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DOES RETIREE HEALTH INSURANCE ENCOURAGE EARLY RETIREMENT?

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ABSTRACT

The strong link between health insurance and employment in the United States may cause workers
to delay retirement until they become eligible for Medicare at age 65. However, some employers extend
health insurance benefits to their retirees, and individuals who are eligible for such retiree health benefits
need not wait until age 65 to retire with group health coverage. We investigate the impact of retiree
health insurance on early retirement using employee-level data from 64 diverse firms that are clients
of Towers Watson, a leading benefits consulting firm. We find that retiree health coverage has its
strongest effects at ages 62 and 63, resulting in a 3.7 percentage point (21.2 percent) increase in the
probability of turnover at age 62 and a 5.1 percentage point (32.2 percent) increase in the probability
of turnover at age 63; it has a more modest effects for individuals under the age of 62. A more generous
employer contribution of 50 percent or more raises turnover by 1-3 percentage points at ages 56-61,
by 5.9 percentage points (33.7 percent) at age 62, and by 6.9 percentage points (43.7 percent) at age
63. Overall, an employer contribution of 50 percent or more reduces the total number of person-years
worked between ages 56 and 64 by 9.6 percent relative to no coverage.

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1. Introduction

In the United States, there is currently a strong link between health insurance and employment. Most individuals can only purchase health insurance at favorable group rates through their employer, and there are significant tax advantages to employer-based coverage. Employment-based health insurance can make it more difficult for individuals to retire before they become eligible for health insurance through Medicare at age 65. While some employers extend health insurance coverage to their pre-65 retirees, most do not. According to the Kaiser Family Foundation (2010), only 28 percent of large firms (with 200 or more employees) and 3 percent of small firms that offer employee health coverage also extend benefits to retirees. A worker whose employer does not offer retiree health coverage has limited options for obtaining health insurance if he or she retires before becoming eligible for Medicare. Buying an individual health insurance policy can be difficult, particularly for those with preexisting conditions. The Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 allows workers who leave their jobs to continue to participate in their former employer's health plan at group rates for up to 18 months. This law makes it possible for workers to retire at age 63½ without losing group coverage, although they would forego any employer contribution toward their premiums.

In this paper, we investigate the impact of the availability of group health insurance on the decision to retire. We have access to a unique and rich data source for examining this question. Our dataset consists of employee records from a large and diverse group of firms, drawn from among the clients of Towers Watson, a leading benefits consulting firm. These employee records are matched to detailed information about the firms' benefit provisions. Some of Towers Watson's clients offer health insurance to their retirees, while others do not. Moreover, the retiree health benefits that are offered vary considerably in their generosity. Another advantage

of our dataset is that we can control for a number of firm-level characteristics that influence retirement, including specific features of defined benefit and defined contribution pension plans. If access to health insurance does in fact influence retirement decisions, then we would expect to find a relationship between retiree health coverage and retirement, especially for persons age 65 or younger.

This question is particularly important in light of the recently passed Patient Protection and Affordable Care Act (PPACA) of 2010, which will considerably weaken the link between employment and health insurance by making group coverage available to all individuals regardless of employment. Many individuals will also receive explicit subsidies to purchase group coverage, and older individuals will also likely receive substantial implicit subsidies through a legal limit on their premiums relative to those paid by younger individuals. One possible consequence of this reform is that it may encourage earlier retirements, as all older workers will be able to maintain group coverage – often with generous subsidies – even if they retire before Medicare eligibility. Studying the link between employer-provided health insurance and retirement can help us to understand the potential impact of PPACA on the labor market participation of older pre-Medicare workers.

To provide a preview of our results, we find that after controlling for demographic characteristics and pension plan features, subsidized retiree health coverage (i.e., coverage in which the employer contributes towards the premium) raises the probability of turnover by 3.7 percentage point (21.2 percent) at age 62 and 5.1 percentage points (32.2 percent) at age 63. The effect is more modest for individuals under the age of 62. A more generous employer contribution of 50 percent or more raises the probability of turnover by 1-3 percentage points at ages 56-61, by 5.9 percentage points (33.7 percent) at age 62, and by 6.9 percentage points (43.7

percent) at age 63. These effects are even stronger for individuals with 15 or more years of

service, who are more likely to be eligible for coverage. In this group, subsidized coverage

raises the probability of turnover by 6.3 percentage points (32.6 percent) at age 62, by 7.4

percentage points (43.2 percent) at age 63, and by 3.5 percentage points (21.0 percent) at age 64.

Effects for individuals under age 62 are smaller, but still present. We find little evidence that

"access only" (i.e., coverage in which the retiree gets a group rate but the employer does not

contribute towards the premium) influences retirement decisions in this age range. These results

are consistent with the hypothesis that Medicare eligibility influences workers' retirement

decisions, specifically among individuals who are younger than age 65 and do not have access to

subsidized retiree health coverage.

The remainder of the paper is organized as follows. Section 2 summarizes the previous

literature on the relationship between health insurance and retirement, and describes the

contribution of this paper. Section 3 describes our dataset. Section 4 presents our methodology,

and Section 5 discusses our results. Section 6 concludes

2. Prior Research on Health Insurance and Retirement

Prior studies have used a variety of approaches to estimate the effect of health insurance on

retirement. A number of studies use a reduced form approach to examine the retirement (labor

force exit) rates or labor force participation rates of those with and without retiree health

coverage, controlling for other factors and, in some cases, for selection into retiree health

coverage based on unobservable characteristics. In general, these studies find that retiree health

coverage substantially increases the probability of early retirement among pre-Medicare eligible

workers. Blau and Gilleskie (2001) estimate that subsidized retiree health coverage increases the

rate of retirement (labor market exit) by about 2 percentage points per year among male workers aged 51-61, with an increase of 7.5 percentage points among 61-year-olds. They find that the effect on retirement is positive starting at age 54 and increases with age. Kapur and Rogowski (2011) estimate that retiree health insurance raises retirement rates by between 3 and 5 percentage points (depending on gender and marital status) for workers under the age of 65. Marton and Woodbury (2006) find effects of a similar magnitude, in the range of 3-4 percentage points for males aged 51-61.   Karoly and Rogowski (1994) estimate that retiree health coverage roughly doubles (from 12 percent to 24 percent) the probability of retirement over a 2-year period for men aged 55-62. Robinson and Clark (2010) use a proportional hazard model to show that individuals aged 50-60 with retiree health insurance are 21.2 percent more likely to leave their job. Strumpf (2010) finds that retiree health coverage raises the probability of being retired by 8 percentage points, on average, for individuals under the age of 65. Madrian (1994) finds that retiree health coverage reduces the age of retirement by 5-16 months.

An alternative approach followed by a number of authors is to estimate a structural model of retirement, and to use the estimated model to simulate the impact of retiree health coverage. These studies tend to find smaller effects than those that use the reduced form approach. Blau and Gilleskie (2008) estimate that retiree health coverage reduces the labor force participation rate of older men by 3.6 percentage points. Studying the behavior of married couples, Blau and Gilleskie (2006) predict an increase in retirement probability of less than half a percentage point for men and 1.6 percentage points for women. Gustman and Steinmeier (1994) find that retiree health coverage increases the probability of leaving full-time employment at age 62 by 2.1 percentage points, a 16 percent increase over the baseline exit rate. Lumsdaine, Stock, and Wise (1996) find that retiree health insurance raises retirement rates between ages 60 and 64 by about

2 percentage points per year. French and Jones (2011) estimate that retiree health coverage raises the retirement rate at age 62 by 8.5 percentage points.

A third approach is to estimate the impact of retiree health coverage using aggregate state-level data, and variation in state and federal policy. Gruber and Madrian (1995) examine the state and federal "continuation of coverage" requirements that were adopted during the 1970s and 1980s. They find that these mandates encouraged earlier retirement. In particular, they find that the availability of COBRA coverage reduced the labor force participation rate of 55-64 year-olds by 3.3 percentage points.

In this paper we follow the first approach, using a unique dataset that is derived from the employee records of 64 firms. These firms are quite diverse in terms of their industry, size, location, and other characteristics. The advantage of our dataset over publicly available sources such as the Health and Retirement Study or the Survey of Income and Program Participation (used in many of the earlier studies) is that we have detailed information on firm-level retirement incentives, in particular the incentives inherent in defined benefit pension plans. The main disadvantage of our data is limited information on employees. For example, we do not have information on employees' marital status, health status, other sources of potential retiree health coverage (e.g., through a spouse), or level of employee retirement assets (Social Security, pensions, or other saving).

3. Data

Towers Watson is a leading benefits consulting firm that assists its clients with the design and administration of employee benefit programs, particularly pension plans. Its clients consist of a diverse group of firms in terms of size, industry, location, and employee benefit offerings.

We have access to administrative data on the employees of a large number of Towers Watson's clients. This dataset is a panel spanning the years 2005-2009 and containing the employee-level actuarial information necessary to evaluate each client's pension liabilities. The dataset includes each individual's employer name, hire date, birth date, gender, salary, and employment status on January 1 of the relevant year.

We select an initial sample of employees who are active with complete demographic and pay information in 2005; this restriction effectively excludes individuals hired after January 1, 2005. Following this initial selection, we use the 2006-2009 data on these employees in our analysis. Our dependent variable is an indicator for not being employed by the firm in the current period, conditional on being employed in the previous period. We study the relationship between retiree health provisions and this turnover indicator.

We merge these individual-level records with a firm-level survey of benefit plan provisions. The firm-level survey was compiled by actuaries at Towers Watson who are familiar with the specific firms' provisions. The firm-level survey collects data on the provisions applying to three employee cohorts: (1) the typical full-career employee retiring in 2010, (2) the typical full-career employee retiring in 2020, and (3) new hires. We match employees to provisions by assigning each employee to one of these three cohorts based on age and years of service. For retiree health provisions, individuals with less than 5 years of service (as of 2005) are classified as new hires. Individuals with 5-9 years of service are classified as 2010 retirees if they are 60 years or older as of 2005, and 2020 retirees if they are under 60 as of 2005. Individuals with 10 or more years of service are classified as 2010 retirees. For defined benefit (DB) pension plan provisions, individuals with under 5 years of service (as of 2005) are considered new hires, those with 5-9 years of service (as of 2005) are considered 2020 retirees, and those with 10 or more

years of service (as of 2005) are considered 2010 retirees. For defined contribution (DC) pension provisions, individuals with under 5 years of service (as of 2005) are classified as new hires. Individuals with 5-9 years of service (as of 2005) are classified as 2020 retirees if they are under 65 in 2005 and 2010 retirees if they are 65 and older in 2005. Finally, individuals with 10 or more years of service (as of 2005) are classified as 2010 retirees.

For each of the three cohorts, we have information on the existence and generosity of retiree health coverage. Firms may provide either pre-65 coverage or both pre- and post-65 ("Medigap") coverage. In this paper, we focus on pre-65 coverage. If retiree health coverage is provided, the actuaries completing the survey are asked to indicate whether retirees have "access only" or subsidized coverage. Subsidized coverage means that the employer contributes towards the employees' health insurance premiums. There are two types of coverage that could potentially be described as access only. First, the firm may allow retirees to buy insurance at the same group rates that apply to current employees. Second, a firm may offer separate group coverage for retirees. In the former case, there is an implicit subsidy from current employees to retirees, as current employees would generally pay lower premiums than retirees. Thus, adding retirees to the pool would raise premiums for current employees. In the latter case, retirees would presumably pay a higher rate than employees. The provisions survey does not distinguish between these two types of "access only" coverage. The actuaries completing the survey may have classified either type of coverage as "access only." Alternatively, some may have classified the first type as a subsidy, or the second type as no coverage. Thus, we interpret the estimated effect of "access only" coverage with caution. If subsidized coverage is provided, then

respondents are asked to provide a range for the subsidy rate.[1] For each individual, we construct

a set of indicator variables for the existence of access only and subsidized coverage.

We also have information on the DB pension provisions applying to each of the three

cohorts. For each cohort, we know the plan formula (traditional or hybrid), as well as the plan

status (open, frozen, or closed). A traditional plan promises an annuity benefit based on a

formula related to an employee's earnings history. A hybrid plan operates more like a defined

contribution plan. Plan contributions are credited to a "notional" account that earns interest or

credits at a stipulated rate. A plan is open if new hires are enrolled in the plan and existing

participants continue to accrue benefits. A plan is closed if new hires are not enrolled in the

plan, but existing participants continue to accrue benefits. A plan is frozen if new hires are not

enrolled in the plan and existing participants no longer accrue benefits. If a plan is closed or

frozen we know, in most cases, the year in which the change occurred. Respondents are also

asked to rate the generosity of the firm's DB plan on a scale of 1 to 5, with 5 being the most

generous. Respondents were provided guidelines for categorizing the generosity levels based on

the percentage of a member's salary that is notionally put aside, commonly called an "accrual

rate" for traditional DB plans or a "pay credit" for hybrid pension plans. The guidelines

suggested that traditional DB plans with accrual rates of 1 percent or lower are low generosity,

plans with accrual rates of around 1.3 percent are average, and plans with accrual rates of 2

percent or higher are high generosity. Likewise, hybrid plans with 3 percent pay credits are low

generosity, plans with 7 percent pay credits are average generosity, and plans with 10 percent

pay credits are high generosity. We consolidate generosity into three categories (above average,

average, and below average).

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[1] If a zero subsidy rate is indicated, we recode coverage as "access only."

Individuals are matched to DB formula (hybrid or traditional) and generosity measures based on their classification into the three cohorts (new hires, retiring in 2020, or retiring in 2010). However, DB plan status is assigned based on freeze and close dates as follows. An individual has no DB plan if he or she was hired after a DB plan was frozen or closed to new hires. An individual hired before the close date is covered by a DB plan. Those covered by a DB plan may have a plan status of either frozen or open. A plan's status is frozen if the year of observation is later than the freeze year, and open otherwise. For each individual, we construct a set of indicator variables for every possible combination of generosity (above average, average, below average), formula (hybrid, traditional), and status (open, frozen). One shortcoming of the DB data is that some firms offer multiple DB plans covering different groups of workers. In such cases, the plan provision survey contains information on the firm's main DB plan. The firm's main plan may not be the actual plan applying to a particular employee. However, the features of the main plan indicate the general direction of the firm's DB policy. For example, a firm that freezes its main DB plan or makes its main DB plan less generous is likely to be moving in the same direction for its other plans.

Eligibility for DB and retiree health benefits is typically based on age and years of service. We have some information on these eligibility criteria, but this information is incomplete or missing for a number of firms, particularly for DB pensions.[2] Thus, we do not directly make use of eligibility criteria. We only consider whether DB and retiree health benefits are offered for an employee's cohort. However, service requirements for retiree medical coverage tend to fall in the 10-15 year range, and we perform our analysis separately on employees with 15 or more years of service.

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[2] We do not have retiree health eligibility criteria for three employers, representing more than 9,500 observations.

The generosity of the DC plan is also included for each of the three cohorts. We include measures of both matching and non-matching contributions. We summarize DC matching contributions by calculating the total match amount offered, as a percentage of pay, if the employee contributes to the maximum pay threshold. This is commonly referred to as the effective or total match rate. Some firms also offer non-matching contributions. In other words, they contribute funds without requiring an employee contribution. These contributions are often discretionary based on company performance. Since these contributions can vary from one year to the next, we include the average over 2008 to 2010 as a proxy for the typical contribution, expressed as an average percentage of pay.

Additional variables used in the analysis include age and gender, years of service, firm-level turnover among 55-year-olds (as a proxy for retirement incentives not captured by the pension provisions), and salary in 2005. We use salary in 2005 rather than current year salary because current year salary tends to be very low for those who retired during the year. We do not have data on employee marital status, or on whether an individual's spouse has access to employee or retiree health insurance. Thus, we cannot control for the availability of retiree health insurance through a spouse, or for the incentive to maintain coverage for a spouse who is not yet eligible for Medicare. We also do not have information on employee health status.

Our analysis if based on person-year observations for employees aged 55 to 69. After merging the employee dataset with the firm provisions dataset, we have a total of 64 firms and 302,871 person-year observations. Summary statistics for all variables used in our analysis are presented in Table 1. Appendix A describes in greater detail the steps taken to clean up the data and impute missing values.

4. Methods

To motivate our analysis, Figure 1a shows turnover rates by age for three categories of employees: those with no retiree health coverage, those with "access only" coverage, and those with subsidized coverage. It is clear from the figure that individuals with subsidized coverage have substantially higher turnover rates at ages 62 to 65 than those without coverage, but not at other ages. Figure 1b shows turnover rates for the access only and subsidy groups as percentage deviations from the turnover rate of the no coverage group. For example, the turnover rate at age 63 for the subsidy group is more than 40 percent larger than the turnover rate for the no coverage group.

Starting with a group of 54-year-old workers and applying the turnover rates in Figure 1a, Figure 2a shows the fraction of these workers remaining at ages 55 to 69. Figure 2b shows the fraction of 54-year-olds remaining at each age for the subsidy and access only groups, expressed as the percentage deviation from the no coverage group. For example, by age 64, the fraction of 55-year-olds remaining in the subsidy group is close to 30 percent lower than in the no coverage group.

While these figures are suggestive, they do not control for pension provisions and individual characteristics that may also influence retirement. To control for the influence of these other attributes, we estimate probit models, separately for each age (from 55 to 69) in which the dependent variable is the indicator for turnover described in the previous section. Thus, we model the probability of no longer being employed in the current year, conditional on being employed in the previous year. Our key independent variables are a set of dummies describing the type of retiree health coverage available to the individual. Other explanatory variables include individual characteristics such as gender, years of service, years of service squared, and

the log of 2005 salary. We also include year dummies and controls for the pension provisions

applying to the individual. Pension provision controls include the set of DB indicator variables

for every possible combination of generosity (above average, average, below average), formula

(hybrid, traditional), and status (open, frozen), as well as DC total match rate and DC

nonmatching percentage. To attempt to control for firm-level retirement incentives that may not

be fully captured by the pension variables, we include the firm's turnover rate at age 55. We try

two alternative specifications for the retiree health dummy variables. First, we divide retiree

health coverage into three categories: no coverage, access only, and subsidy (of any level). We

include indicator variables for access only and subsidy in our regressions. Second, we further

divide subsidized coverage into three groups by replacing the subsidy indicator variable with

indicator variables for subsidy under 50 percent, subsidy of 50 percent or more, and unknown

subsidy. Our age-specific estimation allows all parameters to vary with age. We estimate all our

models for the full sample of workers, as well as the subset of workers with 15 or more years of

service, as most individuals in this group would be eligible for coverage. In all regressions,

standard errors are clustered by firm.

Our approach may be inappropriate for estimating the impact of retiree health coverage on

retirement if individuals select into retiree health coverage based on unobservable characteristics.

Alternatively, despite our controls for pension incentives, there may be unobservable firm

characteristics that influence retirement decisions and are also correlated with retiree health

coverage. For example, French and Jones (2011) present evidence to suggest that employees of

firms that offer retiree health coverage tend to have a stronger preference for leisure than

employees of other firms; indeed, they find that differences in labor force participation between

these groups persist beyond age 65. Blau and Gilleskie (2001) find that accounting for selection

into retiree health coverage raises the estimated impact of such coverage; on the other hand, French and Jones (2011) find that it modestly lowers the estimated impact of coverage.

While it is not possible to rule out this type of bias entirely within the constraints of our data, there are several reasons why we think selection is unlikely to be a significant concern. First, as Madrian (1994) points out, employees are unlikely to choose a job based on retiree health coverage. Many employees – particularly when they are further from retirement – do not know whether their employer offers retiree health insurance. Workers with 15 or more years of service are especially unlikely to have considered retiree health insurance as a factor in choosing their job. If we find a relationship that is at least as strong for this group, we can conclude that selection is unlikely to be a problem. Second, we control for firm-level turnover at age 55, which should proxy for unobservable factors that tend to raise early retirement rates across firms. Finally, theory predicts that subsidized retiree health coverage should influence retirement behavior for workers under the age of 65. Even though many firms that offer pre-65 coverage also offer Medigap coverage to retirees who are 65 and older, such coverage is far less valuable; therefore, we would expect to find little relationship between subsidized pre-65 coverage and retirement rates among this group. Thus, to the extent that any unobservable factors affect the retirement behavior of those just below the age of 65 and those just above in a similar way, we can use those aged 65 and older as a control group.

5. Results

We estimate probit models to explain the probability of turnover separately for each age group from 55-69. In the main text of the paper, we report only the coefficients on the retiree health coverage variables. Full regression results are in Appendix B.

Table 2 reports the results from estimating our model with three categories of retiree health coverage. The omitted category is no retiree health coverage. The coefficients reported in the tables are marginal effects[3], and standard errors are in parentheses. Subsidized retiree health coverage has its strongest effects at ages 62 and 63, resulting in a 3.7 percentage point increase in the probability of turnover age 62 and a 5.1 percentage point increase in the probability of turnover at age 63. These effects are substantial. Relative to no coverage, subsidized coverage is associated with a 21.2 percent increase in the probability of turnover age 62, and a 32.2 percent increase in the probability of turnover at age 63. Subsidized coverage has a more modest and less consistent impact for individuals younger than 62. Access only also has a statistically insignificant effect for most age groups. There are two potential explanations for this. First, as discussed earlier, there is some ambiguity about the definition of access only in the firm-level plan provisions survey. Second, COBRA effectively provides access only coverage. It allows employees to purchase health coverage at group rates, but without an employer contribution, for 18 months after leaving their job. Thus, access only coverage would not have any additional value to individuals above the age of 63½, and only a small value to individuals aged 62. Overall, these findings are similar in magnitude to those reported in prior studies.

As discussed above, individuals with 15 or more years of service are more likely to be eligible for retiree health coverage. Thus, we re-estimate our model for all observations with 15 or more years of service. These results are reported in Table 3. As expected, retiree health coverage appears to have an even stronger impact for the long service group. We find a statistically significant relationship between subsidized coverage and turnover in all but two of the pre-65 age groups. As with the full sample, retiree health coverage has its largest effect at

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[3] Marginal effects are computed at the age group means of the independent variables. In computing the marginal effect of a dummy variable that is part of set describing the same attribute (e.g., the set of dummies describing retiree health coverage or DB coverage), all other dummies in the set are assigned a value of zero (see Bartus 2005).

age 63, raising the probability of turnover by 7.4 percentage points (43.2 percent). The effect declines at age 64 as individuals approach Medicare eligibility.

Table 4 reports the results from estimating the model with five categories of retiree health coverage. Again, the regression is estimated separately for each age group, and the omitted category is no coverage. Relative to no coverage, a subsidy of 50 percent or less results in an increase in the probability of turnover of 5.1 percentage points at age 63; it has no statistically significant impact among the other pre-65 age groups. A more generous subsidy – of above 50 percent – raises turnover at almost all ages below 65. Consistent with the results in Table 2, the largest effect (6.9 percentage points, or 43.7 percent) occurs at age 63. Table 5 reports results from estimating the same model for observations with at least 15 years of service. Again, we find somewhat larger effects for this group. A subsidy of 50 percent or more raises turnover in all pre-65 age groups, reaching its maximum impact (8.1 percentage points, or 47.3 percent) at age 63. Even the lower subsidy rate raises turnover at most ages below 65 for this group.

To illustrate the impact of controlling for individual characteristics and pension incentives, Figure 3a plots the turnover rates by age found in the raw data for individuals with subsidized retiree health coverage and individuals with no coverage. It also plots the predicted turnover rates for these groups, based on the model in Table 2, after setting the other regressors to their age-group means. Thus, controlling for other factors reduces only slightly the estimated effect of retiree health insurance on turnover. Figure 3b shows the predicted turnover rate of the subsidy group as a percentage deviation from the predicted turnover rate of the no coverage group. Figure 4a shows the fraction of 54-year-old employees remaining at each age based on the turnover rates in Figure 3a. Figure 4b shows the fraction of 54-year-olds remaining for the subsidy group as a percentage deviation from the corresponding value for the no coverage group.

After controlling for individual characteristics and pension provisions, at firms with subsidized coverage, only 15.6 percent of those who were employed at age 54 are still with their firm at age 65, compared to 20.0 percent at firms with no coverage. This represents a difference of 21.9 percent.

To illustrate the effects of the different subsidy levels, Figure 5a shows predicted turnover rates (using the model of Table 4 and setting all other covariates to their age-group means) for no coverage, a subsidy under 50 percent, and a subsidy of 50 percent or more. Figure 5b shows the predicted turnover rates for the two subsidy groups as a percentage deviation from the predicted no coverage turnover rates. For example, at age 63, a subsidy of 50 percent or more raises the predicted turnover rate by more than 40 percent. Figure 6a shows the implied percentage of 54-year-olds remaining for each of the three coverage groups based on the turnover rates in Figure 5a, and Figure 6b shows the proportion remaining as a percentage deviation from the no coverage group. For example, by age 65, only 14.3 percent of employed 54-year-olds with a subsidy of 50 percent or more remain, compared to 20.2 percent of employed 54-year-olds with no coverage. This represents a difference of close to 30 percent.

If we put these results in the context of the number of person-years worked over ages 55-64, we can further highlight the impact that retiree health subsidies have on retirement patterns. For example, we can apply the turnover rates from Figure 5 and estimate the total number of person-years worked for each coverage level over ages 55-64. Summing over this age range, we find that a subsidy of 50 percent or more reduces the number of person-years worked in this age range by a total of 9.6 percent. For a workforce with 2,500 employees aged 54, this implies a loss of over 1,400 person-years. The impact is even larger for workers with 15 or more years of service. A subsidy of 50 percent or more reduces the total number of person-years worked

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between ages 55 and 64 by 13.4 percent relative to no coverage. Again, for a workforce with 2,500 employees aged 54, this equates to a reduction in over 2,000 person-years.

An alternative way to view the results is to compute the impact of retiree health coverage on the expected age of departure (or retirement, assuming most departures in our age range represent retirements). If we assume that all 69-year-olds retire at age 70, we can use our turnover rates from Figure 5 to compute the full probability distribution of retirement ages for a 54-year-old worker. We perform this calculation for three types of coverage: no coverage, a subsidy of under 50 percent, and a subsidy of 50 percent or more. The results are shown in Table 6. A subsidy under 50 percent lowers the expected retirement age by about 3 months, while a subsidy of 50 percent or more lowers it by 9 months. Not surprisingly given our regression results, if we perform the same calculation for workers with 15 or more years of experience we find even bigger effects. A subsidy under 50 percent lowers the expected retirement age by more than 10 months, and a subsidy of 50 percent or more lowers it by more than a year.

6. Conclusions

For most people under the age of 65, group health insurance coverage is only available through employment. In this paper, we have presented evidence to show that the link between health insurance and employment may cause individuals to delay retirement until they are eligible for Medicare. In particular, we have shown that after controlling for individual characteristics and pension incentives, employees under the age of 65 have substantially higher turnover rates at firms that offer subsidized retiree health coverage compared to their counterparts at firms that do not. Moreover, higher subsidy rates are associated with greater

turnover than lower ones. Subsidized coverage has its largest effect at ages 62 and 63, raising the turnover rates at these ages by 3.7 percentage points (21.2 percent) and 5.1 percentage points (32.2 percent) respectively. A more generous subsidy of 50 percent or more raises turnover by 5.9 percentage points (33.7 percent) at age 62 and 6.9 percentage points (43.7 percent) at age 63. These effects decrease at age 64, as individuals approach Medicare eligibility. Our model predicts that, conditional on working at age 54, only 15.6 of individuals with subsidized coverage remain at their firm at age 65, compared to 20.0 percent of individuals with no retiree health coverage.

The Patient Protection and Affordable Care Act (PPACA), which became law in 2010, will soon weaken the link between health insurance and employment by making it possible for all individuals to buy group coverage regardless of employment status. It could also provide a considerable number of individuals with subsidies towards their health insurance premiums, depending on their household income and employer-provided coverage. For those who qualify for a subsidy, the new law provides a tax credit such that the premium a person pays does not exceed 9.5 percent of household income. For those with income less than 400 percent of the Federal Poverty Level, the subsidies are even greater. Older Americans who do not qualify for explicit subsidies can still expect to receive substantial implicit subsidies. The new law prohibits insurers from charging older individuals – even those with pre-existing conditions – premiums that are more than three times the rates paid by younger individuals. As such, many older workers across all income groups will have new opportunities for affordable, non-employment based health care coverage that is comparable to today's employer-provided subsidized pre-65 retiree medical coverage today.

Based on our results, we would expect these new alternatives to increase retirement rates among older workers who are below Medicare eligibility age. The primary effect will be on those with current employer-provided coverage who would not be able to obtain retiree coverage if they left their jobs; health care reform effectively provides these individuals with some level of subsidized retiree coverage.

We are hesitant to use our results to make a projection for the population as a whole given the complex structure of the subsidies and the fact that our sample consists of individuals whose employers have offered defined benefit (DB) pension plans in the past. However, this would be a valuable undertaking for future research. Despite these limitations, our results still suggest that the effects of affordable retiree medical coverage, of the sort that will be available to all Americans in 2014 under PPACA, could have a substantial impact on future retirement patterns.

The social welfare implications of this change in retirement incentives are not straightforward. Viewed by itself, the link between health insurance and employment (which results from the favorable tax treatment of employer-provided coverage) distorts retirement decisions, and breaking that link would increase efficiency. However, viewed in the context of other policies that affect retirement incentives, this may not be the case. For example, Social Security imposes high implicit tax rates on older workers and inefficiently encourages early retirement (see, e.g., Goda, Shoven, and Slavov 2009). For individuals below Medicare eligibility age, there is currently a countervailing effect: employment-based health insurance discourages early retirement and mitigates the distortion caused by Social Security. Breaking the link between employment and health insurance removes this countervailing effect, thereby amplifying the distortion caused by Social Security and potentially reducing efficiency. A valuable area for future research would be to examine the impact of PPACA in the context of

other policies that affect the retirement incentives of older workers, including not only Social

Security, but also other entitlement programs and policies towards private DB and DC pensions.

Figure 1a: Turnover Rate by Retiree Health Coverage
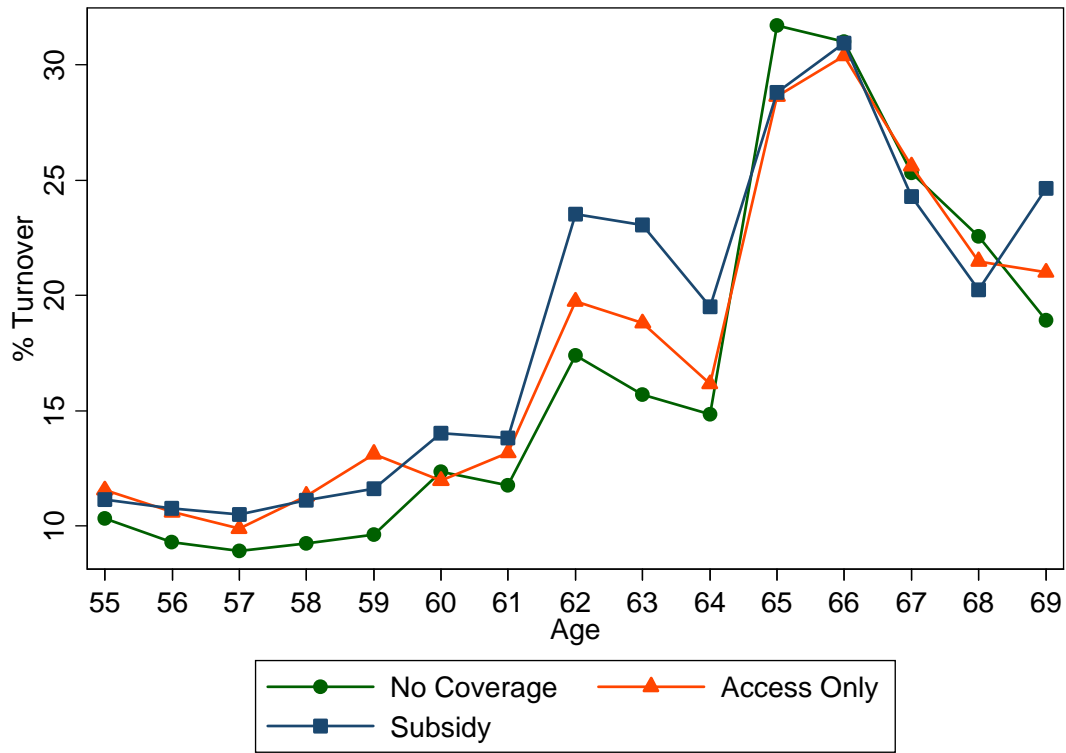
Figure 1b: Percent Deviation from No Coverage Turnover Rate
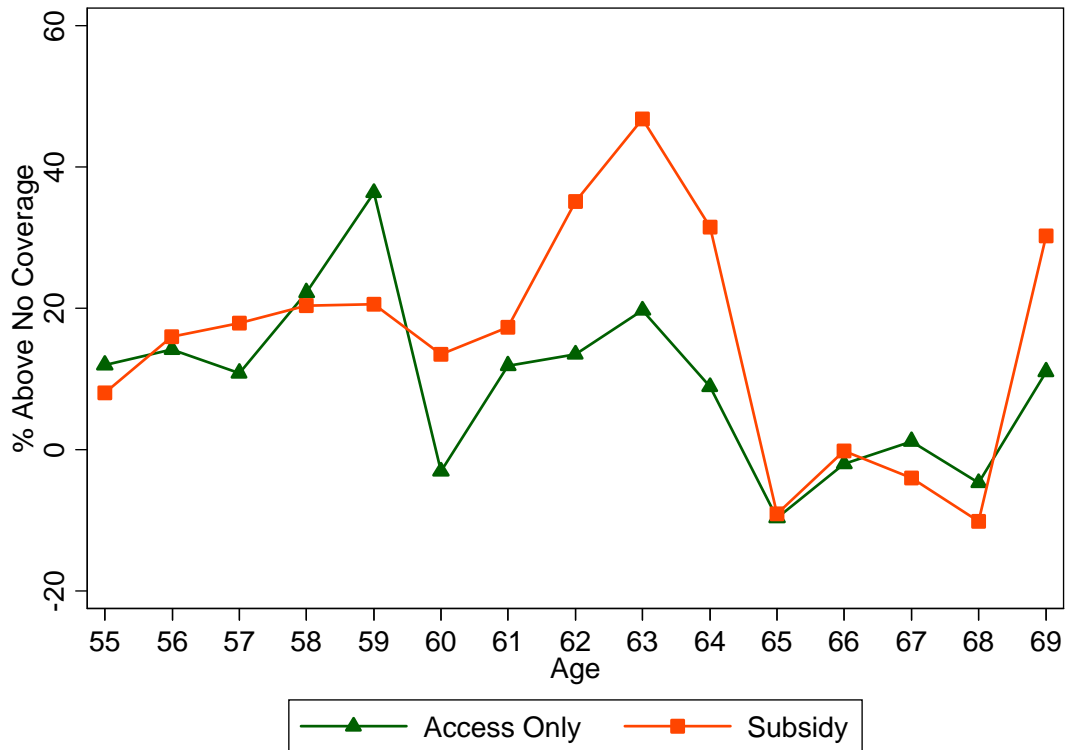
Figure 2a: Percent of Employed 54-Year Olds Remaining, by Retiree Health Coverage
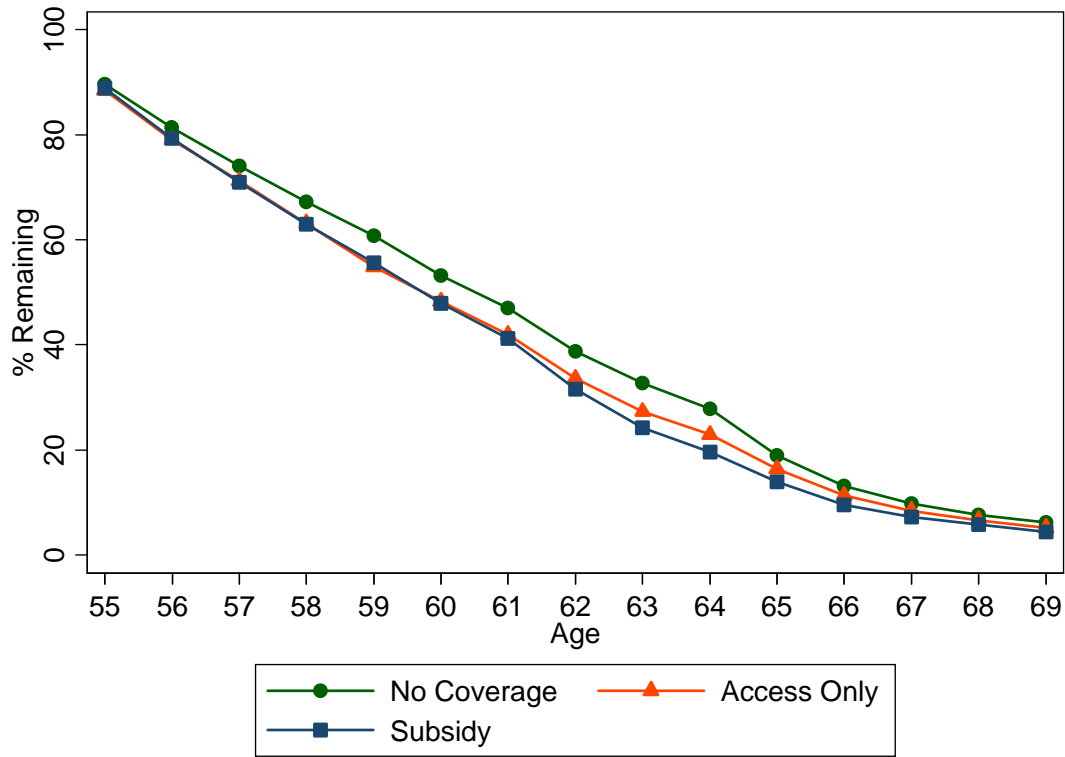
Figure 2b: Percent Deviation from No Coverage Fraction Remaining
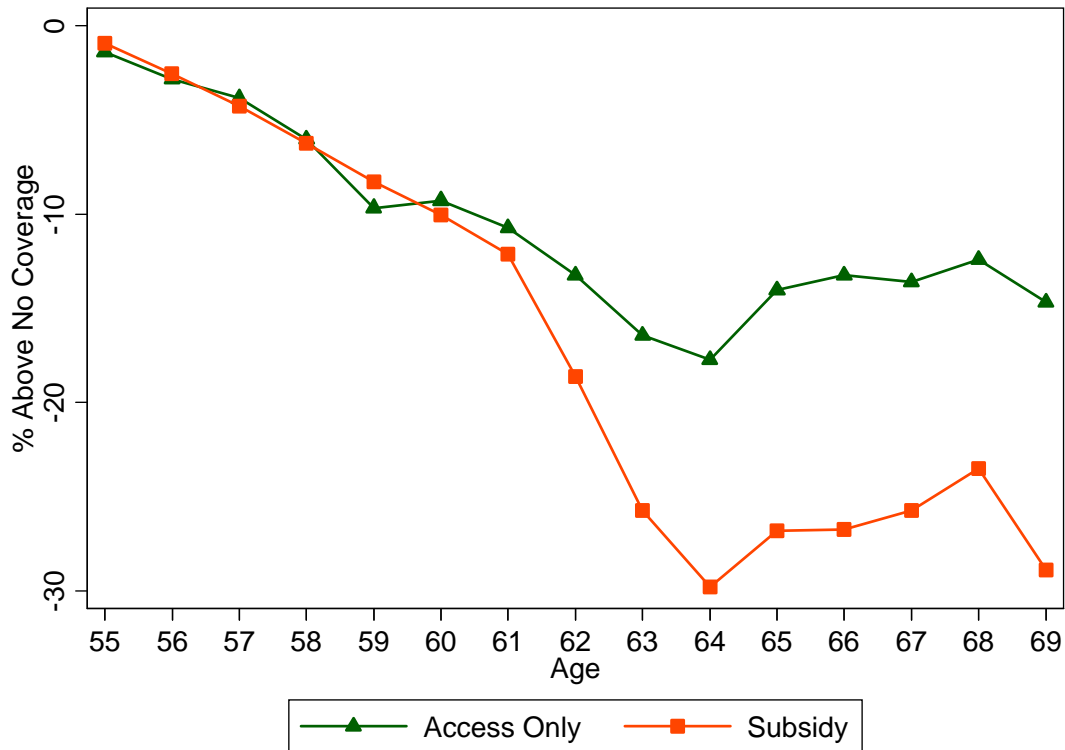
Figure 3a: Raw and Predicted Turnover Rates by Retiree Health Coverage

Legend:
- No Coverage - Raw
- Subsidy - Raw
- No Coverage - Predicted
- Subsidy - Predicted
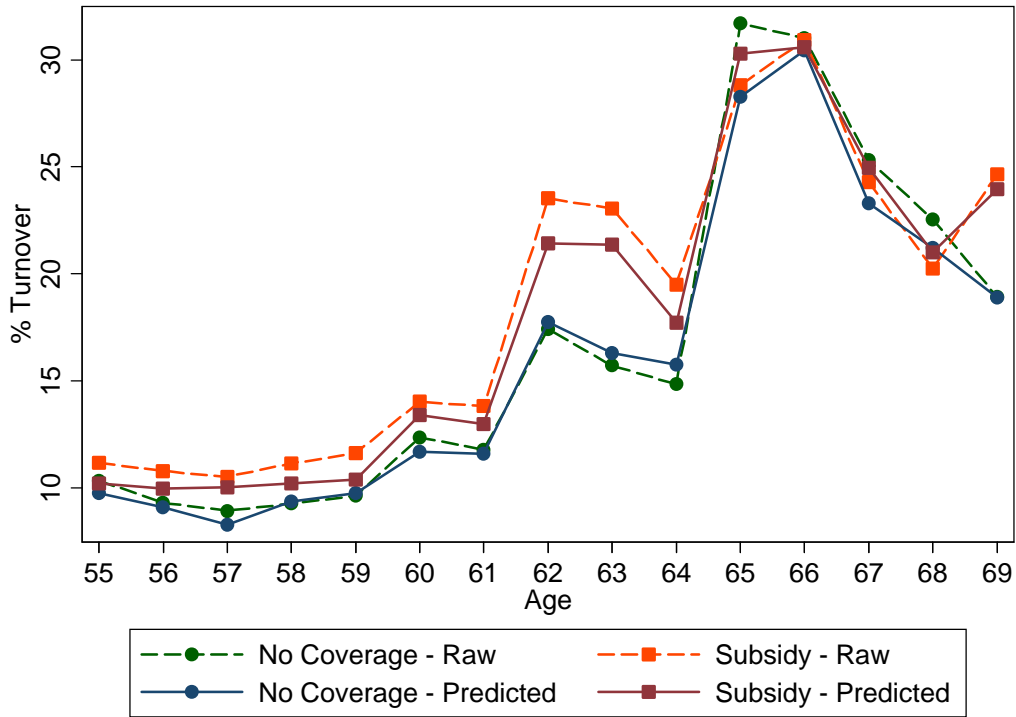
Figure 3b: Percent Deviation from No Coverage Turnover Rate
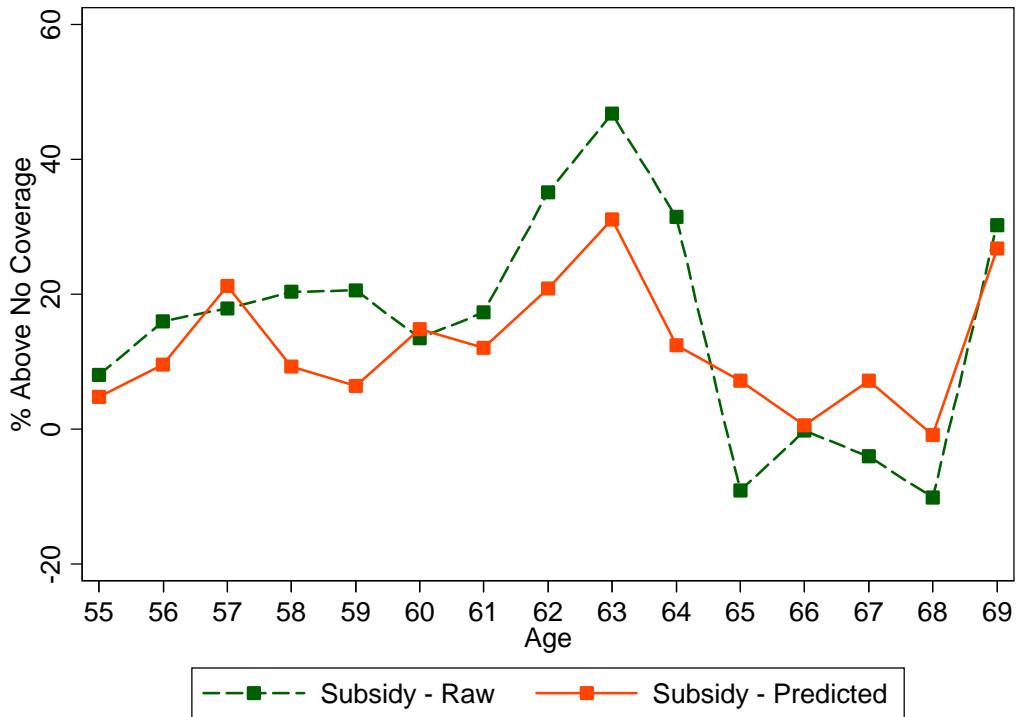
Legend:
- Subsidy - Raw
- Subsidy - Predicted

Notes: Turnover rate predictions for each age group use regression results in Table 2 and are computed at the age-group mean values of all independent variables.

Figure 4a: Raw and Predicted Percent of Employed 54-Year Olds Remaining, by Retiree Health Coverage
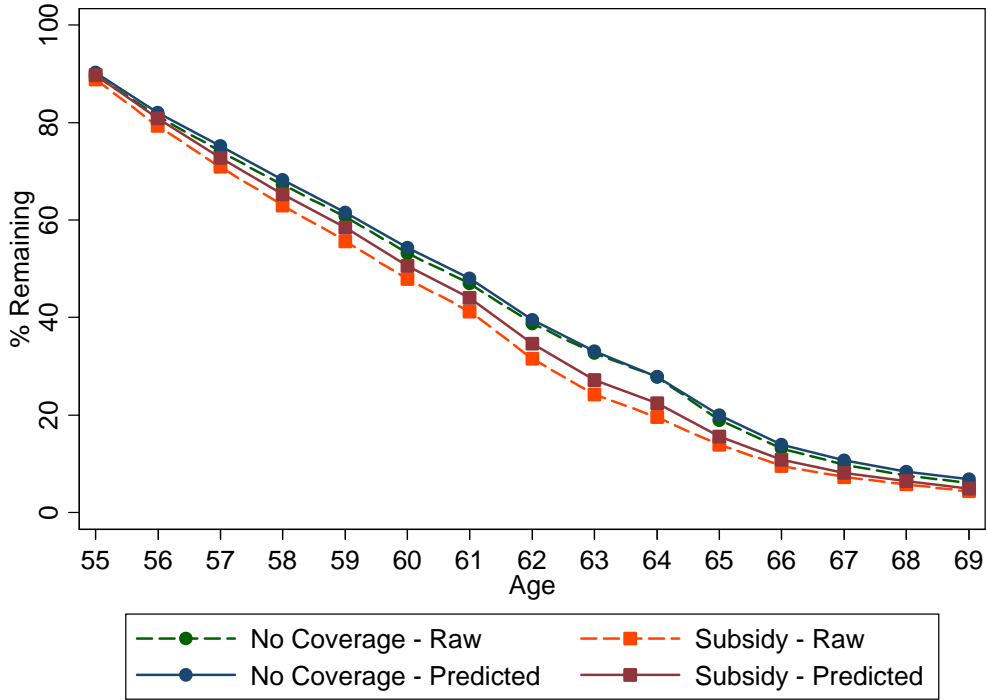
Figure 4b: Percent Deviation from No Coverage Fraction Remaining
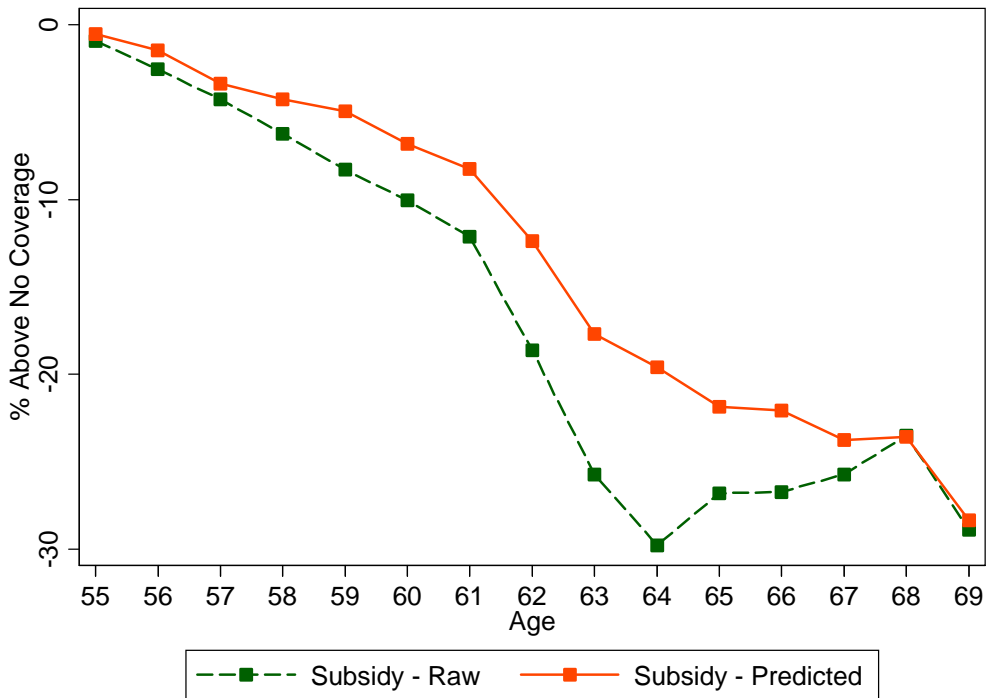
Notes: Turnover rate predictions for each age group use regression results in Table 2 and are computed at the age-group mean values of all independent variables.

Figure 5a: Predicted Turnover Rates by Retiree Health Coverage
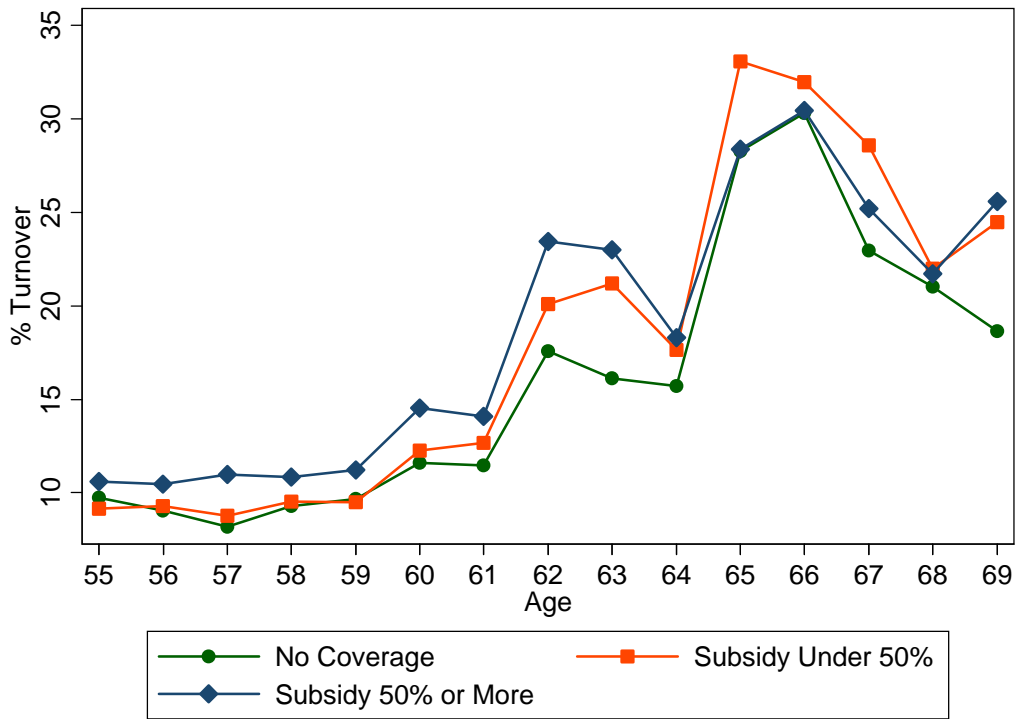
Figure 5b: Percent Deviation from No Coverage Turnover Rate
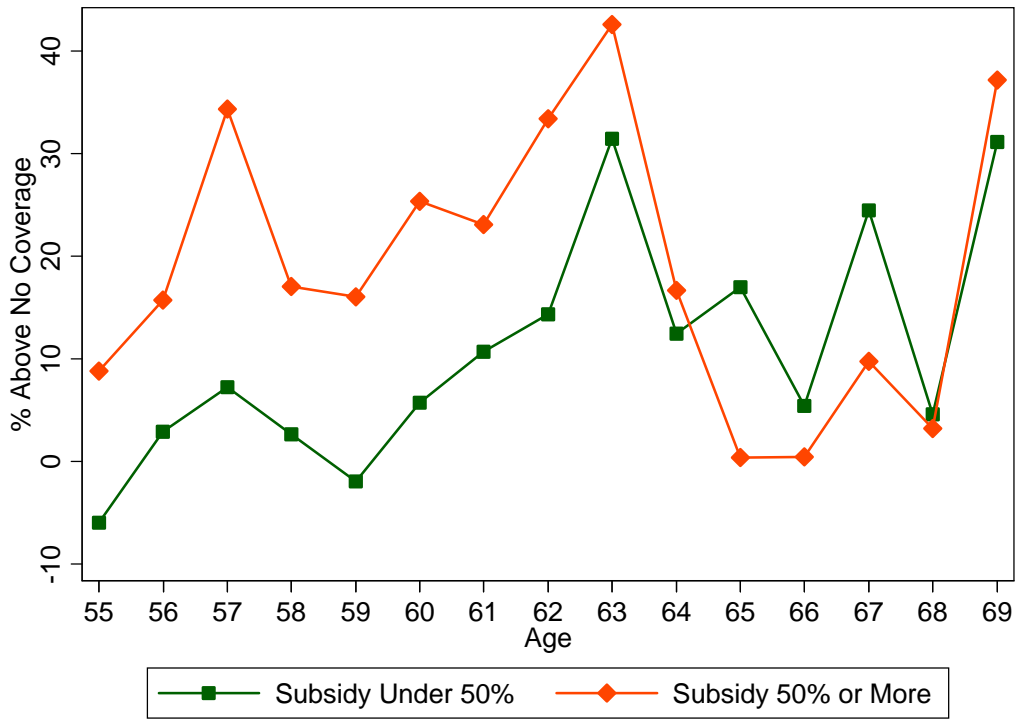
Notes: Turnover rate predictions for each age group use regression results in Table 4 and are computed at the age-group mean values of all independent variables.

Figure 6a: Predicted Percent of Employed 55-Year Olds Remaining, by Retiree Health Coverage
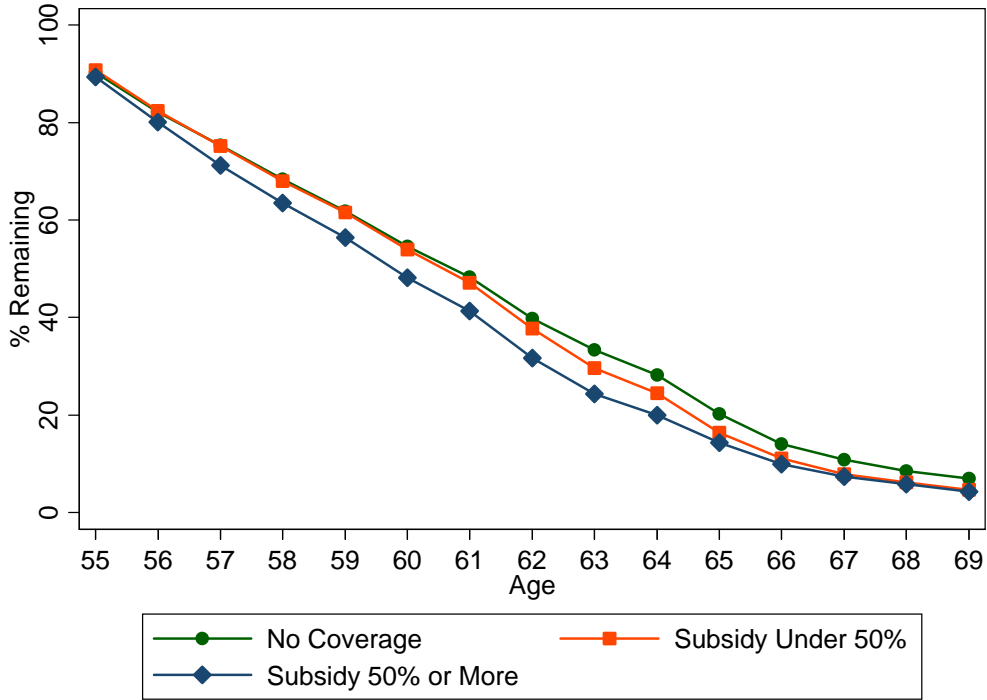
Figure 6b: Percent Deviation from No Coverage Fraction Remaining
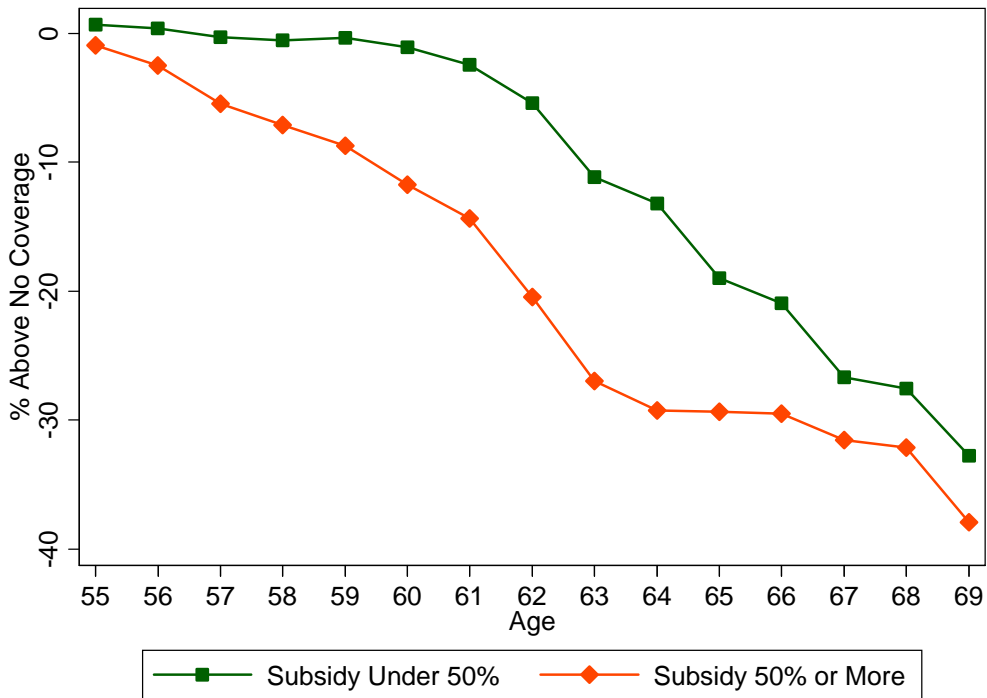
Notes: Turnover rate predictions for each age group use regression results in Table 4 and are computed at the age-group mean values of all independent variables.

Table 1: Summary Statistics

	Variable	Mean	Std. Dev.	Min	Max
	Turnover Indicator	0.1374	0.3443	0	1
	Male	0.5255	0.4993	0	1
	Years of Service	19.8133	10.7988	1	52
	Age	59.2248	3.3981	55	69
	2005 Salary	56029.80	69492.11	10000.1	7959879
	Firm Turnover at Age 55	0.1066	0.0469	0.0274	0.4255
Retiree	No Coverage	0.4142	0.4926	0	1
Health	Access Only	0.1130	0.3165	0	1
	Subsidy Under 50%	0.1400	0.3470	0	1
	Subsidy 50% or More	0.2588	0.4380	0	1
	Subsidy Unknown	0.0740	0.2618	0	1
Defined	Above Average Traditional - Open	0.1325	0.3390	0	1
Benefit	Above Average Traditional - Frozen	0.0043	0.0652	0	1
	Average Traditional - Open	0.2070	0.4052	0	1
	Average Traditional - Frozen	0.1420	0.3491	0	1
	Below Average Traditonal - Open	0.0298	0.1699	0	1
	Below Average Traditional - Frozen	0.0153	0.1226	0	1
	Above Average Hybrid - Open	0.1789	0.3833	0	1
	Average Hybrid - Open	0.0755	0.2642	0	1
	Average Hybrid - Frozen	0.0214	0.1448	0	1
	Below Average Hybrid - Open	0.0771	0.2667	0	1
	Below Average Hybrid - Frozen	0.0231	0.1504	0	1
	Unknown Formula	0.0144	0.1192	0	1
	None	0.0787	0.2692	0	1
Defined	Nonmatching Percent of Pay	0.6005	1.3106	0	9
Contribution	Total Match Rate	2.6369	2.1108	0	6

Notes: Summary statistics computed for 302,871 person-year observations with nonmissing values for all variables.

Table 2: Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Access Only	0.0124	0.00831	0.0115	0.0110	0.0281***
	(0.00949)	(0.00950)	(0.0102)	(0.0105)	(0.0104)
Subsidy	0.00461	0.00868	0.0175***	0.00865*	0.00626
	(0.00725)	(0.00738)	(0.00673)	(0.00516)	(0.00641)
Mean Turnover (No Coverage)	0.1033	0.0930	0.0892	0.0926	0.0963
Observations	41,158	38,014	35,036	33,791	31,014
Number of Firms	64	64	64	64	64

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Access Only	0.00255	0.00955	0.0279	0.0191	-0.00977
	(0.00877)	(0.0174)	(0.0204)	(0.0209)	(0.0164)
Subsidy	0.0173**	0.0140	0.0370**	0.0506***	0.0196
	(0.00699)	(0.0126)	(0.0179)	(0.0156)	(0.0122)
Mean Turnover (No Coverage)	0.1236	0.1178	0.1741	0.1571	0.1484
Observations	27,193	22,956	19,303	15,170	12,297
Number of Firms	64	64	64	64	64

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Access Only	0.0464	0.00714	0.0424	0.00778	0.00543
	(0.0306)	(0.0328)	(0.0407)	(0.0395)	(0.0489)
Subsidy	0.0202	0.00171	0.0167	-0.00197	0.0507***
	(0.0186)	(0.0194)	(0.0269)	(0.0201)	(0.0183)
Mean Turnover (No Coverage)	0.3170	0.3102	0.2531	0.2255	0.1892
Observations	9,983	6,637	4,395	3,328	2,596
Number of Firms	64	64	64	64	61

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Coefficients are marginal effects from probit model. All regressions include gender, log of 2005 salary, years of service, years of service squared, firm turnover at age 55, DB and DC pension provisions, and year dummies. Regressions estimated separately for each age group. Standard errors clustered by firm.

Table 3: Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Access Only	-0.000637	0.00404	3.36e-06	0.0178	0.0210*
	(0.00978)	(0.0106)	(0.0102)	(0.0144)	(0.0118)
Subsidy	0.01000	0.0153**	0.0192**	0.0247***	0.0160**
	(0.00708)	(0.00732)	(0.00832)	(0.00571)	(0.00685)
Mean Turnover (No Coverage)	0.1030	0.0862	0.0828	0.0786	0.0930
Observations	26,469	24,442	22,461	21,489	19,712
Number of Firms	64	64	64	64	64

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Access Only	-0.000537	0.0148	0.0358	0.0102	-0.00532
	(0.0129)	(0.0231)	(0.0323)	(0.0233)	(0.0256)
Subsidy	0.0333***	0.0273	0.0630**	0.0740***	0.0348**
	(0.00924)	(0.0179)	(0.0252)	(0.0160)	(0.0176)
Mean Turnover (No Coverage)	0.1240	0.1213	0.1934	0.1711	0.1660
Observations	17,228	14,369	11,941	9,007	7,058
Number of Firms	64	64	64	64	64

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Access Only	0.0418	-0.00957	0.114***	-0.00367	-0.0512
	(0.0383)	(0.0361)	(0.0429)	(0.0591)	(0.0611)
Subsidy	0.0226	-0.000760	0.0602*	0.0124	0.0386
	(0.0272)	(0.0270)	(0.0314)	(0.0310)	(0.0261)
Mean Turnover (No Coverage)	0.3326	0.3475	0.2748	0.2327	0.2018
Observations	5,658	3,643	2,311	1,668	1,307
Number of Firms	64	64	62	62	59

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Coefficients are marginal effects from probit model. All regressions include gender, log of 2005 salary, years of service, years of service squared, firm turnover at age 55, DB and DC pension provisions, and year dummies. Regressions estimated separately for each age group. Standard errors clustered by firm.

Table 4: Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Access Only	0.0126	0.00914	0.0127	0.0120	0.0295***
	(0.00945)	(0.00929)	(0.00970)	(0.0105)	(0.0105)
Subsidy Under 50%	-0.00584	0.00261	0.00591	0.00245	-0.00190
	(0.00808)	(0.00770)	(0.00729)	(0.00674)	(0.00829)
Subsidy 50% or More	0.00859	0.0142*	0.0281***	0.0158**	0.0155**
	(0.00869)	(0.00793)	(0.00673)	(0.00775)	(0.00727)
Subsidy Unknown	0.0117	0.00506	0.0107	0.00243	-0.00376
	(0.0182)	(0.0165)	(0.0154)	(0.00701)	(0.00836)
Mean Turnover (No Coverage)	0.1033	0.0930	0.0892	0.0926	0.0963
Observations	41,158	38,014	35,036	33,791	31,014
Number of Firms	64	64	64	64	64

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Access Only	0.00413	0.0119	0.0312	0.0227	-0.00857
	(0.00841)	(0.0166)	(0.0196)	(0.0208)	(0.0165)
Subsidy Under 50%	0.00662	0.0122	0.0252	0.0507**	0.0195
	(0.00971)	(0.0135)	(0.0185)	(0.0256)	(0.0162)
Subsidy 50% or More	0.0294***	0.0264**	0.0587***	0.0686***	0.0262*
	(0.00918)	(0.0132)	(0.0212)	(0.0201)	(0.0157)
Subsidy Unknown	0.00512	-0.0113	0.00420	0.0168	0.00776
	(0.0117)	(0.0172)	(0.0204)	(0.0206)	(0.0122)
Mean Turnover (No Coverage)	0.1236	0.1178	0.1741	0.1571	0.1484
Observations	27,193	22,956	19,303	15,170	12,297
Number of Firms	64	64	64	64	64

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Access Only	0.0466	0.00994	0.0524	0.0125	0.0120
	(0.0315)	(0.0328)	(0.0402)	(0.0403)	(0.0493)
Subsidy Under 50%	0.0479	0.0164	0.0561	0.00959	0.0581*
	(0.0296)	(0.0280)	(0.0350)	(0.0245)	(0.0323)
Subsidy 50% or More	0.00107	0.00136	0.0224	0.00673	0.0694**
	(0.0249)	(0.0250)	(0.0289)	(0.0296)	(0.0275)
Subsidy Unknown	0.0242	-0.0102	-0.0251	-0.0216	0.0193
	(0.0231)	(0.0271)	(0.0294)	(0.0312)	(0.0247)
Mean Turnover (No Coverage)	0.3170	0.3102	0.2531	0.2255	0.1892
Observations	9,983	6,637	4,395	3,328	2,596
Number of Firms	64	64	64	64	61

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Coefficients are marginal effects from probit model. All regressions include gender, log of 2005 salary, years of service, years of service squared, firm turnover at age 55, DB and DC pension provisions, and year dummies. Regressions estimated separately for each age group. Standard errors clustered by firm.

Table 5: Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Access Only	0.000513	0.00525	0.00135	0.0194	0.0222**
	(0.00976)	(0.0104)	(0.00855)	(0.0137)	(0.0108)
Subsidy Under 50%	0.00823	0.0215*	0.0138	0.0296***	0.0142
	(0.00843)	(0.0120)	(0.00973)	(0.0107)	(0.00972)
Subsidy 50% or More	0.0149*	0.0205***	0.0286***	0.0311***	0.0237***
	(0.00832)	(0.00788)	(0.00737)	(0.00810)	(0.00747)
Subsidy Unknown	-0.00217	-0.00366	-0.00273	0.00498	-0.00345
	(0.0106)	(0.00797)	(0.00898)	(0.0129)	(0.0110)
Mean Turnover (No Coverage)	0.1030	0.0862	0.0828	0.0786	0.0930
Observations	26,469	24,442	22,461	21,489	19,712
Number of Firms	64	64	64	64	64

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Access Only	0.00212	0.0178	0.0381	0.0132	-0.00465
	(0.0115)	(0.0220)	(0.0312)	(0.0236)	(0.0255)
Subsidy Under 50%	0.0310**	0.0388*	0.0531*	0.0901***	0.0281
	(0.0135)	(0.0219)	(0.0301)	(0.0310)	(0.0244)
Subsidy 50% or More	0.0463***	0.0398**	0.0820***	0.0809***	0.0431**
	(0.0112)	(0.0193)	(0.0292)	(0.0214)	(0.0212)
Subsidy Unknown	0.00359	-0.0165	0.0209	0.0434*	0.0242
	(0.00925)	(0.0145)	(0.0314)	(0.0259)	(0.0177)
Mean Turnover (No Coverage)	0.1240	0.1213	0.1934	0.1711	0.1660
Observations	17,228	14,369	11,941	9,007	7,058
Number of Firms	64	64	64	64	64

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Access Only	0.0383	-0.00988	0.119***	-0.00162	-0.0466
	(0.0388)	(0.0364)	(0.0459)	(0.0609)	(0.0619)
Subsidy Under 50%	0.0307	0.00478	0.0484	0.0242	0.0497
	(0.0342)	(0.0379)	(0.0516)	(0.0406)	(0.0342)
Subsidy 50% or More	0.00232	-0.00611	0.0809**	0.0133	0.0468
	(0.0315)	(0.0324)	(0.0350)	(0.0411)	(0.0348)
Subsidy Unknown	0.0542	0.00316	0.0372	0.000774	0.0181
	(0.0392)	(0.0483)	(0.0353)	(0.0425)	(0.0347)
Mean Turnover (No Coverage)	0.3326	0.3475	0.2748	0.2327	0.2018
Observations	5,658	3,643	2,311	1,668	1,307
Number of Firms	64	64	62	62	59

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Coefficients are marginal effects from probit model. All regressions include gender, log of 2005 salary, years of service, years of service squared, firm turnover at age 55, DB and DC pension provisions, and year dummies. Regressions estimated separately for each age group. Standard errors clustered by firm.

Table 6: Expected Retirement Age by Level of Coverage

		No Coverage	Subsidy Under 50%	Subsidy 50% or More
All Workers	Expected Retirement Age	61.43	61.17	60.68
	Difference from No Coverage (months)	-	-3.08	-9.00
15+ Years of Service	Expected Retirement Age	61.58	60.73	60.53
	Difference from No Coverage (months)	-	-10.20	-12.61

Appendix A: Data

In this appendix, we detail the steps taken to clean up the employee-level administrative data, as well as the firm plan provisions data.

Employee Data

To begin, we drop individuals with missing birth dates and hire dates, individuals whose gender is coded inconsistently across years, and individuals with hire dates that imply they were hired before the age of 18. We exclude any person-year observations with less than one year of service or a salary of less than $10,000 in 2005. A low salary is likely to indicate a partial year and may result if, for example, an employee leaves or retires during the year.

A worker's employment status is "active" if he or she is currently working and accruing benefits. We use employment status to create an indicator variable for employee turnover, which serves as the dependent variable in our analysis. For each employee, the turnover indicator for the current year takes on a value of zero if the employee is active as of January 1 of the current year, and was also active on January 1 of the previous year. The turnover indicator takes on a value of 1 if an employee who was active on January 1 of the previous year is inactive (retired, disabled, on leave, etc.) or missing from the dataset on January 1 of the current year. The turnover indicator is missing in all other cases (i.e., for employees who were not active in the previous year).

Our turnover indicator does not distinguish between retirements and other reasons for leaving the firm or dataset. For example, an employee may leave the firm to take a job at another firm. In addition, an employee can be dropped from the dataset for a number of reasons. In some cases, we do not have administrative data for a firm for a given year because of a merger or acquisition, divestiture, bankruptcy or severed client relationship with Towers Watson. In these cases, all employees of the firm are missing from the sample for a given year. Specific individuals can show up missing in a given year, yet be active in the previous year. This could reflect an employee retiring from the company and taking a lump sum benefit (rather than an annuity), which eliminates the pension liability from the employer's books. In addition, a number of employee records are simply missing for some firms in particular years even if the employees have not departed or retired.

To deal with these issues, we impose several data restrictions. First, we drop all employees of a firm in a given year if the firm has a calculated turnover rate of more than 30 percent or less than 1 percent for that year. Secondly, we restrict the data to firms in which at least 60 percent of the active 2005 employees remain in the database in years 2006 to 2009 and do not drop out of the sample with an unknown status change. For the second criterion, note that individuals with a known status change (e.g., from active to retiree status) are retained in the sample for the entire sample period. Firms that fail to meet this criterion are excluded from the sample for that year.

In addition to these restrictions, we exclude one large firm that offers its employees a phased retirement option. Employees taking this option are classified as having left the firm, resulting in a very high measured turnover rate – in the 70-to-90 percent range – at age 65. Thus, measured turnover at this firm does not reflect actual turnover; for many workers, it reflects the start of a phased retirement. This firm offers retiree coverage with an employer contribution rate of under 50 percent to its 2010 and 2020 retiree cohorts. If we include this firm in our analysis, we find a very large and statistically significant impact of a subsidy of under 50 percent on turnover at age

65 and beyond. However, the pre-65 results, or the results for other subsidy levels, are not affected much.

Provisions Data

Some firms have missing or inappropriate responses on benefit plan provisions for one or more of the three cohorts. We impute many of these responses by substituting values for another cohort.

In addition, we fill in some missing retiree health provision information from another firm-level survey conducted jointly by Towers Watson and the International Society of Certified Employee Benefits Specialists (ISCEBS). The Towers Watson/ISCEBS survey includes information for 2010 and 2020 retirees, and there is some overlap with the firms included in our provisions survey. If the alternative survey indicates coverage for 2010 retirees and no coverage for 2020 retirees, we assume no coverage for new hires as well.

Defined Benefit (DB) plans are classified as either hybrid or traditional. Any responses other than these are coded as either hybrid or traditional depending on the information provided. For example, "career average" is coded as traditional and "5 percent cash balance" is coded as hybrid.

Most closed or frozen DB plans provide a close or freeze year. For some firms, multiple close or freeze years are provided – for example, a response may indicate that benefit accruals for service and pay, or for different subsidiaries, were frozen in different years. In these cases, we used the earliest freeze year provided. Several firms indicate a freeze or close date of "Before 2003." These are coded as 2003. If a DB plan close date is provided, but not a freeze date, and there is an indication that the plan is frozen (i.e., status is given as frozen for one ore more of the employee groups), we assume the plan was frozen in the same year that it was closed to new entrants. If a freeze date is provided, but no close date, we assume the plan was closed to new entrants in the same year that it was frozen.

Appendix B: Full Regression Results

This appendix provides full regression results for the models in Tables 2-5 (labeled as Tables A2-A5 respectively). For the defined benefit (DB) provisions, the omitted category is an open traditional plan of average generosity (Average Traditional – Open). This is the DB plan type that covers the largest group of employees in our sample. For the retiree health coverage provisions, the omitted category is no coverage. For the year dummies, the omitted category is 2006.

Table A2: Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Male	0.00404	0.00323	0.00223	0.00450	0.0113**
	(0.00602)	(0.00549)	(0.00540)	(0.00378)	(0.00485)
Log(Salary 2005)	-0.00226	-0.00515	-0.00139	0.000793	0.00492
	(0.00611)	(0.00546)	(0.00474)	(0.00379)	(0.00551)
Service	-0.00972***	-0.00604***	-0.00636***	-0.00573***	-0.00399***
	(0.00142)	(0.00115)	(0.000992)	(0.00105)	(0.00117)
Service^2	0.000240***	0.000144***	0.000146***	0.000127***	9.58e-05***
	(3.57e-05)	(2.63e-05)	(2.42e-05)	(1.98e-05)	(2.19e-05)
Year=2007	0.000114	-0.00384	-0.0136**	-0.00130	-0.00621
	(0.00639)	(0.00784)	(0.00686)	(0.00598)	(0.00729)
Year=2008	0.0151	0.00146	0.00793	0.00939	0.0219
	(0.0245)	(0.0284)	(0.0251)	(0.0260)	(0.0311)
Year=2009	0.0172	0.00919	0.00813	0.00417	0.00617
	(0.0184)	(0.0148)	(0.0192)	(0.0161)	(0.0175)
Firm-level turnover at 55	0.794***	0.702***	0.681***	0.684***	0.656***
	(0.0479)	(0.0667)	(0.0567)	(0.0778)	(0.0700)
DB: Above Avg Traditional - Open	0.00303	0.00741	-0.00681	-0.00584	0.0257**
	(0.00704)	(0.00937)	(0.00799)	(0.00975)	(0.00999)
DB: Above Avg Traditional - Frozen	-0.0271***	0.0171*	-0.0363***	-0.0165**	-0.0125*
	(0.00509)	(0.00929)	(0.00584)	(0.00805)	(0.00729)
DB: Avg Traditional - Frozen	0.0367***	0.0246**	0.0345***	0.00689	0.0424***
	(0.0129)	(0.00959)	(0.0100)	(0.00954)	(0.0121)
DB: Below Avg Traditonal - Open	0.00905	0.0181	0.0204*	-0.00758	0.0173
	(0.00994)	(0.0120)	(0.0119)	(0.0111)	(0.0110)
DB: Below Avg Traditional - Frozen	-0.00113	0.00650	0.00133	0.0127	0.00943
	(0.0113)	(0.01000)	(0.00837)	(0.0107)	(0.0146)
DB: Above Avg Hybrid - Open	0.00353	0.00279	-0.00400	0.000641	0.0146*
	(0.00647)	(0.00732)	(0.00763)	(0.00869)	(0.00825)
DB: Avg Hybrid - Open	-0.0106	0.00578	-0.000722	-0.00588	0.00947
	(0.00865)	(0.0115)	(0.0105)	(0.0117)	(0.00705)
DB: Avg Hybrid - Frozen	0.00139	0.0133	-3.56e-05	-0.0199***	-0.00611
	(0.00802)	(0.00843)	(0.00875)	(0.00729)	(0.00832)
DB: Below Avg Hybrid - Open	-0.000843	0.00533	0.00181	-0.00877	0.00489
	(0.0113)	(0.0110)	(0.0134)	(0.00564)	(0.00950)
DB: Below Avg Hybrid - Frozen	0.00882	0.0177***	0.00351	-0.00992	0.00697
	(0.00555)	(0.00682)	(0.00747)	(0.00649)	(0.00631)
DB: Unknown Formula	0.00726	0.0265*	0.0175	-0.0160*	0.0139
	(0.00879)	(0.0150)	(0.0114)	(0.00969)	(0.00902)
DB: None	-0.0298***	-0.0121	-0.00644	-0.0205**	-0.00187
	(0.00826)	(0.00951)	(0.00890)	(0.00840)	(0.0111)
DC: Nonmatching % of Pay	-0.000181	4.34e-05	-0.00134	-0.000100	0.00199*
	(0.00192)	(0.00180)	(0.00189)	(0.00130)	(0.00107)
DC: Total Match Rate	7.38e-05	0.00274*	0.00377***	0.00312*	0.00500***
	(0.00118)	(0.00154)	(0.00140)	(0.00179)	(0.00181)
Retiree Health: Access Only	0.0124	0.00831	0.0115	0.0110	0.0281***
	(0.00949)	(0.00950)	(0.0102)	(0.0105)	(0.0104)
Retiree Health: Subsidy	0.00461	0.00868	0.0175***	0.00865*	0.00626
	(0.00725)	(0.00738)	(0.00673)	(0.00516)	(0.00641)
Observations	41,158	38,014	35,036	33,791	31,014
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A2 (continued): Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Male	0.00930	0.00176	0.0463***	0.0430***	0.0235***
	(0.00590)	(0.00622)	(0.00794)	(0.00992)	(0.00770)
Log(Salary 2005)	0.00954	0.00292	-0.0418***	-0.0195*	-0.00335
	(0.00663)	(0.00696)	(0.00994)	(0.0112)	(0.00917)
Service	-0.00365**	-0.00418**	0.00429*	0.00177	0.00124
	(0.00169)	(0.00164)	(0.00238)	(0.00217)	(0.00141)
Service^2	9.71e-05***	0.000111***	-1.57e-05	1.66e-05	3.31e-06
	(3.55e-05)	(3.26e-05)	(4.48e-05)	(4.36e-05)	(2.99e-05)
Year=2007	-0.00308	-0.0110	-0.0155	-0.00881	-0.0120
	(0.00846)	(0.00838)	(0.00976)	(0.0121)	(0.0125)
Year=2008	0.0248	0.0219	0.0418	0.0308	0.0258
	(0.0427)	(0.0404)	(0.0601)	(0.0555)	(0.0489)
Year=2009	0.0137	0.00841	-0.000708	-0.00103	0.00362
	(0.0237)	(0.0247)	(0.0264)	(0.0310)	(0.0253)
Firm-level turnover at 55	0.794***	0.751***	0.832***	0.612***	0.502***
	(0.0700)	(0.0839)	(0.126)	(0.147)	(0.0825)
DB: Above Avg Traditional - Open	0.000347	0.00619	0.0206	-0.0237	-0.0105
	(0.00991)	(0.0141)	(0.0168)	(0.0180)	(0.0105)
DB: Above Avg Traditional - Frozen	-0.00863	-0.0155	0.0818***	0.0575**	-0.00956
	(0.00968)	(0.0128)	(0.0226)	(0.0231)	(0.0170)
DB: Avg Traditional - Frozen	0.0527***	0.0436*	0.00968	0.0117	0.00955
	(0.0136)	(0.0247)	(0.0322)	(0.0308)	(0.0228)
DB: Below Avg Traditonal - Open	0.0187	-0.00987	0.0351	-0.0167	0.0137
	(0.0120)	(0.0177)	(0.0310)	(0.0271)	(0.0193)
DB: Below Avg Traditional - Frozen	0.0450***	0.0204	0.0340	0.000129	-0.0411***
	(0.0112)	(0.0177)	(0.0260)	(0.0257)	(0.0152)
DB: Above Avg Hybrid - Open	0.00733	0.00635	0.0249	0.0203	-0.0167
	(0.0101)	(0.0127)	(0.0190)	(0.0277)	(0.0156)
DB: Avg Hybrid - Open	-0.000201	0.000133	0.0647*	0.0142	0.00813
	(0.0150)	(0.0109)	(0.0340)	(0.0267)	(0.0120)
DB: Avg Hybrid - Frozen	-0.0145*	-0.00566	-0.0143	-0.0397**	-0.0486***
	(0.00848)	(0.0131)	(0.0156)	(0.0155)	(0.0123)
DB: Below Avg Hybrid - Open	0.00427	0.00621	0.00628	-0.0233*	-0.0387***
	(0.00968)	(0.0212)	(0.0184)	(0.0127)	(0.0134)
DB: Below Avg Hybrid - Frozen	0.00522	0.0123	0.0766***	0.00627	0.0442***
	(0.00931)	(0.0147)	(0.0178)	(0.0154)	(0.0151)
DB: Unknown Formula	0.0358***	0.0326	-0.00668	0.0225	0.0553**
	(0.0122)	(0.0300)	(0.0190)	(0.0273)	(0.0245)
DB: None	0.00586	-0.0135	-0.0283	-0.0206	-0.0469***
	(0.0123)	(0.0166)	(0.0230)	(0.0246)	(0.0157)
DC: Nonmatching % of Pay	0.00177	0.00151	-0.00173	0.00439	0.000801
	(0.00212)	(0.00359)	(0.00307)	(0.00366)	(0.00317)
DC: Total Match Rate	0.00211	0.00292	0.000485	0.00696	0.00722**
	(0.00178)	(0.00294)	(0.00358)	(0.00454)	(0.00282)
Retiree Health: Access Only	0.00255	0.00955	0.0279	0.0191	-0.00977
	(0.00877)	(0.0174)	(0.0204)	(0.0209)	(0.0164)
Retiree Health: Subsidy	0.0173**	0.0140	0.0370**	0.0506***	0.0196
	(0.00699)	(0.0126)	(0.0179)	(0.0156)	(0.0122)
Observations	27,193	22,956	19,303	15,170	12,297
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A2 (continued): Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Male	0.0287***	0.0274**	0.0382***	0.0529***	0.0263
	(0.0101)	(0.0137)	(0.0139)	(0.0141)	(0.0229)
Log(Salary 2005)	-0.0559*	-0.0258	-0.0322	-0.0119	-0.00316
	(0.0320)	(0.0332)	(0.0239)	(0.0243)	(0.0309)
Service	0.0106***	0.00973***	0.00753***	0.00367	0.00144
	(0.00306)	(0.00304)	(0.00286)	(0.00392)	(0.00314)
Service^2	-0.000139***	-0.000118**	-0.000105**	-6.40e-05	-1.18e-05
	(5.30e-05)	(5.42e-05)	(5.33e-05)	(7.71e-05)	(6.80e-05)
Year=2007	-0.0332**	-0.0145	-0.0742**	-0.0258	-0.0612**
	(0.0141)	(0.0246)	(0.0316)	(0.0366)	(0.0257)
Year=2008	0.0123	0.0324	-0.0104	0.00564	-0.0140
	(0.0378)	(0.0328)	(0.0201)	(0.0267)	(0.0329)
Year=2009	-0.00396	0.0132	-0.0171	-0.0219	-0.0331**
	(0.0293)	(0.0290)	(0.0257)	(0.0218)	(0.0168)
Firm-level turnover at 55	0.954***	0.760***	0.369**	0.181	0.352*
	(0.171)	(0.201)	(0.181)	(0.230)	(0.211)
DB: Above Avg Traditional - Open	-0.0628**	-0.0601**	-0.0512*	0.00311	-0.0631**
	(0.0248)	(0.0265)	(0.0307)	(0.0330)	(0.0245)
DB: Above Avg Traditional - Frozen	-0.0205	-0.0880***	0.350***	0.0741**	0.0167
	(0.0226)	(0.0192)	(0.0370)	(0.0336)	(0.0360)
DB: Avg Traditional - Frozen	0.0868**	0.0412	0.0816*	0.0758**	0.0142
	(0.0422)	(0.0323)	(0.0467)	(0.0372)	(0.0410)
DB: Below Avg Traditonal - Open	0.0152	0.0305	0.0390	0.0582	0.00677
	(0.0459)	(0.0353)	(0.0597)	(0.0577)	(0.0285)
DB: Below Avg Traditional - Frozen	0.0899***	0.0114	-0.0715**	0.0464	0.0214
	(0.0337)	(0.0553)	(0.0285)	(0.0357)	(0.0385)
DB: Above Avg Hybrid - Open	0.00987	-0.00319	0.0295	-0.00425	0.0693
	(0.0275)	(0.0262)	(0.0268)	(0.0294)	(0.0446)
DB: Avg Hybrid - Open	0.0114	-0.0190	0.0108	-0.0162	-0.0124
	(0.0209)	(0.0306)	(0.0298)	(0.0327)	(0.0357)
DB: Avg Hybrid - Frozen	-0.0824***	-0.0619**	-0.0986***	-0.102***	-0.137***
	(0.0218)	(0.0264)	(0.0288)	(0.0199)	(0.0140)
DB: Below Avg Hybrid - Open	-0.0642***	-0.0470**	-0.0447	-0.0276	-0.0215
	(0.0199)	(0.0196)	(0.0374)	(0.0242)	(0.0208)
DB: Below Avg Hybrid - Frozen	0.0884***	0.0249	0.0809**	-0.0252	0.0345
	(0.0267)	(0.0207)	(0.0391)	(0.0231)	(0.0227)
DB: Unknown Formula	-0.0742*	0.0327	-0.0191	-0.0240	0.0458
	(0.0450)	(0.0570)	(0.0683)	(0.0398)	(0.0592)
DB: None	0.105***	0.0432	0.0823**	0.0180	-0.0339
	(0.0369)	(0.0359)	(0.0392)	(0.0343)	(0.0361)
DC: Nonmatching % of Pay	-0.00330	-0.000968	0.00299	0.0172**	-0.00212
	(0.00861)	(0.00904)	(0.0143)	(0.00747)	(0.00587)
DC: Total Match Rate	0.00485	0.0102*	0.00704	0.00256	0.00170
	(0.00560)	(0.00559)	(0.00521)	(0.00536)	(0.00688)
Retiree Health: Access Only	0.0464	0.00714	0.0424	0.00778	0.00543
	(0.0306)	(0.0328)	(0.0407)	(0.0395)	(0.0489)
Retiree Health: Subsidy	0.0202	0.00171	0.0167	-0.00197	0.0507***
	(0.0186)	(0.0194)	(0.0269)	(0.0201)	(0.0183)
Observations	9,983	6,637	4,395	3,328	2,596
Number of Firms	64	64	64	64	61

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A3: Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Male	0.00165	0.00101	-0.00430	-0.000375	0.00420
	(0.00654)	(0.00577)	(0.00570)	(0.00545)	(0.00612)
Log(Salary 2005)	-0.00627	-0.00763	-2.34e-06	-0.000785	0.00730
	(0.00646)	(0.00504)	(0.00569)	(0.00552)	(0.00543)
Service	-0.00424	-0.00316	0.00241	-0.000174	0.00148
	(0.00467)	(0.00344)	(0.00355)	(0.00275)	(0.00317)
Service^2	0.000130	8.84e-05	-1.46e-05	2.73e-05	-3.66e-07
	(9.69e-05)	(6.48e-05)	(6.48e-05)	(4.83e-05)	(5.46e-05)
Year=2007	-0.00319	-0.00292	-0.0183**	0.00315	-0.00185
	(0.00845)	(0.00985)	(0.00742)	(0.00655)	(0.00896)
Year=2008	0.0170	0.000133	0.00714	0.0165	0.0248
	(0.0256)	(0.0292)	(0.0285)	(0.0251)	(0.0298)
Year=2009	0.0195	0.0174	0.00689	0.00899	0.0108
	(0.0184)	(0.0173)	(0.0204)	(0.0160)	(0.0153)
Firm-level turnover at 55	0.882***	0.777***	0.738***	0.707***	0.657***
	(0.0580)	(0.0683)	(0.0539)	(0.0845)	(0.0824)
DB: Above Avg Traditional - Open	0.0281***	0.0296***	0.00816	0.0157	0.0529***
	(0.00917)	(0.0115)	(0.00848)	(0.0112)	(0.0133)
DB: Above Avg Traditional - Frozen	0.00468	0.0437***	-0.0184**	-0.000879	0.00657
	(0.00634)	(0.0113)	(0.00786)	(0.00871)	(0.00856)
DB: Avg Traditional - Frozen	0.0413***	0.0268**	0.0314**	0.0200*	0.0548***
	(0.0115)	(0.0108)	(0.0126)	(0.0104)	(0.0113)
DB: Below Avg Traditonal - Open	0.0152	0.0280*	0.0151	-0.00597	0.0192
	(0.0133)	(0.0167)	(0.0135)	(0.0150)	(0.0187)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0198***	0.0114	0.00199	0.00668	0.0238***
	(0.00600)	(0.00758)	(0.00717)	(0.00790)	(0.00779)
DB: Avg Hybrid - Open	0.000592	0.00968	-0.00109	0.00353	0.0125
	(0.00845)	(0.01000)	(0.00943)	(0.0162)	(0.00943)
DB: Avg Hybrid - Frozen	0.00765	0.0127	-0.00732	-0.0139	-0.00175
	(0.0100)	(0.0105)	(0.00955)	(0.00956)	(0.00982)
DB: Below Avg Hybrid - Open	-0.00218	-0.00635	-0.00662	-0.00858	-0.0121*
	(0.00785)	(0.00882)	(0.0140)	(0.00779)	(0.00729)
DB: Below Avg Hybrid - Frozen	0.0275***	0.00489	0.0171**	-0.00540	0.00499
	(0.00707)	(0.00720)	(0.00799)	(0.00621)	(0.00757)
DB: Unknown Formula	0.0346*	0.0430***	0.0366*	-0.000843	0.00675
	(0.0179)	(0.0154)	(0.0201)	(0.0162)	(0.0159)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.000393	0.00152	-0.000758	0.00183	0.00479*
	(0.00169)	(0.00158)	(0.00242)	(0.00191)	(0.00249)
DC: Total Match Rate	-0.00254	-2.62e-05	0.00179	0.00107	0.00511**
	(0.00179)	(0.00193)	(0.00200)	(0.00230)	(0.00249)
Retiree Health: Access Only	-0.000637	0.00404	3.36e-06	0.0178	0.0210*
	(0.00978)	(0.0106)	(0.0102)	(0.0144)	(0.0118)
Retiree Health: Subsidy	0.01000	0.0153**	0.0192**	0.0247***	0.0160**
	(0.00708)	(0.00732)	(0.00832)	(0.00571)	(0.00685)
Observations	26,469	24,442	22,461	21,489	19,712
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A3 (continued): Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Male	0.00313	-0.00152	0.0428***	0.0579***	0.0196**
	(0.00672)	(0.00725)	(0.0109)	(0.0126)	(0.00991)
Log(Salary 2005)	0.00224	-0.00270	-0.0534***	-0.0292**	-0.00643
	(0.00860)	(0.00868)	(0.0129)	(0.0142)	(0.0120)
Service	0.00376	0.00189	0.00878**	0.0118**	0.00271
	(0.00443)	(0.00431)	(0.00385)	(0.00530)	(0.00415)
Service^2	-2.92e-05	1.15e-05	-8.56e-05	-0.000144	-1.88e-05
	(8.01e-05)	(7.81e-05)	(6.47e-05)	(9.37e-05)	(7.45e-05)
Year=2007	-0.00124	-0.0133	-0.0144	0.000689	-0.0148
	(0.0105)	(0.00934)	(0.0145)	(0.0150)	(0.0157)
Year=2008	0.0354	0.0239	0.0380	0.0362	0.0198
	(0.0419)	(0.0382)	(0.0571)	(0.0595)	(0.0458)
Year=2009	0.0221	0.00578	-0.00851	0.000390	0.00506
	(0.0215)	(0.0255)	(0.0223)	(0.0266)	(0.0251)
Firm-level turnover at 55	0.908***	0.862***	0.840***	0.714***	0.534***
	(0.0824)	(0.103)	(0.161)	(0.174)	(0.103)
DB: Above Avg Traditional - Open	0.0168	0.0213	0.0514**	0.00149	0.00442
	(0.0142)	(0.0177)	(0.0248)	(0.0205)	(0.0156)
DB: Above Avg Traditional - Frozen	0.0166	-0.00333	0.106***	0.121***	-0.00976
	(0.0136)	(0.0189)	(0.0305)	(0.0233)	(0.0207)
DB: Avg Traditional - Frozen	0.0511***	0.0469	0.0355	0.0117	0.0313
	(0.0149)	(0.0302)	(0.0390)	(0.0298)	(0.0299)
DB: Below Avg Traditonal - Open	0.0299*	0.00760	0.0635	0.0169	0.0548**
	(0.0168)	(0.0252)	(0.0455)	(0.0340)	(0.0262)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0202**	0.00673	0.0360	0.0337	-0.00766
	(0.00951)	(0.0130)	(0.0253)	(0.0298)	(0.0196)
DB: Avg Hybrid - Open	0.00353	0.00964	0.0806	0.0370	0.00728
	(0.0187)	(0.0127)	(0.0496)	(0.0354)	(0.0176)
DB: Avg Hybrid - Frozen	-0.0239**	-0.00825	-0.0227	-0.0104	-0.0561***
	(0.0114)	(0.0188)	(0.0221)	(0.0196)	(0.0152)
DB: Below Avg Hybrid - Open	-0.000126	-0.0119	-0.0169	-0.0354***	-0.0416**
	(0.0117)	(0.0238)	(0.0195)	(0.0136)	(0.0175)
DB: Below Avg Hybrid - Frozen	0.00892	0.00993	0.0647***	-0.00248	0.0499***
	(0.0109)	(0.0181)	(0.0236)	(0.0172)	(0.0169)
DB: Unknown Formula	0.0851***	0.0333	0.0108	0.0968**	0.0735*
	(0.0236)	(0.0408)	(0.0360)	(0.0414)	(0.0425)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.000440	0.00113	-0.00231	-0.00157	0.000828
	(0.00249)	(0.00630)	(0.00607)	(0.00503)	(0.00458)
DC: Total Match Rate	-0.00124	0.000904	0.00130	0.00224	0.00901**
	(0.00262)	(0.00403)	(0.00478)	(0.00515)	(0.00430)
Retiree Health: Access Only	-0.000537	0.0148	0.0358	0.0102	-0.00532
	(0.0129)	(0.0231)	(0.0323)	(0.0233)	(0.0256)
Retiree Health: Subsidy	0.0333***	0.0273	0.0630**	0.0740***	0.0348**
	(0.00924)	(0.0179)	(0.0252)	(0.0160)	(0.0176)
Observations	17,228	14,369	11,941	9,007	7,058
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A3 (continued): Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Male	0.0162	0.0422**	0.0444*	0.0953***	0.0325
	(0.0158)	(0.0185)	(0.0242)	(0.0206)	(0.0245)
Log(Salary 2005)	-0.0489*	-0.0409*	-0.0403	-0.0367	0.00319
	(0.0281)	(0.0248)	(0.0321)	(0.0229)	(0.0340)
Service	0.00584	0.0103*	-0.000898	0.000925	0.00794
	(0.00477)	(0.00605)	(0.00730)	(0.00667)	(0.00778)
Service^2	-4.77e-05	-0.000124	1.87e-05	-1.72e-05	-0.000121
	(8.32e-05)	(9.95e-05)	(0.000116)	(0.000115)	(0.000126)
Year=2007	-0.0382*	-0.0181	-0.0641*	-0.00295	0.0132
	(0.0220)	(0.0348)	(0.0349)	(0.0398)	(0.0334)
Year=2008	0.00482	0.0354	-0.00755	0.0266	0.0257
	(0.0451)	(0.0339)	(0.0267)	(0.0359)	(0.0303)
Year=2009	-0.00396	0.00423	-0.0312	0.00741	-0.00622
	(0.0253)	(0.0222)	(0.0234)	(0.0309)	(0.0280)
Firm-level turnover at 55	0.969***	0.949***	0.311	0.421	0.190
	(0.225)	(0.292)	(0.272)	(0.434)	(0.245)
DB: Above Avg Traditional - Open	-0.0221	-0.0366	-0.0520	0.0306	0.00508
	(0.0340)	(0.0383)	(0.0317)	(0.0503)	(0.0341)
DB: Above Avg Traditional - Frozen	-0.0140	-0.0749***	0.288***	-0.0288	0.0119
	(0.0310)	(0.0256)	(0.0466)	(0.0350)	(0.0335)
DB: Avg Traditional - Frozen	0.115**	0.0513	0.161***	0.0862	0.0182
	(0.0483)	(0.0352)	(0.0512)	(0.0538)	(0.0454)
DB: Below Avg Traditonal - Open	0.0310	0.0785	0.222***	0.104	0.0758*
	(0.0538)	(0.0609)	(0.0673)	(0.118)	(0.0429)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0168	0.0149	0.0171	-0.00454	0.0893**
	(0.0318)	(0.0342)	(0.0311)	(0.0341)	(0.0415)
DB: Avg Hybrid - Open	0.00906	0.00450	0.0243	0.0351	0.0192
	(0.0265)	(0.0481)	(0.0378)	(0.0613)	(0.0578)
DB: Avg Hybrid - Frozen	-0.106***	-0.0623*	-0.0790**	-0.124***	-0.0822***
	(0.0275)	(0.0366)	(0.0361)	(0.0267)	(0.0221)
DB: Below Avg Hybrid - Open	-0.0994***	-0.0583*	-0.0783***	-0.0502*	-0.00803
	(0.0367)	(0.0306)	(0.0290)	(0.0262)	(0.0230)
DB: Below Avg Hybrid - Frozen	0.0921***	0.0383	0.125***	-0.0333	0.0137
	(0.0331)	(0.0327)	(0.0400)	(0.0300)	(0.0228)
DB: Unknown Formula	-0.0479	0.0394	-0.0171	0.116	0.185*
	(0.0620)	(0.0687)	(0.0612)	(0.101)	(0.109)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.00344	-0.00118	0.00468	0.0144	0.000251
	(0.0106)	(0.0147)	(0.0144)	(0.0126)	(0.00719)
DC: Total Match Rate	0.00478	0.0109*	0.0154***	2.02e-05	0.00215
	(0.00728)	(0.00615)	(0.00455)	(0.00836)	(0.00733)
Retiree Health: Access Only	0.0418	-0.00957	0.114***	-0.00367	-0.0512
	(0.0383)	(0.0361)	(0.0429)	(0.0591)	(0.0611)
Retiree Health: Subsidy	0.0226	-0.000760	0.0602*	0.0124	0.0386
	(0.0272)	(0.0270)	(0.0314)	(0.0310)	(0.0261)
Observations	5,658	3,643	2,311	1,668	1,307
Number of Firms	64	64	62	62	59

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A4: Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Male	0.00423	0.00289	0.00182	0.00400	0.0104**
	(0.00616)	(0.00558)	(0.00530)	(0.00363)	(0.00480)
Log(Salary 2005)	-0.00263	-0.00496	-0.00113	0.00109	0.00546
	(0.00590)	(0.00540)	(0.00469)	(0.00400)	(0.00574)
Service	-0.00986***	-0.00603***	-0.00635***	-0.00570***	-0.00389***
	(0.00141)	(0.00115)	(0.00104)	(0.00109)	(0.00120)
Service^2	0.000241***	0.000142***	0.000142***	0.000124***	9.13e-05***
	(3.60e-05)	(2.65e-05)	(2.47e-05)	(2.05e-05)	(2.27e-05)
Year=2007	3.21e-05	-0.00364	-0.0132*	-0.00105	-0.00554
	(0.00650)	(0.00785)	(0.00684)	(0.00598)	(0.00737)
Year=2008	0.0151	0.00181	0.00860	0.00961	0.0223
	(0.0247)	(0.0283)	(0.0250)	(0.0260)	(0.0310)
Year=2009	0.0172	0.00955	0.00903	0.00462	0.00669
	(0.0184)	(0.0148)	(0.0193)	(0.0162)	(0.0176)
Firm-level turnover at 55	0.774***	0.704***	0.685***	0.690***	0.670***
	(0.0682)	(0.0791)	(0.0634)	(0.0704)	(0.0629)
DB: Above Avg Traditional - Open	-0.000454	0.00529	-0.0105	-0.00837	0.0223**
	(0.00854)	(0.0100)	(0.00810)	(0.0102)	(0.0101)
DB: Above Avg Traditional - Frozen	-0.0298***	0.0155*	-0.0384***	-0.0177**	-0.0138*
	(0.00554)	(0.00928)	(0.00606)	(0.00789)	(0.00753)
DB: Avg Traditional - Frozen	0.0377***	0.0254**	0.0355***	0.00748	0.0427***
	(0.0146)	(0.0105)	(0.00895)	(0.00974)	(0.0105)
DB: Below Avg Traditonal - Open	0.00649	0.0212	0.0262**	-0.00334	0.0239*
	(0.0105)	(0.0136)	(0.0126)	(0.0129)	(0.0136)
DB: Below Avg Traditional - Frozen	-0.00201	0.00671	0.00123	0.0131	0.00973
	(0.0108)	(0.0101)	(0.00793)	(0.0113)	(0.0149)
DB: Above Avg Hybrid - Open	0.00285	0.00106	-0.00700	-0.00169	0.0119
	(0.00632)	(0.00693)	(0.00662)	(0.00867)	(0.00799)
DB: Avg Hybrid - Open	-0.0124	0.00511	-0.00207	-0.00665	0.00887
	(0.00962)	(0.0118)	(0.00952)	(0.0111)	(0.00710)
DB: Avg Hybrid - Frozen	-4.07e-05	0.0140	0.00112	-0.0189**	-0.00456
	(0.00906)	(0.00947)	(0.00966)	(0.00739)	(0.00852)
DB: Below Avg Hybrid - Open	-0.00507	0.00485	0.000915	-0.00856	0.00579
	(0.0123)	(0.0101)	(0.0113)	(0.00664)	(0.00904)
DB: Below Avg Hybrid - Frozen	0.00367	0.0123*	-0.00562	-0.0157**	-0.000457
	(0.00595)	(0.00688)	(0.00776)	(0.00755)	(0.00666)
DB: Unknown Formula	0.00571	0.0267*	0.0180	-0.0158	0.0147
	(0.00790)	(0.0155)	(0.0120)	(0.00990)	(0.00971)
DB: None	-0.0308***	-0.0119	-0.00639	-0.0202**	-0.00132
	(0.00814)	(0.00935)	(0.00872)	(0.00894)	(0.0116)
DC: Nonmatching % of Pay	-0.000386	-0.000491	-0.00232	-0.000779	0.00101
	(0.00164)	(0.00169)	(0.00190)	(0.00137)	(0.00117)
DC: Total Match Rate	0.000718	0.00326**	0.00461***	0.00365**	0.00562***
	(0.00144)	(0.00149)	(0.00114)	(0.00154)	(0.00161)
Retiree Health: Access Only	0.0126	0.00914	0.0127	0.0120	0.0295***
	(0.00945)	(0.00929)	(0.00970)	(0.0105)	(0.0105)
Retiree Health: Subsidy Under 50%	-0.00584	0.00261	0.00591	0.00245	-0.00190
	(0.00808)	(0.00770)	(0.00729)	(0.00674)	(0.00829)
Retiree Health: Subsidy 50% or More	0.00859	0.0142*	0.0281***	0.0158**	0.0155**
	(0.00869)	(0.00793)	(0.00673)	(0.00775)	(0.00727)
Retiree Health: Subsidy Unknown	0.0117	0.00506	0.0107	0.00243	-0.00376
	(0.0182)	(0.0165)	(0.0154)	(0.00701)	(0.00836)
Observations	41,158	38,014	35,036	33,791	31,014
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A4 (continued): Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Male	0.00846	9.37e-05	0.0441***	0.0408***	0.0229***
	(0.00619)	(0.00615)	(0.00769)	(0.01000)	(0.00794)
Log(Salary 2005)	0.00977	0.00408	-0.0405***	-0.0183	-0.00282
	(0.00676)	(0.00709)	(0.00991)	(0.0115)	(0.00929)
Service	-0.00356**	-0.00398**	0.00442*	0.00191	0.00132
	(0.00173)	(0.00170)	(0.00243)	(0.00224)	(0.00141)
Service^2	9.28e-05***	0.000106***	-2.06e-05	1.31e-05	1.28e-06
	(3.60e-05)	(3.33e-05)	(4.55e-05)	(4.44e-05)	(2.96e-05)
Year=2007	-0.00249	-0.00987	-0.0143	-0.00793	-0.0115
	(0.00853)	(0.00856)	(0.0101)	(0.0125)	(0.0125)
Year=2008	0.0254	0.0226	0.0429	0.0314	0.0260
	(0.0426)	(0.0403)	(0.0600)	(0.0555)	(0.0489)
Year=2009	0.0142	0.00932	0.000280	-0.000654	0.00372
	(0.0237)	(0.0246)	(0.0263)	(0.0309)	(0.0254)
Firm-level turnover at 55	0.807***	0.789***	0.851***	0.640***	0.512***
	(0.0683)	(0.0812)	(0.126)	(0.132)	(0.0778)
DB: Above Avg Traditional - Open	-0.00375	0.00490	0.0158	-0.0242	-0.0104
	(0.0107)	(0.0147)	(0.0179)	(0.0190)	(0.0128)
DB: Above Avg Traditional - Frozen	-0.0104	-0.0142	0.0807***	0.0613**	-0.00807
	(0.0102)	(0.0133)	(0.0246)	(0.0244)	(0.0179)
DB: Avg Traditional - Frozen	0.0527***	0.0437**	0.0101	0.0129	0.0102
	(0.0122)	(0.0220)	(0.0279)	(0.0281)	(0.0224)
DB: Below Avg Traditonal - Open	0.0264*	0.00158	0.0516	-0.00231	0.0183
	(0.0151)	(0.0206)	(0.0339)	(0.0316)	(0.0217)
DB: Below Avg Traditional - Frozen	0.0452***	0.0222	0.0361	0.00312	-0.0399**
	(0.0114)	(0.0172)	(0.0239)	(0.0252)	(0.0156)
DB: Above Avg Hybrid - Open	0.00406	0.00231	0.0208	0.0160	-0.0179
	(0.00985)	(0.0127)	(0.0193)	(0.0272)	(0.0147)
DB: Avg Hybrid - Open	-0.00135	0.00189	0.0649**	0.0191	0.0104
	(0.0140)	(0.0121)	(0.0283)	(0.0223)	(0.0126)
DB: Avg Hybrid - Frozen	-0.0128	-0.000833	-0.00912	-0.0337**	-0.0464***
	(0.00864)	(0.0135)	(0.0165)	(0.0164)	(0.0130)
DB: Below Avg Hybrid - Open	0.00589	0.0137	0.0153	-0.0112	-0.0347**
	(0.00977)	(0.0150)	(0.0153)	(0.0162)	(0.0154)
DB: Below Avg Hybrid - Frozen	-0.00437	0.00372	0.0586***	-0.00484	0.0389**
	(0.0100)	(0.0162)	(0.0222)	(0.0196)	(0.0192)
DB: Unknown Formula	0.0370***	0.0364	-0.00213	0.0275	0.0570**
	(0.0115)	(0.0302)	(0.0191)	(0.0269)	(0.0246)
DB: None	0.00622	-0.0114	-0.0259	-0.0171	-0.0456***
	(0.0128)	(0.0168)	(0.0216)	(0.0244)	(0.0161)
DC: Nonmatching % of Pay	0.000512	5.44e-05	-0.00422	0.00281	0.000352
	(0.00214)	(0.00363)	(0.00338)	(0.00373)	(0.00315)
DC: Total Match Rate	0.00286*	0.00326	0.00132	0.00700*	0.00721***
	(0.00150)	(0.00270)	(0.00349)	(0.00423)	(0.00276)
Retiree Health: Access Only	0.00413	0.0119	0.0312	0.0227	-0.00857
	(0.00841)	(0.0166)	(0.0196)	(0.0208)	(0.0165)
Retiree Health: Subsidy Under 50%	0.00662	0.0122	0.0252	0.0507**	0.0195
	(0.00971)	(0.0135)	(0.0185)	(0.0256)	(0.0162)
Retiree Health: Subsidy 50% or More	0.0294***	0.0264**	0.0587***	0.0686***	0.0262*
	(0.00918)	(0.0132)	(0.0212)	(0.0201)	(0.0157)
Retiree Health: Subsidy Unknown	0.00512	-0.0113	0.00420	0.0168	0.00776
	(0.0117)	(0.0172)	(0.0204)	(0.0206)	(0.0122)
Observations	27,193	22,956	19,303	15,170	12,297
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A4 (continued): Impact of Retiree Health Coverage on Probability of Turnover

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Male	0.0280***	0.0266*	0.0366***	0.0523***	0.0253
	(0.0100)	(0.0140)	(0.0134)	(0.0141)	(0.0234)
Log(Salary 2005)	-0.0559*	-0.0256	-0.0322	-0.0123	-0.00330
	(0.0320)	(0.0333)	(0.0244)	(0.0243)	(0.0310)
Service	0.0105***	0.00979***	0.00779***	0.00369	0.00142
	(0.00305)	(0.00304)	(0.00285)	(0.00392)	(0.00312)
Service^2	-0.000135**	-0.000119**	-0.000109**	-6.40e-05	-1.03e-05
	(5.30e-05)	(5.40e-05)	(5.29e-05)	(7.72e-05)	(6.75e-05)
Year=2007	-0.0333**	-0.0147	-0.0728**	-0.0256	-0.0609**
	(0.0141)	(0.0245)	(0.0316)	(0.0366)	(0.0258)
Year=2008	0.0121	0.0324	-0.0100	0.00572	-0.0145
	(0.0379)	(0.0328)	(0.0201)	(0.0266)	(0.0331)
Year=2009	-0.00415	0.0131	-0.0168	-0.0220	-0.0330*
	(0.0294)	(0.0289)	(0.0255)	(0.0219)	(0.0171)
Firm-level turnover at 55	0.997***	0.796***	0.450**	0.221	0.404**
	(0.189)	(0.210)	(0.217)	(0.192)	(0.200)
DB: Above Avg Traditional - Open	-0.0545**	-0.0563**	-0.0421	0.00263	-0.0648**
	(0.0254)	(0.0283)	(0.0292)	(0.0369)	(0.0257)
DB: Above Avg Traditional - Frozen	-0.0142	-0.0823***	0.369***	0.0815**	0.0240
	(0.0227)	(0.0212)	(0.0384)	(0.0357)	(0.0393)
DB: Avg Traditional - Frozen	0.0860*	0.0415	0.0843*	0.0768**	0.0169
	(0.0451)	(0.0322)	(0.0463)	(0.0378)	(0.0395)
DB: Below Avg Traditonal - Open	0.0122	0.0354	0.0590	0.0674	0.0206
	(0.0458)	(0.0361)	(0.0618)	(0.0614)	(0.0321)
DB: Below Avg Traditional - Frozen	0.0893**	0.0125	-0.0665**	0.0478	0.0255
	(0.0353)	(0.0555)	(0.0278)	(0.0364)	(0.0378)
DB: Above Avg Hybrid - Open	0.00679	-0.00663	0.0195	-0.00809	0.0639
	(0.0248)	(0.0255)	(0.0246)	(0.0293)	(0.0472)
DB: Avg Hybrid - Open	0.0156	-0.0140	0.0262	-0.0102	-0.00421
	(0.0239)	(0.0291)	(0.0295)	(0.0340)	(0.0356)
DB: Avg Hybrid - Frozen	-0.0817***	-0.0579**	-0.0867***	-0.0972***	-0.130***
	(0.0219)	(0.0277)	(0.0304)	(0.0204)	(0.0148)
DB: Below Avg Hybrid - Open	-0.0615***	-0.0390	-0.0201	-0.0165	-0.00222
	(0.0237)	(0.0274)	(0.0334)	(0.0262)	(0.0276)
DB: Below Avg Hybrid - Frozen	0.108***	0.0280	0.0849**	-0.0291	0.0225
	(0.0293)	(0.0250)	(0.0376)	(0.0272)	(0.0282)
DB: Unknown Formula	-0.0757*	0.0339	-0.0139	-0.0224	0.0500
	(0.0429)	(0.0565)	(0.0658)	(0.0397)	(0.0594)
DB: None	0.104***	0.0442	0.0877**	0.0198	-0.0297
	(0.0381)	(0.0355)	(0.0382)	(0.0352)	(0.0356)
DC: Nonmatching % of Pay	-0.00163	-0.000820	0.00264	0.0168**	-0.00349
	(0.00829)	(0.00897)	(0.0138)	(0.00766)	(0.00645)
DC: Total Match Rate	0.00352	0.00940	0.00521	0.00197	0.00139
	(0.00536)	(0.00577)	(0.00536)	(0.00541)	(0.00656)
Retiree Health: Access Only	0.0466	0.00994	0.0524	0.0125	0.0120
	(0.0315)	(0.0328)	(0.0402)	(0.0403)	(0.0493)
Retiree Health: Subsidy Under 50%	0.0479	0.0164	0.0561	0.00959	0.0581*
	(0.0296)	(0.0280)	(0.0350)	(0.0245)	(0.0323)
Retiree Health: Subsidy 50% or More	0.00107	0.00136	0.0224	0.00673	0.0694**
	(0.0249)	(0.0250)	(0.0289)	(0.0296)	(0.0275)
Retiree Health: Subsidy Unknown	0.0242	-0.0102	-0.0251	-0.0216	0.0193
	(0.0231)	(0.0271)	(0.0294)	(0.0312)	(0.0247)
Observations	9,983	6,637	4,395	3,328	2,596
Number of Firms	64	64	64	64	61

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A5: Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(1) Age 55	(2) Age 56	(3) Age 57	(4) Age 58	(5) Age 59
Male	0.000930	-0.000126	-0.00529	-0.00182	0.00287
	(0.00663)	(0.00566)	(0.00587)	(0.00557)	(0.00608)
Log(Salary 2005)	-0.00613	-0.00721	0.000408	-0.000221	0.00806
	(0.00662)	(0.00521)	(0.00586)	(0.00577)	(0.00575)
Service	-0.00392	-0.00287	0.00304	4.61e-05	0.00188
	(0.00469)	(0.00344)	(0.00351)	(0.00276)	(0.00323)
Service^2	0.000123	8.21e-05	-2.82e-05	2.22e-05	-9.27e-06
	(9.76e-05)	(6.48e-05)	(6.39e-05)	(4.85e-05)	(5.60e-05)
Year=2007	-0.00275	-0.00242	-0.0175**	0.00391	-0.000884
	(0.00835)	(0.00989)	(0.00744)	(0.00663)	(0.00899)
Year=2008	0.0177	0.00103	0.00824	0.0174	0.0257
	(0.0256)	(0.0292)	(0.0284)	(0.0250)	(0.0296)
Year=2009	0.0204	0.0185	0.00845	0.00971	0.0116
	(0.0188)	(0.0177)	(0.0208)	(0.0165)	(0.0157)
Firm-level turnover at 55	0.911***	0.835***	0.779***	0.757***	0.700***
	(0.0751)	(0.0639)	(0.0596)	(0.0581)	(0.0645)
DB: Above Avg Traditional - Open	0.0280***	0.0321***	0.00842	0.0177*	0.0528***
	(0.00843)	(0.00993)	(0.00766)	(0.00984)	(0.0116)
DB: Above Avg Traditional - Frozen	0.00425	0.0474***	-0.0190**	0.00226	0.00715
	(0.00621)	(0.0113)	(0.00769)	(0.00899)	(0.00828)
DB: Avg Traditional - Frozen	0.0424***	0.0286***	0.0323***	0.0216**	0.0551***
	(0.0123)	(0.0108)	(0.00976)	(0.0104)	(0.00964)
DB: Below Avg Traditonal - Open	0.0270	0.0480**	0.0382*	0.00978	0.0346
	(0.0194)	(0.0231)	(0.0197)	(0.0206)	(0.0259)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0173***	0.00948	-0.00155	0.00415	0.0205***
	(0.00623)	(0.00698)	(0.00610)	(0.00759)	(0.00737)
DB: Avg Hybrid - Open	0.000638	0.0131	-0.00145	0.00629	0.0131
	(0.00826)	(0.00891)	(0.00724)	(0.0151)	(0.00905)
DB: Avg Hybrid - Frozen	0.0115	0.0206**	-0.000905	-0.00751	0.00315
	(0.0109)	(0.0102)	(0.00995)	(0.00933)	(0.0107)
DB: Below Avg Hybrid - Open	0.00260	0.00293	0.00116	0.00127	-0.00608
	(0.00804)	(0.00812)	(0.0110)	(0.0135)	(0.00835)
DB: Below Avg Hybrid - Frozen	0.0243***	0.00423	0.0118	-0.00694	0.00136
	(0.00746)	(0.00610)	(0.00782)	(0.00618)	(0.00765)
DB: Unknown Formula	0.0390**	0.0517***	0.0466**	0.00528	0.0120
	(0.0189)	(0.0144)	(0.0193)	(0.0155)	(0.0182)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.00174	-7.43e-05	-0.00326	0.000351	0.00304
	(0.00219)	(0.00157)	(0.00243)	(0.00173)	(0.00315)
DC: Total Match Rate	-0.00201	0.000115	0.00258*	0.00120	0.00550***
	(0.00178)	(0.00173)	(0.00140)	(0.00196)	(0.00202)
Retiree Health: Access Only	0.000513	0.00525	0.00135	0.0194	0.0222**
	(0.00976)	(0.0104)	(0.00855)	(0.0137)	(0.0108)
Retiree Health: Subsidy Under 50%	0.00823	0.0215*	0.0138	0.0296***	0.0142
	(0.00843)	(0.0120)	(0.00973)	(0.0107)	(0.00972)
Retiree Health: Subsidy 50% or More	0.0149*	0.0205***	0.0286***	0.0311***	0.0237***
	(0.00832)	(0.00788)	(0.00737)	(0.00810)	(0.00747)
Retiree Health: Subsidy Unknown	-0.00217	-0.00366	-0.00273	0.00498	-0.00345
	(0.0106)	(0.00797)	(0.00898)	(0.0129)	(0.0110)
Observations	26,469	24,442	22,461	21,489	19,712
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** p<0.01, ** p<0.05, * p<0.1

Table A5 (continued): Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(6) Age 60	(7) Age 61	(8) Age 62	(9) Age 63	(10) Age 64
Male	0.00158	-0.00442	0.0404***	0.0551***	0.0193*
	(0.00694)	(0.00747)	(0.0103)	(0.0125)	(0.0100)
Log(Salary 2005)	0.00269	-0.00114	-0.0519***	-0.0280*	-0.00600
	(0.00884)	(0.00862)	(0.0127)	(0.0143)	(0.0120)
Service	0.00442	0.00222	0.00938**	0.0118**	0.00299
	(0.00445)	(0.00421)	(0.00395)	(0.00516)	(0.00419)
Service^2	-4.28e-05	4.51e-06	-9.77e-05	-0.000145	-2.43e-05
	(8.03e-05)	(7.58e-05)	(6.64e-05)	(9.09e-05)	(7.51e-05)
Year=2007	3.77e-06	-0.0109	-0.0129	0.00108	-0.0142
	(0.0107)	(0.00999)	(0.0149)	(0.0154)	(0.0157)
Year=2008	0.0369	0.0263	0.0398	0.0366	0.0203
	(0.0418)	(0.0379)	(0.0570)	(0.0595)	(0.0458)
Year=2009	0.0235	0.00842	-0.00727	0.000776	0.00532
	(0.0219)	(0.0255)	(0.0225)	(0.0268)	(0.0252)
Firm-level turnover at 55	0.969***	0.978***	0.883***	0.777***	0.534***
	(0.0787)	(0.101)	(0.185)	(0.164)	(0.110)
DB: Above Avg Traditional - Open	0.0168	0.0257	0.0502*	0.00641	0.00309
	(0.0143)	(0.0180)	(0.0285)	(0.0231)	(0.0181)
DB: Above Avg Traditional - Frozen	0.0183	0.00370	0.105***	0.131***	-0.0105
	(0.0154)	(0.0205)	(0.0356)	(0.0264)	(0.0227)
DB: Avg Traditional - Frozen	0.0513***	0.0480*	0.0350	0.0135	0.0312
	(0.0132)	(0.0279)	(0.0346)	(0.0300)	(0.0289)
DB: Below Avg Traditonal - Open	0.0557**	0.0408	0.0940*	0.0341	0.0619**
	(0.0217)	(0.0340)	(0.0555)	(0.0400)	(0.0298)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0156	0.00287	0.0331	0.0302	-0.00784
	(0.0100)	(0.0137)	(0.0252)	(0.0292)	(0.0182)
DB: Avg Hybrid - Open	0.00429	0.0173	0.0798*	0.0460	0.00641
	(0.0170)	(0.0166)	(0.0426)	(0.0306)	(0.0187)
DB: Avg Hybrid - Frozen	-0.0162	0.00673	-0.0121	-0.000350	-0.0541***
	(0.0120)	(0.0203)	(0.0252)	(0.0223)	(0.0170)
DB: Below Avg Hybrid - Open	0.0141	0.0106	0.00116	-0.0176	-0.0381
	(0.0153)	(0.0203)	(0.0270)	(0.0229)	(0.0233)
DB: Below Avg Hybrid - Frozen	0.00359	0.00782	0.0558**	-0.00129	0.0439**
	(0.0117)	(0.0194)	(0.0277)	(0.0216)	(0.0206)
DB: Unknown Formula	0.0983***	0.0516	0.0277	0.108**	0.0784*
	(0.0219)	(0.0396)	(0.0381)	(0.0427)	(0.0446)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.00352	-0.00275	-0.00746	-0.00336	-0.000522
	(0.00231)	(0.00598)	(0.00694)	(0.00529)	(0.00477)
DC: Total Match Rate	-0.000740	0.000784	0.00200	0.00146	0.00928**
	(0.00223)	(0.00354)	(0.00509)	(0.00503)	(0.00440)
Retiree Health: Access Only	0.00212	0.0178	0.0381	0.0132	-0.00465
	(0.0115)	(0.0220)	(0.0312)	(0.0236)	(0.0255)
Retiree Health: Subsidy Under 50%	0.0310**	0.0388*	0.0531*	0.0901***	0.0281
	(0.0135)	(0.0219)	(0.0301)	(0.0310)	(0.0244)
Retiree Health: Subsidy 50% or More	0.0463***	0.0398**	0.0820***	0.0809***	0.0431**
	(0.0112)	(0.0193)	(0.0292)	(0.0214)	(0.0212)
Retiree Health: Subsidy Unknown	0.00359	-0.0165	0.0209	0.0434*	0.0242
	(0.00925)	(0.0145)	(0.0314)	(0.0259)	(0.0177)
Observations	17,228	14,369	11,941	9,007	7,058
Number of Firms	64	64	64	64	64

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A5 (continued): Impact of Retiree Health Coverage on Probability of Turnover - 15+ Years of Service

VARIABLES	(11) Age 65	(12) Age 66	(13) Age 67	(14) Age 68	(15) Age 69
Male	0.0179	0.0420**	0.0451*	0.0946***	0.0318
	(0.0151)	(0.0187)	(0.0245)	(0.0207)	(0.0245)
Log(Salary 2005)	-0.0502*	-0.0409*	-0.0410	-0.0367	0.00331
	(0.0278)	(0.0247)	(0.0323)	(0.0230)	(0.0341)
Service	0.00538	0.0101*	-0.000400	0.000674	0.00787
	(0.00476)	(0.00609)	(0.00728)	(0.00666)	(0.00782)
Service^2	-3.78e-05	-0.000121	1.04e-05	-1.29e-05	-0.000119
	(8.29e-05)	(0.000100)	(0.000115)	(0.000115)	(0.000127)
Year=2007	-0.0384*	-0.0183	-0.0625*	-0.00292	0.0132
	(0.0221)	(0.0349)	(0.0347)	(0.0397)	(0.0335)
Year=2008	0.00444	0.0353	-0.00590	0.0269	0.0258
	(0.0453)	(0.0339)	(0.0265)	(0.0359)	(0.0302)
Year=2009	-0.00383	0.00429	-0.0295	0.00750	-0.00583
	(0.0253)	(0.0223)	(0.0234)	(0.0310)	(0.0282)
Firm-level turnover at 55	0.970***	0.964***	0.301	0.459	0.244
	(0.257)	(0.318)	(0.303)	(0.431)	(0.278)
DB: Above Avg Traditional - Open	-0.0199	-0.0348	-0.0584*	0.0318	0.00410
	(0.0333)	(0.0389)	(0.0311)	(0.0520)	(0.0374)
DB: Above Avg Traditional - Frozen	-0.0146	-0.0735***	0.286***	-0.0237	0.0185
	(0.0292)	(0.0275)	(0.0524)	(0.0393)	(0.0372)
DB: Avg Traditional - Frozen	0.113**	0.0506	0.163***	0.0857	0.0190
	(0.0507)	(0.0350)	(0.0514)	(0.0545)	(0.0448)
DB: Below Avg Traditonal - Open	0.0150	0.0755	0.239***	0.110	0.0844*
	(0.0539)	(0.0636)	(0.0689)	(0.121)	(0.0460)
DB: Below Avg Traditional - Frozen	-	-	-	-	-
	-	-	-	-	-
DB: Above Avg Hybrid - Open	0.0189	0.0144	0.0176	-0.00648	0.0857**
	(0.0305)	(0.0344)	(0.0330)	(0.0339)	(0.0416)
DB: Avg Hybrid - Open	0.00883	0.00660	0.0246	0.0411	0.0265
	(0.0312)	(0.0463)	(0.0414)	(0.0663)	(0.0559)
DB: Avg Hybrid - Frozen	-0.112***	-0.0627	-0.0730*	-0.121***	-0.0757***
	(0.0270)	(0.0405)	(0.0409)	(0.0275)	(0.0255)
DB: Below Avg Hybrid - Open	-0.112***	-0.0594	-0.0688*	-0.0427	0.00712
	(0.0359)	(0.0438)	(0.0363)	(0.0342)	(0.0344)
DB: Below Avg Hybrid - Frozen	0.106***	0.0426	0.110***	-0.0313	0.0110
	(0.0362)	(0.0378)	(0.0412)	(0.0328)	(0.0287)
DB: Unknown Formula	-0.0564	0.0378	-0.00888	0.120	0.190*
	(0.0575)	(0.0714)	(0.0632)	(0.0985)	(0.110)
DB: None	-	-	-	-	-
	-	-	-	-	-
DC: Nonmatching % of Pay	-0.000574	-0.000522	0.00145	0.0139	-0.000961
	(0.00974)	(0.0152)	(0.0150)	(0.0123)	(0.00762)
DC: Total Match Rate	0.00431	0.0106*	0.0161***	-0.000673	0.00145
	(0.00695)	(0.00639)	(0.00495)	(0.00860)	(0.00748)
Retiree Health: Access Only	0.0383	-0.00988	0.119***	-0.00162	-0.0466
	(0.0388)	(0.0364)	(0.0459)	(0.0609)	(0.0619)
Retiree Health: Subsidy Under 50%	0.0307	0.00478	0.0484	0.0242	0.0497
	(0.0342)	(0.0379)	(0.0516)	(0.0406)	(0.0342)
Retiree Health: Subsidy 50% or More	0.00232	-0.00611	0.0809**	0.0133	0.0468
	(0.0315)	(0.0324)	(0.0350)	(0.0411)	(0.0348)
Retiree Health: Subsidy Unknown	0.0542	0.00316	0.0372	0.000774	0.0181
	(0.0392)	(0.0483)	(0.0353)	(0.0425)	(0.0347)
Observations	5,658	3,643	2,311	1,668	1,307
Number of Firms	64	64	62	62	59

Robust standard errors in parentheses. Coefficients are marginal effects from probit model. Standard errors clustered by firm. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

References

Bartus, Tamás (2005), Estimation of Marginal Effects Using margeff. *Stata Journal*, 5(3), 309-329.

Blau, David M. and Donna B. Gilleskie (2008). The Role of Retiree Health Insurance in the Employment Behavior of Older Men. *International Economic Review*, 49(2), 475-514.

Blau, David M. and Donna B. Gilleskie (2006). Health Insurance and Retirement of Married Couples. *Journal of Applied Econometrics*, 21(7), 935-953.

Blau, David M. and Donna B. Gilleskie (2001). Retiree Health Insurance and the Labor Force Behavior of Older Men in the 1990s. *Review of Economics and Statistics*, 83(1), 64-80.

French, Eric and John Bailey Jones (2011). The Effects of Health Insurance and Self Insurance on Retirement Behavior. *Econometrica*, 79(3), 693-732.

Goda, Gopi Shah, John Shoven, and Sita Nataraj Slavov (2009). Removing the Disincentives in Social Security for Long Careers. In Jeffrey Brown, Jeffrey Liebman, and David Wise (Eds.), *Social Security Policy in a Changing Environment* (pp. 21-38). Chicago: University of Chicago Press.

Gruber, Jonathan and Bridgette C. Madrian (1995). Health Insurance Availability and the Retirement Decision. *The American Economic Review*, 85(4), 938-948.

Gustman, Alan L. and Thomas L. Steinmeier (1994). Employer Provided Health Insurance and Retirement Behavior. *Industrial and Labor Relations Review*, 48(1), 124-140.

Kapur, Kanika and Jeannette Rogowski (2011). How Does Health Insurance Affect the Retirement Behavior of Women? *Inquiry* 48(1), 51-67.

Karoly, Lynn A. and Jeannette Rogowski (1994). The Effect of Access to Post-Retirement Health Insurance on the Decision to Retire Early. *Industrial and Labor Relations Review*, 48(1), 103-123.

Lumsdaine, Robin L., James H. Stock, and David A. Wise (1996). Retirement Incentives: The Interaction between Employer-Provided Pensions, Social Security, and Retiree Health Insurance. In Michael D. Hurd and Naohiro Yashiro (Eds.), *The Economic Effects of Aging in the United States and Japan* (pp. 261-293). Chicago: University of Chicago Press.

Madrian, Bridgette C. (1994). The Effect of Health Insurance on Retirement. *Brookings Papers on Economic Activity*, 1994(1), 181-232.

Marton, James and Stephen A. Woodbury (2006). Retiree Health Benefits and Retirement. (Upjohn Institute Staff Working Paper No. 06-128). Retrieved July 22, 2011, from http://www.upjohn.org/publications/wp/06-128.pdf.

Robinson, Christina and Robert Clark (2010). Retiree Health Insurance and Disengagement from a Career Job. *Journal of Labor Research*, 31(3), 247-262.

Strumpf, Erin (2010). Employer-Sponsored Health Insurance for Early Retirees: Impacts on Retirement, Health, and Health Care. *International Journal of Health Care Finance and Economics*, 10(2): 105-147.