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Working Longer in the United States Trends and Explanations

Courtney C. Coile

In 2016, the share of men in their early 60s who were working or looking for work in the United States was *not* 4 in 10—but it would have been if the trend in earlier decades had persisted. After falling continuously for over a century (Costa 1998), the labor force participation (LFP) rate of older men suddenly began to rise starting in the mid-1990s. Today, more than 6 in 10 men aged 60–64 are in the labor force, a dramatic increase relative to what might have been expected two decades ago. The LFP rates for older women have also been rising for decades, due in part to far-reaching societal changes in the role of women.

Many factors have been proposed to explain the rise in LFP at older ages and the resulting increase in the average age of retirement (Munnell 2015). These include demographic factors like improving health and rising education, shifts in the economy away from sectors with physically demanding work, and changes to employer-sponsored pensions and health insurance benefits and to social security. Rising participation among women may also lead men to work longer if spouses prefer to retire together. While these factors could all plausibly have contributed to the recent trend, it is not clear whether all of them did so nor which factors are the most important.

This chapter aims to begin to fill this gap by providing an analysis of trends in LFP and employment and of factors that may influence these out-

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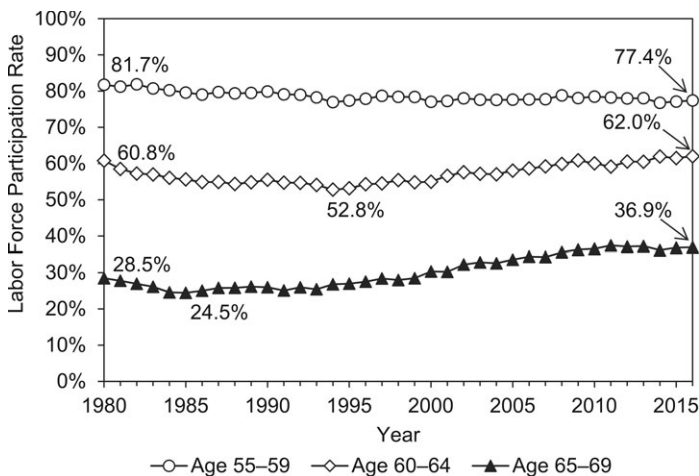


Fig. 12.1 LFP rate for men ages 55–69, 1980–2016

Source: OECD, <http://stats.oecd.org> (data from US Bureau of Labor Statistics).

comes. The focus is on the years 1980 to the present, a period encompassing both declining and rising participation for men and rising participation for women. The analysis is largely descriptive, examining whether the trends are consistent with the hypothesis that changes in factors such as health or social security may lead to longer work lives and glean insights from the literature about the likely role of these factors. This analysis sets the stage for future work that will focus on the role of social security and private pensions, documenting how the financial incentives for retirement have changed over time due to changes in retirement programs and estimating how much of the rise in LFP can be explained by these changes in incentives.

12.1 Trends in Labor Force Outcomes

The rise in LFP at older ages is among the most significant labor market trends in the United States in recent decades. As figure 12.1 illustrates, for men aged 60–64, participation began to increase in the mid-1990s, growing from 53 percent in 1994 to 62 percent in 2016, a 9-point increase. For men aged 65–69, the trend began a decade earlier, and the increase to date was 12 points, from 25 percent in 1985 to 37 percent in 2016. In contrast, there is no U-shaped pattern for men aged 55–59, whose participation declined from 82 percent in 1980 to 77 percent by the mid-1990s and remained flat thereafter.¹

1. Council of Economic Advisors (2016) documents this trend and explores supply and demand factors that may have contributed to this decline, concluding that the decline in real wages of less-skilled workers is an important factor.

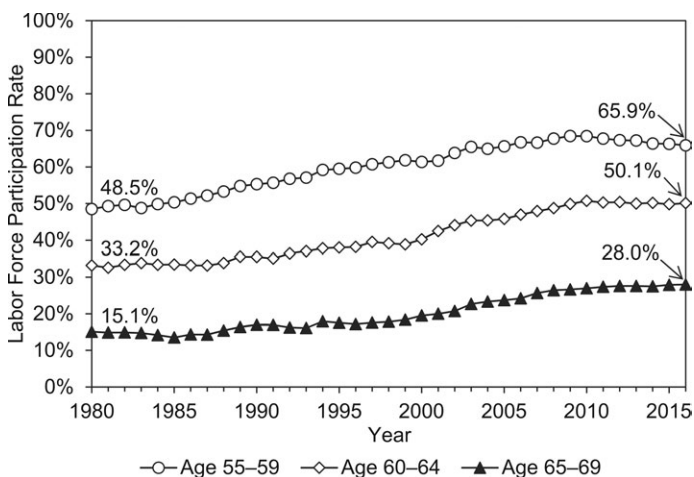


Fig. 12.2 LFP rate for women ages 55–69, 1980–2016

Source: OECD, <http://stats.oecd.org> (data from US Bureau of Labor Statistics).

The trend for women, shown in figure 12.2, is quite different. In all age groups, participation has risen continuously since 1980, increasing by 17 points at ages 55–59 and 60–64 and by 13 points at ages 65–69. In 2016, nearly two-thirds of women aged 55–59 and half of women aged 60–64 were in the labor force. These numbers are at least partly a reflection of the growing rates of participation (at all ages) among women in more recent cohorts—indeed, Goldin and Katz (2018) show that the cohorts of women who are working longer at older ages had higher rates of participation throughout their life cycle, having invested more in human capital accumulation at younger ages. Women’s sustained increases in participation led to a substantial narrowing of the male-female participation gap—for those aged 55–59, the gap fell from 33 points in 1980 to 12 points in 2016. There is some indication in the figure that participation has plateaued for women aged 55–64 since about 2010, though it is not yet clear whether this is a temporary or permanent break from the long-term trend.

The employment rate is also of interest. As shown in figures 12.3 and 12.4, trends in employment are very similar to those in LFP, as unemployment, which is the difference between the two series, is generally quite low in these age groups. The average unemployment rate during the 1980–2016 period is 3.4 percent for men and 2.3 percent for women aged 55–59; rates for the two older age groups are lower. The unemployment rate is affected by the business cycle, reaching highs of 5 to 6 percent for men aged 55–59 in the early 1980s and after the Great Recession of the late 2000s. The official unemployment rate may understate the number of older individuals who would like to work if some discouraged workers do not report themselves

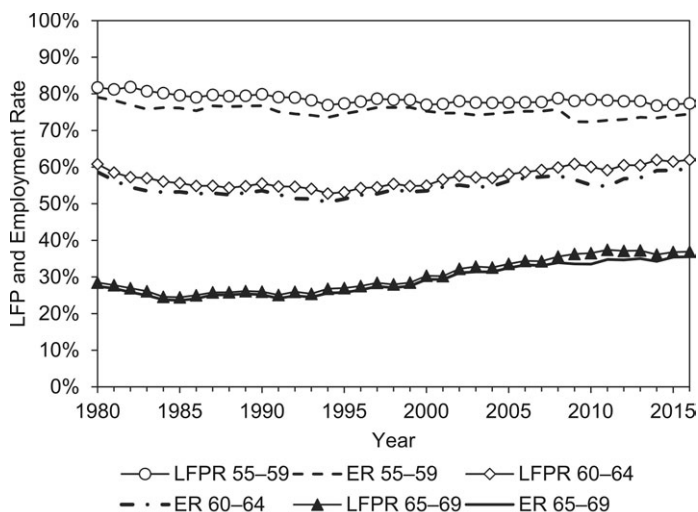


Fig. 12.3 LFP and employment rates for men ages 55–69, 1980–2016

Source: OECD, <http://stats.oecd.org> (data from US Bureau of Labor Statistics).

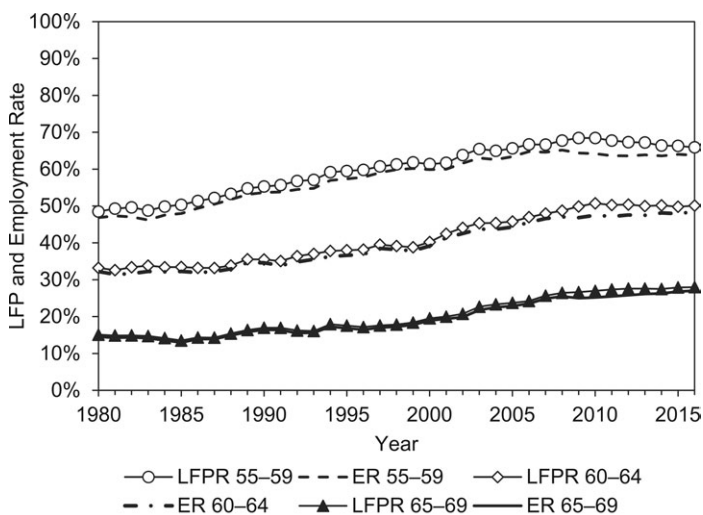


Fig. 12.4 LFP and employment rates for women ages 55–69, 1980–2016

Source: OECD, <http://stats.oecd.org> (data from US Bureau of Labor Statistics).

to be looking for work. Age discrimination as well as lower labor demand during troughs in the business cycle may impede work at older ages (Lahey 2008; Neumark, Burn, and Button 2015; Coile and Levine 2007).

Population averages may mask substantial heterogeneity in the experiences of different groups. The LFP rates by education are shown in figures 12.5 and 12.6. Rates are reported as a three-year moving average to reduce

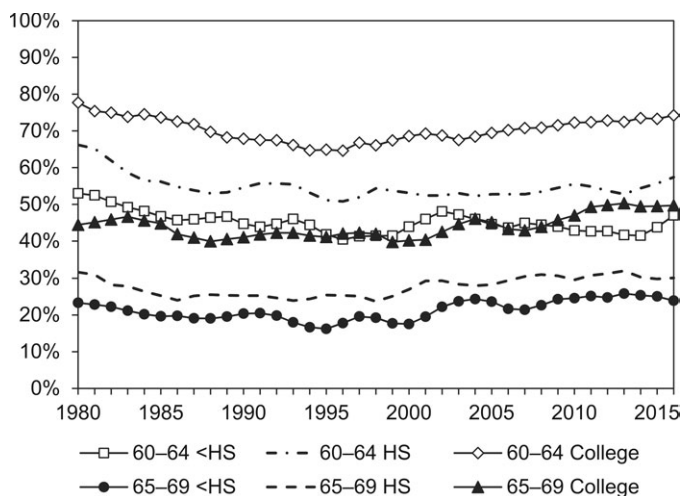


Fig. 12.5 LFP rate by education for men ages 60–69, 1980–2016

Source: March Current Population Survey (CPS). Data are weighted by person weights; rates are a three-year moving average. Those with some college are omitted from the graph.

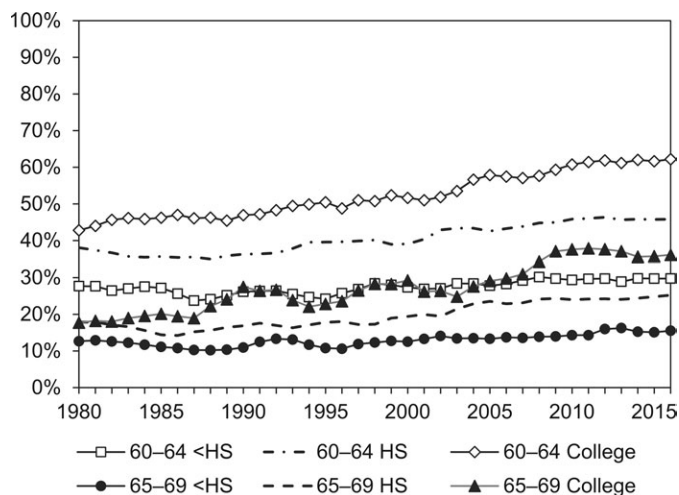


Fig. 12.6 LFP rate by education for women ages 60–69, 1980–2016

Source: March CPS. Data are weighted by person weights; rates are a three-year moving average. Those with some college are omitted from the graph.

sampling variation (here and in similar graphs below), and the youngest age group and those with some college are omitted for clarity of exposition. There are very large differences in participation by education. On average, across all years, the participation of college graduates is 25 points higher than that of high school dropouts for both men and women aged 60–64; at

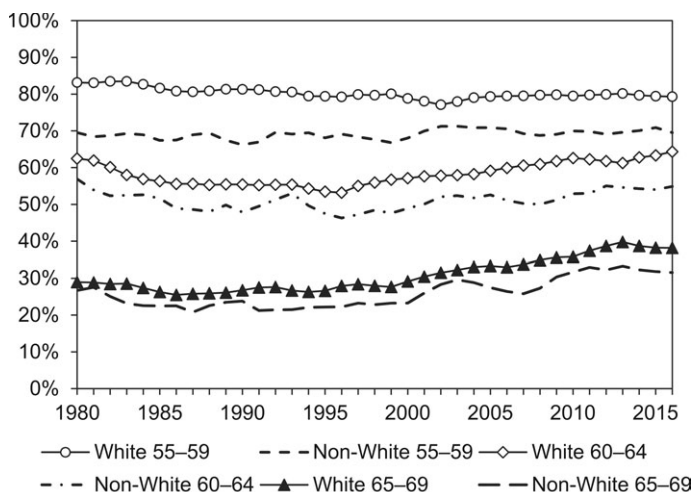


Fig. 12.7 LFP rate by race for men ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; rates are a three-year moving average.

ages 65–69, the participation gap between college graduates and high school graduates is 23 points for men and 15 points for women. For men, patterns over time by education group are fairly similar, though there is some evidence of a widening gap in participation during the past decade, which could reflect a stronger effect of the Great Recession on those with less education. For women, the increases in participation over time are much larger for college graduates than for those with a high school education or less, leading to a substantial widening of the participation gap by education.²

The LFP rates by race are presented in figures 12.7 and 12.8. For men, participation rates are consistently higher for whites than for nonwhites, but differences are smaller than those across education groups. At ages 55–59, a gap of 15 points in 1980 declined to 10 points in 2016, due to falling participation of whites. At older ages, the gap held steady or widened slightly over time, reaching 10 points for those 60–64 and 7 points for those 65–69 in 2016. For women, differences in participation by race are smaller, 3–5 points in 2016, though this represents a change from the 1980s, when the participation rate of nonwhites was similar to if not slightly higher than that of whites. As these figures do not control for education, differences in

2. In examining trends in the LFP by education group, it is important to be mindful of the large changes over time in the share of the population in each education group, discussed below. As there are, for example, fewer high school dropouts in recent years, the average characteristics of this group may be somewhat different from the average characteristics of high school dropouts in an earlier era. For a discussion of this issue in the context of trends in mortality by education, see Bound et al. (2014).

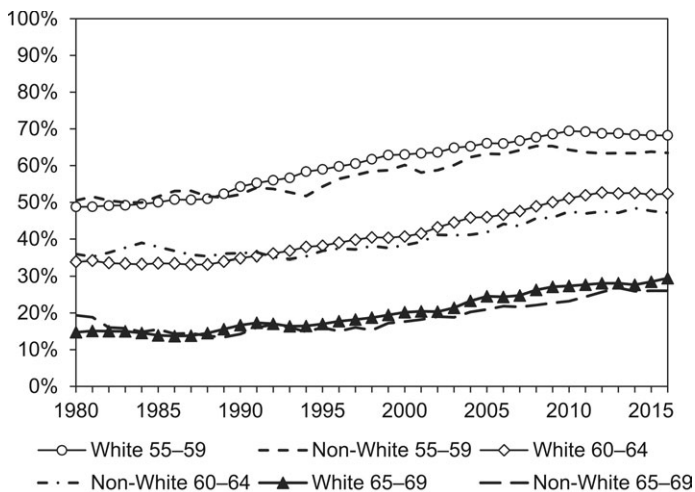


Fig. 12.8 LFP rate by race for women ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; rates are a three-year moving average.

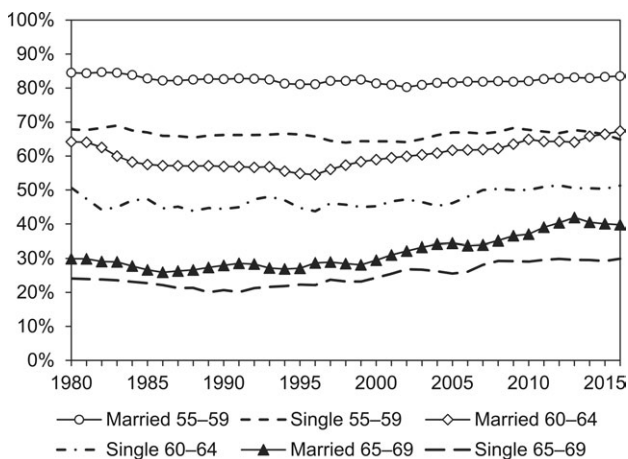


Fig. 12.9 LFP rate by marital status for men ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; rates are a three-year moving average.

participation by race could in part reflect the effect of racial differences in educational attainment.

Participation by marital status, shown in figures 12.9 and 12.10, is markedly different by gender. Single men participate at rates 10–20 points below their married counterparts, depending on the age group, and these differ-

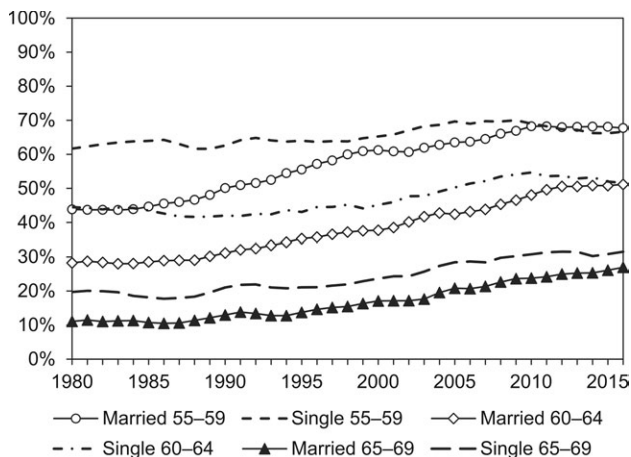


Fig. 12.10 LFP rate by marital status for women ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; rates are a three-year moving average.

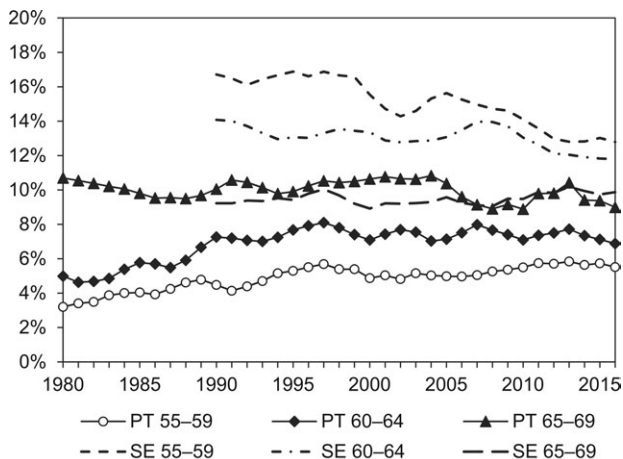


Fig. 12.11 Part-time work and self-employment for men ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average. Self-employment data are shown starting in 1990 due to a change in question.

ences have been stable or widened slightly over time. In the case of women, single women in 1980 had participation rates 16–18 points higher than those of married women at ages 55–64 and 8 points higher at ages 65–69. Over time, this gap was eliminated in the two younger groups and narrowed in the oldest group. Thus much of the rise in women’s participation at older ages over the past few decades is the result of an increase in the share of married women who are working.

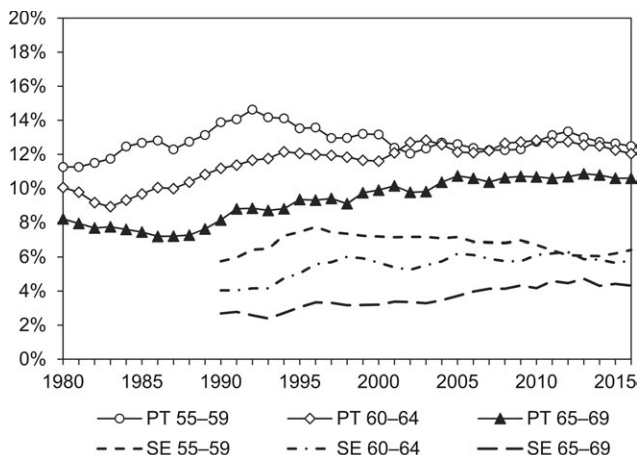


Fig. 12.12 Part-time work and self-employment for women ages 55–69, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average. Self-employment data are shown starting in 1990 due to a change in question.

Work can encompass different kinds of labor market activity, including part-time work and self-employment. Figures 12.11 and 12.12 detail the frequency of these forms of work at older ages. Self-employment is fairly popular among men, with 12–13 percent of men aged 55–64 and 10 percent of men aged 65–69 engaged in such work in 2016; rates of self-employment among women are about half as large. The fraction of men working part time (less than 35 hours per week) is low but increases with age, at about 6 percent for those aged 55–59 and 9 percent for those aged 65–69. Part-time work is more common for women, with 11–12 percent of all age groups working part time in 2016. Part-time work has been essentially flat since 1990, as has self-employment among women, though there is a modest decline in self-employment among men.³ With employment rate rising over time, the share of workers who are part time has been falling—even so, among those still in the labor force, 25 percent of men and nearly 40 percent of women in the oldest age group worked part time in 2016.

To sum up, the LFP of older men and women has been rising for several decades. The increase began in the mid-1980s for men in their late 60s and a decade later for men in their early 60s, while women’s participation has been rising since at least 1980. There are notable differences across groups—

3. Data on self-employment from the March Current Population Survey (CPS) are shown starting in 1990 due to a break in the series that appears related to question wording. Beginning in 1988, the survey distinguishes between incorporated and unincorporated self-employment, and there is a roughly 50 percent increase in reported self-employment between 1987 and 1988. As the figure reports three-year moving averages, 1990 is the first year that relies solely on data from 1988 and later.

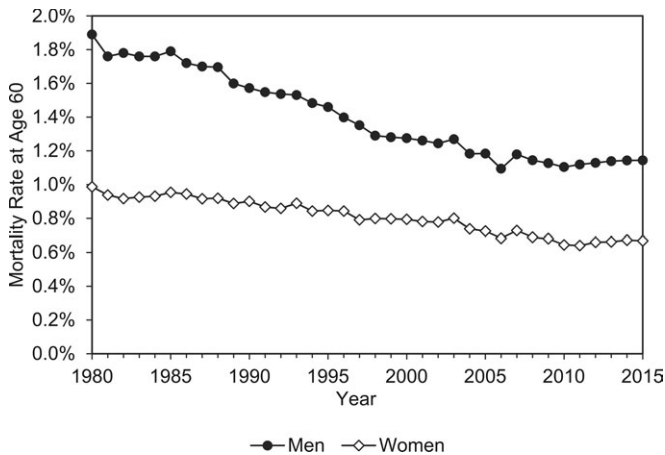


Fig. 12.13 Mortality rate at age 60 for men and women, 1980–2015

Source: <http://www.mortality.org>.

employment at older ages is higher for those with more education, for whites, and for married men. Married women's participation once lagged far behind that of single women, but the gap has largely been eliminated. Part-time work and self-employment are important at older ages, with more women engaged in the former and more men in the latter.

12.2 Trends in Explanatory Factors

These dramatic changes in work at older ages, and in particular the reversal of the century-long decline in participation of older men, naturally raise the question: What are the causes of this trend toward longer work lives? A number of demographic and economic factors are plausible contributors, but it is necessary to examine the trends in these factors and review other relevant evidence to begin to draw conclusions as to the likelihood of their each playing a role.

12.2.1 Mortality and Health

One theory is that improvements in longevity and health have played a key role in rising participation at older ages. Many studies have established that poor health is associated with earlier retirement (e.g., Bound et al. 1999; see Coile 2015 for a review). Health at older ages—as measured by mortality risk—has improved substantially over time. Figure 12.13 shows that the mortality rate at age 60 has declined by 40 percent for men and one-third for women since 1980. As mortality risk may be an imperfect proxy for work capacity, figure 12.14 reports trends in self-assessed health, a frequently used measure of overall health. The share of men and women aged 55–64 report-

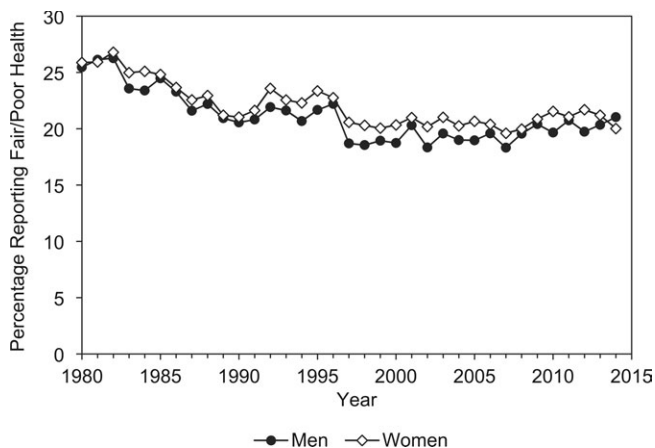


Fig. 12.14 Share reporting fair/poor health at ages 55–64 for men and women, 1980–2014

Source: National Health Interview Survey.

ing fair or poor health fell by 5–7 points between 1980 and the mid-1990s and has been essentially flat thereafter.⁴

A simple juxtaposition of these health and labor force trends is not supportive of the theory that health improvements are driving later retirement. The mortality rate has fallen continuously over time, both during the period that men’s participation was falling and during the period when it was rising. Self-assessed health improved from the 1980s through the mid-1990s, while men’s participation declined; it was flat thereafter, while men’s participation increased. Thus neither of these health trends aligns with the U-shaped trend in men’s participation.

One explanation for the lack of time series evidence supporting this theory may be that while poor health is an important determinant of retirement for some, it is not the main reason most people retire. Most people who are in the labor force at age 60 exit it by age 70, yet health declines only slowly with age over this range (Coile, Milligan, and Wise 2017). Moreover, comparing how much older individuals today work relative to either those in the past or slightly younger individuals in similar health suggests that there is significant health capacity to work at older ages (Coile, Milligan, and Wise 2017). In

4. Trends in other health measures are also of interest, but obtaining an overall view is complicated by the fact that measures do not necessarily all move in the same direction, at the same time, and equally for all groups (Crimmins 2004). One prominent debate focuses on whether longevity increases are resulting in a compression of disability into a shorter period before death or an increase in the number of years of disability; see Cutler, Ghosh, and Landrum (2014) and Crimmins and Beltrán-Sánchez (2010). For a discussion of other measures of health and disability, see Coile (2018).

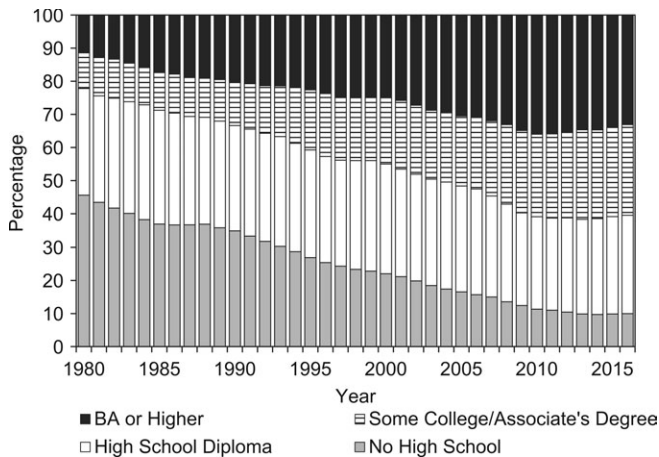


Fig. 12.15 Educational attainment of men ages 60–64, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average.

short, while better health may have supported longer work lives, there is little evidence that it is a primary driver.

12.2.2 Education and Occupation

Another potential candidate is the increase in educational attainment of the near retirement-age population and the shift away from physically demanding jobs. Changes in education since 1980 have been dramatic, as shown in figures 12.15 and 12.16. For men aged 60–64, the share with less than a high school education has fallen by about 30 percentage points, from 40 to 10 percent of the population, while the share with a college degree or some college has grown from one-quarter to half of the population. Patterns for women are largely similar, though the initial share with at least some college was lower than for men. By contrast, changes in broad occupation categories (blue collar, white collar, service, and other) are smaller, as seen in figures 12.17 and 12.18.⁵ Between the 1980s and the 2010s, the share of men working in blue-collar jobs fell by 6 percentage points, and the share working in white-collar jobs rose by an equivalent amount. For women, there was a decline in both blue-collar and service jobs and a 12-point increase in white-collar work.

A simple calculation may be useful to begin exploring how much the rise in education may have contributed to the increase in work at older ages. Figure 12.19 simulates the LFP rates that would have occurred in the

5. Classification of occupation codes into the categories of blue collar, white collar, service, and other (which includes farm and military) follows Ham et al. (2011).

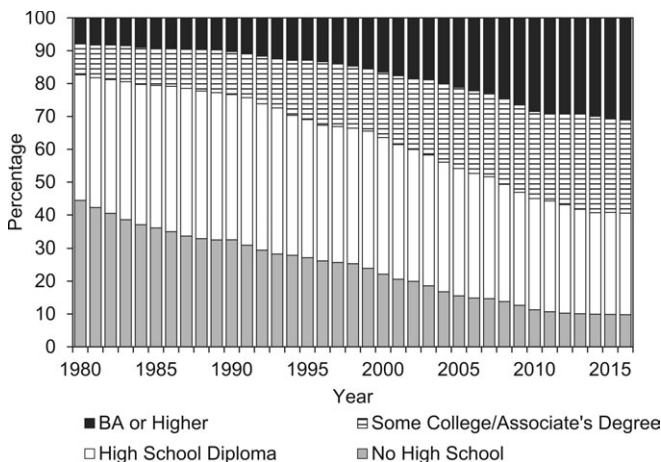


Fig. 12.16 Educational attainment of women ages 60–64, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average.

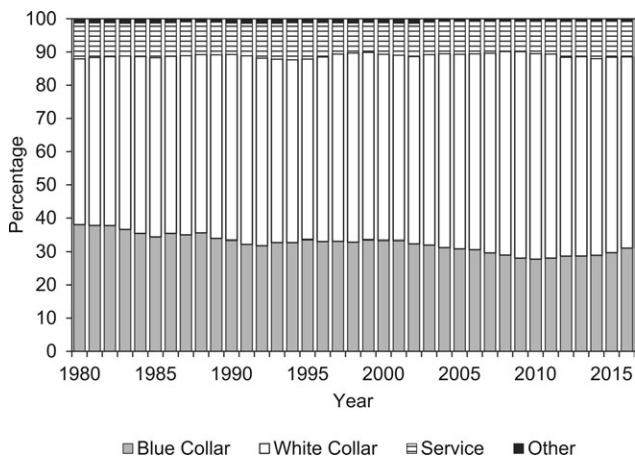


Fig. 12.17 Occupation type of men ages 60–64, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average. See text for definitions of occupation groups.

years 1995–2016 if participation rates by education group (figure 12.5) had remained constant at 1995 levels while the educational composition of the population (figure 12.15) continued to change. In other words, this is an estimate of the rise in work that would be expected simply by having a more educated population, since more educated people tend to retire later. For men aged 60–64, the calculation suggests that participation would have risen

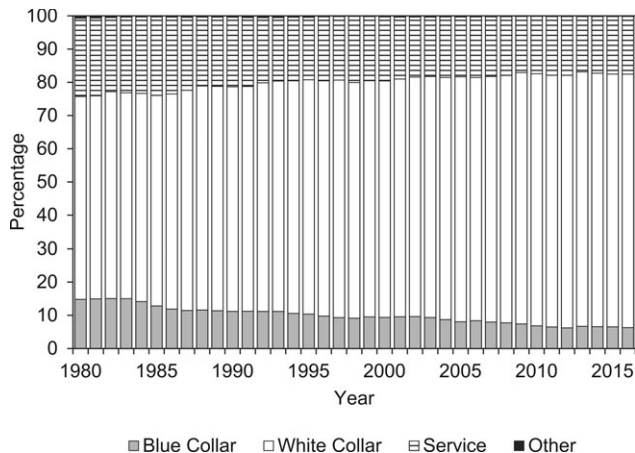


Fig. 12.18 Occupation type of women ages 60–64, 1980–2016

Source: March CPS. Data are weighted by person weights; values are a three-year moving average. See text for definitions of occupation groups.

by 3.5 points between 1995 and 2016 due to the increase in education over this period. Participation actually rose by 9.6 points, suggesting that the increase in education could be responsible for about one-third of the gains. For men aged 65–69, a similar calculation would suggest that increases in education could be responsible for nearly half (44 percent) of the gains.⁶ Calculations for women, shown in figure 12.20, suggest that increases in education between 1995 and 2016 could be responsible for 44 percent of the increase in work at ages 60–64 and 30 percent at ages 65–69.

Caution may be warranted in drawing conclusions from such an exercise, however. Repeating this simulation using the participation rates by education group that existed in 1980, one would have predicted that participation would rise by 4.1 points for men aged 60–64 between 1980 and 1995 and by 3.2 points for men aged 65–69; in reality, participation fell by 9.2 and 2.6 points for the two groups, respectively, presumably for reasons unrelated to the change in education. As in the case of health, education has increased during periods of both falling and rising participation; indeed, educational attainment has been fairly flat over the past decade, even as participation

6. In a similar analysis, Burtless (2013) projects that slightly over half of the increase in the participation of men aged 60–74 between 1985 and 2010 can be attributed to rising educational attainment. Blau and Goodstein (2007) estimate LFP models using data from the CPS and Survey of Income and Program Participation (SIPP) aggregated by age, calendar year, and education; their estimates suggest that the increase in participation between 1988–92 and 2001–5 can be fully explained by changes in education. Both they and Burtless (2013) estimate that if the educational distribution had been fixed at its 1985 level, the LFP would have continued to decline into the 1990s rather than increasing.

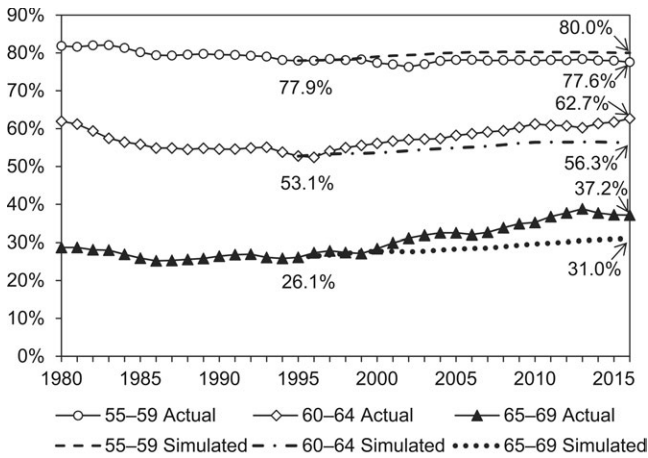


Fig. 12.19 Simulated changes in men's LFP due to changes in education, 1995–2016

Source: March CPS. Data are weighted by person weights; values are three-year moving averages. Simulated rates are weighted averages that combine 1995 participation rates by education group with contemporaneous shares in each education group.

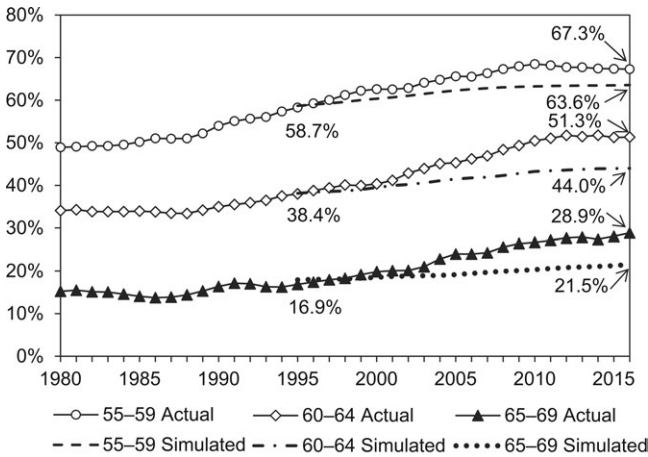


Fig. 12.20 Simulated changes in women's LFP due to changes in education, 1995–2016

Source: March CPS. Data are weighted by person weights; values are three-year moving averages. Simulated rates are weighted averages that combine 1995 participation rates by education group with contemporaneous shares in each education group.

has continued to rise. Moreover, as seen in figure 12.5, the U-shaped trend in LFP for men is also evident within each education group, suggesting that there are factors beyond education that are key to understanding the rise in participation.

12.2.3 Rising Participation among Women

The dramatic increase in women's involvement in the economy during the 20th century has been dubbed a "quiet revolution" (Goldin 2006). As noted earlier, as cohorts of women who have invested more in their education and career reach older ages, older women's LFP rates naturally increase. This trend may also lead to higher participation rates for older men—their husbands—if there are leisure complementarities—that is, if each spouse's enjoyment of leisure time is enhanced when the other spouse is present. Noting that many couples retire together, Gustman and Steinmeier (2000) and Maestas (2001) estimate structural family retirement models and find that complementarity of leisure is a key factor driving joint retirement. Baker (2002) and Coile (2004) find that financial incentives for retirement from public pensions have spillover effects on the retirement decision of the spouse, which is also consistent with leisure complementarities.

Estimating the causal effect of increasing women's participation on men's participation is challenging given the strong possibility that other factors, such as changes to social security, may affect the participation of both men and women. Schirle (2008) overcomes this obstacle by using the women's LFP rate at age 40—which will reflect women's changing role in the economy but will not be affected by factors such as social security—to predict their participation at older ages. Figure 12.21 shows that the LFP rate of women aged 35–44 lagged by 20 years, which roughly corresponds to the share of older men in a given year whose wives were working two decades earlier. This series grew by 35 points, from 43 percent in 1980 to 78 percent in 2016. Using this approach, Schirle (2008) estimates that the increase in older women's participation can explain one-quarter of the increase in older men's participation in the United States.⁷

12.2.4 Employer-Provided Benefits

Employer-provided benefits including pensions and retiree health insurance may influence retirement decisions, and thus changes in these benefits may contribute to retirement trends. One significant change in employer benefits has been the shift from defined-benefit (DB) to defined-contribution (DC) pension plans.⁸ As shown in figure 12.22, the share of private-sector

7. Schirle (2008) estimates that changes in US men's education and age explain about one-third of the increase, leaving 40 percent unexplained by the combination of women's participation and these other factors.

8. In terms of the factors behind this shift, Friedberg and Webb (2005) point to the importance of regulatory changes since 1974 that have tightened funding standards for DB plans,

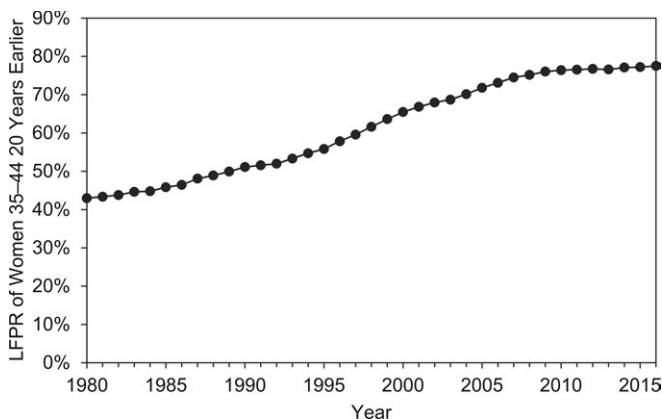


Fig. 12.21 LFP of women ages 35–44, lagged by 20 years, 1980–2016

Source: OECD, <http://stats.oecd.org> (data from US Bureau of Labor Statistics).

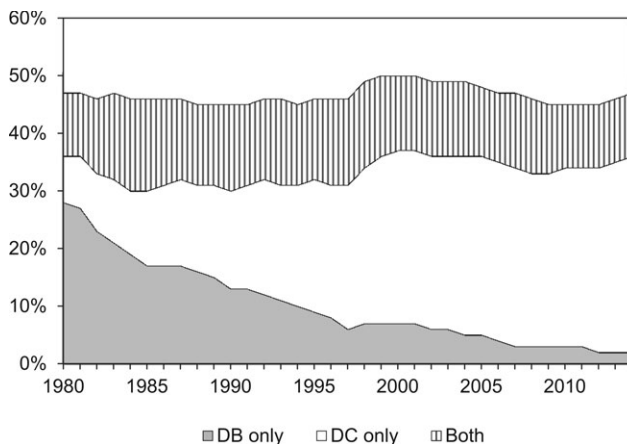


Fig. 12.22 Share of private-sector workers participating in an employer-sponsored pension plan by plan type, 1980–2014

Source: EBRI, <http://www.ebri.org/publications/benfaq/index.cfm?fa=retfaq14fig1>.

workers participating in an employer-sponsored pension plan has remained relatively constant over time, at just under half the workforce. The share of workers with a DB plan only, however, fell from 28 percent in 1980 to 2 percent in 2014, while the share with a DC plan rose by a similar amount, from

constrained the structure of both DB and DC plans, and extended tax breaks for DC contributions. Poterba et al. (2007) note that firms in rapidly expanding industries have chosen to rely on DC rather than DB plans.

6 to 34 percent. The share with both a DB and DC plan remained roughly flat, averaging 13 percent over the period.⁹

DB and DC plans offer very different financial incentives for continued work at older ages. In DB plans, pension wealth typically grows until the plan's early or normal retirement age and declines thereafter; DC plans, in contrast, lack age-specific retirement incentives. Friedberg and Webb (2005) estimate that their absence leads workers with a DC plan to retire nearly two years later.¹⁰ A simple calculation suggests that the shift from DB to DC plans might have led to a roughly five-month increase in the median retirement age, corresponding to nearly one-fifth of the increase for men since 1995 (Munnell 2015).¹¹

Another important change in employer-sponsored benefits has been the decline in the share of firms offering health insurance to retirees. By one estimate, the share of private-sector workers employed by firms offering health insurance to their pre-Medicare-age retirees fell from 29 percent in 1997 to 18 percent in 2011 (Fronstin and Adams 2012).¹² A number of studies suggest that the availability of retiree health insurance benefits leads workers to retire at least several months and potentially more than a year earlier (Madrian, Burtless, and Gruber 1994; Nyce et al. 2013). Using the midpoint of these estimates suggests that the decline in retiree health insurance coverage between 1997 and 2011 might have led to an increase in the median retirement age of about one month.¹³

9. The vast majority of public-sector workers continue to be covered by DB plans. Among state and local workers in 2012, for example, only 2 percent had a DC plan while 7 percent had a hybrid (DB and DC) plan (Munnell, Aubry, and Cafarelli 2014). Most federal workers are covered by both a DB and a DC plan.

10. While this study is one of the few to estimate the effect of the shift from DB to DC pensions on retirement, many previous studies find that DB pension incentives have strong effects on retirement decisions—see, for example, Stock and Wise (1990a, 1990b) and Samwick (1998).

11. Friedberg and Webb (2005) estimate that moving from a DB to a DC plan is associated with a 21-month increase in the median retirement age. Given a 26-point decline in the share of private-sector workers with DB plans between 1980 and 2014 (figure 12.22) and an estimated 84 percent of workers in the private sector (Mayer 2014), this suggests that the shift from DB to DC plans led to a 4.5-month decline in the median retirement age. Munnell (2015) calculates that the median age of retirement for men rose by 26 months between 1995 and 2013, so 4.5 months represents 18 percent of that increase. Friedberg and Webb (2005) forecast a somewhat larger (9–13 month) increase in the median retirement age between 1983 and 2015, based on projections of future age-specific rates of DB coverage with the data then available.

12. Trends in this statistic prior to 1997 are more difficult to discern. The Employee Benefit Research Institute (1996) reports that the share of full-time workers in firms with 100 or more employees who have access to retiree health benefits remained constant between 1988 and 1993, even as a 1990 regulatory change required companies to record unfunded benefit liabilities on their financial statements, potentially causing employers to reexamine their role in providing these benefits. However, the number of large employers offering retiree health insurance benefits has been declining since at least 1991 (Fronstin 2001).

13. Estimates of the effect of retiree health insurance access on retirement vary. Madrian et al. (1994) report an effect of 5–16 months, while Nyce et al. (2013) find an effect of 3–13 months, depending on the employee's length of service and the share of premiums covered by the firm. Using 9 months as an approximate midpoint of these estimates, an 11-point decrease in coverage for private-sector workers (who make up 84 percent of the workforce, as discussed above) yields an estimate of 0.8 months.

12.2.5 Social Security Reforms

While public pension reforms in the United States in recent decades have not been as frequent or dramatic as those in some other countries, there have nonetheless been meaningful changes that have significantly impacted the incentive to work at older ages and likely contributed to longer work lives.

The 1983 amendments to the Social Security Act made a number of changes that collectively were designed to put the system on firmer financial footing for coming decades. One such change was an increase in the full retirement age (FRA), which is the age at which beneficiaries receive their full monthly benefit amount without a reduction for early claiming. The FRA has historically been age 65, but it has risen over time to age 67 in a series of steps, with the first increase for those born in 1938 (who turned 65 in 2003).¹⁴ The increase in the FRA may affect the decision of when to retire for two reasons. First, an FRA increase is effectively a benefit cut for any given claiming age. For example, a worker claiming at age 65 whose primary insurance amount (PIA) is \$1,000 would be entitled to a monthly benefit of \$1,000 if her FRA is 65 versus \$933 per month if her FRA is 66, a decline of 6.67 percent. Economic theory suggests that she will respond to this negative wealth shock by reducing consumption of leisure (and other normal goods), and postponing retirement is one means of doing so. Second, the FRA may play an important role in establishing a focal point for retirement, affecting social norms.

Mastrobuoni (2009) examines the effect of the FRA increase using data for the 1928 through 1941 birth cohorts, covering the first four steps in the FRA increase (from 65 to 65 and 8 months). He shows that the average age of retirement was rising quite gradually across birth cohorts until the FRA increase began and then rose more rapidly thereafter. He concludes that each two-month increase in the FRA is associated with a one-month increase in the average age of retirement.¹⁵ Song and Manchester (2007a) show that the spike in claiming at age 65 for men and women moved in lockstep with the FRA as it increased, though changes in claiming behavior may not necessarily reflect changes in retirement. Extrapolating from these results suggests that the one-year increase in the FRA to date (from 65 to 66) may have increased the average age of retirement by six months.

A second key change in social security provisions is the increase in the delayed retirement credit (DRC) for claiming after the FRA. Workers may claim social security benefits starting at age 62, but they receive a larger monthly benefit amount the longer they wait to claim. Delayed claiming may

14. Specifically, the FRA is 65 for those born in 1937 or earlier, rises by two months per birth cohort for the 1938–42 cohorts, is 66 for those born in 1943–54, rises again by two months per birth cohort for the 1955–59 cohorts, and is 67 for those born in 1960 and later.

15. Mastrobuoni (2009) notes that Blau and Goodstein (2007) reach a different conclusion about the effect of social security reform on the LFP; however, their approach does not isolate the change in benefits that results solely from reforms.

increase or decrease lifetime social security benefits, depending on whether the adjustment is more or less than actuarially fair. Historically, benefits have been reduced by 6.67 percent per year for claiming before the FRA and raised by 3 percent per year of delay after the FRA. Coile et al. (2002) show that with these rates of adjustment, many types of worker can maximize the financial or utility value of benefits by waiting until the FRA to claim, but no types gain from delay beyond the FRA.¹⁶

The 1983 amendments raised the DRC from 3 to 8 percent per year in a series of steps.¹⁷ This change has increased the value of delay beyond the FRA; Sun and Webb (2009) report that for cohorts exposed to the higher DRC, there are many worker types for whom delay beyond the FRA is optimal. An increase in the DRC may encourage individuals to delay their benefit claim without changing their retirement decision or to delay both retirement and claiming if they tend to treat these decisions as linked (though they need not be). Pingle (2006) estimates the effect of the DRC on employment in a model that includes age and year fixed effects and a polynomial in birth year, using the step increases in the DRC for identification. He finds that each one percentage point increase in the DRC is associated with a roughly one percentage point increase in the employment rate of men aged 65–69. This estimate suggests that the five-point increase in the DRC since 1990 could explain up to half of the increase in participation of men aged 65–69 over this period, reported in figure 12.1.

A final change relates to the social security retirement earnings test (RET). Those who claim social security retired worker benefits but continue to have earnings are potentially subject to the RET. Workers below the FRA face a benefit reduction of \$1 for each \$2 of earnings above an exempt amount (\$15,270 in 2016, though this amount is higher for those reaching the FRA during the year). Workers above the FRA were historically subject to the RET with a somewhat higher exemption amount. In 1990, the tax rate on those above the FRA was lowered to \$1 of benefit reduction per \$3 of earnings, and in 2000, the RET was eliminated for those above the FRA. Benefits lost through the RET are subsequently credited back to workers in the form of an increased actuarial adjustment, but this appears to be a little-understood provision.

An existing literature has explored the effect of the RET on both the extensive and the intensive work margins; the former is more relevant here.¹⁸

16. Shoven and Slavov (2014) show that the value of delaying from age 62 to the FRA has increased since the 1960s, with most of the increase due to improvement in mortality and declining real interest rates, though a social security rule change that affects survivor's benefits has also increased the benefit of delay for husbands. They do not report the gains (or losses) from delay beyond the FRA in their analysis.

17. Specifically, the DRC is 3 percent per year for those born in 1924 or earlier, then increases by 0.5 percent every other year (e.g., to 3.5 percent for the 1925–26 cohorts and to 4 percent for the 1927–28 cohorts), reaching 8 percent for those born in 1943 and later.

18. See Friedberg (2000) and Gelber, James, and Sacks (2013) for evidence of the effect of the RET on the intensive margin.

A number of studies employ a differences-in-differences approach to explore the effect of changes to the RET over time and conclude that the test has little effect on employment (see Gruber and Orszag 2003; Haider and Loughran 2008; Song 2004; Song and Manchester 2007b).¹⁹ In contrast, Friedberg and Webb (2009) find that the RET affects employment in some of their specifications and conclude that its elimination above the FRA increased employment at ages 66–68 by 0.5–2 percentage points. Gelber et al. (2017) also identify an extensive margin response to the RET using a regression discontinuity approach based on changes in the employment levels of 63- and 64-year-olds with earnings near the RET threshold; the authors estimate that eliminating the RET would cause an increase in employment of 1.4 points among workers at those ages with earnings near the threshold. While these results are not directly informative regarding the effect of eliminating the RET above the FRA, they may suggest that a modest increase in employment was likely.

Overall, these three changes to social security—the increase in the FRA, the increase in the DRC above the FRA, and the elimination of the RET above the FRA—seem likely to have contributed substantially to the increase in employment at older ages, particularly at ages 65 and older. As the literature on the FRA and DRC increases is fairly limited and the results of different studies are not necessarily reported in a way that allows easy comparison of the effects of these policy changes on employment, additional work examining how social security policy changes have affected the return to work at older ages would be helpful.

12.3 Discussion

Men and women in the United States are working substantially longer than their counterparts of a few decades ago, a phenomenon with profound implications both for the workers themselves and for the economy as a whole. Many theories have been put forth to help explain this trend. Improving health is one such theory. Yet while good health is certainly a necessary ingredient for a longer career, there is little evidence that changes in health are driving rising participation. Education is another likely candidate, given the steep participation gradient with respect to education and the dramatic increases in the educational attainment of the older population in recent decades. Although simple calculations suggest that this factor could have played a key role, there is as yet no test of this hypothesis based on a compelling empirical strategy.

More persuasive evidence appears to exist with respect to several other hypotheses: Rising women's participation in the economy has encouraged

19. Gustman and Steinmeier (2008) employ a different methodology, estimating a structural model of retirement and wealth; they conclude that the RET reduces participation between ages 62 and the FRA by 4 percentage points.

older husbands to work longer due to leisure complementarities. A shift in employer-provided pensions from DB to DC plans has reduced the share of workers facing strong incentives to retire at particular ages, while a decline in retiree health coverage has left some workers with no means of obtaining health insurance other than through their job until the Medicare eligibility age of 65; both changes contributed to longer work lives. Finally, changes to the social security FRA, DRC, and RET have strengthened the incentive for work past the FRA, contributing to the increase in participation at older ages.

The estimates from the existing literature may be combined to get some sense of the share of the increase in work that is explained by these various factors, although the results this exercise should be treated very cautiously given that they are projections based on findings from different studies that may not be directly comparable. Using Munnell's (2015) estimate of a 26-month increase in men's average retirement age since 1995, Schirle's (2008) estimate that the rise in women's participation accounted for one-quarter of the increase in men's participation would suggest a 6.5-month increase in men's average retirement age from this factor. In the discussion above, the effects of the DB to DC shift and the decline in retiree health insurance coverage were estimated to be 4.5 months and 0.8 months, respectively, while the effect of the FRA increase was estimated to be 6 months. Making a projection of the effect of the rising DRC and elimination of the RET is more difficult. Pingle (2006) suggests that the DRC increase led to a 5-point increase in participation at ages 65–69 while the findings of Friedberg and Webb (2009) might suggest a further 1–2-point increase from the elimination of the RET. Together, these would account for roughly half the increase in participation since 1995 in the 65–69 age group. Given that the participation rate of this group is roughly half that of men aged 60–64, this might be seen as the equivalent to one-sixth of the overall increase in the retirement age, or 4.3 months. Together, these factors account for an estimated 22-month increase in the average retirement age for men, or about 85 percent of the total increase since 1995. Social security is the single largest factor, with all the changes combined accounting for perhaps 10 months of the increase, although the calculations with respect to the DRC and RET are particularly speculative. The average age of retirement for women rose by 24 months between 1995 and 2013, indicating that changes in social security can account for a large share of the increase in women's work over this period as well.

Several potentially fruitful directions for future analysis are suggested from this analysis. First, there is some evidence of a slowdown or even an end to the trend toward longer work lives for men and women, as seen in figures 12.1 and 12.2, although this period coincides with the recovery from the Great Recession and so trends could reflect business-cycle effects. It will be important to monitor these trends to see how retirement behavior continues

to evolve in the future. Second, trends by socioeconomic status merit further attention. There is clear evidence of a widening gradient in participation by education for women (figure 12.6) and some evidence of this for men as well (figure 12.5), although the changing distribution of educational attainment complicates the evaluation of trends over long periods of time. It would be useful to explore trends in retirement and benefit claiming by other key measures of socioeconomic status, such as lifetime income group. In addition, as noted earlier, better evidence regarding the effect of increasing education on participation at older ages is needed.

Finally, this discussion highlights the need for more analysis of how changes to social security since 1980 have affected the incentives for work at older ages and how much these reforms have contributed to the increase in work at older ages. Making projections based on results from different studies, as has been done here, necessarily provides only tentative answers to these important questions. Future work on these questions will not only provide a better understanding of past reforms but also lay the groundwork for projecting the effect of future reforms as well.

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