Healthy Life Expectancy:
Estimates and Implications for Retirement Age Policy

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ABSTRACT

The simultaneous growth in longevity and mounting budget deficits in the U.S. have increased interest in raising the age of eligibility for public health and retirement benefits. The consequences of this policy depend on the health of the near elderly, and on the distribution of health by demographic group. We first describe healthy life expectancy at age 62 by sex, race, and education. Healthy life expectancy varies widely within and across gender and race groups, with the best-off groups enjoying nearly 4 more years of healthy life than less well-off groups. We then simulate the capacity to work of near elderly individuals (62-64 year-olds) based on the work, disability, and retirement status of 57-61 year-olds reporting the same level of health. Our estimates indicate that work capacity is substantial. The health status of 62-64 year-olds suggests their labor force participation could rise by over 15 percentage points without access to early Social Security retirement benefits, while disability rates would increase modestly, by 3 percentage points. Still, less advantaged groups such as those without any college education, would experience a rise in disability rates that is twice as large, indicating the uneven burden of changes in the age of eligibility.

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The long-range deficit in Social Security requires reform to bring future benefits and revenues into alignment. Similar concerns surround Medicare, a program for which budget forecasts are even more dire. One common suggestion for reform of both programs is to increase the age of early and normal retirement (Munnell et al. 2004), a suggestion that has recently been endorsed by both Democratic and Republican leaders of the House of Representatives. Analysts argue that this is good policy because people are living longer and are healthier at any given age than in the past, thus making employment at older ages more feasible (Munnell et al. 2004; Steuerle, Spiro and Johnson 1999).

The equity implications of raising the age of eligibility may be troubling, however. People with low healthy life expectancy will find the return to increased work substantially lower than people with longer life expectancy, both because they cannot work as much, and because they earn less when they do work. As we show in the first part of the paper, healthy life expectancy varies predictably by demographic group: healthy life expectancy at age 62 is as much as 3 years lower for blacks, Hispanics, and less educated people than for their counterpart groups. This lowers the expected value of Social Security retirement benefits substantially for these groups, compared with others, confirming what earlier literature suggests (Liebman 2002). Further, significant evidence shows that health shocks play an important role in labor force exit and early retirement (Burkhauser, Couch and Phillips 1996; McGeary 2009; Smith 1999b). Such differences have important consequences for the equity inherent in proposed changes to Social Security and Medicare benefits.

In this paper, we examine the potential impact of policies that would raise the age of eligibility for early and normal retirement benefits, including Social Security and Medicare. We analyze these policies for the overall population, and for different demographic groups. In particular, we consider how increases in the age of eligibility for retirement benefits would affect work capacity and disability of different groups. If eligibility ages for Social Security and Medicare increase, would more people go to work, or would more people instead be out of work and disabled? If the latter, how does this vary by demographic group?

Our predictions are based on a notion of work capacity that is a function of health. We assume that the relationship between employment and health among people aged 62 to 64 (the ages at which individuals can currently claim Early Entitlement for Social Security benefits) would be the same as for people aged 57 to 61 today. Thus, by estimating the impact of health on labor force participation among people aged 57 to 61, we can forecast work capacity for people aged 62 to 64. If private pension and health benefits, as well as employment opportunities, are the same for ages just above and below 62, this would predict actual labor market outcomes. We do the same exercise for self-reported disability. Finally, we make similar comparisons between adults aged 62-64 and those aged 65-69.

Our primary empirical finding is that health deteriorates very slowly in the 60s. In particular, the health of people aged 62 to 64 is only marginally worse than the health of people aged 57 to 61. This is true overall and for most demographic groups. It is also true through age 69. As a result, when we simulate the work capacity of people aged 62 and older, and assume that there were similar job opportunities and no Social Security or Medicare consequences to working, we find that labor force participation among men in these age groups would increase by over 15 percentage points, while self-reported disability rates would increase only 3 percentage points among white college attendees. This pattern is generally true for all ages below 70. However, disability rates would rise more for the less educated, increasing by 6 percentage points among white males who did not attend college, for example. And since life expectancy is shorter for these groups, the percentage reduction in healthy, non-working years at the end of life is substantially higher – 9 percent among less educated men and women compared with 6.5 percent for the better educated. Thus, the equity implications of such a change would be unfavorable.

The paper is structured as follows. Section 1 discusses past research on health and work capacity. Section 2 describes the data we analyze. Section 3 presents descriptive calculations of health, labor force status, and healthy life expectancy for different race, gender, and education groups. Section 4 estimates models of work capacity and simulates labor force status in the wake of alternative Social Security and Medicare changes in age eligibility. Section 5 discusses the implications of these results.

Section 1. Background

There is a large literature on determinants of retirement decisions and the consequences of retirement policy for that decision. For recent reviews, see Gustman and Steinmeier (2005) or Blau and Goodstein (2010). We focus our summary on the potential impact of proposed policies to raise the early and normal retirement age for Social Security benefits and age-eligibility for Medicare benefits. Although there is controversy regarding the exact role of Social Security benefits play in retirement decisions, a few points of consensus emerge. First, most of the literature finds that health shocks, although important determinants of work, do not explain retirement trends over time, partly because few individuals have truly poor health (Burkhauser et al. 1996; McGeary 2009; Mitchell and Phillips 2000; Smith 1999a). Second, Social Security policies cannot explain large declines in labor force participation through 1990, but changes in rules to make work relatively more favorable may have contributed to rising labor force participation in recent years (Blau and Goodstein 2010; Gustman and Steinmeier 1986; Gustman and Steinmeier 2005; Lumsdaine, James and David 1996; Lumsdaine, Stock and Wise 1994; Rust and Phelan 1997). Finally, health insurance benefits provided by employers do influence labor force participation, as does Medicare eligibility, but modestly (Blau and Gilleskie 2008; Gustman and Steinmeier 1994; Lumsdaine et al. 1996).

Because retirement rates spike at ages 62 and, more moderately at 65, much of the retirement literature attempts to model these peaks at ages 62 and 65 as a function of pension and/or health benefits. Since delaying retirement from 62 to 65 is approximately actuarially fair, the literature cannot attribute the spike in retirement at age 62 to the incentive effects of Social Security. Thus, researchers need other explanations to understand why people retire when they do (Blau and Goodstein 2010; Borsch-Supan 1999; Gustman and Steinmeier 1986; Gustman and Steinmeier 2005; Rust and Phelan 1997; Smith 1999a).

Gustman and Steinmeier (Gustman and Steinmeier 1986; Gustman and Steinmeier 2005) posit that discounting is the issue. Their key insight is that individuals with high discount rates (i.e. they discount the future heavily) will retire as soon as early retirement benefits are permitted at age 62. For individuals with low discount rates, retirement is optimal when the actuarial adjustment to delayed SSA benefits become less favorable, at age 65. An alternative model suggests that individuals would like to retire before 62, but due to market imperfections that leave them unable to borrow against future income, they "wait" until age 62 and retire at rapid rates (Rust and Phelan 1997). Rust and Phelan argue similarly that retirement spikes at age 65 reflect a lack of access to health insurance in private markets that is relieved with age eligibility for Medicare.

Most relevant to our work is the literature focusing on health status and/or health insurance and retirement. A study of older male workers in the Health and Retirement Study (HRS) describes characteristics of Social Security beneficiaries claiming early retirement (Burkhauser et al. 1996). In the HRS, early retirees were slightly more likely to be in poor health than non-early retirees, but only 3% of the early retirees reported poor health. Reports of poor health were much more predictive of adverse economic outcomes (such as low employment rates, low levels of income and wealth) than early retirement. In closely related work McClellan (1998) demonstrates that functional status, rather than a health condition, is an important determinant of retirement decisions. This finding is not surprising given the heterogeneity in outcomes among individuals with a particular health condition. Mitchell and Phillips (2000) also explored potential changes in age eligibility for Social Security, carefully assessing streams of income, the availability of disability benefits, pension benefits, and health insurance individuals can expect over their lifetimes. On the basis of behavioral responses to the possible change in financial incentives, they estimate that retirement would fall by much more than disability would rise. McGarry (2004) uses the Health and Retirement Study to show that one's perception of health is an important determinant of retirement.

Related literature addresses how age eligibility for pension and health benefits plays into decisions regarding retirement. This work indicates that increases in eligibility ages for pension or health benefits would produce substantial changes in retirement behavior. Recent evidence comes from a simulation of the impact of several policy changes among singles and married couples without private pension benefits, including eliminating the earliest eligibility age (EEA) and raising the Social Security normal retirement age and Medicare eligibility age to 70 (Van Der Klaauw and Wolpin 2005). Van der Klaauw and Wolpin predict large increases in employment rates among married males aged 62-69 (10 percentage points for the EEA change alone and 15 points for the elimination of all benefits before 70), but only modest changes among married females and single males or females. Gustman and Steinmeier (2005) simulate that if the EEA were raised to 64, the share of persons aged 62-63 who would be retired would fall by 5 percentage points. The literature described above aims to understand what people might do in response to policy changes, and in each case authors are forced to make strong assumptions regarding an individual's ability to borrow against future Social Security Benefits, or to restrict empirical populations to narrow groups such as working single males from a single firm or people facing a similar ability to access pension and health benefits, to overcome some of the complexity introduced by joint decisions and by variation in private retiree benefits. However, little of the existing literature answers an important question regarding the potential burden of reforms that raise the age of eligibility for retirement and health benefits.

Our work complements existing studies of health and retirement. By focusing on work capacity as it relates to health, we answer a different question, "What are the young retired able to do?" Further, our focus on retirement as it relates to health does not force us to restrict our study population in order to avoid complicated private pension rules. Our results are not sensitive to assumptions about liquidity constraints. Because we model a rise in the normal retirement age and Medicare eligibility to 70, our simulation does not rely on the resolution of the debate regarding whether Medicare benefits induce the spike in retirement at age 65, versus whether the financial implications of postponing retirement after age 65 can explain these spikes. Finally, we focus more attention on the distributional impact of such policy changes by describing how these rules may impact sex, race, and education groups differentially.

2. Data to Estimate Healthy Life Expectancy and Labor Force Status

Mortality and Population Data

As in our previous work (Meara, Richards and Cutler 2008), we use the nearly universal sample of death certificates compiled in the Mortality, Multiple-Cause-of-Death (MCD) file for 2000 to generate death totals. We match these with population estimates from the Public-Use Micro Sample of the 2000 Census, the denominator, to calculate mortality rates. Although there are known inconsistencies with the education levels reported on death certificates (Sorlie and Johnson, 1996), these data allow the use of two broad educational categories with reasonable accuracy: high school or less vs. any college.[1]

Health and Employment Data

To determine quality of life, health limitations and conditions, and labor force status, we use data from the Medical Expenditure Panel Survey (MEPS). The MEPS is a nationally representative household survey with an overlapping panel design. New panels are drawn each year from the National Health Interview Survey and then followed for two years. Our data are taken from the public-use Full-Year Consolidated Data files for 2000 through 2003. These files contain 132,032 observations on 84,081 unique individuals (who can appear in two successive years). We restrict attention to blacks, whites, and Hispanics aged 57 and up, for which there are 22,026 observations on 14,145 individuals. After dropping observations without data on key variables, our final MEPS sample contains 18,732 observations on 12,410 individuals.[2]

We use the years 2000 through 2003 because in those years the MEPS included a 100-

[1] For further details on these data sources and education measurement, see Meara, Richards, and Cutler (2008).
[2] 3,083 observations were dropped because respondents did not complete the form with the self-reported health scale. Survey weights are provided that adjust for this non-response. An additional 211 observations were dropped due to missing information on education or labor force status.

point self-reported health scale. Respondents were shown a thermometer with markings from 0 to 100 and asked to "indicate on this scale how good or bad your own health is today, in your opinion." The MEPS also asks detailed questions on impairments in activities of daily living (ADLs) and instrumental activities of daily living (IADLs), as well as other physical, cognitive, and social limitations.[3] In addition, the MEPS asks whether individuals have ever been diagnosed with certain health conditions such as diabetes, heart conditions, stroke, or high blood pressure. Together, these measures provide a very rich picture of health status compared with other studies evaluating the importance of health with regard to retirement policies.

Our data describing whether individuals are "in the labor force", retired, or "disabled" come from two questions. First individuals are asked, "Do you currently have a job for pay or own a business?" If the answer is no, respondents are asked, "What is the main reason you did not work since (START DATE)?" Possible responses include: could not find work; retired; unable to work because ill/disabled; on temporary layoff; maternity/paternity leave; going to school; take care of home or family; wanted some time off; or waiting to start new job. We classify individuals as disabled if they self-report "unable to work because ill/disabled" and term them retired if they self report being "retired, " if they never worked in their life, say they are "taking care of home or family," or give an unclassified reason for not being employed.[4] All other individuals are coded as "in the labor force." One should note that defining disability in this way is, if anything, likely to yield an upper bound on rates of disability by age since some individuals may rationalize their decisions to exit the labor force by reporting they are disabled.

[3] Activities of Daily Living include self care activities such as feeding and dressing oneself. Instrumental Activities of Daily Living include activities such as shopping and doing housework.

[4] These data represent each individual's *subjective* assessment of disability and retirement status. Given our interest in self-perceived well being, we believe this is more appropriate than defining disability and retirement status based on benefits receipt or some threshold in hours of work.

Table 1 provides sample counts and weighted descriptive statistics from our MEPS sample, broken out by sex and age. The share of individuals who are in the labor force declines rapidly between ages 57-61 and 65-69, falling by about half. The share retired increases commensurately. On the other hand, there is virtually no change in self-perceived health, which falls by only 1 point over these ages. More objective measures of health conditions change slowly over these ages as well. For example, the rates of reported diagnoses for high blood pressure and heart conditions increase by more than five percentage points from the late fifties to the late sixties, but the majority of the sample live without these conditions in these age ranges. Rates of ADL and IADL limitations suggest that the functional impact of these conditions is small. Although rates of ADL and IADL limitations double for males from ages 57-61 to ages 65-69, less than 5 percent of males in the MEPS have an ADL or IADL. Thus, overall, health appears to remain fairly constant through the sixties and then to decline after age 70.

3. Health and Healthy Life Expectancy

We start our empirical analysis by estimating healthy life expectancy for different education and demographic groups around the year 2000. We define healthy life expectancy as the number of quality-adjusted years of life a person can expect to live, conditional on being alive at age x. For analytical purposes, we present some notation. Denote $q_{g,a}$ as the quality of life for a person of demographic group g at age a. We think of this as an average for all people of group g at that age. Similarly, $\pi_{g,a|x}$ is the probability that a member of that group survives to age a, conditional on being alive at age x. We imagine groups separated by education, which is determined early in life, in addition to sex and race or ethnicity. Thus, the membership of the groups is determined well before the minimum age for our analyses, age 57.

Quality adjusted life expectancy (QALE) is the sum over future ages of the probability of being alive multiplied by the quality of life for those who are alive:

$$\text{(1)} \qquad \text{QALE}_{g,x} = \sum_{a=x}^{\infty} \pi_{g,a|x} q_{g,a} \ .$$

In practice, a is capped at some terminal age A, in our case A = 85. After age 85, we use mortality rates reported in life tables. By construction, there is no difference across education groups in the quality adjustment after age 85, given the lack of data at these ages.

Figures 1 and 2 show the averages of health ($q_{g,a}$) over ages 50 to 85 and Figures 3 and 4 show retirement over ages 57 to 85 for each group. Figures 1 and 3 are for men, and figures 2 and 4 are for women. Self-reported health changes very little over ages 50-69. Among white, college educated women and men, for example, the health scale is virtually constant at 80 throughout the age range. Although the average health scale is slightly lower, between 70 and 80, for less educated white women and men, the trend is also flat over this age range. This stands in stark contrast to retirement trends, which rise by about 20 percentage points, nearly doubling the share of individuals in retirement between ages 59 and 65 for white men and women in both education groups. The data for blacks and Hispanics are noisier, but show similar patterns.

The retirement status profiles in Figures 3 and 4 indicate certain differences by education and sex. In particular, low education males have large increases in the proportion retired at ages 62 and 65, while this is not the case for females or high education males. This is consistent with the fact that Social Security replacement rates for less educated individuals are high relative to earnings while working, and males are more sensitive to Social Security policy than females, for whom the retirement activity of an older spouse is empirically important (Coile 2004).

Table 2 presents our estimates of life expectancy and healthy life expectancy at age 62 by sex, race and education. Life expectancy at age 62 ranges from 23.7 years for white women with any college education down to 14.9 years for black males with a high school education or less – a 38 percent reduction.[5] The educational difference in life expectancy is greatest for white males, with the low education group expecting about four years less—a 19% drop. The differences in life expectancy within the other race/ethnicity and sex groups range from 2.0 to 3.4 years (10% to 18%). Between blacks and whites, the difference in life expectancy is about 1.75 years (8% to 10%) for both low education males and females. Less educated Hispanics have higher life expectancy than their non-Hispanic white counterparts.

To form QALE, we take these life expectancy estimates and weight survival at each age by quality of life for that demographic group. The results are shown in the bottom part of table 2. The 100-point health scale yields healthy life expectancy that is 70-75% as large as life expectancy. Education and race differences follow the same patterns as with life expectancy. At age 62, when early retirement benefits become available, the average healthy life expectancy remaining ranges from 18.0 years for high education white females to 10.3 years for low education black males, a 43 percent reduction. Thus, an increase of three years in the EEA for Social Security would affect 30 percent of the healthy years remaining for less educated black males, but a much smaller proportion for other groups.

4. Estimating Work Capacity

In this section, we consider how health deterioration as people age affects their work capacity. We then use these estimation results to forecast what would happen to the fraction of people who would self-identify as in the labor force, disabled, or retired under a policy change

[5] Hispanic women with any college education have a life expectancy of 25 years at age 62, which is the highest for any group. Although this estimate is reliable, we do not focus on the results for high-education minority groups due to small sample sizes in the data used for the subsequent analyses.

that reduces the availability of current retirement benefits. In particular, we consider a hypothetical policy change that would increase the EEA for Social Security benefits from age 62 to age 65, and the normal retirement age for Social Security benefits from age 67 to age 70.[6] In addition, the age of Medicare eligibility would increase to 70. This policy change creates a situation where the Social Security and Medicare incentives facing people aged 65 to 69 would match incentives currently facing the population aged 62 to 64. We do not explicitly consider changes in employer-provided health or pension benefits, though one could imagine them changing as well. We discuss the implications of this approach below. We analyze this policy change separately for two groups: those aged 62-64, who would face a delay in eligibility for early retirement benefits, and those aged 65-69, for whom there would be eligibility for early retirement benefits but not Medicare.

We start with adults aged 62 to 64. To understand work capacity, disability, and retirement for this group, we extrapolate from models for currently non-eligible people near age 62. Specifically, we assume that conditional on observed health status and demographics, the ability of 62-64 year olds to work equals that of 57-61 year olds. Next, for people aged 65 to 69, under the hypothetical policy change they would be able to claim early (partial) Social Security benefits but would not yet be age-eligible for Medicare. Because this group would face changes in both health and pension benefits, these simulations should be viewed with more caution. Nevertheless, we are primarily interested in likely work capacity as a function of detailed health status. To simulate our measure of work capacity for the 65-69 year-old group, we estimate models of work, retirement, and disability status among people aged 62 to 64, who are currently in the interval between the early and normal retirement ages.

Note that we interpret our predictions of labor force participation as work capacity rather

[6] Note that among the adults aged 65-66 observed in 2000 to 2003, the normal retirement age is still below 67.

than as an expected behavioral response to reform, the latter of which depends on other changes in society as well. To interpret our estimates as behavioral responses to the potential reforms, one must make several additional strong assumptions. First, one must assume that employer-provided pension and health benefits of 62-64 year olds match those of 57-61 year olds. This is equivalent to assuming that employer-provided health or pension benefits would also change with the reforms. Second, the propensity to seek work conditional on health and private health and pension opportunities must be equal across the two groups. Finally, to understand the rate of employment under the reforms, beyond simply labor force participation rates, the propensity to gain employment conditional on seeking work must be equivalent across these two age groups. With these additional assumptions, we could interpret our simulated labor force participation as the expected behavioral response to reforms, but our main goal is to describe work capacity, or the ability to work based on one's health status.

We obtain estimates of work status by estimating multinomial logit models for adults aged 57 to 61, with three possible outcomes: in the labor force, disabled, or retired. For example, the probability of being retired is estimated as:

$$(2) \qquad \Pr(\text{Retired}) = \frac{\exp(x_i'\beta_R)}{1+\exp(x_i'\beta_R)+\exp(x_i'\beta_W)}, \qquad \begin{array}{l} R:\text{retired} \\ W:\text{in labor force} \end{array}$$

These equations are then used to simulate the labor force status of people aged 62 to 64, assuming only that health differs. Similarly, we will estimate (3) for 62 to 64 year-olds and apply these estimates to the 65 to 69 year old population.

We estimate these models separately by sex, controlling for education (an indicator for any college education), black race, Hispanic ethnicity, marital status, and geographic location in addition to our detailed health measures. In our models of work status, the health variables include a cubic function of the 100-point health scale, indicators for physical or mental limitations (such as any ADL or IADL limitation), sensory impairments, and diagnoses for common health conditions shown in Table 1.

By using these as predictors in our simulations, we are assuming that these aspects of health evolve exogenously from labor force status. Although this is a strong assumption, we believe it is appropriate to obtain an estimate of available work capacity. We are also implicitly assuming that the health index and reported health conditions used in our models are similar for individuals 1 to 6 years apart in age (i.e. reporting a health score of 80 means the same thing for a 62-64 year old as it does for a 57-61 year old).[7] This assumption is problematic if individuals norm self-reported health according to their age group, or if the severity of a diagnosed condition is likely to differ dramatically by age in ways that are not captured by the health index of the functional limitations studied here.

Appendix table A1 reports relative risk ratios from multinomial logit models of labor force status among persons aged 57-61. The 100-point health scale has a strong association with self-reported disability, with a statistically significant risk ratio of .51 for males and .56 for females on the linear health scale. This is easiest to see in Figure 5, which plots the rates of being in the labor force or being disabled as a function of the 100 point health scale, implied by the estimates in Table A1. The relationship between health status and disability rates is nonlinear, but generally speaking, a 10 point decline in the health status scale accompanies a rise in disability of 2 to 5 percentage points near the top of the health scale, and closer to a 10

[7] Doorslaer and Jones (2003) provide evidence that supports this assumption. They examine the relationship between a typical, categorical, self-reported health variable and a more objective index based on eight functional status questions. They find that the means and implied thresholds of the index within each self-reported health category are similar for two broad age groups: 18-44 and 45+.

percentage point increase in disability as one moves below 60 on the health scale. Note that near the top of the health scale, near values of 70 to 80, the average values for individuals in the 60s, there is little change in disability status for small changes of a few points on the scale.

Several indicators for health limitations, impairments, or conditions are also strongly associated with self-reported disability. Physical or social limitations and vision impairments have similar estimated risks for males and females, while ADLs or IADLs and diagnoses of heart conditions or stroke have significant predictive power for males alone and diagnoses of diabetes or high blood pressure are predictive for females alone. Turning to education, the risk of disability for individuals with any college is less than half the risk for those with high school or less, with risk ratios of .42 for males and .47 for females, even given health status.

Table A1 also confirms what Figures 3 and 4 suggest, that health variables are much less predictive for retirement. Based on the self-reported scale, healthier individuals are slightly less likely to be retired than are less healthy individuals. ADLs or IADLs lead to a greater probability of retirement. None of the non-health variables are significantly associated with retirement for males. For females, college education is associated with lower retirement, as is being unmarried. Hispanics are more likely to be retired than non-Hispanics.

Figures 6 and 7 compare the observed proportions of people aged 62-64 who are in the labor force or disabled with the simulations for the age group based on the estimated models described above. Two patterns stand out. First, the predicted rise in labor force participation is large, 15 to 20 percentage points depending on the group. Second, despite the fact that levels of labor force participation differ dramatically by group, the change in labor force participation based on health status is remarkably similar in magnitude across education, sex, and race groups.

However the fraction of less educated white males who are disabled increases substantially, from 9 to 15 percent in the absence of Early Eligibility for Social Security benefits before age 65, a 40 percent relative increase. Less educated black males would also witness a 6 percentage point rise in disability rates. For other groups, the rise in disability is less dramatic, 2 to 3 percentage points, although this represents a large relative rise given low baseline rates of disability.

Appendix table A2 displays the estimates from our models for work capacity among persons aged 62-64. These results are generally similar to the estimates for the younger age group, except for the fact that different health conditions seem to matter more for labor force status. For example, among males, cognitive limitations are the best predictor for retirement. Among females, blacks and Hispanics in the older age group have an increased risk of disabled status, which is not the case for ages 57-61. Also high blood pressure is associated with being retired among females in the older group.

The results of our simulated labor force participation for whites and low-education blacks and Hispanics aged 65-69, based on the estimates in Table A2, are shown in Appendix figure A1. In the actual data, the fraction of white males who consider themselves retired is similar across education groups. Under the simulated policy, based on health status, labor force participation rates would rise by 15 to 23 percentage points for whites depending on gender and education, and by 5 to 20 percentage points for blacks and Hispanics in the low-education groups. As with the younger age group, the simulation results suggest that increasing the age of eligibility for public programs would mainly shift population from retired to in the labor force. Compared with the simulation for ages 62-64, here there are relatively larger shifts among white males and females in the college education group. This suggests that high education individuals are potentially more sensitive to changes in the age for full retirement benefits and Medicare eligibility rather than changes in the age for early retirement benefits. The sole exception to the pattern of increased labor force participation is for less educated black males, who do not show a significant change under the simulated policy. This suggests that, based on their health status, black males aged 65 to 69 may have difficulty increasing their labor force participation if eligibility ages were raised.

Earnings among individuals simulated to be in the labor force

Our simulations ask whether individuals appear able to stay in the labor force based on their health status. An important question for individuals who would delay retirement is whether they have an adequate source of income in the absence of pension and health benefits. To examine this question, we simulated the wages of non-working individuals aged 62 to 64 based on the wages of workers aged 57 to 61 with similar characteristics (using the same variables as in table A1).[8] We averaged these predicted wages across all of the 62-64 year-olds not in the labor force, but weighted by their predicted probability of entering the labor force in the absence of early retirement benefits at ages 62-64. Effectively, we ask the question, "Would workers who are induced to stay in the labor force because of an increase in the EEA likely earn much less than individuals who currently work at these ages?"

On the basis of health and demographic information, the answer, shown in Table A3 appears to be "no." The table shows only the less educated groups, for whom these differences would be the greatest concern.[9] Average wages for current 62-64 year-old low education workers under current policy (row 1) range from over $21,000 to $27,000 depending on race and

[8] To capture the fact that older workers may not command the same wages as younger workers, we adjusted predicted wages downward by the ratio of average wages among 62-64 years olds to average wages among 57-61 year olds.
[9] We find similar results for more educated groups.

gender. We compare this to the predicted wages of low education non-workers aged 62-64 who would be induced to work if Social Security EEA was raised to age 65. Across race and gender groups, the average wages of workers affected by this policy change would only be about 1-7 percent lower than the wages of workers who currently work.

Expected retirement years and changes in lifetime benefits

Finally, an important question with any policy change is how it would affect the progressivity of the Social Security system. For a first pass at this issue, we consider how raising the EEA would affect lifetime benefits for different education groups by reducing the amount of time spent in retirement. To do this, we calculate the expected retirement years (ERY) for each group as currently observed, and compare this with ERY using the predicted labor market status in our simulations. ERY is similar to QALE, except that the survival probabilities are weighted by the fraction of the group that is retired at each age, $r_{g,a}$, rather than the average quality of life:

(3) $$\text{ERY}_{g,x} = \sum_{a=x}^{\infty} \pi_{g,a|x} r_{g,a} \ .$$

Thus the ERY for group *g* at age *x*, say high-education white females at age 62, gives the remaining number of years a member of that group is expected to spend in retirement, regardless of their current retirement status at age *x*. If monthly benefits remain approximately the same for each group, changes in lifetime benefits amounts will be closely related to changes in the length of retirement (above eligibility ages, of course).

Table 3 shows that the absolute loss of retirement years would be similar for high and low education groups. For example, among whites, the simulated reduction in expected retirement years is 0.6 for men with a high school degree or less, and 0.5 for men with any college education. Because expected retirement years is so much greater for the better educated, however, the proportional loss for low education groups is greater. These reductions in retirement years represent a 5 percent reduction for the less educated and 3 percent for the better educated. A similar differential is apparent for women, for the same reason.[10] If we only count years in retirement from age 65, when Social Security benefits would be received under the new policy, the loss is 1 year for white males in either education group and 1.2-1.5 years for white females. In proportional terms, this is a decrease of 9 percent for low-education white males and females, but about 6.5 percent for the high-education groups.[11] All else equal, this suggests that low-education groups would have a greater proportional reduction in their expected lifetime benefits than high-education groups, which would reduce the progressivity of the Social Security system.

5. Conclusion & Discussion

In this paper, we simulated the work capacity of individuals in age groups targeted by policies to raise the age of eligibility for Social Security and Medicare. Specifically, we examined a policy raising the age of eligibility for Social Security and Medicare benefits to age 70, and making partial Social Security available at 65 (instead of 62). We find that until age 70, health appears to decline very slowly, and thus work capacity is large. Still, compared with younger workers, rates of new disability are higher at older ages, especially among less educated workers. Our results suggest that, based upon the health of today's young retirees, many more individuals could work than currently do.

[10] To understand why ERY could decrease by only 0.5 when the EEA increases by three years, recall that in our simulations the share retired at ages 62-64 drops by about 0.2. Thus 0.2 times three years is approximately the change in ERY.

[11] Our calculation assumes that current retirees aged 62-64 all receive Social Security retirement benefits, which is supported by evidence that only a small number of eligible retirees delay claiming benefits. Coile et al. (2002) show that only 10% of men who retire before age 62 delay claiming benefits by more than one year after their 62nd birthday, and fewer than 5% of those who retire after age 62 delay claiming by more than one year.

To put our findings in context, consider the drop in labor force participation between 1970 and 1994, as described in Burkhauser, Couch and Phillips (1996). In 1970, 69.4 percent of 63-year old men reported being in the labor force. In 1994, that number was 45.1. Similarly, 39.4 percent of 68-year old men worked in 1970, compared with 22.7 percent in 1994. In the decades prior to 1970, LFP rates were even higher. In our data, taken from 2000 to 2003, 57 percent of males aged 62-64 reported being in the labor force, but our analysis of the health status of the workforce in this age group suggests that in the absence of Early Eligibility for Social Security benefits until age 65, labor force participation could rise by 15 percentage points, returning labor force participation to levels at or even above those observed in 1970. Among whites aged 65-69, our simulation of what could happen in the absence of Social Security and Medicare at these ages suggests that this population is healthy enough to sustain labor force participation rates that are 15-20 percentage points higher than observed in 2000-2003.

Our descriptive analysis of wage rates among workers potentially induced to work in the face of a higher Social Security eligibility supports the notion that there is ample work capacity among the population of early retirees. Even among less educated workers, workers that would likely be "induced" to work by a rise in the age of eligibility have predicted wages that are very similar to those of current workers in the 62 to 64 year old age range. Assuming that such workers can obtain or maintain employment at these ages, our calculations suggest that these "induced workers" could fare well even without access to early retirement benefits.

On the downside, policies designed to protect the solvency of old age programs by raising the age of eligibility should consider how to address groups such as the less educated, for whom disability may prevent longer periods of work and who have shorter life expectancy. The simulated rise in the rate of disability is 6 percentage points for black and white males who never attended college. This indicates that a substantial portion of these groups do not have the capacity to work at ages 62-64 due to their health. For better educated whites, as well as less educated black and white females, the simulated rise in disability is smaller at 3 percentage points, but this is still a considerable amount relative to their baseline rates. The potential rise in disability suggests the need for alternative sources of income among older workers, especially less educated older workers with fewer resources available when disability limits their ability to work.

In addition, raising the ages of eligibility for partial Social Security and full Social Security and Medicare benefits has the consequence of shifting risk from society as a whole to individuals. These programs have an insurance function that protects people against the loss of a job, a pension, or retiree medical benefits. Reducing social insurance by raising eligibility ages creates an efficiency loss because individuals are risk averse, while the government can smooth over individual-level shocks by pooling many individuals together. This efficiency loss must be considered against the gain due to a reduction in the dead weight loss of taxation, which is accomplished by reducing program expenditures.

Despite these concerns, our results offer reasons to be cautiously optimistic about the ability for many older Americans to continue working beyond current retirement ages. We find that the good health enjoyed by individuals aging throughout their 60s implies a tremendous potential for labor force participation. Even among those groups that would observe the highest disability rates under a policy that delayed early retirement until age 65, the majority of individuals aged 62 to 64 could work, based on their reported health status. If workers translate this good health, and a new norm of providing public retirement benefits at older ages into longer working lives, such a shift has the potential to both reduce the costs of the Social Security program, and to increase revenue raised through payroll and income taxes that would not be realized in the absence of such a policy change.

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Figure 1: Average Health Scale in the 2000-2003 Medical Expenditure Panel Survey, Males

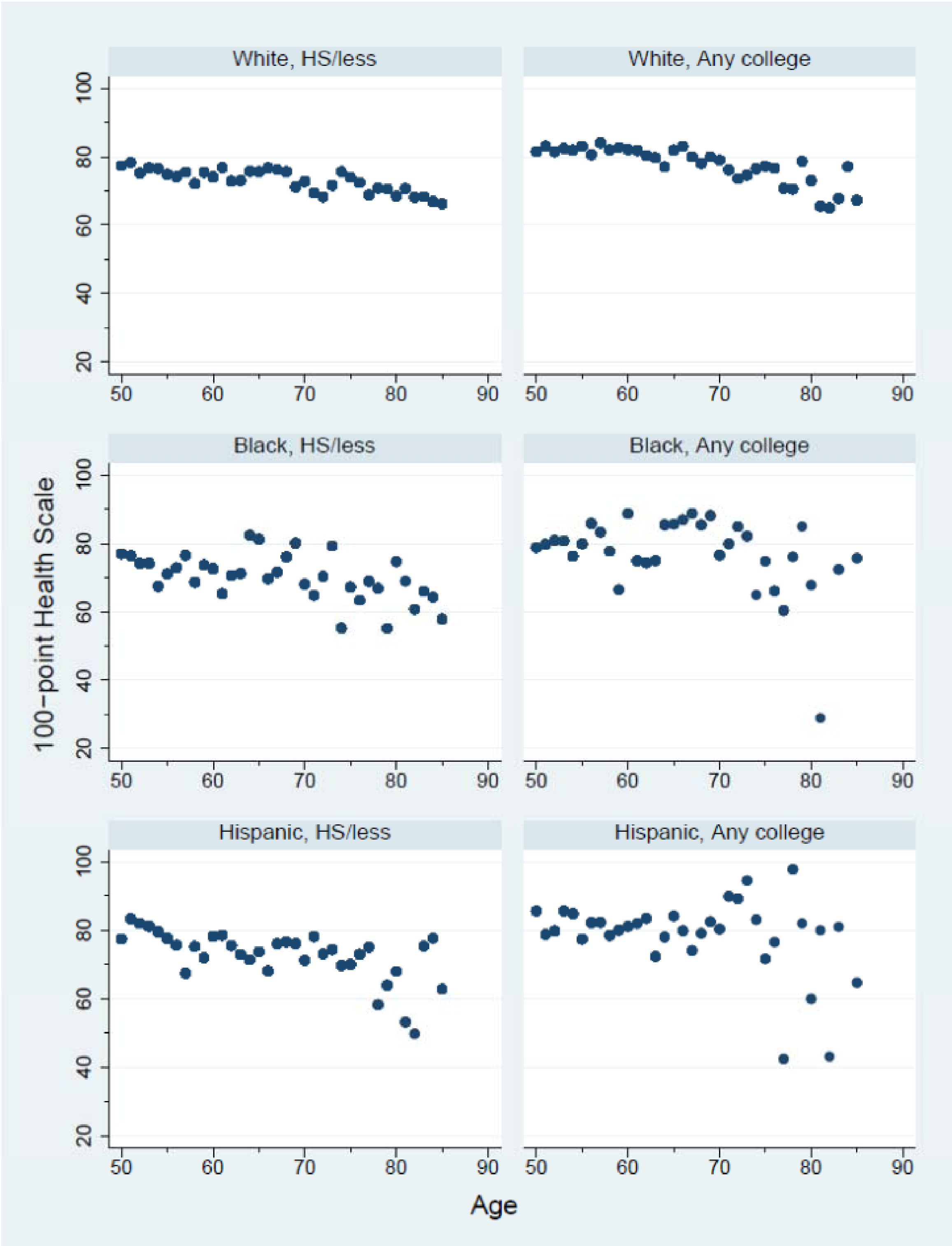


Chart shows score when MEPS respondents were shown a thermometer marked 0 to 100 and asked to "indicate on this scale how good or bad your own health is today, in your opinion."

Figure 2: Average Health Scale in the 2000-2003 Medical Expenditure Panel Survey, Females

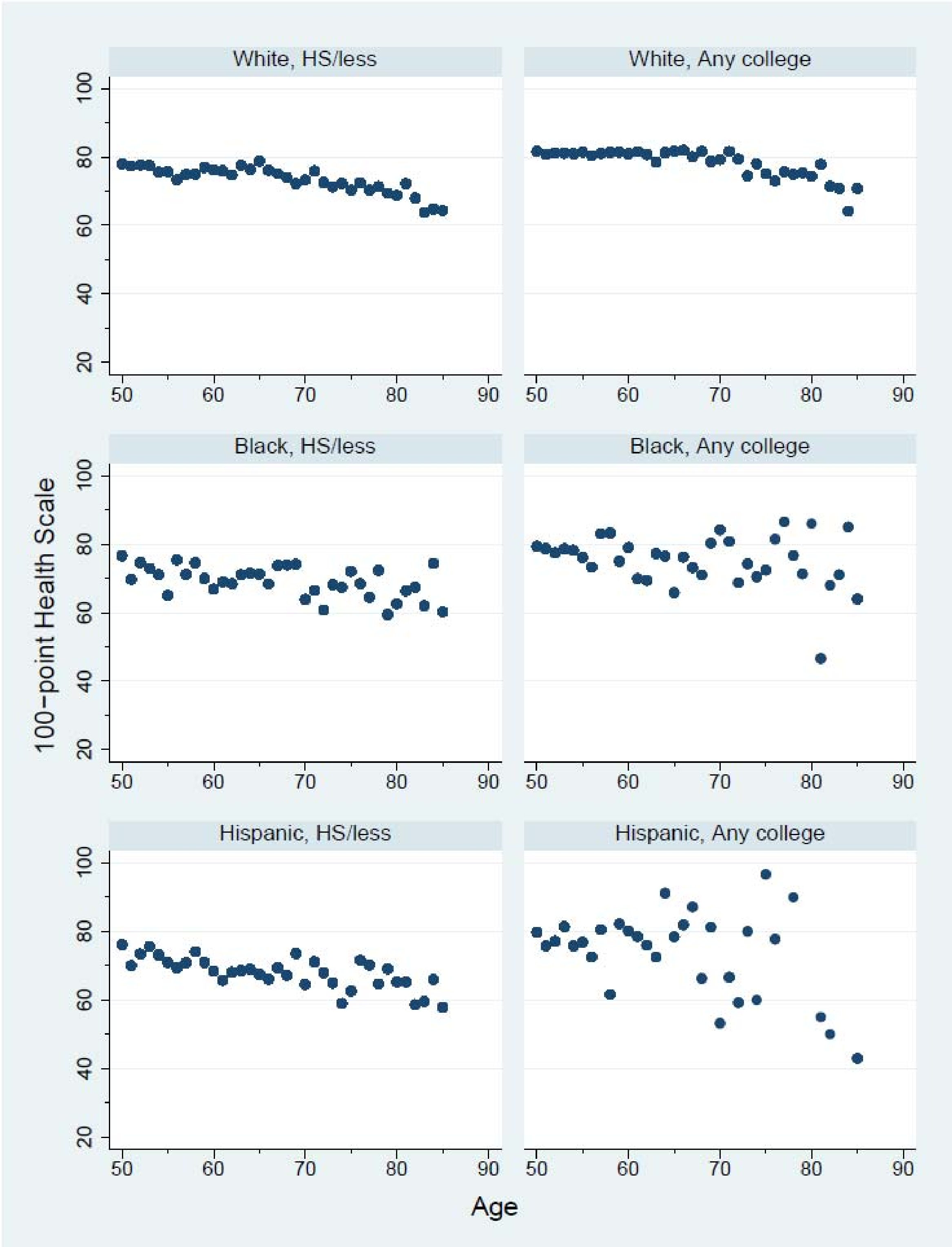
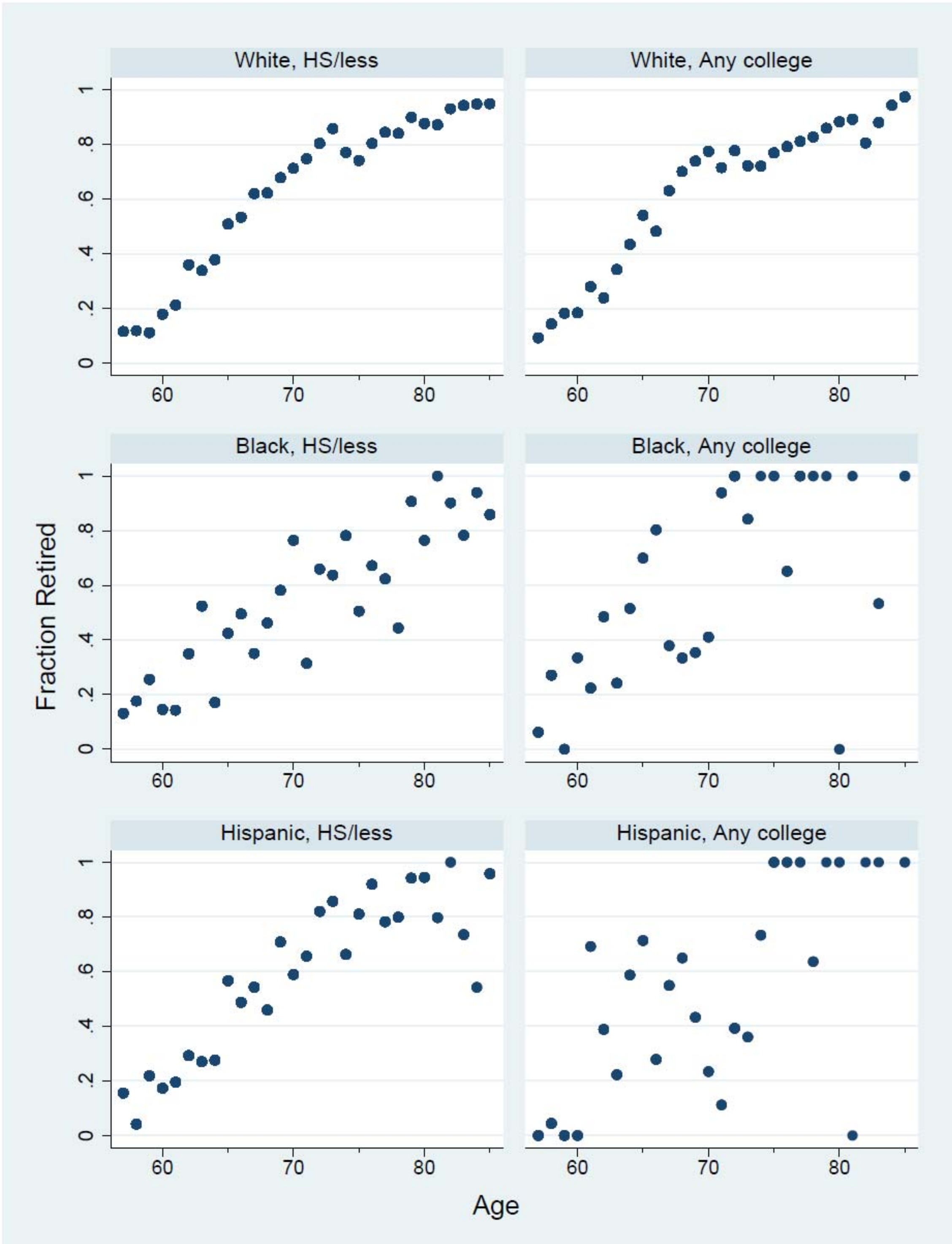


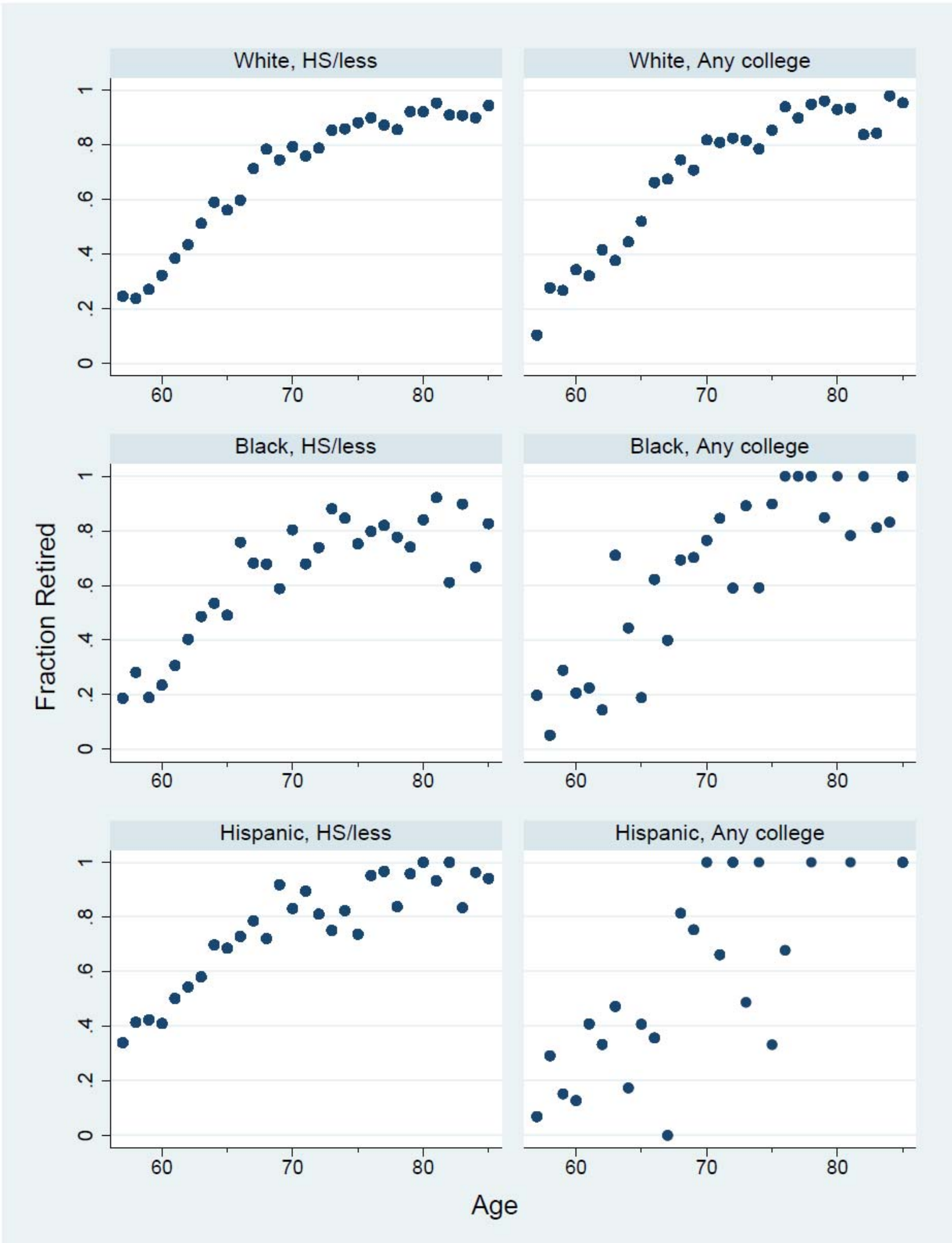
Chart shows score when MEPS respondents were shown a thermometer marked 0 to 100 and asked to "indicate on this scale how good or bad your own health is today, in your opinion."

Figure 3: Share Retired in the 2000-2003 Medical Expenditure Panel Survey, Males



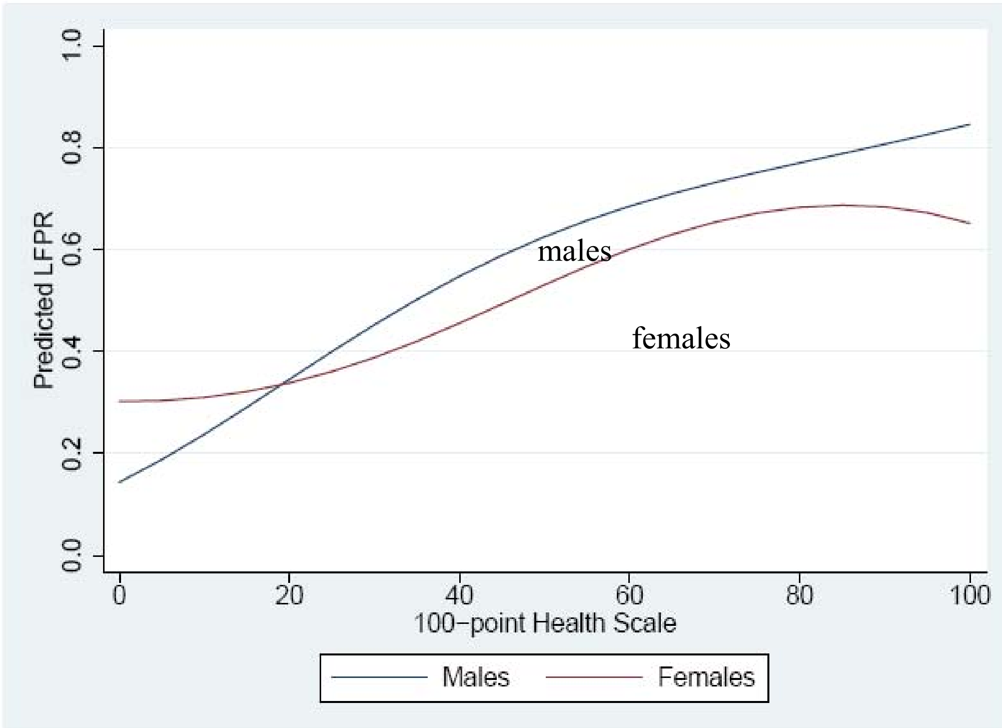
Individuals are coded retired if they self-report being "retired, " if they never worked, say they are "taking care of home or family," or give an unclassified reason for not being employed.

Figure 4: Share Retired in the 2000-2003 Medical Expenditure Panel Survey, Females



Individuals are coded retired if they self-report being "retired, " if they never worked, say they are "taking care of home or family," or give an unclassified reason for not being employed.

Figure 5: Adjusted Probability of Labor Force Participation and Disability by Health Status in the 2000-2003 Medical Expenditure Panel Survey, ages 57-61



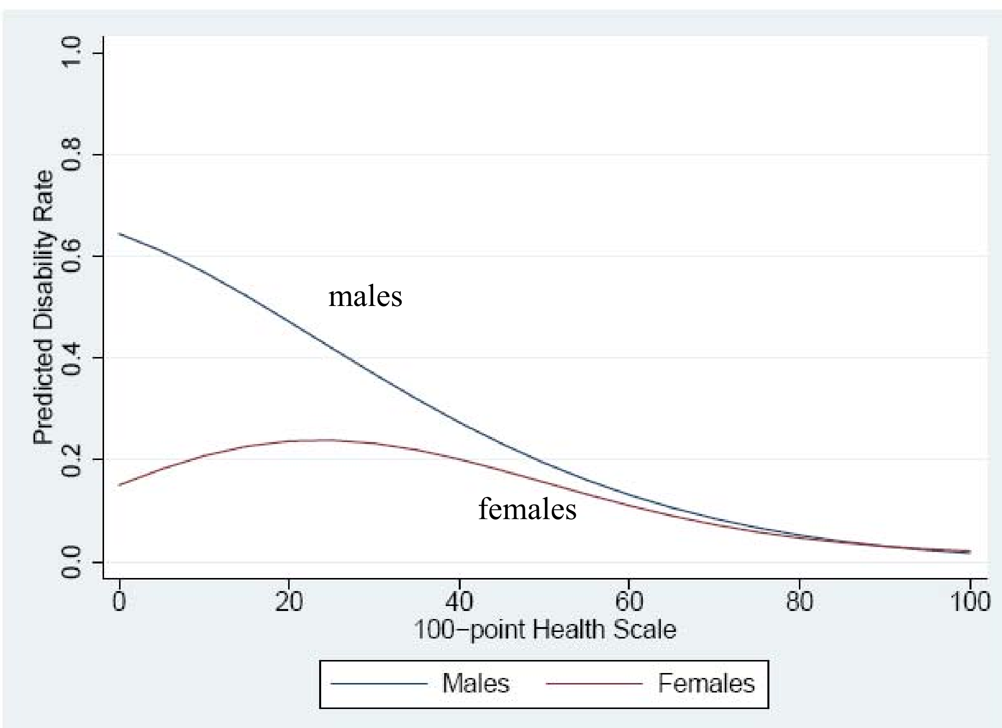
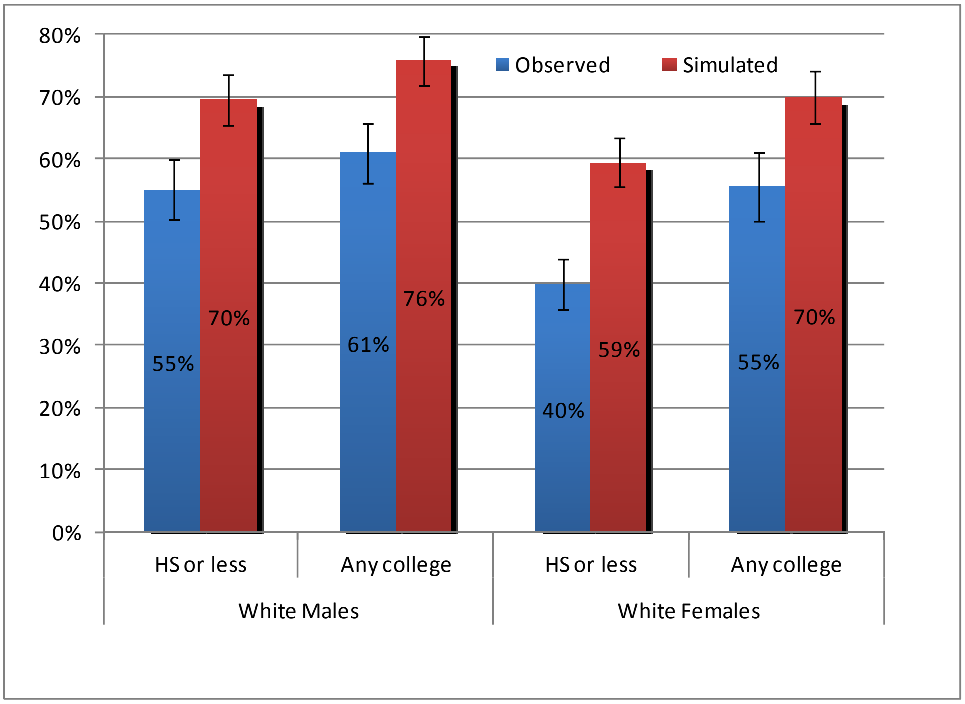
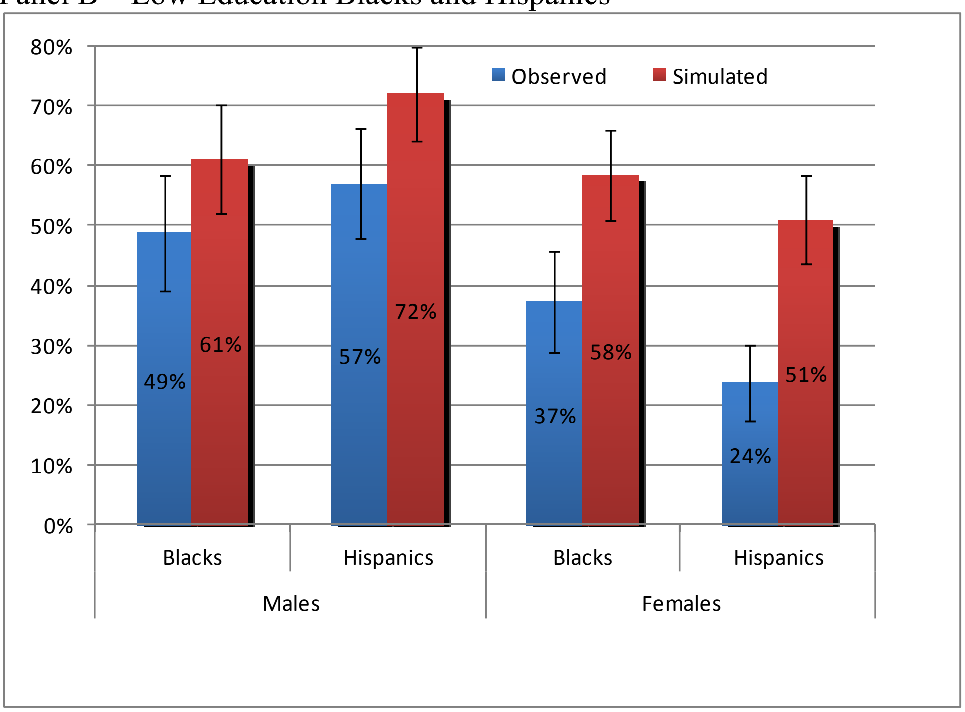


Figure 6: Labor Force Status With and Without Early Social Security Benefits at 62-64
Panel A – Whites

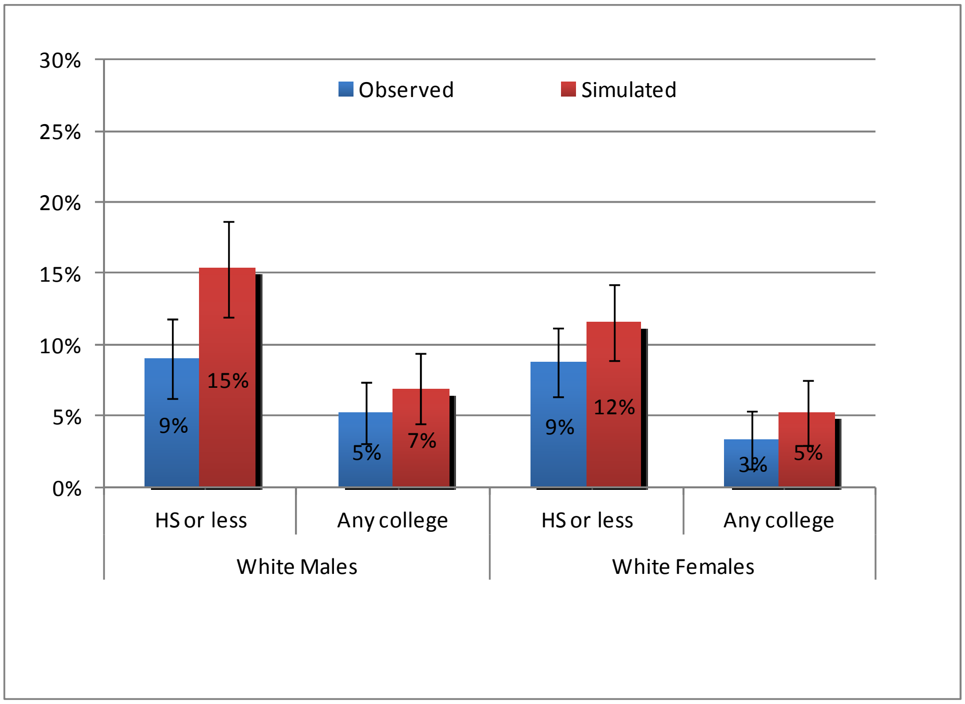


Panel B – Low Education Blacks and Hispanics

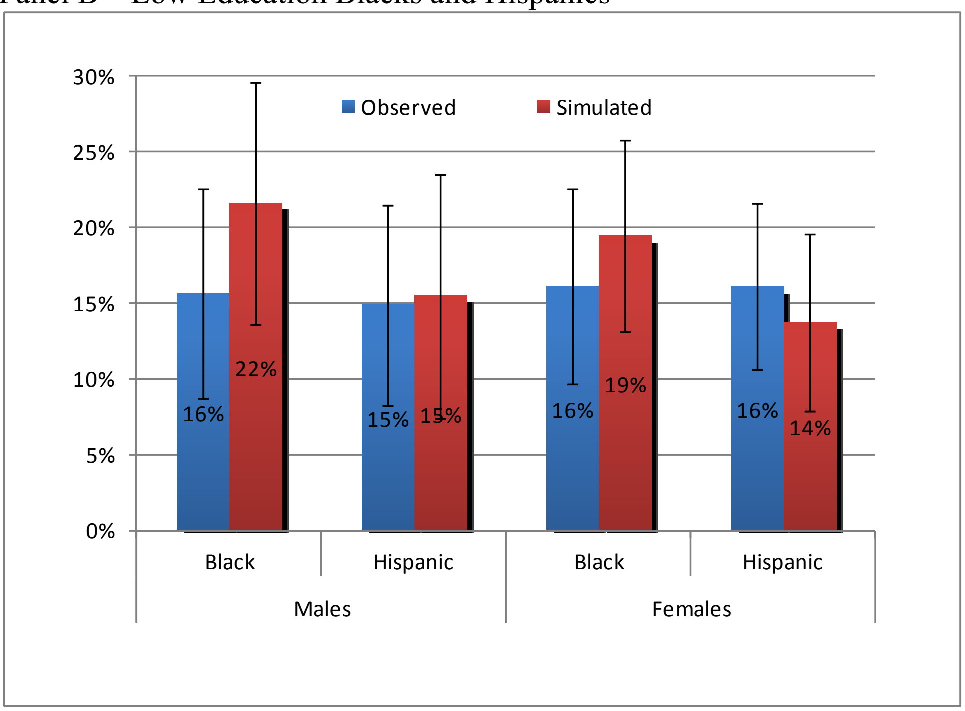


Simulated rates apply parameter estimates from models of labor force status in the 57-61 year old population (Table A1) to the population aged 62-64 to obtain predicted labor force status. Bar shows 95% confidence interval around estimates. Note, labor force participation rates for Blacks and Hispanics reflect adults with a high school degree or less, as sample sizes were too small among college attendees to obtain precise estimates.

Figure 7: Disability Status With and Without Early Social Security Benefits at 62-64
Panel A – Whites



Panel B – Low Education Blacks and Hispanics



Simulated rates apply parameter estimates from models of labor force status in the 57-61 year old population (Table A1) to the population aged 62-64 to obtain predicted labor force status. Bar shows 95% confidence interval around estimates. Note, disability rates for Blacks and Hispanics reflect adults with a high school degree or less, as sample sizes were too small among college attendees to obtain precise estimates.

Table 1a: Descriptive Statistics by Age and Gender, Males

	Males, by age			
	57-61	**62-64**	**65-69**	**70+**
Labor force status				
In labor force	0.74	0.57	0.36	0.15
Retired	0.16	0.35	0.58	0.82
Disabled	0.10	0.08	0.05	0.03
Individual income	$40,413	$35,519	$30,347	$23,650
	(36,331)	(33,888)	(28,0960	(24,107)
Self-reported health	78	76	77	71
100-point scale	(19)	(19)	(19	(20)
Activity/other limitations				
ADLs	0.02	0.02	0.03	0.06
IADLs	0.02	0.04	0.04	0.12
Vision impairment	0.06	0.06	0.08	0.13
Hearing impairment	0.17	0.15	0.22	0.31
Physical limitation	0.14	0.16	0.18	0.31
Cognitive limitation	0.03	0.05	0.05	0.10
Social limitation	0.06	0.07	0.07	0.11
Disease diagnoses				
Diabetes	0.13	0.13	0.17	0.17
Asthma	0.07	0.09	0.07	0.07
High blood pressure	0.42	0.46	0.54	0.54
Heart condition	0.18	0.20	0.28	0.39
Stroke	0.04	0.04	0.08	0.12
Race/ethnicity (%)				
White	85.5	84.7	84.9	88.4
Black	7.8	9.4	8.3	6.5
Hispanic	6.7	6.0	6.8	5.2
Education				
Some college	0.50	0.49	0.42	0.38
Marital status				
Married	0.78	0.76	0.78	0.72
Divorced/Separated	0.15	0.14	0.13	0.07
Widowed	0.03	0.04	0.05	0.18
Never married	0.05	0.06	0.04	0.03
Location				
Metropolitan area	0.78	0.77	0.74	0.77
Northeast	0.19	0.19	0.20	0.21
Midwest	0.22	0.26	0.24	0.23
South	0.38	0.35	0.38	0.36
West	0.22	0.19	0.18	0.20
N	2129	1084	1525	3383

Standard deviations of continuous variables in parentheses. Sample based on data from the Medical Expenditure Panel Surveys, 2000-2003.

Table 1b: Descriptive Statistics by Age and Gender, Females

	Females, by age			
	57-61	**62-64**	**65-69**	**70+**
Labor force status				
In labor force	0.63	0.44	0.28	0.08
Retired	0.28	0.48	0.67	0.87
Disabled	0.09	0.08	0.06	0.05
Individual income	28,270	24,795	22,259	18,423
	(28,093)	(25,040)	(19,991)	(16,116)
Self-reported health	77	76	76	70
100-point scale	(19)	(19)	(18)	(20)
Activity/other limitations				
ADLs	0.02	0.02	0.02	0.08
IADLs	0.04	0.05	0.05	0.17
Vision Impairment	0.09	0.09	0.09	0.15
Hearing Impairment	0.07	0.07	0.09	0.20
Physical Lim.	0.19	0.23	0.23	0.41
Cognitive lim.	0.05	0.04	0.04	0.11
Social lim.	0.07	0.07	0.06	0.13
Disease diagnoses				
Diabetes	0.11	0.11	0.15	0.15
Asthma	0.12	0.11	0.12	0.09
High blood pressure	0.42	0.51	0.54	0.61
Heart condition	0.13	0.16	0.20	0.30
Stroke	0.03	0.05	0.06	0.10
Race/ethnicity				
White	82.5	81.6	82.7	87.2
Black	10.3	11.2	9.7	7.4
Hispanic	7.2	7.3	7.6	5.4
Education				
Some college	0.46	0.36	0.34	0.27
Marital status				
Married	0.65	0.60	0.59	0.37
Divorced/Separated	0.19	0.17	0.12	0.07
Widowed	0.10	0.19	0.26	0.53
Never married	0.05	0.05	0.03	0.03
Location				
Metropolitan area	0.79	0.79	0.74	0.78
Northeast	0.20	0.18	0.20	0.22
Midwest	0.24	0.25	0.23	0.23
South	0.36	0.37	0.40	0.35
West	0.20	0.19	0.18	0.19
N	2472	1244	1843	5052

Standard deviations of continuous variables in parentheses. Sample based on data from the Medical Expenditure Panel Surveys, 2000-2003.

Table 2. Life expectancy and Healthy Life Expectancy at Age 62 by Race, Gender, and Education

Life Expectancy

	Whites		Blacks		Hispanics	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
HS or less	16.8	20.7	14.9	19.0	19.5	22.9
Any college	20.7	23.7	18.3	21.1	21.7	25.0
Education difference	3.94	3.05	3.41	2.10	2.24	2.03
P-value of difference	<.001	<.001	<.001	<.001	<.001	<.001

Healthy Life Expectancy

	Whites		Blacks		Hispanics	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
HS or less	12.0	14.8	10.3	12.7	13.7	14.8
Any College	15.6	18.0	13.6	15.4	16.1	13.7
Education difference	3.59	3.26	3.27	2.63	2.33	-1.07
P-value of difference	<.001	<.001	<.001	<.001	0.002	0.104

See text for details on computing life expectancy and healthy life expectancy.

Table 3: Expected Retirement Years, and Social-Security Eligible Retirement Years, at Age 62, Whites

	Males		Females	
	HS or less	Any college	HS or less	Any college
Observed:				
Expected Retirement Years	11.7	14.9	16.3	18.8
Raise EEA to 65:				
Expected Retirement Years	11.1	14.4	15.7	18.3
Simulated-actual	-0.6	-0.5	-0.7	-0.5
Percent difference	-5.2	-3.3	-4.0	-2.6
Social-Security eligible Expected Retirement Years*	10.7	13.9	14.8	17.6
Simulated-actual	-1.0	-1.0	-1.5	-1.2
Percent difference	-8.9	-6.7	-9.2	-6.5

* Social-Security Eligible Expected Retirement Years counts expected retirement years at ages 65 and up, based on the higher EEA.

APPENDIX

Table A1: Multinomial Logit of Labor Force Status in the 2000-2003 MEPS, Ages 57-61

	Males		Females	
Variable	**Disabled**	**Retired**	**Disabled**	**Retired**
	--- RELATIVE RISK RATIOS ---			
100-point health scale (/10):				
-Linear term	0.51***	0.90*	0.56***	0.93
-squared term	0.98	0.98	1.03	1.05**
-cubic term	1.00	0.99	1.01	1.00
ADLs/IADLs	6.24***	3.43**	1.64	1.95*
Vision Impairment	1.68	1.33	1.63*	0.99
Hearing Impairment	0.81	1.21	1.50	1.50*
Physical Lim.	2.53***	1.37	4.63***	1.42**
Cognitive lim.	1.69	0.85	2.05*	1.48
Social lim.	2.69**	2.79***	2.17**	1.64
Diabetes	1.02	0.61*	1.87**	1.63**
Asthma	1.63	1.29	0.93	1.01
High BP	0.92	0.98	1.44	1.09
Heart condition	2.17***	1.45*	1.23	0.79
Stroke	3.04**	1.07	2.02	1.31
Some college	0.42***	1.10	0.47***	0.76**
Black	1.53	1.26	0.86	0.84
Hispanic	0.92	0.87	0.96	1.43*
Divorced, separated or widowed	2.31***	1.02	1.03	0.30***
Never married	5.47***	1.59	4.17***	0.59
Metropolitan area	2.24***	1.06	0.82	1.00
N	2129		2472	

Risk ratios reflect multinomial logit models of reporting disability or retirement, relative to being in the labor force.
Models include dummies for region.
P-values: *p<.1; ** p<.05; *** p<.01.

Table A2: Multinomial Logit of Labor Force Status in the 2000-2003 MEPS, Ages 62-64

	Males		Females	
Variable	**Disabled**	**Retired**	**Disabled**	**Retired**
	--- RELATIVE RISK RATIOS --			
100-point health scale (/10):				
-Linear term	0.56***	0.93	0.61***	0.99
-squared term	1.05*	1.04	0.93	0.99
-cubic term	1.02	1.00	0.99	1.00
ADLs/IADLs	0.60	0.60	2.85	2.03
Vision Impairment	0.54	0.80	1.99*	1.41
Hearing Impairment	0.77	1.03	0.38	0.96
Physical Lim.	3.10***	1.45	3.75***	1.96***
Cognitive lim.	2.57	2.45**	3.20*	2.09
Social lim.	1.76	1.02	2.45	1.51
Diabetes	1.53	1.18	1.04	1.31
Asthma	0.49	0.73	1.40	0.70
High BP	1.95*	0.98	1.72*	1.56**
Heart condition	1.34	1.38	1.69	1.29
Stroke	7.38***	2.12	1.38	0.86
Some college	0.88	0.98	0.39**	0.53***
Black	1.40	1.19	2.25*	1.14
Hispanic	2.32*	0.84	2.92***	1.68*
Divorced, separated or widowed	2.59***	1.28	0.65	0.27***
Never married	4.17**	1.40	0.38	0.49*
Metropolitan area	0.63	0.90	0.77	1.34
N	1084		1244	

Risk ratios reflect multinomial logit models of reporting disability or retirement, relative to being in the labor force. Models include dummies for region.
P-values: *p<.1; ** p<.05; *** p<.01.

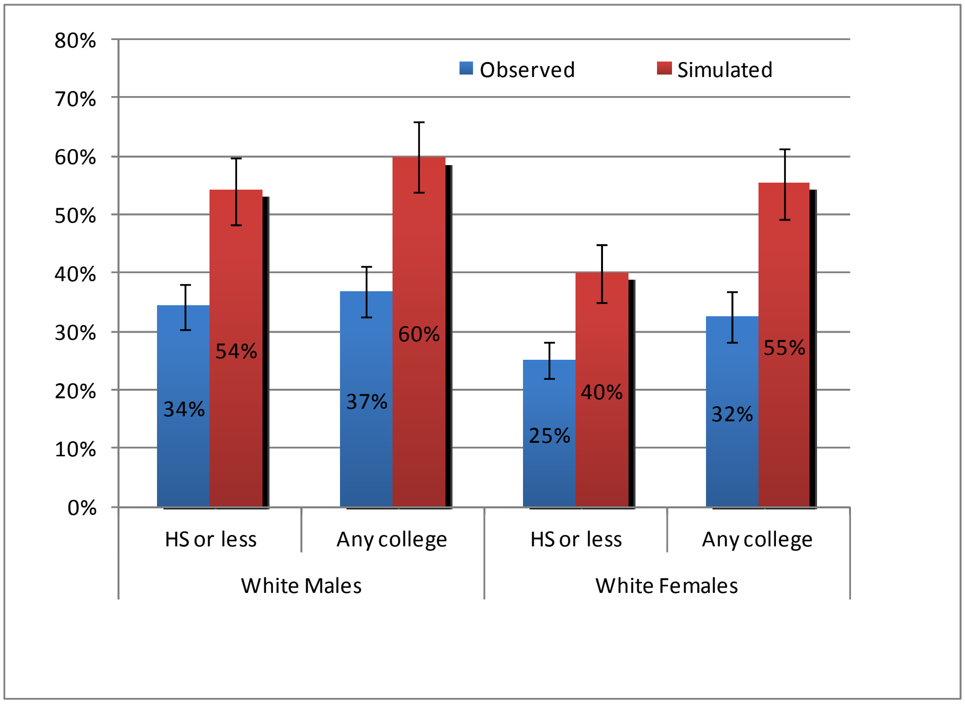
Table A3: Average Wages among Workers 62-64 with No College Education and Predicted Wages for Similar Adults Affected by a Rise in Social Security Early Eligibility Age to 65

	Males			**Females**		
	White	**Black**	**Hispanic**	**White**	**Black**	**Hispanic**
E[wage | work under current rules]	$27,633	$23,868	$22,358	$21,238	$25,190	$21,518
E[wage | work only if EEA raised to 65]	$26,125	$22,194	$20,885	$21,074	$23,568	$20,275
Difference (percent)	5.5	7.0	6.6	0.8	6.4	5.8

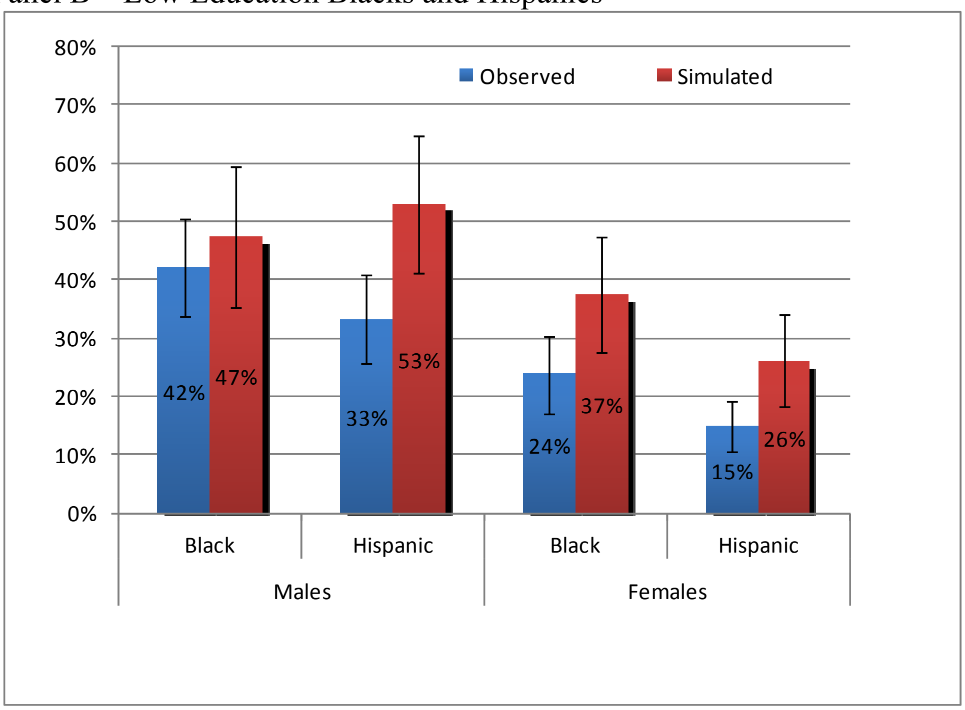
Row 1 shows the average wages of those working under current Social Security rules. Row 2 shows the predicted wages of those "induced to work" if the Early Eligibility Age for Social Security were raised to 65.

Figure A1: Labor Force Status for Whites With and Without Normal Social Security Benefits and Medicare at 65-69

Panel A – Whites



Panel B – Low Education Blacks and Hispanics



Simulated rates apply parameter estimates from models of labor force status in the 62-64 year old population (Table A2) to the population aged 65-69 to obtain predicted labor force status. Bar shows 95% confidence interval around estimates. Small sample sizes among the black and Hispanic populations over age 65 preclude simulations of labor force participation for college educated groups.