correlation of the error term for observations that occur for the same individuals over time.

Lastly, we will compare results from estimating the multinomial logit without local controls and with controls for the local unemployment rate and local house price levels and changes. We plan to add more variables that capture local economic conditions in the near future.

IV. DATA

The HRS is a detailed longitudinal survey of over 7,600 households with a member born between 1931 and 1941. The HRS began in 1992 and surveys people every two years. We use data from the first seven waves through 2004.[2]

The HRS provides enormous detail about covariates which are important in explaining retirement and may be correlated with local factors – like job characteristics, health, marital status, and assets. Subject to the individual's consent, the HRS also obtains detailed information about pensions from employers and about earnings from Social Security, and this is made available to researchers on a restricted basis. Lastly, the HRS reports data on the state, county, and zip code at which each individual was interviewed at each wave, also on a restricted basis; this latter data enables us to assign individuals to local labor markets.

We define the individual's location as the Core Based Statistical Area (CBSA) in which he was interviewed.[3] The U.S. Census Bureau has defined 940 CBSAs for the country. A CBSA comprises one or more counties or county equivalents that have at least one urban core area of at least 10,000 population, plus adjacent territory that has a high degree of economic and social integration with the core as measured by commuting ties (U.S. OMB 2006). These CBSAs are divided into 363 Metropolitan Statistical Areas (MSAs) with core areas of at least 50,000, and 577 smaller Micropolitan Statistical Areas (mSAs).[4]

We select our sample as follows. Beginning with 12,652 individuals in the 1992 HRS, we keep 11,314 of them who also appear in Wave 2, so we observe at least one transition for each. We drop 272 under age 50 or above age 69 in 1992, leaving 11,042.

[2] Where possible, we make use of the RAND HRS data file, a cleaned version of the original. We have not incorporated cohorts entering into the HRS in 1998 or 2004.
[3] We experimented with an alternative of using Combined Statistical Areas (CSAs) where appropriate and obtained substantially similar results. CSAs are groups of CBSAs with substantial commuting ties.
[4] As of the 2000 Census, 82.6% of the population lived in MSAs, 10.3% in mSAs, and 7.1% in neither.

We drop a further 1,069 who lived outside a Metropolitan or Micropolitan Statistical Area, and 8 whose work status was unknown, leaving 9,965 whose labor force transitions were observed for periods varying from roughly two years, if they left the survey in 1994, to twelve years, if they remained in the survey in 2004.

The HRS is intended to be nationally representative, subject to oversampling of minorities and residents of Florida.[5] Most mSAs and some small MSAs contain only a handful of respondents, although these contribute to our analysis of the overall impact of unemployment on labor market behavior. A potential difficulty with analyses of the impact of local labor market conditions on retirement transitions is the treatment of individuals who move from one MSA to another. In practice, this is not a significant issue. We converted person-wave observations into 86,145 person-year observations measured, with each individual's status measured from one birthday to the next. This older sample is relatively immobile geographically, and only 1,217 of our 86,145 sample changed MSA between one birthday and the next.

These person-year observations include information on whether the person was working for the same employer, working for a different employer, or not working at the start and end of the period along with socio-economic characteristics.[6]

In our estimation, we control for gender, race, education (3 categories), self-reported health (5 categories), single age dummies, financial wealth by quintile (which, though potentially endogenous, does not alter other estimated coefficients much when included), job tenure, plant size (6 categories), industry (4 categories), occupation (3 categories), whether the individual has responsibility for pay and promotion (key indicator of management-type jobs), union membership. We also include information on employer-provided pensions. We use self-reported information on pension type (defined benefit, defined contribution, both, none) and an indicator for being older than the DB full retirement age.[7] Lastly, we also tried controlling for an individual's Social Security

[5] We find that after inclusion of sample weights, the sample is indeed broadly nationally representative.
[6] In contrast to our annual approach, Gustman and Steinmeier (2001) tracked individuals by wave (over two years), which is less predictable since many important milestones, such as attaining age 62 or 65, or one's normal retirement age, occur annually on the individual's birthday.
[7] While Gustman and Steinmeier (1999) showed that individuals report this information with substantial error, Chan and Stevens (2008) found that retirement responded more to one's beliefs about one's pension type, but also that, as people approached retirement, the accuracy of their information improved; therefore, it is reasonable to consider both measures.

wealth (SSW) and Social Security "peak value" (the discounted gain in SSW available if waiting to retire until SSW reaches its peak, as in Coile and Gruber 2007).[8]

Our key geographic variables involve the MSA-specific unemployment rate and house prices. The average unemployment rate for the MSA for the year. We use unemployment rates for the period 1990-2004. House prices and house price growth from the National Association of Realtors are only available for larger MSAs in our sample, covering the largest 151 out of 363 MSAs, which represent 55,969 out of 86,145 person-year observations.

To give an idea of how the sample moves through the transitions that we focus on, we note that, between turning 55 and turning 56, 88.2% of the sample (defined as people who are in a job at the beginning of the period) stays in the same job, while 2.9% lose their job involuntarily and take another job, 4.1% leave their job voluntarily and take another job, while 1.0% and 3.8% have the same types of exits, respectively, but retire. At age 60, staying in the job occurs at almost the same rate, 86.5%, while this declines to 84.7% at age 61 and 77.7% at age 62. Involuntary and voluntary job exits to another job both decline gradually as the sample ages, while involuntary job exit to retirement remains roughly steady. Meanwhile, voluntary job exit to retirement rises to 6.6% at age 60, 9.7% at age 61, and 15.0% at age 62.

IV. EMPIRICAL RESULTS

In Tables 1-4, we report relative risk ratios and clustered standard errors obtained from weighted multinomial logit estimation of birthday-to-birthday job transitions.[9] Each table reports results for a particular transition obtained from several specifications, with the coefficients reporting the risk of that transition relative to the base outcome of staying

[8] These earnings records are available for those who gave permission to match to Social Security records and are available to qualifying researchers on a restricted basis; in fact, any use that combines both restricted Social Security and restricted geographic data can only be undertaken onsite at the University of Michigan. While we do not report these results in the current draft, we found that SSW peak value had a statistically significant effect on retirement, but including it did not alter estimated effects of geographic variables. Our measure of the difference between the current and the peak value of Social Security wealth are constructed from Social Security earnings records for the period 1951 to 1991, and a projection of 1991 earnings, assuming a 3.0 percent real interest rate and real earnings growth of 1.1 percent a year. We include spousal benefit, assume that both husband and wife claim at 62, and further assume that the spouse continues to work until he/she attains that age.

[9] We employ sample weights so that the results are nationally representative.

in the same job that year. The transitions are (1) an involuntary exit from one job to another (appearing in Table 1), (2) a voluntary exit to another job (Table 2), (3) an involuntary exit to retirement (Table 3), and (4) a voluntary exit to retirement (Table 4). The columns within each table differ by control variables or by sample; thus, the joint estimation of a single multinomial logit specification for all transitions is reported in the same column across Tables 1-4.

The results in these tables are presented in the form of relative risk ratios (RRR). The RRR is a transformation of the estimated logit coefficient and captures the marginal effect of the right-hand side variable on the likelihood of a particular job transition occurring relative to the likelihood of the base outcome (staying in the job) occurring. If the RRR takes a value equal to *one*, then the right-hand side variable *does not alter* the likelihood of that particular job transition occurring relative to staying in the job. If the RRR takes a value that is *smaller than one*, then the variable *reduces* the likelihood of the job transition occurring relative to staying in the job by the percentage of RRR-1, and if the RRR takes a value *greater than one*, it *raises* the likelihood relative to staying in the job. The standard errors are transformed as well to correspond to the relative risk ratios and can be compared with RRR-1 using the critical values for z-statistics; so, if, upon computing RRR-1 and dividing by the transformed standard error reported in the table, one obtains a value that is roughly two, the corresponding RRR is statistically significant at roughly the 95% confidence level.

Before discussing the impact of particular variables, we note that we tried estimating multinomial logits on a small number of outcomes, investigating various combinations of the five outcomes listed above. However, likelihood ratio tests strongly reject the equality of coefficients across different combinations of outcomes (including outcomes 1 and 2, 1 and 3, and 2 and 4).

A. Impact of Geographic Variables

Column 1 in Tables 1-4 reports the estimates when no geographic information is included, while Column 2 in each table adds the local unemployment rate and Columns 3 and 4 then split the sample into men and women, respectively. Columns 5 and 6 explore

specifications that include local house prices, in which case the sample is restricted to the largest MSAs and the sample size is reduced, once again, from 86,145 to 55,969.

We find that the MSA unemployment rate has statistically significant effects for the combined sample of men and women on most of the outcomes. It has significant negative effects on the likelihood of voluntary exit to a new job (outcome 2) and voluntary exit to retirement (outcome 4) and a significant positive effect on involuntary exit to retirement (outcome 3), all relative to staying in the job; the effect on the likelihood of involuntary exit to a new job (outcome 1) is not significant. The similar pattern for outcomes 2 and 4 (both involving voluntary exits) may reflect not only the difficulty an older worker faces in finding a new job during bad times (outcome 2) but also an unwillingness to leave a job and then face a search for another when nothing has been lined up (outcome 4). It is not surprising, then, that the effect of high unemployment is to increase the combination of involuntary exit and full retirement.

The magnitudes of the estimated effects of local unemployment are relatively important in size. For voluntary exit to a new job (outcome 2), the RRR is 0.916, so a 1 percentage point increase in the MSA unemployment rate (from 3% to 4%, say, which is a smaller difference than is observed between the peak and trough of a typical business cycle) reduces the likelihood of this event by 1-0.916, or approximately 8.4%. Further, the RRR of 0.981 for voluntary exit to retirement (outcome 4) implies that a 1 percentage point increase in the local unemployment rate raises the likelihood of this event by 1.9%. Lastly, it raises the likelihood of an involuntary exit to retirement (outcome 3) by 5.6%.

For the sample of men only (third column), the same pattern of significance among the unemployment rate coefficients is observed. For the sample of women only (fourth column), the effects are also similar though in all cases a little less pronounced, and the impact of unemployment on outcome 4 (voluntary exit to retirement) disappears entirely. Thus, both men and women are sensitive to labor market conditions but men are more so, perhaps because husbands lead wives in making joint retirement decisions.

In the larger MSAs in our sample (specifically, those for which we have house price data, with results reported in the fifth column), unemployment rates have more severe effects in deterring voluntary exits, including both outcome 2 (voluntary exits to a

new job) and outcome 4 (voluntary exits to retirement).[10] The deterrent effect on outcome 2 exceeds the effect on outcome 4. Meanwhile, the unemployment rate loses significance and no longer has a notably positive effect on outcome 3 (involuntary exits to retirement). Thus, we have evidence that labor market effects differ in small and large labor markets, which we will explore in future work. For example, low unemployment rates in large MSAs, encourage voluntary quits compared to small MSAs, perhaps reflecting a more liquid labor market, even given the same reported unemployment rate.

Lastly, while we hypothesized that local housing markets might also affect retirement transitions, we find only small effects of local house prices. In these estimates in the fifth column of each table, house prices only have significant effects on outcome 4 (voluntary exits to retirement). Higher local house prices raise the likelihood of this outcome very slightly, relative to staying in one's job; in contrast, a higher rate of house price growth that year reduces the likelihood of outcome 4 by a little. When we further interact local house price variables with individual home ownership, hypothesizing that home owners are more sensitive to such variables, we find that the negative effect of house price growth on outcome 4 of home owners persists.

B. Impact of Non-Geographic Variables

In general, we find that including the MSA unemployment rate leads to remarkably small changes in estimated effects of other individual-specific variables. Thus, the effect of the unemployment rate is quite uniform across individuals that vary considerably in their socio-economic characteristics.

Other statistically significant variables include the following. First, consider individual non-job characteristics. Being male raises the likelihood of moving to another job via either involuntary or voluntary exits (outcomes 1 and 2), while reducing the likelihood of a voluntary exit to retirement (outcome 4), showing that men both work longer and are more likely to take bridge jobs than women. Education has little effect on involuntary exits to another job, while higher educational attainment is associated with a

[10] In results that we do not report, we ran the same specification that is reported in the second column (including MSA unemployment rate, men and women combined) but on the reduced sample of the largest MSAs, for which we have house price data. The change in unemployment coefficients in the fifth column is due to the sample restriction, not to the inclusion of house price controls.

reduced likelihood of voluntary exit to another job or to retirement (so educated workers voluntarily work longer). Good or bad health has little association with taking a new job versus staying in the same job, but excellent health substantially reduces the likelihood of exiting to retirement while poor health substantially raises it, relative to staying in the same job.

Next, consider job characteristics. Blue collar industries (agriculture+mining+construction, manufacturing+transport) generate significantly more involuntary quits in total as well as more voluntary quits to retirement, and white collar industries (professional services+public administration) generate significantly fewer involuntary quits. Also, white and pink-collar occupations (managerial+professional, sales+clerical) generate significantly fewer involuntary exits to retirement, while having pay and promotion responsibilities over other employees generates significantly fewer exits of any type to retirement.

Previous research shows that employer-provided pensions can have substantial effects on the timing and manner of exit from career jobs. Here, we find that having any type of pension reduces the likelihood of involuntary exits, as pensioned jobs are probably more stable, while it also reduces the likelihood of voluntary exits to another job and raises the likelihood of voluntary exits to retirement. This is consistent with evidence in Friedberg and Owyang (2002) that workers with any type of pension have longer tenure in jobs, with greater effects for workers with defined benefit pensions than for workers with only defined contribution pensions.

Furthermore, individuals here who are at or over their defined benefit plan's normal retirement age are significantly and substantially less likely to involuntarily exit to a new job and are more likely to voluntarily exit to a new job. Workers with defined benefit plans who remain in the labor force arguably have high productivity that makes them valuable to both their current and alternative employers. We will investigate these effects further, as Friedberg and Webb (2005) show that the defined benefit early retirement age is particularly important in governing the timing of exit from the career job.

V. CONCLUSIONS

The ability of employees to exit the labor force at an age and in a manner of their choosing depends on their ability to find employment at older ages, which depends in turn on local labor market conditions. Thus, we investigate how local labor market conditions affect retirement transitions, a question that has until recently been overlooked in the retirement literature. To study this, we use data from the HRS, which is the first data set to offer both a lengthy panel and also rich local identifiers on a restricted basis. We estimate a multinomial logit model that distinguishes among several paths which workers take to retirement. This flexible estimation approach will ultimately allow us to implement Bayesian estimation methods that are being used in the local business cycles literature.

We find that the local unemployment rate has statistically significant and relatively important effects on retirement transitions, and moreover that they differ for men and women and across small versus large labor markets. For the entire sample, a higher MSA unemployment rate reduces the likelihood of voluntary exits from a job, perhaps reflecting the corresponding difficulty of finding a new job at older ages; these effects are greater for men than for women and are greater in large MSAs. A higher unemployment rate also has a significant effect in raising the likelihood of involuntary exit to retirement for men, though not for women. This reflects combined effects on the probability of being laid off and of finding new work afterwards.

This paper remains a work in progress, and we plan to add additional variables at the local and individual levels. We will explore the role of local industrial composition, which alters the return to a worker's specific skills, as well as spatial arrangements within MSAs that influence commute times. We will add further information to the estimation reflecting employer pension structure and health insurance coverage. Thus, our research may reveal further effects of local labor and other markets on retirement transitions. Such effects will usefully inform efforts to estimate structural retirement models and to analyze policy reform at both the federal and local levels.

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Table 1: Multinomial Logit Estimates, Outcome (1) Involuntary Exits to New Job (relative to staying in same job)

		Both sexes		Both sexes		Men only		Women only		Both sexes		Both sexes	
		RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.
Dependent Variable: Involuntary exit to new job (relative													
Local labor market variables													
Percentage unemployment rate				0.985	0.017	0.971	0.021	1.001	0.027	1.013	0.040	1.011	0.040
Real house prices										0.999	0.001	0.999	0.002
Percentage increase in real house prices										1.007	0.013	0.993	0.022
Owns home										0.946	0.131	0.946	0.330
Owns home * % increase in real house prices												1.017	0.026
Owns home * real house prices												1.000	0.002
Socio-economic variables													
Male		**1.437**	0.145	**1.438**	0.145					1.373	0.167	1.371	0.166
Married		0.936	0.101	0.935	0.101	1.287	0.249	0.781	0.114	0.946	0.125	0.943	0.125
Black		0.920	0.122	0.914	0.121	0.722	0.152	1.051	0.185	0.899	0.141	0.898	0.141
Education	Less than high school	0.891	0.109	0.897	0.110	0.936	0.161	0.849	0.148	0.776	0.119	0.776	0.119
	Some college	0.972	0.104	0.974	0.105	1.225	0.194	0.733	0.112	0.872	0.111	0.872	0.111
Self-reported health	Excellent	0.966	0.124	0.969	0.124	1.075	0.193	0.876	0.163	0.892	0.133	0.891	0.133
	Very good	0.909	0.099	0.907	0.099	0.919	0.144	0.900	0.137	0.874	0.110	0.873	0.109
	Fair	1.052	0.148	1.052	0.148	0.970	0.197	1.130	0.219	0.965	0.168	0.967	0.168
	Poor	0.692	0.267	0.691	0.266	0.718	0.371	0.665	0.380	0.600	0.282	0.604	0.283
Industry	Agric, mining, construction	1.625	0.268	1.643	0.272	**2.107**	0.402	0.703	0.353	1.653	0.343	1.657	0.344
	Manufacturing, transport	1.007	0.112	1.005	0.112	1.165	0.177	0.851	0.155	1.005	0.136	1.007	0.137
	Prof services, public admin	**0.606**	0.080	**0.607**	0.080	**0.613**	0.129	**0.638**	0.105	**0.628**	0.098	**0.628**	0.097
Occupation	Managerial & professional	0.970	0.127	0.967	0.127	0.873	0.171	0.956	0.173	0.944	0.145	0.944	0.145
	Other, except sales & clerical	0.817	0.101	0.817	0.101	**0.699**	0.129	0.903	0.143	0.797	0.118	0.796	0.118
Plant size	< 5 employees	**0.403**	0.165	**0.405**	0.165	**0.226**	0.136	0.832	0.466	**0.350**	0.191	**0.349**	0.191
	5-14	1.481	0.270	1.481	0.270	1.241	0.332	1.775	0.450	1.780	0.358	1.779	0.358
	15-24	1.288	0.255	1.295	0.257	1.255	0.326	1.369	0.433	1.422	0.324	1.421	0.324
	25-99	1.064	0.118	1.067	0.118	1.083	0.175	1.047	0.161	1.025	0.133	1.025	0.133
	100-499	0.917	0.095	0.919	0.096	0.889	0.125	0.964	0.149	0.830	0.104	0.830	0.104
Union member		1.020	0.034	1.020	0.034	1.001	0.043	1.053	0.057	1.020	0.041	1.020	0.041
Has pay and promotion responsibility		1.006	0.030	1.006	0.030	1.034	0.038	0.967	0.049	1.001	0.036	1.000	0.036
Self reported pension type	Defined contribution	**0.703**	0.079	**0.700**	0.079	0.723	0.108	**0.685**	0.119	**0.686**	0.094	**0.686**	0.093
	Defined benefit	**0.422**	0.065	**0.421**	0.065	**0.426**	0.090	**0.404**	0.094	**0.357**	0.069	**0.358**	0.069
	Both	**0.466**	0.074	**0.465**	0.074	**0.489**	0.103	**0.409**	0.102	**0.430**	0.080	**0.430**	0.080
Age > = defined benefit full retirement age		**0.288**	0.172	**0.287**	0.171	0.409	0.245	**0.000**	0.000	0.426	0.254	0.425	0.254
Years tenure in current job		**0.963**	0.006	**0.963**	0.006	**0.969**	0.007	**0.953**	0.009	**0.966**	0.007	**0.966**	0.007
Financial wealth	81th-100th percentile	0.991	0.147	0.985	0.146	0.900	0.183	1.135	0.258	1.095	0.195	1.097	0.195
	61th-80th percentile	0.953	0.128	0.951	0.128	0.882	0.158	1.061	0.220	1.141	0.179	1.143	0.179
	21st-40th percentile	1.223	0.158	1.221	0.158	1.110	0.202	1.327	0.250	1.424	0.214	1.427	0.214
	1st-20th percentile	0.962	0.125	0.965	0.125	0.943	0.163	0.974	0.193	0.970	0.151	0.972	0.152

Notes: N = 86,145 throughout, except N = 55,969 when including house price variables. The table reports relative risk ratios and correspondingly transformed robust standard errors (clustered at the individual level) from weighted multinomial logit estimation (using HRS sample weights). Each column reports results for a different specification (differing by the choice of right-hand side variables or by the sample), and each table reports all specifications for one of the five multichotomous outcomes; estimates here pertain to the risk of an involuntary exit to another job occurring between one birthday and the next, relative to the risk of remaining in the same job. Each model includes a full set of age dummies. Dark shading and bolded text indicates 1% statistical significance; dark shading indicates 5% significance, light shading indicates 10% significance.

Table 2: Multinomial Logit Estimates, Outcome (2) Voluntary Exits to New Job (relative to staying in same job)

		Both sexes		Both sexes		Men only		Women only		Both sexes		Both sexes	
		RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.
Dependent Variable: Voluntary exit to new job (relative t													
Local labor market variables													
Percentage unemployment rate				**0.916**	0.019	**0.905**	0.028	0.928	0.026	**0.851**	0.029	**0.851**	0.029
Real house prices										1.000	0.001	1.000	0.001
Percentage increase in real house prices										0.997	0.010	1.011	0.023
Owns home										0.820	0.097	0.827	0.234
Owns home * % increase in real house prices												0.983	0.024
Owns home * real house prices												1.000	0.002
Socio-economic variables													
Male		1.234	0.110	1.241	0.110					1.242	0.132	1.243	0.133
Married		0.998	0.092	0.991	0.091	1.286	0.226	0.934	0.106	1.019	0.117	1.021	0.119
Black		0.881	0.103	0.863	0.101	0.820	0.160	0.929	0.135	0.936	0.126	0.938	0.127
Education	Less than high school	**0.623**	0.077	**0.645**	0.080	**0.545**	0.094	0.760	0.133	**0.569**	0.092	**0.569**	0.092
	Some college	1.251	0.117	1.265	0.119	1.102	0.154	1.400	0.177	1.309	0.148	1.311	0.148
Self-reported health	Excellent	1.081	0.117	1.090	0.118	0.983	0.148	1.271	0.196	1.191	0.155	1.191	0.155
	Very good	0.985	0.093	0.973	0.093	0.784	0.106	1.259	0.165	0.980	0.116	0.981	0.116
	Fair	1.075	0.139	1.079	0.140	1.166	0.207	0.985	0.184	1.099	0.183	1.097	0.184
	Poor	0.644	0.256	0.638	0.254	0.730	0.362	0.512	0.337	0.578	0.324	0.578	0.324
Industry	Agric, mining, construction	0.944	0.151	0.977	0.155	0.992	0.176	1.043	0.491	0.893	0.191	0.892	0.190
	Manufacturing, transport	**0.711**	0.084	**0.709**	0.084	**0.583**	0.096	0.957	0.157	**0.612**	0.090	**0.611**	0.089
	Prof services, public admin	0.855	0.086	0.859	0.086	0.953	0.145	0.840	0.112	**0.728**	0.084	**0.728**	0.084
Occupation	Managerial & professional	0.999	0.115	0.985	0.114	0.703	0.128	1.253	0.184	0.991	0.138	0.991	0.138
	Other, except sales & clerical	1.232	0.131	1.234	0.131	1.017	0.169	1.279	0.175	1.302	0.172	1.301	0.172
Plant size	< 5 employees	1.022	0.270	1.033	0.273	0.604	0.223	1.891	0.698	0.794	0.304	0.797	0.306
	5-14	1.016	0.177	1.024	0.179	1.177	0.262	0.783	0.227	1.194	0.244	1.194	0.244
	15-24	1.209	0.206	1.233	0.210	1.310	0.294	1.116	0.296	1.448	0.293	1.448	0.293
	25-99	0.885	0.090	0.893	0.091	0.919	0.131	0.863	0.126	0.899	0.114	0.899	0.114
	100-499	1.023	0.088	1.033	0.089	0.949	0.120	1.086	0.128	1.089	0.113	1.090	0.113
Union member		1.016	0.027	1.009	0.027	0.995	0.036	1.040	0.040	1.004	0.032	1.004	0.032
Has pay and promotion responsibility		0.964	0.026	0.962	0.026	0.963	0.034	0.965	0.041	0.949	0.029	0.950	0.029
Self reported pension type	Defined contribution	**0.600**	0.062	**0.587**	0.061	**0.600**	0.085	**0.574**	0.088	**0.645**	0.080	**0.645**	0.080
	Defined benefit	**0.520**	0.061	**0.519**	0.061	**0.556**	0.088	**0.468**	0.084	**0.573**	0.082	**0.573**	0.082
	Both	**0.551**	0.082	**0.546**	0.081	**0.511**	0.103	**0.600**	0.133	**0.554**	0.099	**0.554**	0.099
Age >= defined benefit full retirement age		1.594	0.360	1.584	0.358	1.391	0.394	1.791	0.674	1.439	0.402	1.440	0.403
Years tenure in current job		**0.969**	0.005	**0.969**	0.005	**0.980**	0.006	**0.952**	0.008	**0.971**	0.006	**0.971**	0.006
Financial wealth	81th-100th percentile	0.788	0.100	0.772	0.098	0.949	0.168	**0.621**	0.114	0.809	0.125	0.807	0.124
	61th-80th percentile	1.025	0.117	1.018	0.117	1.269	0.201	0.769	0.130	0.992	0.142	0.990	0.142
	21st-40th percentile	1.171	0.129	1.165	0.129	1.034	0.165	1.286	0.199	1.244	0.171	1.243	0.171
	1st-20th percentile	1.009	0.117	1.023	0.119	0.888	0.151	1.138	0.185	0.870	0.127	0.869	0.127

Notes: N = 86,145 throughout, except N = 55,969 when including house price variables. The table reports relative risk ratios and correspondingly transformed robust standard errors (clustered at the individual level) from weighted multinomial logit estimation (using HRS sample weights). Each column reports results for a different specification (differing by the choice of right-hand side variables or by the sample), and each table reports all specifications for one of the five multichotomous outcomes; estimates here pertain to the risk of a voluntary exit to another job occurring between one birthday and the next, relative to the risk of remaining in the same job. Each model includes a full set of age dummies. Dark shading and bolded text indicates 1% statistical significance; dark shading indicates 5% significance, light shading indicates 10% significance.

Table 3: Multinomial Logit Estimates, Outcome (3) Involuntary Exits to Retirement (relative to staying in same job)

		Both sexes		Both sexes		Men only		Women only		Both sexes		Both sexes	
		RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.
Dependent Variable: Involuntary exit to retirement (relati													
Local labor market variables													
Percentage unemployment rate				**1.056**	0.018	**1.066**	0.026	1.046	0.025	0.984	0.047	0.982	0.046
Real house prices										1.001	0.001	1.000	0.002
Percentage increase in real house prices										0.982	0.013	0.959	0.025
Owns home										0.719	0.118	0.519	0.184
Owns home * % increase in real house prices												1.032	0.030
Owns home * real house prices												1.001	0.002
Socio-economic variables													
Male		0.887	0.110	0.887	0.887					0.843	0.129	0.841	0.129
Married		0.843	0.103	0.842	0.102	0.790	0.171	0.852	0.127	0.802	0.117	0.807	0.118
Black		1.028	0.164	1.068	0.170	1.333	0.328	0.904	0.183	1.103	0.205	1.103	0.205
Education	Less than high school	1.188	0.165	1.150	0.161	1.163	0.246	1.115	0.215	1.164	0.207	1.153	0.207
	Some college	1.175	0.151	1.162	0.149	1.230	0.236	1.067	0.185	1.132	0.177	1.132	0.177
Self-reported	Excellent	**0.587**	0.099	**0.584**	0.099	**0.500**	0.131	0.675	0.149	**0.528**	0.113	**0.526**	0.112
health	Very good	0.801	0.103	0.809	0.104	0.736	0.135	0.881	0.159	0.853	0.136	0.848	0.135
	Fair	1.346	0.216	1.328	0.215	1.078	0.268	1.529	0.321	1.549	0.296	1.561	0.298
	Poor	2.435	0.665	2.444	0.668	1.662	0.697	3.765	1.379	1.347	0.486	1.337	0.485
Industry	Agric, mining, construction	1.780	0.361	1.680	0.349	**2.014**	0.502	0.530	0.329	**2.244**	0.581	2.235	0.576
	Manufacturing, transport	1.483	0.199	1.496	0.200	1.435	0.280	1.615	0.295	1.630	0.270	1.634	0.271
	Prof services, public admin	**0.533**	0.085	**0.530**	0.084	**0.490**	0.146	**0.551**	0.104	0.526	0.098	**0.524**	0.098
Occupation	Managerial & professional	0.718	0.114	0.726	0.115	0.751	0.189	0.670	0.145	0.969	0.178	0.964	0.177
	Other, except sales & clerical	**0.694**	0.093	**0.687**	0.093	**0.627**	0.136	0.749	0.135	**0.660**	0.110	**0.658**	0.110
Plant size	< 5 employees	1.065	0.361	1.066	0.361	0.607	0.300	2.034	0.917	1.240	0.459	1.223	0.454
	5-14	0.691	0.182	0.695	0.183	0.819	0.279	0.526	0.225	0.687	0.218	0.686	0.218
	15-24	1.194	0.285	1.185	0.281	0.894	0.325	1.553	0.483	1.141	0.323	1.127	0.319
	25-99	0.902	0.128	0.893	0.127	0.723	0.167	0.995	0.179	0.865	0.151	0.862	0.151
	100-499	0.924	0.116	0.920	0.116	0.985	0.181	0.794	0.142	0.854	0.133	0.849	0.132
Union member		1.055	0.039	1.056	0.039	1.057	0.056	1.057	0.054	1.069	0.047	1.067	0.047
Has pay and promotion responsibility		1.120	0.050	1.122	0.050	1.155	0.070	1.077	0.074	1.130	0.060	1.129	0.060
Self reported	Defined contribution	**0.481**	0.075	**0.485**	0.076	0.631	0.143	**0.370**	0.083	0.422	0.084	**0.424**	0.084
pension	Defined benefit	**0.687**	0.110	0.686	0.110	0.702	0.169	0.714	0.149	**0.598**	0.119	**0.598**	0.118
type	Both	0.831	0.148	0.832	0.149	1.127	0.294	0.632	0.159	0.900	0.190	0.895	0.189
Age >= defined benefit full retirement age		0.755	0.298	0.762	0.301	0.683	0.386	0.867	0.487	0.556	0.303	0.551	0.299
Years tenure in current job		0.991	0.006	0.991	0.006	0.991	0.008	0.993	0.008	0.991	0.007	0.991	0.007
Financial	81th-100th percentile	0.985	0.167	1.000	0.170	1.131	0.283	0.879	0.200	0.952	0.196	0.951	0.197
wealth	61th-80th percentile	0.964	0.151	0.965	0.152	1.281	0.295	0.747	0.166	0.863	0.171	0.868	0.173
	21st-40th percentile	**0.639**	0.109	**0.635**	0.108	0.723	0.195	**0.553**	0.125	0.668	0.142	0.677	0.144
	1st-20th percentile	0.840	0.129	0.818	0.126	1.115	0.259	**0.595**	0.127	0.881	0.168	0.887	0.170

Notes: N = 86,145 throughout, except N = 55,969 when including house price variables. The table reports relative risk ratios and correspondingly transformed robust standard errors (clustered at the individual level) from weighted multinomial logit estimation (using HRS sample weights). Each column reports results for a different specification (differing by the choice of right-hand side variables or by the sample), and each table reports all specifications for one of the five multichotomous outcomes; estimates here pertain to the risk of an involuntary exit to retirement occurring between one birthday and the next, relative to the risk of remaining in the same job. Each model includes a full set of age dummies. Dark shading and bolded text indicates 1% statistical significance; dark shading indicates 5% significance, light shading indicates 10% significance.

Table 4: Multinomial Logit Estimates, Outcome (4) Voluntary Exits to Retirement (relative to staying in same job)

		Both sexes		Both sexes		Men only		Women only		Both sexes		Both sexes	
		RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.	RRR	Robust s.e.
Dependent Variable: Voluntary exit to retirement (relative													
Local labor market variables													
Percentage unemployment rate				0.981	0.011	**0.955**	0.017	1.004	0.015	**0.917**	0.022	**0.916**	0.021
Real house prices										1.001	0.001	1.000	0.001
Percentage increase in real house prices										0.984	0.007	1.023	0.018
Owns home										1.096	0.102	0.984	0.218
Owns home * % increase in real house prices												0.955	0.018
Owns home * real house prices												1.002	0.001
Socio-economic variables													
Male		**0.776**	0.047	**0.776**	0.047					**0.776**	0.059	**0.778**	0.059
Married		1.156	0.070	1.157	0.071	0.938	0.105	**1.244**	0.090	1.133	0.088	1.136	0.088
Black		1.060	0.079	1.053	0.079	0.999	0.134	1.100	0.099	1.080	0.098	1.092	0.099
Education	Less than high school	1.157	0.083	1.163	0.084	1.144	0.121	1.163	0.117	1.150	0.107	1.153	0.107
	Some college	0.915	0.057	0.917	0.058	0.967	0.088	0.882	0.077	0.892	0.069	0.896	0.069
Self-reported	Excellent	**0.756**	0.059	**0.757**	0.060	0.800	0.094	**0.720**	0.077	**0.688**	0.067	**0.687**	0.066
health	Very good	0.952	0.058	0.950	0.058	1.040	0.095	0.875	0.073	0.899	0.068	0.899	0.068
	Fair	**1.589**	0.126	**1.593**	0.127	**1.597**	0.188	**1.530**	0.168	**1.588**	0.156	**1.583**	0.156
	Poor	**2.645**	0.448	**2.638**	0.448	1.782	0.484	**3.488**	0.734	**2.576**	0.531	**2.570**	0.531
Industry	Agric, mining, construction	1.151	0.135	1.167	0.138	1.258	0.177	1.004	0.293	1.302	0.201	1.294	0.200
	Manufacturing, transport	1.202	0.085	1.200	0.085	1.128	0.111	1.264	0.134	1.262	0.109	1.261	0.109
	Prof services, public admin	0.991	0.067	0.991	0.067	0.956	0.112	1.023	0.086	0.966	0.081	0.968	0.081
Occupation	Managerial & professional	1.025	0.077	1.023	0.077	0.902	0.122	1.108	0.105	1.023	0.093	1.018	0.093
	Other, except sales & clerical	1.078	0.075	1.078	0.075	0.996	0.122	1.106	0.099	1.016	0.090	1.014	0.090
Plant size	< 5 employees	1.466	0.233	1.471	0.234	1.520	0.303	1.381	0.378	1.287	0.268	1.296	0.270
	5-14	1.075	0.127	1.075	0.127	1.068	0.182	1.047	0.175	1.074	0.159	1.076	0.160
	15-24	1.042	0.132	1.043	0.132	1.104	0.186	0.971	0.191	1.026	0.166	1.029	0.166
	25-99	1.031	0.068	1.034	0.068	1.020	0.106	1.044	0.090	1.026	0.085	1.029	0.085
	100-499	1.084	0.065	1.087	0.065	1.120	0.101	1.061	0.086	1.059	0.079	1.063	0.079
Union member		1.004	0.015	1.004	0.015	0.993	0.021	1.016	0.021	1.015	0.018	1.014	0.018
Has pay and promotion responsibility		**1.073**	0.020	**1.072**	0.020	**1.089**	0.027	1.047	0.030	**1.094**	0.025	**1.094**	0.025
Self reported	Defined contribution	**0.667**	0.051	**0.665**	0.051	**0.677**	0.080	**0.681**	0.069	**0.658**	0.064	**0.659**	0.065
pension	Defined benefit	1.105	0.082	1.106	0.082	1.260	0.145	1.009	0.102	1.076	0.100	1.074	0.100
type	Both	**1.464**	0.114	**1.462**	0.114	**1.511**	0.182	1.474	0.153	**1.419**	0.136	**1.422**	0.136
Age >= defined benefit full retirement age		1.121	0.138	1.119	0.138	1.101	0.182	1.109	0.205	1.069	0.165	1.069	0.165
Years tenure in current job		**1.013**	0.002	**1.013**	0.002	**1.019**	0.003	1.005	0.004	**1.014**	0.003	**1.013**	0.003
Financial	81th-100th percentile	1.256	0.099	1.251	0.098	1.113	0.132	1.363	0.143	1.192	0.115	1.184	0.114
wealth	61th-80th percentile	1.116	0.084	1.116	0.084	1.223	0.133	1.010	0.106	1.163	0.107	1.152	0.106
	21st-40th percentile	0.896	0.072	0.896	0.072	0.977	0.116	0.844	0.092	0.933	0.093	0.928	0.092
	1st-20th percentile	**0.775**	0.064	**0.780**	0.064	0.773	0.099	0.775	0.085	**0.734**	0.076	**0.731**	0.076

Notes: N = 86,145 throughout, except N = 55,969 when including house price variables. The table reports relative risk ratios and correspondingly transformed robust standard errors (clustered at the individual level) from weighted multinomial logit estimation (using HRS sample weights). Each column reports results for a different specification (differing by the choice of right-hand side variables or by the sample), and each table reports all specifications for one of the five multichotomous outcomes; estimates here pertain to the risk of a voluntary exit to retirement occurring between one birthday and the next, relative to the risk of remaining in the same job. Each model includes a full set of age dummies. Dark shading and bolded text indicates 1% statistical significance; dark shading indicates 5% significance, light shading indicates 10% significance.