

# EMPLOYMENT, EARNINGS, AND PRIMARY IMPAIRMENTS AMONG BENEFICIARIES OF SOCIAL SECURITY DISABILITY PROGRAMS

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*Empirical evidence on the relationship between the primary impairments of Social Security disability program beneficiaries and the employment and earnings experiences of those beneficiaries is limited. To provide such evidence, we classify recent Disability Insurance beneficiaries and working-age Supplemental Security Income recipients according to 25 detailed primary-impairment categories and examine their employment and earnings patterns using 2011 data from linked Social Security administrative files. We find substantial heterogeneity in employment and earnings across primary impairments. We also find that if we restrict our sample to beneficiaries with earnings (and then further restrict it to those with earnings above the substantial gainful activity level), some impairment categories that are strongly associated with employment status are not as strongly associated with higher earnings. These findings can inform new initiatives designed to help beneficiaries return to work or successfully transition into the adult workforce.*

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## Introduction

The two major disability programs administered by the Social Security Administration (SSA)—Disability Insurance (DI) and Supplemental Security Income (SSI)—have experienced substantial growth in recent decades. The number of DI disabled-worker beneficiaries grew from 2.9 million in December 1980 to 8.8 million in December 2012, and the number of working-age SSI recipients increased from 1.5 million at the start of the program in January 1974 to about 4.9 million in December 2012 (Stapleton and Wittenburg 2011; SSA 2013a, Table 3; 2013b, Table 4). This growth in program participation has spurred strong policy interest in understanding beneficiary employment patterns and, ultimately, helping some beneficiaries to find work and earn enough to become

as self-sufficient as possible (Rupp and Stapleton 1998; Stapleton and Burkhauser 2003).

As these programs have grown, the distribution of disabling conditions among Social Security disability program beneficiaries has also changed.<sup>1</sup> For example, mental impairments accounted for 10.3 percent of DI disabled-worker awards in 1981; that share more

### Selected Abbreviations

AIDS	acquired immune deficiency syndrome
DAF	Disability Analysis File
DI	Disability Insurance
HIV	human immunodeficiency virus
MEF	Master Earnings File

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### Selected Abbreviations—Continued

SGA	substantial gainful activity
SSA	Social Security Administration
SSI	Supplemental Security Income

than doubled over most of the ensuing years, peaking at almost 30 percent in 1986, before declining to 18.0 percent in 2012 (SSA 2013a, Table 40). In addition, significant changes in the nature of work over time, such as technological innovations and improved workplace accommodations, have likely affected whether certain specific impairments prohibit individuals from engaging in substantial gainful activity (SGA)—a key factor in the disability determination process.<sup>2</sup> Furthermore, an individual’s vocational factors—age, education and training, work history, and job skills—have increasingly become important determinants of initial DI awards (Burkhauser and Daly 2011).

Despite these trends, little is known about the relationship between the specific primary impairment of Social Security disability program beneficiaries and their employment and earnings experiences (although some research has documented different employment rates across broad disability categories—for example, Mamun and others 2011 and Weathers and Wittenburg 2009). Livermore and Goodman (2009) identify several barriers to employment for individuals with disabilities, such as varying degrees of workplace accommodations, variation in occupational needs, and discrimination or stigmatization. Although we concur that those factors (along with others such as differential responses to medical technology and access to necessary health care) may explain observed differences in employment and earnings, in this article we focus on demonstrating the scope of employment and earnings differences, not on examining their potential causes. In doing so, we address a gap in the literature as we define detailed primary-impairment types of recent DI beneficiaries and working-age SSI recipients, and examine their employment and earnings distributions using linked 2011 administrative data from two SSA files—the Disability Analysis File (DAF) and the Master Earnings File (MEF). We identify 25 categories of primary impairment at the time of benefit award, which provides sufficient detail to examine how employment and earnings vary across a wide range of disabling conditions.

Our analysis has two components. First, we provide descriptive population-level statistics on beneficiary employment and earning characteristics by primary impairment. Then, we estimate a series of regression models to examine how primary impairments are associated with employment and earnings. All results are presented separately for three disability program participation categories: DI only, SSI only, and concurrent DI and SSI.

The findings reveal much heterogeneity in employment and earnings across primary-impairment groups:

- Beneficiaries with seemingly similar primary impairments sometimes had divergent employment and earnings outcomes; for example, beneficiaries with anxiety disorders and intellectual disability—both of which are mental impairments—had very different employment and earnings outcomes.
- After controlling for other observed factors, beneficiaries with intellectual disability, visual impairments, hearing impairments, neoplasms, and human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) were among those most likely to be employed across disability programs.
- Beneficiaries with schizoaffective disorders, anxiety disorders, back disorders, and endocrine/nutritional/metabolic diseases were among the least likely to work.
- Although overall employment patterns by impairment type were similar across programs, employment and earnings among SSI-only recipients were not strongly correlated with primary-impairment type, relative to those of DI-only beneficiaries.
- A few impairment categories strongly associated with employment were not as strongly associated with higher earnings (after controlling for employment status) or with earnings above the SGA level.

This study provides policymakers with additional information about the variation in employment experiences along with new data on the variation in earnings among Social Security disability program beneficiaries. This information can inform new initiatives designed to help beneficiaries return to work or successfully transition into the adult workforce. For instance, it may enable future return-to-work initiatives to better target or tailor interventions based on the likelihood of return to work among beneficiaries with certain primary impairments. Nevertheless, the generally low employment rates and earnings of

SSI and DI beneficiaries documented in this study highlight the challenge of reducing disability program growth by helping current beneficiaries work at substantive levels.

### ***Program Descriptions***

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DI and SSI, both administered by SSA, are the primary income-support programs for persons with disabilities in the United States. For a person to be eligible for benefits, both programs require him or her to be unable to “engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which...has lasted or can be expected to last for a continuous period of not less than 12 months” (Section 223(d) of the Social Security Act, 42 U.S.C. § 423(d)). Despite using the same definition of disability, the programs differ in terms of additional eligibility criteria, benefit levels, funding sources, and associated benefits such as public health insurance coverage.

DI, as an income-replacement program, is social insurance. For workers with disabilities and sufficient work histories (and their dependents), it provides income if they have impairments that prevent work at or above the SGA level. DI benefits are paid from the DI Trust Fund, into which workers pay via payroll taxes. After 24 months on the DI rolls, all disabled beneficiaries qualify for Medicare benefits.<sup>3</sup> About 8.2 million disabled workers received DI benefits in 2010, with an average monthly benefit of \$1,068 (SSA 2013a, Table 3). Upon reaching full retirement age, DI beneficiaries stop receiving payments from the DI Trust Fund and transfer automatically to the Old-Age and Survivors Insurance program.

Unlike DI, SSI is a means-tested program in which beneficiaries qualify for cash assistance based on financial need and other criteria. Individuals with disabilities and older persons with limited incomes and resources are eligible for SSI. Our analysis focuses exclusively on working-age (18–64) recipients of SSI disability payments, who comprised 60 percent of SSI recipients in 2010. SSI payments are drawn from the general fund of the Treasury. Children with disabilities who live in households with limited incomes and resources can be eligible for SSI. Some states supplement SSI payments to their residents, and SSI recipients generally are categorically eligible for Medicaid benefits.<sup>4</sup> SSI recipients often also qualify for other need-based supports, such as food assistance (via the Supplemental Nutrition Assistance Program) and housing assistance. Social Security disability

program beneficiaries can receive DI and SSI benefits concurrently if they satisfy eligibility criteria for both programs. About 4.6 million working-age individuals received federal SSI disability payments in December 2010, with an average monthly payment of \$497 (SSA 2011, Table 5).

Given the large and growing size of these two programs, policy interest has increasingly focused on preventing initial entry into the program while simultaneously helping some beneficiaries leave the program rolls by returning to substantive work or, in the case of many SSI recipients, by entering the labor force for the first time. Consequently, Congress has built work supports into the DI and SSI programs, and SSA has championed a series of initiatives that test or enact employment interventions for disability program beneficiaries. For example, for SSI recipients who work, payments are reduced only \$1 for every \$2 in earnings, after an initial \$65 earnings disregard (or \$85 if there is no unearned income). DI earnings rules and work incentives are quite complex, but they essentially provide DI beneficiaries with opportunities to test their ability to engage in SGA without risk of losing benefits.

Several past, ongoing, and planned SSA initiatives and demonstrations have been designed to assist the efforts of SSI and DI beneficiaries to become employed and to allow them to maintain their earnings. For example, the Ticket to Work program, enacted in 1999 and implemented in 2002, encourages disability program beneficiaries to seek employment services from state vocational rehabilitation agencies and other prequalified local rehabilitation service providers (termed *employment networks*) and offers payments to service providers that succeed in helping beneficiaries achieve specific employment milestones (Thornton and others 2004; Livermore and others 2013). Both the completed Benefit Offset Pilot Demonstration and the ongoing Benefit Offset National Demonstration test an intervention that reduces DI benefits by \$1 for every \$2 of earnings above annualized SGA, instead of suspending or terminating all benefits (Weathers and Hemmeter 2011; Wittenburg and others 2012; Stapleton and others 2010). Some demonstrations target subgroups of disability program beneficiaries for return-to-work supports. The Mental Health Treatment Study, for example, used a supported employment model to provide medical and return-to-work assistance to DI beneficiaries with psychiatric disorders (Frey and others 2011). Some more recent demonstrations have targeted child SSI recipients,

encouraging and assisting them in finding employment as they transition to adulthood. For example, the recently completed Youth Transition Demonstration tested intensive and comprehensive transition supports for child SSI recipients at six locations across the nation, and the current Promoting Readiness of Minors in Supplemental Security Income project is among the first interagency efforts to test interventions designed to assist child SSI recipients (Fraker 2013; Fraker and others 2014; Fraker and Honeycutt 2012).

### **Recent Analyses of Employment by Impairment Type**

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Our analysis builds on that of Mamun and others (2011), who also used SSA data to examine the earnings of Social Security disability program beneficiaries. Specifically, they examined how the beneficiary employment rate varies over time and across states. Our study builds on their analysis in multiple ways. In addition to examining beneficiaries' employment status, we consider their earnings to provide a more complete picture of their level of work engagement. Moreover, we use a finer measure of primary impairment (25 categories, compared with 7 categories used in Mamun and others 2011). As our analysis shows, the greater disaggregation of impairment categories captures the heterogeneity in employment and earnings that exists even among beneficiaries with similar impairment classifications. We also use regression models to estimate the prevalence of employment at an annualized SGA level of earnings, which is the earnings level of interest to policymakers seeking to reduce DI program growth.

Relatively few studies have used administrative or survey data to examine the employment or earnings of Social Security disability program beneficiaries by impairment type. Von Wachter, Song, and Manchester (2011) investigated the employment and earnings of both allowed and rejected DI applicants, examining employment among applicants by impairment. However, similar to Mamun and others (2011), they aggregated impairments into a small number of categories (eight) in their analysis. Ben-Shalom and Mamun (2013) also used aggregated impairment groups in their analysis of the return-to-work behavior of DI beneficiaries. Jung and Bellini (2011) used data on closed vocational rehabilitation cases from the Department of Education's Rehabilitation Services Administration to explore which factors, such as SSI and DI receipt status, are correlated with employment among people with HIV/AIDS. Weathers and Wittenburg

(2009) used data from four major surveys (the American Community Survey, the Current Population Survey, the National Health Interview Survey, and the Survey of Income and Program Participation) to show that employment rates for persons with disabilities in the general population vary widely depending on impairment type. However, with the survey data, they were able to provide employment statistics using concepts that classify disability into only three broad categories of impairment—sensory, physical, and mental. Our analysis adds to the relatively limited research on employment and earnings among disability program beneficiaries by providing more quantitative information for detailed categories of primary impairments.

### **Data**

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This study uses linked administrative data for 2011 from two SSA sources: the DAF and the MEF. The DAF is an annually updated data set that contains selected information extracted from a variety of SSA source files on all SSI and DI beneficiaries from 1996 to the recent past. The 2011 DAF contains beneficiary data from January 1996 through December 2011 (Hildebrand, Kosar, Fischer, Page, and others 2013; Hildebrand, Kosar, Fischer, Phelps, and others 2013). The data contained in the DAF include details of benefit award, benefit receipt, and impairment status, as well as beneficiary demographic information. The MEF contains annual earnings data for SSA program beneficiaries compiled from Internal Revenue Service (IRS) data drawn from Forms W-2 and 1040, self-employment tax schedules, and quarterly earnings records. We use data in the MEF to construct our employment-status indicators and earnings measures. Annual earnings are defined as the maximum of Social Security-taxable wages and self-employment earnings (wages and earnings covered by the Federal Insurance Contributions Act [FICA] and the Self-Employment Contributions Act [SECA]), or Medicare-taxable wages and self-employment earnings, minus payments from known third-party sources—such as insurance companies—where payments involve the earnings and tax records described above.<sup>5</sup> Thus, the employment and earnings statistics presented in this article do not reflect the employment and earnings of those whose earnings are not reported to the IRS. MEF records are accessible by authorized SSA staff only.

The analysis sample includes all working-age beneficiaries (ages 18 through 64) who received a DI benefit and/or SSI payment in December 2010.

Thus, our sample excludes new awardees in 2011, but includes beneficiaries who were not necessarily in current-pay status in every month of 2011 (that is, their benefits could have been suspended or terminated for 1 or more months in 2011). Although this sample could include some beneficiaries whose employment and earnings occurred after their benefits were suspended or terminated, it allows us to avoid counting earnings that predate the disability benefit award. By including beneficiaries who may not have been in current-pay status in each month in 2011, we avoid severely underestimating the incidence of paid employment among disability program beneficiaries at any given time. Using December 2010 pay status, we separate beneficiaries into three program participation groups: DI only, SSI disability only, and concurrent DI and SSI disability. Across these three program groups, the analysis sample covers 65.9 percent of persons who received benefits during at least 1 month in 2011.

Except for annual employment and earnings, all variables are constructed using data from the December 2011 records in the DAF. We construct 25 primary-impairment categories by mapping primary-impairment codes available in the DAF for each program participation group (see Appendix Table A-1 for the primary-impairment categorization scheme we use).

Our analysis also controls for county-level population density and unemployment because local employment opportunities are likely to be correlated with those factors. We use the county-level annual unemployment rates for 2011 from the Bureau of Labor Statistics (2013). County population densities are computed as the ratio of population to land area. We use 1990 county land area data and 2010 county population data from Census Bureau (2000, 2013) to calculate the ratios. For both county population density and county annual unemployment rate, we use the mean-centered values.

## Methods

We use two analytical models to investigate employment and earnings of Social Security disability program beneficiaries. We estimate a logistic regression model of the following form to analyze the probability of employment, given the primary impairment and other characteristics:

$$\Pr(EMP_i = 1) = \frac{1}{1 + e^{-g_i}}$$

$$g_i = \beta_0 + \beta_1 x_i + \beta_2 imp_i + v_i,$$

where  $EMP_i$  is an employment indicator variable for individual  $i$ ,  $x$  is a vector of individual characteristics, and  $imp$  is a vector of primary impairment indicator variables (Appendix Table A-2 lists all the individual characteristics used as covariates in the regression models). Note that no more than one of the elements in  $imp$  can have a nonzero value. We use two definitional thresholds for beneficiary employment status. The first includes only those beneficiaries with annual earnings exceeding \$1,000;<sup>6</sup> the second includes only those with annual earnings exceeding the annual equivalent of the 2011 SGA level (\$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries). The first definition aims to distinguish significant work effort from small ad hoc earnings over the course of a year; that definition is also used in other recent analyses of employment and earnings among Social Security disability program beneficiaries (for example, Ben-Shalom and Stapleton 2013; Maestas, Mullen, and Strand 2013; Autor and others 2011; Liu and Stapleton 2011; Mamun and others 2011). The second definition captures a key earnings level of much policy interest, as earnings at the SGA level are the precursor to benefit suspension or termination for most beneficiaries; a similar definition of employment was also used in other recent research (for example, Maestas, Mullen, and Strand 2013; Wittenburg and others 2012; Autor and others 2011).

We also construct a multinomial categorical measure of earnings for five earnings levels and then model the measure as an ordinal logistic regression of the following form:

$$C_{i,j} = \Pr(EARN_i \leq j) = \sum_{k=1}^j \Pr(EARN_i = k)$$

$$\ln\left(\frac{C_{i,j}}{1 - C_{i,j}}\right) = \alpha_j + \gamma_1 x_i + \gamma_2 imp_i + \varepsilon_i,$$

where  $j$  denotes an earnings category and  $EARN_i$  is the earnings for individual  $i$ . The five earnings categories are as follows: less than \$1,000; \$1,000 to \$4,999; \$5,000 to \$9,999; \$10,000 to \$19,999; and \$20,000 or more.<sup>7</sup> We conduct the earnings analysis using categories rather than a continuous measure because doing so allows us to demonstrate how the beneficiaries are distributed across the earnings spectrum and to examine the relationship between earnings and primary impairment at different levels rather than at the mean only.

## Beneficiaries by Primary Impairment

The distribution of beneficiaries by primary impairment varies across programs (Table 1). Of the 25 impairment categories we define, affective disorders (15.4 percent), back disorders (13.0 percent), and intellectual disability (11.8 percent) are the most prevalent primary impairments overall. In total, mental impairments account for 43.7 percent of primary impairments among Social Security disability program beneficiaries, and back disorders and musculoskeletal diseases together account for more than one-fifth (22.4 percent). No other primary-impairment category represents more than 6.4 percent of disability program beneficiaries, with the

majority of the remaining categories representing less than 2 percent of them.

As might be expected for programs with different purposes, the distribution of primary impairments within each program differs somewhat from the aggregate distribution. DI-only beneficiaries are more likely than persons who receive only SSI payments to have a back disorder (18.8 percent versus 5.9 percent) or a musculoskeletal disease (12.7 percent versus 5.5 percent) as their primary impairment. DI-only beneficiaries also report a higher prevalence of other primary impairments often associated with aging, such as circulatory system diseases (7.9 percent versus 4.3 percent) and nervous system diseases (7.7 percent

**Table 1.**  
**Disability program beneficiaries, by primary impairment and program participation, 2011**

Impairment	Total		DI only		SSI only		Concurrent DI and SSI	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	9,583,864	100.0	4,973,277	100.0	3,168,413	100	1,442,174	100.0
Mental impairments								
Affective disorders	1,476,274	15.4	687,142	13.8	539,262	17.0	249,870	17.3
Schizoaffective disorders	632,242	6.6	208,858	4.2	285,521	9.0	137,863	9.6
Anxiety disorders	347,747	3.6	158,930	3.2	133,876	4.2	54,941	3.8
Intellectual disability	1,126,163	11.8	215,642	4.3	632,336	20.0	278,185	19.3
Other mental impairments	607,739	6.3	201,759	4.1	313,230	9.9	92,750	6.4
Nonmental impairments								
Back disorders	1,246,008	13.0	935,688	18.8	186,866	5.9	123,454	8.6
HIV/AIDS	96,002	1.0	43,911	0.9	36,265	1.1	15,826	1.1
Neoplasms	187,952	2.0	139,243	2.8	32,258	1.0	16,451	1.1
Congenital anomalies	44,467	0.5	9,988	0.2	26,306	0.8	8,173	0.6
Visual impairments	184,155	1.9	98,266	2.0	56,810	1.8	29,079	2.0
Hearing impairments	72,278	0.8	31,656	0.6	27,713	0.9	12,909	0.9
Speech impairments	9,009	0.1	3,016	0.1	4,803	0.2	1,190	0.1
Infectious and parasitic diseases	30,968	0.3	19,393	0.4	7,897	0.3	3,678	0.3
Endocrine, nutritional, and metabolic diseases	289,968	3.0	157,667	3.2	88,239	2.8	44,062	3.1
Diseases of the—								
Musculoskeletal system	902,036	9.4	632,886	12.7	175,119	5.5	94,031	6.5
Blood and blood-forming organs	28,746	0.3	10,437	0.2	12,949	0.4	5,360	0.4
Nervous system	609,924	6.4	380,709	7.7	158,711	5.0	70,504	4.9
Circulatory system	588,768	6.1	393,732	7.9	134,641	4.3	60,395	4.2
Respiratory system	217,670	2.3	125,619	2.5	64,165	2.0	27,886	1.9
Digestive system	124,993	1.3	78,478	1.6	31,003	1.0	15,512	1.1
Genitourinary system	119,833	1.3	76,236	1.5	29,287	0.9	14,310	1.0
Skin and subcutaneous tissue	19,508	0.2	11,725	0.2	5,074	0.2	2,709	0.2
Injuries	346,339	3.6	223,393	4.5	82,403	2.6	40,543	2.8
Other nonmental impairments	255,677	2.7	115,062	2.3	101,596	3.2	39,019	2.7
Unknown	19,398	0.2	13,841	0.3	2,083	0.1	3,474	0.2

SOURCE: Authors' calculations using DAF and MEF.

versus 5.0 percent), which is to be expected because DI-only beneficiaries are typically older than persons who receive SSI payments.<sup>8</sup> SSI-only and concurrent beneficiaries are much more likely to have an intellectual disability (20.0 percent and 19.3 percent, respectively) than are DI-only beneficiaries (4.3 percent). In addition, relative to DI-only beneficiaries, SSI-only recipients are more likely to have affective disorders, schizoaffective disorders, and other mental impairments as their primary impairment. These different impairment distributions are broadly consistent with the design of the respective programs, wherein DI benefits support individuals who are more likely to suffer negative health shocks, and SSI payments support those who are more likely to have life-long impairments that impede work.

### ***Employment and Earnings***

In Table 2, we present the shares of beneficiaries who were employed and whose earnings fell within the earnings categories we define, all by primary impairment. A relatively low percentage of disability program beneficiaries in current-pay status in December 2010 worked in calendar year 2011: 11.4 percent of DI-only beneficiaries, 5.4 percent of SSI-only recipients, and 6.9 percent of concurrent beneficiaries were employed (that is, earned \$1,000 or more). The employment rate is substantially lower for SSI-only recipients than for DI-only beneficiaries. That result is not surprising because SSI recipients do not need a work history to establish program eligibility, as is required to qualify for DI. These estimates are also consistent with findings in previous studies, such as Mamun and others (2011).

Across primary-impairment categories, the share of beneficiaries who were employed in 2011 ranged from 6.0 percent to 27.4 percent. In the following impairment categories, less than 10 percent of beneficiaries were employed in 2011: affective disorders, schizoaffective disorders, anxiety disorders, musculoskeletal diseases, back disorders, infectious/parasitic diseases, endocrine/nutritional/metabolic diseases, nervous system diseases, circulatory system diseases, respiratory system diseases, digestive system diseases, diseases of the skin and subcutaneous tissue, injuries, and nonmental impairments categorized as “other.” For the remaining 11 impairment categories (excluding “unknown”), however, between 10 and 20 percent of beneficiaries were employed in 2011.

Among beneficiaries who were employed in 2011, about three-quarters of DI-only and SSI-only

beneficiaries and about eight-in-nine concurrent beneficiaries earned less than \$10,000 (the relative numbers are not shown in the table). Across impairment categories, the shares of beneficiaries who were employed and earned between \$1,000 and \$4,999 ranged from 2.7 percent (endocrine/nutritional/metabolic diseases) to 7.8 percent (congenital anomalies). Only in the following eight impairment categories do we find more than 5 percent of the beneficiaries earning between \$1,000 and \$4,999 in 2011: congenital anomalies (7.8 percent), hearing impairments (7.1 percent), intellectual disability (6.5 percent), unknown impairment (6.0 percent), blood and blood-forming organ diseases (5.7 percent), other mental impairments (5.7 percent), neoplasms (5.5 percent), and speech impairments (5.2 percent). Across impairment categories, the share of beneficiaries who earned between \$5,000 and \$9,999 ranged from 1.6 percent (other impairments) to 5.8 percent (impairment unknown). Besides unknown impairment, the only category in which we find more than 5 percent of the beneficiaries earning between \$5,000 and \$9,999 in 2011 is hearing impairments.

Table 2 also shows that only a small fraction of beneficiaries in any impairment category earned more than the annualized SGA level in 2011, but this is not surprising. Only 2.2 percent of the DI-only beneficiaries had earnings above that level in 2011, as did 0.8 percent of SSI-only recipients and 0.5 percent of concurrent beneficiaries. The share of beneficiaries who earned above the SGA level in 2011 is less than 5 percent for all impairment categories except unknown impairments, in which 13.2 percent of the beneficiaries earned above the SGA level. The fact that only a small fraction of beneficiaries earned more than the SGA level is unsurprising for two reasons. First, to establish initial eligibility for disability program benefits, all beneficiaries demonstrated that they could not earn above the SGA level at that time. Second, beneficiaries who earn above the SGA level are potentially at risk of benefit suspension or termination, which may create a disincentive for some beneficiaries to earn more. In fact, there is limited evidence that some DI beneficiaries restrain their earnings to below the SGA level to maintain their cash benefits (Schimmel, Stapleton, and Song 2011), although other studies have found opposing evidence (General Accounting Office 2002).

We use a multivariate approach to assess whether differences observed in the descriptive statistics change when controlling for multiple factors. Results from the descriptive analysis provide a snapshot of the

**Table 2.**  
**Distribution of disability program beneficiaries among earnings categories, by program and primary impairment, 2011**

Program and impairment	Number	Percent- age emp- loyed	Mean earnings (\$)		Percentage with earnings—				
			Overall	Among those with earnings	Between \$1,000 and \$4,999	Between \$5,000 and \$9,999	Between \$10,000 and \$19,999	Of \$20,000 or more	Above annual- ized SGA <sup>a</sup>
Total	9,583,864	8.7	773	8,694	4.1	2.5	1.5	0.6	1.5
<b>Program</b>									
DI only	4,973,277	11.4	1,149	9,939	4.7	3.5	2.1	1.1	2.2
SSI only	3,168,413	5.4	368	6,605	2.9	1.4	1.0	0.2	0.8
Concurrent DI and SSI	1,442,174	6.9	368	5,119	4.4	1.7	0.7	0.1	0.5
<b>Primary impairment</b>									
Mental impairments									
Affective disorders	1,476,274	7.8	655	8,308	3.4	2.4	1.4	0.5	1.3
Schizoaffective disorders	632,242	6.0	403	6,552	3.0	1.8	0.9	0.2	0.7
Anxiety disorders	347,747	7.0	666	9,315	3.2	2.0	1.2	0.7	1.4
Intellectual disability	1,126,163	10.3	557	5,113	6.5	2.6	1.2	0.1	0.8
Other mental impairments	607,739	10.7	800	7,291	5.7	2.9	1.6	0.5	1.4
Nonmental impairments									
Back disorders	1,246,008	7.4	703	9,414	3.2	2.3	1.3	0.7	1.4
HIV/AIDS	96,002	11.4	1,205	10,429	4.1	3.6	2.5	1.2	2.6
Neoplasms	187,952	15.5	2,363	15,118	5.5	4.0	3.0	3.0	4.9
Congenital anomalies	44,467	11.1	569	4,784	7.8	2.2	0.9	0.2	0.7
Visual impairments	184,155	12.5	1,388	10,993	4.3	3.0	4.0	1.2	1.3
Hearing impairments	72,278	17.0	1,373	7,988	7.1	5.6	3.5	0.9	2.6
Speech impairments	9,009	10.7	927	8,466	5.2	3.0	1.8	0.7	1.8
Infectious and parasitic diseases	30,968	9.9	936	9,407	3.8	3.0	2.2	0.9	2.0
Endocrine, nutritional, and metabolic diseases	289,968	6.3	515	8,128	2.7	2.0	1.1	0.4	1.0
Diseases of the—									
Musculoskeletal system	902,036	8.7	789	9,002	3.7	2.7	1.6	0.7	1.6
Blood and blood-forming organs	28,746	13.5	1,225	8,973	5.7	4.3	2.6	1.0	2.5
Nervous system	609,924	9.8	997	10,018	4.2	2.8	1.8	1.0	2.0
Circulatory system	588,768	8.2	844	10,242	3.5	2.4	1.5	0.8	1.6
Respiratory system	217,670	7.2	618	8,490	3.2	2.3	1.3	0.5	1.2
Digestive system	124,993	9.1	940	10,271	3.6	2.7	1.7	1.0	2.1
Genitourinary system	119,833	12.7	1,354	10,602	4.9	3.8	2.6	1.4	2.9
Skin and subcutaneous tissue	19,508	8.3	735	8,769	3.4	2.8	1.5	0.6	1.5
Injuries	346,339	8.9	1,012	11,293	3.6	2.6	1.7	1.0	2.0
Other nonmental impairments	255,677	6.1	477	7,640	3.2	1.6	1.0	0.3	0.9
Unknown	19,398	27.4	4,535	16,473	6.0	5.8	9.1	6.6	13.2

SOURCE: Authors' calculations using DAF and MEF.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

employment rates and earnings among beneficiaries with different impairments. However, the observed variation in employment and earnings across primary impairments might be confounded by other individual characteristics and local socioeconomic factors. For instance, the pattern of employment and earnings for a particular impairment group could be influenced by the age distribution or educational attainment of beneficiaries in that group, or by the strength of the local economy where those beneficiaries reside. We conduct multivariate regression analyses of employment and earnings to account for such possibilities, and we present the results in the next section.

## **Regression Results**

Employment and earnings regression models are estimated separately for recipients of DI-only, SSI-only, and concurrent DI-SSI benefits. Tables 3–5 present the odds ratios and marginal-effect estimates for those regressions.<sup>9</sup> The estimated odds ratios reveal how likely an individual with a certain impairment was, with all else equal, to be employed (that is, to earn at least \$1,000) in 2011 relative to a beneficiary with the reference-category impairment (diseases of the respiratory system). The marginal-effect estimates reveal how a certain impairment is correlated, with all else equal, with the probability of employment.<sup>10</sup> The estimates for all covariates included in the models are available from the authors upon request. Because each regression is calculated using at least 1 million observations, the estimates are very precise. However, the parameter estimates' standard errors are of limited relevance because the regressions are estimated using the entire population and therefore provide the population parameter values.

In the following subsections, we first discuss the regression estimates showing how the beneficiaries' primary impairments are associated with employment and earnings (conditional on being employed). We then discuss the estimates for employment at the annualized SGA level across primary-impairment categories.

### **Employment and Conditional Earnings by Primary Impairment**

Table 3 presents results for DI-only beneficiaries. The results suggest that beneficiaries with several seemingly dissimilar primary impairments were relatively more likely to be employed in 2011. In fact, relative to persons with respiratory system diseases (the reference category), DI-only beneficiaries in most primary-impairment categories had a greater likelihood of

being employed during 2011, after controlling for other factors. The six categories whose members were most likely to be employed are unknown impairments, hearing impairments, intellectual disability, visual impairments, HIV/AIDS, and neoplasms. Conversely, DI-only beneficiaries with the following impairments were less likely to be employed than were those with respiratory diseases: anxiety disorders, schizoaffective disorders, endocrine/nutritional/metabolic diseases, back disorders, and affective disorders.<sup>11</sup> The marginal-effect estimates help quantify how these differences affect the absolute probability of employment. For instance, having a primary impairment that is positively correlated with employment is associated with a percentage point increase in employment probability (relative to having a respiratory disease) ranging from 0.5 for musculoskeletal diseases to 25.6 for unknown impairment. The impairments with lower odds of employment are associated with no more than a 1.9 percentage point decline in employment probability (for anxiety disorders) relative to respiratory disease.

One might hypothesize that the impairments associated with higher employment rates are also associated with higher conditional earnings. For most primary-impairment categories, employment and conditional earnings in 2011 were either both higher or both lower than those for the reference group (as one can see when comparing the odds ratios for a single impairment across models in Table 3). However, this is not always the case. For example, although DI-only beneficiaries with intellectual disability were relatively more likely to work than were those with a respiratory disease, they were also likely to earn less than those with a respiratory disease, all else being equal.<sup>12</sup>

The impairment categories that include beneficiaries who were relatively more or relatively less likely to work are similar for SSI-only and DI-only beneficiaries, but the likelihood of employment was much weaker among SSI-only recipients (Table 4) than it was among their DI-only counterparts. Similar to DI-only beneficiaries, SSI-only recipients with hearing impairments, neoplasms, HIV/AIDS, and intellectual disability were among the six primary-impairment types most likely to work. However, unlike DI-only beneficiaries, SSI-only recipients with unknown impairments and visual impairments were no more likely to work than were those in the reference category with respiratory disease. Instead, for SSI-only recipients, the two other categories among the six whose members were most likely to be employed were

**Table 3.**  
**Regression analysis of employment and earnings among DI-only beneficiaries: Estimated odds ratios and marginal effects, 2011**

Primary impairment	Employment status: Logit model				Conditional earnings: Ordered logit model		Earnings at annualized SGA level: <sup>a</sup> Logit model			
	Odds ratio	Standard error	Marginal effect	Standard error	Odds ratio	Standard error	Odds ratio	Standard error	Marginal effect	Standard error
<b>Mental impairments</b>										
Affective disorders	0.974**	0.010	-0.002**	0.001	0.988	0.018	0.936***	0.022	-0.001***	b
Schizoaffective disorders	0.838***	0.011	-0.015***	0.001	0.768***	0.017	0.459***	0.015	-0.009***	b
Anxiety disorders	0.799***	0.010	-0.019***	0.001	1.160***	0.026	1.038	0.029	0.001	0.001
Intellectual disability	2.236***	0.027	0.087***	0.002	0.686***	0.014	0.826***	0.028	-0.002***	b
Other mental impairments	1.243***	0.015	0.022***	0.001	1.048**	0.021	1.254***	0.032	0.005***	0.001
<b>Nonmental impairments</b>										
Back disorders	0.907***	0.009	-0.008***	0.001	1.057***	0.019	0.998	0.023	b	b
HIV/AIDS	1.840***	0.030	0.068***	0.002	1.226***	0.033	1.903***	0.062	0.017***	0.001
Neoplasms	1.703***	0.020	0.062***	0.002	1.668***	0.034	2.456***	0.060	0.030***	0.001
Congenital anomalies	1.556***	0.047	0.046***	0.004	0.783***	0.041	1.037	0.085	0.001	0.001
Visual impairments	1.880***	0.024	0.072***	0.002	1.936***	0.042	1.045	0.033	0.001	0.001
Hearing impairments	2.299***	0.039	0.100***	0.003	1.253***	0.034	1.689***	0.067	0.012***	0.001
Speech impairments	1.431***	0.077	0.036***	0.006	1.183*	0.106	1.445***	0.162	0.008***	0.003
Infectious and parasitic diseases	1.337***	0.031	0.028***	0.003	1.196***	0.047	1.450***	0.072	0.008***	0.001
Endocrine, nutritional, and metabolic diseases	0.856***	0.011	-0.013***	0.001	0.968	0.022	0.805***	0.024	-0.003***	b
<b>Diseases of the—</b>										
Musculoskeletal system	1.056***	0.011	0.005***	0.001	1.039**	0.019	1.062***	0.025	0.001**	b
Blood and blood-forming organs	1.439***	0.041	0.037***	0.003	1.280***	0.060	1.734***	0.097	0.013***	0.002
Nervous system	1.152***	0.012	0.014***	0.001	1.127***	0.021	1.309***	0.031	0.006***	0.001
Circulatory system	1.118***	0.012	0.010***	0.001	1.047**	0.020	1.149***	0.028	0.003***	0.001
Respiratory system (reference category)	...	...	...	...	...	...	...	...	...	...
Digestive system	1.120***	0.016	0.011***	0.001	1.188***	0.030	1.376***	0.042	0.007***	0.001
Genitourinary system	1.531***	0.021	0.046***	0.002	1.137***	0.027	1.600***	0.046	0.012***	0.001
Skin and subcutaneous tissue	0.971	0.031	-0.003	0.003	1.101*	0.060	1.040	0.072	0.001	0.001
Injuries	1.121***	0.013	0.011***	0.001	1.217***	0.025	1.406***	0.036	0.007***	0.001
Other nonmental impairments	1.074***	0.016	0.006***	0.001	1.016	0.026	1.149***	0.039	0.002***	0.001
Unknown	5.319***	0.112	0.256***	0.005	3.987***	0.125	14.176***	0.467	0.171***	0.005
Number	<sup>c</sup> 4,973,277				568,724		<sup>c</sup> 4,973,223			

SOURCE: Authors' calculations using DAF and MEF.

NOTES: Covariates include sex, age, race/ethnicity, educational attainment, number of dependents, age at disability onset, years since initial eligibility for benefits, status as disabled adult child or disabled widow(er) beneficiary, adjudication level, Medicare enrollment status, county population density and unemployment rate (mean-centered), and state of residence. See Appendix Table A-2.

... = not applicable.

\* = statistically significant at the 0.10 level using a two-tailed *t*-test.

\*\* = statistically significant at the 0.05 level using a two-tailed *t*-test.

\*\*\* = statistically significant at the 0.01 level using a two-tailed *t*-test.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

b. Between zero and 0.0005.

c. Sample sizes do not match because some combinations of characteristics perfectly predicted earnings above the SGA level. We removed the 54 individuals with those characteristics from the regression models for earnings above annualized SGA.

**Table 4.**  
**Regression analysis of employment and earnings among SSI-only recipients: Estimated odds ratios and marginal effects, 2011**

Primary impairment	Employment status: Logit model				Conditional earnings: Ordered logit model		Earnings at annualized SGA level: <sup>a</sup> Logit model			
	Odds ratio	Standard error	Marginal effect	Standard error	Odds ratio	Standard error	Odds ratio	Standard error	Marginal effect	Standard error
<b>Mental impairments</b>										
Affective disorders	1.006	0.024	b	0.001	1.023	0.043	1.110*	0.064	0.001*	b
Schizoaffective disorders	0.758***	0.019	-0.011***	0.001	0.854***	0.038	0.741***	0.044	-0.002***	b
Anxiety disorders	0.890***	0.024	-0.005***	0.001	1.025	0.049	1.001	0.064	b	b
Intellectual disability	1.080***	0.025	0.005***	0.002	0.723***	0.031	0.855***	0.049	-0.002***	0.001
Other mental impairments	1.198***	0.029	0.012***	0.002	0.766***	0.033	0.894*	0.053	-0.001**	0.001
<b>Nonmental impairments</b>										
Back disorders	0.815***	0.023	-0.005***	0.001	1.014	0.051	0.895*	0.060	c*	b
HIV/AIDS	1.273***	0.041	0.009***	0.001	0.913	0.053	1.285***	0.095	0.002***	0.001
Neoplasms	1.308***	0.045	0.010***	0.001	1.153**	0.071	1.510***	0.120	0.003***	0.001
Congenital anomalies	1.021	0.033	0.001	0.001	0.397***	0.026	0.461***	0.048	-0.004***	b
Visual impairments	0.995	0.029	c	0.001	1.400***	0.074	0.588***	0.047	-0.003***	b
Hearing impairments	1.925***	0.057	0.036***	0.002	1.251***	0.066	2.384***	0.163	0.009***	0.001
Speech impairments	1.006	0.058	b	0.002	0.969	0.103	1.101	0.154	0.001	0.001
Infectious and parasitic diseases	1.007	0.064	b	0.002	1.472***	0.168	1.355**	0.181	0.002**	0.001
Endocrine, nutritional, and metabolic diseases	0.795***	0.025	-0.007***	0.001	1.090	0.060	0.836**	0.062	-0.001***	b
<b>Diseases of the—</b>										
Musculoskeletal system	0.947**	0.025	-0.002**	0.001	1.078	0.052	1.068	0.068	b	b
Blood and blood-forming organs	1.362***	0.049	0.014***	0.002	1.053	0.067	1.325***	0.113	0.002***	0.001
Nervous system	0.633***	0.017	-0.019***	0.001	0.952	0.045	0.732***	0.047	-0.002***	b
Circulatory system	0.768***	0.022	-0.007***	0.001	0.993	0.053	0.844**	0.059	-0.001***	b
Respiratory system (reference category)	...	...	...	...	...	...	...	...	...	...
Digestive system	0.866***	0.035	-0.004***	0.001	1.164**	0.085	1.046	0.097	b	0.001
Genitourinary system	0.906***	0.033	-0.003***	0.001	1.208***	0.078	1.072	0.086	b	0.001
Skin and subcutaneous tissue	0.910	0.066	-0.003	0.002	1.078	0.138	0.890	0.154	-0.001	0.001
Injuries	0.727***	0.022	-0.010***	0.001	1.270***	0.069	0.961	0.066	c	b
Other nonmental impairments	0.895***	0.025	-0.004***	0.001	1.005	0.052	1.167**	0.079	0.001**	b
Unknown	1.001	0.117	b	0.004	1.350	0.285	1.110	0.287	0.001	0.001
Number	<sup>d</sup> 3,168,413				169,828		<sup>d</sup> 3,167,720			

SOURCE: Authors' calculations using DAF and MEF.

NOTES: Covariates include sex, age, race/ethnicity, educational attainment, number of dependents, age at disability onset, years since initial eligibility for benefits, adjudication level, Medicaid enrollment status, county population density and unemployment rate (mean-centered), and state of residence. See Appendix Table A-2.

... = not applicable.

\* = statistically significant at the 0.10 level using a two-tailed *t*-test.

\*\* = statistically significant at the 0.05 level using a two-tailed *t*-test.

\*\*\* = statistically significant at the 0.01 level using a two-tailed *t*-test.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

b. Between zero and 0.0005.

c. Between -0.0005 and zero.

d. Sample sizes do not match because some combinations of characteristics perfectly predicted earnings above the SGA level. We removed the 693 individuals from the regression models for earnings above annualized SGA either because they exhibited those characteristics or because their data for county population density, county unemployment rate, and Medicaid status were missing.

other mental impairments and diseases of the blood and blood-forming organs. The four impairment categories whose members among DI-only beneficiaries were least likely to be employed—anxiety disorders, schizoaffective disorders, endocrine/nutritional/metabolic diseases, and back disorders—were also among the SSI-only groups that were relatively less likely to work. However, the marginal-effect estimates show that having a particular impairment does not have a large effect on employment probability for SSI-only recipients. For instance, having a primary impairment that is positively correlated with employment was associated with no more than a 3.6 percentage point increase in employment probability (hearing impairments) relative to having a respiratory disease. The impairments with lower odds of employment were associated with no more than a 1.9 percentage point reduction in employment probability (nervous system diseases). The magnitude of the positively correlated marginal effects was larger for DI-only beneficiaries than for SSI-only recipients, but the magnitude of negatively correlated marginal effects was about the same across the programs.

Among SSI-only recipients who were employed, we find relatively weak relationships between impairment category and earnings. Point estimates for 13 of the 24 nonreference impairment categories are not statistically significant. Among the significant point estimates, we observe again that the primary-impairment categories positively correlated with higher conditional earnings are not necessarily the categories that are more strongly associated with employment. For example, SSI-only recipients with other mental impairments were more likely to be employed; but, once employed, they were less likely to be in a higher earnings category than were recipients in the reference group.

Most primary-impairment groups that tended to have relatively greater likelihood of employment among DI-only beneficiaries also tended to have greater odds of employment for concurrent beneficiaries (Table 5). The marginal-effect estimates show that, relative to concurrent beneficiaries with respiratory diseases, the magnitude of the effect of having a particular impairment on employment probability ranged from negative 0.4 percentage points (schizoaffective disorders) to 5.8 percentage points (intellectual disability) and was not always statistically significant. The relationship between impairments and conditional earnings is weaker than that between impairments and employment for concurrent beneficiaries; for nine impairments, the estimated odds ratio from the

ordered logit regression of conditional earnings was not statistically significant, even though six of those impairments had a statistically significant relationship with employment. Within impairment categories, the estimated relationships between employment and conditional earnings appear to be most consistent for DI-only beneficiaries, to be least consistent for SSI-only recipients, and to lie somewhere in the middle for concurrent beneficiaries. This finding, which we observe throughout our analysis, is consistent with that of previous studies (for example, Mamun and others 2011; Ben-Shalom and Mamun 2013)

### ***Earnings Above the Annualized SGA Level***

For each impairment group, we also use a logistic regression model to estimate the probability that a beneficiary earned an annualized SGA amount (that is, 12 times the monthly SGA amount) or more in 2011. Policymakers may wish to know the extent to which beneficiaries engage in SGA—the key earnings level that, if surpassed, can lead to benefit suspension or termination under certain circumstances. In estimating the SGA earnings indicator, we account for whether a beneficiary is blind or not in order to apply the appropriate annualized SGA threshold for 2011 (\$19,680 and \$12,000, respectively). As shown in the results from the ordered logistic regressions of earnings categories, we find that a positive correlation between a primary impairment and employment often—but not always—implies a positive correlation between that impairment and earnings above the SGA level. DI-only beneficiaries with intellectual disability again provide an example of the exception: Although estimates of the employment indicator show a strong positive relationship between having an intellectual disability and employment, a negative marginal effect (of about 0.2 percentage points) exists between having that impairment and earning above the annualized SGA level (Table 3). For both DI-only and SSI-only beneficiaries (Tables 3 and 4), estimates from the regressions for employment status and for earnings above annualized SGA level have the same direction for most primary impairments. Likewise, the magnitude of the estimated relationship between a given impairment and a given outcome is often consistent between the two models. However, the shares of beneficiaries in the reference category (respiratory system diseases) with earnings of at least the SGA level are quite small—only 1.8 percent among DI-only beneficiaries, 0.5 percent among SSI-only recipients, and 0.4 percent among concurrent

**Table 5.****Regression analysis of employment and earnings among recipients of concurrent DI and SSI benefits: Estimated odds ratios and marginal effects, 2011**

Primary impairment	Employment status: Logit model				Conditional earnings: Ordered logit model		Earnings at annualized SGA level: <sup>a</sup> Logit model			
	Odds ratio	Standard error	Marginal effect	Standard error	Odds ratio	Standard error	Odds ratio	Standard error	Marginal effect	Standard error
<b>Mental impairments</b>										
Affective disorders	1.142***	0.038	0.007***	0.002	0.827***	0.050	1.160	0.120	0.001	0.001
Schizoaffective disorders	0.920**	0.032	-0.004**	0.002	0.593***	0.038	0.648***	0.072	-0.002***	b
Anxiety disorders	1.077**	0.040	0.004*	0.002	0.845**	0.058	1.106	0.129	b	0.001
Intellectual disability	2.393***	0.079	0.058***	0.003	0.474***	0.029	0.859	0.092	-0.001	b
Other mental impairments	1.820***	0.062	0.040***	0.003	0.725***	0.046	1.101	0.121	0.001	0.001
<b>Nonmental impairments</b>										
Back disorders	0.964	0.034	-0.001	0.001	0.870**	0.057	0.904	0.101	b	b
HIV/AIDS	1.504***	0.068	0.019***	0.002	0.855*	0.071	1.532***	0.200	0.002***	0.001
Neoplasms	1.535***	0.068	0.020***	0.002	1.078	0.088	1.720***	0.225	0.003***	0.001
Congenital anomalies	2.219***	0.105	0.046***	0.004	0.376***	0.036	0.436***	0.108	-0.002***	b
Visual impairments	1.319***	0.053	0.013***	0.002	0.988	0.073	0.289***	0.052	-0.003***	b
Hearing impairments	2.152***	0.091	0.047***	0.003	1.065	0.081	2.362***	0.296	0.006***	0.001
Speech impairments	1.736***	0.181	0.026***	0.006	0.799	0.153	1.174	0.413	0.001	0.002
Infectious and parasitic diseases	1.134	0.096	0.005	0.003	0.964	0.154	1.264	0.295	0.001	0.001
Endocrine, nutritional, and metabolic diseases	0.972	0.039	-0.001	0.001	0.926	0.068	0.955	0.119	b	b
<b>Diseases of the—</b>										
Musculoskeletal system	1.145***	0.041	0.005***	0.001	0.880*	0.058	1.035	0.116	b	b
Blood and blood-forming organs	1.414***	0.077	0.017***	0.003	0.835*	0.081	1.157	0.181	0.001	0.001
Nervous system	1.059	0.038	0.003	0.002	0.715***	0.048	0.811*	0.094	-0.001**	b
Circulatory system	1.025	0.039	0.001	0.001	0.838**	0.059	0.860	0.104	-0.001	b
Respiratory system (reference category)	...	...	...	...	...	...	...	...	...	...
Digestive system	0.998	0.050	b	0.002	0.881	0.082	1.062	0.162	b	0.001
Genitourinary system	1.274***	0.060	0.011***	0.002	0.914	0.078	1.219	0.167	0.001	0.001
Skin and subcutaneous tissue	0.911	0.086	-0.003	0.003	0.691**	0.122	0.789	0.227	-0.001	0.001
Injuries	0.953	0.038	-0.002	0.002	0.881*	0.065	1.039	0.126	b	0.001
Other nonmental impairments	1.567***	0.065	0.017***	0.002	0.528***	0.044	0.756*	0.119	-0.001**	b
Unknown	2.371***	0.170	0.047***	0.005	1.122	0.148	3.005***	0.592	0.007***	0.002
<b>Number</b>		<sup>c</sup> 1,442,174				98,869		<sup>c</sup> 1,442,044		

SOURCE: Authors' calculations using DAF and MEF.

NOTES: Covariates include sex, age, race/ethnicity, educational attainment, number of dependents, age at disability onset, years since initial eligibility for benefits, status as disabled adult child or disabled widow(er) beneficiary, adjudication level, Medicare and Medicaid enrollment statuses, county population density and unemployment rate (mean-centered), and state of residence. See Appendix Table A-2.

... = not applicable.

\* = statistically significant at the 0.10 level using a two-tailed *t*-test.\*\* = statistically significant at the 0.05 level using a two-tailed *t*-test.\*\*\* = statistically significant at the 0.01 level using a two-tailed *t*-test.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

b. Between zero and 0.0005.

c. Sample sizes do not match because some combinations of characteristics perfectly predicted earnings above the SGA level. We removed the 130 individuals from the regression models for earnings above annualized SGA either because they exhibited those characteristics or because their data for county population density, county unemployment, and Medicaid status were missing.

beneficiaries (Appendix Tables A-3, A-4, and A-5, respectively). As a result, the relative change in the likelihood of earning above SGA level for a specific impairment category is larger than the change estimated in the employment-status model. For concurrent beneficiaries (Table 5), few primary-impairment categories were strong predictors of annual earnings above the annualized SGA level. Specifically, concurrent beneficiaries with unknown impairments, hearing impairments, and neoplasms were most likely to have earnings above the annualized SGA level, whereas those with visual impairments, congenital anomalies, and schizoaffective disorders were least likely to have such earnings.

## **Conclusions**

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Our results provide a variety of new and updated information about Social Security disability program beneficiaries. Our tabulations reveal the distributions of beneficiaries across program types and primary-impairment categories. In addition, they provide a basic picture of beneficiary employment and earnings across program and impairment types. Similar to employment tabulations in previous studies, our findings indicate that a large majority of individuals who were Social Security disability program beneficiaries in December 2010 did not engage in substantial employment in 2011 and, on average, their annual earnings were relatively low even when they did work. Our earnings-category tabulations show that SSI-only recipients were relatively less likely to be in higher earnings categories than were DI-only or concurrent beneficiaries, both overall and across most primary-impairment categories. This is not surprising, given the differences in the eligibility rules for the two programs: Beneficiaries must have a history of earnings to qualify for DI, whereas SSI recipients must not exceed income and asset limits.

Our multivariate regression models, estimated separately for each program, reveal noticeable variations in the relationship between primary-impairment category and both employment and earnings. Impairments that are often lumped together, such as the various mental disorders, exhibit widely varying correlations with employment. Beneficiaries with schizoaffective disorders, for example, were among the least likely to work, whereas those with intellectual disability were among the most likely to work. Thus, the more narrowly defined impairment categories we have constructed for this analysis can provide valuable information for policymakers.

In contrast with the substantial variation in employment and earnings experiences across primary-impairment categories, there is noticeably less variation in the relationships between specific impairment types and employment and earnings across program types. However, for most primary impairments, employment status and impairment category are more strongly correlated for DI-only beneficiaries than they are for SSI-only recipients. Again, we speculate that differences in beneficiary characteristics generated by differences in the programs' respective eligibility criteria explain a substantial portion of this result.

After controlling for observed factors in our analysis, we find that beneficiaries with certain primary impairments are consistently associated with relatively higher or lower employment across program types. Beneficiaries with intellectual disability, visual impairments, hearing impairments, neoplasms, and HIV/AIDS were most likely to be employed. Conversely, beneficiaries with schizoaffective disorders, anxiety disorders, back disorders, and endocrine/nutritional/metabolic diseases were least likely to earn at least \$1,000 in 2011.

When compared with employment experiences by primary impairment, the pattern of earnings among beneficiaries who were employed paints a somewhat unexpected picture. The primary impairments that are positively correlated with employment are not always positively correlated with being in a higher earnings category or with having earnings above the annualized SGA level. This result suggests heterogeneity across primary-impairment types in the ability to work a certain number of hours at a given wage level or the ability to obtain a higher wage level.

Policymakers may want to better understand the earnings patterns among Social Security disability program beneficiaries who work because those beneficiaries are presumably the most likely to leave the rolls through work. Similarly, proposals to intervene prior to disability program participation (Liebman and Smalligan 2013) may be more effective if targeted to potential beneficiaries in groups with disabilities that have historically shown relatively greater earnings once they are in the program. Mann and Stapleton (2011) explicitly discuss customizing intervention services by impairment type. Although we are not advocating for any particular proposal, it is clear that identifying the underlying causes of different earnings patterns across impairment types is one important area for future research.

## Appendix

**Table A-1.**  
**Primary-impairment categorization scheme**

Primary-impairment category	SSA impairment codes
Mental impairments	
Affective disorders	2960–2969, 3110–3119
Schizoaffective disorders	2950–2959, 2980–2989
Anxiety disorders	3000–3019, 3080–3099
Intellectual disability	3170–3194, 3196–3199
Other mental impairments	2900–2949, 2990–2999, 3030–3079, 3100–3109, 3120–3129, 3138–3169, 3195
Nonmental impairments	
Back disorders	7221–7249
HIV/AIDS	0070–0079, 0201–0449, 0540–0559, 0780–0789, 1360–1369
Neoplasms	1400–2399
Congenital anomalies	7400–7599
Visual impairments	3610–3699, 3780–3789
Hearing impairments	3890–3899
Speech impairments	7840–7849
Infectious and parasitic diseases	0110–0119, 0450–0459, 0930–1359, 1380–1389
Endocrine, nutritional, and metabolic diseases	2400–2479, 2500–2559, 2630–2799
Diseases of the—	
Musculoskeletal system	7100–7200, 7250–7399
Blood and blood-forming organs	2800–2899
Nervous system	3200–3419, 3430–3599, 3860–3889
Circulatory system	3420–3429, 3750–3759, 3900–4599
Respiratory system	4600–4869, 4910–5199, 7690–7699
Digestive system	5200–5799
Genitourinary system	5800–6299
Skin and subcutaneous tissue	6900–7099
Injuries	8000–9599
Other nonmental impairments	0000–0069, 0680–0689, 2480–2499, 2580–2589, 3130, 4880–4889, 6300–6889, 7600–7689, 7740–7839, 7850–7959, 9840–9849
Unknown	Any other code

SOURCE: DAF.

NOTE: The specific impairments that correspond with the impairment codes are listed in SSA's Program Operations Manual System (<http://policy.ssa.gov/poms.nsf/lnx/0426510015>).

**Table A-2.**  
**Regression covariates: Characteristics controlled for in the estimation models**

Characteristic	Values
Sex	Men (reference category) Women
Race/ethnicity	Non-Hispanic white (reference category) Non-Hispanic black Hispanic Missing data or other
Age group	18–39 40–49 50–59 (reference category) 60–64
Education (in years)	Less than 12 (reference category) 12 13–15 16 or more Missing data
Level of award adjudication	Disability Determination Service (reference category) Administrative law judge or higher Missing data
Age at disability onset	Onset age (in years) Missing data
Number of dependents	Zero (reference category) One Two or more Missing
Years since first eligibility	2 or fewer 3–5 6 or more (reference category)
Disabled widow(er) beneficiary status (DI only)	Yes No (reference category) Missing data
Disabled adult child beneficiary status (DI only)	Yes No (reference category) Missing data
Medicare enrollment status (DI beneficiaries only)	Yes (reference category) No Missing data
Medicaid enrollment status (SSI recipients only)	Yes (reference category) No Missing data
County characteristics (mean-centered)	Population per square mile Unemployment rate County of residence data missing
State of residence	Includes the District or Columbia and Puerto Rico

SOURCE: Authors' determinations.

**Table A-3.**  
**Distribution of DI-only beneficiaries among earnings categories, by primary impairment, 2011**

Primary impairment	Number	Percent- age emp- loyed	Mean earnings (\$)		Percentage with earnings—				
			Overall	Among those with earnings	Between \$1,000 and \$4,999	Between \$5,000 and \$9,999	Between \$10,000 and \$19,999	Of \$20,000 or more	Above annual- ized SGA <sup>a</sup>
Total	4,973,277	11.4	1,149	9,939	4.7	3.5	2.1	1.1	2.2
Mental impairments									
Affective disorders	687,142	10.5	974	9,151	4.3	3.5	1.9	0.9	1.8
Schizoaffective disorders	208,858	9.0	629	6,836	4.1	3.3	1.4	0.3	0.8
Anxiety disorders	158,930	9.5	1,059	11,076	3.8	2.7	1.6	1.3	2.2
Intellectual disability	215,642	16.8	911	5,216	9.7	5.4	1.6	0.1	0.8
Other mental impairments	201,759	13.4	1,340	9,897	5.5	4.3	2.4	1.3	2.6
Nonmental impairments									
Back disorders	935,688	8.9	872	9,698	3.7	2.7	1.6	0.8	1.8
HIV/AIDS	43,911	17.8	2,047	11,438	5.8	5.7	4.1	2.2	4.5
Neoplasms	139,243	18.9	3,034	15,939	6.5	4.8	3.7	4.0	6.3
Congenital anomalies	9,988	15.4	1,058	6,720	8.0	4.6	2.1	0.7	1.7
Visual impairments	98,266	18.1	2,172	11,955	5.3	4.4	6.5	1.9	2.1
Hearing impairments	31,656	21.8	1,936	8,826	7.4	8.4	4.7	1.3	3.1
Speech impairments	3,016	14.3	1,653	11,499	5.4	4.8	2.4	1.7	2.9
Infectious and parasitic diseases	19,393	13.3	1,291	9,648	5.0	4.1	2.8	1.3	2.8
Endocrine, nutritional, and metabolic diseases	157,667	8.8	757	8,467	3.8	2.9	1.6	0.6	1.4
Diseases of the —									
Musculoskeletal system	632,886	10.8	1,017	9,295	4.6	3.4	2.0	0.9	2.0
Blood and blood-forming organs	10,437	16.5	1,896	11,414	6.0	5.3	3.3	2.0	3.9
Nervous system	380,709	12.9	1,414	10,859	5.1	3.9	2.5	1.4	2.8
Circulatory system	393,732	10.8	1,165	10,659	4.6	3.2	2.0	1.1	2.2
Respiratory system	125,619	9.9	897	8,921	4.4	3.1	1.7	0.8	1.8
Digestive system	78,478	12.3	1,341	10,852	4.7	3.7	2.4	1.5	3.0
Genitourinary system	76,236	16.8	1,884	11,135	6.3	5.0	3.4	2.1	4.0
Skin and subcutaneous tissue	11,725	10.6	1,003	9,352	4.2	3.5	2.0	0.9	2.0
Injuries	223,393	11.6	1,404	12,007	4.5	3.4	2.2	1.5	2.7
Other nonmental impairments	115,062	8.6	729	8,276	4.2	2.4	1.4	0.6	1.4
Unknown	13,841	35.7	6,167	17,210	6.9	7.4	12.3	9.1	18.1

SOURCE: Authors' calculations using DAF and MEF.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

**Table A-4.****Distribution of SSI-only disability payment recipients among earnings categories, by primary impairment, 2011**

Primary impairment	Number	Percent- age emp- loyed	Mean earnings (\$)		Percentage with earnings—				
			Overall	Among those with earnings	Between \$1,000 and \$4,999	Between \$5,000 and \$9,999	Between \$10,000 and \$19,999	Of \$20,000 or more	Above annual- ized SGA <sup>a</sup>
Total	3,168,413	5.4	368	6,605	2.9	1.4	1.0	0.2	0.8
Mental impairments									
Affective disorders	539,262	5.0	381	7,467	2.3	1.4	1.1	0.2	0.9
Schizoaffective disorders	285,521	4.1	302	7,045	2.1	1.1	0.8	0.2	0.7
Anxiety disorders	133,876	4.6	333	7,053	2.3	1.2	0.9	0.2	0.8
Intellectual disability	632,336	7.7	465	5,691	4.6	1.8	1.2	0.1	1.0
Other mental impairments	313,230	8.9	526	5,605	5.4	2.1	1.3	0.2	1.0
Nonmental impairments									
Back disorders	186,866	2.3	174	7,565	1.0	0.7	0.4	0.1	0.4
HIV/AIDS	36,265	5.7	504	8,755	2.4	1.7	1.2	0.4	1.2
Neoplasms	32,258	5.2	417	7,938	2.3	1.6	1.0	0.3	1.0
Congenital anomalies	26,306	8.8	396	4,008	6.9	1.2	0.6	0.1	0.5
Visual impairments	56,810	5.8	516	8,641	2.7	1.4	1.2	0.5	0.5
Hearing impairments	27,713	13.0	967	7,277	6.6	3.1	2.7	0.6	2.6
Speech impairments	4,803	8.5	558	6,232	4.8	1.9	1.5	0.3	1.3
Infectious and parasitic diseases	7,897	3.8	348	9,000	1.4	1.1	1.1	0.2	0.9
Endocrine, nutritional, and metabolic diseases	88,239	2.7	211	7,632	1.1	0.9	0.6	0.1	0.5
Diseases of the —									
Musculoskeletal system	175,119	3.1	237	7,602	1.3	1.0	0.7	0.1	0.6
Blood and blood-forming organs	12,949	11.6	857	7,193	5.5	3.6	2.1	0.5	1.9
Nervous system	158,711	4.2	297	6,752	2.4	1.0	0.7	0.2	0.7
Circulatory system	134,641	2.3	180	7,724	1.0	0.7	0.5	0.1	0.4
Respiratory system	64,165	3.3	236	7,114	1.4	1.1	0.6	0.1	0.5
Digestive system	31,003	3.1	244	7,669	1.4	0.9	0.7	0.1	0.6
Genitourinary system	29,287	4.8	410	8,420	1.9	1.4	1.2	0.3	1.0
Skin and subcutaneous tissue	5,074	4.5	339	7,298	1.9	1.5	1.0	0.1	0.8
Injuries	82,403	3.5	296	8,385	1.5	1.0	0.8	0.2	0.7
Other nonmental impairments	101,596	3.8	299	7,640	1.9	1.0	0.7	0.2	0.7
Unknown	2,083	3.9	364	9,239	1.5	1.1	1.1	0.2	0.8

SOURCE: Authors' calculations using DAF and MEF.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

**Table A-5.****Distribution of disability program beneficiaries receiving concurrent DI and SSI benefits among earnings categories, by primary impairment, 2011**

Primary impairment	Number	Percent- age emp- loyed	Mean earnings (\$)		Percentage with earnings—				
			Overall	Among those with earnings	Between \$1,000 and \$4,999	Between \$5,000 and \$9,999	Between \$10,000 and \$19,999	Of \$20,000 or more	Above annual- ized SGA <sup>a</sup>
Total	1,442,174	6.9	368	5,119	4.4	1.7	0.7	0.1	0.5
Mental impairments									
Affective disorders	249,870	6.2	371	5,808	3.5	1.7	0.9	0.1	0.6
Schizoaffective disorders	137,863	5.1	270	4,968	3.4	1.2	0.5	0.1	0.4
Anxiety disorders	54,941	6.0	342	5,486	3.6	1.6	0.8	0.1	0.5
Intellectual disability	92,750	10.7	551	4,937	6.8	2.9	1.0	0.1	0.6
Other mental impairments	278,185	11.2	490	4,088	8.3	2.2	0.7	0.0	0.4
Nonmental impairments									
Back disorders	123,454	3.7	224	5,923	2.0	1.2	0.5	0.1	0.3
HIV/AIDS	15,826	7.1	474	6,473	3.6	2.1	1.2	0.2	0.9
Neoplasms	16,451	7.1	496	6,810	3.5	2.1	1.3	0.2	0.9
Congenital anomalies	8,173	13.4	530	3,712	10.5	2.5	0.3	0.1	0.2
Visual impairments	29,079	6.8	443	6,310	3.8	1.8	1.2	0.2	0.2
Hearing impairments	12,909	13.7	865	6,167	7.4	3.9	2.0	0.4	1.6
Speech impairments	1,190	10.3	570	5,291	6.1	2.9	1.2	0.1	0.8
Infectious and parasitic diseases	3,678	4.8	329	6,611	2.6	1.3	0.8	0.2	0.6
Endocrine, nutritional, and metabolic diseases	44,062	4.1	259	6,168	2.1	1.4	0.6	0.1	0.4
Diseases of the —									
Musculoskeletal system	94,031	4.6	285	6,078	2.4	1.5	0.6	0.1	0.4
Blood and blood-forming organs	5,360	11.9	804	6,585	5.7	3.9	2.0	0.3	1.4
Nervous system	70,504	5.8	318	5,244	3.6	1.5	0.6	0.1	0.4
Circulatory system	60,395	3.9	238	5,959	2.1	1.2	0.5	0.1	0.4
Respiratory system	27,886	3.8	242	6,127	1.9	1.3	0.6	0.0	0.4
Digestive system	15,512	4.8	303	6,121	2.6	1.4	0.6	0.1	0.5
Genitourinary system	14,310	6.7	463	6,708	3.4	2.2	0.9	0.3	0.8
Skin and subcutaneous tissue	2,709	5.2	321	6,009	2.9	1.7	0.4	0.2	0.5
Injuries	40,543	4.8	303	6,086	2.7	1.3	0.7	0.1	0.5
Other nonmental impairments	39,019	4.4	199	4,012	3.4	0.8	0.3	0.0	0.2
Unknown	3,474	8.4	532	6,032	4.7	2.3	1.2	0.2	1.1

SOURCE: Authors' calculations using DAF and MEF.

a. \$12,000 for nonblind beneficiaries and \$19,680 for blind beneficiaries in 2011.

## Notes

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<sup>1</sup> Because DI and SSI are programmatically distinct, individuals who receive SSI payments are often referred to as “SSI recipients” to distinguish them from “Social Security beneficiaries” or the more specific “DI beneficiaries.” However, for the sake of simplicity, in this article we sometimes use the word “beneficiaries” to indicate awardees of either SSI or DI, including those who receive concurrent benefits from both programs.

<sup>2</sup> In 2011, engaging in SGA meant earning at least \$1,000 per month for a nonblind individual or \$1,640 per month for a blind individual (SSA n.d.). SGA amounts have been adjusted annually based on the national average wage index since 1978 (for blind individuals) and since July 1999 (for all others).

<sup>3</sup> DI beneficiaries who have amyotrophic lateral sclerosis or end-stage renal disease qualify for Medicare benefits immediately, as do new DI beneficiaries whose entitlement is retroactive to at least 24 months prior to DI award.

<sup>4</sup> To determine Medicaid eligibility, 39 states and the District of Columbia use SSI criteria, and 11 states use more restrictive eligibility criteria.

<sup>5</sup> Individuals with FICA- or SECA-covered earnings that are not also Medicare taxable have their earnings capped at the FICA/SECA maximum (\$106,800 in 2011). Earnings not taxable by either the IRS or Medicare are not included in the underlying data and are thus not included in the analysis.

<sup>6</sup> In our population, 3.7 percent of DI-only beneficiaries, 3.8 percent of SSI-only recipients, and 4.5 percent of concurrent-benefit recipients have earnings greater than \$0 but less than \$1,000.

<sup>7</sup> Because we define employment as having earnings of at least \$1,000, our statistical tables omit data for beneficiaries earning less than \$1,000.

<sup>8</sup> Statistics on beneficiary age and other characteristics are available from the authors upon request.

<sup>9</sup> The estimated coefficients from the regressions are available from the authors upon request.

<sup>10</sup> Essentially, these estimates correspond with the average change in the outcome variables for all individuals when the variable of interest is changed from 0 to 1, with all other variables set to their actual values. For more information, see Bartus (2005).

<sup>11</sup> The odds ratio for diseases of the skin and subcutaneous tissue is also less than 1, but that result is not statistically significant.

<sup>12</sup> Although the odds ratio calculations depend on the choice of reference category, the fact that we have found one instance of deviation between employment and conditional earnings using any reference group is sufficient to support our claim that impairment groups whose members are more likely to work are not necessarily those groups whose members have higher earnings.

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