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CHANGES IN NEW DISABILITY AWARDS: UNDERSTANDING TRENDS AND LOOKING AHEAD

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Abstract

This paper examined health, demographic, and disability trends over four birth-year cohorts using data from the *Health and Retirement Study* (HRS) and restricted linked SSA data with the goal of understanding current and future Social Security Disability Insurance (SSDI) prevalence. The analysis included (1) identifying physical and mental health responses in the HRS most predictive of SSDI receipt and how these responses and the likelihood of SSDI receipt have changed over cohorts; and (2) a decomposition to determine what share of the changes in SSDI receipt can be attributed to differences in the effects of health and other factors over cohorts, while accounting for the changing selection into program coverage. Key aspects to be addressed in future work include analysis of the younger adult population and modeling application timing and behavior, as this work focused instead on ultimate SSDI application approval among older birth-year cohorts.

This paper found that:

- For both men and women, several health factors (e.g., back pain and heart disease) and non-health measures (e.g., share never married) that are associated with SSDI receipt have become more common.
- There has been an increase in SSDI that is beyond what changes in health and demographics alone would predict in the population studied here. For men, only about half of the increase can be explained by changes in these measures; among women the increase explained by changes in these measures is only about 35 percent.
- Because factors associated with non-coverage are also associated with receiving SSDI conditional on being covered, results are sensitive to how selection into the SSDI program coverage is modeled.

The policy implications of these findings are:

- While the SSDI incidence and prevalence rates have begun to decline in recent years, this does not seem to be due to improved health, and the trend seems unlikely to continue.
- While non-health factors matter overall more for women, within these non-health factors, job characteristics mattered somewhat more for men in the sample. Changes to the determination process related to the vocational grid may, then, have more of an impact on men than women.

1. Introduction

Researchers at the Social Security Administration have recently highlighted the decline in Social Security Disability Insurance (SSDI) beneficiaries (Social Security Administration, 2019). After a decades-long increase in the number of beneficiaries—peaking at nearly nine million beneficiaries in 2014—the number of total disabled workers receiving SSDI benefits has been steadily declining. The decline in the number of new awards goes even further back. What are some of the possible changes in population health and work characteristics that might have contributed to this trend and, with potential revisions to the current SSDI award eligibility requirements on the horizon, should we expect this trend to continue and even accelerate?

This paper looks at receipt of SSDI and its relationship with demographic and health characteristics after age 50 for several birth-year cohorts. The chief finding is that, for the birth cohorts studied here, later (younger) cohorts have higher rates of SSDI receipt—beyond what their health and demographic characteristics would predict—and the decline in SSDI incidence should not necessarily be expected to continue.

The rich measures available in survey data the Health and Retirement Study serve as the core data for understanding the underlying physical, cognitive, and mental health of the population across ages and time. However, the way in which these health measures available in surveys interact and correspond to ability to work, SSDI application, and award probability is not straightforward. Furthermore, the strongest predictors of work disability from one cohort in time may not best predict disability that ultimately results in SSDI receipt for another cohort.

With both the composition of health and work characteristics across cohorts changing, and the possibility of the correspondence between these characteristics and SSDI application and award also changing, it is not clear what is driving ongoing SSDI trends and what we should expect future activity to be. This study looks at how trends in health and demographic characteristics over time have changed and uses decomposition methods to better understand and distinguish between the mapping between sets of health measures to work disability, and how that mapping has shifted over time. Specifically, I focus on decomposing the simultaneous contributions of (i) changes in cohort characteristics and (ii) changes in the correspondence of these characteristics to work disability. An important preliminary element is determine which physical, cognitive, and mental health characteristics are most important for the main purpose of the research. Additionally, while considering multiple types of health—broadly categorized under physical, cognitive, and mental—and measure the relationship with work disability jointly.

To determine the extent to which changes in both SSDI application and award rates are due to changes in various characteristics of the population over time, I use decomposition

methods found in Fortin et al. (2011) based on a generalization of Oaxaca (1973). In the first stage, counterfactual disability rates are generated representing what the disability incidence rate for cohort i would be if the population characteristics would have remained as they were for cohort i'. In the second stage of the decomposition a separate counterfactual probability is generated to estimate the probability of application and award for cohort j compared to the probability of application and award for cohort j' for the same set of characteristics. This is also be used to predict what trends in SSDI we should expect to see in the future if populations characteristics change in particular ways.

Several findings result from this analysis. The first is that, for both men and women, several health factors (e.g., back pain and heart disease) and non-health measures (e.g., share never married) that are associated with SSDI receipt have become more common. There has been an increase in SSDI that is, however, beyond what changes in health and demographics alone would predict in the population studied here. For men, only about half of the increase can be explained by changes in these measures; among women the increase explained by changes in these measures is only about 35 percent.

Another finding is that, because factors associated with non-coverage of the SSDI program—such as having a low earnings history, not being married, and having poor health—are also associated with receiving SSDI conditional on being covered, results are sensitive to how selection into the SSDI program coverage is modeled. If not accounted for, results would understate, for instance, the likelihood of someone in poor health receiving SSDI.

There are several implications for understanding SSDI policy as a result. The first is that, while the SSDI incidence and prevalence rates have begun to decline in recent years, this does not seem to be due to improved health, and the trend seems unlikely to continue. One result to be further studied in later work would be to look at whether in fact the poorer general health of the younger cohorts even leads to slightly earlier receipt for many, resulting in a steeper rise in beneficiaries (and more noticeable decline) than otherwise would have occurred.

The second implication for potential future changes to policy is that, while non-health factors matter overall more for women, within these non-health factors, job characteristics mattered somewhat more for men in the sample. Changes to the determination process related to the vocational grid may, then, have more of an impact on men than women.

2. Background on SSDI and the HRS Data

The Social Security Disability Insurance (SSDI) program is a large national program in the United States administered by the Social Security Administration (SSA) as part of the Old-Age, Survivors, and Disability Insurance program. The program covers nearly all workers in the United States, who are subject to the Social Security payroll tax. Both Social Security Old-Age and Disability Insurance benefits are a function of a person's taxable earnings history and his or her Full or Normal Retirement Age (NRA), which is between 65 and 67 depending on birth year. Old-Age retirement benefits can be claimed as early as age 62—though they depend on the claiming age relative to one's NRA and increase with age up to age 70—with qualification automatic with age. Disability Insurance benefits, however, are only received if an applicant is determined to be unable to perform work due to a qualified, long-term disability, with this determination also depending on age, education, and past work performed.

The first decision on SSDI applications is made on average within three to four months, with expedited processing for particular situations, such as a terminal illness. Appeals for reconsideration after initial rejections, however, are very common and the entire process commonly takes over one year with the allowance rate for workers varying between 47 and 62 percent for the 1.2 to 2.8 million annual decisions over the last 20 years.[1]

The number of total disabled worker beneficiaries is currently 8 million, falling from a high of about 9 million between 2014-2016. Understanding the substantial increase in beneficiaries in both the absolute numbers and as a share of the working age population, studied prominently in Autor and Duggan (2003), constitutes a substantial literature. Many factors are understood to be associated with this increase, including the age distribution, the increase of females as SSDI covered workers, longer-living beneficiaries, economic consitions and the SSDI program as a possible substitute for long-term unemployment insurance, and higher NRAs leading to delayed transition to Social Security Old-Age benefits. The more recent decline in SSDI beneficiaries in particular has been more recently studied by authors at the Social Security Administration's (Social Security Administration, 2020), who survey and integrate SSA projections and a number of external studies to delineate a number of factors contributing to these trends. This study focuses on aspects of health and demographic trends of existing and upcoming retirees.

The data used in this analysis comes from the Health and Retirement Study (HRS) survey, including the restricted access variables for respondents' detailed occupation codes and linked SSA data. As the youngest respondents in the Study are at least 50 years old—or are married to someone who is—this necessarily restricts some aspects of the analysis to an older population. While not ideal in this aspect, the richness of the data combined

[1] See Table 60 of www.ssa.gov/policy/docs/statcomps/di_asr/2019/sect04.pdf.

with the facts that (1) retrospective data in the linked SSA data captures past SSDI onset and (2) work disability onset is most common at these older ages likely outweighs the disadvantages of not capturing all health disability at younger ages.

The respondents would include those born between 1936 and 1959, which corresponds to the HRS cohorts of "HRS [Original] Cohort", "War Babies", "Early Baby Boomers", and "Mid-Baby Boomers". The variables of interest include:

- self-reported health and whether health problems limit work
- specific health responses (e.g. arthritis, cancer) and measures (e.g. BMI)
- reported health habits (e.g. smoking, drinking, exercise)
- difficulties with activities of daily living (ADLS and IADLS), back pain
- cognitive health scores (e.g. word counts, serial 7s)
- mental health and CESD measures

as well as variables controlling for other non-health aspects like past job characteristics, education, earnings and household structure. I map these characteristics to the linked SSA data on SSDI receipt at any time prior to a respondent reaching Normal Retirement Age.[2]

3. Patterns in SSDI Receipt and Characteristics in the HRS Sample

In this section will describe the HRS sample analyzed and show patterns in a number of health, behavior, and demographic characteristics associated with ultimately receiving SSDI benefits, many of which have changed across the four birth-year cohorts studied here. Most of the following are characteristics on health and demographics describe the respondents at ages 50–59, with an approximately uniform age distribution. In the next section, I will look at the relationship between these and SSDI incidence at any point prior to reaching Normal Retirement age across cohorts.

3.1. HRS Sample

The sub-sample of HRS respondents analyzed here were born between 1936 and 1959, categorized under of four HRS cohorts: "[Original] HRS" (a subset born 1936-41), "War Babies" (born 1942-47), "Early Boomer" (born 1948-53), and "Mid Boomer" (born 1954-59). The respondents included here for demographic and health characteristics include those who do and do not have match SSA records, and a representative sample of only those who do have linked SSA records for measures of SSDI incidence.

Table 1 shows some broad characteristics of the sample, all related to SSDI receipt, divided into the four birth-year cohorts. Between 70 and 76 percent are married when

[2]The SSA disability variables linked from the HRS are described in the codebook on the HRS website: https://hrs.isr.umich.edu/data-products/restricted-data/available-products/9695.

TABLE 1: *Characteristics of the Matched Sample*

	HRS subset (b. 1936–41)	War Babies (b. 1942–47)	Early Boomers (b. 1948–53)	Mid-Boomers (b. 1954–59)
Married	.76	.74	.73	.70
Separated/Divorced	.14	.18	.17	.17
Widowed	.06	.05	.04	.03
Never Married	.04	.04	.06	.10
Less than HS	.21	.14	.10	.10
GED	.05	.05	.04	.05
HS Diploma	.33	.30	.24	.24
Some College	.21	.25	.29	.29
College +	.20	.27	.33	.31
Median Earnings, age 50–59	$41.8K	$44.1K	$46.9K	$45.3
Mean Earnings, age 50–59	$52.2K	$55.1K	$59.2K	$58.9
Self-Reported Health, age 50–59				
Good to Excellent	.79	.79	.77	.77
Fair	.14	.15	.16	.17
Poor	.07	.07	.07	.06
Health problems limit work, %	22.4	20.1	21.4	23.6
Person-Year Obs.	5,372	2,076	7,739	4,910

Note: All responses are for respondents when age 50–59 in the HRS survey and are weighed to be representative of the population within cohort.

observed at ages 50–59, with the share falling across cohorts. The proportion separated or divorced has risen slightly, those never married goes from 4 up to 10 percent, while the share widowed is low and has declined. The total level of education has risen considerably, with the proportion with less than a high school diploma going from 21 to 10 percent. The median earnings in 2016 dollars has mostly gone up, falling slightly for the youngest Mid-Boomers cohort, and the same is true for mean earnings. Both sets of figures are for those who report any earnings, which has been roughly constant for men and risen for women across cohorts.

Self-reported health when age 50–59 has not changed substantially, but is in the direction of worsening slightly. This broad subjective measure tends to be a good proxy for the finer and more objective measures of health we will see in Table 3 below. The proportion reporting either Fair or Poor health has gone from 21 to 23 percent, while the share reporting health problems that limit work—a combination of both health and the type of work one is engaged in—has varied from around 20 and 24 percent.

3.2. Patterns in SSDI Receipt

The share of respondents of are approved for SSDI benefits at some point before reaching Normal Retirement age has increased significantly for the cohorts studied here. This includes the respondent for whom there is a matched SSA record—which for those who have claimed Old-Age retirement benefits is highly representative of the whole HRS sample—or who have some interaction with a Social Security program such as SSDI—a younger sample that is highly unrepresentative yet not exhaustive of the population that has received SSDI. For this reason, to keep the sample representative and avoid sensitive weighting assumptions, the analysis focuses on those who have ever been approved for receiving SSDI benefits rather than those who have a record of applying by the time they reach Normal retirement age. More information on studying approvals versus applications is in Subsection A.2.

Table 2, we see that the share of respondents who had been approved for and received SSDI benefits at any point prior to reaching their Normal Retirement Age of 65–67 has risen from 12 to 20 percent. This is true also within male respondents—rising from 15 to to 23 percent of the unweighted data—and within female respondents, who have overall lower figures but go from 12 to 18 percent. This increase between the oldest and youngest cohort for which we have complete data is also true broadly within race categories. The White/Caucasian share has risen modestly from 14 to 17 percent, while for Black/African American the share goes from 18 to 28 percent. Unweighted figures are reported here for the within sex and race figures, as these along with income are the major factors in determining sample weights.

TABLE 2: *DI Receipt by Cohort, Sex, and Race*

	HRS subset (b. 1936–41)	War Babies (b. 1942–47)	Early Boomers (b. 1948–53)	Mid-Boomers (b. 1954–59)
Received SSDI by NRA*	.12	.17	.20	**
Male (unweighted)	.15	.21	.23	
Female	.12	.16	.18	
White/Caucasian (unweighted)	.14	.15	.17	
Black/African American	.18	.27	.28	
Other	.14	.26	.23	
Person Obs.	3,330	1,956	2,183	

Notes: *Weighted using HRS respondent-level weights. Unweighted is .14, .17, .20, - for the cohorts. This is the share who, by the time of their Normal Retirement Age, had received SSDI benefits.
** There is not a representative sample of SSA matched data for this cohort, most of whom had not reached NRA at the time of response.

3.3. Patterns in Health Characteristics

There have been overall large increases in SSDI receipt, however it is not clear from the broad characteristics present so far what could be contributing. We have seen in Table 1 that younger birth cohorts have generally higher mean and median earnings and more educational attainment and self-reported health that is not significantly worse, though we will see in Table 3 that on many health and lifestyle measures the younger cohorts seem to be worse off. This is true for the (weighted) population as well as within broad race categories.[3] There are increases particularly in factors that—as we will see in the next section—tend to be strongly associated with DI receipt. But while some measures have worsened on average, many others have improved.

Among the few that show improvements in this Table 3 are the share the report engaging in regular vigorous activity, going from 37 to 46 percent (with the oldest birth cohort, the HRS subset not being asked this question). The share who smoked at the time of the interview fell from 26 to 21 percent. The share who report any mobility difficulties has decreased modestly but remains high at 32 percent for the youngest cohort. Others have not changed drastically, including the share who report having arthritis and some difficulty walking and difficulties with activities of daily living (ADL) and instrumental activities of daily living (IADL), all of which have increased by only two percentage points. But while this may not seem large, as we will see, these happen to be significant predictors of eventual SSDI receipt.

[3]Table A.2 in the Appendix includes characteristics by birth-year cohort and race.

TABLE 3: *Health Characteristics when age 50–59, by birth cohort*

	HRS subset (b. 1936–41)	War Babies (b. 1942–47)	Early Boomers (b. 1948–53)	Mid-Boomers (b. 1954–59)
Reg. Vigorous Activity	-	.37	.42	.46
Current Smoker	.26	.22	.20	.21
Drink ≥ 1 per week	.59	.58	.65	.70
BMI (median)	26.6	27.4	27.8	29.2
Cancer Diagnosis	.051	.074	.064	.078
High Blood Pressure	.34	.37	.39	.42
Arthritis	.39	.42	.40	.39
Back pain	.33	.35	.37	.40
Some Difficulty Walking	.17	.19	.19	.19
Diff with 1+ ADL	.09	.11	.10	.11
Diff with 1+ IADL	.06	.05	.07	.08
Any Mobility Difficulties	.35	.34	.35	.32
Cognitive and Mental Health Measures				
Cog. Total (out of 35), All cohorts	24.6	24.8	24.0	23.7
CESD (percent at least one)	52.9	57.8	54.1	56.2

Notes: Total are using sample weights, which are not used for statistics by race. Measures reported when interviewed at ages 50–59.

Several other average health measures have worsened more noticeably, some of which are strong predictors of SSDI receipt while others are not. The share who drink alcohol at least once per week has gone from under 60 percent to 70 percent, though the share who more frequently drink has not increased similarly (not shown) and this frequency happens not to be a predictor of disability. Average BMI has also gone up, from an index of 26.6 to 29.2 for these ages. Other measure that have gone up include high blood pressure, and back pain. The CESD score, an indicator of depression has also worsened somewhat on average, with the percent reporting at least one depressive symptom ranging between 52.9 and 57.8.

3.4. What Predicts SSDI Receipt?

Table 4 shows what characteristics tend to be most associated with SSDI receipt across birth year cohorts. The results shown include coefficients from second-stage probit regressions for men and women where the outcome is DI receipt by Normal Retirement Age and, with predictive margins (with other variables being fixed at mean) in the right two columns. The first stage accounts for selection into having an observed Primary Insurance Amount (PIA), which requires having a history of Social Security "covered" earnings that would also indicate eligibility for SSDI benefits. This first stage is very relevant here, as the measures that would tend to be associated with receiving SSDI approval at some point—such as low earnings history, lower levels of education, and not being married—are also associated with not having enough of a "covered" earnings history to be technically eligible to receive SSDI should a qualifying disability arise.

Table 4 shows the coefficient estimates as well as the predictive margins for both men and women. Looking at the education level coefficients, higher levels of education tend to be associated with lower probabilities of having received SSDI by the time of Normal Retirement Age. The predictive margins for both men and women reflect this.[4] For race, Black is associated with being just under a 16 percent increase in the likelihood of receiving SSDI relative to White for men and about half that for women; category Other is less precisely estimated but is lower for men relative to White and higher for women. The predictive margins also reflect this, however it is worth noting that the predictive margins for the race and education measures do not correspond well to the numbers in the actual data in Table 2. This is because the predictive margins compare, for instance, the probability of receiving SSDI for two people who have two different education levels but otherwise the same population average characteristics; people in different education and race categories, however, do not typically share the same characteristics for all other variables in the regression.

[4]The exception is with those holding a GED. Having worse outcomes than those without either a GED or high school diploma is consistent with various measures in labor economic literature.

TABLE 4: *Predictors of SSDI Receipt*

		Coefficients		Predictive Margins	
		Men	Women	Men	Women
Education					
	< High School	-	-	.191	.133
	GED	.035 (.137)	.133 (.144)	.200	.157
	HS Graduate	-.039 (.090)	.156 (.093)	.182	.161
	Some College	-.057 (.095)	.124 (.100)	.179	.155
	College +	-.389 (.105)	-.028 (.119)	.117	.129
Race					
	White	-	-	.165	.144
	Black	.158 (.089)	.083 (.083)	.199	.159
	Other	-.018 (.137)	.106 (.134)	.161	.163
PIA ($100s)		-.154 (.059)	-.000 (.000)		
Trouble walking					
	No	-	-	.142	.117
	Yes	1.713 (.090)	1.572 (.083)	.331	.244
Heart disease					
	No	-	-	.163	.145
	Yes	.309 (.102)	.173 (.112)	.234	.179
Self-reported health					
	Good/Excellent	-	-	.133	.108
	Fair	.467 (.083)	.558 (.084)	.244	.229
	Poor	.878 (.122)	.816 (.124)	.375	.305
BMI		.011 (.006)	.013 (.005)		
Cancer					
	No	-	-	.168	.144
	Yes	.251 (.190)	.399 (.145)	.225	.229
Back pain					
	No	-	-	.153	.133
	Yes	.207 (.064)	.182 (.068)	.197	.168
Marital Status					
	Married/partnered	-	-	.165	.132
	Separated/divorced	-.007 (.096)	.274 (.079)	.164	.185
	Widowed	.407 (.248)	.041 (.117)	.261	.139
	Never Married	.385 (.147)	.390 (.141)	.255	.211
CESD					
	None	-	-	.160	.131
	At least one	.084 (.066)	.151 (.070)	.177	.158
Constant		-1.38 (.215)	-1.81 (.176)		
Observations		2,859	2,620		

Notes: First stage selection on birth year, marital status, and race, with 201 non-selected men and 462 non-selected women.

The next variable is PIA, or Primary Insured Amount, which is an increasing function of a person's earnings history and gives the amount one would receive monthly is claiming at his or her full retirement age, which also corresponds to the monthly amount that one would receive if approved for SSDI benefits. The coefficient estimate is strongly negative for men but there is interestingly almost zero effect for women. Having trouble walking is very strongly associated with receiving SSDI benefits: Men who report having trouble walking are 171 percent more likely and women are 157 percent more likely to eventually receive SSDI than those who do not have trouble walking. Other strong predictors are back pain, heart disease, self-reported health, and BMI. Marital status and cancer (broadly defined), and CESD also are clear, though less precise, predictors of SSDI receipt.

The following section looks at the relationship between health and SSDI receipt across cohorts and whether the changes in many demographic and health factors alone can explain changes in SSDI receipt, or whether the relationship between a given portfolio of health and demographics and eventual SSDI receipt has changed.

4. Effects of Changing Population Characteristics on Awards

4.1. Approach

In this section, I show results from an exercise to see what share of the change in new SSDI beneficiaries can be attributed to changes in the population's underlying health and demographic characteristics versus changes in the propensity to apply for and receive SSDI. This begins with estimating coefficients on outcome Y_t in for two birth year cohorts, those born 1939–41 and 1951–53, referred to as $t = A, B$, in:

$$Y_t = \beta_{0,t} + \beta_{D,t} D_t + \beta_{H,t} H_t + \beta_{W,t} W_t \tag{1}$$

Here, D_t is a vector of demographic characteristics, including age, marital status, sex, education, and race; H_t is a vector of health characteristics (physical, mental, cognitive (possibly) of varying degrees of severity); and W_t is a vector of work/job characteristics (physical intensity, income) at time period t. The outcome Y is SSDI approval at any point prior to reaching Normal Retirement Age for the overall sample.

- The total difference between the annual rate of new SSDI recipients in the data set between cohorts $t = A$ and $t = B$ is

$$\overline{Y}_A - \overline{Y}_B \tag{2}$$

- While differences that could be attributed to changes in the mapping from D, H, and

W to Y is given by:

$$(\beta_{0,A} - \beta_{0,B}) + (\beta_{D,A} - \beta_{D,B})\overline{D}_B + (\beta_{H,B} - \beta_{H,B})\overline{H}_B + (\beta_{W,A} - \beta_{W,B})\overline{W}_B \quad (3)$$

- The difference that could be attributed to changes in population characteristics is:

$$\beta_{D,B}(\overline{D}_B - \overline{D}_A) + \beta_{H,B}(\overline{H}_B - \overline{H}_A) + \beta_{W,B}(\overline{W}_B - \overline{W}_A) \quad (4)$$

4.2. Results

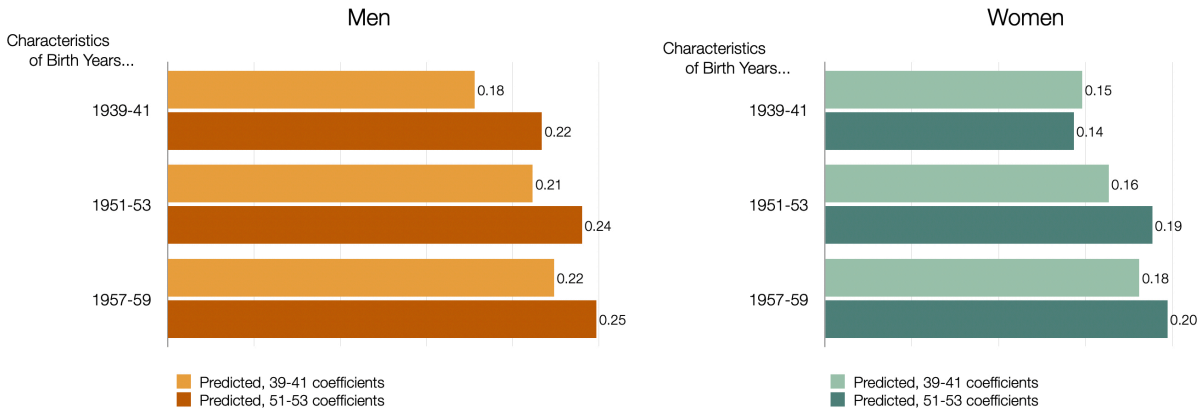
Overall, the findings are that, while younger birth-year cohorts are more likely to receive SSDI benefits by the time they arrive at Full Retirement Age, their characteristics alone do not fully explain their higher levels of SSDI receipt. The results are shown graphically in Figure 1. The upper two graphs show, for men and women, what predicted share of the sample would be SSDI recipients based on applying the coefficients for the regression on the earlier $t = A$ cohort (lighter upper bars) compared to the later $t = B$ cohort (darker lower bars).

For men, only about half of the increase in SSDI receipt between the 1939-41 cohort and the 1951-53 cohort can be explained by changes in the characteristics measured. The actual estimated SSDI receipt is 18 percent for the 1939-41 cohort and 24 percent for the 1931-53 cohort. Applying the 1951-53 cohort characteristics to the 1939-41 coefficient estimates would lead to an expected 21 percent receiving SSDI instead of the actual 24 percent. Applying either the 1939-41 or the 1951-53 coefficients to the characteristics of the 1957-59 cohort, if the mapping between characteristics and receipt were to not change, we would expect only a modest increase of about one percent in SSDI compared to the 1951-53 cohort.

Among women, the increase in SSDI receipt between the 1939-41 and 1953-57 cohorts explained by changes in health, demographic, and work characteristics is less than one third. The predicted and actual rate of SSDI for the 1939-41 cohort is about 15 percent, while it would be only slightly higher at 16 percent with the characteristics of the 1951-53 cohort, with the remainder of the actual 19 percent rate for the 1951-53 cohort unexplained by changes in the characteristics captured here. Applying the 1939-41 and the 1951-53 coefficients to the characteristics of the 1957-59 cohort, if the mapping between characteristics and receipt were to not change, we would expect only a modest increase of about one percent in SSDI compared to the 1951-53 cohort.

In the lower panel in Figure 1, we see the separate effects of demographic characteristics D_t, health characteristics H_t, and job characteristics W_t broken out in detail. While non-health factors matter overall more for women, within these non-health factors, job characteristics mattered somewhat more for men in the sample. Changes to the determi-

FIGURE 1: *Decomposition Results*



nation process related to the vocational grid may, then, have more of an impact on men than women

5. Conclusions and Future Work

Several findings result from the analysis above. The first is that, for both men and women, several health factors (e.g., back pain and heart disease) and non-health measures (e.g., share never married) that are associated with SSDI receipt have become more common. There has been an increase in SSDI that is, however, beyond what changes in health and demographics alone would predict in the population studied here. For men, only about half of the increase can be explained by changes in these measures; among women the increase explained by changes in these measures is only about 35 percent. Another finding is that, because factors associated with non-coverage of the SSDI program—such as having a low earnings history, not being married, and having poor health—are also associated with receiving SSDI conditional on being covered, results are sensitive to how selection into the SSDI program coverage is modeled. If not accounted for, results would understate, for instance, the likelihood of someone in poor health receiving SSDI.

There are several implications for understanding SSDI policy as a result. The first is that, while the SSDI incidence and prevalence rates have begun to decline in recent years, this does not seem to be due to improved health, and the trend seems unlikely to continue. One result to be further studied in later work would be to look at whether in fact the poorer general health of the younger cohorts even leads to slightly earlier receipt for many, resulting in a steeper rise in beneficiaries (and more noticeable decline) than otherwise would have occurred. The second implication for potential future changes to policy is that, while non-health factors matter overall more for women, within these non-health

factors, job characteristics mattered somewhat more for men in the sample. Changes to the determination process related to the vocational grid may, then, have more of an impact on men than women.

Future work that would most immediately improve the analysis above would look more closely at the onset of disability through not only SSDI receipt at any point up to the Normal Retirement Age of these cohorts, but also the application timing and determination. Because the linked administrative data did not include all of the HRS respondents who applied for but did not receive SSDI, it was not possible to determine how that component of the process changed over these cohorts. Such analysis would be extremely useful for understanding how propensity to apply might have changed across cohorts.

A. Appendix

A.1. Weights in the HRS Restricted SSA Data

The SS files are not representative of the population, and this is not wholly corrected by using HRS respondent or household weights. At younger ages, one is more likely to be in benefit records if receiving SSDI, so even looking at initial Type of Claim overstates the share who have applied for SSDI if not weighted properly. Even using the SS weights, overall percent applying for SSDI in younger cohorts is overstated (younger people in the SS benefits data are disproportionately SSDI applicants as opposed to OASI claimants, a category which is representative of the population of "covered" workers). For this reason, the present study looks at ultimate SSDI receipt at the time of Normal Retirement Age, at which point those with linked SSA records—which will include both SSDI and Old-Age beneficiaries.

A.2. The matched Sample DI Approval

To be matched, an HRS respondent must agree to have their Social Security Administration (SSA) records linked to their de-identified HRS survey responses. The population who agree is highly representative of the survey respondent population who have SSA records. However, there is possible selection by age of DI start date for those not in the f831 records (DI applications). This is not mechanically the case, as for all rabyears (aggregated below but could be isolated) it spans all ages for initial benefits or application. However of all who were ever approved for SSDI in this matched sample, the mean age for first SSDI receipt of those for whom we do have an application record is much higher than those for whom we do not have the application record (age 54.86 versus 47.05). Because we don't have the universe of applied (those who are not in f831 who applied but were not approved), we can't say much about what makes someone apply, we can say something about (1) for those in f831, who are mostly representative, the probability of approval if applied and (2) whether in f831 or not, traits that lead to ultimate approval.

This paper focuses on the approval outcome as opposed to the application stage. The reason for this is that, while through the matched data we can determine who had received SSDI at any point, we do not have all of those who applied for but did not receive approval, especially for older cohorts. (For the application to show up it must have been at some point during observation in the HRS.) In Table A.1 we see application records for about 20 percent of matched respondents. We also see that 4.75 percent have a record of receiving SSDI but no record of application (with an average age of first receipt of (SSDI) benefits of 47.05, versus an average age of 58.86 with those for whom we have an application record). Among the 75.17 percent who have no SSDI application or approval record, it is not clear

from the matched data what share applied but were not approved for SSDI.

For those who are on DI but for whom we don't have records for, did they start receiving DI at a younger age? While they did, this does not limit looking at ultimate approval as the outcome, however. The characteristics for two select birth year groups are shown below.

approveSSDIever_matched	stats	born 1950-53	born 1940-43
1.no record and approve	mean	37.88372	48.472
	p50	38	50
	min	19	25
	max	65	62
	N	602	1750
2.applied and approved	mean	53.40268	56.42391
	p50	55	58
	min	24	25
	max	66	64
	N	4999	2576

A.3. Additional Tables

TABLE A.1: *Matched Sample*

```
* at least 24% have applied for DI in the sample by the time they are last in the survey

% tab approveSSDIever_matched  if SSDIsampleMatch==1 &inwLAST==1

       approveSSDIever_matched |      Freq.     Percent
-------------------------------+-----------------------
0.no applicaiton record, no DI |      4,475       75.17
      1.no record and approved |        283        4.75
        2.applied and approved |        713       11.98
       3.applied, not approved |        482        8.10
-------------------------------+-----------------------
                         Total |      5,953      100.00
% tabstat rabyear  age_at_DOEI  if (rabyear>=1936)&(rabyear<=1953) , by( approveSSDIever_matched) stats(mean me
/* (only 1. and 2. have initial benefits being DI beneifts doeitob==2.  0. does not have )
approveSSDIever_matched    stats |   rabyear  age_at~I
---------------------------------+--------------------
0.no applicaiton record     mean |  1943.537  62.95875
                             p50 |      1943        63
                             min |      1936         1
                             max |      1953        79
                               N |     82306     70938
---------------------------------+--------------------
1.no record and approve     mean |   1942.27  47.05135
                             p50 |      1941        50
                             min |      1936        19
                             max |      1953        65
                               N |      5180      5180
---------------------------------+--------------------
2.applied and approved      mean |  1946.106   54.8606
                             p50 |      1947        56
                             min |      1936        21
                             max |      1953        69
                               N |     14197     14197
---------------------------------+--------------------
3.applied, not approved     mean |  1945.655  62.30612
                             p50 |      1947        62
                             min |      1936        13
                             max |      1953        73
                               N |     10682      7546
---------------------------------+--------------------
.                           mean |   1944.08         .
                             p50 |      1943         .
                             min |      1936         .
                             max |      1953         .
                               N |     92316         0


% tab approveSSDIever_matchedBIN if SSDIsampleMatch==1 &inwLAST==1

approveSSDIever_matc |
              hedBIN |      Freq.     Percent        Cum.
---------------------+-----------------------------------
0.did not receive DI |      4,957       83.27       83.27
       1.received DI |        996       16.73      100.00
---------------------+-----------------------------------
```

TABLE A.2: *Health Characteristics when age 50–59, by birth cohort and race*

	HRS subset (b. 1936–41)	War Babies (b. 1942–47)	Early Boomers (b. 1948–53)	Mid-Boomers (b. 1954–59)
Reg. Vigorous Activity	-	.37	.42	.46
White	-	.39	.43	.48
Black	-	.26	.34	.36
Other	-	.28	.42	.43
Current Smoker	.26	.22	.20	.21
White	.25	.21	.19	.20
Black	.27	.28	.28	.29
Other	.24	.22	.21	.17
Drink ≥1/week	.59	.58	.65	.70
White	.61	.61	.67	.73
Black	.47	.40	.52	.58
Other	.44	.41	.55	.57
BMI (median)	26.6	27.4	27.8	29.2
White	26.5	26.7	27.4	28.1
Black	28.1	28.8	29.5	30.1
Other	26.3	28.1	27.6	28.1
Cancer Diagnosis	.051	.074	.064	.078
White	.053	.067	.067	.085
Black	.038	.053	.071	.062
Other	.051	.098	.069	.062
High Blood Pressure	.34	.37	.39	.42
White	.32	.33	.36	.40
Black	.50	.56	.61	.65
Other	.34	.38	.42	.44
Arthritis	.386	.42	.40	.39
White	.36	.41	.40	.40
Black	.41	.47	.45	.44
Other	.33	.46	.37	.34
Back pain	.33	.35	.37	.40
White	.33	.35	.37	.39
Black	.32	.39	.34	.44
Other	.33	.42	.40	.41
Some Difficulty Walking	.17	.19	.19	.19
White	.16	.17	.17	.17
Black	.26	.29	.28	.30
Other	.17	.30	.24	.19
Diff with 1+ ADL	.09	.11	.10	.11
White	.08	.09	.09	.09
Black	.16	.20	.17	.18
Other	.10	.18	.16	.16
Diff with 1+ IADL	.06	.05	.07	.08
White	.05	.04	.04	.06
Black	.10	.10	.09	.11
Other	.11	.10	.11	.10
Any Mobility Difficulties	.35	.34	.35	.32
White	.34	.32	.33	.30
Black	.46	.47	.45	.47
Other	.36	.43	.43	.34
Cognitive and Mental Health Measures				
Cog. Total (out of 35), All cohorts	24.6	24.8	24.0	23.7
White	24.8	25.4	24.6	23.9
Black	21.7	22.3	21.6	21.2
Other	21.8	22.4	21.3	21.2
CESD (percent at least one)	52.9	57.8	54.1	56.2
White	.52	.55	.54	.55
Black	.67	.71	.69	.72
Other	.66	.73	.66	.65

Notes: Total are using sample weights, which are not used for statistics by race. Measures when age 50–59.

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