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EMPLOYER PROVIDED HEALTH INSURANCE AND RETIREMENT BEHAVIOR

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ABSTRACT

This paper analyzes the effects on retirement of employer provided health benefits to workers and retirees. Retiree health benefits delay retirement until age of eligibility, and then accelerate it. With a base case of no retiree health coverage, granting retiree health coverage to all those with employer coverage while working accelerates retirement age by less than one month. Valuing benefits at costs of private health insurance to unaffiliated individuals, rather than at group rates, increases the effect. Ignoring retiree health benefits in retirement models creates only a small bias. Changing health insurance policies has a small effect on retirement.

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I. Introduction And Overview.

This paper is concerned with the effects of employer provided health insurance on retirement behavior. Three fourths of older, full-time male workers in the private sector are covered by employer provided health insurance at work, with the comparable figure for women at sixty percent. Almost two thirds of the covered men, and over half the covered women, can continue coverage into retirement. The basic value of health coverage is about six percent of compensation when employed, and is worth about three fourths of an employed worker's coverage upon retirement, with lower values for those over than under 65.[1] Retiree health benefits affect the relative reward to continuing at work in a way analogous to that of a defined benefit pension plan, raising the reward to remaining in employment until becoming eligible for the benefit, and reducing the marginal reward to continued work thereafter.[2]

Despite the potential effect of retiree health insurance on retirement incentives, most studies of retirement do not consider retiree health benefits.[3] So far as we are aware, there are two studies which investigate the relation of retiree health benefits to retirement outcomes.

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1. These figures are estimated below. The Employee Benefit Research Institute calculates, from Chamber of Commerce data, that medical benefits accounted for 7.3 percent of payroll in 1990, of which one percentage point was benefits for retirees (EBRI, 1992, Table 2.8).

2. The figures in this paragraph are from Section II below. Descriptive studies document the availability and terms of employer provided health insurance to various populations of workers and retirees. Studies have focused on the availability of employer provided health insurance while working and while retired (Monheit and Schur, 1989), the change in coverage with retirement (Rogowski and Karoly, 1992; Clark, Headen and Shumaker, 1992), and the value of such insurance when working and when retired (U.S. Department of Labor, 1986; U.S. General Accounting Office, 1989).

3. These include Fields and Mitchell (1984), Gustman and Steinmeier (1986a and b), Stock and Wise (1990a and b), Lumsdaine, Stock and Wise (1990, 1992a), Berkovec and Stern (1991) and Rust (1990).

Clark, Headen and Shumaker (1992) is a reduced form study which relates retirement to coverage, but not values.[4]

Only Lumsdaine, Stock and Wise (1992b) investigates the effects of employer provided health insurance on retirement outcomes in the context of a structural model. That study suggests that including retiree health insurance in the opportunity set has small effect on the estimates of the parameters of the model, and on behavior. The data used by Lumsdaine, Stock and Wise are not nationally representative, but pertain to a single firm and its special circumstances. A rather special definition of retirement is used, termination of employment with the firm, rather than cessation of labor force participation. Moreover, the retirement model which is estimated represents one of a number of types of models which have been used in the retirement literature.[5] Because the specialized nature of this study leaves a number of important questions unanswered, it is worthwhile investigating the role of retiree health benefits in the context of a nationally representative sample, using an alternative specification of the retirement model.

This paper will attempt to provide the answers to three specific questions. What is the size of the effect of retiree health insurance on retirement outcomes at different ages? What is the effect of having omitted retiree health insurance from retirement models on the parameters that have been estimated? What are the likely effects of changes in availability or

4. Clark, Headen and Shumaker (1992) regresses the duration of retirement, for those in the CPS who indicate they are retired, on a set of independent variables, including coverage by retiree health benefits, coverage by a pension, and the duration of job attachment. The retiree health benefit measure refers to coverage in retirement, rather than to the effects of differences in health coverage when working and when retired.

5. For a survey of this literature, see Quinn, Burkhauser and Meyers (1990).

value of retiree health benefits on retirement behavior in the future?

The paper begins with a description of coverage by employer provided health insurance for current workers and retirees. The analysis distinguishes among workers who have no employer provided health insurance coverage, those who have health coverage only while employed, and those with health coverage both on the job and in retirement. Following the analysis of coverage, the value of employer provided health insurance is analyzed.

A structural retirement model is then specified to include the estimated value of employer provided health insurance in the opportunity set. The model is estimated with data from the 1969-79 Retirement History Study (RHS), which remains the only available nationally representative longitudinal data set which contains the required information for a structural retirement analysis.[6] Although the RHS does not include full details of the pension, it does provide information on the location of the spikes in the pension accrual profile by indicating the dates when the individual would qualify for early and normal retirement benefits. The RHS also reports coverage by employer provided health insurance, both before and after retirement. The model is also estimated without including employer provided health insurance in the budget constraint, and the differences in estimates are used to evaluate the importance of including employer provided health insurance in estimating retirement models.

The Retirement History Study includes cohorts born from 1906 to 1911. To project the effects of alternative trends and policies on retirement behavior in future years, information on incomes, pensions and health insurance are required for more recent cohorts. The only data set to provide the required information on pension accrual profiles is the Survey of Consumer

6. Due to sample restrictions in the RHS, only the retirement behavior of males is analyzed.

Finances (SCF). Accordingly, the utility function estimated with data from the RHS, with parameters modified to reflect differences among cohorts, is embedded in a simulation model which uses data from the 1983-86 Survey of Consumer Finances, and covers cohorts born from 1933 through 1953. These individuals enter retirement in the last decade of the nineties and the first two decades of the next century. The simulation model is used to evaluate the likely effects on retirement created by incentives from employer provided health insurance, and to evaluate the effects of various policies and trends in employer provided health benefits.

There are a number of policies which might induce changes in health benefits. First, there is the recent adoption of new accounting provisions, requiring funding of projected retiree health benefits. This policy might induce some firms to stop paying for retiree health benefits. Alternatively, firms may cease making health insurance available to retirees at group rates, instead forcing them to face rates offered to unaffiliated individuals. Second, health insurance reform may make health insurance available at group rates for those who are not covered on their job, and who are not employed, or may provide for government supported health insurance for those without a job. Third, there has been a recent proposal to extend age of eligibility for Medicare to 67. This proposal would increase the value of firm provided coverage to those who would be uncovered in retirement.

Each of these policies might affect retirement outcomes. Although we do not have a model of the firm which allows us to project the likely frequency of various potential reactions by firms to such policy changes, we can simulate the effects of alternative changes in the opportunity set which the policies might induce. Our strategy is to ask about the effects on retirement of each of these policies in the extreme -- i.e., if they were uniformly

adopted, how would retirement outcomes change?

II. Descriptive Statistics On Coverage And Value Of Employer Provided Health Insurance

A. Health Insurance Coverage.

This section examines descriptive statistics on health insurance coverage during an employee's working years and during subsequent retirement. The data come from the August 1988 Current Population Survey. A supplement on health insurance coverage was asked of 52,654 individuals 40 years and older.

Table 1 examines responses from *current* private sector employees. Self-employed are excluded. The first column indicates health insurance coverage from the current employer.[7] About 78% of current full-time (35 hours or more per week) employed males over 40 years of age have employer provided health insurance coverage. Coverage for full-time females is almost 16 percentage points lower than for full-time males. Coverage is around 50 percentage points lower for part-time than for full-time workers.

For those indicating that they were covered by their current employers, columns 2 and 3 indicate whether they expected to continue to be covered after they retire.[8] That is, the percentages in columns 2 and 3 report the fraction of workers expecting coverage by an employer provided health policy *conditional* on currently being covered. Column 2 disregards

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7. An individual is counted as covered by the current employer if he answers that he "is covered by a health insurance plan other than Medicare or Medicaid," that the coverage is in his own name, and that it is from a current employer.

8. A person is covered in retirement if he responded affirmatively to the question "If you were to retire from your employer, would you be able to continue the health insurance plan at a group rate throughout your retirement years." Note in particular that this does not include workers who thought that they would be able to continue coverage for a little while under COBRA or analogous provisions.

the almost 30% of the subsample who reported that they didn't know whether they would be covered during their retirement years. Among full-time employed males who were able to answer the question, about 73% expected retirement coverage, with the percentages falling by about 10% for females and part-time workers. Curiously, part-time work drastically lowers the probability of current coverage, but if the worker is currently covered it does not lower the probability of retirement coverage nearly so much. When the don't knows are included in the denominator only, as in column 3, only about 51% of covered full-time males and 42% of full-time covered females definitely expect coverage to continue into retirement.

Table 2 considers health insurance coverage reported by retirees from private sector jobs lasting 5 years or more.[9] The data in column 1 indicate health insurance coverage while the individual was working. These figures exclude uncovered individuals with no jobs longer than five years, and individuals covered by a spouse's employer.[10] The overall figures, which are 78% for full-time males and 58% for full-time females, are very similar to the corresponding figures in Table 1, despite the fact that the figures in Table 2 exclude jobs held less than five years.

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9. For retired individuals who were covered by health insurance from a previous job, the questions from the Retiree Health Insurance Supplement relate to that job. For retired persons who were not covered by health insurance from a previous job, the questions refer to the last job held for five years or more.

10. Questions related to last job were not asked of retirees without employer provided health insurance with no jobs lasting at least five years, or who were covered by a spouse's policy. Fortunately, for those who were retired and were covered by health insurance from a previous employer, the questionnaire did ask about the length of tenure with the firm. Thus by eliminating those with employer provided retiree health insurance who did not work at least five years, it is possible to limit the sample in this section to individuals who retired from jobs held 5 years or more and hence to avoid selection based on the variable of interest, namely current coverage.

Columns 2 and 3 present, for retired individuals, the conditional percentages of those who are covered by health insurance in retirement, given that they were covered while they were working. Column 2 classifies retired individuals to be covered if they have current coverage from a previous employer. Column 3 classifies them to be covered if they have, or could have had, coverage from a past employer had they chosen to take advantage of such coverage. The difference is that some individuals, when asked for the reason for the lack of current coverage, replied that it was "too expensive," that they were "covered by another plan," or that they "did not need/want coverage". In column 3, it can be seen that about 73% of full-time males who had health insurance coverage while they were working, could have continued the coverage when they retired.[11] About two thirds of covered, full-time females could have continued health insurance coverage into retirement.

For full-time workers in pension jobs, the data are further disaggregated into pension and non-pension jobs. These data indicate a very strong relation between retiree health insurance coverage and pension coverage. Full-time males with a pension are over 40 percent more likely to have been covered by health insurance while working than those without a pension. The difference is even wider for women. Conditional on having been covered by health insurance while working, full-time men and women with pensions are 34 percent and

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11. However, this is only for individuals who had jobs lasting 5 years or more. Tabulations in our report to The Department of Health and Human Services suggest that coverage in retirement is extended much less frequently to individuals who worked 5 to 9 years than to individuals who worked 10 years or more. About 10% of males came from jobs lasting less than 5 years. If these jobs were only slightly less likely to have offered coverage while working, but were not likely to have offered coverage while retired, then the 73% figure should be reduced to somewhere in the 65-67% range for a sample which would include individuals coming from short-tenure jobs.

28 percent more likely to be covered by employer provided health insurance in retirement (column 2). The corresponding figures for the difference in *availability* of employer provided health insurance coverage in retirement are somewhat lower, but the difference between those with and without pensions still exceeds 20 percent for both men and women (column 3).

B. Employer Expenditures for Health Insurance from the 1977 National Medical Care Expenditure Survey.

This section examines employer expenditures for health insurance, both for active and retired employees. At the time of this study, the latest microdata for use in analyzing employer contributions to health insurance comes from the National Medical Care Expenditure Survey, which was conducted in 1977 by the National Center for Health Services Research.[12] This survey is a cross sectional survey of 40,320 individuals. It collected information primarily about health and the provision of health care, but it also collected a small amount of basic demographic and employment information. For individuals who indicated that they were covered by health insurance, an attempt was made to collect information about the extent of the coverage, as well as about the cost of the insurance and

12. The matched employer survey to the 1987 NMCES was not available to us when we began the study. As it turns out, this is not a problem for our estimation because, as noted, the only longitudinal data set suitable for a nationally representative structural retirement analysis is the 1969-79 Retirement History Survey, which also covered the period of the 1970s. In a few years, a complete set of longitudinal data highly suitable for a study like the present one will be available from the Health and Retirement Survey. Right now, the first wave of that survey is in the field, employer descriptions of health insurance plans have not yet been collected, and funds are not available for coding once they are. All in all, use of the HRS data in a structural retirement analysis which incorporates information on retiree health benefits is at least five years down the road.

who paid for it. This information was coded into a supplementary file.[13]

Table 3 contains the measures of employer provided health insurance expenditures for covered individuals over 40, including employer expenditures for family coverage.[14] Average employer expenditures for health insurance are compared for current workers and for retired workers for whom employers are still contributing. Since the survey does not contain questions directly pertaining to retirement status, we took individuals to be retired if they were out of the labor force and were over age 60.

As seen in the first line of Table 3, average employer expenditures were $732 for currently employed workers and $499 per retiree. From the data by gender, it can be calculated that for retired males whose employers continued to make contributions to health insurance, the level of expenditure was about 72% of the level of expenditure for active employees. The comparable figure for females was 62%.[15] Employed females with health insurance coverage have benefits about two thirds of the level for males, perhaps reflecting the greater likelihood of family coverage for males. The next two lines confirm the strong

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13. Other supplementary files, which are not used here, describe the respondents' contacts with physicians, hospitals, and other providers of health care.

14. For the most part, the employer expenditures for female workers over 40 is only about 5% more than for all female workers, but for males the percentage is more like 10%.

15. These figures, however, may understate the value of the continuing insurance. For one thing, many firms may calculate their expenditures by dividing the total health insurance premiums by the number of covered employees. This would particularly understate the value of the insurance to retired individuals who are not yet eligible for medicare, relative to the cost of obtaining that insurance in the private market, and reinforces the impression that if the firm continues to provide insurance for its retirees, it continues to foot most of the bill. For another, access to a group policy is of value to the employee because, by offering group rates, it reduces the costs of health insurance below the payments that would be required of a person who is not associated with a group. We return to these issues below.

effects of marital status on employer costs.

Benefits of workers over 65 are 62% of the benefits for comparable workers under 65. This situation is likely to have changed with recent changes in medicare, now making the employer first payer for workers over 65. The last part of the table suggests that the value of coverage in retirement is inversely related to education, suggesting that job mix associated with different levels of education play a role in the value of health coverage in retirement.

In terms of the overall project, multivariate extensions of these results, involving regressions with additional explanatory variables, provide a rough means of introducing employer health insurance into the retirement model.[16] For individuals who indicate in the Retirement History Survey that they received some health care paid for by employer provided insurance, we use separate regressions for workers and retirees to estimate the value of the health insurance the employer is providing. For individuals who, after they retire, indicate in the RHS that they are still receiving health care paid for by the employer, we also estimate how much the employer is contributing after retirement.

It is worth considering further the question of retiree health benefits for those over and under 65. The figures reported so far for the employer contribution to health insurance come directly from our own calculations based on the 1977 NMCES. Another recent estimate of the employer contribution comes from a report from the General Accounting Office (GAO, 1989), which is partially based on the NMCES. To be specific, the GAO report (June 1989, page 28) cites the employer contribution to retiree health insurance as being $2602 (in 1988

16. These regressions, and analogous regressions for coverage by health insurance when working and when retired, are reported in Gustman and Steinmeier (1992).

dollars) for retirees under 65 years old and $777 for retirees over 65. Both sets of numbers were based on figures in a previous DOL study (May 1986, pages 74-75), updated to 1988 dollars using the health care expenditure component of the consumer price index. In contrast to the GAO estimates, our estimates of the employer contributions are $651 for retirees under 65 and $440 for retirees over 65. Inflating these figures from 1977 to 1988 dollars using the health care expenditure component of the consumer price index yields values of $1614 and $1091 for retirees under and over 65, respectively. Our figures are 38% below the GAO values for retirees under 65 but are 40% above them for retirees over 65.

There is still a third set of estimates which we use in the course of analyzing the potential effects of changes in policies. These estimates are based on the costs of blue cross and blue shield policies (BC/BS) for unaffiliated individuals over or under the age of 65. The GAO figures indicate a larger value of employer provided health insurance when working relative to retired, and when policies are valued at the cost of private purchase of a blue cross/blue shield policy, the differences are larger still. In our later simulations, we will use the BC/BS figures to provide an upper bound estimate of the incentive effects from employer provided health insurance, and the cost figures from the NMCES to provide a lower bound estimate.

III: Specification And Estimation Of A Life Cycle Model With Retiree Health Benefits In The Opportunity Set.

This section discusses the specification and estimation of a life cycle retirement model that is a modest variation of the one described in Gustman and Steinmeier (1986a).

The lifetime utility function for the model is given by

(1) $$U = \sum \left[\alpha C_t^{\alpha} + e^{X_t\beta+\epsilon} \frac{L_t^{\delta} - L_f^{\delta}}{1 - L_f^{\delta}} \right]$$

where C_t is consumption at time t and L_t is leisure at time t.[17] Total available time (and hence the leisure in retirement) is normalized to 1, so that $u(L_t) = (L_t^{\delta}-L_f^{\delta})/(1-L_f^{\delta})$ will always be 1 for retirement and 0 for full-time work. ϵ determines the disutility of work, and δ determines the relative disutility of partial retirement work.[18] In the utility function, both ϵ and δ are taken to be individual fixed effects.

Utility is then maximized subject to the opportunity set. The opportunity set is specified to include incentives from the wage in the full-time job, the wage in a partial retirement job, and accruals from the pension, from social security, and from employer provided health insurance. The general nature of the solution is discussed in Gustman and Steinmeier (1986a).

In estimating the model, the separate elements of the opportunity set are estimated and combined to measure the value to the individual of each additional year of work. Measurement of the wage offer in full-time work and in partial retirement, and of the effect

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17. As compared to the utility function used in our previous work, there are a number of differences. First, the exponent α of the consumption term is distinct from the exponent δ of the leisure term, whereas these exponents were constrained to be equal in our previous work. A second difference is in the formulation of the utility of the leisure term, which in the present version of the equation is equal to the ratio indicated in the expression following the exponential term.

18. If δ is near unity, the disutility of partial retirement work is proportional to the amount of work, but if δ is low, the disutility of part-time work will be much lower than for full-time work. In the latter case, partial retirement should occur more often and for a longer period of time.

on the accrual profile of social security and pensions are discussed in Gustman and Steinmeier (1986a).[19] Importantly, as we have noted, the RHS does provide information on the location of kink points in the pension accrual profile by indicating the ages of eligibility for early and normal retirement benefits facing each covered worker.[20]

To introduce health insurance in the compensation profile to be used in the retirement analysis, we combine information on the health insurance coverage before and after retirement in the Retirement History Study with information on the value of health insurance from the National Medical Care Expenditure Survey. In each year the RHS asks whether the respondent had health insurance that was at least partly financed by his employer or union. If he responded that he was so covered in at least a majority of surveys covering the last full-time job, we assume that the employer is providing the insurance, and we use regressions on employer contributions from the NMCES to impute the amount of the employer contribution to that insurance. We also look at the years after the individual retires to see whether the

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19. Full-time and partial retirement compensation profiles can be calculated for 3530 individuals in the RHS. However, 175 individuals are imputed to have partial retirement earnings that were greater than full-time earnings in years they were working full-time. This situation, which could not logically occur in the model, probably reflects partial retirement wages that are imputed higher than they should be, so these observations are dropped. Also, another 72 individuals have compensation profiles which were inconsistent with the observed behavior. Most of these have hourly partial retirement compensation rates that were higher than full-time rates, and yet the respondents were observed to proceed directly from full-time work to retirement, without any intervening partial retirement. Again, it is likely that partial retirement compensation rates were imputed too high for these individuals, and they are dropped. Another few individuals retired despite having substantial increases in compensation, usually either because of the elimination of the 100% earning test in 1972 or because the earnings test does not apply beyond age 72.

20. Due to the focus of the RHS on males, the retirement analysis using the RHS and later simulations based on that analysis pertain only to males.

respondent is still being covered by insurance at least partly financed by his former employer or union. If he reports such coverage in at least a majority of the survey instruments covering his retirement years, we assume that the employer is providing post-retirement insurance. We impute the value of the post-retirement insurance by reducing the value of pre-retirement insurance using ratios calculated from the NMCES data.[21]

For individuals who indicated that they received post-retirement health insurance, the question arises as to when this insurance became available. This is important because there will be a compensation spike at the time the individual is eligible for post-retirement health insurance, as illustrated in Figure 1. The value of health insurance while employed to workers who do not have retiree health insurance is indicated by the horizontal line proceeding from the Y-axis across the entire graph.

If the worker does have retiree health insurance, the value of health insurance is the same until the year before the individual becomes eligible for retiree insurance. By working that year, the individual gains not only that year's health insurance but also the value of the entire stream of retiree health insurance, creating a large spike in the accrual profile. Upon attaining this age the individual essentially receives a large amount of additional compensation. If the individual continues to work, the additional compensation is the difference between the value of health insurance to active workers and to retirees. Since the

21. For some combinations of worker characteristics, such as a single individual with only a high school education, the log of the change in contributions will be positive, indicating an increase in benefits with retirement. In these cases, it is assumed that the contributions continue at the pre-retirement rate. It should be noted here that the period of the RHS is before COBRA required employers to cover ex-employees for a period after separation, so if health insurance was provided by an employer after retirement, it is likely that this represents true post-retirement coverage.

employer's contribution to health insurance for active workers is usually higher than the contribution to retirees, the accrual during this period is nonzero, but below the level before the worker became eligible for retiree insurance. In addition to the accruals plotted in the figure, there may be discontinuities at age 65 both in the case where retiree benefits are provided and the case where they are not.

Since almost all firms that provide retiree health insurance also provide pensions, we assume that eligibility for retiree health insurance coincides with the date the individual is first eligible for an immediate pension, that is, at the pension early retirement age. However, some individuals were observed to have retiree health insurance even though they did leave the job before the pension early retirement date. In these cases, we assume that the individual became eligible the last year they were observed to work at the job. For the relatively few individuals who appeared to have retiree health insurance but not pensions, we assume that the date of first eligibility was age 62. This is the date of first eligibility for social security, and it was also the most common date of early retirement in pensions of that time period.

To the extent that eligibility is granted on a proportionate basis in accordance with the fraction of required service that has been accumulated, a spike like that in Figure 1 will exaggerate the incentive to remain with the firm until early retirement age. For those individuals whose eligibility increases smoothly with service, the estimates will understate the importance of retiree health benefits in influencing retirement. A bias in the other direction may result from two causes. First, the value of health insurance to the retiree is understated when one ignores the value of participating after retirement in a group plan, even if the employer makes no contribution to that plan. Moreover, any understatement by the employer

of the costs of retiree policies which results from attributing claims evenly across current employees and retirees will cause the value of retiree health insurance to be understated.

A difficulty occurs with the relatively few individuals who were retired when the survey began and who were not receiving retiree health insurance. For such individuals, the question arises as to whether they were covered while they were working. However, since we do not observe the retirement transition for such individuals, the only effect that the insurance would have in the model is through the income effect. Since previous work has shown this effect to be very small, we assume that these individuals did not have insurance while they were working either.

Of the 3283 individuals in the sample, 1806 had health insurance while they were working. Of these, 745 had coverage which continued while they were retired. These figures are somewhat below the 1988 CPS estimates for retired workers, but those estimates included only workers who worked at a job for 5 years or more. Including short tenure workers would bring down the percentages somewhat.[22]

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22. Our estimates do not include Medicare in the opportunity set. Rather, the small wealth effect from Medicare net of payroll taxes is ignored. As noted in all of our previous work wealth effects have had only a very modest effect on retirement outcomes. Instead, our focus is on the effect of employer provided health insurance on the incentives governing the individual's retirement decision. For that reason, we estimate the value of employer provided retiree health benefits from the NMCES. That is, during the time period when the RHS and the NMCES surveys were taken, Medicare was first payer for all individuals over 65. Hence the NMCES employer expenditures for active as well as retired workers over 65 have full value to the worker. We also will use the NMCES regressions for simulations covering later periods, even though during later periods Medicare is second payer for active workers over 65. The figure we use represents the value of the employer insurance to the worker, since the worker would have been eligible for Medicare if he were to quit the job. That is, making Medicare second payer for active workers increases employer expenses, but does not increase the value of the insurance to an active worker. Since we use the employer expenditures from a time before Medicare was second payer, we have the value of the insurance to the worker

The model is estimated for males in the Retirement History Survey for whom data is available through 1979. The terms ε and δ in the utility function are assumed to come from distributions $f(\varepsilon) = N(0, \sigma_\varepsilon)$ and $f(\delta) = \gamma e^{\gamma}$, $\gamma \leq 1$. The parameters of the utility function are α, γ, σ_ε, and the elements of β. Given this utility function and these parameters, and given an opportunity set, the likelihood function is the same as in our previous work.

The maximum likelihood estimates for the model are shown in the first two columns of Table 4. The standard errors and the associated t-statistics are estimated using the Berndt-Hall-Hall-Hausman algorithm, and they suggest that the parameters are estimated quite closely.[23] For instance, the confidence interval for the coefficient of the age variable includes only values less than 0.007 away from the maximum likelihood value.[24]

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and not the expense to the firm. In these later simulations, we will, of course, adjust expenditures in view of inflation in health costs.

23. As compared with the corresponding estimates in our original article (column 3 of Table 3, Gustman and Steinmeier, 1986a), the critical coefficient of age (β_1) is about the same. The parameter γ characterizing the distribution of δ is somewhat lower in the present estimates, which means that the median exponent of the leisure term is lower. The vintage effect is larger in the present estimates, while both the coefficient of the health variable and the standard deviation of ε are smaller. Finally, α is higher than the median of the exponent of consumption in the earlier estimates. In those estimates, the median of this exponent was -0.65 [derived as the value for which $F(\delta) = e^{-\gamma(1-\delta)} = 0.5$, with the earlier value of δ estimated to be 0.42], as compared to 0.09 in the present estimates.

24. When we compare the differences in the distributions of the projected retirement ages from the estimates between the current and previous specifications of the retirement model, the new estimates give the same peaks of retirement at ages 62 and 65 as do the old estimates. However, there are some differences traceable to the different parameters. Probably the most notable difference is the substantially larger partial retirement for the new estimates. In our earlier paper we found that partial retirement was consistently underestimated at all ages by up to 8 percentage points, with an average of 5 to 6 percent. Another difference is that the retirement is slightly more concentrated, with the peaks at ages 62 and 65 slightly higher than in the original estimates. Also, with the full sample (the original sample was only a 1/10th sample) the original specification yielded estimates that imply a much wider dispersion of retirement ages than we observe.

The second two columns of Table 4 report parameter estimates from that version of the model which excludes the effects of employer expenditures for health insurance, both for current workers and for retirees. Although these estimates are slightly different from those in the first column, which did include retiree health insurance in the opportunity set, the differences are not very large and occur in the third decimal place or beyond for four of the seven coefficients.

Three reasons may account for the small size of the differences. First, for those individuals who are covered while they are employed but are not covered while they are retired, the health insurance is an increase in compensation which is uniform over time. From earlier work (e.g., we simulated the effects of increasing wages by 10% in earlier models), we know that this does not affect retirement very much. Secondly, for those individuals who do have retiree health insurance but who retire earlier or later than the eligibility age, the spike will affect the marginal retirement decision only through the income effect, which is relatively small. Third, for those who have retiree health insurance and do retire when they are eligible, the retirement coincides with other strong retirement incentives.

The top of Table 5 gives the actual distributions for the retirement states of the individuals in the sample. In these data, individuals are counted as working full-time only up to the point where they first report being partially or fully retired, and they are counted as being fully retired only after the last time they are observed to be working full-time or partially retired. Observations in the middle are counted as being partially retired if at least one of them is partially retired, or as being ambiguous if none of them is partially retired. For instance, if full-time work, partial retirement and full retirement are denoted as f, p, and

r, respectively, the first two years of the sequence ffpfrr would be counted as full-time work, the last two years as full retirement, and the middle two years would be counted as partial retirement (because at least one of them was partial retirement). In the sequence fffrfr, the first three years would be counted as full-time work, the last as full retirement, and the fourth and fifth years would be counted as ambiguous (since there was no partial retirement).

The bottom panel of Table 5 contains the results of a simulation using the parameters from column 1 of Table 4. In comparing the simulations with the observed distributions, we see that the simulation with the new estimates does a fairly good job at replicating the adjusted observed distributions. The simulation also does a reasonably good job at replicating the magnitude of the peaks of retirement activity, although in the observed distribution there appears to be some broadening of the peak at age 65 to ages 64 and 66 that is not evident in the simulated results. The simulation slightly overstates partial retirement until age 69, after which it understates it slightly.[25]

The results of simulations in the model which includes retiree health insurance do not differ much from the simulations without retiree health insurance, with none of the corresponding percentages differing by more than 0.4 percentage point.[26] This suggests that selectivity bias due to retiree health insurance is not a direct problem either for estimating the opportunity set, or for estimating the retirement model. The response of retirement to retiree

25. The magnitude of partial retirement is much closer than in the simulation in Gustman and Steinmeier (1986a).

26. The simulations in which the model ignores retiree health insurance are presented in Gustman and Steinmeier (1992).

health benefits is small enough that a correction for selectivity bias is not required in estimating the opportunity set, and as Table 4 indicates, the retirement model is not affected by having left out retiree health benefits.

IV: Simulations Altering Retiree Health Insurance Using 30 to 50 Year Olds From The 1983 Survey of Consumer Finances.

The results in the previous section are based on data from the 1970's. We would like to understand the effects of retiree health insurance on retirement for the current workforce, who face a different set of pension and social security incentives from those who retired in the 1970's. We also would like to understand the likely effects that trends and alternative policies pertaining to retiree health insurance are likely to have on those who will be approaching retirement age in the next decades. This requires use of the opportunity sets for those cohorts that will be retiring in future years. Together with these opportunity sets, we need a preference function. To meet these needs, we use information on employment, earnings, pensions and work history for workers who were 30 to 50 years old and included in the 1983 Survey of Consumer Finances (SCF).[27] For a preference function, we use the parameters estimated from the RHS data, but adjust the constant so as to best represent the differences observed among recent cohorts of retirees and those cohorts in the RHS sample.

For individuals in the SCF, wage offers for full-time and part-time work are constructed from the observed wages in the 1983-86 Survey of Consumer Finances. Pensions are reported

27. We additionally restricted the sample to males, since that is the group for which data were available to fit the preference function used in the retirement model. The simulations are also restricted to private sector workers for whom we have at least one full-time wage observation.

for covered individuals by their employers and are used to calculate the pension accrual rates associated with alternative retirement dates. The current social security law is coded and applied to each individual in the sample according to date of birth. A variety of hazards are also built into the opportunity set, including the probability of job change, change in pension coverage and the chance of becoming ill.[28]

After the budget constraints are calculated for these individuals under current policies, random variables are drawn for the stochastic processes in the model, and a set of simulated results as to the distribution of retirement ages is obtained from the model. Budget constraints are varied to correspond to several assumptions about the availability of health insurance for current workers and retirees, and simulations are done using these budget constraints.

For the SCF, the 1986 interview asked whether an individual had health insurance at the time of the survey. If the individual was interviewed only in 1983, the provision of health insurance is simulated on the basis of a probit equation.[29] If the individual was not initially covered by a pension but is simulated later to obtain one, the health insurance status on the new job is simulated from the same equation.

The Survey of Consumer Finances did not ask any individual whether he would be covered by health insurance in retirement, so this was simulated for everyone. For those who

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28. This opportunity set is essentially the same opportunity set (except for health insurance) we used in a previous paper which investigated various social security policy options (Gustman and Steinmeier, 1991). Further details of the calculations are presented in that paper and in our report to HHS (Gustman and Steinmeier, 1992).

29. The estimated probit equation is reported in Table III-24 of our report to HHS (Gustman and Steinmeier, 1992)

have health insurance on their present job, the availability of retiree health insurance is simulated on the basis of probit equations which are consistent with the descriptive data presented in Table 3.[30] The amounts of the health insurance on the current job are derived in a manner analogous to the derivations for the RHS data used to estimate the model. The dollar amounts are inflated to 1986 on the basis of the actual medical care CPI index and thereafter are increased by 1.7% more than the inflation rate.[31] As previously discussed, the effect of retiree benefits on compensation is to create a spike at the point when the individual first becomes eligible for retiree benefits, and afterwards to increase compensation by the difference between active and retiree benefits.

Since most individuals with retiree benefits have pensions, the date of eligibility for retiree health insurance was taken to be the same as the date of eligibility for early retirement in the pension plan, if the pension plan was in fact observed. For individuals for whom the plan was not observed and hence was imputed (most likely using several plans with possibly differing ages of early retirement), the early retirement age was chosen as the age at the peak of the accrual rates. For most individuals with pensions in this sample, the early retirement date turns out to be 55, although there are clusters at other ages (particularly 62). For those individuals with retiree benefits but without pensions, we considered the eligibility for retiree health insurance to be 62, coinciding with the eligibility age for early social security benefits.

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30. These probit equations are reported in Tables IV-9 and IV-12 in our report to HHS.

31. This compromise in assuming that the firm's contribution to health care costs lies between the inflation rate and recent growth in medical care costs is a crude attempt to build in an assumed response of firm policies which supposes that medical cost increases at current rates will not simply be accepted by employers indefinitely.

For each of the 737 individual in the SCF sample who pass the selection criteria, 100 simulations are conducted. For each simulation, the budget constraint is constructed in the manner described above, with the occurrences of health problems, pensions, employer-provided health insurance (if the individual was not interviewed in 1986), and retiree health insurance being calculated on the basis of the probabilities described above. In order to calculate the predicted retirement choices, we must also choose values for δ and ε in the utility function. These are the stochastic elements in the utility function, and they are chosen anew each simulation from the associated distributions (which have the parameter γ for the distribution of δ and σ_ε for the distribution of ε).

The simulations for the SCF sample require an adjustment based on the retirement behavior of cohorts retiring after those in the RHS sample. Applying the estimated effect of vintage on retirement age obtained within the RHS sample yields retirement ages much too young to be believable. That is, the differences among the cohorts within the Retirement History Survey suggest that the cohorts born in later years had a much stronger preference for retirement than did the cohorts born in earlier years, so that when extrapolated there is a much stronger trend to earlier retirement than is seen in the data. There are a number of possible reasons for this, including differences in time for adjustment among the RHS cohorts to major changes in the social security system in the early 1970's; but whatever the reason, these results suggest that the cohort effect should not be simply extrapolated from the cohorts of the RHS sample.

To calibrate the model, we run simulations using the compensation paths and individual characteristics of those in the SCF sample, setting the cohort variable to 8.5 (the average RHS cohort) but adjusting the constant term in the linear form $X\beta$. For each simulation, we sum the

absolute deviations between the simulated percentages and actual percentages for individuals working full-time and those fully retired. The actual percentages come from retirees in the Survey of Consumer Finances, the dividing line between full-time work and partial retirement being 1500 hours of work per year. The absolute differences are minimized when the constant term is increased by about 7.5 times the coefficient of the vintage variable.[32]

Once the utility function is adjusted for the differences in preferences among cohorts, the simulations are weighted and summed, and the distributions of retirement ages are calculated. Table 6 presents base case simulations of predicted retirement behavior for the cohorts in the SCF who are 30 to 50 years old in 1983, and thus will be retiring in the present decade and in the first two decades of the twenty first century. It does so on the assumption that retiree health insurance remains available under the same conditions that it is currently offered.

A number of changes may be adopted in employer provided health programs. Some changes may be made in retirement health programs in response to the new funding requirements adopted by the Financial Accounting Standards Board. Moreover, rising health care costs may induce more firms to abandon funding either for employee health benefits or for retiree health benefits, or to require still larger employee contributions to fund them.

Other changes in incentives may result from changes in policy. For example, a number of possible changes in policy which would affect retirement incentives have been floated by

32. Similar results are obtained when the parameters are adjusted using a definition based on hours per week worked, and adjustments are made by referring to retirees in the CPS (See Gustman and Steinmeier, 1992).

the Clinton administration. [33] One possibility is to mandate health insurance coverage for all employed workers. Another possibility is that the health care system be expanded to cover the unemployed and the retired, whatever their age. From the worker's point of view, the latter change would have the same incentive effects as excluding health insurance from compensation. The health insurance would be available whether the individual was working or retired, and hence it should not be counted as a reward for continued work. A partial move in this direction would make health insurance coverage available for all at work, and would cover retirees exclusively through federal insurance, eliminating from the picture the work incentives from employer provided retiree health benefits.

Figure 2 considers the results of simulations altering the provision of employer-financed health insurance for current workers and/or retirees. Panel (a) compares retirement outcomes under current employer provided health insurance, both on the job, and where available in retirement, with a base case in which there were no employer provided health insurance. Panel (b) indicates the difference in retirement outcomes between a case where all employers are required to provide health insurance, at least to current full-time employees, and the current state. Panel (c) analyzes the effect of current retiree coverage, comparing retirement outcomes in the current state with a base case in which there were no retiree coverage; and Panel (d) considers what would happen if all employers who have health insurance for their current full-time employees were to continue it for retirees, compared to the current situation

33. We do not consider the effects on retirement incentives either of taxes or of compensating wage differentials which might arise as benefits are changed. Our previous work (Gustman and Steinmeier, 1986a and b) suggests that modest changes in after tax wages will have little effect on retirement outcomes.

as a base case. Panel (e) simulates the effects of extending the age of eligibility to age 67, with age 65 eligibility as the base case.

Consider the two left panels in Figure 2. In Panel (a) the base case is one in which there is no health insurance (including retiree health insurance) for those who presently have it, while in Panel (c) the base case is one in which there is no retiree health insurance for the same group. Thus Panel (a) shows the effect of current health insurance on retirement, while Panel (c) shows the effect of current retiree health insurance on retirement. The difference is that although both panels drop health insurance for retirees, only Panel (a) drops health insurance for active workers. The similarities between the two panels suggests that retiree health insurance is responsible for most of the effect, with health insurance for active workers having relatively little effect. This same conclusion is reached in examining Panel (b), which extends health insurance to all active workers (but not retirees).

The small magnitude of the changes should not be entirely unexpected. The impact of the provision of health insurance to current employees is to raise effective compensation by a given amount in the years the individual is working, then to cease the insurance when the individual retires. The effect of this on compensation is about the same as an increase in the wage. The amount of increase is around 6% (calculated as $705, which is the 1977 mean employer contribution using the NMCES data, divided by $11,513, which is the approximate median income for that sample). In previous work, we found that a uniform percentage increase in the wage (both full-time and partial retirement) had only minor effects of retirement. In Figure 3(d) of Gustman and Steinmeier (1986a), for instance, we found that a whopping 50% increase in the wage increased retirement by only 5 to 10 percentage points in

the 61-69 age range.

The effects of health insurance for retirees are indicated in the bottom two panels of the figure. Panel (c) considers the effect of retiree health insurance were dropped for those who currently have it, and Panel (d) adds retiree health insurance for all those who have health insurance on their current jobs. In the data, the majority of individuals become eligible for retiree health insurance at age 55, but there is another peak at age 62. In the simulations, the peaks at age 61 reflect the fact that for some workers, working up to age 62 will make them eligible for retiree health insurance. In both simulations, this peak in the number of additional people working full-time is slightly above 1 percentage point. In delaying retirement until eligibility, retiree health insurance operates similarly to the option value of a pension.

Make available retiree health insurance, and the individual does not lose the entire value of his active worker health insurance if he retires, since he will get the retiree health insurance anyway. If he retires, he loses only the difference between the value of active worker health insurance and the retiree health insurance. This implies that once the spike is reached, retiree health insurance reduces the compensation penalty for retiring or partially retiring. Hence retiree health insurance should lead to a reduction in full-time work and an increase in full retirement and possibly also partial retirement. Such a pattern is indeed evident in Panels (c) and (d) of Figure 2 for ages after the eligibility for retiree health benefits.

The outcomes in panels (c) and (d) pertain to labor force behavior for those who have employer provided health insurance on the job, but average in a zero effect for the quarter of uncovered workers. The intensity of the effects for covered workers who lose their benefits

will be magnified somewhat, and will be even larger for those with the most generous benefits. Thus the economy wide results reported here may understate retirement changes from abolishing retirement health benefits for workers at some firms.

In order to put the magnitudes of these effects into perspective, we can compare them with the effects of potential changes in another "fringe" benefit of working, namely the social security benefit. Recently we investigated the effects of a potential policy change which would immediately eliminate the retirement earnings test of the social security system, and would increase the delayed retirement credit (the increase in future benefits for delaying retirement each year after 65) to 8% per year. This is in contrast with the current law, which will very gradually increase the delayed retirement credit from 3% to 8% over a period of several decades. The results of this potential policy change are reported in Table 2 of Gustman and Steinmeier (1991). They indicate that, for the affected cohorts, full-time work would increase by 1.8, 1.6, and 1.3 percentage points at ages 65, 66, and 67, respectively. The increases were positive but below 1.0 percentage points in three other years, summing to 5.8 percent. This means that the average date of retirement would increase by .058 years, or about 3 weeks.

In comparison, the effect of providing retiree health insurance on full-time work for all those who have health insurance on their current job (compared to the case where no one with employer provided health insurance has retiree coverage) is 2.2 percentage points at age 61, -1.6 percentage points at age 62, and -1.4 percentage points at age 63. These are calculated by adding the figures from Panel (d) of Figure 2 to the figures from Panel (c). Summing these figures over all ages yields -5.1 percent, which converts to a decrease in the average date of

retirement of about .051 years. This is about the same order of magnitude, but opposite in direction, to the social security simulations described above.

Figure 2e simulates the effects of delaying age of eligibility for medicare to age 67. As can be seen, using the NMCES cost figures, the effects on retirement outcomes are minor. As will be seen below, however, when health insurance is valued at individual blue cross/blue shield rates, rather than at group rates, the larger difference between health insurance costs for current and retired workers generates larger effects on retirement.

We also investigate whether there are significant differences in the estimated effects of retiree health insurance when the GAO estimates discussed in Section II are used. To do so, we scaled our previous estimates of employer contributions to health insurance (for both retired and active workers) so that the under-65 and over-65 averages are comparable with the GAO benefit amounts. The general nature of the results with the GAO cost figures is the same, differing only slightly in terms of the exact magnitudes of the effects. The magnitudes of effects at ages less than 65 (when the GAO benefits are higher) is increased and the magnitudes at ages over 65 (when the GAO benefits are lower) are reduced.

As a final exercise, we consider whether the results are significantly affected if other cost figures are used. One drawback of the NMCES data is that it most likely averages cost figures over a range of employee ages rather than reflecting the cost of insuring particular employees. The same is true of the GAO figures. Neither figures reflect the fact that health insurance is much more valuable to a 60 year old employee than to a 30 year old employee. Another issue is the question of what is the appropriate counter-factual. In the simulations conducted to this point, we value health insurance by the employer's contribution to a group

plan. This assumes the employer shifts costs by continuing to offer group coverage, but having covered workers pay the full contribution. It is of interest to ask what would happen if employers no longer offered group policies, so that the private alternative must be valued at the cost to an unaffiliated individual. To address these problems, and to determine the relevant magnitudes in the extreme case, we collected price figures on expensive Blue Cross/Blue Shield plans, a basic plan from California, and a medigap plan from New York, and ran simulations using them.

The California Blue Cross/Blue Shield we chose was a $200 deductible family plan in Region 4, which includes Riverside, San Bernardino, San Diego, Santa Barbara and Ventura counties. The cost figures, which are about average for California, are $209 per month for individuals under 30 and rise to $430 for individuals 50-59 and $524 for individuals 60-64. For individuals over 65, we used the rate for the New York medigap plan (Empire Blue Cross/Blue Shield) of $63 per month.[34] Using these cost figures, health insurance looks more like a pension in that the accrual builds rapidly to a peak at age 64 before falling off dramatically.

The simulations based on these cost figures are presented in Figure 3. In general, these simulations produce larger movements in retirement than the simulations in Figure 2. Extending health insurance to all current employees (Panel b) would increase full-time workers by around one percentage point up to age 64 due to the high value of health insurance to workers in this age range. After age 65, full-time work would drop sharply

34. Medicare supplement insurance can be sold in only ten standard plans. The rate in the text is for Plan B, which includes the hospital deductible.

because the availability of Medicare greatly reduces the value of employer provided health insurance. The effect of retiree health insurance on those who have it is even more dramatic. Retiree health insurance (Part c) decreases full-time work by almost three percentage points between 62 and 64. In this case the employee loses insurance if he retires, and hence the insurance effectively serves an added incentive to continue working. The net effect of retiree health insurance is to decrease the average retirement age by 0.12 years, which is almost 1.5 months.

Finally, there is the simulation in Figure 3(e). In contrast to the earlier simulation in which there was virtually no effect, this last simulation indicates that if health insurance costs are valued at the nongroup BC/BS rate, then raising the medicare retirement age to 67 will raise full-time work effort over the age range 65 to 67 by one to two percentage points per year.

V. Conclusions

This paper has addressed three specific questions. What is the size of the effect of retiree health insurance on retirement at different ages? What is the effect of having omitted retiree health insurance from retirement models on the parameters that have been estimated? And finally, what are the likely effects on retirement outcomes of changes in availability or value of retiree health benefits on retirement behavior in the future, due either to the effects of current policies, or to policies which are under consideration?

Incentives created by retiree health insurance, as opposed to health insurance for active workers, are responsible for most of the effects of health insurance on retirement outcomes. Health insurance for active workers has an effect on retirement analogous to about a six

percent increase in compensation, which is quite small. Retirement incentives from health benefits for retirees are analogous to those created by defined benefit pensions. The spike in the accrual profile is assumed to coincide with the spike created by early retirement provisions of pensions. Because of the size of the value of health insurance relative to the wage, and because there are opposing effects of retiree health insurance before and after the age of eligibility for benefits, the overall effects on retirement incentives are modest. Consequently, the resulting effects on retirement behavior are small. Compared to a case in which those who currently are covered by employer provided health insurance while working would have no benefits in retirement, providing retiree health insurance to all workers who currently have employer provided health insurance would reduce retirement age by .05 years. The magnitude of this effect is similar in size but opposite in sign to the effect of abolishing the social security retirement earnings test and moving immediately to implement fully the 1983 social security reforms as they will apply after the first two decades of the next century. Larger effects are found when retiree health benefits are valued at the cost of purchase to an unaffiliated individual, rather than at the cost to the employer under a group plan.

The omission of retiree health benefits from the opportunity set in most previous studies of retirement behavior is not likely to invalidate the conclusions of these studies, with regard to the effects on retirement of pensions, social security and other components of the opportunity set.

None of the potential policy changes evaluated is likely to have a large effect on retirement outcomes. Thus our findings also suggest that in evaluating the distributional consequences of alternative retiree health policies, calculation of first order effects on the

assumption of no adjustment in retirement is likely to be adequate.

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Table 1
Health Insurance Coverage Among Active Workers

	Percent Covered as Active Workers	Percent Covered When Retired Given Coverage When Active	
		Excluding Unsure Responses	Denominator Includes Unsure Responses
Full-Time Workers	78.0%	73.4%	51.2
Males	62.1	61.9	42.0
Females			
Part-Time Workers	22.2	62.2	47.7
Males	15.6	56.3	40.2
Females			

Source: August 1988 Current Population Survey

Table 2
Health Insurance Coverage Among Retirees

	Percent Covered as Active Workers	Percent Covered When Retired Given Coverage When Active	
		Actual Coverage	Potential Coverage
Full-Time Workers			
Males	77.9%	59.9%	72.5%
With Pensions	91.0	66.8	77.4
Without Pensions	49.4	32.7	53.0
Females	58.4	43.5	65.5
With Pensions	83.4	52.2	72.2
Without Pensions	35.5	24.4	50.8
Part-Time Workers			
Males	36.5	43.9	51.6
Females	26.7	31.7	51.0

Source: August 1988 Current Population Survey

Table 3
Employer Contributions for Retiree Health Insurance
for Covered Workers Over 40 Years Old and for Retirees

	Contributions When Employed	Contributions When Retired
All Workers	$732	$499
By Gender		
Male	830	598
Female	546	337
By Marital Status		
Married	779	564
Not Married	543	347
By Age		
Under 65 Years	739	651
Over 65 Years	457	440
By Education		
High School Dropout	734	543
High School Graduate	727	557
Some College	755	374
College Graduate	731	433
Post-Graduate	734	330

Source: Computed from 1977 National Medical Care Expenditure Survey

Table 4
Structural Retirement Model Estimates
With And Without Health Insurance

		With Health Insurance		Without Health Insurance	
		Coeffi-cient	t Statistic	Coeffi-cient	t Statistic
α	Exponent of consumption	0.09	2.42	0.09	2.37
γ	Parameter for δ	0.27	56.65	0.28	57.28
σ_ϵ	Standard deviation of ϵ	1.11	65.85	1.12	67.77
β_0	Constant in linear term	0.07	2.40	0.04	1.53
β_1	Coefficient of age[1]	0.26	65.34	0.26	69.57
β_2	Coefficient of health	0.67	19.97	0.67	19.24
β_3	Coefficient of vintage[2]	0.12	9.81	0.12	9.73
	number of observations	3283		3283	
	log likelihood	-9750.97		-9859.03	

[1] The actual variable is (Age - 62).
[2] The actual variable is (Vintage - 9).

Table 5
Retirement Outcomes

Age	Percentages in Retirement States				Percentages in Transitions	
	Working Full-Time	Partially Retired	Ambig-uous	Fully Retired	Retires From Full-Time Work	Retires Completely
				Actual		
58	93.9	2.2	0.3	3.6		
59	91.9	3.1	0.7	4.4	2.0	0.8
60	87.7	5.0	0.4	6.9	4.1	2.5
61	83.5	6.1	0.5	9.9	4.2	3.0
62	70.6	10.8	0.5	18.2	12.9	8.3
63	63.7	11.6	0.4	24.3	6.8	6.1
64	46.7	16.4	0.6	36.3	17.0	11.9
65	26.7	21.1	0.8	51.4	20.0	15.2
66	15.0	22.2	0.7	62.1	11.7	10.7
67	12.0	21.1	0.9	66.0	3.0	3.9
68	7.5	17.6	0.6	74.3	4.5	8.2
69	6.6	17.8	0.8	74.8	0.9	0.5
70	4.1	15.3	0.3	80.4	2.5	5.6
71	4.9	13.9	0.3	80.8	-0.9	0.4
72	2.6	12.6	0.0	84.8	2.4	4.0
				Simulated		
58	93.7	4.8		1.5	1.6	0.7
59	91.0	6.1		2.9	2.7	1.4
60	86.3	7.8		5.8	4.6	2.9
61	81.0	9.7		9.4	5.4	3.5
62	69.0	14.1		16.9	12.0	7.5
63	60.0	16.1		23.9	9.0	7.0
64	50.0	17.8		32.2	10.0	8.3
65	28.0	24.4		47.6	22.0	15.4
66	21.0	23.1		55.8	6.9	8.2
67	14.7	21.2		64.0	6.3	8.2
68	9.3	19.1		71.6	5.4	7.6
69	5.5	16.8		77.7	3.8	6.1
70	2.9	14.4		82.7	2.6	5.0
71	1.9	11.8		86.4	1.1	3.7
72	1.7	10.8		87.5	0.2	1.1

Table 6
Base Simulation Using NMCES Cost Figures
For SCP Cohorts Born From 1933-1953

Age	Percentages in Retirement States			Percentages in Transitions	
	Working Full-Time	Partially Retired	Fully Retired	Retires From Full-Time Work	Retires Completely
58	86.5	5.5	8.1	4.4	3.0
59	81.0	6.8	12.2	5.5	4.1
60	72.4	8.3	19.2	8.6	7.1
61	64.9	9.4	25.7	7.6	6.5
62	51.9	11.8	36.3	13.0	10.6
63	42.2	12.7	45.2	9.7	8.9
64	32.8	12.9	54.2	9.3	9.1
65	22.4	13.3	64.3	10.5	10.1
66	15.3	12.5	72.2	7.1	7.8
67	9.7	11.5	78.8	5.6	6.7
68	5.7	10.1	84.2	4.0	5.3
69	3.2	8.7	88.1	2.5	3.9
70	2.2	7.3	90.5	1.0	2.4
71	1.2	6.1	92.8	1.0	2.3
72	0.6	4.9	94.5	0.6	1.7

Figure 1

Health Insurance Accruals
for Continued Work

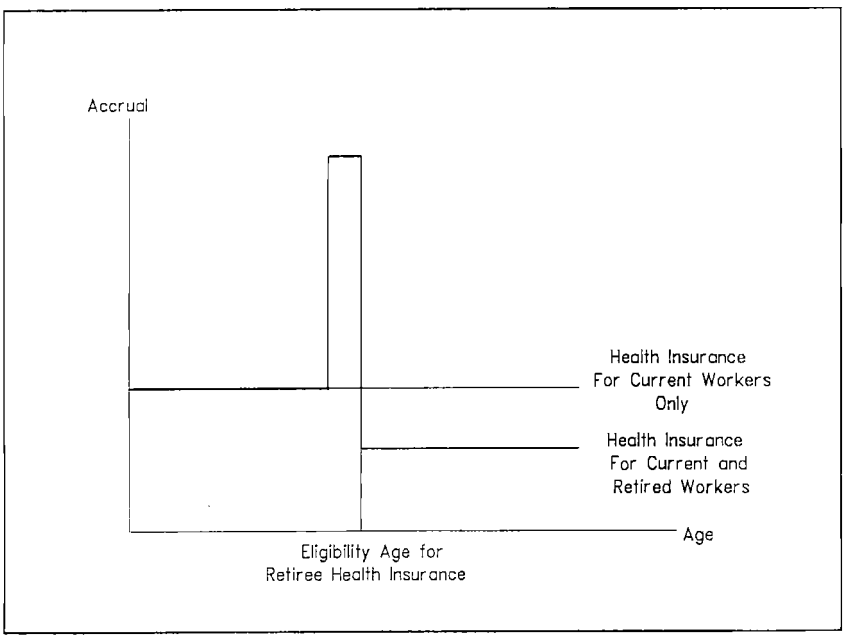
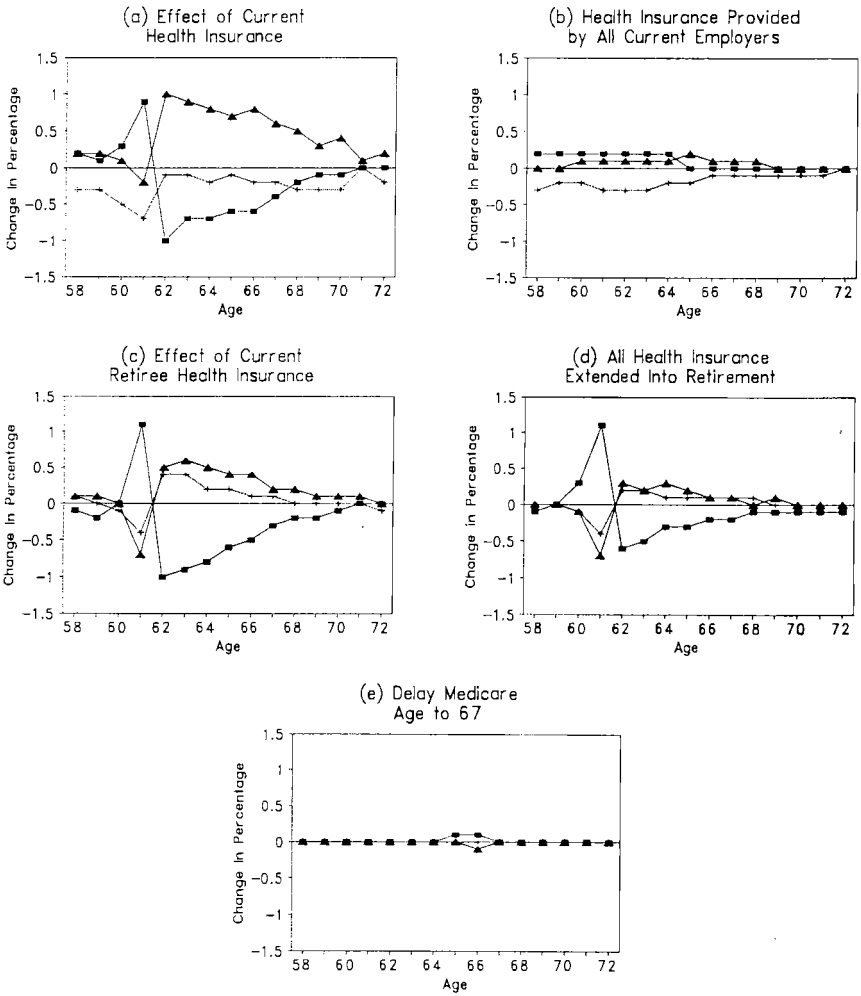
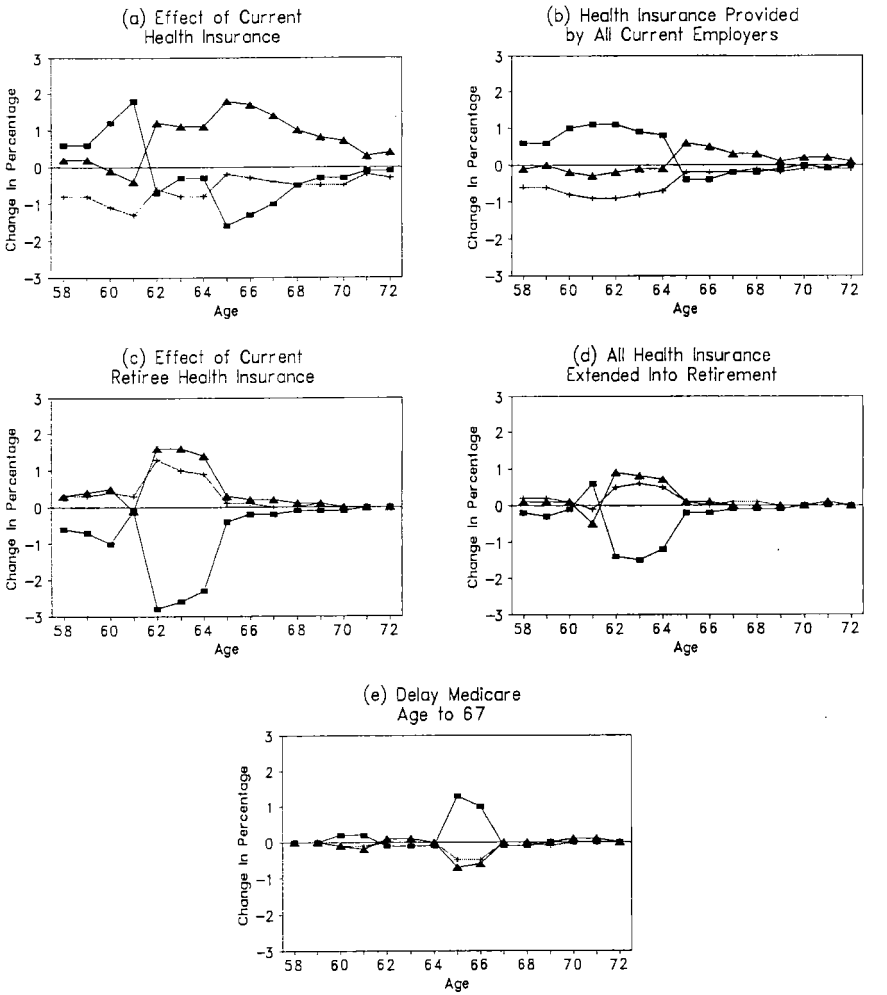


Figure 2
Simulations of Alternative Health Insurance Coverage
Using NMCES Cost Figures for SCF Cohorts



Legend
Squares: Full-Time Work Crosses: Partial Retirement Triangles: Full Retirement

Figure 3
Simulations of Alternative Health Insurance Coverage
Using 1992 Blue Cross/Blue Shield Cost Figures



Legend
Squares: Full-Time Work Crosses: Partial Retirement Triangles: Full Retirement