

The Long-Term Financial and Health Outcomes of Disability Insurance Applicants*

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1. Introduction

In 2006, over 6.8 million disabled workers received benefits from the Social Security Disability Insurance (SSDI) program with an average monthly payment of somewhat more than \$900 (SSA, 2007). An additional 2.8 million disabled working-age adults received income from the means tested Supplemental Security Income Program which provides guaranteed incomes to the elderly, blind, and disabled. These programs are designed to ensure the well-being of disabled workers and their dependents and provide an important safety net for those unable to work yet too young to qualify for Social Security retirement benefits. In addition to the financial transfers, the programs provide health insurance: SSDI recipients are entitled to Medicare two years after the initial receipt of disability benefits, while SSI recipients are eligible for Medicaid immediately upon the determination of eligibility.¹

At a first glance, the benefits from these two programs appear to be of substantial importance to recipients. Social Security estimates that over one-half of disabled-worker families would have incomes below the poverty line if SSDI benefits were excluded (SSA, no date). Furthermore, several studies have shown that older workers' application rates respond to changes in SSDI benefit rates (e.g., Burkhauser, et al, 2003; Autor and Duggan, 2007), suggesting that some workers might choose SSDI receipt over employment when benefits are sufficiently high.

However, despite the financial protection offered by the SSDI/SSI programs, there are likely to be substantial costs associated with the receipt of benefits. Although the formula for determining SSDI benefits recognizes the shorter work period that disabled applicants have relative to retired workers, and therefore requires fewer covered quarters for benefit determination, any benefits will be lower than the disabled individual's earnings were he able to continue to work and likely lower than what his OASI benefits would be were he to work until the normal retirement age. These lower benefits thus depress income not only during the prime age working years but the lower income levels will likely continue beyond the normal retirement age and remain as such throughout their lives.

Other financial consequences of disability may be less immediately apparent. Depending on the age at disability, the disabled worker will likely lose much of his

¹ For some categories of disability Medicare benefits are available sooner.

potential pension wealth and any employer-provided retiree health insurance to which he would have been entitled had he continued to work (see Mitchell and Phillips, 2000). Additional restrictions on both future earnings (for SSDI and SSI) and wealth accumulation (for SSI) ensure that households remaining on these programs will experience modest standards of living, at best, throughout their lives.²

The long-term financial security of people who were rejected for SSDI or SSI is not well understood. On the one hand, Bound (1989) and van Wachter, Song, and Manchester (2008) compared the subsequent work experience of this group and found that relatively few returned to work, suggesting that the SSDI/SSI application process may have denied benefits to people who were unable to work. On the other hand, as Parsons (1991) suggested, the long process of application (which requires remaining out of the labor force for years at a time) may have had a scarring effect on these workers that itself reduces the potential for future labor market success. In our study we build on these earlier analyses by comparing the household incomes, financial assets, health, and out-of-pocket medical expenditures of those who were rejected for SSDI/SSI to those who received benefits and to those who never applied.³ We pay particular attention to outcomes during retirement.

Briefly, our preliminary results suggest dramatically lower levels of income and wealth among those receiving SSDI and SSI, even when controlling for differences in socioeconomic status and self-reported health. As has been found in other studies (e.g., Burkhauser et al., 2003), mortality rates are higher among this group compared to those who never applied, and self-reported health is much worse. Perhaps more surprisingly, those who applied for SSDI/SSI, but who were rejected, experienced nearly identical adverse effects as those who received benefits – indeed, for some measures (such as income and wealth pre-retirement), they were somewhat *worse off* than the SSDI/SSI recipients.

We acknowledge that these results are specific to the HRS sample drawn from the non-institutionalized population, and thus will not reflect the mortality experience of the entire population of SSDI or SSI recipients, many of whom are seriously disabled or

² The federal SSI asset limits are \$2000 for a single person and \$3000 for a married couple, exclusive of a home.

³ We examine SSDI and SSI jointly because in the early years of our data application to the two programs cannot be distinguished.

institutionalized.⁴ Nonetheless, for people over age 65, there was nearly complete convergence between those who received benefits and those who simply applied but never got benefits – they all experienced much lower levels of income and wealth that could not apparently be explained by education, race, ethnicity, or self-reported health. Whether these adverse effects reflect selection into the process of just applying for SSDI or SSI, or whether there are causal adverse effects of these programs (e.g., Stapleton et al., 2006), is not entirely clear.

2. Data and Methods

Our data for this project come from the Health and Retirement Study (HRS). The HRS is a panel survey of the older population. The initial cohort was first interviewed in 1992 and has been interviewed biennially ever since. Additional cohorts have been added over time so that the sample is approximately representative of the population ages 51 or older.⁵ We use data for each survey year from 1992 until the most recent 2006 wave. To date, over 30,000 individuals have been interviewed at least once.

The HRS is ideal for our study. It provides an extremely large sample of older workers and follows them into retirement. We can therefore observe reports of an individual's disability over his entire working-life as well as the individual's subsequent financial status once he reaches normal retirement age. The HRS contains extremely detailed information on income, wealth, out of pocket medical expenses, and health, including information on specific disease conditions, limitations with respect to activities of daily living, and measures of depression. We exploit these measures in our analysis to present a complete description of the situations of the disabled relative to the non-disabled as they age.

The HRS asks respondents whether they have applied for disability insurance at some time in the past (and if so, in what year), whether their application was denied, appealed, and whether it was accepted. The date at which the application was made and the date at which benefits began are also obtained. In addition to this disability history,

⁴ Joyce Manchester has kindly shared with us unpublished data suggesting higher rates of mortality in the entire SSDI population than what we observe in the HRS, thus suggesting (as noted above) that our sample of SSDI recipients (or those turned down for SSDI) may not be representative of the entire population.

⁵ Detailed information on the sampling methodology and survey design is available at <http://hrsonline.isr.umich.edu/>. The HRS data are publicly available and can be obtained through the website.

the survey asks whether respondents are currently receiving income from SSDI and/or SSI. Until the 2000 survey (the fifth interview for HRS respondents), the survey questions did not distinguish applications to or income from SSDI and SSI.⁶ For consistency across waves, we therefore treat a respondent as applying for disability or receiving benefits if she applied for benefits / received benefits from either program and was less than 65 when doing so.⁷ These multiple questions result in inevitable contradictions; a respondent might report receiving SSDI income but claim to have never applied (or never to have received) SSDI income, and conversely. We therefore use the RAND definitions of SSDI/SSI receipt as perhaps the best approach to resolving these conflicts and facilitating comparisons with other researchers.⁸

Because we have panel data following respondents over a long period of time, some respondents in our data will become disabled during the sample window. To simplify the analysis and avoid a more complex dynamic model of disability application, we restrict our sample to those who had applied for SSDI/SSI benefits prior to our first observation on their disability status. For the original HRS cohort, the initial interview year is 1992 so we classify respondents by their status in 1992. The AHEAD cohort of the HRS was first interviewed in 1993 and again in 1995 before being merged with the HRS cohort. Because very few questions about disability were asked of these respondents in either 1993 and in 1995, we assign their disability status based on the information in the 1998 interview.⁹ The Children of the Depression Era (CODA) and War Baby (WB) cohorts were also added in the 1998 wave.

We begin with a sample of 28,224 people.¹⁰ We exclude from this sample those individuals for whom we have no information on whether they had applied or received

⁶ One can use data obtained in later waves to infer the type of benefit received early on (RAND, 2009).

⁷ Requiring that an applicant be less than 65 is meant to eliminate those who applied to the SSI program as an aged individual or couple.

⁸ Patricia St. Clair at RAND has been very helpful in working with us to help resolve the inconsistencies.

⁹ We therefore lose all AHEAD respondents who die or otherwise attrit from the survey before the 1998 interview.

¹⁰ Most of the sample are first observed in the 1992 (12,650) or 1998 (10,902) waves when the AHEAD, CODA, and WB are first captured. A substantial number of respondents (3,486) were added in 2004 with the addition of the new Early Boomers cohort (EBB) cohort along with a few new spouses of members of other cohorts. A small number of additional individuals (typically spouses) appear in the waves for years 1994 (103 people), 1996 (196), 2000 (403), 2002 (273) and 2006 (211).

SSDI/SSI and any individuals who applied for SSDI/SSI *after* they are first observed. In keeping with target age group of the HRS we exclude all respondents under the age of 51. These restrictions leave us with a total sample of 24,074 individuals, of whom 1,485 applied for SSDI/SSI and were accepted, 660 applied and were rejected, and 21,929 never applied.

3. Results

Table 1 displays means and standard errors of selected variables for this sample. Column 1 describes characteristics of the sample of 21,929 people who never applied for SSDI/SSI and columns two and three show the corresponding values for those who applied but were rejected and those who eventually received SSDI/SSI.¹¹ Those who never applied for SSDI/SSI are slightly older than the two groups of SSDI/SSI applicants with a mean age of 63.7 years, 46.3 percent are male, 15.5 percent nonwhite, and 8.0 percent Hispanic. Twenty-eight percent of the sample did not finish high school, while 33 percent reported being in a blue-collar occupation. Self-reported health ranges from excellent to poor, and we have aggregated fair and poor health together, which for this group accounted for 23.4 percent of the population. Similarly, 22.6 percent reported being depressed, defined as responding positively to at least 3 of the 8 CESD depression scale questions. Total household income averaged \$65,176, of which \$22,140 was attributable to own earnings. Average wealth was \$350,718 including housing equity,¹² and \$105,732 excluding housing equity.

In columns 2 and 3 we compare the characteristics of our rejected and accepted SSDI/SSI.¹³ The two groups of applicants are remarkably similar along nearly all

¹¹ We do not use the sample weights for individuals. Because the weights are tied to specific cohorts, spouses who are outside the age range of the target sample have zero weight until they reach the age of an included cohort. If we were to use weights, these individuals would be excluded from the sample. Additionally, the weights create difficulties in the construction of survival curves – our sample is skewed in that some age categories are underrepresented initially (and some spouses receive zero weights if they were not in the original sampling frame). The conclusions of study are largely unchanged if weights are used.

¹² We use a wealth measure that excludes the value of a second home. In one year, the HRS failed to ask about second homes, thus to preserve consistency over time, the RAND measure excludes second homes in all years.

¹³ As noted earlier, in later years of the survey, respondents were asked specifically about SSDI or SSI income (rather than both together). Of those for whom a disability benefit type can be discerned, over 85 percent reported at least some income from SSDI. For those who reported in the earlier waves of the survey

dimensions. For example, 47.4 percent of those who were rejected did not complete high school, compared to 50.6 percent of those receiving SSDI/SSI (and compared to 27.7 percent of those not applying). Nearly half of those who applied and were rejected reported feeling depressed, while slightly over half (53.6 percent) of those receiving SSDI/SSI were depressed at some point. Note that these figures are more than twice that for the non-applicant population. Similarly, 73 percent of those rejected for SSDI/SSI had fair or poor self-reported health, just below the 80.5 percent among recipients.

Household income and wealth are remarkably similar for these two groups and dramatically different from the average income and wealth for those who never applied.¹⁴ Income for those who were rejected for SSDI/SSI was \$29,500 (in 2006 dollars) compared to \$28,915 for recipients, suggesting a role for risk sharing within the family (Haider and McGarry, 2006; McGarry and Schoeni, 1995). Similarly, total assets were quite low for disability applicants: \$121,000 for those who applied but were not accepted, compared to \$109,000 for those with benefits, as were non-housing assets at \$22,432 and \$21,576.

Expenditures for the two groups of disabled are nearly identical at \$5,205 and \$5,502, a surprising result given the availability of Medicare and/or Medicaid to disability recipients. For either group, the spending is approximately 80 percent greater than for the non-disabled.

It is perhaps not so surprising to observe that those who applied at some point to SSDI/SSI receive less in income and have lower assets, given their lower educational attainment and differences more generally in socioeconomic status. We therefore use propensity score methods to reweight our original sample to better reflect the characteristics of those who applied at all for SSDI/SSI. (Given that the characteristics of people rejected, and people accepted, are so similar, we lump them together into the category “ever applied” for the purposes of Table 1.) The covariates used to “match” respondents are shaded in Columns 4 and 5 of Table 1. That is, we used the PSCORE procedure in STATA to predict the probability that an individual observation was in the “applied” category. This probability was then used to weight the “never applied” sample

that their application had been rejected and who never received benefits, we do not learn whether the application was to the SSDI or SSI program.

¹⁴ All dollar denominated variables are scaled to 2006 dollars.

to create a newly weighted sample which is designed to be matched with the “applied” sample.¹⁵ Column 4 uses age, sex, race, and ethnic identification, whether a couple, years of schooling, and blue collar occupational status (shaded blue), while Column 5 adds in self-reported health status to the list of predicting variables. Thus, Column 5 attempts to match on the basis of both socioeconomic status and health.

The propensity score approach does a reasonable job of matching the non-applicant group to the sample of people who applied for SSDI/SSI; the weighted age is 57.9, slightly lower than for the full sample of those who applied for SSDI/SSI.¹⁶ The sample better matches the fraction of blue-collar occupations, and the educational and racial/ethnic distribution of the sample of people who applied for SSDI/SSI. While adjusting for these differences narrowed the gap between depression scores, household income, and wealth of the two groups, they did not erase them – the reweighted sample of people who never applied still experience more than double the levels of income and wealth of their counterparts who applied for SSDI/SSI. The difference between out of pocket spending actually grows, perhaps because we have not controlled for insurance status in our matching.

Column 5 presents propensity-score weighted averages but where self-reported health is also used in creating the weighting. Thus the distribution of self-reported health in this sample is similar to those in the “received/rejected” groups; just 2.5 percent of the reweighted group reports excellent health, and 70.4 percent report fair or poor health. While reducing once again the gap between income and rates of depression, these further adjustments do not erase them. The depression score for this sample is still just 32.4 percent, significantly lower than the rate of depression of roughly 50 percent among those who applied for SSDI/SSI. Similarly, household income is more than 70 percent higher in this reweighted “never apply” group, and household assets are more than double those of the comparison group. Out of pocket medical spending remains substantially higher for the disabled group than for the matched comparison group.

¹⁵ The PSCORE program also tests to ensure that the weighting scheme is balanced within each block or interval of the propensity score. Generally our predictive equations performed well, but there were often one or two variables (or interaction terms) that did not satisfy the balancing property within a block.

¹⁶ However, once we account for the loss of observations due to missing values of some variables (e.g. occupation) the mean age for people who applied for SSDI/SSI, 55.7, is very close to what is predicted using the propensity score weighting.

In sum, having ever applied for SSDI/SSI appears to be a marker for particularly adverse wealth and income shocks that goes even beyond the obvious differences in education, occupation, race/ethnicity, or self-reported health. In part, the lower wealth (even conditional on income) may be explained by government restrictions on wealth accumulation for people in the SSI program, but the fact that depression scores are so high among those who applied for SSDI/SSI, even relative to a propensity-score reweighted sample of never-applied, suggests an additional adverse health characteristic for people who apply, or perhaps reflects frustration with the program itself or with one's own inability to function at the same level as earlier in life.

3.1 Analysis By Age Group

To observe how financial and health measures vary with age as well as disability status, particularly how the disabled fare in retirement, we further stratify our sample by age, constructing three age categories (55-59, 60-64, 65-69, and 70-74). We focus on our outcomes of primary interest: household income, wealth, individual out of pocket medical expenditures, and depression. Figure 1 shows simple household median family income measures (all in 2006 dollars) by SSDI/SSI category and age. Median income falls with age as one would expect, and is substantially higher for those who never applied. The key result here, as illustrated in the table of means as well, is that there is almost no difference in household income (including SSDI and SSI) between those who applied and were rejected, and those who applied and were accepted. Given our interest in outcomes during the retirement years, we highlight the results for the 65-69 year old category. Here the median household income for respondents who were denied SSDI/SSI benefits is \$19,500 while for those in which the respondent received benefits the median is \$16,700. The means (Figure 1a) are even closer, \$28,172 and \$26,626 with identical patterns across ages. As noted in the discussion of Table 1, this result is consistent with the family acting to insure members against a shortfall in income.¹⁷

Figure 2 shows similar results for wealth. The medians, and particularly the means, are quite similar for the two groups of applicants. Interestingly, as shown elsewhere, wealth rises past the age of retirement and only begins to decline in one's 70s.

¹⁷ In investigating the differences in the source of income, we find small differences in income from a variety of sources, particularly own earnings and spousal income from government programs including SSDI/SSI, workers' compensation, and unemployment.

This pattern undoubtedly reflects differential mortality of the sample, suggesting that the decline in income with age would be even steeper were we following a balanced sample of survivors.

As an indicator of emotional health, we consider a measure of depression, where the individual is deemed to be currently depressed if they respond affirmatively to three or more of the CESD8 depression scale questions. The results are presented in Figure 3. A similar pattern is obtained; those who received SSDI/SSI experience remarkably high levels of depression, only slightly higher than those who applied and were rejected for SSDI/SSI. The levels for both groups of applicants are more than double those in the general population of the same age group.

Finally, we present some preliminary results for out-of-pocket medical expenditures in figure 4. Our out of pocket measure excludes health insurance premiums and expenditures at the end of life collected in the exit interviews. We anticipate that adding these components will affect the results. However, consistent with earlier work of ours on out of pocket spending (Marshall, McGarry, and Skinner, 2009), we find enormous differences between medians and means. The median values are on the order of \$1,000 for all groups. They do not vary consistently with disability status or with age. We showed earlier the significantly worse health status of disability applicants and infer from these results that Medicare provides important protection against burdensome out of pocket spending. We note, however, that at the means, the story changes dramatically. Applicants have significantly higher mean expenses than those who never applied for benefits, with average expenditures of over \$5,000 at the younger ages. The difference between the groups lessens with age, suggestive of the impact of differential mortality where the least healthy among the disability applicants die in their 50s or early 60s.

3.2 Regression Analysis of Income, Wealth, and Out-of-Pocket Expenditures

In a similar spirit to the propensity score weighted means, we next turn to the regression analysis to capture the association among SSDI/SSI status and income, assets, and out-of-pocket medical expenditures in a multivariate context. Table 2 presents selected coefficient estimates – whether rejected for SSDI/SSI, whether received benefits, college education (compared to high-school education), excellent health (compared to

fair-poor health) and whether depressed – for a number of dependent variables. Generally, OLS is used except for two quantile regressions for median income.

In the regressions, we use the entire sample of person-year measures for all available HRS waves, thus expanding the sample size to 123,087. As noted earlier, we exclude people who applied for SSDI/SSI during the period of analysis and treat the application / receipt of benefit status as fixed over time.¹⁸ All standard errors are clustered by individual. Coefficient estimates are expressed relative to the excluded category, those who never applied for SSDI/SSI. For each regression, we test the hypothesis that the coefficients for rejected applications and successful applicants are equal, with a rejection at the 5% level denoted by * and at the 1% level by **.

We first consider the coefficients for a regression of income on disability status including variables in Table 2, along with additional covariates (full results not reported here): health status (excellent, very good, good, and fair/poor), Hispanic, non-white, male, couple, blue collar, and depressed dummy variables (we also include a dummy if the depression question is missing and a dummy for if the blue collar question is missing). We focus on the first two columns of coefficient estimates which present the estimated effects of having applied but been rejected for SSDI/SSI and having applied and received SSDI/SSI. As shown in Row 1, for our entire sample there is a significant difference ($p < 0.01$) between the coefficient on income for the rejected group (-\$24,380) compared to those who received SSDI/SSI (-\$20,359), but the magnitude of the effect is not large, roughly \$4,000.¹⁹ Although not shown here, the difference (and significance level) is roughly similar when one does not control for self-reported health variables and depression.

We are particularly interested in the effects at older ages and therefore divide the sample by age. For people over age 65 (Row 3), the coefficients are more modest than for the for those less than 65 (Row 2). For those greater than 65 the estimated effects are a negative \$13,202 for those rejected, and -\$10,747 for people who had received SSDI/SSI a marginally significant difference ($p = .06$). Median regressions for the two age-

¹⁸ Some of those in our sample are observed to leave the disability rolls. We ignore such exits here.

¹⁹ We note that if we include all individuals in the sample, including those who apply after they are first observed, the difference is not significantly different from zero at conventional levels. We present the restricted sample version here to agree with the sample in Table 1 and to present the strongest estimates of the protective effect of disability insurance.

delineated samples (Rows 4 and 5) suggest even smaller differences, whether for those under age 65 (an insignificant difference of just over \$1,000) or for over age 65 (an insignificant difference of less than \$400). Regardless of specification, these are remarkably small differences in household income with any differences largely disappearing at older ages. However, among income for either of these groups of applicants (whether successful or not) is substantially lower than for the non-applicants, even when controlling for socioeconomic status and self-reported health.

The next set of rows shows the coefficient estimates for a series of regressions with household wealth as the left hand side variables. There are larger differences by disability status in the under-65 population for wealth than for income. The OLS estimates for being rejected point to a highly depressive effect on overall wealth (-\$91,387 with a standard error of 13,023), larger than the equivalent estimate for those receiving SSDI/SSI (-\$41,769, with a standard error of 13,005), suggesting that failure to qualify for disability has serious long-term deleterious effects. Among older recipients, the association between any kind of SSDI/SSI application and lower wealth accumulation is enormous: -\$137,180 (s.e. 15,770) for those rejected, and -\$102,462 (s.e. 16,518) for those who had received SSDI or SSI. However, the gap between the two coefficients is attenuated relative to the under-65 age population, and is not significantly different from zero. Results for financial wealth in the next set of rows are qualitatively similar to total wealth, but the differences between the SSDI/SSI recipients and those rejected are not significantly different from zero either in the over-65 or the under-65 age group.²⁰

Finally, we turn to out-of-pocket expenditures. Here the distinction between under- and over-age-65 is particularly important in that nearly all respondents will receive Medicare benefits at age 65 regardless of disability status. In the under-age-65 group, those rejected experienced \$784 more in out-of-pocket expenditures (conditional on self-reported health and socioeconomic status) compared to those who never applied, while those who receive SSDI/SSI spend \$958 more. The differences not significantly different from zero, but they are consistent with the large differences in mean spending shown in Table 1. By retirement age, however, out-of-pocket expenditures for both groups are no longer different from the control group (those who never applied); the

²⁰ Least-squares regressions of wealth are notoriously sensitive to outliers. We also attempted to estimate a quantile regression in STATA, but it did not converge.

coefficient for those rejected is \$730 (with a standard error of 733) and for those who had previously received benefits, the coefficient is -\$260 (308), the similarity likely owing to the near universal coverage of Medicare.

These regressions are purely descriptive and should not be interpreted as causal. Nonetheless, they do suggest that the largest gap in financial health is related to whether the individual applied at any time for SSDI or SSI, and not so much whether they got it or not. While there are significant differences in income and wealth at earlier ages (51-65), these differences shrink among retirees, likely because of the availability of Social Security for those not eligible for SSDI or SSI. Furthermore, among the disability applicants, those who receive benefits are faring substantially better than those whose applications are rejected. These results lend some doubt to the hypothesis that many of the disabled applicants could return to work if they are denied benefits, since it is unlikely that they would chose to maintain such a low level of income if other options were available.

3.3 Health outcomes

To investigate further differences in the health of the three populations we examine differences what is arguable the most objective measure of health: mortality. Figure 5 presents a Kaplan-Meier graph for the three groups of individuals in HRS as defined above. Once again, the results show much better survival paths for those who never applied for SSDI/SSI, and little difference in survival by whether the SSDI/SSI application was accepted or rejected.²¹ Figure 5A presents the graph of a Cox-proportional hazard model which includes other characteristics such as sex, gender, and marital status; this model also failed to distinguish between those who were rejected and those who received SSDI/SSI.

4. Conclusions and Discussion

We have presented some preliminary results measuring the longer-term outcomes for people who applied for (and may have received) SSDI/SSI. Perhaps surprisingly, we

²¹ There is a surprising pattern of flattening mortality at ages 60-65 which might be related to the initial sample selection in the HRS – thus these preliminary results should be treated cautiously.

found only modest (and often insignificant) differences between those accepted, and those rejected for SSDI/SSI. This negative finding is consistent with three possible explanations. First, it is possible that all those who apply for SSDI or SSI are legitimately unhealthy, but the application and adjudication process is so complicated (and disability so difficult to discern) that it fails to do a good job in distinguishing between those truly unable to work and those who can. This first explanation is consistent with our results on mortality suggesting that for this extreme but objective measure, the two groups have nearly identical long-term health outcomes. However, it contradicts several earlier studies (see Bound 1989 for a discussion) which found that those accepted to SSDI were significantly less healthy than those who were rejected.

We note that the similarity of incomes and assets for the two groups of applicants, despite one receiving SSDI/SSI income and one not, suggests that those denied benefits have found ways to compensate for the lack of an SSDI/SSI benefit perhaps by offsetting income from family members or other government programs, or some marginal attachment to the labor force. As noted above, our result may also reflect the sampling frame of the HRS, which is unlikely to include the least healthy SSDI enrollees.²²

A second explanation for the similarity of outcomes for accepted and rejected applicants attributes a more positive role to the SSDI/SSI program – while those accepted into the SSDI/SSI programs are indeed less healthy and less able to work, but the benefits of the SSDI/SSI income support offsets the lost income and health care costs (through Medicare eligibility), thus leaving no overall difference relative to those who are not judged to be disabled.

The final explanation for our results, consistent with Parsons (1991), is that the process of applying for SSDI or SSI has permanent scarring effects on labor force participation and earning ability (Atlas and Skinner, 2009). Thus, the long and often drawn-out process of application, denial, appeal, and denial may have led to many of the rejected applicants becoming depressed and marginalized in the labor market. The extended spell of non-work may lead to a deterioration of labor market skills or may provide an adverse signal to potential employers, permanently affecting the ability to earn a living.

²² We remind the reader that our measure of mortality is mortality conditional on surviving long enough after the onset of disability to enter the HRS survey.

While we cannot definitely rule out (or rule in) these competing explanations in this preliminary paper – and leave formal modeling and hypothesis testing for future work – these initial results are at least suggestive of broader welfare effects of SSDI/SSI than previously thought.

References

- Atlas, Steven J., and Jonathan Skinner, "Education and the Prevalence of Pain," NBER Working Paper, 2009.
- Autor, David H. and Mark G. Duggan, "The Growth in the Disability Insurance Roles: A Fiscal Crisis Unfolding," *Journal of Economic Perspectives* 20(3), Fall 2006: 71-96.
- Benitez-Silva, Hugo, Buchinsky, Moshe, Chan, Hiu Man, Cheidvasser, Sofia and Rust, John P., "How Large is the Bias is Self-Reported Disability?" *Journal of Applied Econometrics* 19, 2004: 649-670.
- Bound, John. 1989. "The Health and Earnings of Disability Insurance Applicants," *American Economic Review*, 74: 482-503.
- Bound, John, Richard V. Burkhauser, and Austin Nichols, "Tracking the Household Income of SSDI and SSI Applicants," mimeo, Population Studies Center, University of Michigan, 2002.
- Burkhauser, R., Butler, J., & Gümüs G. (2003). Dynamic Modeling of the SSDI Application Timing Decision: The Importance of Policy Variables, *Welfare State and Labor Market*, Abstract obtained from Institute for Study of Labor (IZA), Discussion Paper No.942. <http://digitalcommons.ilr.cornell.edu/edicollect/153>.
- Haider, Steven and Kathleen McGarry, "Recent Trends in Resource Sharing among the Poor," in *Working and Poor*, edited by Rebecca Blank, Sheldon Danziger, and Robert Schoeni, New York: Russell Sage, 2006.
- Marshall, Samuel, Kathleen McGarry and Jonathan Skinner, "Out of Pocket Medical Expenditures and Retirement Security in the United States," paper presented at the NBER Aging Conference, May, 2009, Carefree AZ.
- McGarry, Kathleen, "Guaranteed Income: SSI and the Well-being of the Elderly Poor," in *The Distributional Effects of social Security and Social Security Reform*, Martin Feldstein and Jeffrey Liebman, eds. Chicago: University of Chicago Press, 2002 : 49-79.
- McGarry, Kathleen and Robert Schoeni, "Transfer Behavior in the Health and Retirement Study: Measurement and the Redistribution of Resources within the Family," *Journal of Human Resources*, 1995 (30) : s184-s226.
- Mitchell, Olivia S., and John W. R. Phillips, "Disability, Early, and Normal Retirement," Working Paper, University of Pennsylvania, 2000.
- Parsons, Donald O., "The Health and Earnings of Rejected Disability Insurance Applicants: Comment," *The American Economic Review* 81(5) (Dec., 1991): 1419-1426.

Rand, *RAND HRS Data Documentation, Version I*, March 2009.

Social Security Administration Office of Policy, 2007. *Annual Statistical Report on the Social Security Disability Insurance Program*,
http://www.ssa.gov/policy/docs/statcomps/di_asr/2006/index.html

Social Security Administration, no date. *Income of Disabled-Worker Beneficiaries*,
www.ssa.gov/policy/docs/chartbooks/income_workers/di_chart.pdf

Stapleton, David C., Bonnie L. O' Day, Gina A. Livermore, Andrew J. Imparato,
“Dismantling the Poverty Trap: Disability Policy for the Twenty-First Century,”
The Milbank Quarterly, 84(4) 2006: 701-732.

von Wachter, Till, Jae Song, and Joyce Manchester, “The Employment Effects of Social Security Disability Insurance in the Past 25 Years: A Study of Rejected Applicants Using Administrative Data,” Columbia University Department of Economics Discussion Paper Series 0809-05, 2008.

Table 1: Means by SSDI/SSI Application Category: HRS

Variable	Never Applied (N=21,929)	Applied: Rejected (N=660)	Applied: Accepted (N=1,485)	Never Applied: Prop. Score [N = 12,398]	Never Applied: Prop. Score (N=18,680)
Age	63.7 [11.7]	58.3 [7.57]	59.4 [8.04]	57.9 [6.33]	58.3 [6.76]
Male	0.463 [0.499]	0.476 [0.500]	0.533 [.499]	0.548 [0.498]	0.542 [0.498]
Nonwhite	0.155 [0.362]	0.317 [0.466]	0.297 [0.457]	0.277 [0.447]	0.270 [0.444]
Hispanic	0.080 [0.271]	0.118 [0.323]	0.127 [0.333]	0.114 [0.318]	0.120 [0.325]
Couple	0.701 [0.456]	0.645 [0.479]	0.567 [0.496]	0.640 [0.480]	0.649 [0.477]
< High School	0.277 [0.448]	0.474 [0.500]	0.506 [0.500]	0.397 [0.489]	0.418 [0.493]
High School Grad.	0.333 [0.471]	0.302 [0.496]	0.284 [0.451]	0.359 [0.480]	0.340 [0.474]
Some College	0.194 [0.395]	0.147 [0.354]	0.142 [0.349]	0.157 [0.364]	0.151 [0.358]
College +	0.196 [0.397]	0.077 [0.267]	0.067 [0.251]	0.087 [0.281]	0.091 [0.287]
Blue Collar Occ.	0.333 [0.471]	0.517 [0.500]	0.537 [0.498]	0.519 [0.500]	0.512 [0.500]
Excellent Health	0.182 [0.386]	0.020 [0.139]	0.014 [0.118]	0.181 [0.385]	0.025 [0.154]
Very Good Health	0.276 [0.447]	0.064 [0.246]	0.042 [0.202]	0.269 [0.443]	0.067 [0.250]
Good Health	0.308 [0.462]	0.186 [0.389]	0.139 [0.346]	0.333 [0.471]	0.205 [0.404]
Fair/Poor Health	0.234 [0.423]	0.730 [0.444]	0.805 [0.399]	0.217 [0.412]	0.704 [0.457]
Depressed	0.226 [0.418]	0.454 [0.499]	0.536 [0.499]	0.227 [0.419]	0.324 [0.468]
Total Income	65,176 [109,815]	29,499 [28,897]	28,914 [45,354]	57,532 [126,138]	50,109 [73,951]
Earnings	22,140 [45,727]	6,450 [14,191]	2,503 [10,230]	25,970 [38,557]	22,148 [34,804]
Total Assets	350,718 [785,159]	121,069 [263,322]	109,041 [314,969]	243,052 [563,529]	206,310 [476,266]
Total Assets ex. housing**	105,732 [422,068]	22,432 [107,766]	21,576 [157,184]	53,389 [207,416]	45,604 [204,929]
Out-of-pocket medical expenses	2,985 [8,949]	5,205 [19,603]	5,502 [21,397]	2,821 [7,932]	3,806 [10,155]

* Propensity score matching uses variables shaded above in blue (along with interaction terms). Block balance met except for a few variables/blocks. ** Excluding second home.

Table 2: Selected Regression Coefficients

Left hand side variable	Rejected SSDI/SSI	Received SSDI/SSI	College (v. hs)	Excellent hlth (vs.poor)	Depressed
<i>Income measures:</i>					
1. Income	-24,380 [1,234]	-20,359** [1,136]	56,047 [2,871]	8,630 [1,336]	-2,183 [594]
2. Income Age <=65	-24,350 [1,456]	-20,100** [1,456]	65,605 [3,940]	11,081 [1,942]	-3,281 [898]
3. Income Age > 65	-13,202 [1,080]	-10,747 [960]	38,812 [1,922]	11,101 [1,503]	-737 [637]
4. Median Income Age <= 65	-11,100 [867]	-9,996 [669]	37,197 [450]	15,573 [549]	-3,017 [448]
5. Median Income Age > 65	-5,258 [544]	-4,897 [365]	21,449 [231]	6,994 [292]	-1008 [198]
<i>Asset measures:</i>					
6. Total Assets Age <= 65	-91,387 [13,023]	-41,769** [13,005]	418,292 [33,845]	97,958 [17,435]	-38,310 [8,398]
7. Total Assets Age > 65	-137,180 [15,770]	-102,462 [16,518]	543,340 [39,085]	71,681 [29,648]	-18,308 [7,337]
8. Financial Assets Age <= 65	-26,785 [20,400]	-5,179 [17,667]	170,360 [10,636]	17,021 [10,515]	-19,728 [7,959]
9. Financial Assets Age > 65	-48,472 [35,225]	-27,219 [24,506]	247,939 [15,800]	43,294 [12,587]	-5,391 [7,981]
<i>Medical spending:</i>					
10. OOP Expenses Age <= 65	784 [367]	958 [288]	859 [125]	-2,883 [187]	300 [117]
11. OOP Expenses Age > 65	730 [733]	-259 [308]	1299 [213]	-2,864 [229]	460 [164]

Each of the 11 regressions is run separately. Covariates of particular interest are listed in the column heading. The complete set of covariates consists of dummy variables for age (5-year intervals), health status (excellent, very good, good, and fair/poor), indicators for depression, blue collar occupation, Hispanic, non-white, male, and couple. We also include dummy variables to indicate that if the depression question is missing and a dummy for if the blue collar question is missing. * denotes statistical significance at the 5% level, ** at the 1% level for a t-test that the two coefficients on indicators of whether the effects for those who applied and were rejected or applied and received benefits are equal. Regressions are clustered at the individual level (except for quantile regressions). Standard errors are in brackets.

Figure 1: Median Household Income by SSDI/SSI Status & Age

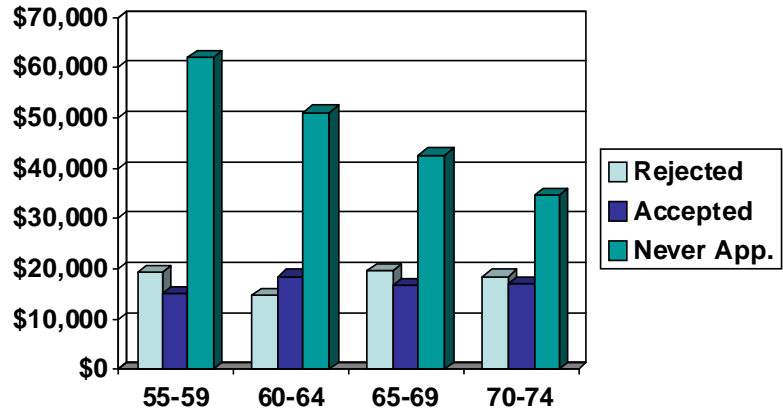


Figure 1A: Mean Household Income by SSDI/SSI Status & Age

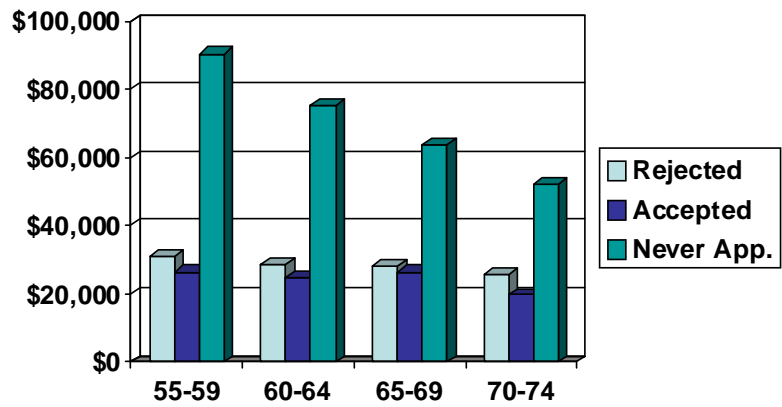


Figure 2: Median Household Assets by SSDI/SSI Status & Age

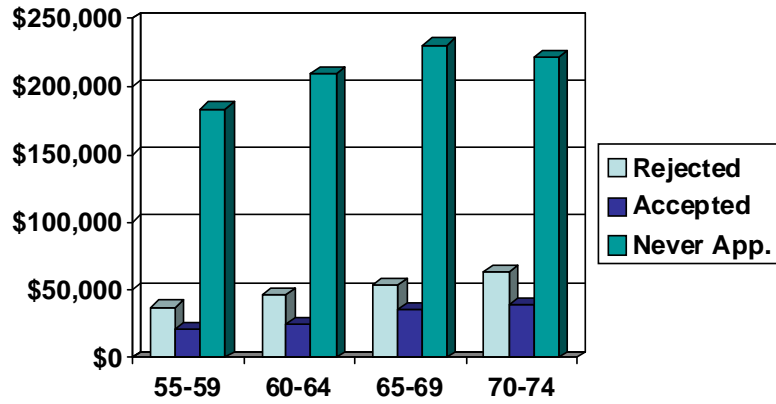


Figure 2A: Mean Household Assets by SSDI/SSI Status & Age

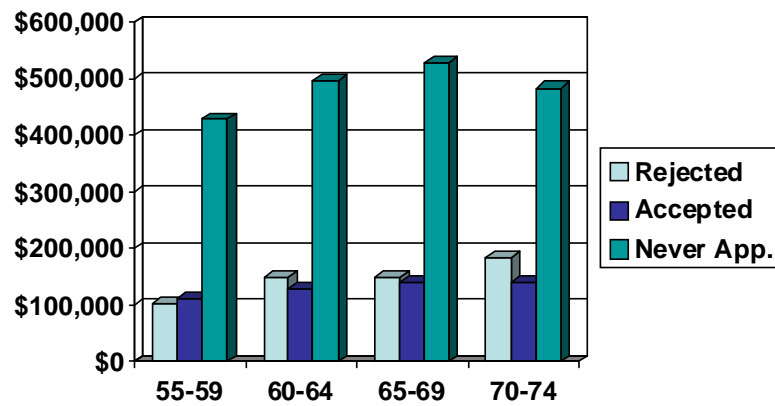


Figure 3: Percentage Currently Depressed by
SSDI/SSI Status & Age

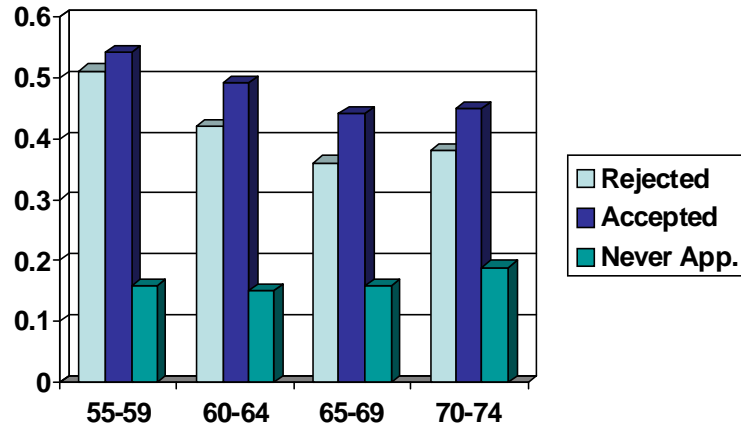


Figure 4: Median OOPME by SSDI/SSI Status & Age

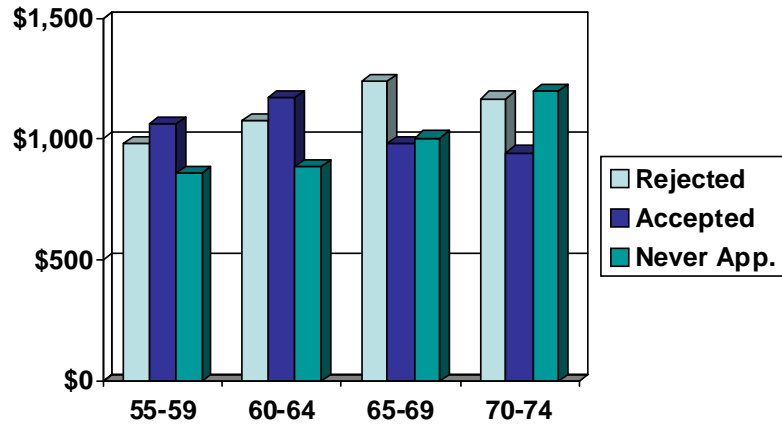


Figure 4A: Mean OOPME by SSDI/SSI Status & Age

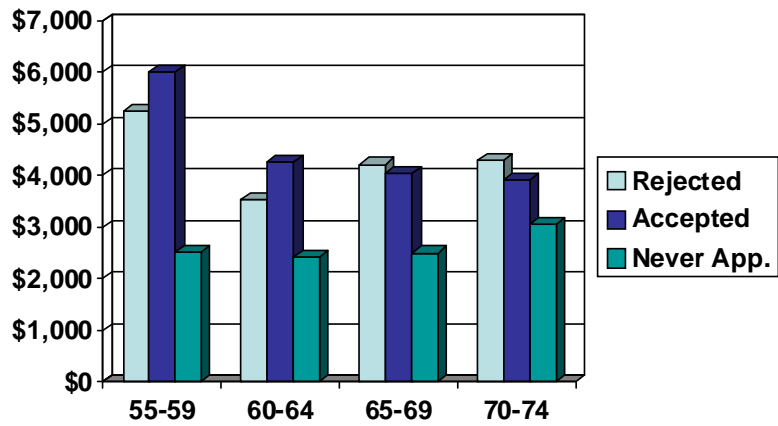


Figure 5: Meier Kaplan Survival Estimates, by SSDI/SSI Status

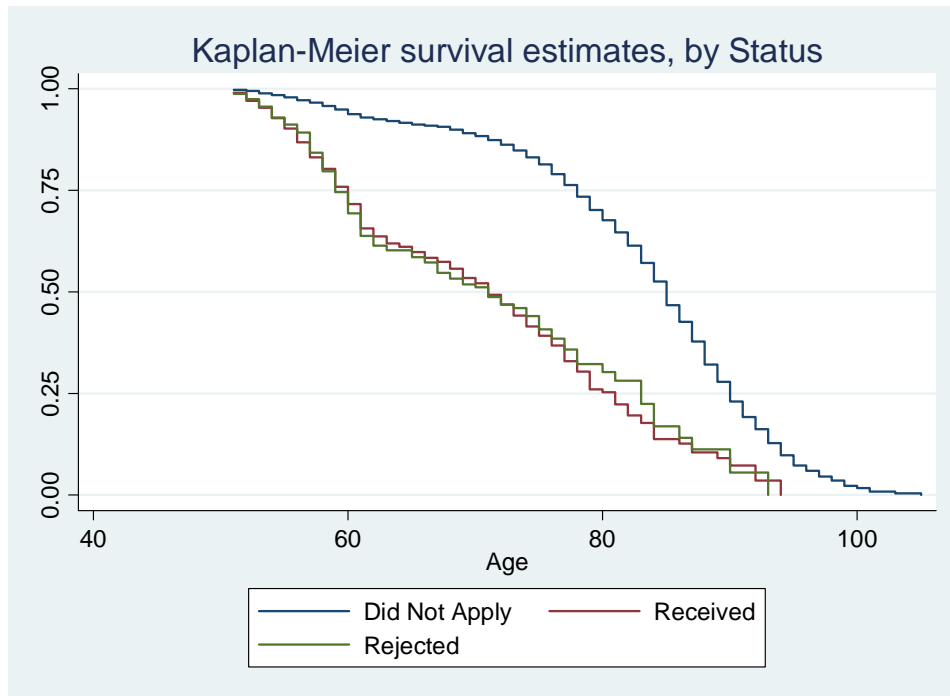


Figure 5A: Meier Kaplan Survival Estimates, by SSDI/SSI Status

