DRAFT July 7, 2006 – DO NOT CITE

The Health Effects of Medicare for the Near-Elderly Uninsured

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Acknowledgements:

We would like to thank Shelby Newland for her project management. This work has been supported by an NIH/NIA grant on Lifecycle Effects of Health Insurance on Elderly Health (R01 AG024451-01).

Abstract

We study how the trajectory of health for the near-elderly uninsured changes upon enrolling into Medicare at the age of 65. We find that Medicare increases the probability of the previously uninsured having excellent or very good health, decreases their probability of being in good health, and has no discernable effects at lower health levels. Surprisingly, we found Medicare had a similar effect on health for the previously insured. This suggests that Medicare helps the relatively healthy 65 year olds, but does little for those who are already in declining health once they reach the age of 65. The improvement in health between the uninsured and insured were not statistically different from each other. It may be the stability of insurance coverage afforded by Medicare that imparts a health benefit suggesting that universal coverage at other ages may have similar health effects.

1. Introduction

The Medicare program provides near universal health insurance coverage for Americans over the age of 65, while those under 65 are predominantly reliant on employer-sponsored health insurance for affordable health insurance coverage. The substantial gaps in coverage resulting from the employer-based system are partially filled by individually purchased policies and public insurance (primarily Medicaid), but 18% of the non-elderly, 45.5 million people in 2004, remain without health insurance. Because health insurance reduces the financial barriers of using the medical system to maintain or prevent the deterioration of health, the uninsured may experience indirect negative consequences to their health as a result of health care foregone from a lack of incentives for obtaining medical care (Institute of Medicine, 2001). Because the near-elderly uninsured obtain health insurance through the Medicare program at the age of 65, they may experience a health benefit from this transition. The goal of this paper is to determine the effect of the Medicare program on the health of the near-elderly uninsured.

Understanding whether there is a health benefit to the near-elderly uninsured from the Medicare program is an important aspect of policy debates regarding expanding and contracting Medicare coverage. As we approach the year 2018 -- when the Medicare trust fund reserves are projected to be exhausted (Trustees of the Social Security and Medicare trust funds, 2006) – policy changes to Medicare may become necessary. The near-elderly uninsured may be particularly vulnerable to any contraction in Medicare coverage because Medicare arrives at an age when treatable health conditions are emerging at an increasing rate. Despite the importance of health insurance for this age group, 25% of the near-elderly will experience a period without health insurance between ages 55 and 65 (Baker et al., 2005). This may be partially due to the fact that affordable coverage is difficult to find for those lacking health insurance with existing or emerging health conditions. Although all are guaranteed an issue of a health insurance policy in the individual market through the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the law does not limit the amount insurers can charge for such coverage. Hence, premium levels can exceed the financial resources of all but the wealthiest individuals. As a result, several policy proposals have emerged to address this vulnerable group including expansions in the Medicare program to cover the uninsured in the 55 to 65 age group. Understanding the direct and indirect benefits of providing health insurance to the near-elderly uninsured can help inform these policies. The health effects of policies specifically aimed to provide insurance to the near-elderly uninsured have not been established.

In this paper, we use a quasi-experimental approach to establish the health effects of insurance for the near-elderly uninsured. Those who acquire health insurance typically do so for a reason: they may have gained employment that offers coverage; they may have qualified for coverage from the federal government as a result of poverty or disability; or they may have purchased insurance in the individual market. In all of these cases, the decision to purchase health insurance may be related to recent and projected changes in health status, making it difficult to empirically assess the health effects of acquiring insurance using cross-sectional comparisons. In contrast, uninsured persons who turn 65 acquire health insurance through the Medicare program simply by aging in. Therefore, by using panel data to assess how gaining Medicare coverage at age 65 changes the health trajectory of the near-elderly uninsured as they age into their late 60s and early 70s, we can identify how insurance changes the trajectory of health.

2. Literature on Health Insurance and Health

The Institute of Medicine Committee on the Consequences of Uninsurance examined the relationship between being uninsured and the health of American adults (Institute of Medicine, 2002). The Committee concluded that if the roughly 30 million working-age uninsured Americans were to become continuously insured, their health would be expected to improve. The studies on general health supporting these conclusions find that being uninsured for relatively short periods (1 to 4 years) appears to result in a decrease in general health status (Baker et al., 2001) and that uninsured adults followed for 5 to 17 years are at higher risk of premature death than are persons with private coverage (Franks et al., 1993; Sorlie et al., 1994). Hundreds of other studies have also documented a disparity in morbidity between the uninsured and the insured (Literature reviews: Brown et al., 1998; Hadley, 2003; Institute of Medicine, 2002). From these studies, however, it is difficult to determine the causal relation between health insurance and health for several reasons. A positive association between health insurance and health may reflect the effects of health on health insurance (reverse causation) or the effects of some other unobserved attribute on both health insurance and health (selection) (Levy and Meltzer, 2004).

The only experimental study of the effect of insurance on health was the RAND Health Insurance Experiment (HIE). Between 1974 and 1982, the HIE randomly assigned roughly 2,000 families to one of 14 experimental health plans that varied in their cost-sharing arrangements (Newhouse et al., 1981; Newhouse et al., 1993). Although the study found sizable effects of more generous health insurance on use and expenditures, effects on health status were more modest. For low-income persons with high blood pressure, free care brought an improvement in blood pressure control. Vision also improved among those with poor vision. No significant effects were detected on eight other measures of health status and health habits for adults (Brook et al., 1983). The absence of a health effect could be due to the presence of a cap on out-of-pocket health expenditures by all enrollees that was, at most, 15% of income (Newhouse et al., 1993). This randomized social experiment is of limited use for our purposes because (1) it did not include a study group with no health insurance and (2) it excluded the Medicare-eligible population and thus excluded the elderly population.

By exploiting a natural experiment from a change in the eligibility of pregnant women for Medicaid benefits, a few quasi-experimental studies have provided evidence of a causal relation between health insurance and health of newborns (Joyce, 1998; Epstein and Newhouse, 1998; Baldwin et al., 1998; Ray et al., 1997; Currie and Gruber, 1996a, 1996b, 1997; Reichman and Florio, 1995; Haas et al., 1993; Fossett et al., 1992; Buescher et al., 1991; Piper et al., 1990). The findings generally suggest that health insurance does result in modest reductions in infant mortality.

More recently, quasi-experimental designs have been applied to the question of health and health insurance around the introduction of Medicare. Decker and Rapaport (2002) found that mortality decreased significantly after women diagnosed with early breast cancer acquired Medicare. Finkelstein and McKnight (2005) reported that the establishment of Medicare in 1965 had no discernible impact on the mortality of the elderly in the 10 years following Medicare's enactment.

The hypothesized mechanism by which health effects might occur is through increased or more timely use of medical services with insurance and Medicare. The HIE provides direct experimental evidence that a reduction in out-of-pocket costs increases utilization and expenditures for health care services (Manning et al., 1987; Newhouse et al., 1993). Several recent observational studies provide strong evidence of the increased use of medical services due to Medicare. State hospital discharge datasets have also been used to assess how Medicare might alter medical service use (Lichtenberg, 2002; Card et al., 2004). These studies have found that utilization rates for doctor visits and hospitalizations (particularly hospitalizations for discretionary conditions) increase at age 65, the cusp of Medicare eligibility. McWilliams et al. (2003), using the Health and Retirement Study (HRS), found a jump in preventive care utilization between just before and just after age 65. Because so many medical procedures have been found to reduce risks of death and disability (Aiken and Bays, 1984; Cassel et al., 1999; Fuchs, 1999; McClellan and Noguchi, 1998), the assertion that Medicare and other forms of health insurance that improved access to medical care has helped Americans live longer, healthier, and more independent lives is compelling.

Yet no study has looked directly at how the introduction of Medicare may change the health trajectory of the previously uninsured using individual-level data. We hypothesize that the health trajectory of previously uninsured persons will improve as a result of the introduction of Medicare at age 65. The mechanism for this change would be the greater use of medical care induced by subsidized, universal health insurance coverage. There may also be contemporaneous changes occurring at this age. The most obvious are the higher rates of retirement and the introduction of Social Security payments at age 65. Because of these other changes occurring simultaneously, we will also test whether the health trajectory of the previously uninsured changes by more than that of the previously insured.

3. Conceptual and Empirical Framework

Health insurance and medical care exist to maintain and improve health, and to guard against the financial risks associated with poor health. Health can be viewed as an asset that has a natural rate of deterioration over time. A medical event can hasten that deterioration. Medical care is used after a medical event to restore, maintain, or prevent further decline in health (Grossman, 1972). The expenditure for this medical care is sometimes large and unexpected. Insurance reduces the financial risk associated with higher medical expenses after a health event. Health insurance plays other important roles in this relationship, including allowing access to health care that would otherwise be unaffordable (de Meza 1983, Nyman, 1999) and increasing demand for medical care because the person using health care with insurance typically does not pay the entire cost of that care (Pauly, 1968).

Determining whether the additional medical care afforded by the introduction of health insurance affects health may be complicated by adverse selection: the decision to acquire or to drop health insurance is often related to one's health status (sometimes this is not a decision – it happens because a person involuntarily loses their job with employment-based benefits). For example, one could acquire health insurance before seeing the doctor for an emerging health problem. Unless the health status factors that led to the change in insurance status are perfectly controlled for, assessing causality in the empirical evaluation of the relationship between change in health insurance status and health status is problematic because the effects of the unmeasured or mismeasured aspects of poor health may be attributed to being insured.

The empirical framework in this paper focuses on the introduction of Medicare insurance at age 65, where the introduction of government-subsidized health insurance for previously uninsured persons occurs independently of any underlying health status change other than aging one more year. Because government policy restricts entry into

Medicare until age 65 for most Americans, those who take up Medicare insurance (at age 65, but not those before age 65) do so for reasons other than changes in health status. It is the introduction of health insurance at age 65 for no other reason than turning this age that creates the natural experiment used in our key comparisons.

A stylized version of our model is expressed as

$$\Delta H = \beta_0 + \beta_1 U + \beta_2 M + \beta_3 U * M + \beta_4 Age$$

where ΔH is the change in health status between age and age+1, U is an indicator of whether subjects are uninsured prior to age 65, M is an indicator for the ages subjects are enrolled in Medicare. We can determine from the estimated coefficients the average change in health status ($\overline{\Delta H}$) in the pre-Medicare and post-Medicare period for both the Uninsured and the Insured groups: $\Delta H_{Upre}=\beta_0+\beta_1$, $\Delta H_{Upost}=\beta_0+\beta_1+\beta_2+\beta_3$, $\Delta H_{Ipre}=\beta_0$, and $\Delta H_{Ipost}=\beta_0+\beta_2$. To simplify the notation, we refer to these four $\overline{\Delta H}$ groups as U_{pre}, U_{post}, I_{pre}, and I_{post}. They are depicted as slopes in Figure 1. From $\overline{\Delta H}$, we can estimate the change in the rate of health decline after the introduction of Medicare for the Uninsured and Insured groups (ΔU and ΔI) by subtracting the pre change from the post change. Finally, we estimate the change in the rate of health decline for the Uninsured using the Insured group as a control by ΔU-ΔI. Note that while, for simplicity, the graph depicts no intercept change at 65, our modeling does allow for this.

This experimental opportunity at age 65 is not exact for two reasons. First, initial insurance status is not random assigned, which could bias our findings: certain factors, such as low socioeconomic status, can cause poor health and lower rates of health insurance coverage. With the first-difference approach, baseline health differences between the insured and uninsured (both observed and unobserved differences) are removed. By controlling for the characteristics of the groups, we control for differences in the rate of change in health status due to differences in these characteristics. Second, other changes confounded with health status may also occur at age 65, including retirement and Social Security payments. We consider the change in trajectory of the insured as a proxy for these contemporaneous changes. We directly consider how sensitive our comparisons are to the time-dependent (but potentially endogenous) changes to job status and Social Security payments. In addition the difference in the change at age 65 between the insured and uninsured groups provides a control for contemporaneous changes.

4. Data

The data were obtained from the original age-eligible cohort of the Health and Retirement Study (HRS). The HRS began in 1992 as a national longitudinal study of the noninstitutionalized population born between 1931 and 1941 (i.e., persons age 51 to 61 at the time of the baseline survey) and their spouses. Respondents and their spouses have been reinterviewed every 2 years since. The investigators used a complex sample design in which black persons, Hispanic persons, and residents of Florida were oversampled. The initial age-eligible sample was 9,771. We use all biannual waves from 1992 to 2004. Figure 2 describes the aging of the original sample at each wave.

Our study sample includes birth cohorts 1932-1937 (grey shading in Figure 2). These birth cohorts have the potential to be observed at 59/60 and twice once they reach the age of 65. By using the same participants for the pre- and post-eligibility periods removes the possibility of a birth cohort effect; we excluded the 1938-1941 birth cohorts for this reason. Starting all individuals when they are 59/60 removes the possibility of left-censoring bias that would result from a differential death rate by insurance status and age cohort; to avoid this, we excluded the 1931 cohort and started following the included birth cohorts at age 59/60. As a result, we studied the 1932-1937 birth cohorts (N = 5,086).

We also excluded persons who dropped out or died before age 59/60 (n = 226), those with missing insurance status (n = 55), the few persons who reported never receiving Medicare after age 65 (n = 31), those with no follow-up after age 59/60 (n = 127), and those on Medicare or Medicaid at age 59/60 (n = 572). We will use sensitivity analysis to test the influence of this last exclusion. Our final study sample consists of 4,075 persons (Table 1).

In each wave, HRS respondents provided detailed information about their current insurance coverage. They were asked whether they received any employment-based coverage, individual coverage, and coverage through federal programs such as Medicare or Medicaid. The uninsured are defined as those whose response indicated they had no form of private or public insurance. Those uninsured at age 59/60 represent the uninsured group and those insured at age 59/60 represent the insured group. The insured group consists of 3,484 persons, and the uninsured group consists of 591 persons (Table 2). Everyone is insured through Medicare once participants cross the age 65 threshold, but the analytical labels for our comparison groups are held fixed according to their insurance status at age 59/60. The percentage of uninsured persons drops from 14.5% to 14.0% between the pre and post period because of the higher death rate in the uninsured group.

However, switching between insured and uninsured states is possible before age 65. In fact, 9.7% of the sample switched from insured to uninsured or from uninsured to insured between 59/60 and 63/64. Because our interest is determining whether health is a consequence of one's insurance status, we would like the definition of insurance status to not be a consequence of a health event. Therefore, our primary analysis is based on the initial insurance status (i.e. insurance status at age 59/60). In a sensitivity analysis, we compare the group continuously insured and the group continuously uninsured.

While wave-specific overall response rates average 88.6%, persons who are uninsured are more likely to be lost to follow-up than persons who are insured. The HRS sample weights account for attrition (in addition to the complex sample design) through a post-stratification of the HRS to the Current Population Survey (CPS) by age, sex, race, ethnicity, and marital status groups. This stratification explains differential non-response over time by those major demographic groups. Because differential attrition by insurance status remained, we used the CPS to apply an additional adjustment to the HRS weights by age, race, labor force status, education, and insurance status to arrive at our final weights. These adjusted weights are used in all analyses.

The primary outcome measure is self-reported health status combined with mortality. The former is measured by the question, "Would you say that your health is excellent, very good, good, fair, or poor?" Mortality is reported by surviving family members or other contacts, and non-reported mortality is obtained through a link of the HRS files with the National Death Index. Self-reported health status has been used as a measure of health for many previous studies that related insurance coverage to health outcomes (Fihn and Wicher, 1988; Hafner-Eaton, 1993; Lurie et al., 1984; Short and Lair, 1994) and has been shown to have predictive validity for both future health care utilization and subsequent mortality (Manning et al., 1987; DeSalvo, 2006). Due to the small sample sizes on the extremes of this scale, we combine the excellent and very good health status categories and the fair and poor categories.

Our control variables include patient demographics and socioeconomic status. The sociodemographic variables include sex, age, education, ethnicity, race, and region. Marital status, income, and wealth are also included as explanatory variables, but with caution because they may be considered endogenous. Wealth and income measures are converted to 2004 real U.S. dollars adjusted by the Consumer Price Index.

5. Empirical Model

We estimate health state transition between the health state in wave *t* (H_t) and the health state in wave *t+1* (H_{t+1}). H_{t+1} is a categorical variable with four categories: j = (excellent/very good (E), good (G), fair/poor (F) and died (D)). The transitions from H_t to H_{t+1} are estimated by using the following multinomial logit model:

$$\ln\left[\frac{p_{ij}}{p_{iE}}\right] = \beta_{ij0} + \beta_{ij1}H_t + \beta_{ij2}U_t + \beta_{ij3}M_t + \beta_{ij4}H_t * U_t + \beta_{ij5}H_t * M_t + \beta_{ij6}M_t * U_t + \beta_{ij7}H_t * U_t * M_t + \beta_{ij8}Age_t + \beta_{ijn}X_n$$

where p_{ij} is the probability of being in health status category *j* for participant *i* at wave *t+1*: $p_{ij} = pr(H_{t+1} = j \mid H_t = i; age_t; X)$. A more traditional fixed effect model of health status would not be appropriate because death is one of the health states and it is an absorbing state. We considered an ordered logit for this model because the health states are ordered, but because of the poor performance of this model on the Brant test and the fact that the multinomial logit generally passed the revised Hosmer-Lemeshow test, while the ordered logit universally failed this test. (The details of our specification tests will be provided upon request.)

To provide interpretability from the large number of estimated relevant coefficients in our multinomial logit model, we simulate how the estimated health state transitions will change the health state for U and I as the subjects in these groups age. The simulation is conducted as follows. First, we start with the sample when they are 59/60. We then use the estimated coefficients from the health transition model to predict their probability of being in each of the four health states at 61/62. Each subject's realized health state at 61/62 is then determined from a random draw from a uniform distribution on the unit interval. We then repeat this process using the predicted health states at 61/62 as their baseline health state for the prediction of the probability of being in each of the four health states at 63/64. This process is repeated until each subject is aged to 71/72. Those subjects who enter the dead state are treated as dead for all remaining ages in the simulation and are dropped from the repeated predictions for subsequent ages. In addition to simulating the health of subjects as they age onto Medicare, we simulate the health of subjects as they age from 65 to 71 assuming they did not receive Medicare. This out-of-sample simulation is performed by not "turning on M" for ages beyond 65.

The simulation is similar to a Markov chain, but instead of using average transition probabilities and averages for initial conditions, the Markov process is conducted at the individual level. This allows for unique transition probabilities for each individual's covariates. This greatly simplifies the process when the time dependent covariates of retirement and Social Security payments are added to the model. However, random variation enters because realized states are based on a random draw. This variation is reduced because we repeat the simulation 100 times for each individual.

When the simulation is complete, the average proportion of subjects in each health status at each age for each insurance group is estimated as well as for the counterfactual post period of U and I. We then estimate the change in health state over a 6-year period for each insurance group (i.e. U_{pre}, I_{pre}, U_{post}, I_{post}) by subtracting the health state probability at age 71 from the health state probability at age 65. The difference in difference for each insurance group (ΔU and ΔI) is defined as the difference in a 6-year change in health status caused by Medicare enrollment at age 65 (($U_{post} - U_{pre}$) and ($I_{post} - I_{pre}$)). Finally, the difference between these two differences gives the change in health status caused by Medicare enrollment at age 65 for the uninsured, controlling for any contemporaneous changes in health over time. These calculations are depicted graphically in Figure 3.

We estimated standard errors and significance in the multinomial logit using robust standard errors (White, 1980), correcting for clustering at the person level. We estimated confidence intervals of the health state probabilities estimated in the simulation using the percentile method from a non-parametric clustered bootstrap. The cluster was at the individual level to maintain the serial correlation pattern at the individual level without assuming an explicit form for the autocorrelation (Efron and Tibshirani, 1993).

We then estimate the base model for several important subgroups: continuous insurance groups, by gender, for low income and low wealth, and for those with and without supplemental insurance. Low income (wealth) group is defined as those with income (wealth) below the median in that wave when 59/60. This translates into income below $46,000 and wealth below $156,000 in 1996 dollars. Supplemental insurance is defined as any additional insurance to Medicare. This includes employer insurance, individual insurance, a MediGap plan, VA Champus, and Medicaid. Finally, we perform several robustness checks. We explore whether the results are robust to additional control variables such as time-dependent retirement and Social Security payments, to alternative age specifications, to alternative health status categorizations, and to weighting.

6. Results

Table 3 shows the baseline characteristics of the study sample by insurance status. The insured and uninsured groups in the HRS at age 59/60 are representative of these groups in the United States. The uninsured are more likely to be in fair or poor health, are less likely to work, have lower education and lower income, and are more likely to be African American or Hispanic. Although the uninsured are more likely to have diabetes and psychiatric problems and to visit the hospital, they are less likely to visit the doctor.

Table 4 shows the coefficients of the multinomial regression coefficients, with the excellent/very good group being treated as the reference category. The tests of significance for key groups of variables are displayed at the bottom of the table. Here we see that the health of the uninsured is different from that of the insured in the pre-and post-Medicare periods. The health status differences before and after Medicare within insurance group approaches significance at the .05 level. The difference in the rates of change pre- vs. post-Medicare between the uninsured and insured is not statistically significant.

To better understand the direction of these health changes, we turn to the simulated trajectories depicted in Figure 4. In the northwest quadrant we see the trajectory for the excellent/very good health status. The darker lines represent the uninsured group trajectory and the lighter lines represent the insured group trajectory. The uninsured trajectory is below the insured trajectory representing their inferior health. Both lines decline with age representing deteriorating health with age and the monotonically increasing probability of being in the dead health state. At age 65 there is a kink in the trajectories which represents the change in the rate of health decline post Medicare enrollment. The dashed line is the pre-65 trajectory, based on the pre-65 transition probabilities, extended into the post-65 ages. The divergence between the two lines for each insurance group represents the effect of Medicare on that insurance group. Here we see the increase in the likelihood of excellent/very good health with Medicare for both the uninsured and insured groups. The divergence is greater for the uninsured group. The other panels show the trajectories for the other health status categories. It is notable that by age 71 the fair/poor trajectories for the insured and uninsured groups converge.

As a check on the fit of our model and our simulation to the raw data on health status for our sample, we graphically display the raw trajectories with the trajectories from our fitted data in Figure 5. This dramatically demonstrates the remarkable fit of our model.

Table 5 displays the simulated incremental effects between health trajectories. In column [E] we see that for every 100 persons in the uninsured group, from age 65 to 71 the introduction of Medicare at age 65 leads to 7.7 more uninsured people reporting excellent or very good health, 6.1 fewer reporting good health, 3.7 fewer reporting fair or poor health, and 2.2 more are dead. The changes are statistically significant for the excellent/very good group, suggested by the exclusion of 0 in the reported 95% confidence interval. Similar but weaker patterns are observed for the insured group from age 65 to 71, where the introduction of Medicare at 65 leads to 5.9 more insured people reporting excellent or very good health, 5.1 fewer reporting good health, 1.0 fewer reporting fair or poor health, and 0.2 more are dead (column [F]). Medicare at age 65 appears to delay the erosion of excellent or very good health. For the uninsured group, the deterioration of health prevented is one that would have resulted in good, fair, or poor health. For the insured group, the deterioration of health prevented is one that would have resulted in good health. We could not detect a significant survival effect of Medicare at age 65.

The comparisons between the insured and uninsured groups in column [G] show 1.8 more reporting excellent or very good health in the uninsured group and 2.8 fewer reporting fair or poor in the uninsured group. Although not statistically significant, this does suggest that providing health insurance to the uninsured does has a modest health effect.

Table 6 displays results for various subgroups. There is a similar pattern when the analysis is limited to the continuously insured and the continuously uninsured. The uninsured enrolling into Medicare appears to have a slightly greatest positive influence on women compared with men in terms of the gain in excellent/very good health. The comparisons in the low-income and low-wealth groups look remarkably similar to the overall result. Finally, we compare the subgroup of those with supplemental versus those without supplemental insurance. The rates of death increase for both subgroups because those who died before 65 were dropped from both subgroups because supplemental status could not be determined. The relative difference between the uninsured and insured is greater for the uninsured who also obtain supplemental insurance.

Table 7 presents the sensitivity of the results to various alternatives. The results are insensitive to retirement, change in marital status, or introduction of Social Security payments suggesting that the difference within the insured and uninsured groups cannot be attributed to these often contemporaneous changes at age 65. The results are insensitive to alternative age specifications. Our main concern is that our use of a quadratic age specification was not appropriately capturing the non-linear trajectory of health status with age. In this series of robustness checks, we find almost no non-linear pattern of health status changes and age. The three alternative age specifications considered (i.e., 2a, 2b, and 2c in Table 7) are nearly identical to the base model, suggesting that we have appropriately specified the age/health trajectory.
Panel 3 in Table 7 shows the model when the five living health states are not collapsed into three living health states. The three health states used in the base model potentially mask some differences between the excellent and very good health states and between the fair and poor health states, but the smaller sample sizes in the disaggregated groups leads to noisier estimates. Generally, the condensed groups are a fair representation of the more specific patterns in this panel. When the five categories of health status in the multinomial logit but summarizes the results in the same way as the base model. Here the results are similar to the base model.

Panel 4 in Table 7 shows the results excluding the weights. The weighting slightly increases the additional number of persons with excellent/very good health and this increase is greater in the uninsured group. Given the greater rates of attrition among the uninsured, the weighted estimate offers an appropriate adjustment for the observable attrition differences between groups.

7. Conclusion

Because the number of near elderly is rising rapidly and there are few affordable alternatives for health insurance for those who lack access to employment-based coverage, the uninsured near-elderly are of growing concern. We find that providing Medicare to the uninsured increases their probability of being in excellent or very good health, decreases their probability of being in good health, and has no discernable effects at lower health levels. Surprisingly, we found Medicare had the same pattern of effect on the health of the previously insured. This suggests that Medicare helps the relatively healthy 65 year olds, but does little for those who are already in declining health once they reach the age of 65. The improvement in health from Medicare for the uninsured was not statistically different from the improvement in health from Medicare for the insured. However, the direction of the statistically insignificant effect is suggestive of a greater health effect for the previously uninsured.

The health status improvement for the uninsured is consistent with the evidence that the lack of health insurance in the period immediately preceding Medicare eligibility is associated with faster declines in health (Baker et al., 2001; Hadley and Waidmann, 2006; Dor, Sudano, and Baker, 2006); it appears Medicare may be attenuating the rapid health declines of the uninsured. However, the introduction of Medicare also improved the health of those who enrolled into Medicare at age 65 and were insured before this age. This may be a result of the aspects of the Medicare program itself. Medicare offers a more stable source of health insurance which may itself have a health advantage because the decision to leave work when one is recovering from an illness may improve recovery (Bradley et al., 2005). This might outweigh the possibility that insurance coverage under Medicare may be less generous, on average, when compared to employer-sponsored health insurance, even in the presence of private supplemental coverage that is obtained by many Medicare beneficiaries. Alternatively, it may reflect health changes resulting from contemporaneous changes at age 65, such as retirement and Social Security payments. However, the results remain when controls for retirement and Social Security were added to the model.

While Medicare improved health status for both the previously uninsured and insured, there was no effect on mortality. The lack of any survival improvement after Medicare enrollment is consistent with Finkelstein and McKnight (2005) who found, using aggregate data, that the establishment of Medicare had no discernible impact on the mortality of the elderly in the decade after the enactment of Medicare.

The potential for health improvements for the uninsured is supported by the evidence that use of medical services rises dramatically after enrollment into Medicare and that the increase is greater for those who become insured when they are eligible for Medicare than for those who were insured before Medicare enrollment. This effect of Medicare on health service use may be the mechanism for the positive effects on health status. A limitation of our study, however, is that, by using self-reported health status, our results may be influenced by subjective responses to the health status question. Further research into the mechanisms generating the effects measured in this paper is still needed.

We find that Medicare does improve the health of the uninsured and the insured, but only for the relatively healthy. This suggests that there are health benefits of universal coverage and that extending this coverage to much earlier ages may increase the proportion of the population who arrive at the age of 65 in excellent or very good health. It also suggests that Medicare itself may be providing health benefits to the population. When considering the value of health insurance, however, health is only one important aspect. Health insurance is designed to provide financial security to families by protecting them from potentially devastating financial consequences that can result from unexpected health care expenses (Himmelstein, et al., 2005). The more direct financial justification for health insurance should not be forgotten as we seek to better understand its indirect health consequences.

References

Aiken LH, Bays KD, (1984). The Medicare debate – Round one. New England Journal of Medicine. 311:1196-1200.

Baker DW, Sudano JJ, Albert JM, Borawski EA, Dor A (2001). Lack of health insurance and decline in overall health in late middle age. New England Journal of Medicine. 345(15):1106-1112.

Baker DW, Sudano JJ (2005). Health Insurance Coverage During the Years Preceding Medicare Eligibility. Archives of Internal Medicine, Apr 2005; 165:770-776.

Baldwin LM, Larson EH, Connell FA, Nordlund D, Cain KC, Cawthon ML, Byrns P, Rosenblatt RA (1998). The effect of expanding Medicaid prenatal services on birth outcomes. American Journal of Public Health. 88(11):1623-1629.

Bradley CJ, Neumark D, Bednarek HL, Schenk M (2005). Short-term effects of breast cancer on labor market attachment: results from a longitudinal study. Journal of Health Economics. 24:137-160.

Brook RH, Ware JE, Rogers WH, Keeler EB, Davies AR, Donald CA, Goldberg GA, Lohr KN, Masthay PC, Newhouse JP (1983). Does free care improve adults' health? Results from a randomized controlled trial. New England Journal of Medicine. 309(23):1426-1434.

Brown ME, Bindman AB, Lurie N (1998). Monitoring the consequences of uninsurance: a review of methodologies. Medical Care Research and Review. 55(2):177-210.

Buescher PA, Roth MS, Williams D, Goforth CM (1991). An evaluation of the impact of maternity care coordination on Medicaid birth outcomes in North Carolina. American Journal of Public Health. 81(12):1625-1629.

Card D, Dobkin C, Maestas N (2004). The impact of nearly universal insurance coverage on health care utilization and health: evidence from Medicare. National Bureau of Economic Research Working Paper 10365.

Cassel CK, Besdine RW, Siegel LC (1999). Restructuring Medicare for the next century: what will beneficiaries really need? Health Affairs. 18(1):118-131.

Currie J, Gruber J (1996a). Saving Babies: The efficacy and cost of recent expansions of Medicaid Eligibility for Pregnant Women. Journal of Political Economy. 104:1263-1296.

Currie J, Gruber J (1996b). Health insurance eligibility, utilization of medical care, and child health. Quarterly Journal of Economics. 11(2):431-436.

Currie J, Gruber J (1997). The technology of birth: health insurance, medical interventions and infant health. National Bureau of Economic Research Working Paper 5985.

Decker S, Rapaport C (2002). Medicare and disparities in women's health. National Bureau of Economics Research Working Paper 8761.

de Meza D (1983). Health insurance and the demand for medical care. Journal of Health Economics. 2:47-54.

DeSalvo KB, Bloser N, Reynolds K, He J, Muntner P (2005). Mortality Prediction with a Single General Self-Rated Health Question: A Meta-Analysis. Journal of General Internal Medicine. 20:267-275.

Dor A, Sudano J, Baker DW (2006). The Effect of Private Insurance on the Health of Older, Working Age Adults: Evidence from the Health and Retirement Study. Health Services Research 41:3 (Part I): 759-787.

Efron B, Tibshirani R (1993). An introduction to the bootstrap. Chapman & Hall Ltd.

Epstein AM, Newhouse JP (1998). Impact of Medicaid expansion on early prenatal care and health outcomes. Health Care Financing Review. 19(4):85-99.

Fihn SD, Wicher JB (1988). Withdrawing routine outpatient medical services: Effects on access and health. Journal of General Internal Medicine. 3(4):356-362.

Finkelstein A, McKnight R (2005). What Did Medicare Do (and Was it Worth it)? National Bureau of Economic Research Working Paper 11609.

Fossett JW, Perloff JD, Kletke PR, Peterson JA (1992). Medicaid and access to child health care in Chicago. Journal of Health Politics, Policy & Law. 17(2):273-298.

Franks P, Clancy CM, Gold MR (1993). Health insurance and mortality: evidence form a national cohort. Journal of the American Medical Association. 270(6):737-741.

Fuchs VR (1999). Health care for the elderly: How much? Who will pay for it? Health Affairs. 18(1):11-21.

Grossman M (1972). On the concept of health capital and the demand for health. Journal of Political Economy. 80:223-255.

Haas JS, Udvarhelyi S, Epstein AM (1993). The effect of health coverage for uninsured pregnant women on maternal health and the use of cesarean section. Journal of the American Medical Association. 270(1):61-64.

Hadley J (2003). Sicker and poorer – the consequences of being uninsured: A review of the research on the relationship between health insurance, medical care use, health, work, and income. Medical Care Research and Review. 60(2 Supplement):3S-112S.

Hadley J, Waidmann T (2006). Health Insurance and Health at Age 65: Implications for Medical Care Spending on New Medicare Beneficiaries. Health Services Research. 41(2):429-451.

Hafner-Eaton C (1993). Physician utilization disparities between the uninsured and insured: Comparisons of the chronically ill, acutely ill, and well nonelderly populations. Journal of the American Medical Association. 269(6):7877-7892.

Himmelstein, David U., Elizabeth Warren, Deborah Thorne, and Steffie Woolhandler. 2005. "Illness and Injury as Contributors to Bankruptcy." Health Affairs. February 2, web exclusive.

Institute of Medicine (2001). Coverage Matters: Insurance and Health Care. Washington, DC, National Academy Press.

Institute of Medicine (2002). Care Without Coverage: Too Little, Too Late. Washington, DC, National Academy Press.

Joyce T (1998). Impact of augmented prenatal care on birth outcomes of Medicaid recipients in New York City. Journal of Health Economics. 18:31-67.

Levy H, Meltzer D (2004). What do we really know about whether health insurance affects health? In Catherine McLaughlin (ed) Health Policy on the Uninsured: Setting the Agenda. Urban Institute Press.

Lichtenberg F (2002). Sources of U.S. longevity increase, 1960-1997. National Bureau of Economic Research Working Paper 8755.

Lurie N, Ward NB, Shapiro MF, Brook RH (1984). Termination from Medi-Cal – does it affect health? New England Journal of Medicine. 311(7):480-484.

Manning WG, Newhouse JP, Duan N, Keeler EB, Leibowitz A, Marquis MS (1987). Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment. American Economic Review. 77(3): 251-277.

McClellan M, Noguchi H (1998). Technological change in heart-disease treatment: Does high tech mean low value? American Economic Review. 88:90-96.

McWilliams JM, Zaslavsky AM, Meara E, Ayanian JZ (2003). Impact of Medicare coverage on basic clinical services for previously uninsured adults. Journal of the American Medical Association. 290(6):757-764.

Newhouse JP and the Health Insurance Group (1993). Free for all? Lessons from the RAND Health Insurance Experiment. Harvard University Press.

Newhouse JP, Manning WG, Morris CN, Orr LL, Duan N, Keeler EB, Leibowitz A, Marquis KH, Marquis MS, Phelps CE, Brook RH (1981). Some interim results from a controlled trial of cost sharing in health insurance. New England Journal of Medicine. 305(25):1501-1507.

Nyman JA (1999). The value of health insurance: the access motive. Journal of Health Economics. 18(2):141-152.

Pauly MV (1968). The economics of moral hazard: Comment. American Economic Review. 58:531-537.

Piper JM, Ray WA, Griffin MR (1990). Effects of a Medicaid eligibility expansion on prenatal care and pregnancy outcome in Tennessee. Journal of the American Medical Association. 264(17):2219-2223.

Ray WA, Mitchel EF, Piper JM (1997). Effect of Medicaid expansions on preterm birth. American Journal of Preventive Medicine. 13(4):292-297.

Reichman NE, Florio MJ (1995). The effects of enriched prenatal care services on Medicaid birth outcomes in New Jersey. Journal of Health Economics. 15:455-476.

Short PF, Lair TJ (1994). Health insurance and health status: Implications for financing health care reform. Inquiry. 31(4): 425-437.

Sorlie PD, Johnson NJ, Backlund E, Bradham DD (1994). Mortality in the uninsured compared with that in persons with public and private health insurance. Archives of Internal Medicine. 154(21):2409-2416.

White, H (1980) A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica. 48:817-838

Figure 1. Model of health effect at 65

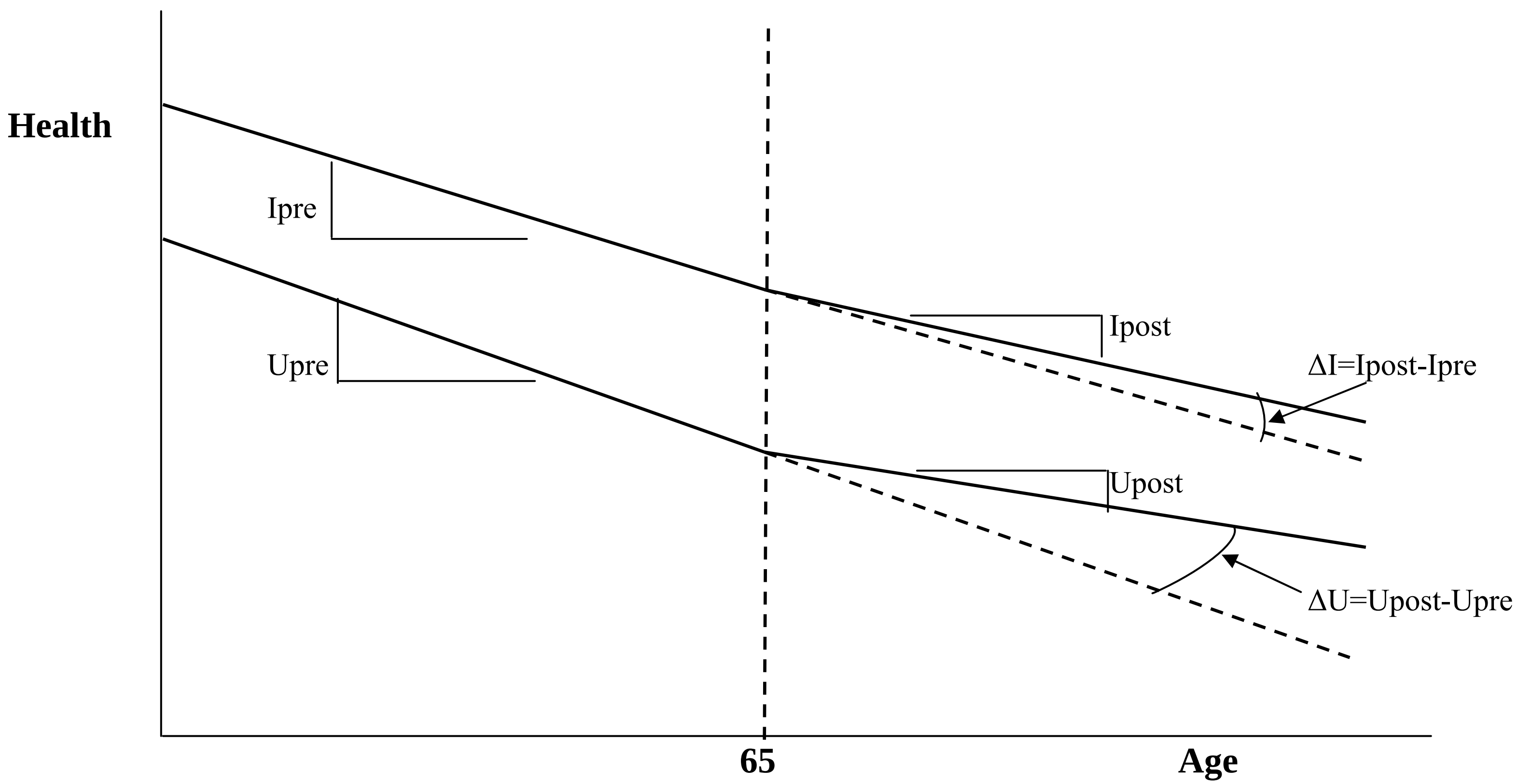


Figure 2. Ages in Pre and Post Group Samples

birth year	SURVEY YEAR 1992	1994	1996	1998	2000	2002	2004
	(AGE IN SURVEY YEAR IS LISTED BELOW)						
1941	51	53	55	57	59	61	63
1940	52	54	56	58	60	62	64
1939	53	55	57	59	61	63	65
1938	54	56	58	60	62	64	66
1937	55	57	**59**	61	63	**65**	67
1936	56	58	**60**	62	64	**66**	68
1935	57	**59**	61	63	**65**	67	69
1934	58	**60**	62	64	**66**	68	70
1933	**59**	61	63	**65**	67	69	71
1932	**60**	62	64	**66**	68	70	72
1931	61	63	**65**	67	69	71	73

Figure 3. Calculations of health effects from the empirical model

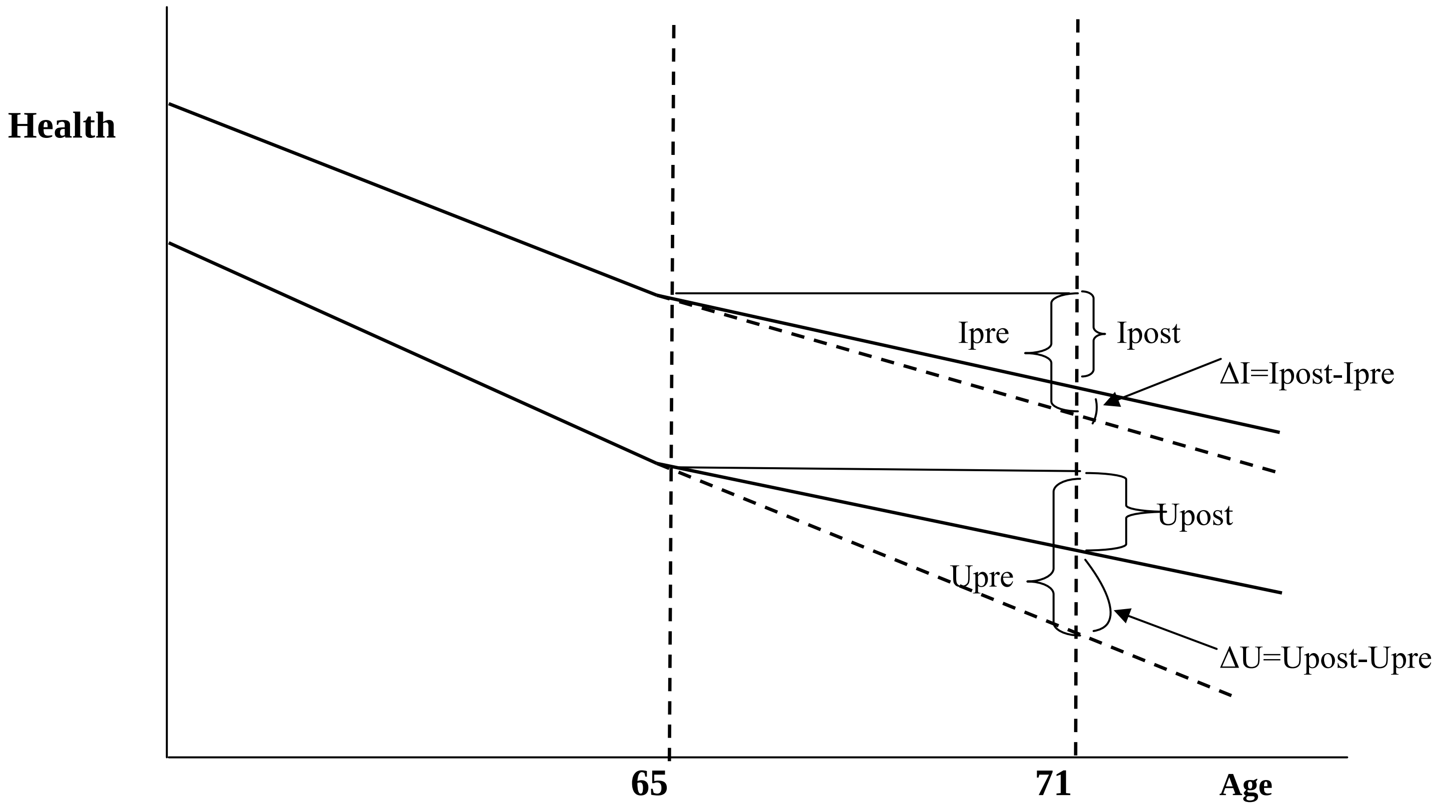
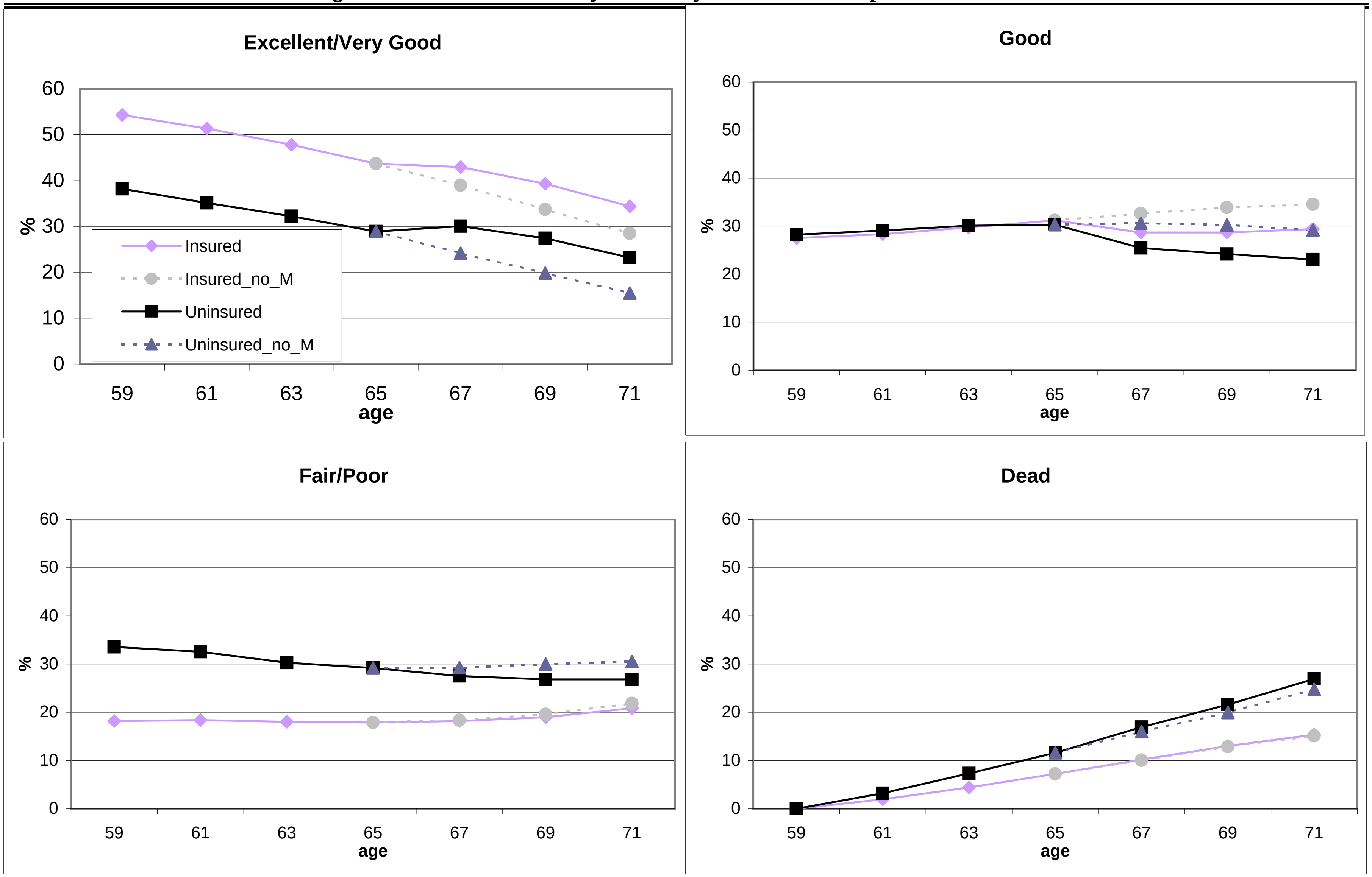
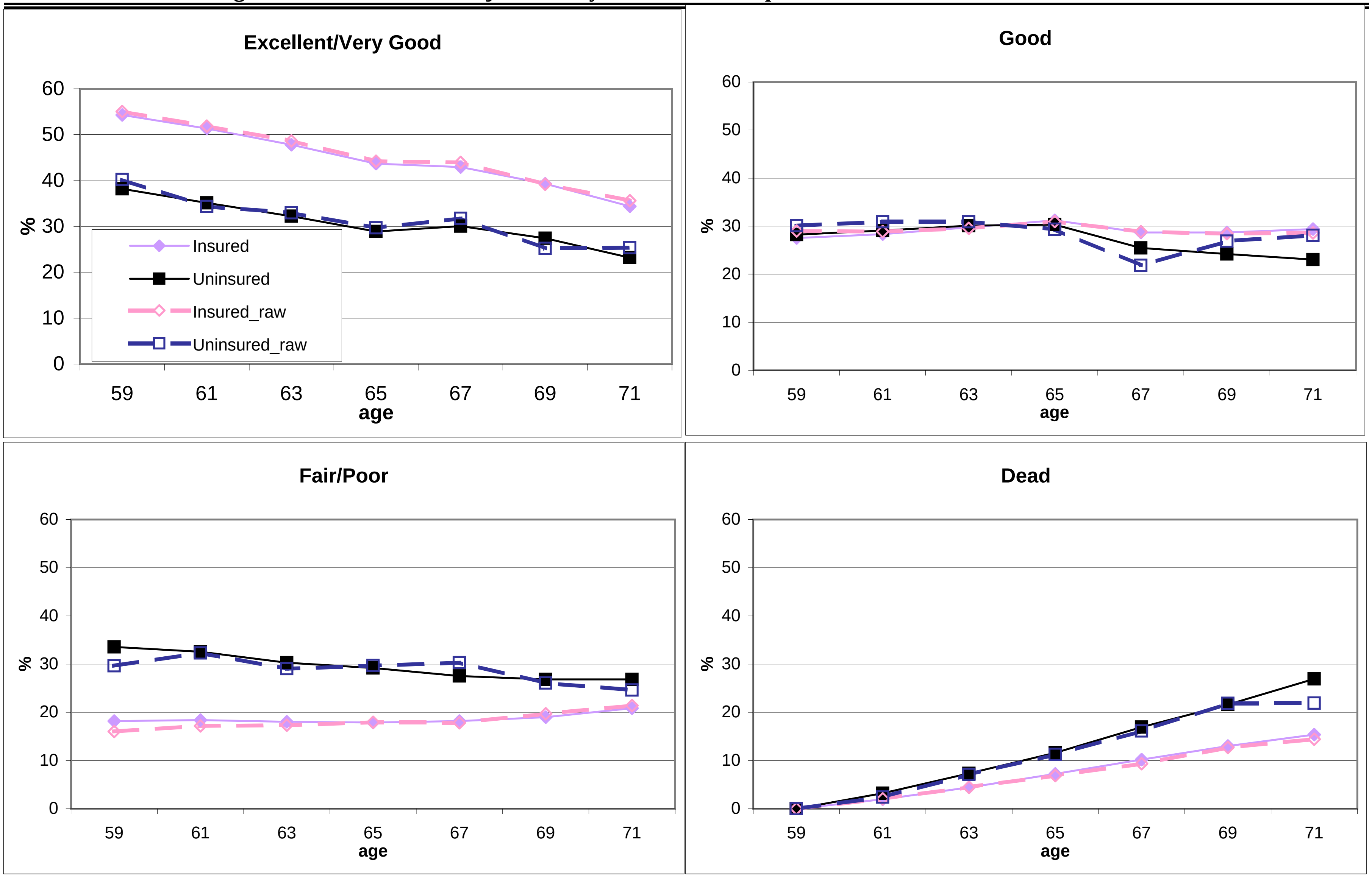


Figure 4. Health Status Trajectories by Insurance Group from Simulation*



***Adjusted for sex, age, education, ethnicity, race and region**

Figure 5. Health Status Trajectories by Insurance Group from Simulation* and from Raw Data



***Adjusted for sex, age, education, ethnicity, race and region**

Table 1. Selection of Study Sample

Selection Criteria	N	Group excluded	N Excluded
Total age eligible, cohorts 1931-1941	9,771		
Survey wave for cohort at age 59/60	9,234	Age cohort 1931	537
Two survey waves for cohort before age 65	5,086	Age cohorts 1938-1941	4,148
Interviewed at age age 59/60	4,994	Deceased before age 59/60	92
	4,860	Unobserved at age 59/60	134
Insurance status observed in 1992	4,805	No initial insurance status	55
Covered by Medicare after 65	4,774	Post-65 uninsured	31
More than one follow-up	4,647	No follow-ups	127
Not on Medicare or Medicaid at 59/60	4,075	Medicare or Medicaid at 59/60	572

Table 2. Insurance Groups

Insurance Groups	Total N	Total Weighted %	Pre-Period N	Pre-Period Weighted %	Post-Period N	Post-Period Weighted %
Subjects						
Insurance status at age 59/60						
Insured	3484	85.5	3484	85.5	3256	86.0
Uninsured	591	14.5	591	14.5	524	14.0
Total	4075	100.0	4075	100.0	3780	100.0
Observations						
Insurance status at age 59/60						
Insured	16511	85.7	10236	85.6	6275	86.0
Uninsured	2727	14.3	1712	14.4	1015	14.0
Total	19238	100.0	11948	100.0	7290	100.0

Table 3. Baseline characteristics of insured and uninsured

	Insured N=3484	Uninsured N=591	P-value of difference
Health Status			
Excellent/Very good	54.9%	40.4%	<0.001
Good	29.0%	30.0%	0.615
Fair/Poor	16.1%	29.6%	<0.001
Male	48.2%	46.3%	0.394
Race			
White	86.2%	65.4%	<0.001
Black	7.7%	14.6%	<0.001
Hispanic	4.2%	15.8%	<0.001
Other	1.8%	4.2%	<0.001
Education			
High school drop-out	17.6%	45.7%	<0.001
High school graduate	41.6%	32.9%	<.0001
Some college	20.0%	13.1%	<0.001
College graduate	20.8%	8.3%	<0.001
Marital status			
Married	79.3%	68.6%	<0.001
Single	3.1%	3.5%	0.665
Divorced/Separated	10.5%	16.3%	<.0001
Widowed	7.1%	11.6%	<0.001
Region			
Midwest	26.8%	14.7%	<0.001
Northeast	21.6%	16.7%	0.007
South	32.2%	45.9%	<0.001
West	19.4%	22.7%	0.065
Total Assets			
Negative	1.9%	7.9%	<0.001
0-35,000	9.7%	32.6%	<0.001
35,001-100,000	15.7%	16.8%	0.496
100,001-230,000	26.0%	17.0%	<0.001
230,001 and above	46.7%	25.8%	<0.001
Total Income			
0-20,000	12.4%	48.0%	<0.001
20,001-40,000	22.5%	25.1%	0.161
40,001-75,000	34.2%	15.1%	<0.001
75,001 and above	31.0%	11.8%	<0.001
Social Security Recipient	4.5%	7.6%	0.001

Retirement Status			
Not Retired	61.8%	57.6%	0.051
Fully Retired	20.1%	14.6%	0.002
Partly Retired	9.8%	10.1%	0.792
Not Applicable	8.3%	17.7%	<.0001

Table 4. Multinomial Logit Regression of Health Status in t+1

	Good vs. Exc/VG		Fair/Poor vs. Exc/VG		Dead vs. Exc/VG	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Health Status						
Good	1.89	<.001	2.28	<.001	1.49	<.001
Fair/Poor	2.38	<.001	4.75	<.001	4.07	<.001
Uninsured	0.27	0.024	0.47	0.013	0.49	0.172
Post (Medicare)	-0.26	0.007	-0.16	0.294	-0.54	0.092
Uninsured*Health Status						
Good	-0.26	0.164	-0.21	0.400	-0.01	0.992
Fair/Poor	-0.50	0.063	-0.67	0.022	-0.51	0.273
Post (Medicare)*Health Status						
Good	-0.06	0.527	-0.08	0.625	0.53	0.129
Fair/Poor	0.14	0.472	0.17	0.412	0.65	0.063
Uninsured*Post (Medicare)	-0.46	0.039	0.15	0.618	0.92	0.105
Uninsured*Post (Medicare)*Health Status						
Good	0.36	0.275	-0.36	0.367	-1.30	0.093
Fair/Poor	0.17	0.713	-0.64	0.172	-1.23	0.091
Age	0.07	<.001	0.08	<.001	0.07	0.052
Age*Age	0.00	0.584	0.01	0.045	-0.01	0.053
Male	0.08	0.049	0.17	0.002	0.70	<.001
Race/Ethnicity						
Black	0.28	<.001	0.41	<.001	0.40	0.004
Hispanic	0.35	0.001	0.39	0.001	-0.30	0.181
Other Race	0.45	0.004	0.22	0.251	-0.15	0.713
Education						
High School Graduate	-0.27	<.001	-0.66	<.001	-0.44	0.001
Some College	-0.30	<.001	-0.85	<.001	-0.63	<.001
College Graduate	-0.52	<.001	-1.25	<.001	-0.86	<.001
Region						
Northeast	-0.08	0.229	-0.08	0.355	0.04	0.815
South	-0.03	0.567	0.18	0.008	0.16	0.243
West	-0.24	<.001	0.07	0.426	0.01	0.972

P-value of the X^2 Tests on the set of coefficients representing the following Null Hypotheses:

Hypothesis:	**P-value**
Upre = Ipre	0.049
Upost = Ipost	0.001
Upre = Upost	0.071
Ipre = Ipost	0.063
(Upost - Upre) = (Ipost - Ipre)	0.236

Table 5. Predicted Probabilities of Health Status Changes Simulated between Age 65 and 71

	U post	U pre	I post	I pre	ΔU	ΔI	ΔU - ΔI
					[A] - [B]	[C] - [D]	[E] - [F]
	[A]	[B]	[C]	[D]	[E]	[F]	[G]
N=	1015 (5.3%)	1712 (8.9%)	6275 (32.6%)	10236 (53.2%)			
Excellent/VG	-5.7	-13.4	-9.3	-15.2	7.7	5.9	1.8
					(2.5, 12.3)	(0.8, 8.9)	(-2.6, 7.0)
Good	-7.2	-1.1	-1.8	3.3	-6.1	-5.1	-1.0
					(-13.5, -1.4)	(-9.3, -1.5)	(-7.2, 3.2)
Fair/Poor	-2.4	1.3	3.0	4.0	-3.7	-1.0	-2.8
					(-8.1, 3.6)	(-4.1, 3.4)	(-6.8, 3.2)
Dead	15.3	13.2	8.1	7.9	2.2	0.2	1.9
					(-3.9, 7.5)	(-2.7, 2.5)	(-3.2, 6.5)

Adjusted for sex, age, education, ethnicity, race and region

Table 6. Subgroup Analysis

	U post	U pre	I post	I pre	ΔU [A] - [B]	ΔI [C] - [D]	ΔU - ΔI [E] - [F]
	[A]	[B]	[C]	[D]	[E]	[F]	[G]
1. Continous Insurance Status Subgroups							
a. Continuously Uninsured (U) vs. Continuously Insured (I)							
N=	509 (3.0%)	886 (5.2%)	5925 (34.9%)	9665 (56.9%)			
Excellent/VG	-4.6	-12.2	-10.0	-16.0	7.6	6.0	1.6
					(1.4, 12.8)	(0.6, 9.5)	(-3.7, 8.3)
Good	-11.2	-4.4	-2.0	2.5	-6.8	-4.6	-2.3
					(-14.2, -0.5)	(-8.4, 0.0)	(-9.5, 3.1)
Fair/Poor	1.8	2.6	3.8	5.7	-0.7	-1.9	1.2
					(-8.1, 8.7)	(-6.0, 2.3)	(-5.3, 9.4)
Dead	13.9	13.9	8.2	7.8	-0.1	0.4	-0.5
					(-6.7, 5.9)	(-2.1, 3.1)	(-7.1, 5.0)
b. Continuously Uninsured (U) vs. Continuously Privately Insured (I)							
N=	509 (3.2%)	886 (5.6%)	5500 (34.7%)	8976 (56.6%)			
Excellent/VG	-4.5	-11.7	-10.1	-16.4	7.3	6.3	0.9
					(2.4, 14.0)	(2.0, 11.1)	(-5.0, 7.4)
Good	-10.7	-4.1	-1.8	3.4	-6.6	-5.1	-1.4
					(-14.3, 0.4)	(-9.3, -0.4)	(-9.1, 5.0)
Fair/Poor	1.8	4.3	4.3	6.3	-2.5	-2.0	-0.5
					(-11.0, 5.3)	(-6.4, 1.9)	(-8.3, 6.7)
Dead	13.4	11.5	7.6	6.8	1.9	0.8	1.0
					(-4.3, 9.0)	(-2.2, 2.9)	(-4.3, 8.7)
2. Sex Subgroups							
a. Female							
N=	562 (5.6%)	937 (9.3%)	3285 (32.6%)	5298 (52.6%)			
Excellent/VG	-3.5	-11.7	-9.5	-15.3	8.2	5.9	2.3
					(-2.6, 13.1)	(-4.5, 7.4)	(-3.3, 11.4)
Good	-6.3	0.6	-1.9	3.2	-6.8	-5.1	-1.7
					(-14.9, 0.7)	(-9.3, 1.9)	(-10.2, 3.6)
Fair/Poor	-3.3	0.3	2.8	3.6	-3.6	-0.9	-2.7
					(-10.0, 6.7)	(-3.4, 6.1)	(-9.9, 4.5)
Dead	13.1	10.8	8.6	8.5	2.3	0.1	2.2
					(-4.2, 8.6)	(-3.6, 3.1)	(-3.9, 8.3)
b. Male							
N=	453 (5.0%)	775 (8.5%)	2990 (32.7%)	4938 (53.9%)			
Excellent/VG	-6.7	-14.2	-9.4	-15.5	7.5	6.1	1.4
					(3.5, 16.8)	(3.5, 13.5)	(-5.9, 8.4)
Good	-8.2	-2.6	-1.8	3.4	-5.6	-5.2	-0.4
					(-16.1, 0.2)	(-11.9, -0.7)	(-9.0, 6.1)
Fair/Poor	-0.4	4.0	3.2	4.1	-4.4	-1.0	-3.4
					(-12.2, 5.5)	(-7.9, 3.1)	(-8.7, 6.5)

Dead	15.3	12.8	8.1	7.9	2.5 (-7.8, 9.5)	0.1 (-4.1, 3.3)	2.4 (-6.5, 9.0)
3. Low Income and Wealth Subgroups							
a. Below Median Income							
N=	826 (8.8%)	1393 (14.8%)	2684 (28.5%)	4511(47.9%)			
Excellent/VG	-5.1	-12.4	-7.7	-13.4	7.3 (-2.6, 9.8)	5.7 (-3.7, 6.9)	1.6 (-3.2, 7.9)
Good	-7.0	-1.3	-2.4	2.7	-5.7 (-14.0, -0.4)	-5.2 (-10.0, 0.4)	-0.6 (-9.1, 3.8)
Fair/Poor	-3.1	0.7	1.9	2.8	-3.7 (-10.4, 4.5)	-1.0 (-2.9, 7.1)	-2.8 (-11.0, 1.4)
Dead	15.2	13.0	8.3	7.9	2.2 (-1.4, 11.7)	0.4 (-3.4, 3.6)	1.7 (-0.8, 10.9)
b. Below Median Wealth							
N=	727 (7.6%)	1263 (13.3%)	2816 (29.6%)	4702 (49.5%)			
Excellent/VG	-5.7	-11.9	-8.6	-13.9	6.2 (2.3, 11.7)	5.3 (1.7, 10.1)	0.9 (-4.1, 6.3)
Good	-7.0	-2.3	-2.8	2.0	-4.7 (-8.8, 4.3)	-4.8 (-9.2, 1.8)	0.1 (-5.0, 7.7)
Fair/Poor	-3.6	0.1	2.2	3.1	-3.7 (-9.0, 6.0)	-0.9 (-5.2, 5.9)	-2.8 (-8.9, 4.6)
Dead	16.3	14.1	9.2	8.7	2.2 (-12.2, 4.4)	0.4 (-9.3, 1.3)	1.7 (-7.5, 7.2)
4. Medicare Supplemental Insurance Status Subgroups							
a. Medicare with No Supplemental Insurance							
N=	579 (7.2%)	921 (11.4%)	2551 (31.6%)	4032 (49.9%)			
Excellent/VG	-9.0	-14.5	-11.6	-14.1	5.5	2.4	3.1
Good	-10.2	2.2	-2.4	6.3	-12.4	-8.7	-3.6
Fair/Poor	3.0	12.3	4.3	7.7	-9.3	-3.5	-5.9
Dead	16.2	0.0	9.8	0.0	16.2	9.8	6.4
b. Medicare with Supplemental Insurance							
N=	436 (4.1%)	651 (6.2%)	3724 (35.3%)	5736 (54.4%)			
Excellent/VG	-2.5	-8.8	-8.9	-15.1	6.3	6.2	0.1
Good	-6.0	2.0	-1.8	7.0	-8.1	-8.8	0.8
Fair/Poor	-6.8	6.8	2.7	8.1	-13.6	-5.4	-8.2
Dead	15.4	0.0	8.0	0.0	15.4	8.0	7.4

Table 7. Sensitivity Analysis

	U post	U pre	I post	I pre	ΔU [A] - [B]	ΔI [C] - [D]	ΔU - ΔI [E] - [F]
	[A]	[B]	[C]	[D]	[E]	[F]	[G]
1. Adding Potential Endogenous Covariates							
a. Time-varying Retirement Status							
Excellent/VG	-5.4	-13.1	-9.2	-15.1	7.7	5.9	1.8
Good	-7.5	-1.3	-1.8	3.3	-6.2	-5.1	-1.1
Fair/Poor	-2.1	1.7	3.0	4.0	-3.7	-1.0	-2.7
Dead	14.9	12.8	8.0	7.9	2.2	0.2	2.0
b. Time-varying Social Security Recipient Status							
Excellent/VG	-5.6	-13.3	-9.3	-15.2	7.7	5.9	1.8
Good	-7.3	-1.2	-1.7	3.4	-6.1	-5.1	-1.0
Fair/Poor	-2.5	1.2	2.9	3.9	-3.7	-1.0	-2.7
Dead	15.4	13.3	8.1	7.9	2.1	0.3	1.8
c. Time-varying Retirement Status, Social Security Recipient Status, and Marital Status							
Excellent/VG	-5.4	-12.9	-9.2	-15.0	7.6	5.8	1.7
Good	-7.0	-1.3	-1.6	3.3	-5.8	-5.0	-0.8
Fair/Poor	-2.5	1.5	2.9	3.9	-4.0	-1.0	-3.0
Dead	15.0	12.7	7.9	7.8	2.3	0.1	2.1
d. Baseline Marital Status, Income, and Wealth							
Excellent/VG	-4.7	-12.6	-9.4	-15.3	7.8	6.0	1.8
Good	-7.1	-0.9	-1.7	3.5	-6.2	-5.2	-1.0
Fair/Poor	-2.8	0.9	2.9	3.8	-3.6	-1.0	-2.7
Dead	14.6	12.6	8.2	8.0	2.1	0.2	1.9
2. Alternative Age Specifications							
a. Linear Age							
Excellent/VG	-5.2	-12.4	-8.7	-14.3	7.3	5.6	1.7
Good	-6.9	-0.6	-1.5	3.7	-6.2	-5.3	-1.0
Fair/Poor	-4.3	-1.3	1.5	1.8	-3.0	-0.3	-2.7
Dead	16.3	14.3	8.7	8.8	2.0	-0.1	2.0
b. Interaction of Age and Health Status							
Excellent/VG	-4.9	-12.5	-8.7	-14.5	7.6	5.8	1.8
Good	-7.1	-1.4	-1.5	3.6	-5.7	-5.1	-0.5
Fair/Poor	-4.2	-0.5	1.5	2.1	-3.8	-0.5	-3.2
Dead	16.2	14.3	8.7	8.8	1.9	-0.1	2.0
c. Interaction of Age and Health Status, and Age-Squared and Health Status							
Excellent/VG	-5.8	-13.4	-9.3	-15.3	7.6	6.0	1.7
Good	-7.3	-1.1	-1.8	3.3	-6.2	-5.1	-1.1
Fair/Poor	-2.2	1.3	3.0	4.1	-3.6	-1.1	-2.5
Dead	15.4	13.2	8.1	7.9	2.2	0.2	1.9
3. Alternative of Health Status Categorization							
a. Health Status: 5 Categories							
Excellent	-1.5	-4.3	-5.1	-4.7	2.8	-0.3	3.1

Very Good	-3.9	-8.1	-4.5	-9.5	4.2	5.1	-0.8
Good	-7.5	-2.4	-1.9	2.7	-5.2	-4.6	-0.6
Fair	-1.7	-1.1	1.6	1.9	-0.6	-0.3	-0.3
Poor	-0.6	3.0	1.7	2.1	-3.6	-0.4	-3.3
Dead	15.2	12.9	8.1	7.6	2.3	0.5	1.8
b. Health Status 5 Categories Summarized as 3 Categories (E/VG, G, F/P)							
Excellent/VG	-5.4	-12.4	-9.5	-14.3	7.0	4.8	2.3
Good	-7.5	-2.4	-1.9	2.7	-5.2	-4.6	-0.6
Fair/Poor	-2.3	1.9	3.3	4.0	-4.2	-0.6	-3.5
Dead	15.2	12.9	8.1	7.6	2.3	0.5	1.8
4. Sensitivity to Survey Weight							
Excellent/VG	-4.4	-10.4	-9.0	-14.1	6.1	5.0	1.0
Good	-10.7	-4.5	-2.9	1.0	-6.3	-3.8	-2.4
Fair/Poor	-1.3	1.2	3.0	4.5	-2.5	-1.5	-1.0
Dead	16.4	13.7	8.9	8.6	2.7	0.4	2.4
5. Including People with Medicare/Medicaid at Age 59/60							
Excellent/VG	-4.4	-12.7	-8.0	-14.5	8.3	6.5	1.8
Good	-7.8	-0.7	-1.9	2.9	-7.0	-4.8	-2.2
Fair/Poor	-3.1	0.8	1.6	2.9	-3.9	-1.3	-2.6
Dead	15.3	12.7	8.3	8.7	2.6	-0.5	3.1