

THE IMPLICATIONS OF CAREER LENGTHS FOR SOCIAL SECURITY

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Abstract

While growing fiscal pressures and increasing life expectancy have prompted calls to raise retirement ages so that lifetime benefits would be concentrated in older ages, some fear that this change—without other adjustments—might harm long-career, lower-wage workers. Tying retirement benefit eligibility to years of service might protect lower-wage workers if they tend to start their careers relatively early and work more years prior to retirement than higher-wage workers. But higher disability rates and greater employment volatility could offset lower-wage workers' early labor force starts, and lead to fewer total years of service completed. Using survey data matched to administrative earnings records, we describe variation in work histories for current and near retirees by gender, education, and other important characteristics. We find that years of service are not likely to provide an effective way to protect the lowest-wage workers. Among other reasons, men and women with the least education also work the least.

Introduction

Recent debates about raising the Social Security and Medicare retirement ages have generated considerable controversy in part because we do not have a full understanding of how the change would affect workers with different career paths. Some argue that increasing the retirement age would harm lower-wage workers who put in long careers and are more likely to need benefits at age 62 because of health problems or unemployment. They suggest tying benefit eligibility to years of service as opposed to or in addition to raising the minimum retirement age.¹ The argument is that lower-wage workers start their careers earlier than higher-wage workers and thus would qualify for Social Security sooner. Among the many issues raised by these proposals are whether lower-wage workers with limited education in fact do accumulate more work years by their late 50s and early 60s than better-educated, higher-wage workers. Or do higher disability rates and greater employment volatility among workers with limited education offset their early start in the labor force?

This project attempts to fill this gap in our knowledge by using administrative earnings data matched to the Survey of Income and Program Participation (SIPP) to describe the work histories of current and near retirees and compare those histories to trajectories for younger workers. The analysis of older adults' earnings histories highlights differences by key socioeconomic characteristics (gender, education, highest earnings, nativity, race, and childbearing histories). The comparisons of career earnings paths between the younger and older cohorts, in turn, tell us whether these differences are likely to continue into the future. Some of the core questions that we consider include the following:

- How do career start dates, end dates, and years of service interact for individuals with different degrees of education or average earnings?
- How does the disability insurance (DI) program interact with early endings in determining length of the work career, especially among those with less education?

¹Variable retirement ages are used in other countries, and recent reforms in Greece and Portugal (sometimes promoted by organized labor) called for “flexible” retirement ages. Early work on these types of issues in the U.S. context included Thompson *et al.* (1976). Recent comments on the issue included White (2006). This approach might be used to make an increase in the age at which workers can first collect Social Security retirement benefits more palatable (for example, the age would increase for all *except* those who had a met a minimum service years target by that age).

- How do the patterns of work effort by educational status differ for women and men, and how does caregiving influence these patterns?

We begin by describing previous research on career paths. We then outline some Social Security policy areas that are quite sensitive to work years. While we primarily focus on retirement ages based on years of service, we also consider implications for other policies such as caregiver credits, computation years, and minimum benefits. Turning next to data sources and methods, we place particular emphasis on data quality and measurement issues associated with the matched survey data. We then present our results, a series of descriptive estimates from the historical data. We close with observations on how policymakers should take into account patterns in work years when designing changes to the Old Age, Survivors and Disability Insurance program (OASDI).²

We find that patterns in work histories appear to be changing quite rapidly across cohorts. Certain subgroups of less-educated men (most notably high school graduates) do complete many years of service early, especially relative to men with more than a college degree. Generally, however, different levels of education do not markedly differentiate the number of years of service among men except that those with less than a high school diploma tend to work less than other men at young ages, especially in later cohorts. In both earlier and later cohorts, women's work patterns tend to rise with education. Those with more than college work the most and those with some college come in second. These patterns persist even after accounting for immigration, earnings not covered by the Social Security program, and receipt of disability program benefits. These results suggest that years-of-service provisions will not effectively offset an increase in the retirement age for many of the least educated, lower-wage workers. Nonetheless, some other policy options based on career length could help a significant minority, especially men with a high school diploma or less with long work careers.

1. Previous Research and Contribution to the Literature

Despite their importance to retirement income security, surprisingly little is known about career earnings history patterns. Even though the issue is quite straightforward, data limitations have until recently prevented a thorough accounting of lifetime work patterns.

² We use the terms OASDI and Social Security interchangeably.

Most surveys are too short to measure lifetime earnings. The National Longitudinal Studies (NLS) focus on individuals in particular age ranges (e.g., youth, young women, young men, mature women, mature men), facilitating analyses of fairly long-term earnings, but only for a subset of the life course. Veum and Weiss (1993), for example, use the 1979 youth survey (NLSY) to describe early career experience (from ages 18 through 27) by sex and race, and find that many observed differences in work experience by race and sex become smaller or disappear once they account for education. The Panel Study of Income Dynamics (PSID) has followed respondents for many years (since 1968), but only now are any survey respondents approaching a full career. Attrition and inadequate treatment of immigrants also raise questions about the sample's representativeness.³

Several studies use retrospective data to examine the related concept of job tenure and consider whether it has been changing in recent decades. Although tenure does not directly correspond to Social Security service years, the concepts are related because the program covers most U.S. jobs, and long job tenures imply lack of movement out of the workforce during those years. Stevens (2004), for example, considers self-reported completed tenure on the longest job using data from several longitudinal sources (the Retirement History Survey, the NLS of Older Men, and the Health and Retirement Study). She finds little evidence of declining long-term tenure for late career men. Farber (2007, forthcoming) uses Current Population Survey data (including those from supplements) from 1973 to 2005. He finds men's age-specific tenure declines over the period, while women's appears more stable. One limitation of these studies is that retrospective data tend to have inaccuracies, with respondents often rounding their answers to five- and ten-year intervals, for example.

Administrative data on work and earnings avoid some of these limitations of survey data. A major advantage is their relative accuracy. Reporting error is known to be considerable in self-reported earnings (e.g., Cristia and Schwabish 2007, Pischke 1995). Survey respondents often systematically underreport earnings, with reporting error negatively correlated with actual earnings. A limitation of administrative data is that they usually lack substantial demographic information. However, by matching administrative data to survey records, researchers can combine information on a vast array of demographic characteristics,

³ Validation studies of the PSID are numerous, and include Beckett *et al.* (1988) and Fitzgerald *et al.* (1998).

often including life histories (marriage and fertility histories, for example), with high-quality earnings and benefit receipt information.

Iams (1991) relies on the 1984 SIPP matched to administrative earnings and benefit data and focused on exits from the labor force for caregiving for members of the 1930 to 1949 birth cohorts. Haverstick *et al.* (2007) use data from the Health and Retirement Study (HRS) linked to administrative earnings records to explore related questions, with a particular focus on how to mitigate adverse effects of an increase in the Social Security early eligibility age on older workers with work limitations. They find that tying benefit claiming to years of service (and counting caregiving toward service years) would typically not be very helpful to workers who approach retirement in poor health.

Researchers have begun using administrative data on earnings—including the Continuous Work History Supplement (CWHS) and various matched files—for a variety of related applications, including examining income distribution, intragenerational mobility, and earnings volatility.⁴ Researchers from the Congressional Budget Office (2007) examine earnings volatility using data from CWHS, which they supplement with self-reports in SIPP. They conclude that year-to-year earnings volatility is substantial and arises from both voluntary choices and involuntary events, and that declines in macroeconomic volatility do not appear to have reduced volatility for workers. Importantly for this study, they also find that less educated workers have more earnings volatility than those with more education. These findings are consistent with other work that finds longer unemployment spells for those with less education (for example, Gottschalck 2006).

Extending this previous work, our study looks at education-specific labor force patterns and considers labor force interruptions for child care and other reasons (e.g., disability). We do not look at job tenure (i.e., time working for a particular employer) or job transitions per se, but rather focus strictly on earnings histories (whether one had earnings above a threshold, regardless of whether these earnings were with a series of employers).⁵

⁴ For example, Haider and Solon (2006) use the matched HRS data to explore the relationship between current and lifetime earnings. Utendorf (2001/2002) uses CWHS data from 1982 to 1994 to consider trends in earnings inequality. Kopczuk, Saez, and Song (2007) use Master Earnings file data (not linked to surveys) to characterize inequality and mobility since 1937.

⁵ The administrative data do not have consistent information on wage rates or hours worked, only on annual earnings (self-reports can supplement in those years where self-reports are available).

A particularly important contribution of this project is the cross-cohort comparisons. Recent research into low employment rates by men who did not complete high school (especially African Americans) underscores the importance of recent changes in career patterns (Edelman *et al.* 2006). At the same time, women of all education levels with young children are more likely to be working now than in the past, even if they are unmarried (Johnson *et al.* 2003; U.S. Department of Labor 2006). This suggests that combining information on different cohorts may be the best way to explore the persistence of career paths, and how it differs for men and women (Hungerford 2004). Policies that fail to account for these cohort changes may not achieve their intended effects.

2. Social Security Law and Policy Relevance

Future Social Security changes are likely to address its long-run fiscal deficit (OASDI Trustees 2007). Along the way, however, many proposals attempt to improve the program's adequacy, efficiency, or equity. Unfortunately, though, few policy prescriptions make improvements along all of these lines simultaneously, partly because these objectives often conflict. Trade-offs are often required when addressing simultaneously (1) fiscal balance, (2) fairness (i.e., treating similarly beneficiaries who have worked the same amount), (3) work incentives, and (4) adequacy for the most vulnerable beneficiaries.

Under a number of Social Security reform options geared at improving program performance along one or more of these four objectives, outcomes are quite sensitive to the character of workers' career paths. Such policies include alternative retirement ages, minimum benefits, and changes in the years counted for benefits (the current system uses an Average Indexed Monthly Earnings [AIME] with a limited computation period of 35 years).⁶

Retirement Ages: Changing the Social Security retirement age is a hot-button political issue. While there are several indications that such changes are politically unpopular, many policy analysts see merit in increasing the retirement age. Americans are living longer: since 1940 (not long after Social Security first started paying benefits), life expectancy at age 65 has increased by about four and one-half years for men and more than five and one-half years

⁶ AIME is defined as the average of one's highest years of indexed, Social Security earnings (e.g., covered earnings up to the taxable maximum), where earnings are indexed to the earlier of the year that one turns age 60 or two years before one becomes disabled or dies. AIME is used to compute the base benefit amount for workers (Primary Insurance Amount, or PIA). For details on AIME and PIA computations, see Social Security Administration (2007).

for women (Board of Trustees 2007). At the same time, many jobs are becoming less physically demanding, allowing older adults to remain in the labor force longer (Johnson 2004; Johnson *et al.* 2007). And, until recently, over the course of Social Security, people have been retiring even earlier while living longer. One can thus consider this issue as separable from whether total benefits increase or decrease under some reform.

Retirement age increases could allow the system to adjust to increased longevity (and, indeed, some analysts explicitly call for longevity indexing). Retirement ages are also important because they trigger incentives (like actuarial reductions for early retirement or credits for delayed retirement), and can send strong social signals about the appropriate time to retire and societal expectations for work and leisure in later life.⁷ Without retirement age increases, individuals likely will continue to respond to this signal spending ever increasing fractions of their adulthoods collecting public pension and health benefits. Early retirement in turn limits retirement incomes by spreading their benefits and other savings over more years and can strap younger generations with very high tax burdens to finance these benefits (see, for example, Shoven 2007). Furthermore, policies that discourage work or saving have additional costs—such as reductions in revenues to support the system—thus reducing the size of the average lifetime benefit that any given tax rate can afford.

Social Security has two key retirement ages. The early eligibility age (EEA) is the age at which an individual can first collect retired worker benefits, although at a reduced level. The normal (or full) retirement age (NRA) is the age at which an individual can collect unreduced benefits. Social Security's EEA is now set at age 62. The NRA has increased from age 65 (for those born 1937 and earlier) to 66 for those retiring this year, and will be 67 for those reaching age 62 in 2022 and later (born 1960 and later).

Under Social Security, retirement ages are fixed for every cohort, regardless of when people enter the labor force, a design feature that raises distributional concerns. Those who start their careers early (such as those who forego educational opportunities in order to help support their family) may end up working many years at arduous jobs and find that they are

⁷ Retirement ages that are too low, for example, could lead individuals who are not forward-thinking to leave the labor force earlier than they should to finance a comfortable retirement (i.e., before they have adequate savings), leaving them vulnerable to poverty later in life.

“worn out” when they reach their early 60s.⁸ A 2002 RAND study (Panis *et al.* 2002) suggests that between 5 and 20 percent of early Social Security claimants could be vulnerable to retirement age increases, and research on hiring discrimination against older workers suggests that women may have difficulty finding employment in later life (Lahey 2006).

Social Security’s disability programs—DI and the means-tested Supplemental Security Income (SSI) program—may meet the needs of many people physically incapable of working at older ages.⁹ Indeed, nearly 13 percent of men in their early sixties receive DI benefits. Fractions for women are a bit lower (about 10 percent), but rising as women work more and qualify for DI benefits. The difference in disability rates by education level is striking, with those with less education receiving DI and SSI disability benefits at much higher rates than those with more education (Table 1). For example, DI/SSI receipt rates are about eight times higher for women who are high school dropouts than for those with graduate school training, and around 30 percent of men who did not complete high school receive some disability benefits in their late 50s and early 60s. This differential suggests that the DI and SSI programs may address some of the needs of less-educated workers that are related to their limited physical capacity to continue to work (but not necessarily the issue of how to provide equity for those with long careers in the workforce). Significant fractions of these less-educated workers could still fall through the cracks because of the two programs’ strict impairment tests, SSI’s asset test, and DI’s recency of work test (Wittenburg and Favreault 2003).

Computation years: Social Security currently bases benefits for retired workers on the highest 35 years of earnings. Many have proposed increasing the computation period (to 38 or 40 years, for example) or totally uncapping the calculation algorithm (see, for example, Aaron and Reischauer 1998; Advisory Council on Social Security 1994-96; Kolbe and Stenholm 2002; Moynihan and Kerrey 1998; National Commission on Retirement Policy 1998; Steuerle and Spiro 1999). A major rationale for increasing computation years (besides the fact that is one way for the system to save money) is to increase work incentives at older

⁸ Many of these same concerns arise with those in their 50s, as well. Health issues do not suddenly arise at any particular age. (For data on age gradients in self-reported health status, see for example Table 60, NCHS 2007)

⁹ The DI program and disability component of SSI have strict tests, requiring workers to document inability to engage in substantial gainful activity due to a medically determinable physical or mental impairment expected to end in death or to last for a continuous period of at least 12 months. (The DI program also tests for recency of work, underlining the program’s motivation to replace lost income for regular, not intermittent, workers.)

ages. Allowing those who work more than 35 years to earn extra benefits also can improve equity. The current system now provides greater benefits for someone with 30 years of service at an average (indexed) annual wage of \$40,000 than to a person with 40 years of service at \$30,000 (see Steuerle and Spiro 1999). Goda, Shoven, and Slavov (2006) suggest some additional variations on computation years changes. Previous research has suggested that the impact of such reforms would differ by gender, race, and Hispanicity (Sandell, Iams, and Fanaras 1999).¹⁰

Caregiver credits: Some analysts propose that years spent out of (or less engaged in) the labor force while providing care—whether to children or elderly relatives—should count toward years of service/Social Security benefits (see, for example, Hartmann and Hill 1999, Lowey 2007). Under one proposal, the system would credit caregivers with a certain annual earnings level (for example, half the average wage). One argument for caregiver credits is that they would explicitly link benefits to care (rather than marital status, as with the spouse and survivor benefits current law provides). Because almost three-fifths of all women with children under age three are in the labor force (U.S. Department of Labor 2006), however, equity questions arise from giving credits only to individuals out of the labor force or working relatively few hours vis-à-vis those who provide care in other ways, e.g., through more equal division of both caregiving and paid employment between spouses.

Caregiver credits also raise many design issues, like what qualifies as a caregiving year (e.g., whether children need to be below some age, whether care to disabled elders qualifies, etc.), who should finance the extra benefits, and how a year of service is valued (minimum wage, half the average wage, etc.). Analyses suggest that caregiver credits by themselves might be more progressive than current law spouse benefits, and could especially benefit unmarried mothers who get no spousal or survivor benefits (Herd 2006, forthcoming, Favreault and Steuerle 2007).

Minimum Benefits: While the Social Security reforms just discussed primarily address equity and efficiency issues, minimum benefits focus on improving benefit adequacy. Minimum benefit proposals frequently use years of covered employment as a criterion for

¹⁰ Based on data from the 1991 SIPP matched to SSA earnings records, the analysts estimated that women, black men, Hispanic women, and those with least education and lowest lifetime earnings would lose the most (in relative terms) with computation years increases.

determining eligibility and benefit levels. Some recent proposals have required between 20 and 40 service years to qualify for a benefit, with increasing benefit levels with each service year. One core motivation for enhancing minimum benefits in Social Security is to increase the program's adequacy for workers with low lifetime earnings, given that substantial fractions of beneficiaries, especially among women, are still poor or near poor (see, for example, Herd 2005). Two of the three plans in the Presidents' Commission report (2001) incorporated a minimum benefit proposal as a backstop to risks associated with private individual, 401(k)-like accounts; however, the particular designs were projected to provide few benefits to people in the future because they required so many years of service at such high levels that in the end they were largely symbolic. Research suggests that design details, including required years of service, can make a big difference in whether a minimum benefit could alleviate poverty or low income (Favreault, Mermin, and Steuerle 2007).

3. Data and Methods

We use data from the 1996 SIPP matched to Social Security earnings, benefit, and mortality data (the Summary Earnings Records [SER], Detailed Earning File, Master Beneficiary Record, Supplemental Security Record, and Numident) through 2004 to describe career earnings for those born from 1935 through 1970.¹¹ Because the SER earnings start in 1951, we consider only people who turn age 16 (the minimum age for labor force entry, except in exceptional circumstances) in 1951 or later (i.e., persons born in 1935 and later) even though SIPP includes people who were born earlier. Later cohorts are more informative given the rapid changes in work patterns across cohorts and the likelihood that most Social Security changes would grandfather current beneficiaries and those likely to be entitled in the near future.

¹¹ We chose the 1996 SIPP panel over more recent panels (e.g., the 2001 SIPP) because of its much higher match rate to the administrative earnings data. Matched Current Population Survey data, another option, do not contain as much information about marriage and fertility histories as SIPP. We chose 1970 as the latest birth cohort to examine, as people in this cohort had reached age 28 in 1996 (and age 32 by the end of the SIPP panel), points at which we would have reasonably good estimates of their ultimate educational attainment. In an earlier version of this paper, we also included matched data from the Health and Retirement Study as a counterpoint to the SIPP data. We ultimately chose to rely on the SIPP alone because of the significantly higher match rate and larger sample size (using a person framework).

SIPP represents the non-institutional population and oversamples lower-income households likely to participate in transfer programs (Westat 2001).¹² Individuals in the SIPP were first interviewed in early 1996, with follow-up interviews every four months for up to three and one half years. We compare segments of older workers' career paths with younger workers' paths to draw implications for the future.¹³ Table 2 presents select descriptive statistics for the SIPP sample, contrasting those who reached age 55 or higher by 2004 (the focus of many analyses) with the larger sample (including younger individuals who are just 34 that year).

Our analysis tabulates years of OASDI-covered service, and shows how they vary by age, gender, earnings, education, and other important socioeconomic and demographic characteristics (childbearing histories, race, etc.). In sensitivity analyses, we consider the effect of different definitions of service years (e.g., four covered quarters compared to a minimum of half-time, half-year work at the minimum wage). We consider persons who have received DI (or SSI) benefits separately from those who have not to assess how well SSA disability programs protect long-career, low-wage workers reaching later life with physical or mental limitations.

Social Security does not cover all workers in the U.S. economy, and Social Security coverage has increased substantially over time—from 82.5 percent of civilian workers in 1955 to about 96.0 percent today (Committee on Ways and Means 2004).¹⁴ To avoid confounding uncovered employment with spells out of the labor force, we exclude long-term uncovered workers from many tabulations and control for the number of years in uncovered employment plus baseline (i.e., first available) uncovered work status in the regression analyses.¹⁵

The analyses account for several important measurement, censoring, and selection issues associated with these data, including incomplete matches to administrative records,

¹² Because of this oversampling, we use weights in all descriptive analyses.

¹³ Such comparisons complicate the analyses, as the populations differ in their survival experiences.

¹⁴ Federal employees hired prior to 1984, many state and local employees, and certain students do not pay OASDI payroll taxes, and their earnings do not count toward OASDI insured status or benefits. Individuals in uncovered employment differ from workers in the economy at large along a number of dimensions (for example, in recent years, uncovered workers have been disproportionately female), and the earnings of uncovered workers differ from the overall earnings distribution (Kawachi et al. 2007).

¹⁵ Detailed Earnings File (DER) data, which allow one to distinguish covered from uncovered work, are only available for the latter part of the period we examine (starting in about 1982). We combine SER and DER information to identify long-term non-covered workers. We use a threshold of five years of non-covered work

survey attrition, and mortality. Earnings records could not be found for about 14 percent of the SIPP sample. We do not know how or whether these differential match rates could affect these results. Also, some of our analyses, such as the evaluation of earnings through age 65, require special attention to representativeness due to factors like differential mortality by education and earnings. Similarly, certain race and education group comparisons at a single year of age late in life may rely on relatively small sample sizes. Because of these limits, our findings must be interpreted with caution. The appendix provides more information.

4. Descriptive Results

We begin by measuring work experience using average years of covered employment—defined as years of earnings greater than four OASDI covered quarters (in 2007, a quarter requires \$1000 in covered earnings)—to different ages (in 5-year steps). We choose a threshold of at least four covered quarters of earnings rather than, say, earnings greater than zero, for consistency with several other Social Security program rules and definitions.¹⁶

Birth Cohort and Gender: The SIPP data show that employment histories for women have increased steadily over time (Figure 1).¹⁷ (The number of individuals reflected by each data point differs substantially. At the first age, 30, we can represent more cohorts, while at later ages, we can only count up the experiences of members of those cohorts that have reached that age by 2004, the last year for which we have data.) At age 30, women in the latest cohorts (from the late 1950s and early 1960s) had on average worked about three and one half covered years more than their older counterparts (the 1935 cohort) had at the same age. By age 55, this differential increases to about four and one half covered years between the first (1935) and last cohorts (in this case, the late 1940s). If we were to extend the lines for some of the younger cohorts (from the 1950s and early 1960s) over the next decade or so, it is not difficult to imagine this age-55 difference increasing to seven or eight years from the earliest cohorts to the latest. The general pattern seems to be one of continuing increase for

from 1982-2004 for removing uncovered workers from the tabulation samples. In the regression analyses, we use the total number of uncovered work years from 1982 to the specified age plus a baseline (1982) measure.

¹⁶ A covered quarter is the minimum level of earnings required to gain credit toward insured status for Social Security. Four covered quarters designate a year of service (though the quarters do not always have to be earned in a calendar year, and since 1978 do not have to be earned in different calendar quarters), the designated eligibility level in some minimum benefit proposals (see Favreault *et al.* 2007 for a sample).

women born between the mid-1930s through about 1959, at which point age-specific cumulative covered work years roughly level off.

For men, there is no obvious difference in work histories across the cohorts (Figure 2). Men in virtually all cohorts have high average lifetime participation rates, but the 1935 and 1938 cohorts bound these estimates at all ages, with a maximum difference of about two covered work years at any age.¹⁸

Mean values for covered work years hide a lot of variability. A population could, for example, work an average of 20 years because everyone works 20 years, or because half the group does not work at all and the other half works every year for 40 years. To explore this sort of variation, we turn to distributions of work years and consider outcomes at age 60, when the career is substantially complete for many (Figure 3). The figure thus includes only people born between 1935 and 1944. The horizontal axis in this figure shows the number of covered work years, and the vertical axis the fraction of workers who have worked **at least** the given number of years.

The results show that the overwhelming fraction of men has covered earnings in most years of adulthood up to age 60. About half have worked at least four covered quarters in 38 years or more. The median age at which men reach 35 years of service (the current computation years threshold) in covered employment is 53 (author's calculations). For women, the work years distribution is much flatter, displaying more significant variation. In these older cohorts, only about 10 percent have worked for at least four covered quarters in each of 38 years or more, while about 19 percent have worked fewer than ten covered years (compared to less than five percent among men).

Education: We next consider patterns by educational attainment and age for average number of years worked in covered employment. These results exclude immigrants because the immigrant educational distribution differs from the distribution for native-born individuals and immigrants' earnings histories are often shortened because many arrive in the U.S. as adults. Because (as Table 1 showed) the prevalence of disability program participation decreases markedly with education, we also exclude those with a history to date of benefit receipt (from either DI or SSI for the disabled, which impose the same medical criteria for

¹⁷ See, for example, DiCecio *et al.* (2008) for a review of explanations of the changes in women's work.

¹⁸ The vertical scale differs for the women's and men's graphs because the men's means are so much higher.

disability, despite their differing resource and work experience tests).¹⁹ The rationale is that those with limitations that prevent them from working should not be expected to have as lengthy careers as those without limitations, and Social Security has never imposed the actuarial reduction for early retirement for those receiving benefits from DI.²⁰ This suggests that a service years program would also not be geared toward this population. We also exclude from the sample those with long-term spells in uncovered employment, as Social Security reforms rarely focus on workers with substantial experience (and pension coverage) in work outside the Social Security system.²¹

For women, those without a high school diploma are less likely to work than other women at all the ages we examine (Figure 4).²² Women have on average worked about two and one quarter years fewer than the next closest group at age 25, and five and one quarter fewer years at age 55. Of course, these less-educated women are more likely to be in the older cohorts, so the chart to some extent reflects cohort patterns observed in the prior chart. Women with at least some college work a bit more on average than high school graduates at all ages after 25. At the older ages, the sample sizes for the more educated groups of women become relatively small.

For men, those with less than a high school education similarly lag in covered work years (Figure 5). High school graduates appear to be stronger lifetime participants than those without a diploma or with a lot of education (most notably more than college), but relative to women there is greater similarity across the education groups. There is a difference of about two and one quarter work years at age 55 and then three and one quarter years at age 65 between those who did not complete high school and those with graduate school experience.

We should bear in mind that the group with less than a high school education is a far smaller portion of the population in the later cohorts than in the earlier cohorts, a factor that

¹⁹ We measure whether individuals have received DI or SSI through 2004. Some younger individuals in the sample will receive disability benefits later in their careers.

²⁰ We discuss incremental effects of DI beneficiary receipt in more detail below in the regression analyses.

²¹ Exceptions include proposals to integrate newly hired state and local workers into Social Security or changes to the Windfall Elimination Provision and Government Pension Offset.

²² The 1996 SIPP data do not allow us to readily distinguish those with a General Equivalency Diploma (GED) from those with a more traditional high school diploma. Analyses based on the Health and Retirement Study (available upon request) suggest that there are significant differences in work years achieved between these groups, consistent with other work about the selectivity and economic outcomes of GED recipients (e.g., Cameron and Heckman 1993).

we explore further in the regression analyses.²³ Also, corrections for mortality and disability differ across the estimates, and could increase the size of the difference between education groups. Because the least-educated individuals with the shortest work histories are also among those most likely to die relatively early, they may appear in the estimates at age 35, but not, say, at age 60.

Examining the full distributions of work years at age 60 by education, we find that a substantial fraction of less educated workers do have long careers despite the group's relatively low mean work years (Figures 6 and 7). Again, the figures exclude immigrants, individuals with disability benefits, and those with long-term uncovered employment. Among women in this cohort, only about 10 percent in the low-education (less than high school) group have worked more than 35 years (Figure 6). But among men, more than 62 percent of those with less than a high school education have worked more than 35 years, and a majority (over 52 percent) has worked 40 years (Figure 7). A substantial fraction—about one in eight—of the most-educated male workers (those with more than a college degree) have worked just 31 to 35 years, compared to eight percent among high school graduates. Notably, the latter is the group on the curve's frontier (i.e., with the highest number of people with at least that many work years) at virtually all the work levels examined.

Earnings: Education, of course, imperfectly predicts job characteristics (like how rewarding or physically demanding it is likely to be). To supplement the analyses of education, we look at relatively simple earnings measures to try to better gauge the work histories of economically vulnerable workers. Specifically, we consider the average of the two highest earnings years in any employment (both covered and uncovered employment) in the career to date, expressed as a percentage of the national average annual wage used for Social Security indexing (\$38,651 in 2006).²⁴ We cross-tabulate the work years distribution at age 60 by this characteristic, once more for the native-born population and excluding individuals with long-term uncovered employment and disability program participation.

Figures 8 and 9 show how average covered work years vary by earnings for women

²³ About 18 percent of the sample has less than a high school education in the 1935-1947 cohorts, compared to about 13 percent in the 1935-1970 cohorts, a decline of over 25 percent.

²⁴ A longer measure (for example, the average of the 5 highest years) might better represent earnings capacity, but we have opted for a low bound in order to minimize the number of cases where people did not have at least this many years in which we can observe annual wages.

and men, respectively. For women (Figure 8), the percentage with total work years at higher levels increases systematically with each increase in the maximum wage until women reach a two-year average high wage of about one and one quarter times the national average wage, at which point the distribution of years worked starts to look the same for the different earnings groups. For men (Figure 9), the pattern in work years by earnings is qualitatively similar, though with a different point at which the convergence across our earnings groups occurs. Those with maximum earnings of one and one half times the average wage and more seem to have relatively similar work years distributions, while below that level lower rates of long-duration work accompany each reduction in earnings level. Looking at this in another way, the SIPP data suggest that only relatively modest fractions of workers have long work histories at consistently low wages, even after accounting for disability participation. For men, only about 12 percent of those whose highest total earnings were between one-half and three-quarters of the average wage worked 35 or more years, while for women less than 5 percent of those in this earnings group reached 35 years. For those who earn less than half the average wage at a maximum, the fractions are even lower.

Number of children: Each additional child depresses women's year of paid work in the 1935-1947 cohorts (Figure 10).²⁵ The SIPP data suggest that at age 50 women without children worked on average about five and one-half years fewer than all men. For a woman with two children, the gap at age 50 (with the average man) is an additional 4.5 years (for a total of almost ten years). By age 60, these same gaps are 7.6 years between the woman with no children and the man, with an additional 4.75 years for the women with two children, for a total gap of over 12 and one quarter years.

In later (1948-1958) cohorts, both the effect of children and the effect for being a woman on work years forms a pattern similar to earlier cohorts, though with a reduction in absolute size (Figure 11).²⁶ For instance, the gap at age 50 between the woman without children and the average man is now just over two years (down over three years from 5.4 years earlier), and the corresponding gap for women with two children is closer to 6.5 years (down about three and a half years from 9.9 earlier).

²⁵ The effect's direction is unclear: smaller family sizes may contribute to or result from women's increased participation.

²⁶ For this graph, we limit the population to individuals born between 1948 and 1958 to allow for relatively complete fertility histories by the end of the survey.

Regardless of means, small but significant minorities of women with at least one child in the 1935-1947 cohorts work virtually all years (Figure 12). For example, among women surviving to age 60, just over one-fifth of women with one child and almost 15 percent of those with two children had worked at least four covered quarters for more than 40 years. We expect that in later birth cohorts these fractions will grow considerably.

Race: Labor force participation also varies by race. In the 1935-1970 cohorts, the work histories of native-born blacks differ from those of native-born non-blacks (Figures 13 and 14). (In the figures, we show the incremental effect of adding the DI/SSI restriction.) Disaggregating by gender, the data reveal that African-American women on average work more years in covered employment than other women. After accounting for differential DI/SSI receipt, African-American women have logged about two years of additional covered work at age 50, and this climbs to almost four years at age 60. (Small sample sizes are a potential concern here, as this last point includes relatively few cohorts). For men, the pattern reverses. Differences between blacks and non-blacks narrow when considering only those not receiving disability benefits, but remain between two and one quarter years at 50 and three and three-quarters years at age 60.²⁷

5. Regression Results

Differences in work history, covered employment experience, and disability can be found along a whole range of variables, such as gender, education, race, and cohort. Ordinary Least Squares (OLS) regression analyses provide a way to summarize some of these relationships in a compact form.

Table 3 shows the simple OLS regression coefficients from SIPP for education's effects on covered work years through the selected ages, for women (the top panel) and men (the bottom panel). Control variables in the models include cohort (coded categorically), race

²⁷ Mortality and health effects may play a significant role in this. At age 60, a white man can expect to live 2.7 years longer than an African-American man (20.9 years, compared to 18.2 years) (Mininio *et al.* 2007). The corresponding difference for women is narrower, but still sizable at 1.9 years (24.1 compared to 22.2). So if we had measured work years by the *percentage* of expected adulthood worked by age 60, the black-nonblack differential would decrease for men and increase for women. Analogous considerations could be made for the educational comparisons (given that the more educated live longer than the less educated) and the gender comparisons (because women live longer than men). This raises the issue of how Social Security's annuitization affects its redistribution (and how alternative approaches might account for differential mortality in different ways). These are interesting questions for further research, but beyond the scope of the current paper, which assumes that under the proposals OASDI would retain the same basic annuitization structure.

and ethnicity (dummy variables for blacks and Hispanics, to capture labor market discrimination [Bertrand and Mullainathan 2004] and other factors), immigrant status and years of adulthood spent outside the U.S. (for immigrants), years of non-covered work experience (after 1981, plus an indicator for baseline non-coverage status in 1981), and number of children (coded as dummy variables to allow for non-linearities).²⁸ Separate models add a control for duration of DI/SSI receipt. In all models, we can interpret the coefficients as the number of additional years of employment for the members of the education group (relative to the reference group of high school graduates, up to the selected age, assuming survival), all else equal.

For women, those with less than a high school education work less than other education groups in the SIPP after taking into account the control factors. The shortfall ranges from three and one half years at age 50 (after considering time on DI/SSI) to five and one half years at 62 (not considering DI/SSI), relative to high school graduates (the reference category and largest group). Incorporating DI/SSI tends to reduce this education effect for the least educated women by about one year.²⁹ All else equal, those who attended graduate school work the most (between three and five years more than the high school graduates), followed by those with some college (but not a college degree), who work about two years more. At the older ages, covered work years for women who are college and high school graduates do not differ significantly from one another.

For men, the many negative coefficients indicate that high school graduates (the reference category) often work more than other educational groups in the analyses once we control for other factors. At all ages, those with less than a high school education work the least, logging an average of one and three-quarters to three and three-quarters years fewer

²⁸ The rationale for including the number of children is to allow us to think about service years in a broader way by incorporating time out of the labor force to care for children. Regression estimates that exclude variables about children are available upon request (for males, the signs on the coefficients for children are typically positive). We do not include marital status or marital history variables in these regressions, because marriage should not affect the ability to provide service years to the same extent that children do. We also do not consider many other variables (such as defined benefit pension coverage that may provide strong incentives to leave the labor force relatively early). Additional regressions include an indicator for health status (specifically fair or poor health at the last SIPP interview) in addition to the DI/SSI controls, though this is not measured well, so we do not present the results here.

²⁹ Integrating health status (as described in note 28) further reduces the effect of education for those who did not complete high school, though the effect remains large and significant for men and women. The health effect itself is sizable (again for both men and women), suggesting potential importance for work histories of health problems that limit work that are not covered under DI or SSI.

than high school graduates, all else equal. The effect of disability benefit receipt for less educated men amounts to about 1.5 years. At the younger ages (50 and 55), the most educated (those with more than college) have also worked significantly less than the high school graduates, but this effect dissipates with age, suggesting some “catching up.”

These analyses could be masking the increasing selectivity of the less than high school group over time and other rapid changes in the educational distribution of the population (the cohort control indicator will pick up intercept shifts, but not shifts in education’s effects). We therefore estimate models where we interact the less-than-high-school-education indicator with cohort indicators (Table 4). (The control variables remain the same as in the previous analyses.) We see that the effect of having low education, while persistently negative across all cohorts for both men and women even when we account for DI, appears to **increase** across the successive cohorts, as evidenced by the negative and significant coefficients for the interaction terms for later cohorts. That is, long careers among the relatively less educated appear to be increasingly less common.

To summarize, the regression analyses indicate that among near retirees, men with at least a high school education tend to have relatively similar, strong covered work histories. While their work histories do not always differ statistically from those for male college graduates, male high school graduates outwork men with graduate or professional school education until their early 60s, when the more educated appear likely to close the small gap. The results suggest that this same pattern will not persist to the same degree in future cohorts. The decline in work years among the least educated men raises special concerns, although these concerns might be as much directed at helping them in their work years as in their retirement years. The least educated women have also worked the least. Those with post-graduate education have worked the most, followed by those with some college.

Because the Social Security earnings records do not have complete information prior to 1951, we have focused on cohorts who are just reaching the early eligibility age and normal retirement age in 2004, the last year for which we have data. Considering differences in covered work by education at later ages can help determine to what extent those with higher education levels might “pull ahead” of their less educated counterparts (see, for example, Haider and Loughran 2001). When we tabulate the SIPP data, we find that gaps in covered work by education level increase at the later ages beyond those that we have shown (Table 5).

For example, those who did not complete high school are the least likely to be working for both men and women at each age between 65 and 68. These findings suggest that the more educated workers will likely either close the gap with other workers (in the case of men) or pull further ahead where they already lead in covered work years (in the case of women).

6. Sensitivity Analyses

The preceding analyses defined a work year as one in which an individual had at least four covered quarters of earnings. One could of course define an earnings year many other ways. We consider two alternative ways of defining an earnings year—a year with any earnings and a year with earnings representing at least half-time, half-year work at the minimum wage (520 hours per year, equivalent to 20 hours per week for 26 weeks). These alternative thresholds are relevant for Social Security policy, as some have suggested defining a work year as a multiple of the minimum wage to measure substantial commitment to the labor force. Appendix Figure A.1 illustrates how these measures have varied over time.

The results are relatively similar in qualitative terms when we move from the four-covered-quarters concept to any earnings or a minimum-wage based definition (Table 6).³⁰ In nearly all cases, the direction of the effect on work years does not differ, but the size does.³¹

Importantly, the intercepts in the models appear to differ by about two years for men between the least restrictive and most restrictive service-year definitions and by closer to three years for women. It is not surprising that the patterns shift more for women than for men, given their lower earnings (meaning that their earnings are more likely to be close to any minimum threshold). Thus, benefit eligibility and levels could change quite markedly with different earnings thresholds and definitions of a service year.

7. Policy Implications

These results show that basing retirement age on years of service would not protect many of those with less than a high school education from negative effects of an increase in the retirement age. Those with less than a high school education have the shortest work

³⁰ Results from all of the analyses (both descriptive and regression) with each of these alternative measures (and an additional measure of at least one quarter of OASDI coverage) of work years are available upon request.

³¹ For example, the effect of graduate school, which is statistically significant and negative with a minimum wage threshold declines and is no longer statistically significant with thresholds of either zero or four covered quarters.

histories, even when we take disability program participation into account. For men with a high school education, years of work do not differ greatly from those with a college education, especially at older ages. For women, those with more than a high school education outwork those with just the high school diploma. If the goal is to target low-wage workers more broadly, then basing retirement age on a service-years formula, barring other adjustments, could reduce the relative benefits of women who on average have both fewer years of service and lower incomes than men.

Heterogeneity is significant, however, so analysts need to look beyond average effects. The majority of men without a high school diploma, for example, still work many years under Social Security definitions, so could receive some relief under a variety of benefit formula adjustments (for example, bonuses for work years above a threshold).

Increasing computation years might improve work incentives and such inequities as higher benefits for those with 30 years of service at \$40,000 than 40 years at \$30,000. By itself, it is hard to say what this does for the relative benefits of women, who work fewer years on average but also benefit more from spousal and survivor benefits. Suffice it to say that other adjustments, such as a minimum benefit or change in the benefit formula, could be used as an offset to a computation years change to achieve some progressivity goal.

This study does suggest that caregiver credits would increase benefit levels more for women than men—though full examination of this issue requires an investigation of spousal and survivor benefits. But, as in the prior cases, once one looks at distributions rather than averages caregiver credits can seem less well targeted. Clear equity issues arise since many women and men who raise children also work outside the home. And the fraction performing both roles is increasing.

The descriptive results on lifetime earnings levels and work years repeat what prior research has shown with respect to minimum benefits: design really matters. Basing minimum benefits on substantial service-year requirements may help low-wage males regardless of education, but for women in and out of the work force, other changes—for example counting fewer years in the basic formula to qualify for a minimum or perhaps adding some minimum number of years of work for childrearing (e.g., five years) in determining eligibility for a minimum—may be required if the primary goal is progressivity.

All of these potential policy changes interact with spousal and survivor benefits, so further analysis is required. But we are cautioned about basing various OASDI eligibility criteria solely on high service year requirements.

8. Conclusions

Our analyses underscore four main points: First, even if one excludes those who receive disability benefits, years of work vary significantly among and within different subgroups of the population. For both men and women, those who did not complete high school work fewer years on average. For men, high school graduates reach target years of service earlier than those who went beyond college, but the gap with the college educated is relatively modest (and at later ages may not differ from zero). For women, employment history clearly rises with education, especially for those who attended graduate school and, to a lesser extent, those with some college.

Second, these patterns are changing fairly rapidly across cohorts, so that what might be good policy for today's near retirees may be less appropriate for future retirees.

A third finding is troubling: the relatively low employment rates of less-educated people in the more recent cohorts. This suggests the need for new or different types of initiatives among the most disadvantaged—attacking the problem at earlier ages rather than dealing with its consequences at later ages.

Finally, definitions of a work year—and other specifics of how a reform is parameterized—matter a good deal in designing policies. Simply basing retirement age on years of service, for instance, is likely to meet goals of neither progressivity nor fairness. Even policy options that might work well for a group on average may not work well for many in that group who are not average. This implies that a policy option often needs to be considered as part of a larger package of changes, which can offer greater opportunity to build in offsetting adjustments in order better to reconcile competing objectives.

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Tables and Figures

Table 1.
Percent of Adults Ages 51-64 Currently Receiving DI or SSI Benefits
by Sex and Education, 2004

	Men	Women
Less than high school	30.5	28.0
High school	12.5	11.0
Some college	9.3	8.3
College degree	4.0	2.9
Post-college	1.6	3.3

Source: Authors' calculations from 1996 Survey of Income and Program Participation matched to benefit (Master Beneficiary File/Supplemental Security Record) and mortality records (Numident).

Notes: Sample is restricted to those with SER match who survive to 2004. Estimates are weighted to account for SIPP's oversampling of households in areas with high poverty concentrations.

Table 2.
Characteristics of the SIPP Sample, by Birth Cohort

	Birth cohort	
	1935-1947	1935-1970
Percent with any SER match	86.6	85.5
<i>Mean characteristics (Percent)</i>		
Female	51.6	52.4
Less than high school	18.1	13.3
High school graduate	32.2	31.0
Some college	25.9	30.2
College graduate	13.3	17.3
Post college	10.5	8.1
Number of children	2.4	1.8
Foreign born	9.7	9.8
Long-term uncovered worker	6.0	4.3
Health is fair or poor	20.08	11.7
Health status is missing	0.2	0.3
N (before SER restriction)	10,571	41,725
N (with SER match, no missing data on key variables)	9,200	40,352

Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records.

Notes: Percents may not add to 100 due to rounding. Long-term uncovered workers are defined as those with five or more years in which all earnings were in a job not covered by Social Security. Estimates are weighted to account for SIPP's oversampling of households in areas with high poverty concentrations.

Table 3.
OLS Regression Coefficients for Education Effects on Covered Work Years to Various
Ages, with and without Controls for Disability Benefit Receipt and Duration

<i>WOMEN</i>								
Age	62		60		55		50	
	1935-1942		1935-1944		1935-1948		1935-1954	
Birth Cohorts	Yes	No	Yes	No	Yes	No	Yes	No
<HS diploma	-4.18***	-5.46***	-4.07***	-5.26***	-4.11***	-5.06***	-3.55***	-4.41***
High school	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Some college	2.16***	2.39***	2.11***	2.27***	2.03***	2.24***	1.88***	2.02***
College grad	0.79	1.31	1.04	1.47*	0.99*	1.42***	1.41***	1.80***
Post-college	4.31***	4.94***	3.43***	4.00***	3.34***	3.94***	2.93**	3.48***
Adj. R ²	0.2448	0.2063	0.2512	0.2128	0.2888	0.2518	0.3187	0.2824
N	2,807		3,667		6,467		9,694	

<i>MEN</i>								
Age	62		60		55		50	
	1935-1942		1935-1944		1935-1948		1935-1954	
Birth Cohorts	Yes	No	Yes	No	Yes	No	Yes	No
<HS diploma	-1.80***	-3.59***	-2.32***	-3.89***	-2.22***	-3.63***	-1.77***	-2.97***
High school	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Some college	0.05	0.26	0.00	0.14	0.28	0.50*	0.34*	0.55**
College grad	-0.49	0.39	-0.53	0.03	-0.25	0.28	-0.02	0.46*
Post-college	-0.10	0.72	-0.31	0.34	-0.86**	-0.25	-0.84***	-0.25
Adj. R ²	0.5664	0.4577	0.5730	0.4699	0.5781	0.4941	0.5603	0.4792
N	2,509		3,374		5,894		8,836	

Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/ Master Beneficiary File/ Supplemental Security Record and Numident through 2004.

Notes: An earnings year is defined as one with at least 4 covered quarters of earnings. "Yes" column includes controls for both incidence and duration of DI and/or SSI. Other controls include cohort, ethnicity (Hispanic/Not Hispanic), immigrant status and duration in U.S. (for immigrants), years of uncovered employment (since 1981, plus 1981 status), race (black/non-black), and number of children. Sample is restricted to those with SER match who survive to selected age.

***=p<0.001; **=p<0.01; *=p<0.05

Table 4.
OLS Regression Coefficients for Education Effects on Covered Work Years to Various
Ages, Interacting Education < High School with Cohort, with Controls for Disability
Receipt and Duration

<i>WOMEN</i>			
Age	60	55	50
Birth Cohorts	1935-1944	1935-1948	1935-1954
<HS (any cohort)	-3.96***	-3.03***	-1.76***
<HS * 1940s cohort	-0.22	-1.70***	-1.98***
<HS * 1950s cohort	n/a	n/a	-3.46***
High school	Ref	Ref	Ref
Some college	2.10***	2.01***	1.85***
College grad	1.04	0.98*	1.38***
Post-college	3.43**	3.33***	2.91***
Adj. R ²	0.2511	0.2894	0.3207
<i>N</i>	3,667	6,467	9,694
<i>MEN</i>			
Age	60	55	50
Birth Cohorts	1935-1944	1935-1948	1935-1954
<HS (any cohort)	-1.96***	-1.46***	-0.75*
<HS * 1940s cohort	-0.72	-1.15*	-1.08*
<HS * 1950s cohort	n/a	n/a	-1.93***
High school	Ref	Ref	Ref
Some college	0.00	0.26	0.33*
College grad	-0.53	-0.25	-0.03
Post-college	-0.31	-0.87**	-0.84***
Adj. R ²	0.5731	0.5785	0.5610
<i>N</i>	3,374	5,894	8,836

Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/ Master Beneficiary File/ Supplemental Security Record and Numident though 2004.

Notes: An earnings year is defined as one with at least 4 covered quarters of earnings. Model includes controls for both incidence and duration of DI to the select ages. Other controls include cohort, ethnicity (Hispanic/Not Hispanic), immigrant status and duration in U.S. (for immigrants), years of uncovered employment (since 1981, plus 1981 status), race (black/non-black), and number of children. Sample is restricted to those with SER match who survive to selected age.

n/a= not applicable

***=p<0.001; **=p<0.01; *=p<0.05

Table 5.
Fraction with Any Covered Work Earnings at Older Ages, 2004

<i>WOMEN</i>				
Age	68	67	66	65
<HS diploma	0.068	0.124	0.227	0.222
High school	0.318	0.280	0.304	0.392
Some college	0.166	0.283	0.374	0.372
College grad	0.179	0.367	0.387	0.414
Post-college	0.368	0.500	0.277	0.640
<i>MEN</i>				
Age	68	67	66	65
<HS diploma	0.194	0.126	0.327	0.383
High school	0.392	0.431	0.361	0.357
Some college	0.374	0.340	0.453	0.473
College grad	0.413	0.425	0.556	0.680
Post-college	0.471	0.361	0.467	0.653
<i>N</i>	567	558	636	703

Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age. Estimates are weighted to account for SIPP's oversampling of households in areas with high poverty concentrations.

Table 6.
Sensitivity Analysis of Work Years to Age 60 (1935-1944 cohorts): SIPP Education Coefficients under Different Definitions, with Controls for Disability Participation

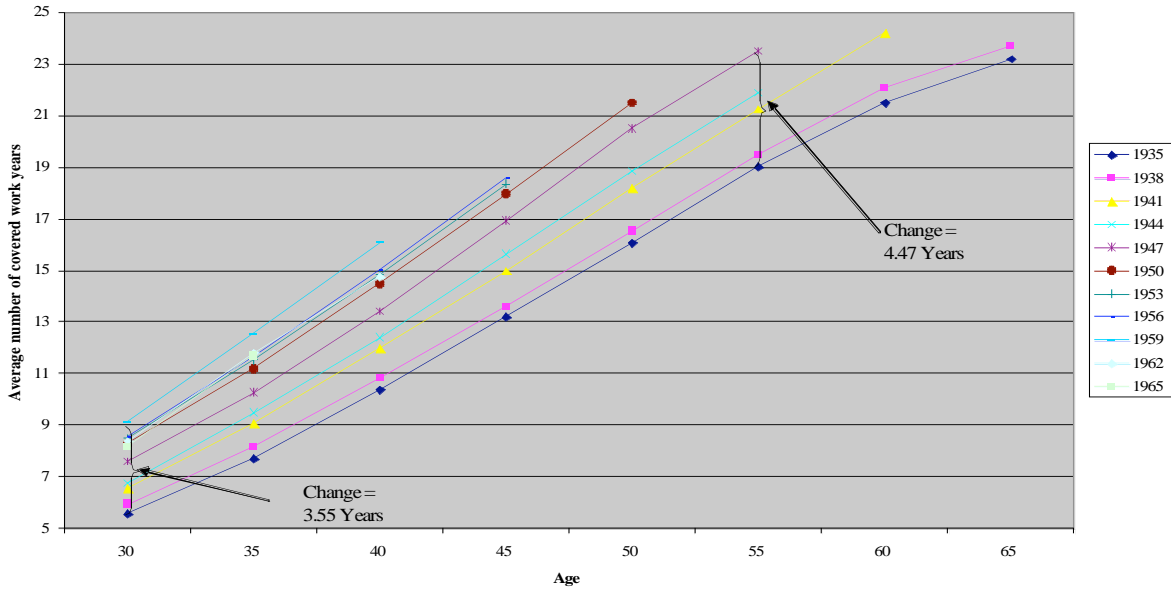
	OLS Regression Coefficients					
	Men			Women		
	Any earnings	At least 4 CQ	Minimum wage	Any earnings	At least 4 CQ	Minimum wage
Intercept	37.717***	36.611***	35.747***	29.840***	28.091***	26.711***
<High schl	-2.053***	-2.316***	-2.580***	-3.744***	-4.065***	-3.978***
Some college	0.105	0.002	-0.035	2.123***	2.106***	2.064***
College graduate	-0.394	-0.526	-0.935*	1.131	1.043	0.910
Graduate school	-0.260	-0.308	-0.950*	3.598***	3.430***	3.380***
<i>N</i>		3,374			3,667	
Adj. R ²	0.5978	0.5730	0.5571	0.2646	0.2512	0.2497

***=p<0.001; **=p<0.01; *=p<0.05

Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Numident/Master Beneficiary File/Supplemental Security Record through 2004.

Notes: Reference category is high school only or GED. Control for DI/SSI includes both presence and duration. Other control variables include number of children, race/ethnicity, cohort, immigrant status and duration in U.S. (for immigrants), years of uncovered employment (since 1981, plus 1981 status). Sample is restricted to those with SER match who survive to age 60. CQ=covered quarter.

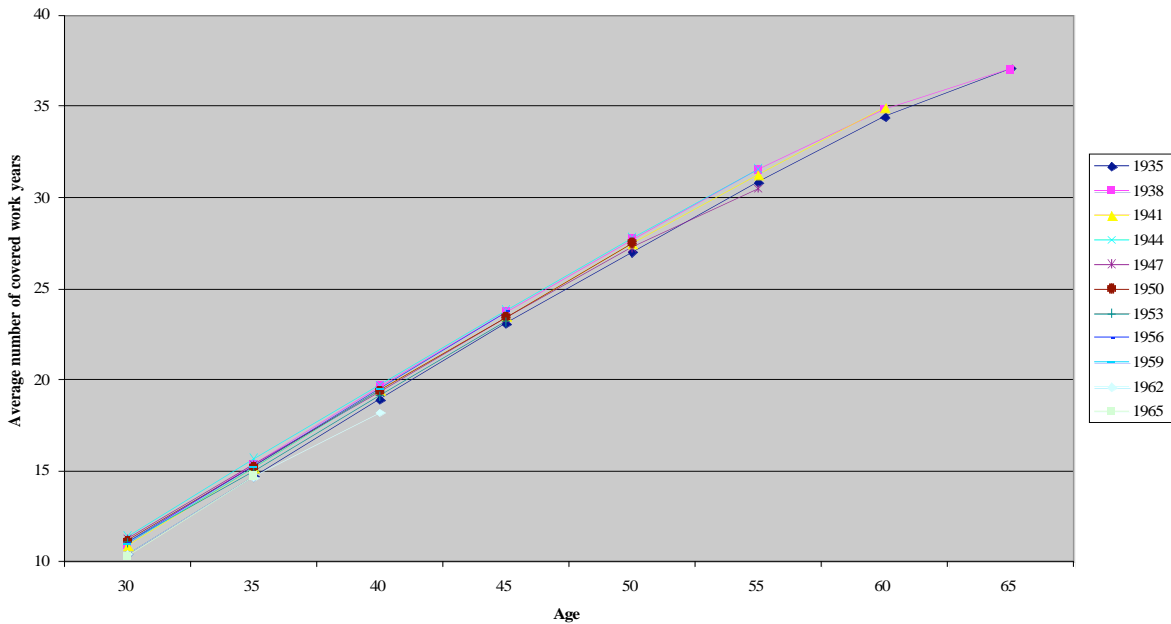
Figure 1. Average Covered Work Years (Defined as Earnings of at Least 4 Covered Quarters) to Selected Ages for Women by Selected Birth Cohorts (1935-1965)



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

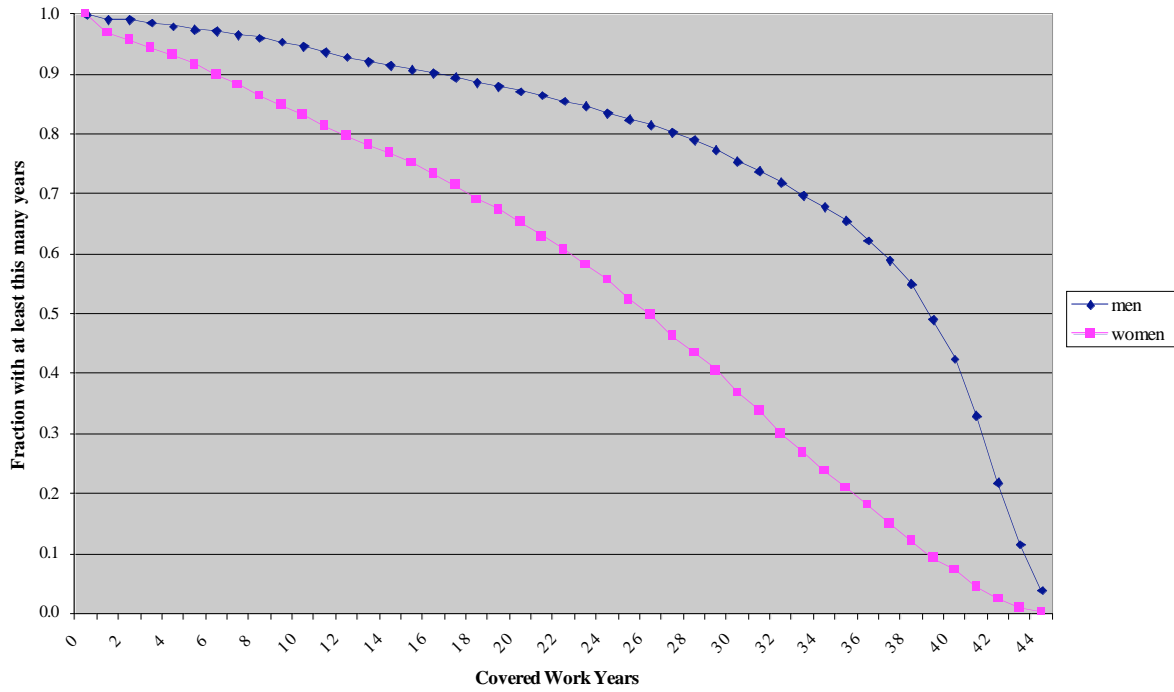
Figure 2. Average Covered Work Years (Defined as Earnings of at Least 4 Covered Quarters) to Selected Ages for Men by Selected Birth Cohorts (1935-1965)



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

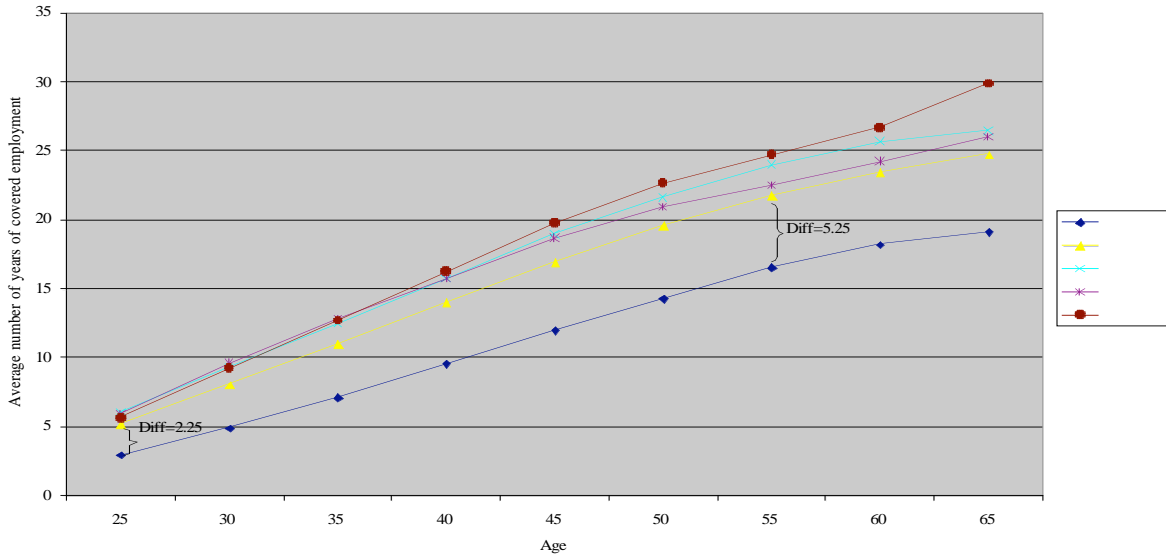
Figure 3: Cumulative Distribution of Covered Work Years (Defined as Earnings of at Least 4 Covered Quarters) for Those in the 1935-1944 Birth Cohorts Surviving to Age 60, by Sex



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to age 60.

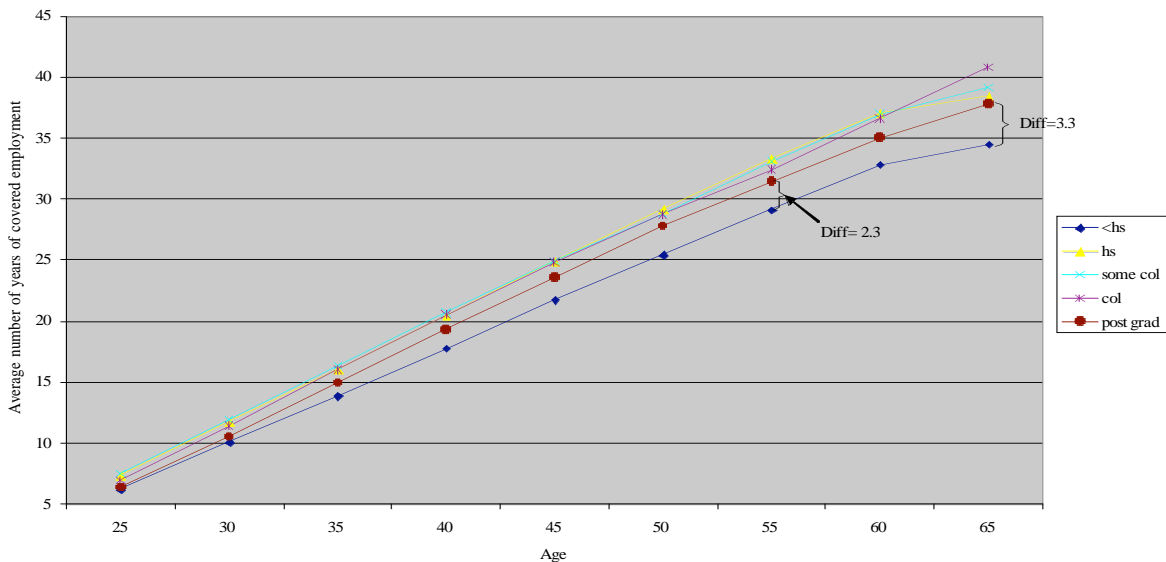
Figure 4. Average Work Years (Defined as at Least 4 Covered Quarters) at Various Ages for Native-Born Women in the 1935-1970 Birth Cohorts who Have Never Received DI or SSI and Have Not Had a Long Recent Spell in Uncovered Employment, by Education



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

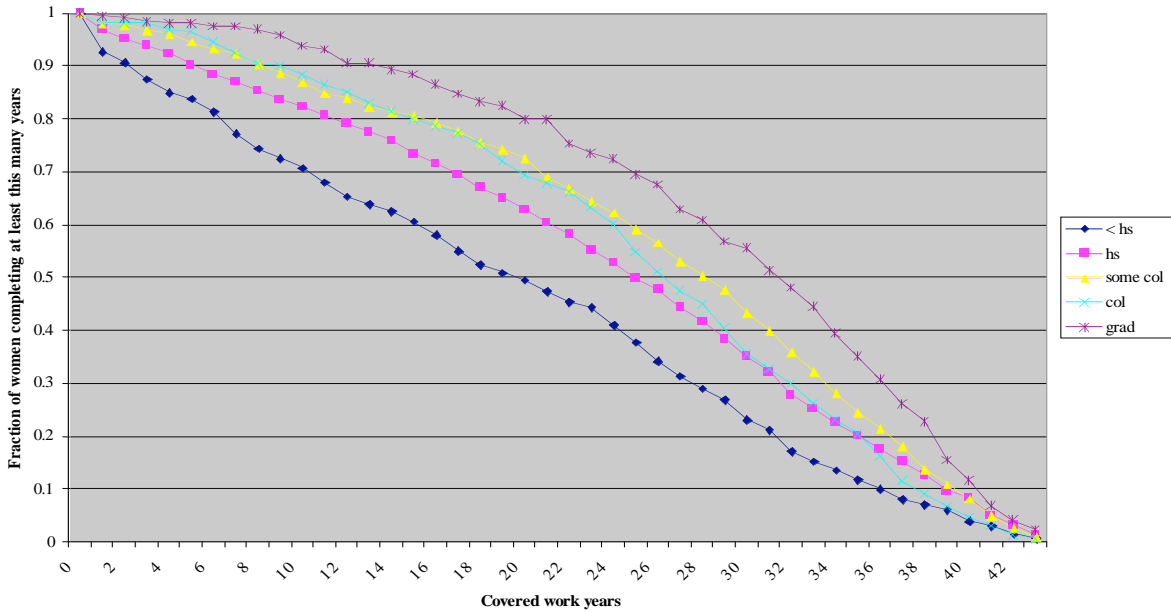
Figure 5. Average Work Years (Defined as Earnings of at Least 4 Covered Quarters) at Various Ages for Native-Born Men in the 1935-1970 Birth Cohorts who Have Never Received DI/SSI and Have Not Had a Long Recent Spell in Uncovered Employment, by Education



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

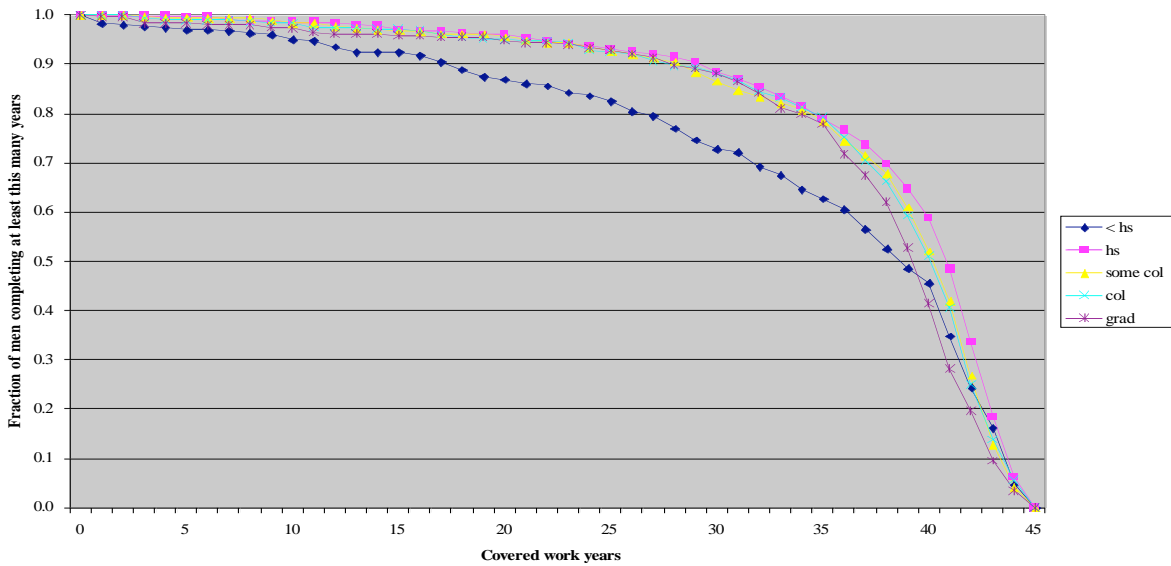
Figure 6. Native-Born Women's Covered Work Years (Defined as Earnings of at Least 4 Covered Quarters) to Age 60, Excluding Those who Have Received DI/SSI or Have Had a Long Recent Spell in Uncovered Employment, by Education (1935-1944 Birth Cohorts)



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to age 60.

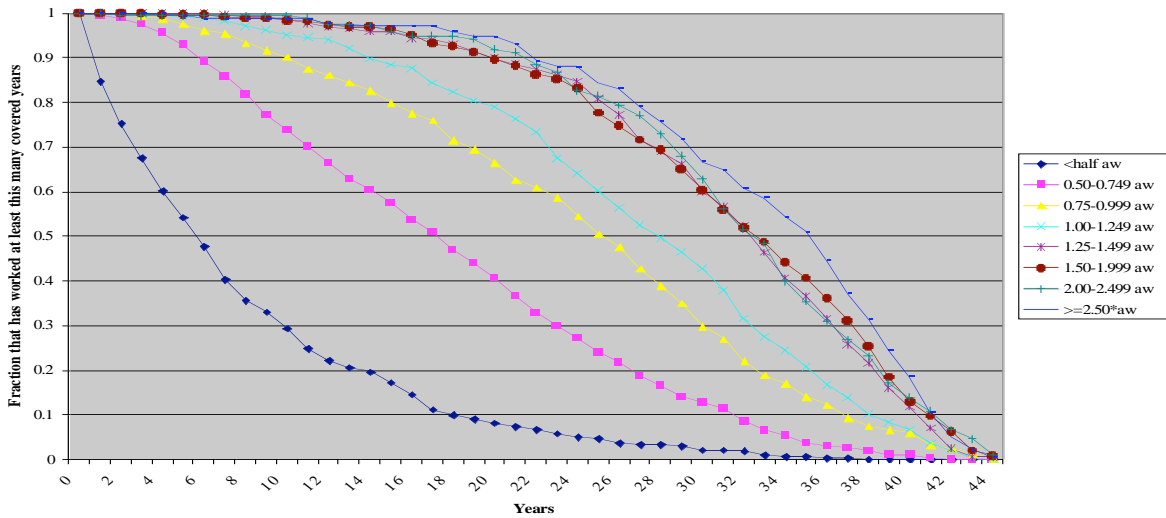
Figure 7. Native-Born Men's Covered Work Years (Defined as Earnings of at Least 4 Covered Quarters) to Age 60, Excluding Those who Have Received DI/SSI or Have Had a Long Recent Spell in Uncovered Employment, by Education (1935-1944 Birth Cohorts)



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to age 60.

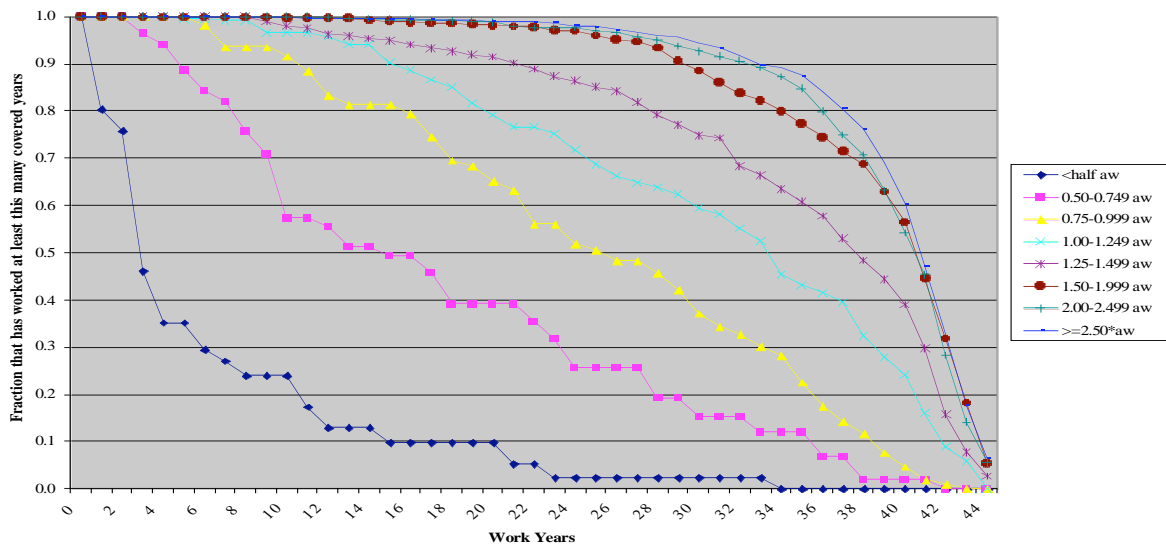
Figure 8. Cumulative Covered Work Years (of at Least 4 Covered Quarters) at Age 60 for Native-Born Women Surviving to 60 by Maximum Total Earnings, Excluding Those who Have Received DI/SSI and Those in Long-term Uncovered Employment



Source: Authors' calculations from the Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Notes: Sample is restricted to those with SER match who survive to age 60. We define maximum total earnings as the average of the highest two years of earnings (including uncovered earnings). Aw=National average annual wage.

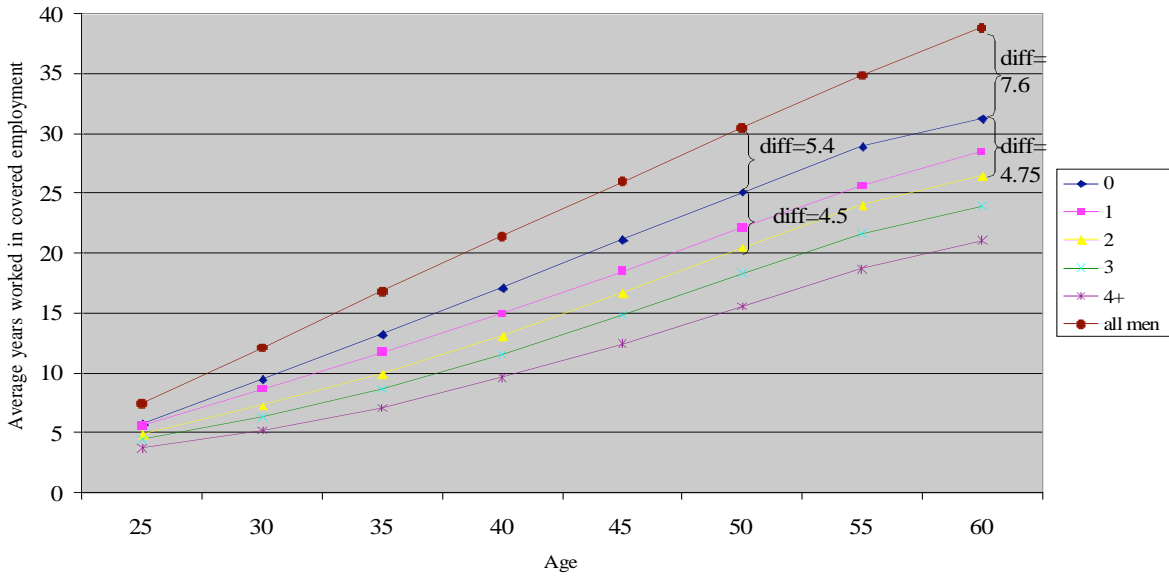
Figure 9. Cumulative Covered Work Years (of at Least 4 Covered Quarters) at Age 60 for Native-Born Men Surviving to 60 by Maximum Total Earnings, Excluding those who Have Received SSI/DI and Those in Long-term Uncovered Employment



Source: Authors' calculations from the Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Notes: Sample is restricted to those with SER match who survive to age 60. We define maximum total earnings as the average of the highest two years of earnings (including uncovered earnings). Aw=National average annual wage.

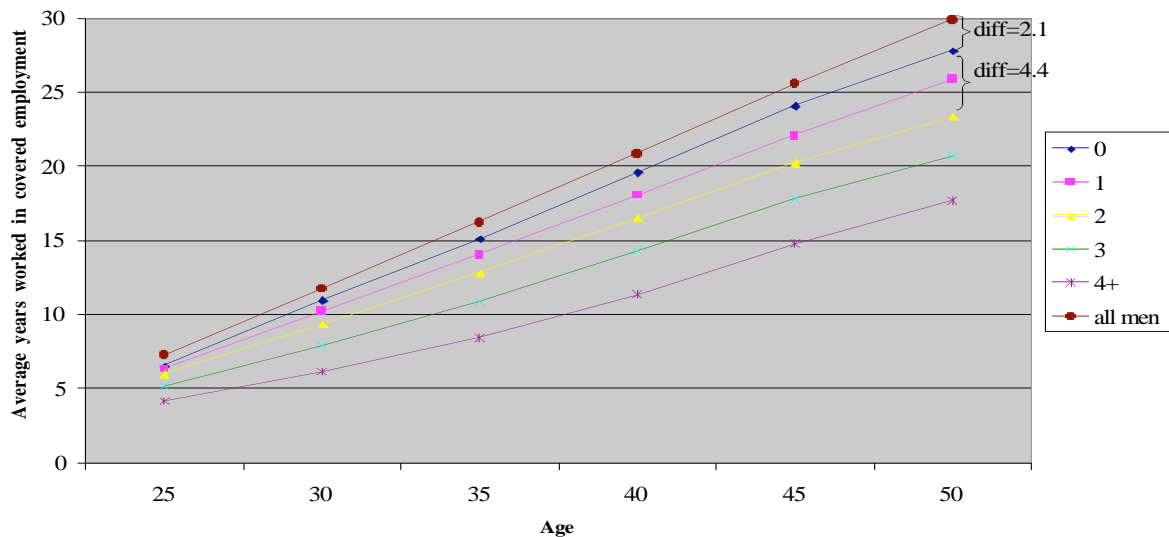
Figure 10. Native-Born Women's Average Covered Work Years to Select Ages by Number of Children Ever Born, Excluding Those with DI or SSI Experience or Long-Term Uncovered Employment, 1935-1947 cohorts



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

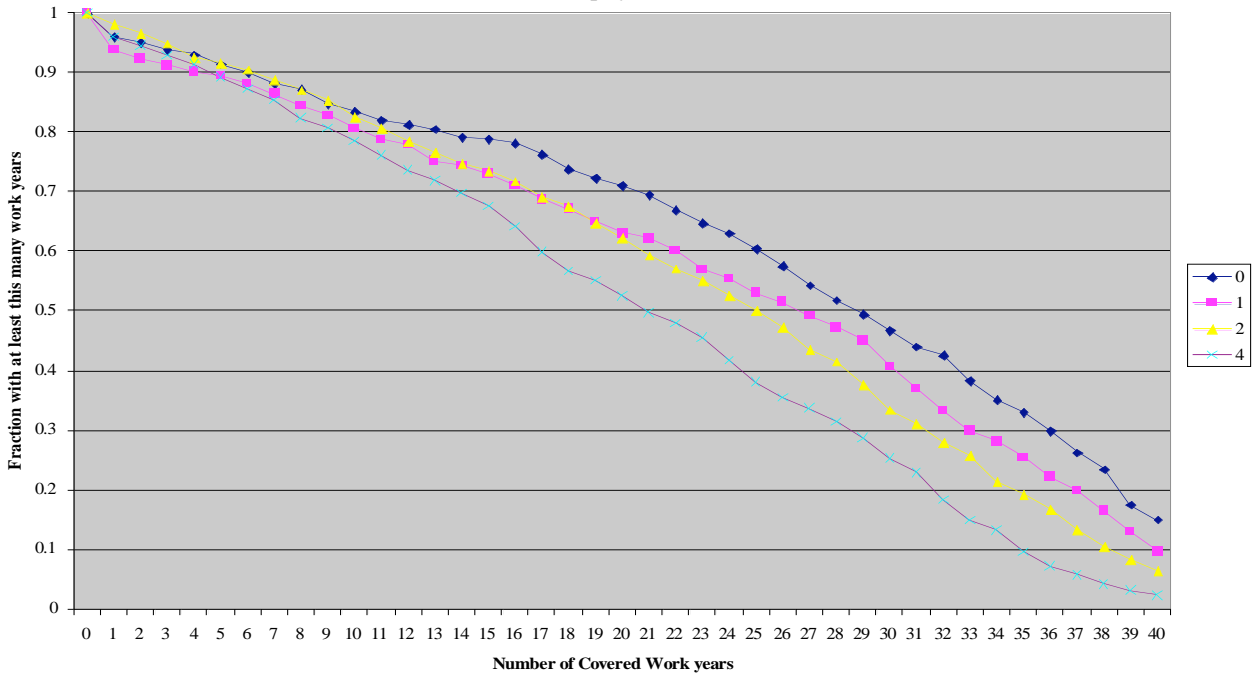
Figure 11. Native-Born Women's Average Covered Work Years to Select Ages by Number of Children Ever Born, Excluding Those with DI or SSI Experience or Long-Term Uncovered Employment, 1948-1958 Birth Cohorts



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to selected age.

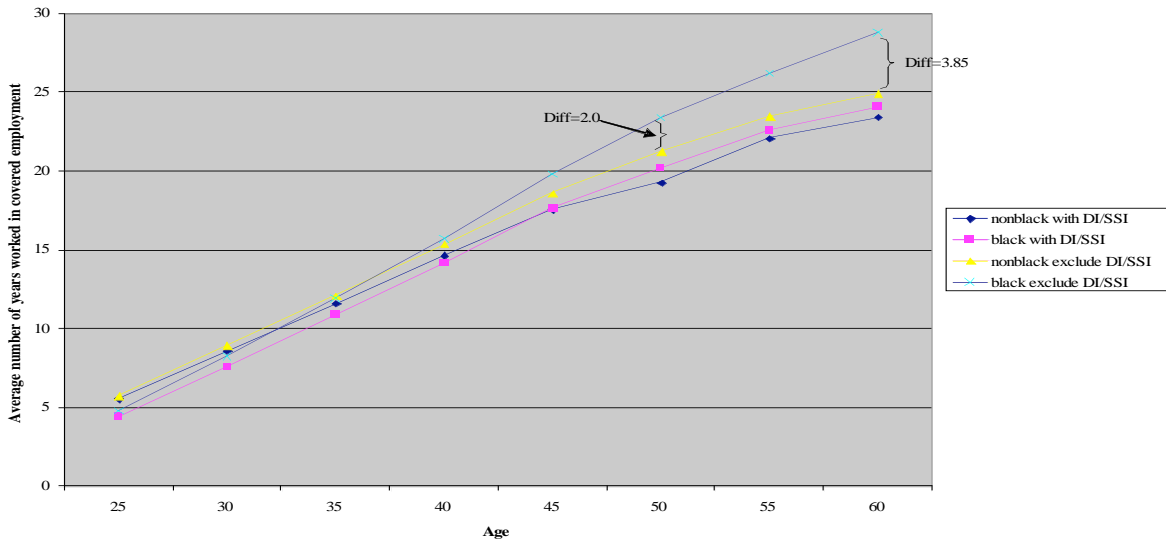
Figure 12. Distribution of Work Years to Age 60 for Native-Born Women in the 1935-1944 Birth Cohorts by Number of Children, Excluding Those with DI or SSI Experience or Long-Term Uncovered Employment



Source: Authors' calculations from the Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records and Numident through 2004.

Note: Sample is restricted to those with SER match who survive to age 60.

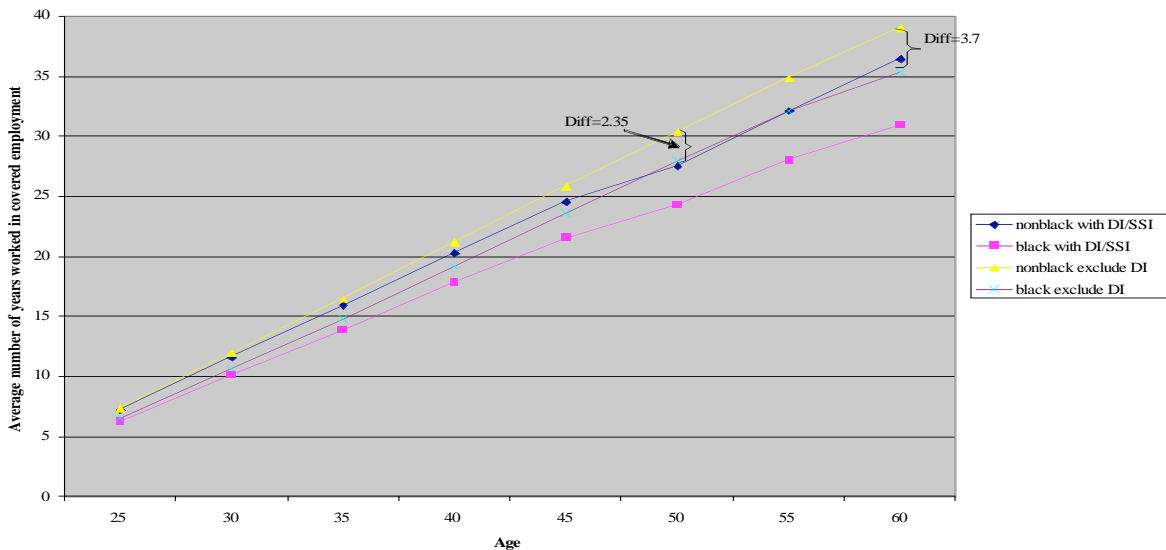
Figure 13. Native-Born Women's Average Covered Work Years to Selected Ages by Self-Reported Race and SSI/DI Experience, 1935-1970 Cohorts



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: DI/SSI series also excludes those in long-term uncovered employment. Sample is restricted to those with SER match who survive to selected age.

Figure 14. Native-Born Men's Average Covered Work Experience at Selected Ages by Self-Reported Race and DI/SSI Experience, 1935-1970 Cohorts



Source: Authors' calculations from the 1996 Survey of Income and Program Participation matched to Summary Earnings Records/Detailed Earnings Records/Master Beneficiary File/Supplemental Security Record and Numident through 2004.

Note: DI/SSI series also excludes those in long-term uncovered employment. Sample is restricted to those with SER match who survive to selected age.

Appendix

Information on Match Rates and Match Differentials and Explanations of Computations, Including Methods for Imputing Missing Data

The age to which one counts when tabulating career or lifetime histories influences the results, given important differences in who works at older ages (see, for example, the findings in Table 5) and differential mortality--the tendency for lower income and less educated workers tend to die more rapidly (see, for example, Waldron 2007). The further into the career that we look, the more important differential mortality becomes, especially for men. Because of this, we show estimates at a range of ages and highlight analyses to ages where the mortality effects are relatively modest (e.g., ages 60 and under). Receipt of Social Security retired worker benefits typically requires survival to age 62.

Elaborating further on this survival issue, we use Numident to screen SIPP sample members for post-interview mortality in all age-specific measures (e.g., covered work years to age 60).³² It is important to bear in mind that individuals in different analyses have survived to different points because of the way that we combine core interview data with follow-up information (though 2004) from the administrative records. For example, all individuals in all of our analyses have survived to 1996, so those in the core 1935-1947 cohorts have survived to at least ages 49 to 61. But the later cohorts are not as select, and include individuals who died (or will die) prior to age 49, making direct comparisons across the cohorts challenging.

Because the SIPP is a longitudinal survey, we could conduct these analyses on either a person or a person-year level. We opt for the person level to prevent double counting (and confounding with the non-random nature of mortality and survey attrition), using the latest and “best” observation with complete data (from among the 1996 through 2000 survey responses) for the key self-reported characteristics, like education, child bearing history, etc.³³ Using later (post-1996) responses is more important for the younger people, who are less likely to have completed childbearing and/or education in the earlier SIPP waves. When

³² The SIPP linkage to the Numident file’s mortality data allows us to do this through 2003, seven years after the original SIPP interviews.

³³ Our sample does not include immigrants who came to the U.S. after the SIPP panel, but this is of only minor significance given that our analyses focus on experiences of the native born and control for length of residence in the U.S. to the extent possible.

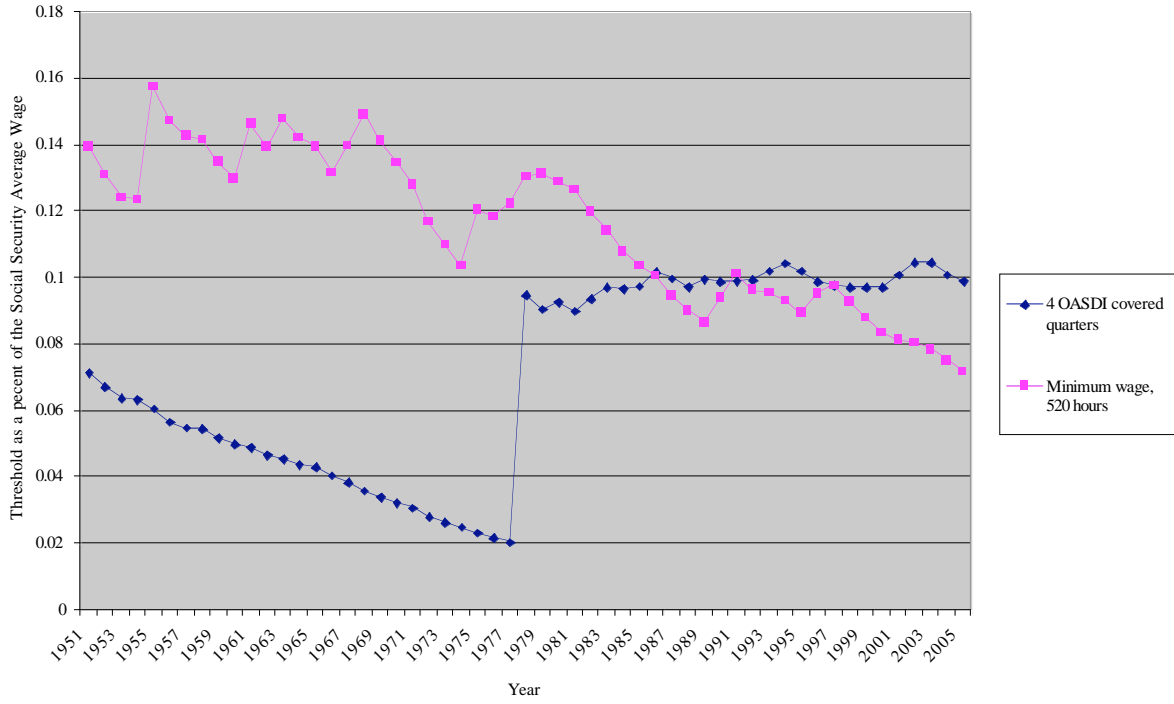
determining the best observation, we screen for mortality. To mitigate the effects of the non-random survey attrition, we retain individuals with just one SIPP observation.

Certain information, most notably data on number of children and nativity, come from SIPP topical modules (most notably wave two) rather than the “core” survey. Data are thus missing for those who attrit between baseline and the second round of SIPP interviews. In such cases, we use wave one data on current family size where available to fill in the latter variable, but this will not be the best possible reflection of lifetime experience having children.

Match rates for the administrative records are an important issue because these analyses rely so heavily on administrative data. SIPP respondents were linked to administrative records at high rates--around 86 percent for cohorts we examine in the 1996 SIPP--relative to alternatives (like the HRS). Of course, the match rate itself is only a part of the concern: Representativeness of the match is vitally important. Regression analyses suggest that non-matched records do differ from matched records along a few key dimensions, which underscores the need for cautious interpretation.

Appendix Figure

Appendix Figure A.1. Comparison of Alternative Wage-Adjusted Work Years Thresholds, 1951-2005



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