Does Retirement Improve Health and Life Satisfaction?[*]

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Abstract

We utilize panel data from the Health and Retirement Study to investigate the impact of retirement on physical and mental health, health care utilization, and life satisfaction. Because poor health can induce retirement, we instrument for retirement using eligibility for Social Security and employer sponsored pensions and coverage by the Social Security earnings test. We find strong evidence that retirement improves both health and life satisfaction. While the impact on life satisfaction is immediate, improvements in health show up 4-6 years after retirement, consistent with the view that health is a stock that evolves slowly. We find no evidence that retirement influences health care utilization.

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I. Introduction

Life expectancy has improved dramatically over the past half century. Conditional on turning 65, men and women born in 1940 could expect to live for an additional 12.7 and 14.7 years, on average. In contrast, men and women born in 1990 can expect to live an additional 16.1 and 19.5 years, respectively.[1] Since working lives have not kept pace with this increase in life expectancy, the length of retirement has increased (see, e.g., Cushing-Daniels and Steuerle (2009); Milligan and Wise (2012)). This fact, combined with impending budget shortfalls in entitlement programs, has lead policymakers to increase the normal retirement age for collecting some retirement benefits and created interest in policies that further extend working lives. Such policies are fiscally attractive as longer working lives can both reduce benefits and increase tax revenue. Beyond their impact on revenue, such policies also affect individual health and well-being, and as a result they may have additional fiscal and individual impacts.

To fully evaluate the welfare and budgetary consequences of such policies, it is important to understand these effects. For example, if retirement worsens health and this worsening of health is associated with increased health care utilization, then policies that prolong working lives may improve Medicare's finances. Likewise, if retirement causes an increase in well-being, then policies that promote delayed retirement to shore up the fiscal budget may have unexpected hidden costs. To this end, this paper studies the effect of retirement on the health and well-being of individuals as well as on their health care utilization, with the latter allowing us to assess the impact of retirement on public health care expenditures.

There are a number of channels through which retirement might affect health and well-being.[2] Some of these channels suggest that retirement could have negative effects on health. For instance, health can be viewed as an investment good for the individual that serves as an input into their market

[1] These data come from Table V.A4 of the 2014 Social Security Trustees report, available at http://www.ssa.gov/oact/tr/2014/lr5a4.html.

output (Grossman (1972)). With such an interpretation, retirement may reduce investment in health because these investments no longer affect wages once individuals are retired. In addition, involuntary retirement may be associated with a negative income shock, which can reduce well-being and the ability to invest in health. Retirement can also lead to social isolation and a diminished sense of purpose (Bradford (1979)), which may worsen health and subjective well-being. On the other hand, several avenues suggest a positive relationship between retirement and health outcomes. Retirement may increase investment in health as retired individuals have a lower marginal value of time, making health investment less costly. Retirement also increases leisure, which may reduce physical and mental stress, improving both subjective well-being and health.[3]

Likewise, the effect of retirement on health spending is also ambiguous, not only because it depends on health status but also because health care spending may be an input into health outcomes. Improved health in retirement may reduce health care utilization. On the other hand, if the improvement in health is the result of increased investment in health, then health care utilization could increase. Similarly, a worsening of health during retirement may be associated with either increases or decreases in health care utilization over one's life cycle.

Early studies on the relationship between retirement and health often find a negative correlation (see, for instance, Dave et al (2008)). However, the main problem in studying the relationship between retirement and health or life satisfaction is that retirement decisions are endogenous. In particular a number of studies have shown that health shocks influence retirement decisions (e.g., Dwyer and Mitchell (1999)). Individuals who experience negative shocks to health or life satisfaction disproportionately select into retirement. Indeed, we find that retirement is correlated with negative health outcomes in simple OLS specifications that do not control for endogeneity. In addition, anticipated health changes due to retirement are likely to be factored into the individual's optimal

[3] See Coe and Lindeboom (2008) for a more detailed theoretical discussion of the interactions between health and retirement.

choice of retirement date.[4] We address this endogeneity with panel data from the Health and Retirement Study (HRS) by instrumenting for retirement using age-based variation in eligibility for Social Security early and normal retirement benefits, applicability of the Social Security earnings test, and eligibility for early and normal retirement benefits in an employer sponsored pension. These age based retirement eligibility instruments should not be directly correlated with health except through their effect on retirement behavior, as we would not expect discrete jumps in health status at these ages beyond what is controlled for with age trends.

Our model is specified to allow us to study post-retirement dynamics of health and well-being. This is important for studying both health and subjective well-being. Objective health indicators such as mobility restrictions and diagnosed conditions are stock variables that move slowly over time as investments in health change. In addition, a number of studies have demonstrated that subjective well-being tends to return to a baseline level after a life change (Clark et al (2008); Oswald and Powdthavee (2008); Frederick and Lowenstein (1999); Lykken and Tellegen (1996)). By studying dynamic changes in panel data after retirement, we are able to detect changes in the stock of health and differentiate between short-term and long-term effects that would be obscured by only focusing on contemporaneous changes in work status.

In addition to studying the impacts on health and well-being measures, we also examine health care utilization measures. Changes in health and well-being upon retirement can directly influence health care utilization and therefore health care costs. While past studies have focused on only changes in health to assess likely changes in costs to the retirement system, we are able to use data from the HRS to assess these costs directly. Estimating these changes are important for understanding how retirement policy may affect public health care expenditures.

[4] See Coe and Lindeboom (2008).

Our instrumental variables estimates show that retirement improves both health and life satisfaction. The improvements in life satisfaction are immediate, while the improvements in health show up 4 or more years past retirement. The delayed health impact is not surprising considering that health is a stock variable that evolves slowly over time. Because we are able to analyze several years out from retirement, we are able to pick up improvements in concrete health measures that have not been shown in past studies. Moreover, because our estimates show no effects of retirement on health care utilization, these health gains are not being driven by increased use of the medical system. In fact, we find that retirement is associated with a short-run decline in prescription drug use.

The remainder of this paper is organized as follows. Section 2 reviews the prior literature on this topic. Section 3 describes the data and methodology. Section 4 presents the results. Section 5 concludes.

II. Previous Literature

Many studies have examined the impact of full or partial retirement on health and well-being, with mixed results.[5] However, only a subset of these studies attempt to carefully account for the fact that, even after controlling for observables, retirement is endogenous. The studies that attempt to correct for this endogeneity have taken a variety of approaches. Avorn and Soumerai (1983) perform a small randomized trial. Other studies have used more broadly representative panel data, which allows the use of individual fixed effects (Kerkhofs et al. 1997, 1999), or fixed effects augmented by conditioning on good initial health (Dave et al. 2008). While this approach controls for unobservable, time-invariant health factors that may influence future health shocks and retirement, it does not account for unexpected health shocks that induce retirement. Another set of studies uses instrumental variables to

[5] A partial list includes Börsch-Supan and Jürges (2006); Calvo (2006); Kim and Feldman (2000); Gill et al. (2006); Shepherd (2010); Warr et al. (2004); Mein et al. (2003); Midanik et al. (1995); Tuomi et al. (1991); Avorn and Soumerai (1983); Kerkhofs et al. (1997, 1999); Dave et al. (2008); Neuman (2008); Charles (2004); Coe et al. (2012); and Becchetti et al. (2012).

assess causality (Becchetti et al. (2012); Neuman (2008); Charles (2004); Coe et al. (2012); Coe and Zamorro (2011); Bound and Waidmann (2007); Coe and Lindeboom (2008); Rohwedder and Willis (2010); Horner (2014); Behncke (2012)). Instruments that have been used for retirement include age-specific retirement probabilities (Becchetti et al. (2012)), age-based retirement incentives in public and private pensions (Coe and Zamorro (2011); Bound and Waidmann (2007); Horner (2014); Neuman (2008); Rohwedder and Willis (2010); Charles (2004); Behncke (2012)), changes in earnings test rules (Charles (2004)), and early retirement offers (Coe et al. (2012); Coe and Lindeboom (2008)). These instrumental variables studies consider a wide range of health and well-being outcomes, including life satisfaction ratings, physical health, and mental health.

Our work is most closely related to the instrumental variable studies. Despite using similar methodology, these studies' findings on the effects of retirement on health and well-being remain mixed. Of these papers, Neuman (2008), Charles (2004), Coe et al. (2012), Bound and Waidmann (2007), Coe and Lindeboom (2008), Bonsang et al. (2012), and Rohwedder and Willis (2010) focus on the U.S. using HRS data. Coe et al. (2012), Rohwedder and Willis (2010), and Bonsang et al. (2012) focus on the impact of retirement on cognitive function; Coe et al. find that retirement has no statistically significant impact on cognitive function, while the other two studies find that it is associated with declines in cognitive function. Charles (2004) focuses on the effect of retirement on two indicators for mental health and finds that retirement improves both indicators once endogeneity is properly accounted for. Neuman (2008) finds that retirement improves individuals' subjective assessment of their health, but not objective health measures like indices for specific functional limitations and score on a depression scale. In contrast to our results, Coe and Lindeboom (2008) find that retirement has a positive impact on reported health indicators in the short run, but has insignificant effects in the long run. This result holds for blue collar and white collar workers, as well as workers with different levels of education. Coe and Zamorro (2011) study several European countries and find that retirement improves long-run health

outcomes. In contrast to these findings, Behnke (2012) uses both non-parametric matching and instrumental variable specifications to find that retirement increases the risk of being diagnosed with a chronic condition and worsens self-assessed health in the United Kingdom. Horner (2014) and Becchetti et al. (2012) find that retirement improves subjective well-being among older Europeans, though Horner finds that life satisfaction tends to return to baseline a few years after retirement.

Our paper extends and updates the results of Coe and Lindboom (2008), Charles (2004), and Neuman (2008). Relative to these papers, we consider additional measures of health and life satisfaction indicators that were added to the HRS in 2004. Moreover, we directly assess the effects on health care utilization to better understand the effect of retirement on health care costs. To our knowledge we are the first to directly study the impact of retirement on health care utilization, which is arguably the most important factor in estimating the fiscal impact arising from the link between retirement and health. We also perform a detailed analysis of the dynamics of post-retirement health and well-being by estimating the impact of retirement immediately after retirement, in the 2-4 years following retirement, and in the 4 or more years following retirement. Our approach to estimating dynamic effects on health and well-being differs from Coe and Lindboom (2008) in several ways. First, we consider life satisfaction and health care utilization in addition to health. Second, we assess how retirement generates changes in individual well-being by estimating a fixed effects model. Fixed effects provide an additional control for time invariant endogeneity. Finally, our larger sample size (with additional years of the HRS) allows us to estimate the impact of retirement more precisely and to study dynamic effects over a longer time horizon. Thus, we often find statistically significant effects where Coe and Lindboom (2008) did not for objective measures of long-run health outcomes. Moreover, we find that the health benefits are not driven by increased utilization of the health care system.

III. Data and Methodology

We use data from the Health and Retirement Study (HRS), a biennial survey constructed to be representative of Americans over the age of 50. The HRS spans the period between 1992 and 2010. The survey began with an initial cohort of individuals and their spouses in 1992, and subsequent cohorts were added in 1998 and 2004 to keep the sample representative of the target population. We keep the original HRS cohort, which entered the sample in 1992, the Children of the Depression and War Babies cohorts, which entered the sample in 1998, and the Early Baby Boomer cohort, which entered the sample in 2004. Most of the variables used in our analysis come from the RAND version of the HRS, a cleaned dataset containing a subset of variables from the raw survey. However, the life satisfaction variables and the retirement ages for DB pension plans are merged in from the raw HRS. All of our analysis is performed at the person-wave level and utilizes the respondent-level weights provided in the RAND dataset.

The HRS includes several summary measures of physical and mental health, which are updated for respondents in each wave. The first health measure we use is a self-reported health status, ranging from 1 (excellent health) to 5 (poor health). While such self-reported health measures can be problematic to measure with surveys given potential reporting bias, they have an advantage of providing a measure of overall health and have been shown to be correlated with mortality (see the discussion in Coe and Zamarro (2011)). The second is an index containing the number of major health conditions that the respondent has ever had out of a possible eight, including high blood pressure, diabetes, cancer, chronic lung disease, heart problems, stroke, psychiatric problems, and arthritis. The third is a summary measure of mental health based on the Center for Epidemiologic Studies Depression (CESD) scale. It is the sum of five indicators of negative sentiments during the past week, minus the sum of two indicators of positive sentiments during the past week. The negative sentiments include feeling depressed, feeling that everything is an effort, experiencing restless sleep, feeling alone, feeling sad, and being unable to

get going. The positive sentiments include feeling happy and enjoying life. The final measure we use is an indicator for whether the respondent is obese (body mass index above 30).

In addition to the summary health measures, the HRS includes several measures of functional limitations. The first of these is the number of activities of daily living (ADLs) with which the respondent has difficulty. The ADLs included in the index include bathing, dressing, eating, getting in and out of bed, and walking across a room. The second is the number of instrumental activities of daily living (IADLs) with which the respondent has difficulty. IADLs include managing money, using the phone, and taking medications. The third is the number of mobility limitations the respondent faces, including difficulty with walking one block, walking several blocks, walking across a room, climbing one flight of stairs, and climbing several flights of stairs. The fourth measure is an index of large muscle limitations, with one point added to the index for difficulty with each of the following activities: sitting for two hours, getting up from a chair, stooping, kneeling or crouching, and pushing or pulling large objects. Fifth, an index of fine motor activity limitations adds one point for difficulty with each of the following tasks: picking up a dime, eating, and dressing. Finally, a gross motor activity limitation index adds one point for difficulty with each of the following: walking one block, walking across a room, climbing one flight of stairs, getting in or out of bed, and bathing.

Health care utilization variables include the number of hospital nights, nursing home nights, and doctor visits; indicators for whether the respondent used home care or prescription drugs; and the respondent's self-reported out-of-pocket health care spending. All utilization variables are measured since the previous interview or in the past two years if the respondent was not included in the previous wave.

Starting in 2004 (wave 7), respondents were asked a series of questions about life satisfaction. Studies show that reports of subjective well-being are correlated with objective physiological and psychological measures. Moreover, they are correlated with changes in circumstances and can impact

future decisions. While these measures can be affected by short-term contexts or mood, these fluctuations should average out and only add noise that makes significant findings less likely.[6] In the HRS, respondents are asked to rate their agreement with the following statements:

- "In most ways my life is close to ideal."
- "The conditions of my life are excellent."
- "I am satisfied with my life."
- "So far, I have gotten the important things I want in life."
- "If I could live my life again, I would change almost nothing."

In each case, the scale ranges from 1 (strongly disagree) to 7 (strongly agree).[7] To impute life satisfaction scores for earlier waves, we regress each life satisfaction measure on the individual components of the CESD index, a set of dummies for self-reported health, body mass index and its square, the health care utilization measures, indicators for Medicare and other health insurance coverage, the components of the major health condition index, a set of dummies for each functional limitation index, and dummies for education, race, age, marital status, and gender.[8] We substitute the predicted values of the satisfaction variables whenever they are missing.

It is important to define retirement carefully when investigating the impact of retirement on these measures of health and well-being. We require that individuals are not working and consider themselves retired. In the HRS, we select a sample of individuals who report at least 20 years of work experience in the wave in which their cohort first entered the survey (hereafter referred to as the baseline wave).[9] Thus, our analysis excludes career homemakers, for whom retirement status might not be very meaningful. In each wave, the RAND HRS classifies individuals as either working full-time, working part-

[6] See Kahneman and Krueger (2006) for a more detailed overview of life satisfaction measures.
[7] In wave 7 alone, this scale is reversed. However, we recode the wave 7 satisfaction variables to make them consistent with the other waves.
[8] For the imputations, we use all available observations on the four cohorts included in the analysis, not just the ones that were retained for the main regressions.
[9] We drop individuals who did not respond, or who responded via proxy, in the baseline wave.

time, partially retired, disabled, unemployed or not in the labor force. Individuals who are not working are classified as unemployed if they state that they are looking for work; retired if they are not looking for work and mention retirement; disabled if they are not looking for work, do not mention retirement, and indicate that they are disabled; and not in the labor force otherwise. Individuals who are working part time but mention being retired are classified as partly retired. We define retirement as a transition from any non-retirement status (working full- or part-time, or being unemployed) to full or partial retirement. We drop from the sample individuals who are disabled or out of the labor force in any wave, whose labor force status is missing in any wave, who are already retired in the baseline wave, who are never observed to retire, and who shift from retirement to non-retirement at any point. We also exclude all baseline wave observations from the analysis.

To capture the average effect of retirement, we run regressions in which the key independent variable is a dummy for retired status. Since we are interested in the dynamics of health after retirement we also estimate specifications in which the post-retirement period is divided into three periods, represented by a set of indicator variables. The first period, is the first wave of the survey in which a person is retired, and it indicates that the individual has been retired for 0-2 years. That is, retirement occurred at some point during the roughly two-year interval since the previous wave. The second period is the wave immediately following one's retirement wave, and it indicates that the individual has been retired for roughly 2-4 years. Finally, a third indicator denotes any post-retirement waves beyond the second and indicates that the individual has been retired for more than 4 years. This group includes people that have been retired from 3 up to 9 waves (or from 4-6 years up to 16-18 years).

Because retirement status could be endogenous, we instrument for retirement using variation in eligibility for Social Security and private DB pensions, as well as applicability of the Social Security earnings test. Our Social Security eligibility instruments are a set of indicators for whether a person-

wave observation falls into each of the following age categories: below 62, 62 to (but not including) 64, 64 to (but not including) normal retirement age, normal retirement age to (but not including) two years above normal retirement age, two years above normal retirement age to (but not including) 70, and 70 or older. We include separate categories for being within two years of ages 62 and normal retirement age in order to be able to instrument for each of the three retirement phases described above. Our DB eligibility instruments are a set of dummies that indicate whether an individual who is covered by a current employer's DB pension (as of the baseline wave) has reached the plan's early and normal retirement ages.[10] The Social Security earnings test effectively forces beneficiaries who earn above a certain threshold to defer part or all of their benefit. While any foregone benefits are received, with a generous actuarial adjustment at a later date (see Shoven and Slavov 2014a,b), there is evidence that most people view the earnings test as a tax on work (see, e.g., Friedburg 2000, Song and Manchester 2007). Our measure of "no earnings test" is an indicator that takes on a value of 1 during a given wave if the individual is outside the age range that would be subject to the earnings test for worker benefits. Prior to 2000, the earnings test applied to workers between the ages of 62 and 70. In 2000 and later, the earnings test applied to workers between the ages of 62 and their normal retirement age (which falls somewhere between 65 and 66 for the individuals in our sample, depending on their birth cohort).

Variation in eligibility for Social Security and DB pensions presents a plausible set of instruments. Our first stage regressions show that Social Security and pension eligibility are strong predictors of individual retirement behavior. Furthermore, there is no reason to believe that discrete age thresholds should directly influence health outcomes beyond the standard linear and quadratic trends in age that

[10] Depending on the baseline wave, an individual may report information on up to 3 or 4 current employer-sponsored pension plans. We use information in the RAND HRS to determine whether each plan is a DB, DC, or a combination. Eligibility ages for each DB or combination plan come from the raw HRS. An individual is determined to be eligible for an early (full) retirement if he or she has reached the lowest early (full) eligibility age for any of the DB or combination plans reported. If an individual responds that the plan has no age requirement, the age requirement is coded as missing. We also include an indicator for individuals who are covered by a DB or combination plan but have an unknown eligibility status due to missing data. For some plans, the early retirement age is either above the normal retirement or missing. In these cases, we replace the early eligibility age with the normal eligibility age.

are included in the specifications. Two possible exceptions to this are the dummy for normal retirement age and the dummy for full DB pension eligibility. For around 48 percent of our sample, Social Security normal retirement age is 65. In addition, roughly 26 of our sample are covered by a DB plan with a full retirement age of 65.[11] Since 65 is also the threshold for Medicare eligibility, reaching that age could directly affect health care utilization and health. We address this issue by controlling for Medicare and other insurance coverage our regressions. This approach allows us to use the normal retirement age threshold as an excluded instrument for the subset of individuals whose normal retirement age is greater than 65.

We estimate first-stage linear probability models that explain each of our four retirement status indicators (the overall retirement indicator and indicators for the three retirement periods) as a function of our instruments, a set of wave dummies, control variables, and individual fixed effects. Then, we use the predicted values from these regressions as instruments in the second-stage model. In the second stage regressions, the dependent variables are the measures of health and life satisfaction. The independent variables include the retirement indicators, age and its square, indicators for Medicare and other health insurance coverage (which could plausibly change at ages indicated in the instruments), wave dummies, and individual fixed effects. Because of the difficulty of estimating nonlinear models with fixed effects, we estimate linear regressions that treat all of these dependent variables as continuous.

Table 1 shows summary statistics for the main variables used in the analysis. We exclude observations with missing values for any of the variables used in the analysis. Our final sample consists of 21,638 person-wave observations, representing 2,879 individuals.

IV. Results

[11] Around 6 percent of the sample also reports a DB early retirement age of 65.

Table 2 shows the results of our first-stage regressions. We report standard errors clustered at the household level in parentheses, and all regressions use the respondent-level weights provided with the HRS. The coefficients in the first-stage regressions generally have the expected signs. Not being subjected to the earnings test reduces the probability of being retired. Being between the ages of 62 and 64 increases the probability of having retired within the past two years. Being at least two years older than normal retirement age increases the probability of having retired at least two waves ago. Similarly, being eligible for an early or full DB pension increases the probability of being retired. The F-statistics for the excluded instruments are greater than 10 in all cases, which suggests that the instruments explain significant variation in retirement status and there will not be biased or inconsistent results due to weak instruments (Bound et al (1995); Staiger and Stock (1997)).

Table 3 shows the results for general health outcomes. The OLS estimates show that retirement is associated with an increase in the number of health conditions with which the respondent has been diagnosed. The only positive association between retirement and health shows up as a moderate reduction in CESD score. The IV estimates are substantially different, showing that retirement significantly improves self-reported health 4 or more years after retirement. It has no statistically significant effect on the number of health conditions with which the respondent has been diagnosed. However, an examination of the individual health conditions that make up the index suggests that retirement may cause a reduction in the incidence of psychiatric problems both initially and in the long run.[12] Retirement also reduces obesity beyond 4 years after retirement. In addition, it is associated with a larger, statistically significant reduction in CESD score relative to OLS.

Table 4 shows the results for the life satisfaction measures. Most of the OLS regressions show no statistically significant relationship between retirement and life satisfaction. In the IV specifications, however, there is a strong positive impact of retirement on life satisfaction. The IV estimates suggest

[12] Results are not shown but are available upon request.

that the effect of retirement on life satisfaction is just as strong in the short run (immediately after retirement) as it is in the long run (4 or more years after retirement). This finding is somewhat at odds with the literature that shows that people return to a set point of well-being or adapt after life changing events. However, it is possible that the return to the set point occurs more slowly than can be captured in our model.

Table 5, shows the association between retirement and functional limitations. The OLS results suggest that retirement is, in many cases, associated with an increase in functional limitations, at least in the short run. The IV specifications suggest that on average, there is no statistically significant (at the 5 percent level) association between retirement and functional limitations. However, many of the functional limitations indices – including mobility limitations, large muscle limitations, and gross motor limitations – improve 4 or more years after retirement.

Table 6 considers the impact of retirement on health care utilization. While the OLS results suggest a positive relationship between retirement and the number of doctor visits and hospital nights, the IV results show no statistically significant effect (at the 5 percent level) of retirement on health care utilization either in the short-run or the long-run. These results suggest that regardless of the impact of retirement on health, policies that either delay or hasten retirement are unlikely to have much direct impact on health care costs.

Finally, we also examine the impact of retirement on summary health measures for various subsamples, including individuals with a high school education or less, individuals with physically demanding jobs, women, nonwhites, unmarried individuals, and individuals who were either unemployed or working part time before retirement. We do this by interacting dummies for group membership with our predicted retirement indicator, then using both predicted retirement and its interaction with group membership as instruments. Our results (not shown but available upon request) suggest that the coefficients on retirement are not statistically significantly different for most summary

health and life satisfaction measures (the top panels of Tables 3 and 4). There are, however, a few exceptions. The number of health conditions rises after retirement for the less-educated group. In addition, women appear to experience an increase in obesity and a smaller increase in some of the life satisfaction measures after retirement. Nonwhites experience a smaller improvement in self-reported health and one of the life satisfaction measures. The impact of retirement does not appear to vary depending on an individual's pre-retirement employment status.[13]

Our life satisfaction results are somewhat different from those of Horner (2014), who finds that subjective well-being improves in the short run after retirement but that the effect falls over time. Like Coe and Lindboom (2008) and Neuman (2008), we also find a positive association between retirement and self-reported good health. In contrast to these papers, we find evidence of improvements on physical health measures as well. Similar to Coe and Lindboom (2008) we do not find significant differences in the impact of retirement for less educated workers and workers with physically demanding jobs. However, we do find a statistically significant relationship between retirement and a number of health outcomes. One reason for this difference could simply be that our sample is larger, as it utilizes additional waves of the HRS that were unavailable when those papers were written. The additional waves also allow us to examine the impact of retirement further into the future, which is important given that health is a stock that adjusts to investments slowly over time. Another reason might be that some of these studies consolidate health outcomes into broader categories. For example, all of the dependent variables in Neuman (2008) are simply indicator variables for whether a particular health measure improved between two waves. Since we use the actual index number for these variables, we might be able to pick up on smaller changes in the indicators relative to the other studies.

[13] Individuals who were unemployed prior to retirement experience a smaller improvement in self-reported health than those who were employed; however, this result is only significant at the 10 percent level. In contrast, using a German dataset, Hetschko et al. (2014) show that transitioning from unemployment to retirement results in a larger improvement in well-being than transitioning from work to retirement. We note, however, that the number of unemployed people in our sample is small.

V. Conclusions

The question of whether retirement affects health and well-being is important not only when making individual retirement decisions but also when designing public policies that influence retirement behavior. As policymakers consider policies to further lengthen working lives and resolve shortfalls in funding for public retirement programs, it is important to take into account the impact these policies have on the health and well-being of working individuals. Moreover, changes in health due to retirement can also influence health care utilization and therefore the solvency of programs that provide health insurance to the elderly. This paper provides new evidence to address these questions.

Without taking the endogeneity of retirement decisions into account, early studies often find negative impacts of retirement on health and well-being. Indeed, our OLS results confirm these findings. More recent studies correct for selection into retirement and find that the effects of retirement on objective health measures largely disappear, and that retirement improves self-reported health. By utilizing more recent data and studying dynamic changes in health outcomes, we find improvements in long-term health outcomes that have not been found in past studies. This is the first paper to discover positive long-term effects in measureable health outcomes.

This evidence is consistent with the view that health is a stock variable that does not change immediately upon retirement but rather evolves over time. If this view is correct, it is likely that a longer horizon may uncover even more health benefits of retirement. Finally, consistent with improvements in health during retirement, we provide direct evidence that retirement has no statistically significant impact on health care utilization. That is, the health improvements that occur after retirement come without added expenses.

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Retired	0.612134	0.487276	0	1
t = 0	0.1265	0.33242	0	1
t = 1	0.111106	0.314271	0	1
t > 1	0.374528	0.484012	0	1
Has Medicare	0.466272	0.498873	0	1
Has non-Medicare health insurance	0.498877	0.500011	0	1
Age	64.35129	6.538274	50	91
No earnings test	0.372568	0.4835	0	1
Age < 62	0.371899	0.483323	0	1
64 > Age ≥ 62	0.110915	0.314034	0	1
NRA > Age ≥ 64	0.068748	0.253031	0	1
NRA + 2 > Age ≥ NRA	0.097242	0.296293	0	1
70 > Age ≥ NRA + 2	0.122675	0.328072	0	1
Age ≥ 70	0.228522	0.419891	0	1
No DB pension	0.524119	0.49943	0	1
Ineligible for DB pension	0.078788	0.269413	0	1
Eligible for early DB pension	0.060716	0.238815	0	1
Eligible for full DB pension (< 2 yrs)	0.046374	0.210298	0	1
Eligible for full DB pension (≥ 2 yrs)	0.262848	0.440191	0	1
DB status unknown	0.027155	0.162539	0	1
Self-reported health	2.509012	0.978287	1	5
Number of health conditions	1.663623	1.281427	0	8
CESD score	0.976383	1.574872	0	8
Obese	0.2868	0.452278	0	1
Life close to ideal	4.83108	0.921544	1	7
Excellent life conditions	4.844523	0.962873	0.79415	7
Satisfied with life	5.302315	0.88621	1	7
Gotten important things in life	5.311564	0.819356	1	7
Change nothing in life	4.327376	0.979426	1	7
ADLs with some difficulty	0.101735	0.445624	0	5
IADLs with some difficulty	0.034804	0.210712	0	3
Mobility limitations	0.625902	1.061002	0	5
Large muscle limitations	0.954582	1.157035	0	4
Gross motor limitations	0.18932	0.615596	0	5
Fine motor limitations	0.083616	0.321264	0	3
Hospital Nights	1.227614	5.804989	0	285
Nursing home nights	0.28986	6.627191	0	600
Doctor visits	8.384568	14.47036	0	900
Used home care	0.031649	0.175068	0	1
Used prescription drugs	0.766315	0.423185	0	1
Out of pocket medical expenses	2492.83	7233.861	0	404200

Notes: Summary statistics are for 20,917 person-wave observations from 2,870 individuals. Data are unweighted.

Table 2: First-Stage Regressions

VARIABLES	Retired	I(0-2 yrs retired)	I(2-4 yrs retired)	I(4+ yrs retired)
No earnings test	-0.194	-0.0326	-0.0295	-0.131
	(0.118)	(0.0999)	(0.142)	(0.127)
64 > Age ≥ 62	-0.0230	0.0843	0.00847	-0.116
	(0.119)	(0.101)	(0.143)	(0.127)
NRA > Age ≥ 64	-0.0108	-0.00671	0.0762	-0.0803
	(0.120)	(0.102)	(0.144)	(0.128)
NRA + 2 > Age ≥ NRA	-0.0687	0.00840	-0.0631	-0.0140
	(0.120)	(0.103)	(0.145)	(0.129)
70 > Age ≥ NRA + 2	-0.0418	-0.0284	-0.123	0.110
	(0.120)	(0.103)	(0.145)	(0.129)
Age ≥ 70	-0.0806	-0.0643	-0.191	0.174
	(0.120)	(0.103)	(0.144)	(0.129)
Eligible for early DB pension	0.0521**	0.0776***	0.0413**	-0.0668***
	(0.0215)	(0.0222)	(0.0171)	(0.0194)
Eligible for full DB pension (< 2 yrs)	0.122***	0.154***	0.00845	-0.0411**
	(0.0219)	(0.0252)	(0.0160)	(0.0194)
Eligible for full DB pension (≥ 2 yrs)	0.136***	0.0280	0.0614***	0.0464**
	(0.0185)	(0.0185)	(0.0158)	(0.0201)
DB status unknown	0.0743	0.0954	0.0652	-0.0862
	(0.0749)	(0.0583)	(0.0452)	(0.106)
Age	0.132***	0.149***	0.0780***	-0.0946***
	(0.0165)	(0.0170)	(0.0146)	(0.0153)
Age squared	-0.00131***	-0.00105***	-0.000739***	0.000484***
	(9.41e-05)	(8.37e-05)	(7.03e-05)	(9.47e-05)
Has Medicare	0.120***	-0.151***	0.163***	0.108***
	(0.0268)	(0.0373)	(0.0306)	(0.0235)
Has non-Mediare health insurance	-0.0429*	-0.0930***	0.0244	0.0257
	(0.0241)	(0.0306)	(0.0205)	(0.0167)
F-statistic for excluded instruments	26.51	16.49	20.48	23.44

Notes: All regressions are based on 20,917 person-wave observations from 2,870 individuals and include wave dummies and individual fixed effects. Standard errors clustered by household in parentheses. All regressions use respondent-level weights.

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

Table 3: Impact of Retirement on Summary Health Measures

	Self-Reported Health (1 = excellent, 5 = poor)		Number of health conditions		CESD Score		Obesity	
VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV
				Average Effect				
Retired	0.00748	-0.164*	0.0637***	0.0257	-0.0890**	-0.448**	-0.00472	-0.0264
	(0.0187)	(0.0959)	(0.0194)	(0.0987)	(0.0392)	(0.191)	(0.00768)	(0.0378)
Age	-0.0107	0.0309	0.000865	0.0101	-0.106**	-0.0190	0.0230**	0.0283**
	(0.0260)	(0.0345)	(0.0284)	(0.0364)	(0.0505)	(0.0704)	(0.0109)	(0.0128)
Age squared	2.47e-05	-0.000338	0.000215	0.000134	0.000925***	0.000165	-0.000268***	-0.000314***
	(0.000149)	(0.000251)	(0.000187)	(0.000269)	(0.000272)	(0.000496)	(5.99e-05)	(9.02e-05)
Has Medicare	-0.0939**	-0.0758*	0.113**	0.117**	-0.0972	-0.0593	0.0142	0.0165
	(0.0435)	(0.0434)	(0.0465)	(0.0462)	(0.0898)	(0.0903)	(0.0192)	(0.0198)
Has non-Medicare HI	-0.0611	-0.0706*	0.111**	0.109**	-0.102	-0.122	0.00890	0.00769
	(0.0419)	(0.0422)	(0.0438)	(0.0447)	(0.0879)	(0.0891)	(0.0180)	(0.0181)
				Post-Retirement Dynamics				
0-2 years	0.0176	-0.208	0.0667***	-0.0695	-0.0651	-0.569**	-0.000384	-0.0317
	(0.0200)	(0.141)	(0.0182)	(0.109)	(0.0414)	(0.272)	(0.00774)	(0.0509)
2-4 years	-0.0177	-0.122	0.0635**	0.121	-0.137***	-0.319	-0.00669	-0.0225
	(0.0236)	(0.134)	(0.0264)	(0.153)	(0.0472)	(0.264)	(0.0100)	(0.0567)
4+ years	-0.00613	-0.376**	0.0841**	-0.219	-0.0844	-0.539*	0.0190	-0.0836
	(0.0303)	(0.150)	(0.0335)	(0.168)	(0.0547)	(0.296)	(0.0116)	(0.0597)
Age	-0.0108	0.00605	0.00293	-0.0164	-0.103**	-0.0247	0.0255**	0.0213
	(0.0260)	(0.0368)	(0.0285)	(0.0389)	(0.0507)	(0.0752)	(0.0110)	(0.0132)
Age squared	1.76e-05	-0.000168	0.000202	0.000326	0.000892***	0.000230	-0.000285***	-0.000268***
	(0.000150)	(0.000261)	(0.000187)	(0.000280)	(0.000274)	(0.000512)	(6.07e-05)	(9.31e-05)
Has Medicare	-0.0868**	-0.0452	0.110**	0.139**	-0.0889	-0.0764	0.0104	0.0267
	(0.0436)	(0.0551)	(0.0466)	(0.0560)	(0.0893)	(0.116)	(0.0192)	(0.0244)
Has non-Medicare HI	-0.0593	-0.0728*	0.111**	0.101**	-0.0983	-0.135	0.00902	0.00788
	(0.0419)	(0.0438)	(0.0438)	(0.0447)	(0.0878)	(0.0930)	(0.0180)	(0.0185)

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

Notes: All regressions are based on 20,917 person-wave observations from 2,870 individuals and include wave dummies and individual fixed effects. Standard errors clustered by household in parentheses. All regressions use respondent-level weights.

Table 4: Impact of Retirement on Life Satisfaction

	Life close to ideal		Excellent life conditions		Satisfied with life		Gotten important things in life		Change nothing in life	
VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
					Average effect					
Retired	-0.000948	0.607***	0.0133	0.644***	-0.0160	0.544***	0.0268	0.193*	0.00679	0.329**
	(0.0251)	(0.130)	(0.0245)	(0.126)	(0.0237)	(0.123)	(0.0220)	(0.105)	(0.0281)	(0.131)
Age	0.143***	-0.00481	0.171***	0.0179	0.116***	-0.0195	0.142***	0.101**	0.0956**	0.0174
	(0.0344)	(0.0471)	(0.0341)	(0.0467)	(0.0327)	(0.0456)	(0.0305)	(0.0398)	(0.0389)	(0.0492)
Age squared	-0.00106***	0.000221	-0.00130***	3.33e-05	-0.00108***	0.000109	-0.00123***	-0.000877***	-0.000686***	-4.01e-06
	(0.000181)	(0.000331)	(0.000186)	(0.000326)	(0.000176)	(0.000321)	(0.000159)	(0.000271)	(0.000201)	(0.000331)
Has Medicare	0.323***	0.259***	0.298***	0.231***	0.244***	0.184***	0.231***	0.213***	0.167***	0.133**
	(0.0592)	(0.0617)	(0.0655)	(0.0662)	(0.0609)	(0.0627)	(0.0509)	(0.0524)	(0.0631)	(0.0652)
Has non-Medicare HI	0.191***	0.225***	0.216***	0.251***	0.217***	0.249***	0.255***	0.264***	0.0427	0.0607
	(0.0574)	(0.0599)	(0.0625)	(0.0645)	(0.0587)	(0.0608)	(0.0493)	(0.0501)	(0.0613)	(0.0617)
					Post-retirement dynamics					
0-2 years	-0.00615	0.542***	0.00269	0.516***	-0.0256	0.320*	0.0227	0.123	-0.00284	0.325
	(0.0284)	(0.194)	(0.0275)	(0.179)	(0.0266)	(0.179)	(0.0250)	(0.154)	(0.0316)	(0.200)
2-4 years	0.0166	0.679***	0.0436	0.791***	0.0105	0.790***	0.0493*	0.270*	0.0365	0.325
	(0.0311)	(0.190)	(0.0304)	(0.193)	(0.0288)	(0.175)	(0.0274)	(0.160)	(0.0335)	(0.207)
4+ years	0.0217	0.660***	0.0408	0.861***	0.00581	0.613***	0.0735**	0.230	0.0391	0.0885
	(0.0353)	(0.196)	(0.0353)	(0.194)	(0.0342)	(0.182)	(0.0316)	(0.176)	(0.0400)	(0.219)
Age	0.144***	0.00510	0.172***	0.0517	0.117***	7.84e-05	0.145***	0.110**	0.0973**	-0.0130
	(0.0347)	(0.0516)	(0.0343)	(0.0508)	(0.0329)	(0.0505)	(0.0306)	(0.0430)	(0.0390)	(0.0539)
Age squared	-0.00107***	0.000173	-0.00130***	-0.000154	-0.00107***	3.44e-05	-0.00124***	-0.000913***	-0.000688***	0.000192
	(0.000183)	(0.000357)	(0.000187)	(0.000351)	(0.000177)	(0.000348)	(0.000158)	(0.000287)	(0.000203)	(0.000358)
Has Medicare	0.316***	0.229***	0.287***	0.149*	0.235***	0.104	0.218***	0.185***	0.155**	0.181**
	(0.0595)	(0.0760)	(0.0661)	(0.0800)	(0.0608)	(0.0761)	(0.0507)	(0.0660)	(0.0631)	(0.0863)
Has non-Medicare HI	0.189***	0.216***	0.214***	0.233***	0.216***	0.221***	0.254***	0.256***	0.0407	0.0637
	(0.0574)	(0.0611)	(0.0626)	(0.0648)	(0.0586)	(0.0619)	(0.0492)	(0.0511)	(0.0612)	(0.0643)

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

Notes: All regressions are based on 20,917 person-wave observations from 2,870 individuals and include wave dummies and individual fixed effects. Standard errors clustered by household in parentheses. All regressions use respondent-level weights.

Table 5: Impact of Retirement on Functional Limitations

	ADLs with some difficulty		IADLs with some difficulty		Mobility limitations		Large muscle limitations		Gross motor limitations		Fine motor limitations	
VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
						Average Effect						
Retired	0.0207	0.111*	0.00659	-0.0125	0.0615***	0.0412	0.0770***	-0.124	0.0404***	0.0723	0.00233	0.0524
	(0.0127)	(0.0637)	(0.00703)	(0.0280)	(0.0216)	(0.110)	(0.0243)	(0.122)	(0.0153)	(0.0745)	(0.00938)	(0.0455)
Age	-0.0389**	-0.0609***	-0.0311***	-0.0265**	-0.113***	-0.108***	-0.0197	0.0292	-0.0637***	-0.0714***	-0.0358***	-0.0479***
	(0.0165)	(0.0205)	(0.00859)	(0.0104)	(0.0309)	(0.0411)	(0.0312)	(0.0421)	(0.0205)	(0.0262)	(0.0125)	(0.0146)
Age squared	0.000296***	0.000488***	0.000212***	0.000172**	0.000790***	0.000747**	0.000323*	-0.000103	0.000494***	0.000562***	0.000155**	0.000261**
	(0.000109)	(0.000160)	(5.42e-05)	(7.54e-05)	(0.000193)	(0.000304)	(0.000184)	(0.000310)	(0.000136)	(0.000201)	(7.54e-05)	(0.000105)
Has Medicare	-0.0169	-0.0265	-0.00293	-0.000918	-0.00714	-0.00499	-0.138**	-0.117*	0.00927	0.00590	-0.0207	-0.0260
	(0.0382)	(0.0381)	(0.0143)	(0.0144)	(0.0525)	(0.0533)	(0.0596)	(0.0608)	(0.0453)	(0.0450)	(0.0206)	(0.0214)
Has non-Medicare HI	-0.00429	0.000777	0.00322	0.00216	-0.00110	-0.00224	-0.0794	-0.0907	0.0256	0.0274	-0.0137	-0.0109
	(0.0379)	(0.0380)	(0.0140)	(0.0141)	(0.0513)	(0.0518)	(0.0589)	(0.0592)	(0.0453)	(0.0458)	(0.0193)	(0.0191)
						Post-Retirement Dynamics						
0-2 years	0.0210*	0.101	0.00420	-0.0314	0.0674***	0.0531	0.0785***	-0.225	0.0434***	0.0595	0.00179	0.0514
	(0.0127)	(0.0806)	(0.00743)	(0.0380)	(0.0220)	(0.156)	(0.0249)	(0.168)	(0.0157)	(0.102)	(0.00930)	(0.0594)
2-4 years	0.0204	0.111	0.0101	0.00438	0.0473*	0.00340	0.0633**	-0.0358	0.0344*	0.0659	0.00561	0.0475
	(0.0157)	(0.0880)	(0.00746)	(0.0387)	(0.0286)	(0.176)	(0.0316)	(0.186)	(0.0188)	(0.123)	(0.0116)	(0.0588)
4+ years	0.0220	-0.213**	0.00175	-0.128***	0.0543	-0.714***	0.0414	-0.788***	0.0411*	-0.547***	0.00951	-0.132*
	(0.0177)	(0.102)	(0.00821)	(0.0427)	(0.0354)	(0.199)	(0.0373)	(0.196)	(0.0227)	(0.133)	(0.0118)	(0.0736)
Age	-0.0388**	-0.102***	-0.0318***	-0.0403***	-0.113***	-0.204***	-0.0226	-0.0504	-0.0633***	-0.150***	-0.0352***	-0.0713***
	(0.0166)	(0.0246)	(0.00872)	(0.0121)	(0.0312)	(0.0472)	(0.0314)	(0.0476)	(0.0207)	(0.0317)	(0.0126)	(0.0167)
Age squared	0.000295***	0.000752***	0.000217***	0.000264***	0.000786***	0.00137***	0.000337*	0.000432	0.000490***	0.00107***	0.000153**	0.000412***
	(0.000110)	(0.000189)	(5.52e-05)	(8.72e-05)	(0.000195)	(0.000342)	(0.000185)	(0.000341)	(0.000137)	(0.000239)	(7.60e-05)	(0.000122)
Has Medicare	-0.0171	0.0374	-0.00274	0.0172	-0.00320	0.154**	-0.129**	-0.00970	0.0103	0.130**	-0.0226	0.0117
	(0.0385)	(0.0447)	(0.0143)	(0.0171)	(0.0535)	(0.0703)	(0.0599)	(0.0764)	(0.0460)	(0.0544)	(0.0205)	(0.0252)
Has non-Medicare HI	-0.00427	0.00426	0.00299	0.00158	-0.000136	0.0100	-0.0785	-0.0931	0.0260	0.0347	-0.0139	-0.00837
	(0.0379)	(0.0395)	(0.0140)	(0.0144)	(0.0512)	(0.0532)	(0.0588)	(0.0612)	(0.0454)	(0.0481)	(0.0192)	(0.0191)

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

Notes: All regressions are based on 20,917 person-wave observations from 2,870 individuals and include wave dummies and individual fixed effects. Standard errors clustered by household in parentheses. All regressions use respondent-level weights.

Table 6: Impact of Retirement on Medical Care Utilization

	Hospital Nights		Nursing Home Nights		Doctor Visits		Home Care Use		Prescription Drug Use		Out of Pocket Medical Expenses	
VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
						Average Effect						
Retired	0.169	-1.020	0.0474	0.860	1.129***	-0.799	0.00314	0.00684	0.0255***	-0.0820*	225.7	1,379*
	(0.180)	(0.744)	(0.110)	(0.802)	(0.432)	(1.490)	(0.00477)	(0.0233)	(0.00903)	(0.0476)	(145.9)	(809.5)
Age	0.0933	0.382	-0.754*	-0.951**	0.0274	0.496	-0.0128*	-0.0137	-0.00756	0.0186	-160.9	-441.0*
	(0.210)	(0.261)	(0.402)	(0.403)	(0.680)	(0.704)	(0.00712)	(0.00917)	(0.0140)	(0.0171)	(165.6)	(248.0)
Age squared	0.00176	-0.000758	0.00530**	0.00702***	0.00684*	0.00277	0.000157***	0.000165**	-5.47e-05	-0.000282**	-0.783	1.657
	(0.00120)	(0.00182)	(0.00248)	(0.00233)	(0.00355)	(0.00439)	(4.19e-05)	(6.42e-05)	(8.15e-05)	(0.000124)	(0.975)	(1.862)
Has Medicare	0.323	0.448	0.0411	-0.0447	1.461**	1.664**	0.00244	0.00205	0.0684***	0.0798***	-209.3	-331.1
	(0.338)	(0.347)	(0.281)	(0.246)	(0.744)	(0.739)	(0.00919)	(0.00954)	(0.0188)	(0.0193)	(379.9)	(377.4)
Has non-Medicare HI	0.441	0.374	0.171	0.217	1.358*	1.250*	0.00747	0.00767	0.0671***	0.0611***	-244.2	-179.7
	(0.290)	(0.298)	(0.266)	(0.282)	(0.698)	(0.702)	(0.00822)	(0.00835)	(0.0184)	(0.0189)	(350.4)	(357.7)
						Post-Retirement Dynamics						
0-2 years	0.295	-0.475	-0.0305	-0.0950	1.250***	-1.049	0.00536	0.00730	0.0210**	-0.0966*	301.6*	1,714
	(0.192)	(1.082)	(0.0840)	(1.338)	(0.485)	(2.607)	(0.00505)	(0.0311)	(0.00875)	(0.0575)	(159.7)	(1,131)
2-4 years	-0.163	-1.626	0.233	1.803	0.645	-0.583	-0.00113	0.00440	0.0354***	-0.0655	43.82	990.8
	(0.236)	(1.066)	(0.260)	(1.791)	(0.491)	(3.087)	(0.00613)	(0.0367)	(0.0126)	(0.0733)	(206.3)	(1,336)
4+ years	-0.0645	-1.372	0.126	-2.090	0.349	-2.550	0.00432	-0.0521	0.0272*	-0.0615	145.9	646.5
	(0.296)	(1.283)	(0.245)	(1.846)	(0.631)	(3.297)	(0.00762)	(0.0384)	(0.0162)	(0.0750)	(236.7)	(1,066)
Age	0.0868	0.311	-0.755*	-1.280**	-0.0264	0.285	-0.0124*	-0.0212*	-0.00790	0.0219	-159.6	-550.3**
	(0.208)	(0.271)	(0.404)	(0.569)	(0.669)	(0.802)	(0.00723)	(0.0108)	(0.0140)	(0.0178)	(167.9)	(277.8)
Age squared	0.00170	-0.000427	0.00537**	0.00935***	0.00704**	0.00418	0.000154***	0.000213***	-4.96e-05	-0.000300**	-0.846	2.283
	(0.00119)	(0.00195)	(0.00248)	(0.00355)	(0.00350)	(0.00534)	(4.25e-05)	(7.62e-05)	(8.18e-05)	(0.000125)	(0.977)	(2.051)
Has Medicare	0.426	0.682	-0.00736	0.281	1.688**	1.951	0.00304	0.0143	0.0663***	0.0713***	-161.3	-81.41
	(0.342)	(0.465)	(0.257)	(0.556)	(0.767)	(1.254)	(0.00916)	(0.0129)	(0.0190)	(0.0258)	(384.7)	(453.0)
Has non-Medicare HI	0.463	0.444	0.159	0.146	1.391**	1.246*	0.00776	0.00857	0.0664***	0.0591***	-231.9	-129.8
	(0.289)	(0.297)	(0.256)	(0.215)	(0.698)	(0.753)	(0.00821)	(0.00854)	(0.0184)	(0.0197)	(347.6)	(368.7)

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

Notes: All regressions are based on 20,917 person-wave observations from 2,870 individuals and include wave dummies and individual fixed effects. Standard errors clustered by household in parentheses. All regressions use respondent-level weights.

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