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How to Evaluate the Effects of Social Security Policies on Retirement and Saving When Firm Policies Affect the Opportunities Facing Older Individuals

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Abstract

This project uses data from the Health and Retirement Study to examine, in the context of a structural retirement model, the effects on retirement of non-wage aspects of employment emanating from firm side factors. Factors examined include minimum hours constraints, layoffs, physical and mental requirements of the job, informal pressures to retire, accommodations made by the employer when a person has a health problem, and retirement windows. The most important effects found pertain to minimum hours constraints. Should minimum hours constraints be abolished, the percent of the population ages 62 to 69 who are completely retired will decline by 10 to 15 percentage points. The fraction in this age group who are working in partial retirement jobs will increase by roughly twenty percentage points of the population. Were minimum hours constraints abolished, more than twice as many people would enter partial retirement as would leave full time work. As a result, total FTE employment would increase were minimum hours constraints eliminated. Increasing the importance of partial retirement would affect the role of the earnings test and liquidity of the Social Security system, although the increase in partial retirement would be largely, but not entirely offset by the decline in full time work. This would limit the size of any effects on Social Security finances.

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As the baby boomers retire, the demand for older workers will increase. As a result, firms will relax the conditions that have encouraged early retirement on long term jobs held by older workers. This project examines the effects on retirement of non-wage aspects of employment emanating from firm side factors, including minimum hours constraints, layoffs, physical and mental requirements of the job, informal pressures to retire, accommodations made by the employer when a person has a health problem, and retirement windows. Accordingly, if these factors change with changing labor market conditions, we will be in a position to predict the effect of such changes on retirement outcomes. By understanding the effects of these factors on retirement, and how soon to be realized changes in these factors will affect retirement, we can draw direct implications for Social Security. Specifically, we can determine the extent to which changes in these non-wage aspects of employment that firms might adopt to encourage longer work lives will lead to postponed retirement, and thus will reduce pressure on the Social Security system.

Six factors are examined: indicators of physical and mental difficulty of work; the role of minimum hours constraints; job accommodations to those with a limitation on their ability to work; age discrimination as perceived by the worker; layoffs; and early retirement windows.

Two lines of analysis are attempted. One line of analysis focuses on proper specification. How important is it that certain factors, normally omitted from structural retirement models, be included in the model? Do the indicated factors significantly affect retirement outcomes? Second, we run a number of simulations asking what would happen to retirement outcomes if we were relax the influence of a number of demand side factors.

Section II examines the role of demand side factors in retirement studies. The basic retirement model is presented in Section III. Section IV describes the data and Section V the

basic estimates of the parameters of the structural model. Section VI examines the role of job conditions in the preference function. Simulations of the effects of relaxing a number of constraints and job conditions are presented in Section VIII. Section VIII concludes.

II. The Potential Importance of Non-wage Demand Side Factors in Retirement Analysis

Non-wage aspects of employment are important determinants of how people value their jobs. Accordingly, they may affect employment choices, including the decision to retire. When these constraints are ignored, and hours of work or retirement status are assumed to be related only to incentives from the wage and fringe benefits, in particular Social Security and pensions, the findings in studies of retirement (and saving) may potentially be subject to serious omitted variable bias.

Physical and mental demands of the job come immediately to mind. Early data from the Retirement History Study (RHS) clearly suggested that conditional on wages and pensions, workers in blue collar jobs preferred to retire earlier (Gustman and Steinmeier, 1986b). Although those in the Health and Retirement Study (HRS) cohort – those born from 1931 to 1941 in the HRS sample -- disproportionately hold union and manufacturing jobs when compared to those in younger cohorts (Gustman, Mitchell and Steinmeier, 1995), physically demanding jobs are less common for those verging on retirement today than they were in the past. Both the physical difficulty of work and the challenges to keep up are measured in the HRS, allowing us to standardize more completely for job features than we could in our previous work.

A minimum hours constraint is among the most important of the features of the opportunity set shaping the retirement choice. [1] Hours constraints limit individuals' employment

[1] The role of minimum hours constraints in shaping retirement behavior was a major theme in our work of two decades ago modeling retirement. (Gustman and Steinmeier, 1983,

choices as they approach retirement from jobs held for a long period of time. Theory tells us that in the absence of any constraints, as they age, most people would prefer to gradually reduce their time at work. Moreover, given the higher wage paid on jobs held for a long time, they would prefer to partially retire on long term jobs. As a result of the minimum hours constraint, however, they are not free to do so. Rather, many firms require full-time work on a main job, or none at all. Consequently, the predominant retirement path is from full time work to complete retirement, with a significant fraction, but a minority, passing through partial retirement (Gustman and Steinmeier, 1984a, 2000c).

As it becomes more difficult to meet the physical demands of work with increasing age, or with the incidence of some health problem, some employers may accommodate by allowing changes in job tasks, while others may make no accommodation. Moreover, certain jobs are by their nature more accommodating, allowing greater autonomy, providing flexibility, and in other ways promoting a work environment that is more favorable to older individuals. An extreme form of accommodation to older workers is flexibility of hours. Job reassignment may also help to prolong the productive work-life of an older employee. This may be especially important for individuals who have experienced health changes that make it more difficult for them to perform their jobs.

1984b) demonstrated the extent of minimum hours constraints facing retirement age workers. Gustman and Steinmeier (1986a) demonstrated the importance of including minimum hours constraints in retirement models. Since these constraints are the reason most workers proceed directly from full time work to complete retirement, a model that assumes workers are free to work part time on their main job, but choose not to, will conclude that there is little convexity to the indifference curves between income and leisure in any period. Rather, as did Gordon and Blinder (1980) in their otherwise pioneering study, they will conclude that work and leisure choices involve corner solutions, where retirement most individuals flip from the corner with full time work to the corner with full retirement.

Informal pressures on jobs from both employers and colleagues aimed at older workers encourage older individuals to leave the firm. By affecting job satisfaction, these pressures may encourage earlier leaving even if the wage offer is not lowered.

Another issue is that a person's employment choices may be constrained by involuntary termination of employment on a long term job, e.g., through layoff.[2]

Early retirement windows are another important feature of the opportunity set that is often ignored in retirement models (see, however, Brown, 2000). One time or periodic changes in retirement rules in the form of window plans may encourage early retirement. These rule changes may enhance the value of the pension by crediting more years of work, by relaxing the early retirement age, by providing retiree health insurance, or by enhancing the reward to earlier retirement in other ways.

Many studies have considered the effects of one or another of these firm side forces when analyzing retirement behavior. Hurd (1996) provides an excellent summary. Some of these constraints have been examined in reduced form studies.[3] Our contribution will be to consider their effects in the context of a structural model of retirement and saving.

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[2] Involuntary separations are distinguished from voluntary retirements. In our earlier work, we recognized that separations due to mandatory retirement should not be treated as voluntary retirement, and thus distinguished those who were forced to leave the firm at the mandatory retirement age (Gustman and Steinmeier, 1986a). Having been outlawed for all but top level executives and those in certain other jobs, mandatory retirement is not an issue today. But layoffs, to the extent they are involuntary, raise the same problems. Recently, Chan and Stevens (2001) have examined the effects of layoffs in the Health and Retirement Study. In contrast to the present study, their analysis is reduced form.

[3] Haider and Loughran (2001) find that the proportion of older workers who report their job requires lifting heavy loads, stooping, kneeling or crouching, and good eyesight declines with age between 50 and 79. These findings are consistent with earlier findings that certain characteristics of the job interact with age, as some jobs become more difficult to perform at older ages than others. Gustman and Steinmeier (1986b) find that those holding blue collar jobs find them sufficiently difficult so that they retire about three years earlier than white collar workers, holding the wage and all other relevant factors constant.

III. The Basic Retirement Model

Our analysis is built around a structural model of retirement and saving that we have introduced in previous work. We have used the model for policy analysis, in one case simulating the effects of raising the Social Security early entitlement age (Gustman and Steinmeier, forthcoming) and in another, simulating certain proposals made by the President's Commission to Strengthen Social Security (Gustman and Steinmeier, 2002). A full description of the methodology in estimating the model and using it to simulate policy is found in our earlier work.

The basic structural model to be used treats full retirement, partial retirement, wealth, and benefit claiming as outcomes. In the basic model, the individual is assumed to maximize a utility function of consumption and leisure over time:

$$U = \int_0^T e^{-\rho t} \sum_{m=0}^{2} \{ s_{m,t} [\tfrac{1}{\alpha} C_{m,t}^{\alpha} + h_t \tfrac{1}{\gamma} L_{m,t}^{\gamma}] \} dt, \qquad \alpha, \gamma < 1.$$

In this equation, T is the maximum lifespan and m refers to the three survival possibilities at time t (both spouses survive, only the husband survives, and only the wife survives). $s_{m,t}$ is the probability of survival state m at time t, $C_{m,t}$ is consumption in real terms at time t, and $L_{m,t}$ is the amount of leisure (retirement) at time t.[6] $L_{m,t}$ takes on a value of 0 for full-time work or if the husband does not survive, 1 for complete retirement, and assuming partial retirement involves half-time work, 0.5 for partial retirement. h_t is a term which measures the value of leisure relative to consumption, and is assumed to be increasing in value as the individual ages and finds work more difficult. As the age variable increases over time, leisure becomes more

[6]In recognition that consumption is more valuable while both spouses are alive, the consumption function is adjusted so that the *marginal* utility for a surviving spouse is approximately equal to that for a couple consuming 40% more.

attractive for reasons of gradually deteriorating physical capacities and similar factors, which eventually result in retirement. h_t also depends on health status and cohort, but it is important to note that it explicitly does not contain any binary age variables or splines in age which might encourage retirement at a particular age.

The asset accumulation over time is given by

$$A_{m,,t} = (1 + r) A_{n,t-1} + W_{m,t} (1 - L_{m,t}) + E_{m,t} + B_{m,t} - C_{m,t}, \qquad \text{with } A_{m,t} \exists 0,$$

where $A_{m,t}$ is the level of real assets at time t in survival state m, r is the real interest rate, $W_{m,t}$ is the real wage rate, $E_{m,t}$ is the earnings of the spouse, and $B_{m,t}$ is the level of Social Security and/or pension benefits at time t. The equation must hold for any legitimate transition between survival state m at time t-1 and survival state m at time t. If the individual is working, the wage rate may depend on whether the work is full-time or part-time. The earnings and pension benefits of the spouse are treated as exogenous in this paper. The level of benefits at time t depends on the previous decisions of the individual as to when to leave full-time employment and when to retire fully, as well as the current survival state. Note that this model does not calculate the value of accruals to Social Security and pensions directly, but the value of the accruals is implicit in the model because work during one period will affect the value of Social Security and pension benefits in later periods. The implicit value of these accruals, of course, depends strongly on the time preference rate.

The assumption of non-negative assets, along with heterogeneous time preferences, is an important part of what drives this model. Otherwise, individuals with high time preferences could simply borrow against their future labor income and Social Security and pension benefits and consume most of their lifetime income early on. The requirement for nonnegative assets

prevents this from happening, and instead such individuals are likely to consume essentially all of their income each period, acquiring very little in the way of savings.

Heterogeneous Elements

This utility function contains three elements which are heterogeneous between different individuals. They are (1) the time preference rate ρ in the discount factor $e^{-\rho t}$, (2) the value of leisure h_t, and (3) the relative attractiveness of part-time vs. full time work, as reflected in γ. The interpretation of ρ as a heterogeneous term is fairly straightforward, but h_t and γ can use a little more explanation.

The term h_t in the model, which is the coefficient of the leisure term, is taken to be of the exponential form $e^{\beta X_t + \varepsilon}$. β is a coefficient vector and X_t is a vector of explanatory variables including a constant, age, health status, and cohort. ε is a heterogeneity term which is constant over time for a particular individual. It is randomly drawn from a normal distribution with zero mean and variance $\sigma 2$, but ε is constant over time for a particular individual. The idea here is that tastes for leisure (or conversely, tastes for work) vary over the population, with some individuals who have a high taste for leisure activities and others who do not mind work, or even enjoy it.

γ reflects the utility value of part-time work as opposed to complete retirement. If γ is close to unity, then full-time leisure has about half the value of half-time leisure, and the individual regards the utility of an hour of leisure (and the disutility of an hour of work) as about the same regardless of whether the work is full-time or part-time. If γ is close to zero, then part-time leisure is almost as valuable as full-time leisure. In this case, the individual does not mind part-time work too much but really dislikes having to work full-time. Rather than define a heterogeneous distribution over γ, we equivalently define the distribution over $V_p = 0.5^{\gamma}$,

where V_p is a monotonic transformation of γ taking on values from 0.5 to 1 and is proportional to the utility value of partial retirement. For any individual, V_p is assumed to be a random draw from the truncated exponential distribution $f(V_p) = k\, e^{\delta V_p}$ defined on the interval 0.5 to 1. If δ is positive, values of V_p toward unity will be more common, while if δ is negative, values near 0.5 will be more common.

The model is similar in almost all respect to one we estimated in Gustman and Steinmeier (forthcoming a), except that there are a few more explanatory variables in the $X\beta$ linear form which governs the utility of leisure, and the respondent contributes something to the moment matrices in a few more ages because we don't restrict the retirement status to be simple the survey dates.

The main difference in this model and the models we have estimated before is that this model contains indicators of job-specific explanatory variables in the $X\beta$ linear form. This requires some modification of the leisure part of the utility term. The way we have written the utility of leisure term before is $e^{X_t\beta} L^{\beta}$. However, now X_t takes on different values depending on whether we are talking about full-time jobs or partial retirement jobs. Let these two vectors of the X variables be X_{ft} and X_{pt}. Recall that L can take on a value of 0 for full-time work, 0.5 for partial retirement, and 1 for full retirement. It is tempting to write the leisure term for the three retirement choices as:

Full-time work:	0	, since L = 0 for full-time work
Partial retirement	$e^{X_{pt}\beta} (0.5)^{\delta}$	, since L = 0.5 for part time work
Full retirement	$e^{X_{ft}\beta}$	, since L = 1 for full retirement.

The problem with this formulation is that the utility difference in going from partial retirement to full retirement is $e^{X_{ft}\beta} - e^{X_{pt}\beta} (0.5)^{\delta}$, and this difference depends on the

characteristics of the full-time job, which it should not. The solution is to realize that the way we have measured utility of leisure before was relative to full-time work, but what we really want to do is to measure it relative to full retirement. Thus, ignoring for the moment the exponential terms, the utility of the three retirement states is as follows:

Full retirement	$1^{\delta} = 1$
Partial retirement	$(0.5)^{\delta}$
Full-time work	$0^{\delta} = 0$

Relative to utility at full-time retirement, these are

Full retirement	$1 - 1 = 0$
Partial retirement	$(0.5)^{\delta} - 1$
Full-time work	$0 - 1 = -1$

We then apply the exponentials to the partial retirement and full-time work Ld terms:

Full retirement	0
Partial retirement	$e^{X_{pt}\beta}[(0.5)^{\delta} - 1]$
Full-time work	$- e^{X_{ft}\beta}$

In this formulation, the job characteristics apply only to those utility differences between the job in question and full retirement. A change in the characteristics of the partial retirement job will affect the utility of that job relative to both full-time work and full retirement, but will not affect the utility of full-time retirement relative to full-time work. Similarly, a change in the characteristics of the full-time job will change the utility of the leisure (or lack thereof) in that job relative to partial retirement work and full retirement, but will not change the valuation of partial retirement leisure relative to full retirement.

Thus, the utility of leisure term in the utility function should be:

$$e^{X_{jt}\beta}(L_j^{\delta} - L_r^{\delta})$$

where j = w, p, or r (working full-time, partially retired, or fully retired) and L_j is equal to 0 for j = w, 0.5 for j = p, and 1 for j = r. Note that X_{jt} does not have a defined value for

j = r, but that does not matter since for j = r, $L_j^{\delta} - L_r^{\delta}$ is equal to zero.

Since the job characteristics in the partial retirement job were not observed for most individuals, we assumed that the characteristics (difficulty, stress, and age discrimination) were no greater than the median of the characteristics or the value in the full-time job, whichever is less.

IV. The Data

This study uses data from the first six waves of The Health and Retirement Study (HRS), a longitudinal survey designed to allow explicit measurement of these different constraints. The survey is taken every two years, so the data cover the period 1992 through 2002. These data cover 12,652 persons from households with a respondent who was 51 to 61 years old in 1992. The study also uses restricted, linked employer provided pension plan descriptions and Social Security earnings records matched with respondents in 1992.

Table 1 describes the derivation of the sample from the HRS. Table 2 reports the distribution for the observed retirements in the sample. The dependent retirement variable is based on hours of work and is described in the appendix. The percentages retired from full-time work and completely retired are calculated as percentages among those respondents who had retirement status observations at each particular age. The columns "retiring in year" are really pseudo-retirements, calculated as the difference between the percent retired at a particular age and the percent retired at the immediately preceding age. From Table 2, the spike in retirements at age 62 is readily apparent. The spike in retirements from full time work at age 65 is much smaller.

Construction of other key variables is also reported in Appendix 1. The appendix begins with a description of the construction of two variables, one reflecting job difficulty, the other job

stress. The measure of physical stress is constructed from answers given to questions about physical effort, lifting heavy loads and requirements for stooping, kneeling or crouching. Mental stress is measured from variables indicating whether the job requires intense concentration or attention, more difficult things than required of the respondent than in the past, and whether the job involves a lot of stress. These indices run from 0 to 9, with 9 indicating strong agreement with the questions indicating stress.

The next measure described in Appendix 1 is related to age discrimination. It is constructed from the answers to questions about whether the employer gives preference to younger persons in promotion decisions; and whether co-workers make older workers feel they should retire before 65. The constructed variable varies from 0 to 6, with 6 indicating the most age discrimination.

The three variables enter linearly into the linear form of the exponential expression which multiplies the utility function. The medians of the three variables respectively are 3 (job difficulty), 6 (job stress) and 2 (age discrimination).

A fourth measure that enters into the utility function indicates, for a respondent who reported a condition limiting the amount of work that could be performed, the respondent's employer had made no accommodation so that the respondent could continue working. These questions are only asked of those who indicated a health problem. If the respondent had a health problem and if the response to the accommodation question is no or left immediately, the no accommodation variable is set equal to 1. Otherwise it is zero.

Three other variables pertain to the budget constraint. One indicates whether the respondent reports being permitted to partially retire on the job held in the first wave. If the answer is yes, it is assumed that the wage rate remains unchanged if the respondent partially

retires. Otherwise, there is a reduction in the wage associated both with partially retiring and with the loss of job tenure. Second, if the 1992 job ended in a layoff, the wage for a new full time job is calculated assuming zero tenure. Third, if a person accepts a window, the wage for full time work is assumed to be the wage paid on a new job with zero tenure.

V. Empirical Estimation

Estimation is based on the general method of simulated moments. Once the model is estimated, including the various retirement outcomes, the model will be used to examine the effects of various Social Security parameters. Since we have estimates of the preferences of the individuals, the simulations involve changing the Social Security parameters and running the model. Typically, we base estimates on random draws of parameters, and then simulate the model 10,000 times.

Table 3 reports the results for the parameters of the utility function where each of the new measures is included. The age, health, consumption coefficient and standard deviation of leisure preference are all significant and of similar orders of magnitude as in our earlier work. As we found earlier, time preference is bimodally distributed.

Table 4 uses the model to simulate retirement outcomes. The model fits the data well.[4] Moreover, as in our recent work, the model is capable of simulating most of the spike in retirements at age 62, despite the fact that there are no age dummy variables included in the model, and that the Social Security benefit formula is actuarially fair around age 62. To be more

[4] In addition to the 46 moments in the early entitlement paper, there are 5 more each for high job difficulty (4-9), high job stress (7-9), high age discrimination (3-6), and lack of accommodation to health problems at ages 55, 58, 60 , 62, and 65. The moments of the first three job-related variables are measured in the last observed full-time job, since this is job that is most relevant to retirement. The fourth variable is measured in the original (1992) job. This makes for 66 moments. Subtracting off the number of parameters, the model has 54 degrees of freedom for the q statistic. The cut-off point for the chi-square distribution at 1% is 80.3 for 54 degrees of freedom. The model's computed q-statistics are outside these bounds, but not by a large amount.

specific, although the model understates the number retiring at ages 62 and 65, the model comes close to simulating the true distribution of retirements. According to the simulations, 7.2 percent more of the population leaves full time work at age 62 rather than 61. In comparison, in the raw data, 8.8 percent more of the population leaves fulltime work at 62 rather than 61. So the simulations catch most of the retirement spike at age 62. The model also catches an age 62 peak in retirements from both full and part time work out of the labor force. However, there it finds the peak between age 61 to 62 represents 4.6 percent of the labor force, whereas in the raw data, that spike represents 7 percent of the labor force.

VI. Job Characteristics, Preferences and Retirement Outcomes

In Table 3, among the newly entered measures, only the measure of age discrimination is significant. In contrast to findings from reduced form studies and from structural results from models that assumed a perfectly operating capital market, we find that measures of difficulty of work, including type of job, have no important effect on retirement preferences.

We conducted a number of experiments to validate the finding that except for evidence of age discrimination, job conditions are not very important in influencing retirement. We describe these sensitivity tests below. The full sets of results are available from the authors.

The first sensitivity test excludes the no accommodation variable on the grounds that its estimate is fairly large, of the wrong sign, and not at all significant. The next set includes only the age discrimination variable, which is the only one that is significant at the usual 5% significance level. We then used these alternative specifications to simulate retirement outcomes. We found as suggested by the basic significance levels, that exclusion of these measures has no important effect on the simulated retirement outcomes.

We also considered alternative approaches. We considered first the no accommodation variable. To see whether this negative result truly reflects what is in the data, we compared retirement statistics for the part of the estimation sample that reported a health problem that received no accommodation from the employer. In comparing these figures to the corresponding figures for the complete sample, it is apparent that for many of the ages the retirement rates for those indicating that no accommodation was made for a health problem is actually lower than for the sample as a whole.

It is difficult to check for this, but one possibility is that the accommodation varied with the severity of the health problem. Suppose that employers tend not to accommodate what they perceive as a minor health problem. Such employees tend to work almost as long as those without health problems, then the coefficient of the "no health problem" variable could become negative. Recall that this variable in essence measures the response to a health problem to which no accommodation is made to all health problems (since a health variable is already in the model).

The coefficient of the age discrimination variables is of the expected sign and significant, but the coefficient of the job stress variable is insignificant (though of the expected sign) and the coefficient of the job difficulty variable is negative, contrary to expectations. To see whether the negative result for the job difficulty variable is the result of something in the estimation or is reflected in the raw data, we separate the estimation sample into two groups according to the level of the job difficulty variable. The observed retirement percentages for these two groups are as follows: At age 58, the retirement rates are 22.5 percent for high difficulty jobs and 24.5 percent for low difficulty jobs. At age 62, the retirement rates are 54.9 for high physical

difficulty jobs vs. 54.7 for low difficulty jobs. Thus, the coefficients are merely reflecting the patterns of the underlying data and do not seem to be artifacts of the estimation procedure.

The estimation sample is subject to selection on a number of dimensions discussed above, and on top of that the job difficulty variable must be imputed for anyone who was already retired or partially retired as of the first survey. To get an idea of whether these considerations are affecting the results, we turn to simple tabulations of the data. Instead of job difficulty, which is not available for those retired in 1992, we will look at a similar variable, which is whether the current or last job was blue collar or white collar. Blue collar is defined as occupation codes 5-16, and white collar is defined as codes 1-4. This variable is available for almost everyone in the sample, whether or not they were working in 1992.

Restricting the sample to married males, and using the self-reported definition of retirement (which is available for almost everyone in the sample), the retirement rates by age are as follows

Age	White Collar	Blue Collar
55	.19	.21
56	.25	.18
57	.17	.22
58	.29	.28
59	.21	.28
60	.33	.32
61	.32	.41
62	.40	.58
63	.68	.69
64	.50	.74
65	.73	.83

Retirement in this table is taken to be anyone who is either partially or fully retired. Using an alternative of retirement to be anyone who is not working more than 30 hours per week and at least 1560 hours per year yields similar results.

Age	White Collar	Blue Collar
55	.26	.25
56	.28	.28
57	.23	.27
58	.31	.35
59	.24	.35
60	.39	.38
61	.34	.42
62	.41	.61
63	.67	.60
64	.45	.73
65	.62	.83

Again, white collar retirement is indeed higher than blue collar retirement at age 60, although at earlier ages (57-59) it appears that blue collar retirement is higher.

Even in these simple and basic tabs, there does not seem to be a clear tendency for blue collar workers to retire more than white collar workers until after about age 60. However, for the estimation, individuals are dropped out of the sample once they start collecting social security disability benefits on the grounds that a disabled individual does not really have the option of continuing work (a justification for this can be Bound et al.). Moreover, disability has a strong correlation with blue collar status. Taking disability as someone who has applied for and been accepted for social security benefits before the 1992 survey, and noting that "0" is no; "1" is yes, we get the following table:

SSDI Acceptance			
Blue Collar	0	1	Total
0	2136	72	2208
	96.74	3.26	100.00
1	2376	251	2627
	90.45	9.55	100.00
Total	4512	323	4835
	93.32	6.68	100.00

That is, 3.3% of married males who were employed in white collar jobs in their current or last jobs have awarded SSDI benefits, while 9.6% of similarly situated blue collar workers have.

Looking at married males who have not previously been awarded SSDI benefits yields the following retirement tables for self reported and objective retirement rates:

Self reported:

Blue Collar		
Age	0	1
55	.18	.11
56	.21	.10
57	.15	.17
58	.25	.21
59	.2	.22
60	.31	.24
61	.29	.35
62	.4	.51
63	.68	.67
64	.49	.7
65	.71	.81

In these tables, it is very difficult to make an argument that among married males not on disability, blue collar workers retire earlier than white collar workers before about age 62, regardless of which retirement definition is used.

Even among married males not on disability, blue collar workers appear to have worse health than white collar workers. Here we use question B1, which asks whether the respondent considers his health excellent, very good, good, fair, or poor. We take poor health to be those who answer fair of poor. This question was asked long before the labor force questions were asked in the survey and avoids some of the potential endogeneity of the "does health limit the amount or kind of work you can do?" question. The relationship of health status to the blue

collar status of the current or last job among married males not on disability (again "0" is no; "1" is yes) is as follows:

Health			
Blue Collar	0	1	Total
0	1928	208	2136
	90.26	9.74	100.00
1	1874	502	2376
	78.87	21.13	100.00
Total	3802	710	4512
	84.26	15.74	100.00

Thus, among this group 21.1% of blue collar workers said their health was fair or poor, vs. 9.4% of white collar workers.

If we limit the above retirement tables to married males in good health and not on disability, they become

Percent self-reported as retired		
Blue Collar		
Age	0	1
55	.18	.11
56	.21	.10
57	.14	.17
58	.25	.21
59	.2	.22
60	.31	.24
61	.29	.35
62	.4	.51
63	.68	.67
64	.49	.7
65	.71	.81

number of observations:

Blue Collar		
Age	0	1
55	147	140
56	134	137
57	131	164
58	142	142
59	110	131
60	146	131
61	128	124
62	90	101
63	71	63
64	57	70
65	42	57

percent retired according to hours definition		
Blue Collar		
Age	0	1
55	.24	.15
56	.24	.20
57	.20	.22
58	.27	.27
59	.22	.29
60	.37	.29
61	.31	.36
62	.40	.54
63	.66	.54
64	.44	.68
65	.61	.81

Using the self-reported retirement definition, it appears that blue collar workers age 60 and below retire, if anything, less often that white collar workers. The same argument could be made, though perhaps a little less forcefully, with the hours defined retirement of the last table. Overall, it looks difficult to make the argument that healthy married blue collar males retire any more frequently than white collar males. Thus, the simple tabulations of the raw data seem to confirm the estimates of the effects of job difficulty on the desire to retire.

In sum, the basic results suggest that age discrimination on the job will encourage earlier retirement, but otherwise job characteristics have little effect on retirement outside of their influence on the monetary rewards to work.

VII. Simulations

To determine the size of the effects of each of the factors examined above, as well as the importance of minimum hours constraints, elimination of layoffs and window plans, we use the model to simulate retirement outcomes under alternative conditions. The first panel of Table 5 presents baseline results. The following panels present results obtained by simulating assuming the taste parameter or the constraint of interest is changed as indicated.[5]

All the simulations use the same time preference rates, and the same draws for the random variables, as are used in the base simulation. Thus, any differences cannot be attributed to differences in the random draws. All simulations are for estimates with job difficulty and job stress variables, but omitting the no accommodation variable from the utility function.

Six potential changes are analyzed:

Age discrimination. The age discrimination variable is lowered to the median value if it was at a higher level. In addition, if an individual was in a 1992 job with above median age

[5] In fact, for each potential change, we ran three simulations. The first is for the complete sample with the indicated change. The second is for the restricted sample for whom the change applies, but without the change. This is essentially the base simulation on a restricted sample. The final simulation is for the restricted sample, with the change. By comparing the first simulation with the base sample, the result indicates the effect of the change on the entire population. By comparing the last two simulations, the result indicates the effect of the change on the population affected by the change. From the perspective of the Social Security Administration, the change for the affected population is of interest only for those policy changes that will have a large effect on retirements for the overall population. Those policies that will have only a small effect on the overall population typically also have only a very small effect even on the affected population. Consequently, the full results are reported only for the overall population. We discuss the results for the affected group when the impact on the overall population is large enough to warrant further investigation.

discrimination and subsequently moved to an easier job, the simulation assumes that the respondent could have continued on the original job. Comparing panel 2 with panel 1 in Table 5, it would appear that abolishing the impact of age discrimination on individual preferences would reduce retirement from full time work by about one percentage point between the ages of 58 and 62. The precise changes are indicated in Table 6. Roughly half the additional workers would come from the ranks of the partially retired, and half would postpone retiring completely. Thus with a reduction in part time work, which we simulate as half time jobs, the addition to FTE employment would be less than one percent. The reduction in retirements from full time work at earlier and later ages amounts to about half a percentage point, with most of those coming from partial retirement.

No hours limits. All individuals are assumed to be able to switch to partial retirement in their full-time job at half of the earnings for half of the work. This affects all respondents except those in full-time jobs which began prior to age 50 and which would allow half-time work in those jobs. Implicitly, this assumes that respondents could collect their full pensions at the age they change from full time work to part time work. Thus the simulation assumes the policy change deals with one of the major issues limiting part time work, the fact that with the exception of contract workers, current law prohibits paying a pension to a person who continues to work for the firm.

A comparison of panel 3 with panel 1 of Table 5 clearly indicates that if demand side changes persuaded firms to allow partial retirement at the same hourly wage as earned on the long term job, this would generate a major change in retirement outcomes. The percent of the labor force that passed through partial retirement would increase from about three tenths to about two thirds. The second panel of Table 6 reports the difference in retirement outcomes between a

state where there are no constraints on partial retirement and a state where partial retirement is permitted. First, when partial retirement is permitted, the fraction who are retired from full time work increases by 7.5 to 9.5 percentage points at each year of age between 58 and 65. Second, the percent who are completely retired declines. The difference in the number completely retired falls from a reduction of 4.7 percent at age 58 to a reduction of 10.5 percent at age 62. From age 65 through age 69, the number who are completely retired falls by 14 to 15 percentage points. Comparing the change in the percent completely retired from full time work with the change in the percent partially retired, the effect on total earnings is roughly a wash, or suggests a slight decline in earnings as roughly twice as many people enter partial retirement as leave full time work. Since the simulation suggests twice as many hours worked in a full time job as when partially retired, this change suggests that work lost through acceleration of retiring from full time work is roughly balanced by the fact that twice as many people now work part time – half coming from full time work, half coming from full retirement.

For those 65 to 69, the opportunity to work part time increases the number partially retired by about 20 percent of the total population. It reduces the number working full time by 8, 6 and 3 percentage points at ages 65, 67 and 69 respectively. Consequently, the increase in part time workers is much greater than twice the decline in full time workers, suggesting 6, 9 and 10 percentage point increases in the population at part time work at ages 65, 67, and 69; or a three to five percentage point increase in full time work equivalents from ages 65 to 69.

No layoffs. If the respondent was laid off from his 1992 job, the base simulation assumes that subsequent full-time work would be in a new job with zero tenure, whether or not the individual was subsequently observed in full-time work. In this simulation, we assume that he could have continued working in that job rather than switching to a different job at zero tenure. Partial

retirement wages are assumed to be unchanged. The results in Tables 5 and 6 suggest that eliminating layoffs would have almost no effect on simulated retirements.

Windows. All windows, that is special offers to provide an additional amount or pension benefit to those who retired at a specified time, are eliminated. In addition, if the individual took a window offer in the 1992 job, it is assumed in the base simulation that subsequent full-time work would have been in a new job with tenure reset to zero. In this simulation, it is assumed that the individual could have continued in the job which offered the window. The effect of eliminating windows is to reduce the percent retired from full time work by about half a percentage point for those 58, 60 and 62. It has no effect at other ages. The entire effect comes from reducing the number who are completely retired. The change in the number partially retired is very small.

Job difficulty. The difficulty level in any job is reduced to the median level if the job was above the median level. This applies to both the job difficulty and job stress variables. In addition, if a respondent moves from a job with above median difficulty to another original full-time job, the simulation assumes that the respondent could have continued on the same job without the loss of tenure (and wages) of moving to a new job. This implicitly assumes that the reason for the move was that the individual wanted an easier job. For those ages 62 to 67, eliminating the effects of excess difficulty of work or stress on the job would reduce the number retired from full time work from 1 to 1.5 percentage points. A bit more than half of the change comes from a reduction in the number who are partially retired.

Accommodation. If an individual left a job because he was not accommodated, this simulation assumes that he could have continued in the job. Implicitly, this assumes that the accommodation would be made to allow the worker to stay in the job. The overall effects of this variable on retirements are miniscule.

VIII. Conclusions

Minimum hours constraints, that is requirements that individual work full time or not at all on many jobs, are the major firm side factor affecting the course of retirements. Perceived discrimination also has an effect on retirement outcomes, but its effect is much smaller. The same is true for the effects of indicators of job difficulty or stress. Reductions in the frequency of layoffs, reduction in the frequency that window plans are offered, and increased availability of accommodations to those who report work limitations would have little effect on retirement outcomes.

Should minimum hours constraints be abolished, the percent of the population ages 62 to 69 who are completely retired will decline by 10 to 15 percentage points. The fraction in this age group who are working in partial retirement jobs will increase by roughly twenty percentage points of the population. Were minimum hours constraints abolished, more than twice as many people will enter partial retirement as will leave full time work, so that total FTE employment would increase were minimum hours constraints eliminated. But the change in FTE employment is much smaller than the increase in partial retirement employment as many individuals will leave full time work and enter partial retirement at younger ages than they would have in the presence of a minimum hours constraints. On the other hand, because most will retire at a later age, postponing their complete retirement from their lifetime job as they engage in a period of part time work, the effect is to raise the amount of work effort among older persons.

As individuals enter partial retirement at younger ages than they would have left full time work were minimum hours constraints in place, the liquidity demands on the Social Security system will increase as they begin to draw down their benefits at an earlier age. However, they will draw fewer benefits between the time they would have fully retired from their long term job

were there no minimum hours constraints, and the time they actually leave that job given the availability of part time employment. The proportion of earnings subject to the earnings test will also be subject to conflicting forces. The fractions of earnings exempt from the earnings test will increase, but the fraction of earnings beyond the reaches of the earnings test will decline. Lastly, should firms relax minimum hours constraints to encourage more partial retirement by older individuals, this will increase the importance of regulations pertaining to withdrawals from personal accounts in those cases where a person continues to work on a part time basis.

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Appendix 1: Construction of Variables

Job characteristics. We use questions from F82 and F83 and their counterparts on later surveys. Since the some of the questions in the earlier surveys were dropped in later surveys, we used only questions which are common across surveys and which arguably reflect on the difficulty of a job. In the end, there are six questions:

My job requires a lot of physical effort
My job requires lifting heavy loads.
My job requires stooping, kneeling, or crouching.
My job requires intense concentration or attention.
My job requires me to do more difficult things than it used to.
My job involves a lot of stress.

All of these are answered on a scale of 1 to 4, with 1 being strong agreement and 4 being strong disagreement.

The responses to the questions are put through a factor analysis. The factor loadings are as follows:

	Eigenvectors					
Variable	1	2	3	4	5	6
physEff	0.57	0.02	0.02	-0.03	-0.68	-0.45
heavLoad	0.58	0.00	-0.05	-0.07	-0.04	0.81
stooping	0.57	-0.00	-0.04	0.05	0.73	-0.37
Concentr	0.04	0.51	0.79	0.33	0.02	0.05
moreDiff	-0.01	0.57	-0.60	0.55	-0.04	-0.02
Stress	-0.04	0.64	-0.10	-0.76	0.05	-0.04

Note that the first factor has loadings of the first three variables with approximately equal weights, and the second factor has loadings of the last three variables with approximately equal weights. Together these two factors explain nearly two-thirds of the variance.

Given these results, we create two new variables. The first simply sums the first three variables and the second sums the last three variables. The sums run from 3 to 12, and they are rescaled and reversed to run from 0 to 9, with 9 being strong agreement on all three questions. We name these two variables job difficulty and job stress, respectively.

The survey also contains three questions in F85 in 1992 related to age discrimination. These three questions are repeated in later surveys as well. They are:

In decisions about promotion, my employer gives younger people preference over older people
My co-workers make older workers feel that they ought to retire before age 65.

My employer would let older workers move to a less demanding job with less pay if they wanted to.

The responses to these questions are also put through a factor analysis, with the following loadings on the factors:

Eigenvectors			
Variable	1	2	3
emplPref	0.69	-0.12	-0.71
collPref	0.69	-0.14	0.71
easyJob	0.18	0.98	0.01

The first two variables are loaded onto the first factor with almost equal weight, and the third variable is nearly identical with the second factor. The first factor accounts for half the variance, and the first two factors account for 82 percent.

Given these results, we create a single variable for age discrimination by adding the first two variables. Since these variables have values from 1 to 4, with 1 being associated with the most discrimination, the sum thus ranges from 2 to 8, and this was rescaled and reversed to form a variable running from 0 to 6, with 6 corresponding to the most discrimination. The third variable, which measures employer flexibility, is closely related to another variable we will analyze, which is whether the employer will permit the worker to reduce work to half time on the job. As such, we did not enter it into the utility function directly.

The medians of these three variables are as follows:

Job difficulty	3
Job stress	6
Age discrimination	2

These variables are entered linearly into the linear form of the exponential expression which multiplies the leisure term in the utility function.

Since these questions are asked each survey, there is the possibility that there may be more than one answer for a particular job. In the case of the job held in 1992, we used the last set of answers for that job on the premise that those values are probably most relevant to the decision as to whether to retire from that job. If the respondent worked subsequently, we also used the last observed responses to these questions for those jobs, again on the premise that those responses were the most relevant to the work/retire decision.

A problem occurs in the cases where these variables have values that are missing. Probably relatively few individuals refused to answer them, but they were not asked of individuals who are not working. This is particularly a problem if the respondent was retired in the first survey and stayed retired. Simply dropping these individuals is tantamount to dropping

observations based on the value of retirement, the dependent variable. Rather than dropping, we impute the variables based on the distributions that we do observe.

More specifically for job difficulty, the average value depends on occupation as follows:

. table occ if 0 < occ & occ <= 17, contents(mean physDiff n physDiff);

Occ	Mean (physDiff)	N (physDiff)
1	10.18	766
2	10.61	575
3	9.67	440
4	9.21	206
5	10.67	3
6	9.92	111
7	7.11	37
8	7.11	9
9	7.60	184
10	6.65	225
11	7.17	292
12	6.03	279
13	8.07	211
14	7.57	281
15	7.82	372
16	6.45	159
17	11.17	6

Definitions of industries:

001	Managerial specialty operation (003-037)
002	Professional specialty operation and technical support (043-235)
003	Sales (243-285)
004	Clerical, administrative support (303-389)
005	Service: private household, cleaning and building services (403-407)
006	Service: protection (413-427)
007	Service: food preparation (433-444)
008	Health services (445-447)
009	Personal services (448-469)
010	Farming, forestry, fishing (473-499)
011	Mechanics and repair (503-549)
012	Construction trade and extractors (553-617)
013	Precision production (633-699)

014	Operators: machine (703-799)
015	Operators: transport, etc (803-859)
016	Operators: handlers, etc (863-889)
017	Member of Armed Forces (900)

[Note: these averages are for the original sum which ranged for 3 to 12, with 3 being the most difficult. The transformed means are (12 – origmean), where origmean is the mean given above.] These values are computed for males with current jobs in 1992. In a regression where the observations are individuals and the dependent value is the job difficulty variable, the set of 17 occupation dummy variables accounts for 30 percent of the variance. The means for industries are much closer, and the regression using industry dummies accounts for only 14 percent of the variance. Moreover, the industry variables add almost nothing to the explanation provided by the occupation dummy variables. In this case, for a missing job difficulty variable, we take the distribution of the observed job difficulty variables in the particular industry, which was asked in sections G and H (last and longest job) sections of the survey, and take a random draw from that distribution. Note that this strategy has some potential for errors in variables causing the estimates of the effects to be biased toward zero, but whatever bias is probably not much, given that only 12 percent of the sample reported themselves as completely retired in the first wave of the survey (Gustman and Steinmeier, 2000).

The approach of using occupation and/or industry as instruments is less successful for the job stress and age discrimination variables. The combination of industry and occupation dummies together are able to explain only 6 percent of the variation in the job stress variable and only 3 percent of the age discrimination variable. These are so low that the imputations were based on the observed distributions of the job stress and age discrimination variables for the entire sample.

In some cases, the HRS indicates that the individual left the 1992 job and took another job but does not provide enough information to calculate the job characteristics of that job. In these cases, the characteristics of the new job are imputed by taking a random draw from the distribution of characteristics in new jobs, given the characteristics in the original jobs, that is observed for individuals for whom the characteristics of both jobs is observed.

Another variable which is entered in the utility function is a variable indicating whether, for a respondent that reported a condition that limited the amount of work they could do, the respondent's employer had made no accommodations so that the respondent could continue to work. These questions are of the form "does your employer currently do anything special to make it easier for you to stay at work?" (question J109) or "At the time your health started to limit your ability to work, did your employer do anything special to help you out so that you could stay at work?" (question J38 in 1992) These types of questions follow the self reported health questions as to whether the respondent had any impairment or health problem that limits the kind or amount of paid work or work around the house that they can do. If the respondent had a health problem (using the same definition we have used in the past) and if the response to the accommodation question is "no" or "left job immediately," the "no accommodation" variable is set equal to 1. Otherwise, it is set equal to 0. The 0 responses cover the answers "yes", "no accommodation needed", and "self employed" responses. Note that the "no accommodation

needed" response was added in later surveys. We are particularly interested in whether there was accommodation in the 1992 job or, if the individual was not working full-time in 1992, in the previous full-time job.

Table 1: The derivation of the sample of long term married couples		
	Number eliminated	Number remaining in the sample
Total males in sample		5867
Not married	939	4928
Not married long term	639	4289
Spouse interview if married	133	4156
Career employment	497	3659
Ambiguity about whether jobs are ss covered	49	3610
FT years unavailable in wave 3 or ss record	0	3610
No FT earnings in ss record or self report	36	3574
No sr earnings, and ss earnings over limit	31	3543
Relatively large business assets	291	3252
No Pension Provider record in last job	865	2384
FT years unavailable for spouse	156	2231

Table 2: The distribution for the observed retirements in the sample

	Percent Retiring in Year		Percent Retired		
Age	Retiring from Full Time	Retiring Completely	Retiring from Full Time	Completely Retired	Number of observations
50	4.1	3.3	4.1	3.3	243
51	0.9	0.0	5.0	3.3	361
52	2.7	2.2	7.6	5.5	510
53	2.0	1.1	9.7	6.6	621
54	2.1	1.3	11.8	7.9	712
55	3.1	2.7	14.9	10.6	801
56	1.9	2.1	16.8	12.7	907
57	4.0	3.2	20.8	15.9	990
58	3.0	2.1	23.8	18.0	1064
59	3.6	2.1	27.4	20.1	1132
60	6.0	6.4	33.4	26.4	1121
61	6.3	5.5	39.7	31.9	1043
62	15.1	12.5	54.8	44.4	986
63	5.6	3.4	60.4	47.9	909
64	6.7	6.7	67.1	54.6	843
65	9.1	6.7	76.2	61.3	744
66	4.5	3.9	80.7	65.2	658
67	2.8	2.9	83.5	68.1	565
68	3.1	3.3	86.7	71.4	472
69	1.7	4.6	88.4	76.0	379

Table 3: Estimation of Parameters of the Utility Function with Measures of Job Conditions Included

Symbol	Description	Coefficient Value	t-statistic
σ_ε	Std. Dev. Of Epsilon	5.50	12.97
δ_0	Constant	-2.89	-5.40
δ_1	Age	0.38	2.84
β_0	Constant	-10.28	-157.56
β_1	Age	0.12	4.62
β_2	Health	3.34	4.08
β_3	Vintage	0.03	0.36
β_4	Job Difficulty	-0.13	-1.34
β_5	Job Stress	0.18	1.24
β_6	Age Discrimination	0.33	1.83
β_7	No Accommodation	-0.97	-0.61
α	Consumption	-0.42	-4.53

Number obs.	2231
q:	86.823

Distribution of time preference rates

0.00	609
0.05	533
0.10	190
0.15	82
0.20	44
>0.20	773

Table 4: Simulated Retirements Based on Estimates in Complete Model From Table 3

	Retiring in Year		Percent Retired	
Age	Retiring from Full Time	Retiring Completely	Retiring from Full Time	Completely Retired
51	1.3	0.8	4.6	2.8
52	1.4	1.0	6.0	3.8
53	1.7	1.2	7.7	5.0
54	2.2	1.7	9.9	6.7
55	2.9	2.1	12.8	8.8
56	3.1	2.4	15.9	11.2
57	3.7	2.8	19.6	14.0
58	4.3	3.4	23.8	17.4
59	4.6	3.7	28.4	21.1
60	6.7	5.4	35.1	26.5
61	5.6	4.6	40.8	31.1
62	12.8	9.2	53.6	40.3
63	4.8	4.0	58.4	44.3
64	5.2	4.6	63.6	48.9
65	8.6	7.8	72.2	56.7
66	5.2	5.2	77.3	61.9
67	4.3	4.5	81.7	66.4
68	4.2	4.6	85.8	71.0
69	3.9	6.1	89.7	77.0

Percent of simulated retirements into partial retirement: 30.0

Table 5: Results of Retirement Simulations from Relaxing the Indicated Factor
(Numbers reported are in percentages)

	Age							
	55	58	60	62	65	67	69	percent into partial retirement
Full Sample Baseline								
Percent retired from full time	12.9	23.9	35.2	53.7	72.2	81.6	89.7	29.9
Percent completely retired	8.8	17.5	26.5	40.2	56.5	66.1	76.7	
Percent partially retired	4.1	6.4	8.7	13.5	15.7	15.5	13	
No Age Discrimination								
Percent retired from full time	12.4	22.9	33.9	52.4	71.5	81.1	89.4	28.9
Percent completely retired	8.6	16.9	25.8	39.7	56.3	66	76.7	
Percent partially retired	3.8	6	8.1	12.7	15.2	15.1	12.7	
No Hours Limits								
Percent retired from full time	18.3	31.4	44.4	63.2	80.2	87.5	92.8	66.9
Percent completely retired	6.4	12.8	19.6	29.7	42.4	50.8	62.9	
Percent partially retired	11.9	18.6	24.8	33.5	37.8	36.7	29.9	
No Layoffs								
Percent retired from full time	12.9	23.9	34.9	53.4	72.2	81.7	89.8	29.8
Percent completely retired	8.8	17.7	26.3	40.1	56.6	66.2	76.9	
Percent partially retired	4.1	6.2	8.6	13.3	15.6	15.5	12.9	
No Windows								
Percent retired from full time	12.7	23.3	34.7	53.3	72.3	81.7	89.7	29.9
Percent completely retired	8.7	17	26.2	39.9	56.5	66.2	76.8	
Percent partially retired	4	6.3	8.5	13.4	15.8	15.5	12.9	
No Job Difficulty or Stress								
Percent retired from full time	12.4	22.9	33.9	52.2	71.1	80.7	89.2	28.6
Percent completely retired	8.5	16.9	25.8	39.6	56.1	65.8	76.5	
Percent partially retired	3.9	6	8.1	12.6	15	14.9	12.7	
Accommodation if Necessary								
Percent retired from full time	12.9	23.9	35.1	53.6	72.2	81.6	89.7	29.9
Percent completely retired	8.8	17.4	26.5	40.2	56.5	66.1	76.7	
Percent partially retired	4.1	6.5	8.6	13.4	15.7	15.5	13	

Table 6: Results of Retirement Simulations from Relaxing the Indicated Factor Relative to Baseline
(Numbers reported are in percentages)

	Age 55	58	60	62	65	67	69	percent into partial retirement
Difference: No Age Discrimination								
Percent retired from full time	-0.5	-1	-1.3	-1.3	-0.7	-0.5	-0.3	-1
Percent completely retired	-0.2	-0.6	-0.7	-0.5	-0.2	-0.1	0	
Percent partially retired	-0.3	-0.4	-0.6	-0.8	-0.5	-0.4	-0.3	
Differences: No Hours Limits								
Percent retired from full time	5.4	7.5	9.2	9.5	8	5.9	3.1	37
Percent completely retired	-2.4	-4.7	-6.9	-10.5	-14.1	-15.3	-13.8	
Percent partially retired	7.8	12.2	16.1	20	22.1	21.2	16.9	
Differences: No Layoffs								
Percent retired from full time	0	0	-0.3	-0.3	0	0.1	0.1	-0.1
Percent completely retired	0	0.2	-0.2	-0.1	0.1	0.1	0.2	
Percent partially retired	0	-0.2	-0.1	-0.2	-0.1	0	-0.1	
Differences: No Windows								
Percent retired from full time	-0.2	-0.6	-0.5	-0.4	0.1	0.1	0	0
Percent completely retired	-0.1	-0.5	-0.3	-0.3	0	0.1	0.1	
Percent partially retired	-0.1	-0.1	-0.2	-0.1	0.1	0	-0.1	
Differences: No Job Difficulty or Stress								
Percent retired from full time	-0.5	-1	-1.3	-1.5	-1.1	-0.9	-0.5	-1.3
Percent completely retired	-0.3	-0.6	-0.7	-0.6	-0.4	-0.3	-0.2	
Percent partially retired	-0.2	-0.4	-0.6	-0.9	-0.7	-0.6	-0.3	
Differences: Accommodation if Necessary								
Percent retired from full time	0	0	-0.1	-0.1	0	0	0	0
Percent completely retired	0	-0.1	0	0	0	0	0	
Percent partially retired	0	0.1	-0.1	-0.1	0	0	0	