

## **Social Security Benefit Claiming and Medicare Utilization**

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# Social Security Benefit Claiming and Medicare Utilization

## Abstract

Are early Social Security claimers too sick to work? We linked Health and Retirement Study data to Medicare claims to study health care utilization at ages 65 and 70. We find that Social Security Disability Insurance recipients use more health care on average than those who never received DI. At age 65, Medicare spending on SSDI recipients was \$4,440 more than spending on retirees who claimed Social Security benefits prior to Full Retirement Age (FRA) and \$4,727 more than those claiming at FRA. Differences in Medicare spending persist at all points of the spending distribution. They are robust to a variety of methodological approaches including general linear models, quantile regression, and reweighting, and in specifications limiting comparisons to beneficiaries claiming benefits at initial EEA. Our results suggest that poor health may contribute to EEA claiming decisions, though this group is considerably healthier than those who were too disabled to work and qualified for DI benefits. [*Corrected 18 March 2014: Original stated "\$4,440 less" and "\$4,727 less".*]

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## **Introduction**

How does the health of retirees vary with the age at which they claim Social Security benefits? This question is interesting for two reasons. First, although a large literature has examined the work disincentive effects of the Disability Insurance program, the question of whether these effects are economically significant remains unsettled. One way to measure these disincentive effects is to analyze whether DI recipients are really in worse health than rejected applicants, as we do here. Second, one policy option for extending the solvency of the Old Age and Survivors Insurance (OASI) program is increasing the age at which individuals may first claim benefits, known as the Early Entitlement Age (EEA), currently age 62 (Congressional Budget Office, 2012). In order to accurately estimate the overall budgetary impact of such a policy, it is necessary to know how many individuals would take up Disability Insurance (DI) if the EEA were increased.

In order to shed light on both of these issues, we use new data to consider differences in health across DI recipients, applicants and early OASI claimers. We use administrative Medicare claims linked to nationally representative Health and Retirement Study data to compare health care utilization at common ages among four groups of Social Security recipients; (1) DI recipients; (2) rejected DI applicants who subsequently claim OASI benefits at or after the EEA; (3) individuals who never applied for DI and claim Social Security benefits after EEA but before FRA (62 – 64 during the study period); (4) individuals who never applied for DI and claim OASI benefits at Full Retirement Age (FRA) ( 65 or older for these cohorts). We compare the Medicare spending of individuals in these four groups at age 65 – when those who have never

received DI become eligible for Medicare on the basis of age – and at age 70, once all of them have been Medicare eligible for at least five years. We use total Medicare spending as a measure of health status, with the assumption that higher utilization implies a greater need for health care driven by worse health. Beneficiaries with significant health care needs are less likely to be able to continue working than those who are healthier.

We find that DI recipients use more health care on average than those who never received DI. These differences are pronounced at age 65, when all older adults become eligible for Medicare if they have not previously qualified through DI receipt. These comparisons may understate the difference between the two groups, however, if those who have just become eligible for Medicare have a spike in utilization, as documented by Card, Dobkin and Maestas (2008) in administrative data and McWilliams et al. (2007, 2009) using the Health and Retirement Study. In order to minimize this problem, we also compare health care spending at age 70, when all patients have had access to Medicare for at least 5 years. Both of these sets of comparisons tell the same story. At age 65, early claimers average \$400 - \$500 more in annual Medicare spending than those who claim benefits at Full Retirement age, but \$4,400 *less* than DI recipients; these differences persist at age 70.

Differences in the level of health care spending persist at all points of the spending distribution. They are robust to a variety of methodological approaches including general linear models, quantile regression, and reweighting, and in specifications limiting comparisons to beneficiaries claiming benefits at initial EEA. Our results suggest that poor health may contribute to EEA claiming decisions, though this

group is considerably healthier than those who were too disabled to work and qualified for DI benefits.

## **Data**

Our data come from the Health and Retirement Study, a large-scale longitudinal study that has been collecting information on the demographic, health, labor supply, economic resources, and program participation of older Americans (ages 51 and up) since 1992. We use self-reported measures of the age at which a respondent first received Social Security benefits, whether they ever applied for DI and whether they received DI to classify four types of Social Security recipients;

- 1) DI recipients, who apply for and successfully receive DI benefits prior to age 62
- 2) Rejected DI applicants, who first receive benefits through OASI at or after the EEA after their DI application(s) are rejected
- 3) Early Claimers, who take OASI benefits anytime between the EEA and the FRA
- 4) Full Retirement Claimers, who take OASI benefits at or after the FRA.

We construct the analytic sample by first selecting the 19,274 HRS respondents who are within two years of their 65<sup>th</sup> or 70<sup>th</sup> birthdays between 1991 and 2008 (the years for which Medicare claims are currently available); 19,274 have complete responses to survey questions about DI application and receipt. Next, we exclude 1,233 respondents who receive SSI prior to their EEA, leaving 18,041 age-eligible respondents. We use survey data that have been linked to administrative Medicare claims data from the Centers for Medicare and Medicaid Services from 1991 through 2008 in order to assess

Medicare spending in the 365-day periods after a respondent's 65<sup>th</sup> and 70<sup>th</sup> birthdays. Medicare provides health insurance coverage to almost all individuals once they turn 65. Individuals who receive DI prior to age 65 also receive Medicare, after a two-year waiting period. By comparing respondents receiving a standardized insurance benefit at common ages, we are better able to isolate differences in health care utilization due to underlying health status and work capacity.

Prior research assessing the work-capacity of SSDI recipients and applicants has typically relied on either self-reported health status measures or work activity. A benefit of using Medicare spending is that provides objective information about the need for health care. We observe components of spending including counts of inpatient hospitalizations, physician visits and outpatient procedures, and durable medical equipment purchases -- this information allows us to verify that patterns are not driven by regional variation in prices for common services. But there are limitations. Some disabling health conditions such as blindness do not require expensive treatments, and Medicare claims data exclude prescription drug spending, out-of-pocket expenditures, and spending on services that Medicare does not cover.

To validate Medicare spending as a measure of health status, we use HRS survey data to generate an index of work disability. We estimate logistic regressions where the dependent variable is the self-reported presence of a health condition that limits work capacity by age 65 and the explanatory variables include self-rated good, fair or poor (vs. excellent or very good) health status, CES-D depression score, indicators for chronic health conditions, mobility limitations, and counts of instrumental activities of daily living limitations and activities of daily living limitations and use these coefficients to



generate each respondent's score. This measure was positively and significantly correlated with Medicare spending ( $\rho = 0.20$  for age 65 spending and 0.14 for age 70 spending).

Since our key outcome comes from administrative data, we can only include respondents who previously consented to the linkage and provided a valid Medicare identification number. While match rates for the full HRS sample are close to 90%, only 13,497 (70%) of age-eligible respondents have linked Medicare claims. Consent rates are highest among DI beneficiaries (83%) and EEA claimers (77%), and lower among rejected DI applicants (63%) and FRA claimers (63%). Medicare beneficiaries can choose to receive their benefits through Traditional, Fee-for-Service Medicare or through a Medicare HMO plan. Managed care plans are not required to report utilization data, therefore we can only calculate annual spending for respondents who receive benefits through Traditional Medicare. We lose 14% of the age 65 sample and 17% of the age 70 sample to HMO enrollment. Our primary sample includes 8,552 HRS respondents with linked claims data who are consistently enrolled in Fee-for-Service Medicare at age 65; 6,552 at age 70; and 6,325 respondents appear in both the 65 and 70 samples. We include additional respondents with partial year HMO enrollment in robustness checks.

Our main outcome measure is Medicare spending, which we treat as a proxy for health. We inflate all dollar amounts to real 2008 levels using the medical Consumer Price Index. Table 1 presents characteristics of the respondents at ages 65 and age 70 for the four groups of claimers. Mean annual spending among DI recipients is markedly higher than comparison groups at both ages. At 65, DI recipients average \$10,081 in total spending, which is more than triple the average spending of early or Full Retirement

claimers. However, a significant portion of each group uses no care; from 21% DI recipients to 39% of Full Retirement claimers have no Medicare claims at age 65. By age 70, only 18% of FRA claimers have no utilization in the 365 days after their birthday, compared with 26% of DI recipients. Figure 1 plots the cumulative distribution of Medicare spending for SSDI recipients, rejected applicants, and age 62 claimants, excluding respondents who potentially have other sources of insurance coverage through the Veterans Affairs system or employer-based care. Since SSDI recipients are less likely to be working for pay than other groups, access to other sources of health insurance for non-disabled workers might account for the differences in average spending. However, utilization remains higher in the SSDI group even after making this adjustment.

These descriptive statistics suggest that DI recipients are indeed sicker than those who do not receive DI, while early claimers are not obviously sicker, on average, than FRA claimers. Self-reported measures of disability from the survey, also shown in Table 1, are consistent with these descriptive findings; both EEA and FRA claimers are nearly 40 percentage points less likely to report having a health condition that limits their capacity to work, and 20 to 30 percentage points less likely to report having a health condition that limits their capacity for housework, than DI recipients. As previous studies have noted, however, there are important differences between DI recipients, early claimers, and Full Retirement claimers that are likely to affect both job and retirement opportunities as well as health status and spending. Table 1 also shows that DI recipients and rejected applicants are more likely to be Black or Hispanic than early or FRA claimers and have lower average educational attainment. Our multivariate analyses will

use a number of different strategies to control for these differences in observable characteristics.

## **Methods**

Another issue that our analysis must address is the fact that the distribution of Medicare spending is very skewed. Typically, 25 percent of beneficiaries account for 85% of program spending, while many enrollees have no spending in a given year (CBO, 2005). Because of this skewness, comparing means may give a misleading impression of how the distribution of medical spending varies across the four groups. We use a number of different methods to control for observable characteristics and to address the skewness of the outcome data, all of which lead to the same conclusion.

Our first approach is to estimate simple regression models to characterize differences in mean and median utilization across the four groups, controlling for observable characteristics. We examine differences in mean spending using general linear models (GLM) with a log link. These specifications are less sensitive to extreme values of spending than ordinary least squares regressions (Manning and Mullahy, 2001). The GLM specification expresses a transformation of the conditional mean,  $E[y|x]$ , as a function of the covariates. We use a log link to estimate

$$\ln(E[M_i | T_i, x_i]) = \alpha + \beta \text{Type}_i + \delta X_i + \varepsilon_i \quad (1)$$

where  $M_i$  is total Medicare utilization in the 365 days following the respondent's 65<sup>th</sup> (70<sup>th</sup>) birthday,  $\text{Type}_i$  includes indicators for claiming benefits as a rejected DI applicant, or at EEA or FRA, and  $X$  is a vector of respondent characteristics including black, other and missing race (relative to White) and Hispanic ethnicity, sex, years of education, and indicator variables for the year the respondent turned 65 (70) to account for secular trends

in health care utilization. We assume a gamma distribution, where the standard deviation of  $E[y|x]$  is proportional to the mean,  $e^{(\alpha + \beta_{\text{Type}} + \delta X)}$ .

We also estimate median regressions of  $M_i$  on the covariates listed above. Since mean spending in our data is considerably higher than median, these models will be more representative of the lower end of the distribution than the GLM estimates.

Since the sickest Medicare beneficiaries are more likely to die in any given year, taking beneficiaries at 65, the earliest common age all claimer groups are observed, has the advantage of limiting concerns that differences between groups are eroded by selective mortality.<sup>1</sup> However, the wide variation in health insurance and access to care prior to age 65 raises concerns that some will reach Medicare with pent-up demand for utilization. If beneficiaries apply for DI as a way to receive health insurance coverage, the differences between groups may be exaggerated in the early years. We address this in two ways. The first is to augment the GLM and median regressions described above with indicators of whether a respondent ever reported being uninsured prior to age 65 or forgoing medication due to cost or access issues prior to age 65. We also compare outcomes for our cohorts at age 70 to examine the persistence of any differences in spending conditional on survival to age 70.

Both of these regression approaches focus on a single point in the spending distribution. However, the healthcare utilization of the mean or median early benefit claimer may not be representative of EEA claimers who would be most likely to apply

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<sup>1</sup> Each year, approximately 3% of SSDI recipients die and another 3% leave the program by aging into OASI benefits. Since our research design relies on Medicare claims which are not uniformly available until age 65, the SSDI respondents in our sample are likely healthier than the entire SSDI population because we cannot include those who die prior to age 65.

for and receive DI in response to an increase in the EEA. Indeed, Panis et al. (2002) note that the beneficiaries claiming Social Security at age 62 consist of groups of workers reporting poor health who had worked physically demanding jobs and a large number of affluent claimers who had retired prior to their EEA. In order to compare the entire distribution of spending, not just mean or median, across three groups -- SSDI recipients, rejected applicants, and EEA claimers -- we use the semi-parametric approach developed by DiNardo et al. (2006) to reweight the spending distribution of EEA claimers to match the characteristics of DI recipients. Briefly, the method of DiNardo et al. is as follows: we first estimate a logistic regression of DI receipt (1=yes, 0=no) on the covariates from Equation (1) using separate specifications for the 62 vs. 63–64 year old claimer groups. Next we predict each respondent's probability,  $p$ , of being a DI recipient conditional on his or her observable characteristics. Each early claimer is assigned a weight,  $p/(1-p)$ , so that claimers whose multivariate scores more closely resemble DI recipients are given larger weights. We rescale the EEA claimer weights so that the weighted samples match the unadjusted populations.

In robustness tests, we consider a broader set of comparison groups. Since there is greater overlap in respondent characteristics between the earliest EEA claimers and SSDI applicants, our discussion focuses on those who claim at their initial EEA for most of our distributional analyses. As with the regression analyses, results are similar when we include additional comparison groups.

## **Results**

Figure 2 summarizes our main regression findings for Medicare utilization and compares them to the simple differences in means and medians calculated without

regression adjustment. Both DI recipients and rejected applicants use significantly more health care, as measured by higher Medicare spending, than Early and Full Eligibility Age Social Security claimers. For example, mean (median) spending at age 65 was \$9,415 (\$2,026) among DI recipients, compared to \$6,975 (\$1,234) among rejected DI applicants, \$3,459 (\$504) among EEA claimers and \$2,736 (\$308) for FRA claimers. In regressions controlling for sociodemographic characteristics commonly used to risk-adjust health care spending (Table 2), we fail to find statistically significant differences in spending between DI recipients and rejected applicants. However, the differences between these beneficiaries and both EEA and FRA claimers are quite pronounced (-\$4,440 and -\$4,727 respectively,  $p < 0.01$ ). In contrast, the difference between EEA and FRA claimers is a relatively modest and statistically insignificant \$287 (\$191), consistent with the survey data evidence indicating that EEA claimers have similar levels of health and work capacity at age 65 as FRA claimers.

We conducted a number of additional analyses to examine the sensitivity of our results to alternative explanations. EEA claimers continued to have spending patterns that were statistically indistinguishable from FRA claimers (\$169 higher) and lower than DI recipients (\$4,121 lower,  $p < 0.01$ ) when we restricted the EEA and FRA comparison groups to the 5,790 respondents reporting a work-limiting health condition prior to age 65. We obtained similar results in regressions, adding additional indicators of whether the respondent was uninsured prior to enrolling in Medicare or delayed taking medication due to cost, which could indicate pent-up demand for medical care prior to Medicare eligibility.

These patterns persist at age 70, after all beneficiaries have been exposed to the same health insurance for at least 5 years. Utilization among EEA and FRA claimers remains significantly lower than that of the DI applicants. In regressions restricting comparisons to respondents reporting work-limiting conditions prior to age 65, Medicare spending at age 70 by EEA and FRA claimers averaged \$4,141 and \$4,231 less than spending by former DI recipients.

Regression results were robust to alternative specifications including Medicare beneficiaries with partial HMO enrollment (controlling for the proportion of the year observed in Fee-for-Service). A large literature suggests that Medicare HMO enrollees are healthier than FFS stayers on average. DI respondents in our sample are 10 percentage points more likely to have any HMO months than control group respondents. If only the sickest DI beneficiaries remain in FFS, our main regression results would overstate the differences between DI recipients and all others. The results from models including beneficiaries with partial-year HMO enrollment, however, are qualitatively similar to the main results, suggesting that this sample restriction is not biasing the results.

We next broaden our analysis to comparisons of the full distribution of Medicare spending. To compare different groups, we first estimated propensities to receive SSDI benefits using the race, sex, ethnicity and education controls mentioned previously. Figure 3 plots the estimated propensity to receive DI for EEA claimers compared to DI recipients. While there is overlap, the DI distribution lies to the right of the EEA distribution. Table 3 and Figure 4 confirm that the patterns described in the mean and median regressions characterize the full distribution; Medicare spending among DI

recipients is generally two to four times greater than age 62 claimers at all points in the distribution at age 65. By age 70, these differences are driven by beneficiaries in the upper half of the spending distribution.

Table 4 also shows the distribution of our age 65 health index, the estimated propensity to report a health condition that limits work. Like Medicare spending, it is generally greater among SSDI applicants and recipients versus early claimers. In additional analyses (not shown), we also verify that these utilization patterns are present in all types of Medicare utilization, including physician visits, inpatient hospitalizations, and outpatient surgery.

### **Conclusion**

Medicare utilization at common ages suggests that Social Security beneficiaries claiming prior to their Full Eligibility Age are modestly less healthy than those who delay, but significantly healthier than DI recipients or rejected applicants. Rejected applicants appear more similar to DI recipients than to beneficiaries who never apply for DI benefits, though this difference is attenuated with additional time in Medicare. Our results suggest that there could be a modest increase in DI application and receipt in response to increases in the EEA and FRA, though many early claimers would be too healthy for DI.



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**Table 1: Summary Statistics at Age 65 by OASDI Claim Type**

	Applied for DI		Never applied for DI	
	DI recipients	DI Rejected applicants	OASI at Pre FRA	OASI at FRA+
Medicare Spending at 65	9,415 (22,520)	6,975 (18,195)	3,459 (11,289)	2,736 (9,339)
Medicare Spending at 70	10,733 (22,367)	6,773 (16,738)	5,640 (16,026)	5,545 (15,794)
Female	0.48 (0.50)	0.65 (0.48)	0.52 (0.50)	0.54 (0.50)
Black	0.24 (0.43)	0.53 (0.51)	0.11 (0.31)	0.12 (0.32)
Hispanic	0.12 (0.32)	0.15 (0.26)	0.06 (0.24)	0.07 (0.25)
Years of Schooling	10.40 (5.34)	9.70 (3.44)	12.27 (3.55)	12.44 (4.29)
Health Limits Work Pre-65	0.96 (0.18)	1.00 (0.00)	0.59 (0.49)	0.59 (0.49)
Health Limits Housework Pre-65	0.65 (0.48)	0.54 (0.51)	0.31 (0.46)	0.34 (0.47)
Health Limits Activities Pre-65	0.31 (0.46)	0.22 (0.42)	0.24 (0.43)	0.23 (0.42)
Observations	1,475	40	4,162	3,540

Notes: Standard deviations in parentheses. Health and Retirement Study survey data from 1996 – 2008 linked to Medicare administrative claims data for respondents enrolled in Fee-for-Service Medicare for the 365 days after their 65<sup>th</sup> (70<sup>th</sup>) birthday. Medicare spending in 2008 \$.

**Table 2: Annual Medicare Spending (\$2008) By Old Age and Survivors' Insurance Claiming Behavior**

	Age 65		Age 70	
	GLM	Median	GLM	Median
DI reject	-1,085 (2,310)	-580* (349)	-3,864 (3,802)	-1,000 (752)
Claim Pre FRA	-4,440*** (524)	-1,363*** (65)	-4,774*** (766)	-1,837*** (140)
Claim FRA+	-4,727*** (564)	-1,559*** (70)	-5,183*** (798)	-1,954*** (143)
Black	403 (428)	-87 (65)	741 (651)	-2 (129)
Other race	-544 (1,047)	-11 (158)	-1,449 (1,585)	-251 (307)
Hispanic	547 (591)	-24 (89)	2,179** (945)	204 (179)
Female	708** (283)	346*** (42)	-599 (415)	314*** (82)
Years of schooling	-9 (43)	3 (6)	52 (49)	26** (10)
Age	-4 (219)	58* (33)	552* (296)	146** (60)
Observations	8,552	8,552	6,552	6,552

Notes: Standard errors in parentheses. Health and Retirement Study survey data from 1996 – 2008 linked to Medicare administrative claims data. Average marginal effects from general linear model (log link, gamma distribution) and quantile (median) regressions. Spending categories relative to DI recipients. Regressions also include indicator variables for year observed. FRA = full retirement age for Social Security benefits. \*\*\*, \*\*, \* denote statistical significance at 1, 5, and 10 percent levels, respectively.

Table 3: Distribution of Medicare Spending and Age

Full Distribution

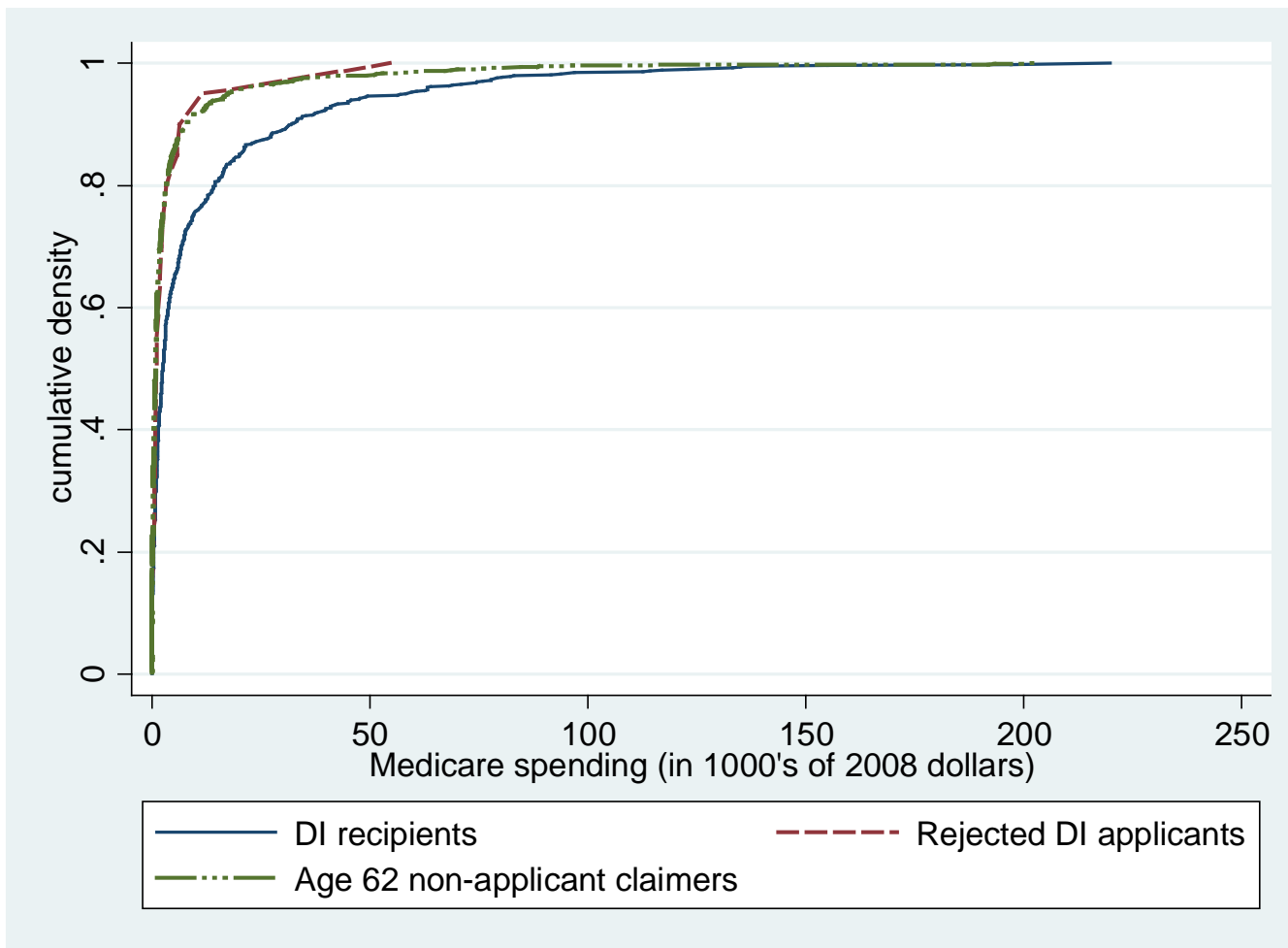
	Age 65 Medicare Spending					Age 70 Medicare Spending					Age 65 Health index				
	10th	25th	50th	75th	90th	10th	25th	50th	75th	90th	10th	25th	50th	75th	90th
SSDI recipient (unweighted)	\$0	\$100	\$1,421	\$6,754	\$25,753	\$0	\$0	\$1,772	\$9,368	\$36,923	0.30	0.45	0.64	0.78	0.86
SSDI rejected (unweighted)	\$0	\$202	\$984	\$5,727	\$20,870	\$0	\$436	\$1,821	\$5,988	\$11,858	0.33	0.43	0.53	0.76	0.83
EEA claimers (unweighted)	\$0	\$40	\$520	\$1,932	\$7,324	\$0	\$234	\$986	\$3,517	\$12,894	0.21	0.28	0.37	0.51	0.65
SSDI rejected (weighted)	\$0	\$231	\$857	\$5,727	\$11,450	\$0	\$436	\$1,821	\$5,872	\$11,858	0.32	0.38	0.48	0.65	0.82
EEA claimers (weighted)	\$0	\$8	\$421	\$1,642	\$6,812	\$0	\$152	\$896	\$3,513	\$13,412	0.20	0.27	0.39	0.54	0.69

Excluding other credible sources of health insurance

	Age 65 Medicare Spending					Age 70 Medicare Spending					Age 65 Health index				
	10th	25th	50th	75th	90th	10th	25th	50th	75th	90th	10th	25th	50th	75th	90th
SSDI recipient (unweighted)	\$0	\$602	\$2,477	\$9,352	\$31,985	\$0	\$96	\$2,485	\$11,095	\$40,271	0.32	0.48	0.67	0.79	0.86
SSDI rejected (unweighted)	\$0	\$549	\$989	\$2,873	\$8,838	\$32	\$1,025	\$3,459	\$9,286	\$81,138	0.33	0.47	0.65	0.82	0.88
EEA claimers (unweighted)	\$0	\$105	\$662	\$2,337	\$7,837	\$0	\$305	\$1,152	\$3,623	\$12,233	0.20	0.27	0.38	0.52	0.67
SSDI rejected (weighted)	\$0	\$541	\$993	\$5,727	\$11,450	\$32	\$259	\$3,609	\$6,715	\$11,858	0.32	0.46	0.54	0.76	0.88
EEA claimers (weighted)	\$0	\$58	\$616	\$2,248	\$7,930	\$0	\$211	\$1,052	\$4,005	\$14,133	0.20	0.27	0.39	0.54	0.69

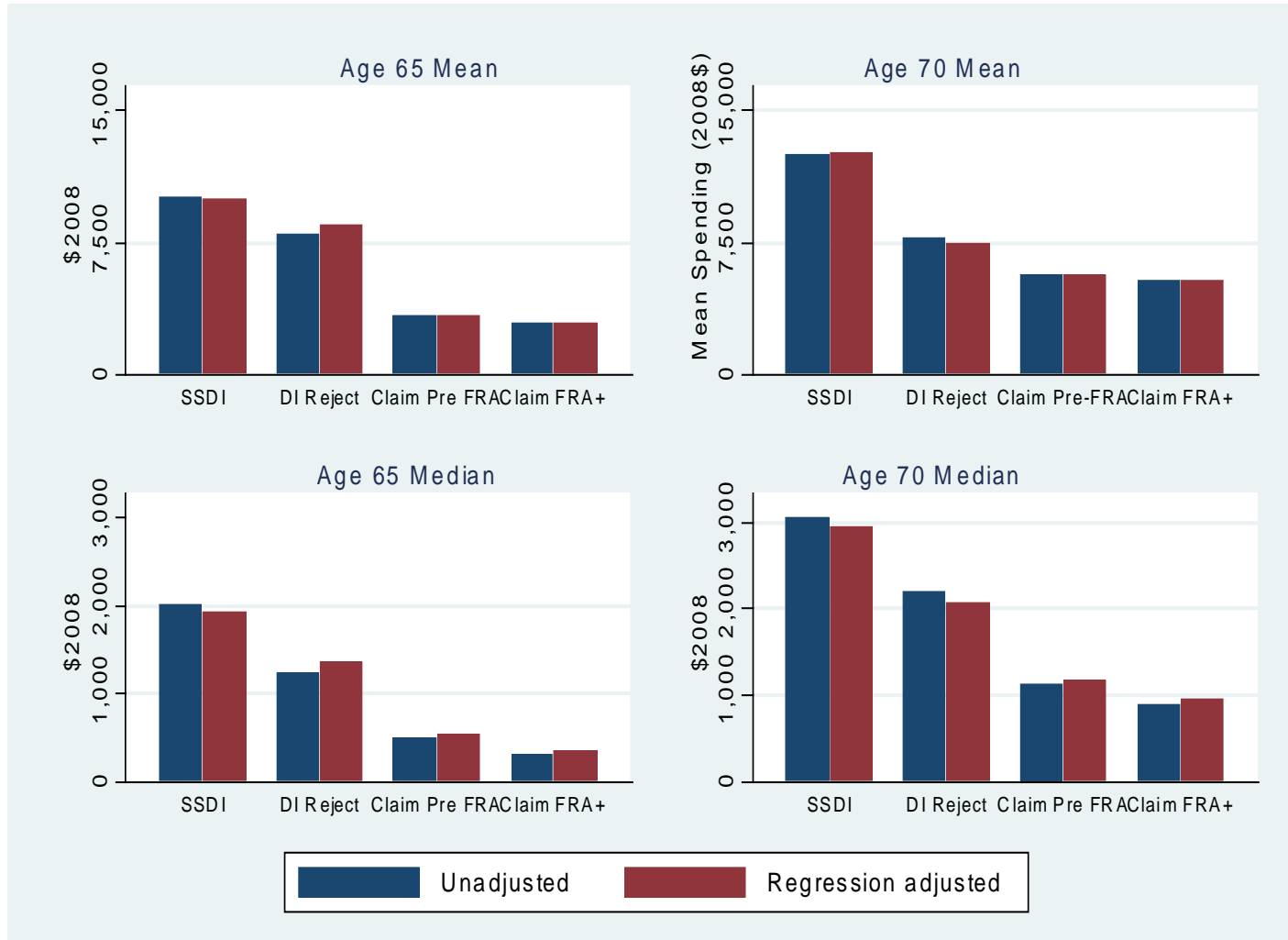
Notes: Medicare spending reported in \$2008 for enrollees with full-year Fee-for-Service coverage. Age 65 health index is the estimated propensity to report a work-limiting condition by age 65 based on survey responses.

**Figure 1: Medicare Spending at Age 65**



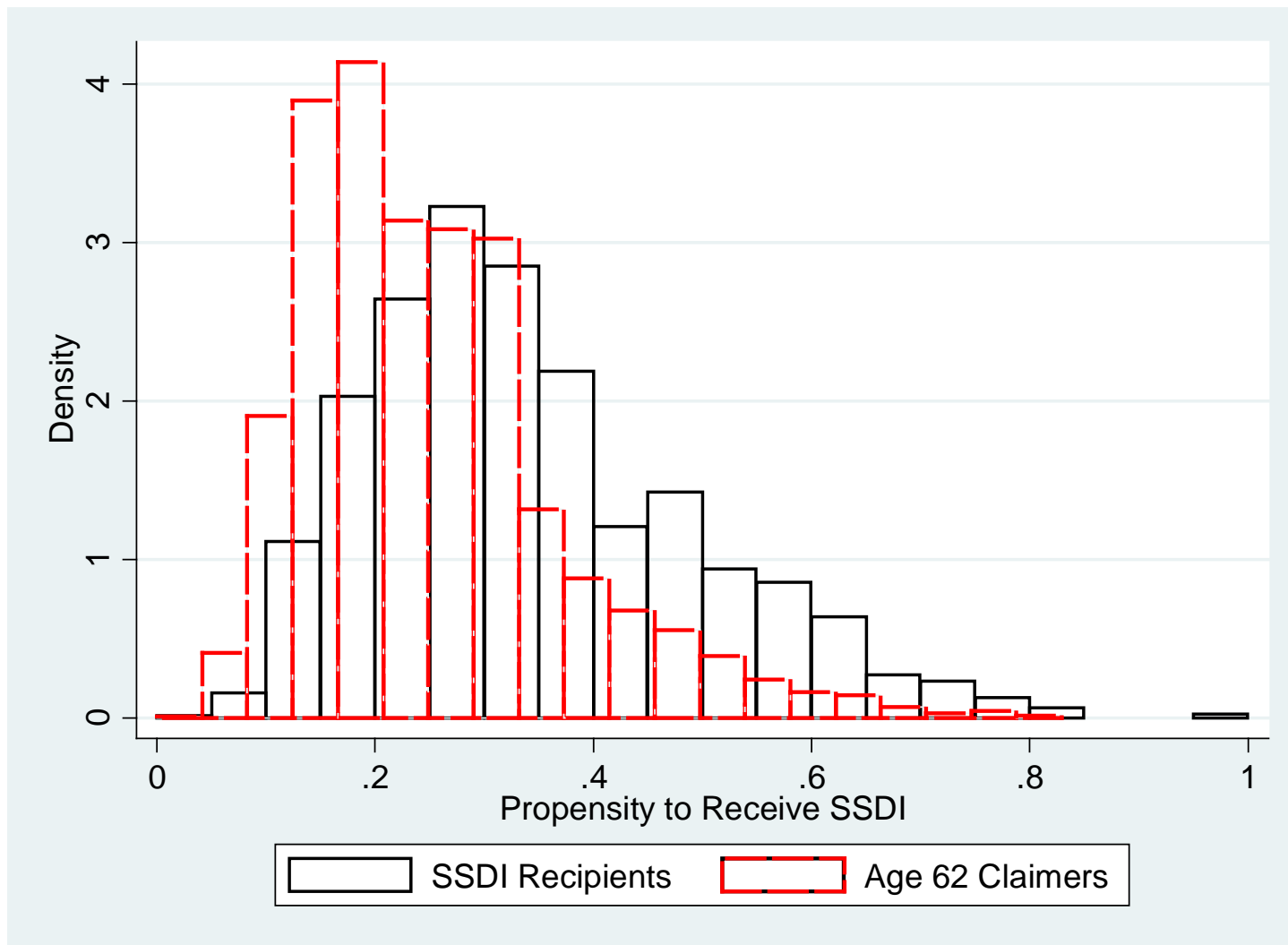
Notes: Medicare utilization in the 365 days after a beneficiary turns 65. Full-year Fee-for-Service enrollees only. Spending in 2008 \$.

**Figure 2: 1-Year Medicare Spending at Age 65 by OASDI Claim Type**



Notes: Medicare utilization in the 365 days after a beneficiary turns 65. Full-year Fee-for-Service enrollees only. Spending in 2008 \$. General linear model and median regressions adjust for sex, Black, other, or missing race, Hispanic ethnicity, years of education and year turned 65 (70). Adjusted column reports the mean predicted value for each group.

**Figure 3: Estimated Propensity to Receive Social Security Disability Benefits: DI Recipients vs. Earliest Eligibility Age Social Security Claimers**



**Figure 4: Cumulative Distribution of Medicare Spending by Social Security Benefit Claiming Type**

