



ARE OLDER WORKERS CAPABLE OF WORKING LONGER?

Laura D. Quinby and Gal Wettstein

CRR WP 2021-8

June 2021

Center for Retirement Research at Boston College

Hovey House

140 Commonwealth Avenue

Chestnut Hill, MA 02467

Tel: 617-552-1762 Fax: 617-552-0191

<https://crr.bc.edu>

Laura D. Quinby and Gal Wettstein are senior research economists at the Center for Retirement Research at Boston College. The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Research Consortium. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the federal government, or Boston College. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States Government or any agency thereof.

© 2021, Laura D. Quinby and Gal Wettstein. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

About the Center for Retirement Research

The Center for Retirement Research at Boston College, part of a consortium that includes parallel centers at the National Bureau of Economic Research, the University of Michigan, and the University of Wisconsin-Madison, was established in 1998 through a grant from the U.S. Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center conducts a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources.

Center for Retirement Research at Boston College
Hovey House
140 Commonwealth Ave
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-0191
<https://crr.bc.edu/>

Affiliated Institutions:
The Brookings Institution
Mathematica – Center for Studying Disability Policy
Syracuse University
Urban Institute

Abstract

Disability-free life expectancy had been rising continuously in the United States until 2010, suggesting working longer as a solution for those financially unprepared for retirement. However, recent developments suggest improvements in working life expectancy have stalled, especially for minorities and those with less education. This paper uses data from the *National Vital Statistics System*, the *American Community Survey*, and the *National Health Interview Survey* to assess how recent trends in institutionalization, physical impediments to work, and mortality have affected working life expectancy for men and women age 50, by race and education.

The paper found that:

- The capacity to work to older ages is still increasing for high-education individuals and low-education Black women.
- However, no progress has been observed for low-education whites of all genders and Black men.
- As a result, large shares of those still working at age 62 will be incapable of working even two more years.

The policy implications of the findings are:

- Raising Social Security eligibility ages may reduce the financial security of large segments of the population.
- These impacts will be particularly pronounced for Black men and low-education white individuals of all genders.

Introduction

Working longer is a key to securing a comfortable retirement (Munnell and Sass 2008; Bronschtein et al. 2019). However, health shocks are known to push older workers out of the labor force before their intended retirement date (Coile and Levine 2007; Munnell, Sanzenbacher, and Rutledge 2018). Until 2010, the trend of rising disability-free life expectancy in the United States suggested increasing scope for longer working lives (Munnell, Soto, and Golub-Sass 2008; Cutler 2009; Cutler, Ghosh, and Landrum 2014; Crimmins, Zhang, and Saito 2016; and Chernew et al. 2017), but recent developments may have stalled this progress.

This paper examines the period 2006-2018 to explore how long individuals can expect to be able to keep working, and how these expectations vary across racial and socioeconomic status (SES) groups. The analysis mirrors that of Munnell, Soto, and Golub-Sass (2008), combining mortality data from the *National Vital Statistics System* (NVSS) with data on the total and institutionalized population from the *American Community Survey* (ACS), and data on work-limiting impairments from the *National Health Interview Survey* (NHIS).

These datasets are used to estimate cumulative probabilities of mortality, institutionalization, and disability at each age after 50 for different demographic and education groups.¹ The resulting profiles of working life by age are then used to calculate working life expectancy at 50 for each group. These expected additional years of working ability are estimated for each year between 2006 and 2018.

The resulting trends suggest cause for concern. While overall life expectancy at age 50 displays moderate improvement for the general population and for every demographic group since 2006, the same is not true for working life expectancy. Working life expectancy at 50 has increased slightly for high-education groups – Black and white, men and women. However low-education groups have, with the exception of Black women, experienced stagnation in their working life expectancy. This pattern suggests that calls for older workers to delay retirement, which have proven successful over the past couple of decades, may be less fruitful going forward.

¹ Following Dowd and Hamoudi (2014), absolute levels of education are recognized as capturing increasingly more selection by unobserved characteristics. Thus, similar to Bound et al. (2015), Sanzenbacher et al. (2019) and Wettstein et al. (2021), education in this analysis is defined in relative, rather than absolute, terms.

The rest of the paper proceeds as follows. Section 2 presents the current state of the literature. Section 3 discusses the data and methodology for the analysis. Section 4 estimates the components of working life expectancy – mortality, institutionalization, and work-limiting disability – and working life expectancy at age 50 for the full population segmented by gender. Section 5 shows the same estimates broken out by the various racial and SES groups. The final section concludes that working life expectancy has improved since 2006 primarily among the more highly educated, while lower-educated individuals have experienced stagnation in working life expectancy.

Background

The main question in this paper is how long people will be able to work and how does that vary by education, race, and gender. Prior work on disability-free life expectancy – how long individuals can expect to live without a disability – does not answer this question. Most studies of health trends define poor health as an inability to perform activities or instrumental activities of daily living (ADLs and IADLs). But ADLs and IADLs are an extreme form of functional limitation; ailments that are both more prevalent and less severe are also likely to prevent people from working (Burkhauser et al. 2002).

Coile and Duggan (2019) conduct one of the few analyses of work-limiting disability. They find that, among men ages 45-54 without a college degree, 1.7 percent reported an ADL in 2015, compared to 16.0 percent reporting a work-limiting health condition; the comparable shares for those with a college degree were 0.9 and 7.5 percent. But since the authors limit their sample to prime-age men, the prevalence of work-limiting health conditions among near-retirees of both genders remains unexamined. Analysis by race and education is similarly unexplored.

The period covered by the current analysis includes the troubling acceleration of deaths of despair among middle-age workers (Case and Deaton 2015), growing inequality, the Great Recession, and the subsequent recovery. Following these upheavals, the analysis explores both whether past trends in working life expectancy have changed and whether these trends vary by SES and race. Since less-educated whites and non-whites tend to approach retirement with fewer resources, declines in work capacity could prevent delayed retirement among the very individuals who would most benefit from it (Hou and Sanzenbacher 2020; Biggs, Chen, and Munnell 2021; Munnell, Wettstein, and Hou 2021 forthcoming).

Recent trends suggest cause for concern. Health status – measured by self-reported health, activities and instrumental activities of daily living, and obesity – has worsened over the past two decades (Martin et al. 2010; Lezzoni, Kurtz, and Rao 2014). This decline has been particularly acute for workers without a college degree (Cutler, Ghosh, and Landrum 2014; Coile and Duggan 2019). At the same time, the separate trend of rising educational attainment, which helped spur past improvements in disability-free life expectancy, has largely played out (Munnell, Soto, and Golub-Sass 2008). And a long-term decline in nursing home use has mostly reduced institutionalization over age 80, when work is largely irrelevant (Kaiser Family Foundation 2021).

Adding to worries about the work ability of low-education individuals, particularly Black individuals, are rising incarceration rates (U.S. Bureau of Justice Statistics 2021). Despite incarceration rates falling for younger men over the period 2000-2016, they nevertheless continued to increase among middle-age men, reflecting the increase in incarceration of younger men in years past (Coile and Duggan 2019). Much like institutionalization in long-term care facilities, incarceration is a nearly insurmountable impediment to work.

Compounding trends in health, trends in mortality among the working-age population are also not encouraging. Although life expectancy has risen across the population over the past several decades, the gains have mostly occurred at older ages when individuals are well past retirement age (Chernew et al. 2017).² More troubling, recent studies have even found an increase in prime-age mortality rates among less-educated whites (Case and Deaton 2020).

The analysis brings together these disparate trends in mortality, institutionalization, and work-limiting disability. It explores the trends by gender, race, and SES, and combines the different risks to work capacity into a summary measure of working life expectancy.

Data

“Working life expectancy” – the additional years of work ability an individual can expect at a given age – depends on three components: 1) mortality risk; 2) the risk of institutionalization; and 3) the risk of work-limiting disabilities in the non-institutionalized

² Increases in life expectancy have an ambiguous effect on retirement preparedness. On the one hand, reductions in mortality in mid-life allow workers to work longer and accumulate more resources for retirement (both their own and their spouses’). On the other hand, reductions in late-life mortality rates present households with longer retirements, increasing the need for resources.

population.³ Each of these probabilities is estimated based on some combination of the NVSS, the ACS, and the NHIS, for the years 2006-2018. The NVSS gives the number of deaths in each demographic group defined by gender, race, and education. The ACS gives the total population in each such group as well as the institutionalized population. The NHIS is used to estimate the share of each demographic group in the community that suffers from a work-limiting disability. These components are estimated for each five-year age bracket after age 50 and for each SES group.⁴

Defining the Demographic Groups

To estimate working life expectancy for different SES groups, it is first necessary to define the groups. Race and gender are relatively straightforward and the definitions follow those of the Census Bureau; the analysis focuses on non-Hispanic white and Black men and women. However, defining relative education groups involves some discretion.

The assignment of individuals to their appropriate educational group is as follows. First, the ACS is used to determine the median level of education for each gender-race-cohort group.⁵ Next, individuals in each of the datasets are assigned to be either above or below the median for their demographic group. To allocate marginal absolute levels of education to above/below the median, individuals in the marginal groups are randomized in the appropriate proportions.⁶

Mortality Estimates

Age-specific mortality rates, q , for each demographic group defined by gender, race, and education are calculated year by year with the following formula:

$$q_{x,i,j} = \frac{d_{x+1,i}}{l_{x,i}}, \quad (1)$$

³ See Crimmins, Saito, and Ingegneri (1989 and 1997) and Munnell, Soto and Golub-Sass (2008).

⁴ Mortality is estimated at each year of age. The other two measures are estimated by 5-year age bins to increase sample size.

⁵ Note that education quantile is, therefore, race-cohort-gender specific. This approach recognizes the fact that attaining an equivalent absolute level of education (e.g., a college degree) implies greater selection for Black individuals than for whites, given the overall lower educational attainment among Black individuals. For further discussion see Leive and Ruhm (2021), who take the complementary approach of assigning quantiles across race. In their setting, therefore, Black individuals are overrepresented in lower-education groups, and whites are overrepresented in higher-education groups. Our approach ensures that each race has equal shares in the education quantiles.

⁶ This approach is similar to that of Meara, Richards, and Cutler (2008), Bound et al. (2015), and Leive and Ruhm (2021).

where x is age, i represents each demographic group, j represents year, $l_{x,i}$ is the number of individuals alive in group i at age x using ACS data, and $d_{x+1,i}$ is the number of individuals in group i who die between ages x and $x + 1$ using the NVSS data. To correct for small cell size, the analysis adjusts the age-specific mortality rates using the Gompertz-Makeham formula (see Brown et al. 2002 and Sanzenbacher and Ramos-Mercado 2016), estimated with non-linear least squares.

Institutionalization Estimates

The share of each gender-race-education group living in institutions in each year is estimated from the ACS. Institutions include both long-term services and supports (LTSS) facilities (such as nursing homes) and carceral institutions such as prisons. Incarceration has played a large and growing role in low labor force participation over the past few decades, particularly among Black men (Coile and Duggan 2019).

Work-limiting Disability Estimates

The estimate of the risk of work-limiting disability relies on three questions in the NHIS: 1) Does a physical, mental, or emotional problem keep you from working? 2) Are you limited in the kind/amount of work you can do because of your health? and 3) Are you limited in any way because of physical, mental, or emotional problems? Following Crimmins, Saito, and Ingegneri (1997), individuals are considered disabled if they respond yes to any of these questions.⁷

The final stage of the analysis estimates the probability of being able to work at a given age by multiplying the probabilities of being alive, non-institutionalized, and without a work-limiting disability.⁸ Working life expectancy, conditional on current age, is the sum of this product over all future years.

⁷ The results look qualitatively similar when disability is defined more restrictively, as responding “yes” only to one or both of the first two questions. See Appendix for results using this restrictive definition.

⁸ This calculation assumes that mortality, disability, and institutionalization are independent events. This approach is common in the literature as the best approximation of the intersection of these events (see, for example, Crimmins, Saito, and Ingegneri 1997).

Estimates of Key Metrics for the Full Population

The methods outlined above produce three sets of probabilities – dying, entering an institution, and developing a work-limiting disability – for each demographic group, and for the full population. These estimates are calculated for every year between 2006 and 2018, producing time trends in the three risks.

Life Expectancy Trends

Tables 1a and 1b show the evolution of life expectancy at age 50 between 2006 and 2018, for men and women. At this age, life expectancy has steadily increased for both genders. From 2006 to 2018, period life expectancy increased by just over one year for men and by almost 1.2 years for women. Cohort life expectancies, which are generally higher since they reflect the predicted improvement of mortality in future years, also show steady increases. Even though period life expectancy overstates likely mortality, estimates of future improvement in mortality by demographic group are not available. Hence, the rest of the analysis will proceed using period mortality estimates.

Institutionalization Trends

Tables 2a and 2b show trends in the share of the population that is institutionalized in each five-year age bin from age 50 and up, for men and women respectively. The data display a number of patterns pertinent to working life expectancy.

First, institutionalization rates generally increase with age. This pattern is not surprising as institutionalization in mid- to late-life typically reflects residence in LTSS facilities, and LTSS needs rise sharply with age.⁹ More unusual is the departure from this pattern for men, whose institutionalization rates *decline* in their 50s only to begin rising in their 60s. A substantial portion of men (but not women) in their 50s are incarcerated, with this share declining with age. Because so few individuals at these ages have LTSS needs, the age-related decline in incarceration swamps the small increases in LTSS facility use. However, by age 60, a growing need for LTSS results in the expected increasing slope of institutionalization with age going forward.

⁹ U.S. Department of Health and Human Services (2018).

The other noteworthy patterns in the data concern time trends. Institutionalization at each age declines over time, particularly at older ages, reflecting a long-term reduction in nursing home use.¹⁰ Again, men in their 50s and 60s stand out. While institutionalization is stable or declining for women at these ages (and sharply declining at older ages for both genders), the percentage of men in their 50s and 60s who are institutionalized has increased since 2006. This pattern likely reflects the increasing prevalence of long prison sentences in the last few decades, which are imposed primarily on younger men who then reach their 50s and 60s in correctional institutions.¹¹

Work-Limiting Disability Trends

Tables 3a and 3b show the share of the non-institutionalized population with a work-limiting disability, for men and women respectively. Unsurprisingly, disability rates increase with age. More importantly, disability rates within a given age group do not seem to have systematically changed over time. In other words, holding age constant, work-limiting disability rates have held steady; thus the growth in total life expectancy implies *more* expected years of disability now than fifteen years ago, as additional years are added at older ages where disability rates are high. Working life expectancy will, indeed, be shown to reflect this fact.

Working Life Expectancy at Age 50

Tables 4a and 4b show how many additional years a 50-year old man (woman) can expect to live, in total and in each of the states relevant to working life expectancy: not institutionalized and free of disability (i.e., capable of work), not institutionalized with a disability, and institutionalized. Furthermore, the tables also show how expected years in each of these states have changed since 2000 and since 2006, decomposing the change in total life expectancy into changes in the three relevant states of life.

In 2018, a 50-year-old man could expect to live an additional 29.8 years, and in 21.8 of those years he would be expected to be capable of work. For a woman, the corresponding

¹⁰ This trend predates COVID-19 but has accelerated during the pandemic.

¹¹ Prison sentences are not only an impediment to work while they last, but also lead to a permanent loss of earning capacity even for those who do reenter the labor market (see, for example, Agan and Starr 2018). While the latter is beyond the scope of this analysis, the estimated impact of institutionalization on the ability of individuals, particularly men, to provide for themselves and their families must therefore be seen as a lower bound of the total effect.

numbers are 33.6 and 23.9. The remaining years are expected to be life in the community with some work-limiting disability, with only about half a year in an institution.¹²

How have these expectations changed since 2006? Men (women) have gained 1.2 (1.0) years of total life expectancy over the time period. These years can be decomposed into 0.5 (0.6) years of work-capable life, 0.7 (0.7) years of life in the community with a disability, and slight declines in years of life in an institution (primarily among women, who have seen a decline of 0.23 years of expected life in this state). Thus, every year of added life is approximately evenly divided between work-capable and work-incapable.¹³

This pattern is very different from trends in the preceding period, from 2000 to 2006. In the earlier period, total life expectancy rose more in six years than it did in the 12 years between 2006 and 2018. The difference in the evolution of disability-free life expectancy is even more stark: between 2000 and 2006, expected years with a disability rose only by about one quarter of a year compared with 1.5 years of total life, unlike the latter period where over half of additional years of expected life were years with a disability.

Nevertheless, on their face, the absolute numbers in Tables 4a and 4b may seem encouraging. While only about half of the additional year of life gained since 2006 is time that can be used for work, even this slow progress still means that the average person can work until their early 70s. However, the average does not tell the full story: certain groups have made more progress than others, and even within groups a substantial share of individuals may not be able to work as long as the average group member. The next section explores heterogeneity in working life expectancy to get at these disparities.

Heterogeneity in Working Life Expectancy

Tables 5a and 5b show the percentage of the non-institutionalized population with a work-limiting disability for each demographic group at ages 50-64. Disability rates have

¹² This estimate is slightly lower than the estimate in Hurd, Michaud, and Rohwedder (2017) of an average of 272 nights, or 0.75 years, in a nursing home for individuals ages 57-61. The difference is likely accounted for by the older ages of individuals in that study versus the current one and the earlier time period of that previous study, which included years 1992-2010. Indeed, looking at women in 2006 in Table 4b yields an estimate very close to the previous study's.

¹³ As expected, using an alternative definition of work-limiting disability that omits the question "are you limited in any way because of physical, mental, or emotional problems?" results in more of the additional years of life being healthy and fewer being years with a disability, although the differences are small. The qualitative patterns are robust to using this alternative definition. See Appendix Tables A1a and A1b.

increased for every gender, race, and education group over the sample period.¹⁴ Disability rates will be joined with mortality estimates to form working life expectancy.

The analysis now turns to estimating total life expectancy for each demographic group. The top panels of Tables 7a and 7b show, for men and women at age 50, the number of years an individual of each race-education group can expect to live.¹⁵ All of the groups experienced gains in life expectancy between 2006 and 2018. These gains ranged from small (low-education white women and men gained only about half a year) to large (Black men with high education and Black women with low education had gains of over two years).¹⁶

The modest gains by low-education whites are emblematic of the opioid epidemic, and “deaths of despair” more generally, which have been particularly devastating among low-SES whites. In contrast, high-education whites experienced more robust gains in life expectancy over the analysis period. The lack of systematic patterns by SES among Black individuals echoes similarly disparate results in other recent work (Leive and Ruhm 2021 and Wettstein et al. 2021).

In contrast to total life expectancy, where all groups saw at least nominal improvement over the past two decades, working life expectancy displays qualitative differences across groups. The bottom panels of Tables 7.1 and 7.2 show the additional years of working life that individuals of each demographic group can expect at each year between 2006 and 2018. Examining the differences between 2006 and 2018 gives a sense of these disparities, with high-education white women gaining 1.4 years of expected work capacity, while Black men with low education had 1.4 *fewer* years of expected work capacity at the end of the period than at the beginning.

¹⁴ How can this finding be reconciled with the relatively stable rates of disability in Tables 3a and 3b? The explanation rests on the fact that the 50-64-year-old group, as a whole, has grown older over time. Table 6 shows the average age of this group, by gender. The population of those who might conceivably work longer has gotten 0.7 and 0.6 years older, for men and women respectively. This increase in average age, while generally small, has likely led to increases in work-limiting disability in the older working-age population for all the demographic groups.

¹⁵ The patterns of working life expectancy are generally similar when using the more restrictive definition of work-limiting disability that does not consider those who answer the question “are you limited in any way because of physical, mental, or emotional problems?” as having a work-limiting disability. As expected, working life expectancy is higher under this definition, but trends over time and across demographic groups are qualitatively similar. See Appendix Tables A2a and A2b.

¹⁶ These groups also had the lowest and highest average annual gains in life expectancy over the period. Low-education white men and women gained 0.05 ($p=0.021$) and 0.02 (not significantly different from 0) years of expected life per year. In contrast, Black men with above-median education gained 0.18 ($p<0.001$) years of expected life per year, on average, between 2006 and 2018. The corresponding number for below-median education Black women was 0.16 ($p<0.001$).

Just looking at the change between 2006 and 2018 is noisy, especially for Black groups due to small sample sizes. Hence, Figure 1 shows the average annual change in working life expectancy over the analysis period for each group.¹⁷ A stark divide is apparent: Both high-education Black and whites individuals experienced an increase of about 0.1 years of working life expectancy per year on average. A similar improvement was seen for Black women with low education. However, the other low-education groups saw no annual improvement, on average, in working life expectancy.

The lack of growth in working life expectancy for most low-education groups means that, even as their total life expectancy has improved, their ability to work longer has not. In particular, low-education Black men begin and end the period with roughly the same low working life expectancy at age 50; the average member of this group will not be able to work past age 63. This lack of progress is, in fact, a step back in terms of retirement security, since the inability to work to a later age is now accompanied by a need to finance a longer retirement.

Simulating How Long Different Individuals Can Work

To more fully explore how long different types of people can work, the analysis uses the estimated life, institutionalization, and work-limiting disability tables to track how ability to work declines with age using the most recent data, from 2018. Figures 2a and 2b show the estimated share of individuals in each group who will be unable to work to each age. The figure is generated by simulating the experience of 100,000 individuals of each demographic group who are capable of work at age 50. As these simulated individuals age, more and more of them die, enter institutions, or develop work-limiting disabilities.¹⁸

¹⁷ This average is calculated using an OLS regression with a linear term in year, with each year-demographic group considered as a single observation. This calculation does not account for the fact that each such working life expectancy estimate is itself an estimate. With this caveat, the simple average improvement is highly statistically significant for all the high-education groups, besides Black men for whom the change is marginally significant ($p < 0.08$). The positive slope for low-education Black women is also highly significant ($p < 0.001$).

¹⁸ The simulation accounts for the fact that while death is an absorbing state, institutionalization and work-limiting disability are not. The ability to leave institutions is particularly important, considering the non-monotone relationship between age and disability among men, due to declining incarceration rates with age in their 50s and 60s. Thus, each individual in the simulation receives a single random draw between 0 and 1, which is compared to his cumulative survival probability to determine age of death; and a random draw for each age which is independently compared to the probability of being resident in the community without a work-limiting disability. However, this calculation assumes independence within individual across years in this latter probability. This independence assumption is surely incorrect but is conservative in the following sense: it will overestimate the share of individuals who are capable of work, since each individual gets a new chance to leave the work-incapable state at each age.

The patterns of decline in work capability are starkly different across demographic groups, consistent with the estimates in Tables 7a and 7b. For example, of those capable of work at age 50, fully 81 percent of high-education white men will still be capable of work at age 70, the latest age for claiming Social Security. In contrast, only 19 percent of low-education Black men will have that capability.

The analysis above begs the question: if individuals are expected to work longer, how many of them will be unequal to the task? For example, the raising of the Social Security Full Retirement Age from 65 to 67 implied no loss of monthly benefits – for those who could postpone claiming by two years. What share of people in each demographic group would be able to postpone retirement by two years from age 62, the Early Eligibility Age?

To answer this question, the analysis builds on the estimated probabilities of mortality, institutionalization, and work-limiting disability at each age after age 50 in 2018. Using the same simulation approach described to generate Figures 2a and 2b, the analysis takes an individual at age 62 and calculates the probability that they will still be capable of work by age 64. Figure 3a shows the result of this exercise. Unsurprisingly, in the general population, only 7 percent of men and 4 percent of women would be forced to drop out of the labor force by death, institutionalization, or disability by age 64. However, the picture is much less rosy when considering those with low education and Black individuals. Among those with low education, over 10 percent of each group would be unable to work even to age 64 (except for low-education white women for whom the share is 7 percent). Similarly, among Black individuals, the different gender and education groups have a greater than 10 percent chance of being unable to work until 64, except for high-education Black women (for whom the share is 6 percent).

The intersection of the two most disadvantaged groups is, unsurprisingly, the least likely to be capable of working to age 64. Sixteen percent of low-education Black women capable of work at age 62 will no longer be able to work by age 64. For low-education Black men, almost a quarter of those capable of work at 62 will no longer be capable two years later.¹⁹ Thus substantial shares of the Black population, particularly men, cannot be expected to work much later than age 62.

¹⁹ Recall that even the average individual in the latter group cannot work to age 64; their working life expectancy is 63.4 at age 50. The 24 percent in Figure 3a is conditional on still being alive and capable of work at age 62.

Looking beyond age 64, outcomes continue to look grim for Black and low-education groups – particularly low-education Black individuals. Figure 3b shows that around a quarter of low-education white men who can work at 62 will not be capable of working to the Full Retirement Age (FRA) of 67. A similar share of high-education Black men will be in the same predicament. Strikingly, more than half of low-education Black men capable of work at age 62 will prove incapable of working to the FRA. When it comes to working until the maximal claiming age of 70, Figure 3c shows that only high-education whites will not experience rates of inability to work in excess of 20 percent. Among all other groups of both genders, of those who can work at age 62, more than a quarter will not be able to work until age 70. For low-education Black men, this share exceeds three quarters.

Conclusion

Both life expectancy and expected years of disability-free life had been trending up in the United States for decades until 2010. The resulting need to fund a longer retirement was met by calls to work longer, and the expanding capacity to work longer justified those calls. However, in the last fifteen years, slowing declines in mortality have coincided with negative health trends, raising the possibility of *even slower* growth in working life expectancy. A crucial question, then, is whether working longer is even possible for many people?

To answer that question, policymakers need to know whether individuals are physically capable of working: are they alive, in the community, and not encumbered by work-limiting disabilities? The analysis presented here shows that improvement in life expectancy has moderated since 2006, while improvement in working life expectancy has slowed even more, such that every year of life expectancy gained is associated with only about half a year of work capacity.

When looking across demographic groups, the picture is more concerning. The population-level gain, however modest, is driven almost entirely by high-education groups (although low-education Black women have seen similar growth). As a result, a large share of those with less than median education will not be able to work even two years beyond the early eligibility age for Social Security, even if they managed to work to 62. This problem is particularly acute among low-education Black men, who had very low working life expectancies

in 2006 and experienced no improvement in the past fifteen years. A majority of this group will be incapable of work to the FRA.

In thinking of solutions for inadequate retirement savings, working longer may be a fine response for those with more education, but Black and low-education individuals, who are the least likely to have sufficient savings, are also the least well-positioned to work longer.²⁰ They would also be the groups most vulnerable to further increases in Social Security's eligibility age thresholds. New solutions for these groups need to account for their high probability of not being physically capable of extending their working lives.

²⁰ Munnell, Hou, and Sanzenbacher (2018).

Tables and Figures

Table 1a. *Period and Cohort Life Expectancy at Age 50 for Males, 2006-2018*

Year	Period LE	Cohort LE
2006	28.59	30.81
2010	29.33	31.11
2014	29.66	31.40
2018	29.77	31.73

Table 1b. *Period and Cohort Life Expectancy at Age 50 for Females, 2006-2018*

Year	Period LE	Cohort LE
2006	32.52	34.55
2010	33.03	34.85
2014	33.38	35.13
2018	33.56	35.41

Source: Authors' calculations using *American Community Survey* (ACS) (2006-2018) and *National Vital Statistics System* (NVSS) (2006-2018).

Table 2a. *Percentage of Male Population Institutionalized*

Age group	2006	2010	2014	2018
50-54	1.26%	1.55%	1.75%	1.76%
55-59	1.04	1.17	1.39	1.54
60-64	1.00	1.02	1.07	1.27
65-69	1.23	1.06	1.17	1.26
70-74	1.60	1.37	1.39	1.37
75-79	2.65	2.05	1.77	1.95
80-84	4.52	3.50	3.16	2.78

Table 2b. *Percentage of Female Population Institutionalized*

Age group	2006	2010	2014	2018
50-54	0.30%	0.28%	0.29%	0.33%
55-59	0.39	0.32	0.36	0.33
60-64	0.61	0.50	0.51	0.49
65-69	0.93	0.72	0.79	0.73
70-74	1.70	1.43	1.31	1.22
75-79	3.49	2.53	2.51	1.87
80-84	6.93	5.23	4.48	4.15

Source: Authors' calculations using ACS (2006-2018).

Table 3a. *Percentage of Non-Institutionalized Male Population with Limitation of Activity*

Age group	2006	2010	2014	2018
50-54	14.90%	13.50%	14.19%	14.49%
55-59	16.96	17.92	17.64	19.41
60-64	22.94	23.52	21.73	21.85
65-69	21.49	23.25	24.94	23.77
70-74	27.09	25.54	25.64	28.32
75-79	31.93	30.65	28.64	30.39
80-84	40.70	39.38	38.54	43.05

Table 3b. *Percentage of Non-Institutionalized Female Population with Limitation of Activity*

Age group	2006	2010	2014	2018
50-54	15.80%	16.00%	15.05%	15.24%
55-59	20.23	21.77	20.59	20.21
60-64	22.74	23.49	23.08	23.06
65-69	23.47	24.74	24.77	23.97
70-74	30.93	28.91	27.19	28.79
75-79	32.86	37.91	33.35	36.66
80-84	41.80	41.97	47.85	43.98

Source: Authors' calculations using *National Health Interview Survey* (NHIS) (2006-2018).

Table 4a. *Expectations at Age 50 of Years Spent in Various States for Men*

Expectation of life	2000	2006	2018	Change		
				2006-2018	2000-2006	2000-2018
Total	27.00	28.59	29.77	1.18	1.59	2.77
Free of disability	19.99	21.30	21.80	0.50	1.30	1.80
With disability	6.53	6.77	7.46	0.69	0.24	0.93
Institutionalized	0.47	0.52	0.51	-0.01	0.05	0.04

Table 4b. *Expectations at Age 50 of Years Spent in Various States for Women*

Expectation of life	2000	2006	2018	Change		
				2006-2018	2000-2006	2000-2018
Total	30.98	32.52	33.56	1.04	1.54	2.58
Free of disability	22.00	23.26	23.85	0.60	1.26	1.85
With disability	8.29	8.55	9.22	0.67	0.26	0.93
Institutionalized	0.69	0.72	0.49	-0.23	0.03	-0.20

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

Table 5a. *Percentage of the Non-Institutionalized Male Population Ages 50-64 with Limitation of Activity, by Race and Education Group*

Year	White		Black	
	Below median	Above median	Below median	Above median
2006	23.4%	12.6%	30.7%	19.3%
2010	23.5	13.0	31.1	22.0
2018	24.6	13.5	36.9	22.0

Table 5b. *Percentage of the Non-Institutionalized Female Population Ages 50-64 with Limitation of Activity, by Race and Education Group*

Year	White		Black	
	Below median	Above median	Below median	Above median
2006	24.6%	14.5%	30.1%	17.2%
2010	24.7	16.0	32.3	22.1
2018	24.8	15.7	33.9	19.4

Source: Authors' calculations using NHIS (2000-2018).

Table 6. *Average Age and Race of Respondents Age 50-64 in Various NHIS Rounds*

Year	Average age	
	Men	Women
2006	56.2	56.3
2010	56.4	56.5
2018	56.9	56.9

Source: Authors' calculations using NHIS (2006-2018).

Table 7a. *Total Life Expectancy and Working Life Expectancy for Males at Age 50, by Education and Race*

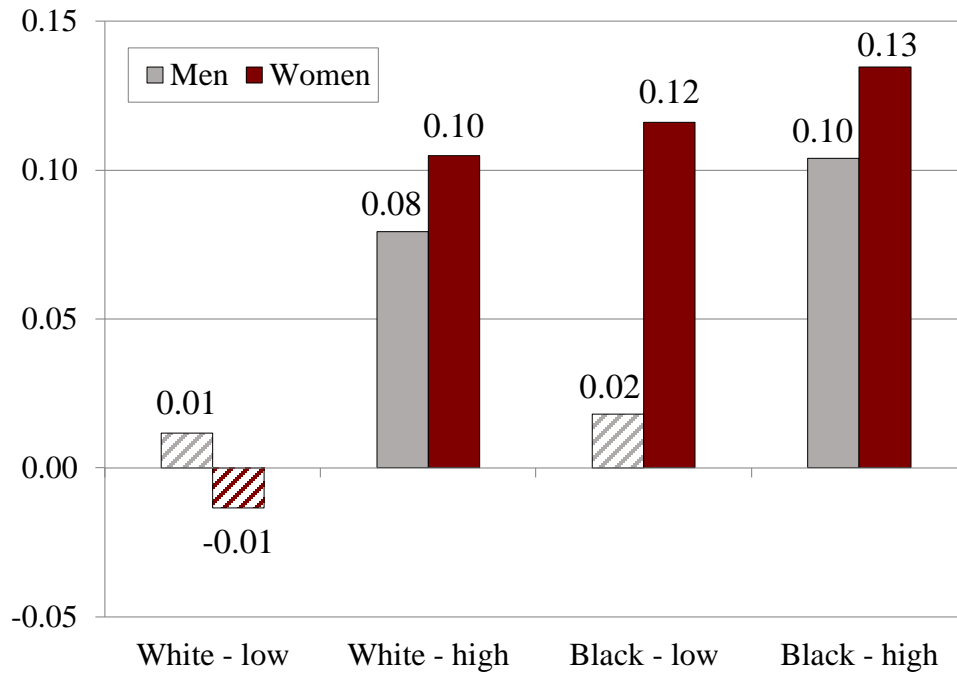
Year	White		Black	
	Below median	Above median	Below median	Above median
<i>Total life expectancy</i>				
2006	26.60	30.91	23.26	26.32
2007	26.73	31.17	23.46	26.77
2008	26.57	31.33	23.38	27.10
2009	26.94	31.47	23.49	27.58
2010	27.31	31.50	24.14	27.65
2011	27.33	31.55	24.42	27.93
2012	27.36	31.82	24.36	28.27
2013	27.35	31.77	24.36	28.34
2014	27.38	31.89	24.76	28.29
2015	27.09	32.15	24.29	28.84
2016	27.24	32.07	24.31	28.46
2017	27.13	32.13	24.40	28.39
2018	27.15	32.34	24.06	28.62
2006-2018 change	0.55	1.43	0.80	2.30
<i>Working life expectancy</i>				
2006	18.95	24.25	14.77	18.83
2007	18.44	24.98	13.37	18.46
2008	18.46	24.70	14.64	19.40
2009	18.37	24.87	13.22	20.04
2010	19.14	25.17	14.57	19.10
2011	18.38	24.99	13.08	19.95
2012	18.93	25.16	14.24	20.69
2013	19.15	25.48	15.35	20.56
2014	19.04	25.50	14.46	20.14
2015	18.73	25.78	14.69	21.32
2016	18.79	25.39	14.53	19.59
2017	18.80	25.11	14.48	19.78
2018	18.51	25.44	13.39	19.67
2006-2018 change	-0.44	1.19	-1.38	0.84

Table 7b. *Total Life Expectancy and Working Life Expectancy for Females at Age 50, by Education and Race*

Year	White		Black	
	Below median	Above median	Below median	Above median
<i>Total life expectancy</i>				
2006	31.20	33.78	28.74	30.47
2007	31.44	34.03	29.34	30.57
2008	31.14	34.15	29.07	31.08
2009	31.57	34.37	29.15	31.55
2010	31.63	34.12	29.89	31.28
2011	31.66	34.25	30.35	31.17
2012	31.67	34.36	30.41	31.93
2013	31.60	34.43	30.35	31.57
2014	31.70	34.60	30.51	31.81
2015	31.31	34.71	30.61	31.73
2016	31.59	34.72	30.43	31.76
2017	31.47	34.70	30.54	31.93
2018	31.57	34.91	30.82	32.08
2006-2008 change	0.37	1.13	2.08	1.61
<i>Working life expectancy</i>				
2006	21.28	25.58	16.34	21.56
2007	21.46	25.32	15.58	19.90
2008	20.14	25.68	15.63	20.72
2009	21.19	25.70	16.37	20.71
2010	21.34	25.72	16.69	20.63
2011	21.10	25.20	16.46	20.85
2012	21.86	26.08	17.08	21.38
2013	20.96	25.71	17.49	22.20
2014	21.40	26.01	16.50	20.96
2015	20.82	26.33	17.18	21.95
2016	21.25	26.26	17.66	22.22
2017	20.61	26.44	17.18	21.64
2018	21.03	26.94	16.66	22.24
2006-2008 change	-0.25	1.36	0.32	0.68

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

Figure 1. Average Annual Change in Working Life Expectancy between 2006 and 2018 by Demographic Group



Note: Solid bars are significantly different from 0 at the 10-percent level.

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

Figure 2a. *Fraction of Men Capable of Work at Age 50 Who Can Still Work at Future Ages, by Race and SES*

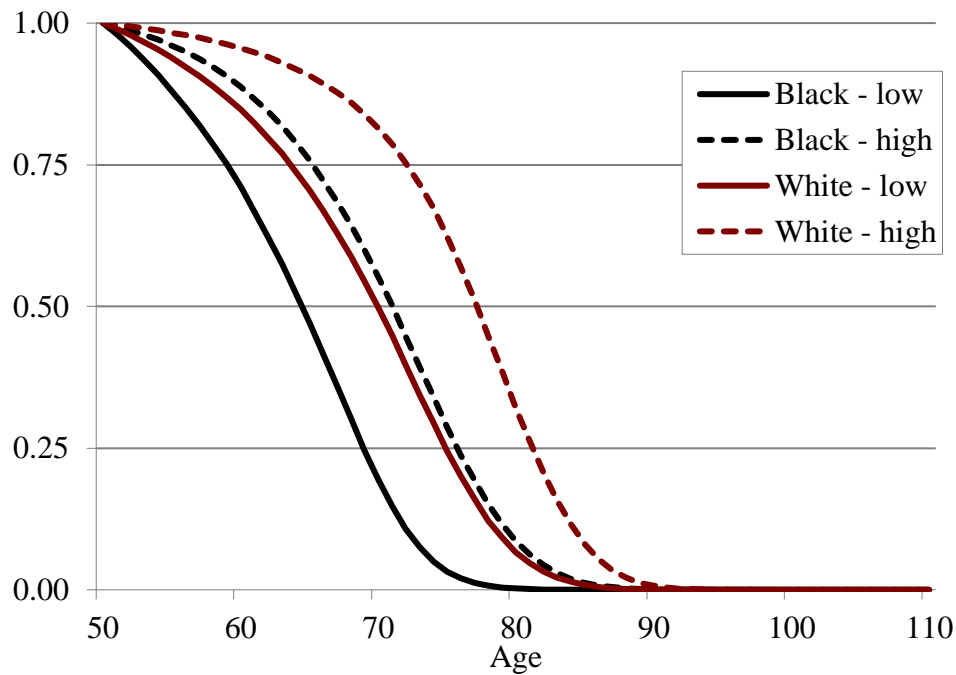
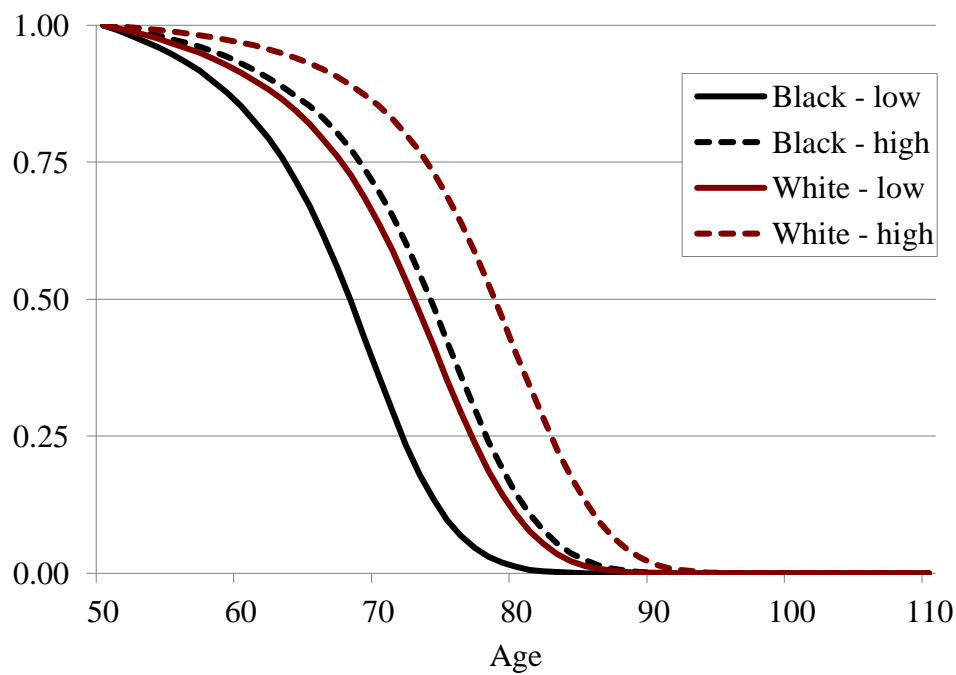


Figure 2b. *Fraction of Women Capable of Work at Age 50 Who Can Still Work at Future Ages, by Race and SES*



Note: Based on 100,000 simulations for each group.

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

Figure 3a. *Percentage of Individuals Capable of Work at Age 62 Who Will Not be Capable by Age 64, by Demographic Group*

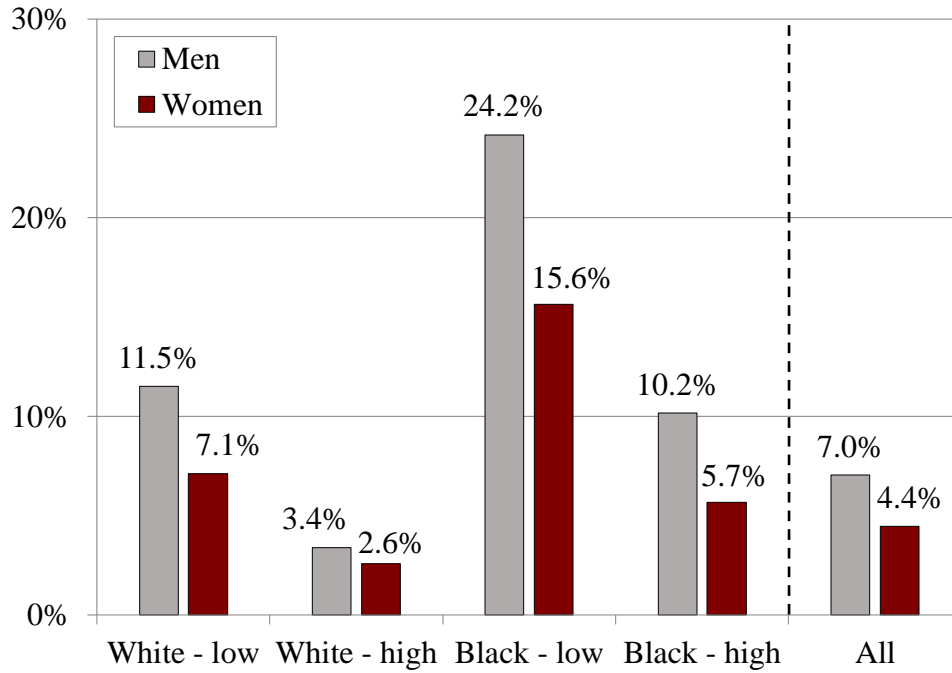


Figure 3b. *Percentage of Individuals Capable of Work at Age 62 Who Will Not Be Capable by Age 67, by Demographic Group*

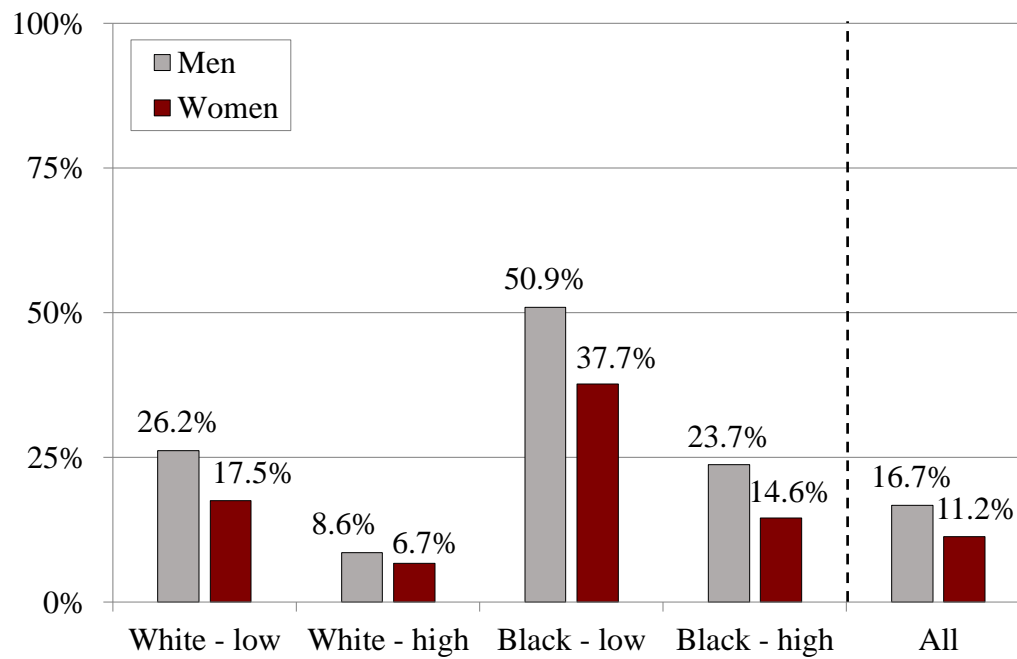
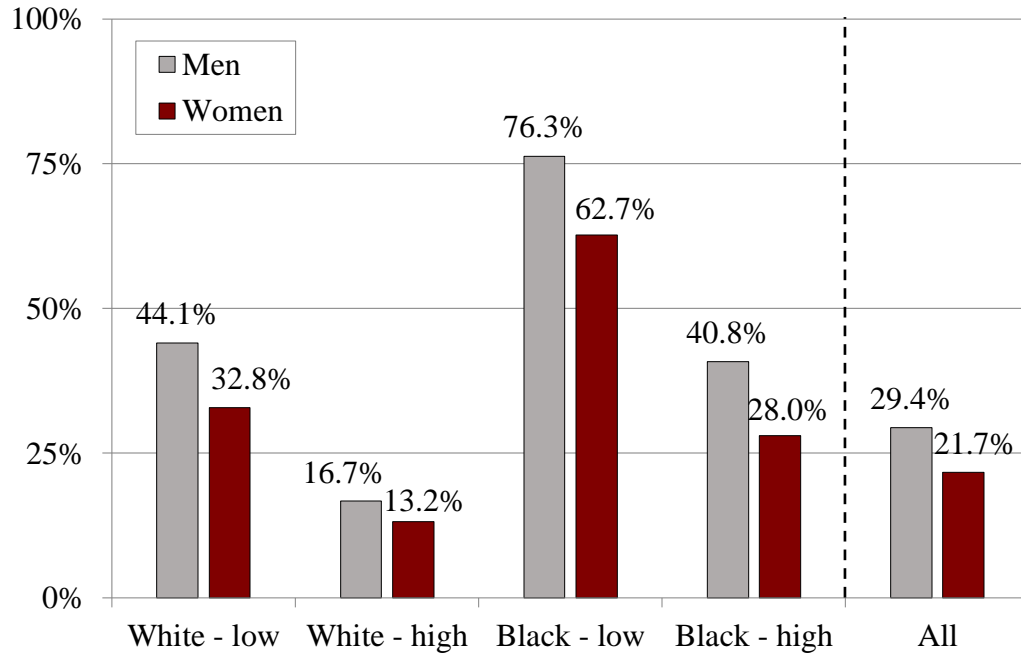


Figure 3c. *Percentage of Individuals Capable of Work at Age 62 Who Will Not Be Capable by Age 70, by Demographic Group*



Note: Based on 100,000 simulations for each group.

Source: Authors' calculations.

References

- Agan, Amanda and Sonja Starr. 2018. "Ban the Box, Criminal Records, and Racial Discrimination: A Field Experiment." *Quarterly Journal of Economics* 133(1): 191-235.
- Biggs, Andrew G., Anqi Chen, and Alicia H. Munnell. 2021. "The Consequences of Current Benefit Adjustments for Early and Delayed Claiming." Working Paper 2021-3. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Bound, John, Arline Geronimus, Javier Rodriguez, and Timothy Waidmann. 2015. "Measuring Recent Apparent Declines in Longevity: The Role of Increasing Educational Attainment." *Health Affairs* 34(12): 2167-2173.
- Bronschtein, Gila, Jason Scott, John B. Shoven, and Sita Nataraj Slavov. 2019. "The Power of Working Longer." *Journal of Pension Economics and Finance* 18(4): 623-644.
- Brown, Jeffrey R. 2002. "Differential Mortality and the Value of Individual Account Retirement Annuities." In *The Distributional Aspects of Social Security and Social Security Reform*, edited by Martin Feldstein and Jeffrey B. Liebman, 401-446. Chicago, IL: University of Chicago Press.
- Burkhauser, Richard V., Mary C. Daly, Andrew J. Houtenville, and Nigar Nargis. 2002. "Self-Reported Work Limitation Data: What They Can and Cannot Tell Us." *Demography* 39(3): 541-555.
- Case, Anne and Angus Deaton. 2020. "Deaths of Despair and the Future of Capitalism." Princeton, NJ: Princeton University Press.
- Chernew, Michael, David M. Cutler, Kaushik Ghosh, and Mary Beth Landrum. 2017. "Understanding the Improvement in Disability Free Life Expectancy in the U.S. Elderly Population." In *Insights in the Economics of Aging*, edited by David Wise, 161-201. Chicago, IL: University of Chicago Press.
- Coile, Courtney C. and Mark G. Duggan. 2019. "When Labor's Lost: Health, Family Life, Incarceration, and Education in a Time of Declining Economic Opportunity for Low-Skilled Men." *Journal of Economic Perspectives* 33(2): 191-210.
- Coile, Courtney C. and Phillip B. Levine. 2007. "Labor Market Shocks and Retirement: Do Government Programs Matter?" *Journal of Public Economics* 91(10): 1902-1919.
- Crimmins, Eileen M., Yasuhiko Saito, and Dominique Ingegneri. 1989. "Changes in Life Expectancy and Disability-Free Life Expectancy in the United States." *Population and Development Review* 15(2): 235-267.

- Crimmins, Eileen M., Yasuhiko Saito, and Dominique Ingegneri. 1997. "Trends in Disability-Free Life Expectancy in the United States, 1970-90." *Population and Development Review* 23(3): 555-572.
- Cutler, David M. 2009. "Estimating Work Capacity among Near Elderly and Elderly Men." Working Paper RRC NB09-18. Cambridge, MA: National Bureau of Economic Research.
- Cutler, David M., Kaushik Ghosh, and Mary Beth Landrum. 2014. "Evidence for Significant Compression of Morbidity in the Elderly U.S. Population." In *Discoveries in the Economics of Aging*, edited by David A. Wise, 21-51. Chicago, IL: University of Chicago Press.
- Dowd, Jennifer B. and Amar Hamoudi. 2014. "Is Life Expectancy Really Falling among Groups of Low Socio-Economic Status? Lagged Selection Bias and Artefactual Trends in Mortality." *International Journal of Epidemiology* 43(4): 983-988.
- Hou, Wenliang and Geoffrey T. Sanzenbacher. 2020. "Measuring Racial/Ethnic Retirement Wealth Inequality." Working Paper 2020-2. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Hurd, Michael D., Pierre-Carl Michaud, and Susan Rohwedder. 2017. "Distribution of Lifetime Nursing Home Use and Out-of-Pocket Spending." *Proceedings of the National Academy of Sciences* 114(37): 9838-9842.
- Kaiser Family Foundation. 2021. "Certified Nursing Facility Occupancy Rate." San Francisco, CA. Available at: <https://www.kff.org/other/state-indicator/nursing-facility-occupancy-rates/>
- Leive, Adam A. and Christopher J. Ruhm. 2021. "Education Gradients in Mortality Trends by Education and Race." Working Paper 28419. Cambridge, MA: National Bureau of Economic Research.
- Lezzoni, Lisa L., Stephen G. Kurtz, and Sowmya R. Rao. 2014. "Trends in U.S. Adult Chronic Disability Rates Over Time." *Disability Health Journal* 7(4): 402-412.
- Martin, Linda G., Vicki A. Freedman, Robert F. Schoeni, and Patricia M. Andreski. 2010. "Trends in Disability and Related Chronic Conditions Among People Ages Fifty to Sixty-Four." *Health Affairs* 29(4): 725-731.
- Meara, Ellen R., Seth Richards, and David M. Cutler. 2008. "The Gap Gets Bigger: Changes in Mortality and Life Expectancy, by Education, 1981-2000." *Health Affairs* 27(2): 350-360.

- Munnell, Alicia H., Wenliang Hou, and Geoffrey T. Sanzenbacher. 2018. "Trends in Retirement Security by Race/Ethnicity." *Issue in Brief* 18-21. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Munnell, Alicia H., Mauricio Soto, and Alex Golub-Sass. 2008. "Will People Be Healthy Enough to Work Longer?" Working Paper 2008-11. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Munnell, Alicia H. and Steven A. Sass. 2008. *Working Longer: The Solution to the Retirement Income Challenge*. Washington, DC: Brookings Institution Press.
- Munnell, Alicia H., Geoffrey T. Sanzenbacher, and Matthew S. Rutledge. 2018. "What Causes Workers to Retire Before They Plan?" *Journal of Retirement* 6(2): 35-52.
- Munnell, Alicia H., Gal Wettstein, and Wenliang Hou. 2021 (forthcoming). "How Best to Annuitize Defined Contribution Assets?" *Journal of Risk and Insurance*.
- Sanzenbacher, Geoffrey T. and Jorge Ramos-Mercado. 2016. "Calculating Expected Social Security Benefits by Race, Education, and Claiming Age." Working Paper 2016-14. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Sanzenbacher, Geoffrey T., Anthony Webb, Candace M. Cosgrove, and Natalia Orlova. 2019. "Rising Inequality by Life Expectancy by Socioeconomic Status." *North American Actuarial Journal* 25(1): S566-S581.
- U.S. Bureau of Justice Statistics. 2021. Key Statistic: Total Correctional Population. Washington, DC. Available at: <https://www.bjs.gov/index.cfm?ty=kfdetail&iid=487>
- U.S. Department of Health and Human Services. 2018. "An Overview of Long-Term Services and Supports and Medicaid: Final Report." Washington, DC: U.S. Department of Health and Human Services, Assistant Secretary for Planning and Evaluation, Office of Disability, Aging and Long-Term Care Policy.
- Wettstein, Gal, Alicia H. Munnell, Wenliang Hou, and Nilufer Gok. 2021. "The Value of Annuities." Working Paper 2021-5. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Appendix

Table A1a. *Expectations at Age 50 of Years Spent in Various States of Health for Males*

Expectation of life	2000	2006	2018	Change		
				2006-2018	2000-2006	2000-2018
Total	27.00	28.59	29.77	1.18	1.59	2.77
Free of disability	21.55	22.93	23.67	0.73	1.39	2.12
With disability	4.98	5.14	5.59	0.45	0.15	0.61
Institutionalized	0.47	0.52	0.51	-0.01	0.05	0.04

Table A1b. *Expectations at Age 50 of Years Spent in Various States of Health for Females*

Expectation of life	2000	2006	2018	Change		
				2006-2018	2000-2006	2000-2018
Total	30.98	32.52	33.56	1.04	1.54	2.58
Free of disability	24.23	25.55	26.29	0.74	1.32	2.06
With disability	6.06	6.25	6.78	0.53	0.19	0.72
Institutionalized	0.69	0.72	0.49	-0.23	0.03	-0.20

Note: Disability is defined using the more restrictive definition, of answering affirmatively one of the following: 1) Does a physical, mental, or emotional problem keep you from working? 2) Are you limited in the kind/amount of work you can do because of your health?

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

Table A2a. *Total Life Expectancy and Working Life Expectancy for Males at Age 50, by Education and Race*

Year	White		Black	
	Below median	Above median	Below median	Above median
<i>Healthy life expectancy</i>				
2006	20.40	26.13	16.03	20.25
2007	19.92	26.67	14.67	20.68
2008	20.09	26.59	15.67	21.13
2009	19.60	26.65	14.36	22.37
2010	20.57	26.89	16.00	21.42
2011	20.10	26.76	14.70	21.53
2012	20.41	27.04	15.89	21.92
2013	20.57	27.08	16.89	21.87
2014	20.60	27.18	16.68	21.85
2015	20.11	27.53	16.23	23.03
2016	20.26	27.10	16.73	21.01
2017	20.34	27.19	16.13	22.15
2018	20.22	27.59	14.76	20.76

Table A2b. *Total Life Expectancy and Working Life Expectancy for Females at Age 50, by Education and Race*

Year	White		Black	
	Below median	Above median	Below median	Above median
<i>Healthy life expectancy</i>				
2006	23.44	27.89	18.64	23.75
2007	23.66	27.87	17.38	22.72
2008	22.55	28.47	18.68	23.02
2009	23.52	28.14	18.32	22.99
2010	23.65	27.90	19.74	23.38
2011	23.66	27.71	18.99	23.48
2012	23.81	28.44	19.76	24.46
2013	23.44	28.27	19.92	24.54
2014	23.77	28.77	19.62	23.37
2015	23.04	28.82	19.88	24.97
2016	23.67	28.75	20.39	24.32
2017	23.06	29.02	20.01	23.87
2018	23.29	29.21	19.90	24.47

Note: Disability is defined using the more restrictive definition, of answering affirmatively one of the following: 1) Does a physical, mental, or emotional problem keep you from working? 2) Are you limited in the kind/amount of work you can do because of your health?

Sources: Authors' calculations using NHIS (2000-2018); ACS (2000-2018); and NVSS (2000-2018).

RECENT WORKING PAPERS FROM THE
CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE

Do Stronger Employment Discrimination Protections Decrease Reliance on Social Security Disability Insurance? Evidence from The U.S. Social Security Reforms

Patrick Button, Mashfiqur R. Khan, and Mary Penn, June 2021

Trends in Opioid Use among Social Security Disability Insurance Applicants

April Yanyuan Wu, Denise Hoffman, and Paul O'Leary, March 2021

The Value of Annuities

Gal Wettstein, Alicia H. Munnell, Wenliang Hou, and Nilufer Gok, March 2021

Will Women Catch Up to Their Fertility Expectations?

Anqi Chen and Nilufer Gok, February 2021

The Consequences of Current Benefit Adjustments for Early and Delayed Claiming

Andrew G. Biggs, Anqi Chen, and Alicia H. Munnell, January 2021

Intended Bequests and Housing Equity in Older Age

Gary V. Engelhardt and Michael D. Eriksen, January 2021

The Effect of Early Claiming Benefit Reduction on Retirement Rates

Damir Cosic and C. Eugene Steuerle, January 2021

Financial Security at Older Ages

Barbara A. Butrica and Stipica Mudrazija, December 2020

Do People Work Longer When They Live Longer?

Damir Cosic, Aaron R. Williams, and C. Eugene Steuerle, December 2020

Do State and Local Government Employees Save Outside of Their Defined Benefit Plans When They Need To?

Laura D. Quinby and Geoffrey T. Sanzenbacher, November 2020

How Much Taxes Will Retirees Owe on Their Retirement Income?

Anqi Chen and Alicia H. Munnell, November 2020

A Behavioral Economics Assessment of SSDI Earnings Reporting Documents

Denise Hoffman, Jonah Deutsch, and Britta Seifert, November 2020

How Accurate Are Retirees' Assessments of Their Retirement Risk?

Wenliang Hou, July 2020

All working papers are available on the Center for Retirement Research website (<https://crr.bc.edu>) and can be requested by e-mail (crr@bc.edu) or phone (617-552-1762).