CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

THE TREND IN DISABILITY INSURANCE COVERAGE RATES AND ITS EFFECT ON SSDI CASELOADS

Norma B. Coe, Matthew S. Rutledge, and Kendrew Wong

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

All the authors are with the Center for Retirement Research at Boston College. Norma B. Coe is the associate director of research, Matthew S. Rutledge is a research economist, and Kendrew Wong is a research associate. The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA), funded as part of the Retirement Research Consortium (RRC). The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the federal government, the RRC, or Boston College.

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Center for Retirement Research at Boston College
Hovey House
140 Commonwealth Avenue
Chestnut Hill, MA 02467
phone: 617-552-1762 fax: 617-552-0191
e-mail: crr@bc.edu
crr.bc.edu

Affiliated Institutions:
The Brookings Institution
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Urban Institute

Abstract

One hypothesis for the growing Social Security Disability Insurance (SSDI) rolls is an increasing trend in employment for individuals with disabilities, which should increase the proportion of people who are eligible for the program. First, this project tests this hypothesis by examining SSDI coverage rates, that is, changes over time in the share of the U.S. population who accumulate enough work experience to qualify for SSDI benefits in the event they become disabled. Using U.S. household data from the *Survey of Income and Program Participation* linked to their SSA earnings and disability records, the analysis finds that the share of workers eligible for coverage has steadily increased, particularly for married women. Second, it tests whether an increase in the eligible population can explain the increasing SSDI rolls. Hazard model estimates indicate that the probability of new SSDI receipt jumps substantially between 13 and 15 months after obtaining coverage, especially among workers over age 55 and those who are jobless in the SIPP. These results are consistent with the hypothesis that work-limited individuals keep working just long enough to acquire coverage status and, eventually, SSDI benefits. Whether the increase in coverage rates has or will lead to increased SSDI receipt is unclear, however, as the coverage increases are concentrated in groups that are least likely to receive SSDI benefits.

1. Introduction

The escalating proportion of working-age adults on the rolls of the Social Security Disability Insurance (SSDI) program has been of great concern to policymakers, and the fiscal pressures are only increasing. As a result of the rapid and continuing increase in SSDI enrollment – the fraction of adults ages 25 to 64 increased from 2.3 percent in 1989 to 4.6 percent in 2009 – the SSDI trust fund is projected to run out of funds in 2018. Numerous studies (Bound and Burkhauser (1999) and Autor and Duggan (2006) provide surveys of the literature) have attributed this growth to a variety of factors, including the business cycle (Rupp and Scott 1998; Black, Daniel, and Sanders 2002), less stringent screening for disabilities (Stapleton et al. 1998), and the Medicare benefit that is associated with SSDI (Gruber and Kubik 2002).

Another potential factor has received much less attention: the change in the SSDI coverage rate. A worker is considered "insured" only if he has accumulated enough experience, both over his career *and* in recent years, to be eligible for the program; benefits are then calculated based on his past earnings using the same progressive formula as the Social Security retirement program.[1]

Legislation and macroeconomic structural changes suggest several different ways that the SSDI coverage rate – the proportion of workers who have accumulated the required years of experience to be eligible for SSDI – may have increased over the last few decades. First, labor force participation among women, especially married women, has shown a distinctive upward trend; 73 percent of married women worked in 2004, compared to 44 percent in 1969 (Juhn and Potter 2006). Second, with the passage of the Americans with Disabilities Act (ADA) in 1990, employers must make accommodations to ease the ability of workers with impairments to continue working, which has been shown to increase labor force attachment (Charles 2004) and delay SSDI application (Burkhauser et al. 1999). In addition, the fastest-growing disabling diagnoses, including mental disorders and musculoskeletal impairments (Autor and Duggan 2006), are conditions that gradually worsen over time or allow for intermittent periods of less-impaired work. Finally, the structure of the labor force has moved away from jobs requiring physical labor and toward more white-collar service industry jobs, allowing workers with impairments to stay in the labor force longer.

[1] Workers with insufficient track records or with significant non-employment gaps are only eligible for the means-tested Supplemental Security Income (SSI) program, which is generally less generous.

Other factors suggest that the SSDI coverage rate may not have contributed to the increase in the SSDI rolls. Much of the growth in female labor supply occurred during the 1970s and 1980s, before the explosion of SSDI application rates. Some of the existing literature finds that the ADA led to declines, not increases, in the employment rate for workers with limitations, as ADA compliance is costly to employers (DeLeire 2000; Acemoglu and Angrist 2001). Indeed, the labor force participation rate has declined slightly for all adult males (Mosisa and Hipple 2006), especially those without a college degree, the group most likely to consider applying for SSDI.

Few studies have investigated changes in the SSDI coverage rate over time. Mitchell and Phillips (2001) explore how eligible and ineligible individuals differ in personal characteristics; they find that many older individuals, especially women, are ineligible, usually due to insufficient recent work experience. Coe and Haverstick (2010) find that married women born after 1940 are significantly more likely to be SSDI-insured at age 55 than married women from previous cohorts, but not a cohort difference for men. Autor and Duggan's (2006) back-of-the-envelope calculation suggests that increased coverage rates could be responsible for about one-sixth of the growth of women's SSDI enrollment.

This project investigates whether increased coverage rates could have led to increases in the SSDI rolls in recent years. We first confirm an upward trend in SSDI insurance status over the last four decades. We find that coverage rates have increased dramatically for most subgroups, especially married women, workers in the service industry, and younger workers. We then examine whether obtaining SSDI coverage leads to benefit receipt soon after. Our hazard model estimates find a statistically significant jump in SSDI receipt 13 to 15 months after obtaining insured status, which is not much longer than the average waiting time between SSDI application and initial evaluation. This jump is particularly pronounced for older individuals and those who are jobless when sampled by the SIPP.

However, the increase in coverage rates occurred among groups that are the *least* likely to receive SSDI benefits, particularly married women and younger workers. While new coverage often leads to receipt for individuals, increases in coverage rates at the aggregate level have not necessarily led to the increase in the number of SSDI beneficiaries.

The structure of this paper is as follows. Section 2 details the institutional background on how one becomes eligible for SSDI and SSI. Section 3 describes the SIPP Synthetic Beta data file and the sample selection criteria. Section 4 discusses the trends in disability coverage since 1970. Section 5 outlines the empirical model that estimates the relationship between acquiring coverage and disability benefit receipt, and Section 6 presents its results. Section 7 discusses potential implications and concludes.

2. Institutional Background

Social Security Disability Insurance. SSDI is a social insurance program administered by the Social Security Administration (SSA) that pays benefits to individuals with sufficient work experience who are unable to work for at least one year due to a medical condition.

Disability insurance status is determined by the number of "credits" accumulated both in total over one's career and in recent years, with the number of required credits under both criteria increasing with age. Workers can earn up to four credits in a year, corresponding to the number of quarters of covered employment where the individual achieved a certain earnings level ($1,130 in 2012, and adjusted for inflation each year).[2] Table 1 details the number of credits required by age to achieve disability insurance status. Anyone past their 31st birthday must earn one credit per year for each year since age 21, and 20 credits in the last ten years.

Disabled individuals who are disability insured and earn less than the Substantial Gainful Activity (SGA) level ($1,010 per month in 2012) can apply for SSDI benefits beginning five months after the onset of the disability. The Disability Determination Service in the applicant's state uses information from medical providers to decide whether the individual's medical condition is sufficiently severe and on the List of Impairments, whether the applicant can do the same work he or she did before, and whether he or she can do any other type of work. Approximately 37 percent of applications are allowed onto SSDI at the initial determination, according to the data used in the state-level regression, but some states have consistently higher or lower allowance rates across years, even accounting for observable differences between the states (Strand 2002, Coe et al. 2011). Wait times between application and initial determination average 131 days (SSA 2008), with terminal cases and applications involving listed impairments

[2] In 1978, SSA changed the rules so that only credits can be earned irrespective of the calendar quarter in which they were earned. This rule change eliminated the need for quarterly reporting; instead, the number of credits earned in a year is equal to the truncation of *annual* earnings divided by the credit threshold, up to a maximum of four.

on the shorter end, and longer wait times are possible. Appeals may also lengthen the time before an ultimately-successful applicant first receives benefits.

The SSDI benefit level is calculated based on the same formula as Social Security retirement benefits. First, SSA adjusts each year's earnings for inflation, based on the Average Wage Index. SSA then determines the beneficiary's top 35 years of earnings, including zero earning years. The Average Indexed Monthly Earnings (AIME) is the sum of the top 35 years of inflation-adjusted earnings divided by 420 (35 years times 12 months). The Primary Insurance Amount (PIA), the level of benefits for which the individual is eligible at Full Retirement Age (FRA), is a progressive function of the AIME: 90 cents on the dollar at first (up to $767 in 2012), then 35 cents on the dollar (up to $4,624 in 2012), and 10 cents on the dollar thereafter. Unlike the Social Security retirement program, SSDI beneficiaries earn the full PIA with no actuarial adjustment for age.

In addition to SSDI's cash benefits, beneficiaries are eligible for Medicare coverage 24 months after first being entitled to receive SSDI benefits.

Supplemental Security Income. Though not the focus of this study, many work-limited individuals seek SSI benefits, either concurrently with SSDI benefits if the projected SSDI benefit is sufficiently small, or in lieu of SSDI benefits if they do not have sufficient total or recent work history to qualify for the more generous SSDI program. Working-age individuals are eligible for SSI only if their income and wealth fall below eligibility thresholds and they satisfy the same disability screening as SSDI. To qualify, their countable income must be below the federal SSI benefit level.[3] In addition, non-housing wealth must be below $2,000. The individual can then receive the difference between the monthly benefit level of $674 and the recipient's countable income. In addition, SSI recipients are eligible for Medicaid coverage as soon as they are approved for benefits.

3. Data

This project uses the *Survey of Income and Program Participation* (SIPP) *Synthetic Beta* (SSB) data product, which links the public-use SIPP household survey to restricted-use SSA

[3] Countable income excludes $20 per month of non-labor income and, for workers, $65 per month plus one-half of labor earnings beyond this level.

earnings and benefits data in a format that can be used by researchers without access to the restricted administrative files (Abowd, Stinson, and Benedetto 2006).

The SIPP surveys households every four months over a two- to four-year period regarding labor market outcomes, public program participation, income, health and health insurance coverage, and demographics and family structure. New panels of between 12,000 and 52,000 households began each year between 1984 and 1993, plus 1996, 2001, 2004, and 2008.

To create the SSB, Census researchers first combine and standardize a subset of SIPP variables, and use Social Security Numbers to merge in SIPP respondents' information from several SSA files, including information on annual earnings over the respondents' careers and any Social Security benefits (including retirement benefits, SSDI, or SSI) for which they applied or received since 1989. This merged file is the SIPP *Gold Standard File*, which can be accessed only through the Census Research Data Centers.[4]

Next, Census statisticians impute missing values for a subset of essential *Gold Standard File* variables to create four implicates called the *Completed Data Files*, each the result of a separate imputations. Finally, each variable in each implicate – with the exception of gender, spouse's identifier, and type of Social Security benefit – is synthesized four times to create a total of 16 SSB implicates. Because the data is synthetic, confidentiality concerns have been removed, so any researcher can use the SSB (after a short application to Census). However, the synthetic data aims only to match unconditional means of the *Gold Standard File* variables, so conditional analysis for selected subsamples is not meaningful. Census personnel, therefore, re-run any analysis that uses SSB on the *Completed Data Files*.[5] The results in this paper are from this Census replication only.[6]

While using the SSB and Completed Files are convenient, the set of available variables is somewhat restricted. The most significant restriction is that information about the SSDI application is not synthesized; the *Gold Standard File* includes not only the timing of application, but also whether the primary and secondary health conditions associated with the application, which allows for testing whether diagnoses have changed over time. Instead, the

[4] We have applied to use the full *Gold Standard File*, but this application is still pending as of this writing. When we have access to the *Gold Standard File*, the outcome variable will be the timing of SSDI application instead of when SSDI benefits were first received, which eliminates the uncertainty over the duration between application and first benefit receipt.

[5] Armour (2012) also uses the SSB product to determine how the adoption of annual Social Security statements influences the decision to apply to SSDI.

[6] SSB results are available upon request.

most similar synthesized outcome is the timing of first SSDI benefit receipt, which derives from the SSA *Master Beneficiary Record*. Another limitation is that state identifiers are not synthesized; if they were, we would include state variation in labor composition by industry to test whether structural shifts away from manufacturing jobs contributed to the ability of the disabled to join or remain in the labor force. Despite these limitations, the SSB product includes synthesized earnings and quarters of covered employment, two series that are not available in most public-use surveys but are essential for calculating whether one is SSDI-insured, in addition to matching to administrative data on the exact date of benefit receipt and the type of disability benefits (SSDI, SSI, or both).

The sample for the SSDI coverage trends consists of the 400,000 respondents with a valid match to SSA data that are between the ages of 25 and 64 when sampled by the SIPP (Table 2). The trend analysis includes their SSDI insurance status for each year that they were between 25 and 64, over the 1970-2006 period.

The hazard model analysis includes person-month observations starting from the month in which the individual is projected to have acquired SSDI coverage. Because young people have volatile coverage status in their first few years in the labor force – a short non-employment spell can reduce the number of quarters of covered employment below the threshold, while obtaining a job can quickly restore coverage – we ignore person-months before one's 25th birthday. The sample consists of 130,000 SIPP respondents who are eligible for SSDI, and never receive SSI, at some point between 1980 and 2006. Table A1 presents summary statistics for both the probit and hazard subsamples.

4. Trends in Disability Insurance Coverage

Figure 1 shows the proportion of the age 25-64 SIPP sample that had earned enough credits to qualify for SSDI coverage for each from 1970 to 2006. During that time, the coverage rate has increased from 66 percent in 1970 to just over 80 percent in 2006. The trend line is generally upward-sloping, except for a plateau in the early 1980s, coincident with the double-dip recession. The recession in the early 2000s also featured a small decline in the coverage rate; the proportion of the population eligible for SSDI peaked at 80.7 percent in 2003, two years after the peak of the previous business cycle, before sliding to 80.2 percent at the end of our sample window.

Over this same period, labor force participation grew among women, and in particular married women. Aggregate data from the Bureau of Labor Statistics indicates that the labor force participation rate among women increased from 43.3 percent in January 1970 to a peak just over 60 percent in the early 2000's. The proportion of married women age 25 to 64 sampled by the *Current Population Survey* (CPS) with positive earnings grew from 49.5 percent to greater than 73 percent over that same period.[7] Not surprisingly, then, the proportion of married women in our sample who are SSDI-insured grew from 45.6 percent to 72.7 percent (Figure 2). Unmarried women were also more likely to be covered by SSDI, though the increase – 58.6 percent to 78.3 percent – was somewhat more modest. The rate of SSDI coverage for married and unmarried men was roughly constant.

In addition to the mass entry of married women into the labor force, the composition of jobs shifted toward the service sector. According to the Bureau of Labor Statistics, 69 percent of workers were employed in the service sector in 1970; by 2006, this proportion had grown to 83 percent. This shift away from goods-producing industries and toward jobs that are presumably more accommodating for workers with physical limitations could make it easier for a physically disabled individual to stay in the workforce long enough to acquire SSDI coverage. In our sample, the SSDI coverage rate for individuals who are working in the service sector when sampled by the SIPP increases from 66 percent to 85 percent, while workers from goods-producing industries saw only a slight increase (Figure 3). Those individuals who are not employed during the SIPP, however, show a definitive decrease.[8]

Figure 4 shows the coverage rate over time by age category. All age groups are more likely to be SSDI-insured in 2006 than in 1970. The 25-34, 35-44, and 45-54 age groups all saw approximately the same percentage point gain, between 15 and 18 percentage points. The gain was smaller for older workers: only 8 percentage points, and all since the late 1980s.

[7] Authors' calculations. The growth in labor force participation between 1980 and 2006 likely understates the expected growth in coverage observed over that period, because coverage requires a certain number of years of paid work. By 1980, the proportion of married women with positive earnings in the CPS had already grown to 51.6 percent from 48.9 percent in 1970.

[8] The sector of employment variable is collected by SIPP during each wave, but the SIPP Completed File only includes an indicator for the respondent's highest-earning industry over all waves in which they're sampled. We further categorize those industries into the goods-producing sector (manufacturing, agriculture, mining, construction, transportation, communications, and public utilities), service sector (wholesale and retail trade, finance, insurance, real estate, services, public administration, and the military), or no industry (presumably not employed for the duration of their time in the SIPP).

5. Empirical Strategy

The general trend in coverage rates is upward, which increases the proportion that are "at risk" of applying to SSDI. At the same time that coverage rates were increasing, the SSDI rolls increased profoundly. The empirical analysis seeks to determine whether these two trends could be related, using individual-level data.

The first analysis formalizes the descriptive analysis above, estimating the effect of personal and labor market characteristics on the probability that one is eligible for SSDI:

$$P\left(Elig_{iy}\right) = \Phi\left(\alpha \mathrm{X}_{\mathrm{iy}} + \tau_{\mathrm{y}} + \varepsilon_{\mathrm{iy}}\right) = \Phi(\theta). \quad (1)$$

$Elig$ is an indicator equal to one if individual *i* has accumulated the necessary years of work experience by year *y* to qualify for SSDI, and zero otherwise. Φ is the standard normal distribution, as we estimate equation (1) by probit. X is a vector of personal characteristics, including indicators for non-white, Hispanic origin, and the interaction of gender and marital status, and categorical variables for age, education, and industry (goods-producing, services, or not employed at the time of SIPP sampling). τ_{y} is a set of calendar year fixed effects.

The second analysis is a discrete-time hazard model, where the dependent variable, Rec, is an indicator equal to one if the individual *i* begins receiving SSDI benefits in month *t*:

$$P(Rec_{it}) = \Phi\left(\gamma X_{it} + \sum_{s=0}^{60} \beta_s 1(t_s - t_0) + \tau_{\mathrm{y}} + \nu_{it}\right). \quad (2)$$

The hazard model is estimated by probit regression.[9] The set of independent variables includes calendar year fixed effects (τ_{y}), and the same set of personal characteristics as in equation (1), X. In some specifications, X also includes the SSDI replacement rate, defined as the ratio of potential SSDI benefits based on earnings as of month *t* to the average earnings in years *y-3* through *y-5*; the replacement rate captures the financial incentive to apply to SSDI, given the potential recipient's pre-disability living standards.[10]

The estimates of interest in equation (2) are from the duration dependence variables, a series of indicator variables equal to one if the current month *t* is *s* months after the month when *i*

[9] To account for the nonlinearity of the probit regression, we report marginal effects for each independent variable, defined as the mean derivative of the outcome variable with respect to the independent variable. Interaction effects also take into the nonlinearity (Ai and Norton 2003). In the final version of this paper, we will also report marginal effects and standard errors for the hazard model.

[10] We do not know exactly when an SSDI recipient becomes disabled; this information is provided in the *831 File*, but not in the Completed File or synthetic data. Coe and Rupp (2012) also use lagged earnings to control for both earnings potential and attachment to the labor force prior to disability onset, but use lags of 6 through 10 years before disability receipt. We use earnings with shorter lags because many individuals in our sample of the newly-SSDI-insured are in their 20s; for this group, earnings with longer lags will be artificially low, or even zero.

most recently gained SSDI insurance status (t_0). If individuals work just long enough to acquire enough credits to be insured, the point estimate in the one to two years will be positive and statistically significant.[11] If, however, acquiring SSDI coverage has little impact on the timing of SSDI receipt, then we shall find little difference in the estimated effects.

To test whether the relationship between gaining SSDI insurance status and the timing of SSDI receipt has changed over time, we test whether interactions between the duration dependence variables and indicators for the decades (1990s and 2000s, with 1980s as the omitted condition) are statistically significant.

We also test whether the pattern of SSDI receipt with respect to SSDI coverage duration differs by several subgroups, by including separate sets of interactions between the duration dependence variables and gender and marital status, industrial sector, and age. These interactions test separate hypotheses about the relationship between increased coverage rates and the growing number of SSDI beneficiaries. If married women's mass entry into the labor force introduced new potential SSDI recipients working only until obtaining coverage, the receipt probability will be more front-loaded for married women. Similarly, an increased proportion of workers with health limitations who are able to stay in the workforce long enough to obtain coverage should manifest itself in a higher probability of SSDI receipt in the early months among service-sector employees. Finally, if more young individuals enter the workforce just long enough to reach a lower threshold for SSDI coverage than they would have to reach when they are older, we should see a greater mass in the probability distribution in the first few years after acquiring coverage for the young than for the old.

6. Results

Table 3 presents the results of the probit regression of SSDI eligibility on demographic variables. Relative to the omitted age 55 and over, the youngest group, age 25 to 34, is 7.2

[11] The largest disadvantage of using SSDI receipt as the dependent variable instead of SSDI application (as would be possible with the Gold Standard File) is that the time between application and first benefit receipt varies substantially across applicants. If potential SSDI recipients worked just long enough to obtain coverage, then we would see the highest application probability in the first months after obtaining coverage. Because we only see receipt, however, we must allow for a response that is slower – due to the lags between application and receipt – and more diffuse – due to the variability in those lags. The hazard model, therefore, tests whether receipt spikes over a five year period; even assuming a two-year lag between application and receipt, which is longer than the median application but reasonable in the data, we should still observe a positive and statistically significant increase in the receipt probability sometime in the first three years.

percent more likely to be SSDI-insured; while this may seem surprising, obtaining eligibility requires less work experience at younger ages, and younger workers appear to be more likely to reach that threshold. Those age 35 to 44 and 45 to 54 are each just over 4 percentage points more likely to be SSDI-insured than their younger counterparts. Over the full period, unsurprisingly, married women are the least likely gender-marital group to be SSDI-insured. Goods-producing workers are slightly more likely than service workers to be insured. Other results are as expected: whites are 8 percent more likely than non-whites, Hispanics are 9 percent less likely than non-Hispanics, and coverage increases with education. All estimates are strongly statistically significant due to the large sample size in the SIPP Completed File.

Next we turn to estimating SSDI receipt conditional on being insured. The results from the hazard model of SSDI receipt are presented in Table 4. The independent variables in the first specification are limited to age categorical dummy variables, dummies for the duration since obtaining coverage, and calendar year fixed effects. Figure 5 plots the predicted annualized rate of SSDI receipt for each period after obtaining coverage, with all other variables at their mean.[12] The line labeled "base" in Figure 5 corresponds to the first specification.

Not surprisingly, given the often long waiting time between SSDI application and receipt of the first benefit check, the SSDI receipt rate is low in the first year after obtaining coverage. Just after one year, however, the probability of receiving SSDI increases by more than one-third, from 0.2 percentage points per month (annualized) to 0.3 percentage points. The point estimate on the indicator variable for 13 to 15 months after obtaining coverage is statistically different (at the 90 percent confidence level) from the point estimate for 1 to 3 months after obtaining coverage. After 15 months, however, the receipt rate remains within in a tight band between 0.29 and 0.38 percentage points, so the jump in SSDI receipt probability is focused at that 13-to-15-month mark. Given the average wait-time between application and receipt, this is a reasonable period for which to observe a spike, and likely indicates an application very quickly after obtaining SSDI-insured status.

The other specifications in Table 4 gradually add additional controls to test how the characteristics of potential SSDI recipients contribute to this pattern of receipt with respect to the time since obtaining coverage. The additional controls are each in the predicted direction and highly statistically significant due to the large sample size, and the estimates are consistent

[12] The annualized SSDI receipt rate is the predicted probability of receipt multiplied by 1200.

across specifications. SSDI receipt increases monotonically with age and decreases monotonically with education. It is more likely for non-whites, non-Hispanics, non-workers during their SIPP sample window, and unmarried individuals of both genders, and least likely for married women. Perhaps surprisingly, the SSDI receipt rate falls with the SSDI replacement rate, which implies that this variable captures the decreasing incentive for high lifetime-earners to apply, rather than the increasing incentive for those with more generous benefits relative to their previous lifestyle.

Adding each set of controls, however, does little to change the pattern of SSDI receipt with respect to the time since obtaining coverage (Figure 5). The base specification predicts a 0.11 percentage point jump between the 10-12 month period and the 13-15 month period; the full specification (column 5 of Table 4) predicts a jump that's only slightly smaller (0.09 percentage points). After this jump, each specification has the same plateau throughout the next four years for the average individual.

The results in Figure 5 suggest that controlling for personal characteristics does little to explain the higher SSDI receipt rate starting just more than a year after obtaining coverage. Figures 6 through 8 examine SSDI receipt patterns more closely, breaking the sample into subgroups by characteristic.

Figure 6 reports the predicted SSDI receipt rate by gender and marital status. Each group exhibits similar jumps at the 13-15 month mark, but as the sample size gets smaller, subsequent changes in receipt become more inconsistent. Married men have the largest jump just after one year followed by a relatively constant receipt rate, while married women see only a small, gradual increase in their receipt over the full five-year period. The trends for unmarried men and unmarried women are also generally upward, but highly nonlinear. These trends are consistent with three stories. First, men may be more responsive to their SSDI-insurance status than women. Second, it could be indicative of different disability rates on jobs between men and women. Men might work in jobs that have earlier disability onset, thus creating higher demand upon reaching insured-status; women could have jobs that have more gradual disability onset with more chronic conditions. Finally, it could be a sign that the disability applications for men are simply processed quicker, likely indicating more terminal cases or Listing Conditions among male applicants.

Those who are not working during their SIPP window are far more likely to receive SSDI in all months, and their jump at the 13-15 month mark is much greater than for individuals working in either the goods-producing or service industries during the SIPP (Figure 7). Goods-producing workers see a small jump just after a year, while service industry workers see almost no increase. This is consistent with a story of differential disability onset based on work characteristics.

Finally, Figure 8 splits the sample by age. Those individuals who gain coverage for SSDI benefits after reaching age 55 are much more likely to receive benefits in the subsequent five years, with an especially large jump just more than a year after obtaining coverage. This is the group that would be most likely to enter (or re-enter) the workforce long enough to earn insured status, and then quickly apply. There are two likely groups that first gain insurance status in their 50's – individuals whose disabilities have kept them out of the labor force earlier in their career, or individuals who have chosen to stay out of the labor market, such as married women with children. Future work will try to identify which of these groups are driving the spike in benefit receipt.

The size of the jump in benefit receipt soon after gaining insurance coverage increases with age, with the middle-aged groups seeing smaller jumps after one year and less growth in the remaining four years. The youngest group (25-34) sees very little increase in SSDI receipt throughout the five-year window after obtaining coverage, both because these individuals are less likely to be medically eligible and because they are more likely to be accumulating quarters of coverage simply as a by-product of working for a living. Interestingly, aggregate data has shown that this group has also seen the largest increase in beneficiaries (SSA 2012); these results suggest that increasing coverage rates did not play an important role in the increase in SSDI receipt among the youngest group in our sample.

7. Conclusions

This project finds that working-age adults are more likely to have accumulated the work experience necessary to qualify for SSDI coverage. The hazard model results indicate that attaining this status is associated with an increased likelihood of SSDI receipt starting just over a year later, implying that the SSDI application probability increases soon after obtaining coverage.

Together, these results are consistent with the hypothesis that the SSDI rolls have increased in part because of increased coverage rates. But the two findings are not conclusive evidence of a causal relationship between increased coverage rates and increased SSDI receipt. Even if the relationship is causal, this finding alone does not inform policymakers on the contribution of increased coverage rates relative to other factors that have encouraged the growth of the SSDI program. In ongoing work, we plan to examine whether the duration between coverage acquisition and SSDI receipt has changed over time, with special emphasis on those groups that have seen the most growth in coverage, like married women and younger workers. We also plan to quantify the degree to which coverage increases explain the growth in SSDI receipt by comparing the actual SSDI growth to a counterfactual of constant SSDI coverage within relevant subgroups.

The simultaneous increases in coverage and benefit receipt have an uncertain net effect on the financial state of the SSDI program. The increase in labor force participation that leads to increased coverage rates yields greater payroll tax revenue. But if participation increases only enough so that those who would have fallen just short of coverage status instead gain coverage, and SSDI awards subsequently increase, the program's finances may weaken. Future work will use the estimates of coverage increases and the dynamics of SSDI receipt with respect to obtaining coverage to calculate the net gain or loss to the program.

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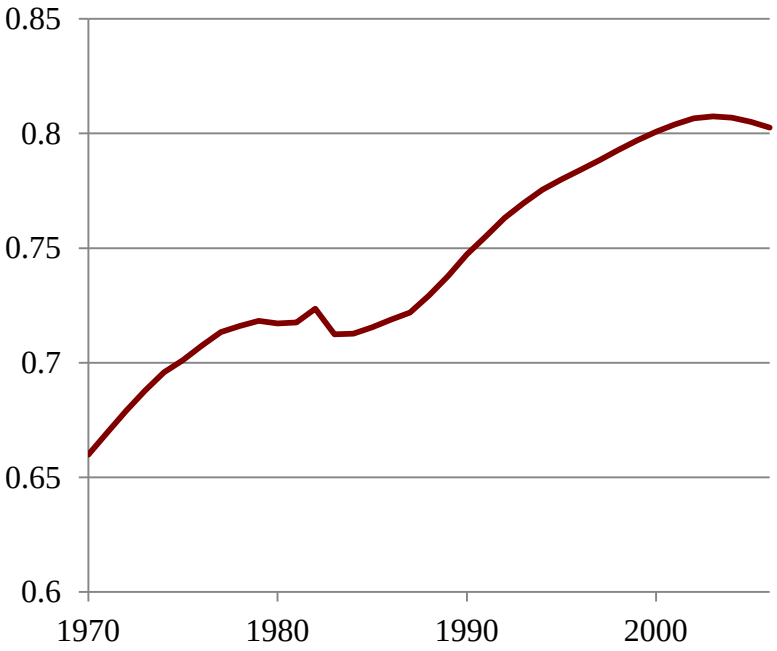
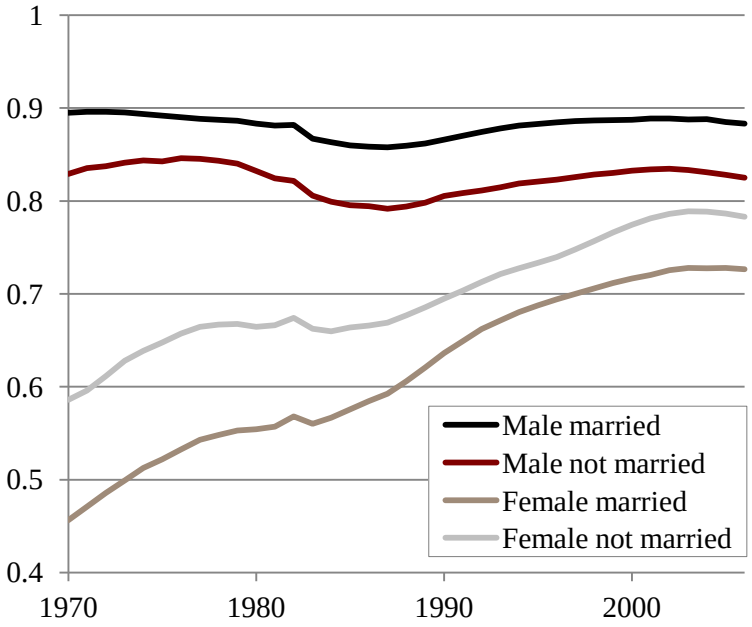
Figure 1. *SSDI Coverage Rate, 1970-2006*



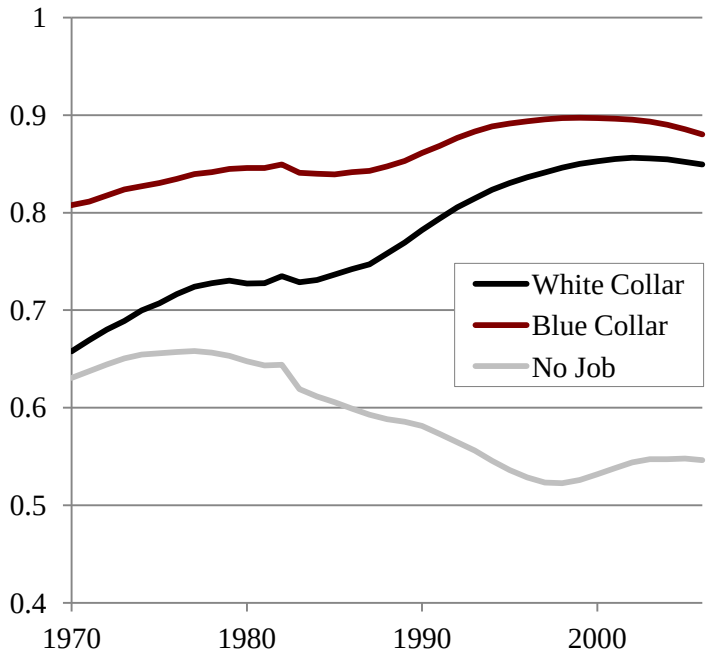
Source: Authors' calculations from the SIPP Completed File.

Figure 2. *SSDI Coverage Rate by Gender and Marital Status, 1970-2006*



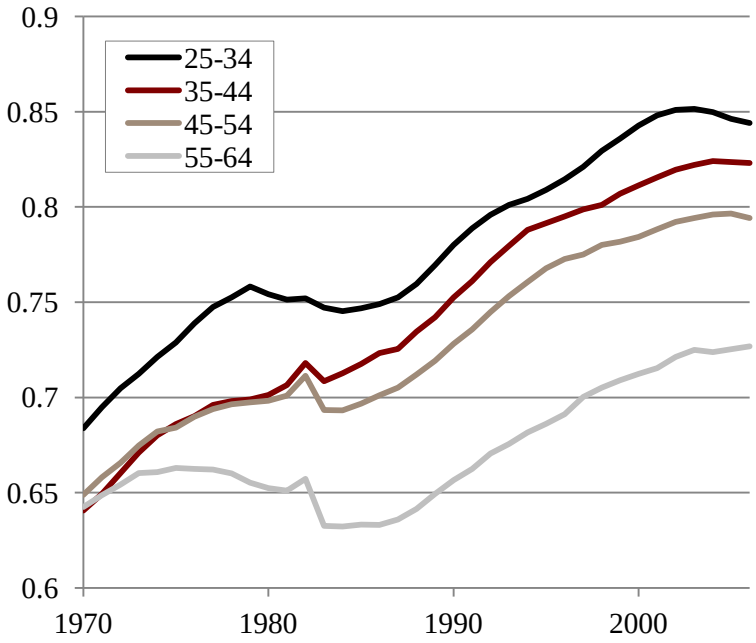
Source: Authors' calculations from the SIPP Completed File.

Figure 3. *SSDI Coverage Rates by Industry, 1970-2006*



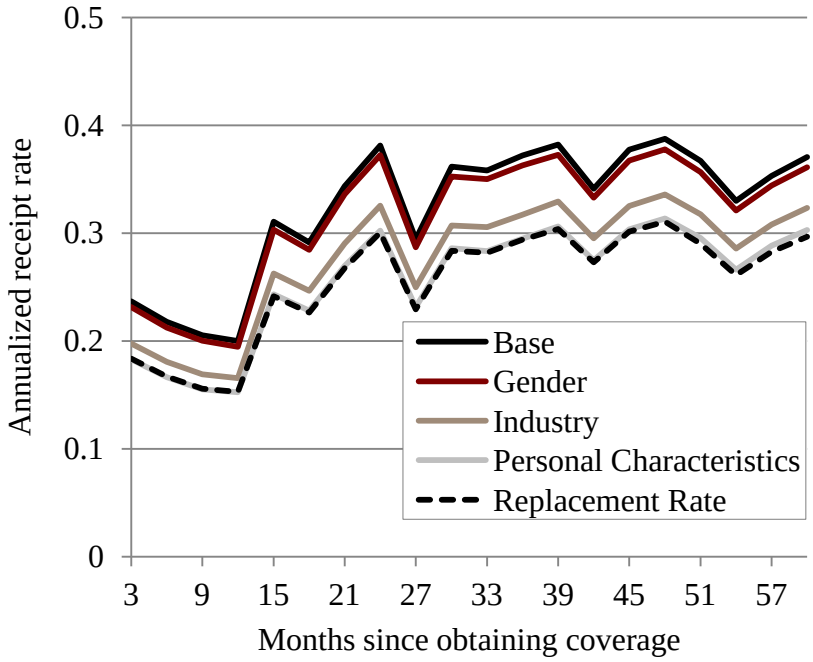
Source: Authors' calculations from the SIPP Completed File.

Figure 4. *SSDI Coverage Rates by Age, 1970-2006*



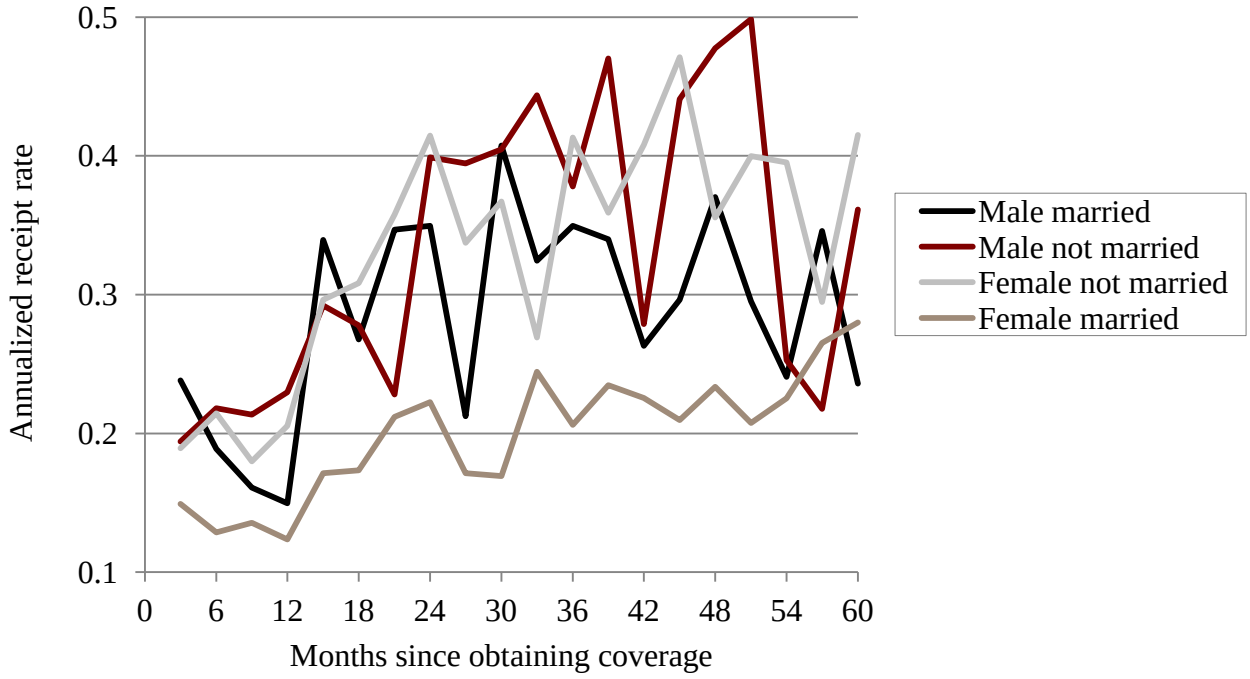
Source: Authors' calculations from the SIPP Completed File.

Figure 5. *Estimated Annualized SSDI Receipt Rate*



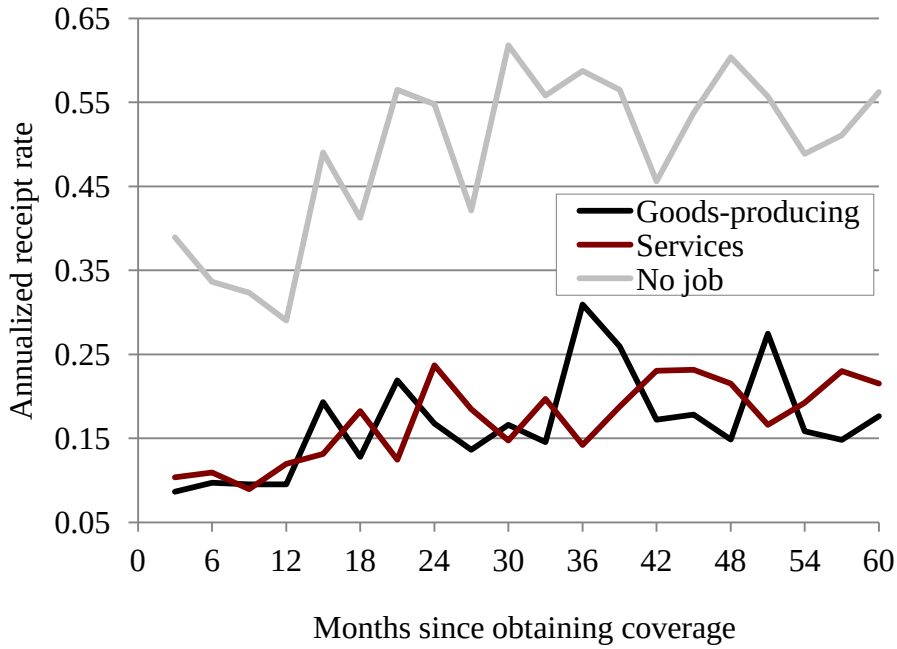
Source: Authors' estimates from the SIPP Completed File.

Figure 6. *Estimated Annualized SSDI Receipt Rate by Gender and Marital Status*



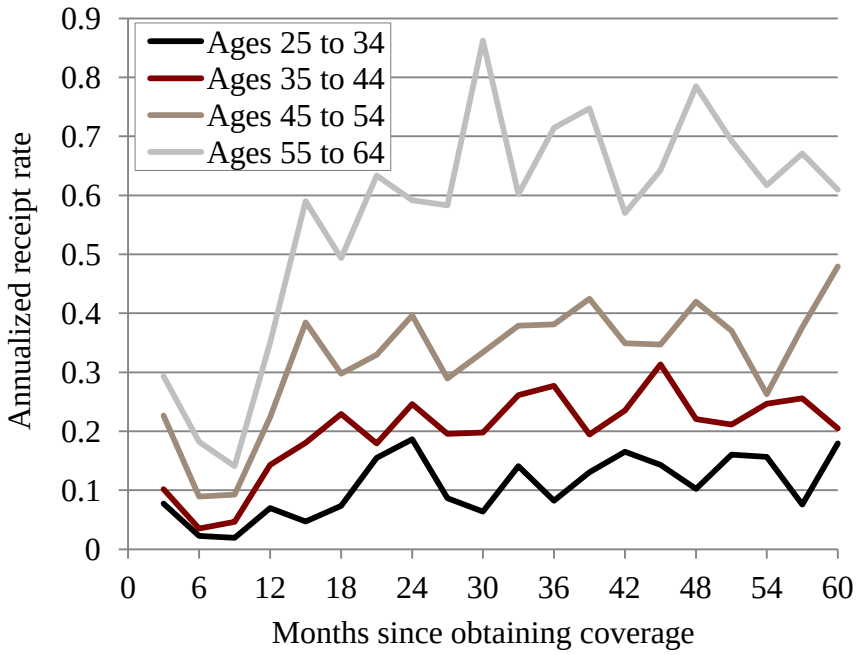
Source: Authors' estimates from the SIPP Completed File.

Figure 7. *Estimated Annualized SSDI Receipt Rate by Industry*



Source: Authors' estimates from the SIPP Completed File.

Figure 8. *Estimated Annualized SSDI Receipt Rate by Age*



Source: Authors' estimates from the SIPP Completed File.

Table 1. *Required Number of Covered Quarters to be SSDI-Insured*

Age	Covered quarters	
	Total	Last 10 years*
23 or less	6 in last 3 years	
24	6	6
25	8	8
26	10	10
27	12	12
28	14	14
29	16	16
30	18	18
31 to 42	20	20
44	22	20
45	23	20
46	24	20
47	25	20
48	26	20
49	27	20
50	28	20
51	29	20
52	30	20
53	31	20
54	32	20
55	33	20
56	34	20
57	35	20
58	36	20
59	37	20
60	38	20
61	39	20
62 or older	40	20

* For anyone younger than 31, recent experience is measured only since age 21.
Source: Social Security Administration Handbook.

Table 2. *Sample Refinement*

	Sample size
SIPP respondents with valid SSA match	436,285
Not between ages 25 and 64	-33,176
Sample for probit model for SSDI eligibility	**403,109**
Never eligible for SSDI between 1980 and 2006	-247,330
Ever received SSI between 1980 and 2006	-25,366
Sample for hazard model for SSDI receipt	**130,413**

Source: Authors' calculations from the SIPP Completed File.

Table 3. *Probit Model Results for SSDI Eligibility*

	Coefficient	SE	Marginal effect
Age group			
25-34	0.389***	(0.008)	[0.072]
35-44	0.244***	(0.007)	[0.047]
45-54	0.246***	(0.004)	[0.041]
Gender and marital status interactions			
Female married	-1.265***	(0.014)	[-0.211]
Female not married	-0.901***	(0.016)	[-0.127]
Male not married	-0.512***	(0.007)	[-0.099]
Industry			
Goods-producing	0.264***	(0.007)	[0.033]
No job	-1.056***	(0.006)	[-0.233]
White	0.419***	(0.005)	[0.080]
Hispanic	-0.446***	(0.010)	[-0.088]
Education			
High school diploma or equivalent	0.444***	(0.004)	[0.093]
Some college or more	0.616***	(0.005)	[0.110]
Person-year observations		8,089,831	

Note: The regression also includes year fixed-effects.
Source: Authors' estimates from SIPP Completed File

Table 4. *Hazard Model Results for SSDI Receipt*

	(1)	(2)	(3)	(4)	(5)
Age group					
25-34	-1.953 ***	-2.040 ***	-1.721 ***	-1.676 ***	-1.556 ***
	(0.089)	(0.091)	(0.094)	(0.009)	(0.012)
	[-0.012]	[-0.026]	[-0.130]	[-0.538]	[-0.416]
35-44	-1.401 ***	-1.395 ***	-1.098 ***	-1.051 ***	-0.997 ***
	(0.058)	(0.059)	(0.061)	(0.004)	(0.004)
	[-0.012]	[-0.026]	[-0.130]	[-0.537]	[-0.415]
45-54	-0.878 ***	-0.845 ***	-0.661 ***	-0.609 ***	-0.588 ***
	(0.053)	(0.053)	(0.054)	(0.003)	(0.003)
	[-0.004]	[-0.007]	[-0.044]	[-0.148]	[-0.146]
Gender and marital status					
Female married		-0.302 ***	-0.324 ***	-0.341 ***	-0.335 ***
		(0.066)	(0.065)	(0.004)	(0.004)
		[-0.002]	[-0.013]	[-0.060]	[-0.063]
Female not married		0.180 ***	0.207 ***	0.135 ***	0.139 ***
		(0.067)	(0.067)	(0.004)	(0.004)
		[0.004]	[0.037]	[0.078]	[0.084]
Male not married		0.194 **	0.190 **	0.138 ***	0.151 ***
		(0.085)	(0.085)	(0.007)	(0.007)
		[0.005]	[0.031]	[0.072]	[0.085]
Industry					
Goods-producing			0.087	-0.022 **	-0.022 ***
			(0.090)	(0.008)	(0.008)
			[0.00004]	[-0.00006]	[-0.00007]
No job			1.099 ***	0.999 ***	0.999 ***
			(0.053)	(0.003)	(0.003)
			[0.063]	[0.179]	[0.192]
White				-0.109 ***	-0.107 ***
				(0.003)	(0.003)
				[-0.046]	[-0.048]
Hispanic				-0.352 ***	-0.356 ***
				(0.007)	(0.007)
				[-0.070]	[-0.074]
Education					
High school diploma or equivalent				-0.453 ***	-0.452 ***
				(0.003)	(0.003)
				[-0.253]	[-0.259]
Some college or more				-0.933 ***	-0.936 ***
				(0.004)	(0.004)
				[-0.186]	[-0.191]
SSDI earnings replacement rate					
Replacement rate					-0.346 ***
					(0.013)
					[-0.148]
Replacement rate N/A					-0.144 ***
					(0.009)
					[-0.044]
Person-month observations					

Note: All regressions also include a set of indicators for the months since obtaining coverage and a set of year fixed-effects. The table presents the coefficients, standard errors (in parentheses), and marginal effects (in brackets) from each hazard model. Marginal effects are annualized percentage changes per million.

Source: Authors' estimates from SIPP Completed File.

Table A1. *Summary Statistics*

	Probit model for SSDI eligibility		Hazard model for SSDI receipt	
	Mean	SD	Mean	SD
Age	44.17	(13.32)	50.92	(15.69)
Gender and marital status				
Female married	0.3271	(0.4691)	0.4359	(0.4959)
Female not married	0.193	(0.3946)	0.2124	(0.4090)
Male married	0.0881	(0.2834)	0.1045	(0.3060)
Male not married	0.2685	(0.4432)	0.3789	(0.4851)
Industry				
Goods-producing	0.3039	(0.4599)	0.2406	(0.4275)
Services	0.1761	(0.3809)	0.1111	(0.3143)
No job	0.8332	(0.3728)	0.8151	(0.3882)
White	0.4926	(0.4999)	0.4654	(0.4988)
Hispanic	0.2389	(0.4264)	0.1557	(0.3626)
Education				
Less than high school	0.1597	(0.3663)	0.2051	(0.4038)
High school diploma or equivalent	0.3334	(0.4714)	0.3446	(0.4752)
Some college or more	0.5069	(0.5000)	0.4503	(0.4975)
Number of unique persons	403,109		130,413	

Source: Authors' calculations from SIPP Completed File.

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