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Perspectives

This article's authors use linked administrative data from the Social Security Administration (SSA) and the Department of Education's Rehabilitation Services Administration to evaluate SSA's investment in services provided by the federal-state Vocational Rehabilitation (VR) program. A unique data resource permits a comparison of the value of SSA payments to state VR agencies for services provided to disability program beneficiaries who find and maintain a substantial level of work with the value of the cash benefits those beneficiaries forgo because of work. The authors find that the value of cash benefits forgone by beneficiaries after applying for VR services is substantially greater than the value of SSA payments to state VR agencies for those services, although the portion of the difference that is attributable to VR services cannot be determined.

SOCIAL SECURITY TOTALIZATION AGREEMENTS

by Brent W. Jackson and Scott Cash*

Since the 1970s, U.S. negotiators have concluded bilateral agreements with 28 important trading partners to coordinate social security coverage and benefit provisions for individuals who live and work in more than one country in their working lives. Known as "totalization agreements," they are similar in function and structure to treaties and are legally classified as congressional-executive agreements concluded pursuant to statute. The agreements have three main purposes: to eliminate double taxation on earnings, to provide benefit protections for workers who have divided their careers between the United States and another country, and to permit unrestricted payment of benefits to residents of the two countries. This article briefly describes totalization agreements, relates their history, and considers proposals to modernize and enhance them.

Introduction

When entering into a totalization agreement, the United States and a partner country agree to coordinate social security coverage and benefit payment provisions for individuals who have worked in both of the countries over the course of their working lives. Totalization agreements have three main purposes. First, they eliminate double social security taxation, which occurs if a worker and his or her employer are required to pay social security taxes to two countries on the same earnings. Second, they help fill gaps in the coverage records of people who have divided their careers between two countries by combining, or totalizing, the periods of coverage earned in each country. Finally, totalization agreements permit unrestricted payment of benefits to residents of the two countries. Although these three purposes do not constitute the entire scope of totalization agreements, they are by far the most visible and have the greatest effect on businesses and workers. All totalization agreements share certain features, but the complexity of and variation in our partner countries' social security laws make each agreement unique.

Determining Coverage Under Totalization Agreements

In the absence of a totalization agreement, many workers who are temporarily employed or self-employed in another country—as well as the employers of the former—face the burdensome prospect of paying social security taxes to two countries on the same earnings. For example, a U.S. employer may send a worker from the United States to another country to continue employment. If no totalization agreement is in force, both the employer and the worker generally are required to pay social security taxes to both the United States and the host country on the worker's earnings. Likewise, if a foreign employer sends a worker to the United States to continue employment, the employer and the worker will often have to pay double social security taxes unless that country and the United States have a totalization agreement in force.

This problem is particularly acute for U.S. workers because the Federal Insurance Contributions Act (FICA) and the Self-Employment Contributions Act (SECA) mandate more extensive coverage for U.S. residents working abroad than do the comparable social insurance programs of most other countries

Selected Abbreviations	
PIA	primary insurance amount
QC	quarter of coverage
SSA	Social Security Administration

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(McKinnon 2012). Although most countries tax their own nationals only for work performed in their own territory, the United States levies taxes on a broad range of economic activity performed by U.S. nationals and permanent residents outside U.S. territory. Further exacerbating this problem, the countries to which most U.S. workers are transferred tend to levy high payroll taxes to finance relatively generous social insurance programs. In some countries, the combined employee and employer share of those taxes can approach or exceed 50 percent of payroll (IBIS Advisors 2017).

Totalization agreements are popular with U.S. businesses because they exempt employers from paying double social security taxes. According to a periodic study of net tax savings performed by the Social Security Administration's (SSA's) Office of International Programs, U.S. businesses and their employees save an estimated $1.5 billion in foreign social security taxes each year because of the agreements. Such tax savings help make U.S. business operations more viable around the world and simultaneously enhance U.S. trade competitiveness. Totalization agreements also excuse foreign workers temporarily sent to the United States from paying U.S. Social Security taxes. This results in annual savings of about $500 million for the affected foreign workers and their employers. Those tax savings make the United States a more attractive destination for foreign capital, thereby encouraging foreign direct investment.

The agreements work by assigning social security coverage and, in turn, tax liability, to only one country, as determined by the rules of the particular agreement. Those rules can vary substantially, but all agreements share certain common features, such as assigning coverage so that workers pay social security taxes to one country or the other, not both. SSA works with representatives from its totalization partner countries throughout the negotiating process and after the agreement has entered into force to ensure that workers are covered under laws of the country to which they retain the greatest economic attachment.

The general principle of all totalization agreements is that, all else being equal, a worker should pay taxes and be covered only under the social security system of the country in which he or she actually works. This simple rule is known as the territoriality rule, meaning the territory in which a person is working determines his or her tax liability. All other coverage provisions of totalization agreements constitute exceptions to this basic rule.

The most notable exception to the territoriality rule is called the detached worker rule. Under that rule, a worker whose employer requires his or her temporary relocation from one country to another to work for that same company will continue to pay social security taxes and retain coverage solely in the country from which he or she transferred.[1] Under almost all totalization agreements, the period of such a transfer cannot be expected, at the time of the transfer, to exceed 5 years. This rule ensures that employees who are only temporarily working in the other country retain coverage in their home country, which will remain the country of their greatest economic attachment.[2] By contrast, workers who permanently transfer to the other country will have coverage under the destination country's system. By mutual agreement, the two countries can agree to extend the 5-year period for temporary foreign work assignments on a case-by-case basis, but extensions beyond 2 additional years are rare.

Other exceptions to the territoriality rule apply to self-employed workers. Of these, the two most common are the transferred self-employment rule and the residence rule.[3] The transferred self-employment rule, like the detached worker rule described above, provides that a self-employed worker who temporarily transfers his or her work from one country to another will retain coverage under the laws of the country from which he or she transferred.[4] The residence rule generally states that the laws of the country in which the person resides will cover his or her self-employment activity exclusively, without regard to the duration of that residence.

Additional special rules generally apply for seafarers, airline crew, diplomats, government employees, and people whose employers did not transfer them directly from one totalization country to the other, but instead from one totalization country to a third country before a subsequent transfer to the other totalization country. Totalization partner countries can also mutually agree to special exceptions for individual workers or entire classes of workers, as appropriate. However, for the United States to agree to a special exception, two underlying principles must be met: The person must be covered in only one country, and the person must retain coverage in the country to which he or she will most likely have the greatest economic attachment. For examples of common coverage situations, see Appendix A.

To provide evidence to the tax authorities in a host country that a worker is exempt from paying that country's social security taxes, he or she (or his or her employer) must retain and furnish, as required,

a certificate of coverage. The certificate is a document issued by the country whose laws will continue to apply to that person according to the rules of the agreement. The agreements designate the agencies in each country responsible for issuing such certificates.

Benefit Provisions Under Totalization Agreements

Totalization agreements protect the benefit rights of workers who divide their careers between the two countries by permitting each country to count periods of social security coverage earned in the other country, as needed, to establish benefit entitlement. Periods of coverage are combined only for people who have a certain minimum amount of coverage but not enough to meet the ordinary requirements for benefit entitlement. For example, in the United States, workers born after 1928 who have never been disabled generally must accrue 40 credits called quarters of coverage (QCs) to be entitled to a Social Security retirement benefit.[5] If a person has earned at least 6 QCs, but fewer than 40, totalization agreements stipulate that SSA will count his or her periods of work in a totalization-agreement partner country in determining benefit entitlement.

The partner country will likewise consider U.S. periods of coverage to entitle a worker to a benefit under similar circumstances. Most countries require that a worker have at least 1 year of domestic coverage to be entitled to totalization benefits. In addition, a worker's combined U.S. and domestic periods of coverage must equal or exceed the statutory minimum in effect in that country. The minimum period of combined coverage a worker must earn for totalization to apply varies from country to country. For example, Switzerland requires 1 year, Hungary requires 20 years, and Japan requires 25 years (SSA 2016, 2017).

Although many countries have multilateral totalization agreements (most notably among the members of the European Union), U.S. agreements are statutorily mandated to be bilateral only. Accordingly, if a worker has earned 6 or more QCs and has additional periods of work in each of two countries with which the United States has concluded a totalization agreement, only periods of coverage from one country or the other can be combined with the QCs to entitle that worker to benefits. The agreements also include provisions that prevent SSA from considering periods of foreign coverage that were earned before the 1937 inception of the U.S. Social Security program or that overlap with periods of coverage already credited under U.S. law.

When a person qualifies for a U.S. Social Security benefit based on combined U.S. and foreign coverage under a totalization agreement, the amount of the U.S. benefit payable is proportional only to those periods of coverage earned in the United States. The partner country similarly pays a partial, or prorated, benefit when combined coverage establishes entitlement. Thus, it is possible for a person to receive a totalized benefit under an agreement from one of the two countries or from both countries if he or she meets all the applicable requirements for entitlement. U.S. prorated benefit calculation provisions are uniform across all totalization agreements, as provided by law in 42 U.S.C. § 433 and 20 C.F.R. § 404.1918. The determination of a prorated U.S. benefit amount under a totalization agreement is a three-step process.

First, SSA creates a theoretical earnings record. This is done by dividing the worker's actual earnings in the United States for each year recorded on his or her earnings record by the national average wage for all U.S. workers in that year.[6] The average value of these results, known as the worker's relative earnings position, is then multiplied by the national average wage in each of the worker's benefit computation years (generally, the years from the attainment of age 22 to the attainment of age 61, disability onset, or death) to derive the theoretical earnings record. This record thus projects what the worker would have earned over an entire career in the United States, assuming a constant earnings position relative to the average wage.

To the theoretical earnings record, SSA applies the standard U.S. Social Security benefit computation method (described in 20 C.F.R. § 404.210) to determine the worker's theoretical primary insurance amount (PIA). This is the PIA to which a worker and his or her auxiliary beneficiaries (the spouse or children of a retired worker or the survivor[s] of a deceased retired worker) would have been entitled had his or her entire career been worked under U.S. law.

The final step in calculating the benefit is to determine the prorated PIA. Although the theoretical PIA assumes an entire career under U.S. law, the prorated PIA reduces that amount in proportion to the ratio of the QCs earned under U.S. law to the QCs that would constitute an entire career under U.S. law, expressed as follows:

$$\text{Prorated PIA} = \text{Theoretical PIA} \times \frac{\text{QCs earned}}{\text{QCs equal to an entire career}}$$

The prorated PIA constitutes the PIA of record for the entitled worker and all auxiliary beneficiaries. For

an example of a totalized benefit computation, see Appendix B.

Totalization partner countries likewise compute a prorated benefit when a worker's periods of U.S. coverage must be added to his or her domestic coverage to establish entitlement to the partner country's benefits, but the theoretical-benefit computation methods vary considerably. However, the partner countries use a fairly uniform prorating computation, which differs slightly from the U.S. formula:

$$\text{Prorated benefit} = \text{Theoretical benefit} \times \frac{\text{Coverage earned under the partner country's laws}}{\text{Coverage earned in both countries}}$$

Benefit Portability Under Totalization Agreements

Most totalization agreements remove restrictions on the payment of benefits to residents of the partner countries. Under current law, U.S. nationals are generally eligible to receive U.S. Social Security benefits regardless of their country of residence.[7] However, nonresident aliens who have been absent from the United States for 6 or more consecutive calendar months are generally ineligible to receive benefits unless they meet a statutory exception to this requirement.[8] The most common exceptions involve:

- The citizen of a country with a generally applicable social insurance system in effect that pays periodic old-age or death benefits (or the actuarial equivalent thereof) to U.S. nationals outside its borders without restriction;

- The citizen of a country without a generally applicable social insurance system in effect that pays periodic old-age or death benefits (or the actuarial equivalent thereof), but the nonresident alien has earned at least 10 years or 40 QCs under the U.S. system; and

- A U.S. treaty obligation to pay that country's nationals outside its borders.

These exceptions, which are based on the worker's country of citizenship or nationality, are provisions of the Social Security Act. In most cases, totalization agreements further expand benefit portability based on residence.

A nonresident alien auxiliary benefit claimant who has been absent from the United States for 6 or more consecutive months must also have resided with the worker for a 5-year period in the United States, during which his or her relationship to the worker existed. For example, a nonresident alien entitled to a spousal benefit who has been absent from the United States for 6 consecutive calendar months may be a citizen of a country that will pay unrestricted benefits to U.S. nationals outside that country's borders. However, the spouse must also have been married to the worker for 5 years while residing in the United States in order to receive benefits abroad.[9] Under U.S. law (42 U.S.C. § 402 (t)(11)(E)), totalization agreements may include provisions that remove payment restrictions to all residents of countries with which the United States has an agreement in effect, including third-country nationals and nonresident alien auxiliary beneficiaries.[10]

Legislative History and Background

Labor shortages in Europe immediately after World War II led to an unprecedented period of labor migration. Consequently, many workers found themselves in the previously unusual position of dividing their careers between two countries, often with unclear rules regarding tax liability. In many instances, workers and their employers were compelled to pay double social security taxes to avoid gaps in coverage that would otherwise prevent these displaced workers from receiving benefits when they retired. Accordingly, Western European countries began to conclude bilateral treaties that would clarify social security tax liability and protect workers' benefit rights.

The United States did not immediately begin entering into similar social security agreements at the time; instead, it concluded a series of Friendship, Commerce, and Navigation (FCN) treaties with close allies and trading partners. Many of the FCN treaties provide that each country treats nationals of the other country as it treats its own nationals in the entitlement to and payment of social security benefits.[11] However, it was soon apparent that these FCN treaties did not adequately protect the benefit rights of U.S. expatriate workers and that many U.S. workers sent abroad and their employers were required to pay double social security taxes on the same earnings.

The FCN treaty with Italy, which went into force in 1949 and was amended in 1951, explicitly called for the United States and the Italian Republic to begin negotiating a bilateral social security agreement. With neither precedent in U.S. law nor a specific authorizing statute, the means of concluding such an agreement were unclear. Concluding agreements as treaties would subject them to the advice and consent clause of the U.S. Constitution and require an affirmative two-thirds

https://www.ssa.gov/policy/docs/ssb/

Senate vote for ratification. This was seen as unworkable, and in ratifying the FCN treaty with Italy, the Senate passed a resolution on July 21, 1953 requiring that any social security agreement arising out of it would "be made by the United States only in conformity with provisions of statute."

In 1973, Secretary of Health, Education, and Welfare Caspar Weinberger and his Italian counterpart signed the first U.S. totalization agreement. Although the Italian government quickly ratified the agreement as a treaty, Congress had not yet enacted an authorizing statute; thus, it was not possible for the United States to bring the agreement into force. After much deliberation, Congress passed the 1977 amendments to the Social Security Act, which included an authorizing statute that enabled the agreement with Italy to enter into force.[12]

The authorizing statute contained in the 1977 amendments is section 233 of the Social Security Act (42 U.S.C. § 433),[13] which permits the president to enter into bilateral totalization agreements with countries that have a social security system similar to that of the United States. Section 233 establishes totalization agreements as congressional-executive agreements, which have essentially the same force of law as treaties but do not require full Senate ratification. For an agreement to go into force, the president must transmit it to Congress, where it must rest before both houses for 60 days during which one or both houses are in session; that period must pass without either house passing a resolution of disapproval.

To date, the United States has entered into totalization agreements with 28 countries; 3 additional agreements have been signed but are not yet in force. A list of all totalization agreements appears in Appendix C.

Modernizing and Enhancing Totalization Agreements

In recent years, support has grown for expanding the geographic scope of totalization agreements beyond its current concentration in Europe. The United States has concluded agreements with several non-European countries, but the nature of the authorizing statute has restricted negotiations in many others, for reasons discussed below. However, concluding agreements with many such countries would likely reduce existing burdens on U.S. businesses, workers, and beneficiaries.

In 1977, labor migration patterns were drastically different from those of 2018, and most U.S. trade and multinational business ties then were concentrated in Western Europe. Consequently, section 233 was tailored toward the Western European social security systems of that time. The first two agreements into which the United States entered, with Italy and West Germany, predated the passage of section 233. Accordingly, that legislation was designed with the social security systems of those two countries already in mind. Both countries featured traditional Bismarckian, pay-as-you-go systems that covered virtually their entire labor forces. Section 233 stipulates that the president may only enter into totalization agreements with countries having social security systems of general application that provide periodic benefit payments or the actuarial equivalent thereof on account of old age, disability, or death.

As U.S. trade and business interests have spread across the globe, the list of important trading partners increasingly includes countries that do not have a system that meets all U.S. statutory requirements. This may disadvantage U.S. businesses, workers, and potential social security beneficiaries abroad, who could benefit from such agreements.

Most U.S. totalization partners have more social security agreements in force than does the United States, with its 28 as of November 2018. By comparison, in 2014, Canada, France, Germany, and the United Kingdom—which conclude totalization agreements as treaties and thereby avoid some of the legislative constraints of the U.S. process—had 57, 80, 50, and 53 agreements, respectively (Leeuwenhaag 2014). As noted earlier, removing the double taxation of earnings in additional countries could encourage greater foreign direct investment in the United States. Additionally, thousands of beneficiaries who are currently ineligible to receive a pension from one or both countries could tangibly benefit from an expanded totalization program.

There have been attempts in recent years to move forward legislative proposals to amend section 233 to broaden the scope of totalization to benefit U.S. interests while retaining the program's traditional focus on actuarial balance and financial prudence. Such legislative proposals have not, however, gained much traction, and to date, totalization partnerships remain concentrated in Europe, with a few notable exceptions.

Appendix A: Some Common Coverage Situations

Although totalization agreements vary according to the partner country's social security system, Table A-1 summarizes some common coverage situations for U.S. workers sent abroad to work. In general, a worker is covered under the social security system of the

Table A-1.
U.S. totalization agreements: Social security coverage provisions for U.S. nationals who work in other countries under selected circumstances

Circumstance	Country of social security coverage
Temporary[a] overseas assignment	
U.S. employer sends worker hired in United States abroad to continue working for the same firm or an affiliate	United States
Self-employed worker transfers work activity to another country	United States
Permanent overseas assignment	
U.S. employer sends worker hired in United States abroad to continue working for the same firm or an affiliate	Partner country
Self-employed worker transfers work activity to another country	Partner country
Occupational travel	
Worker is a crewmember on a seafaring vessel that flies the flag[b] of one of the partner countries	Country of the vessel's flag
Worker is employed by an airline and—	
Resides in one of the partner countries	Country of residence
Does not reside in one of the partner countries	Country of airline headquarters
Diplomatic or government employment	
Worker is a diplomat and is covered under the Vienna Conventions on Diplomatic and Consular Relations (VCDCR)	Determined by VCDCR
U.S. government worker is stationed in a partner country but is not covered under the VCDCR	United States

SOURCE: 42 U.S.C. § 433.

a. Expected to last no longer than 5 years at the time of the assignment.

b. The United States considers a ship that flies the flag of the United States to be an "American vessel" as defined in section 210(c) of the Social Security Act (42 U.S.C. § 410(c)).

country in which he or she works. However, totalization agreements specify exceptions for certain classes of U.S. workers. Because totalization agreements are inherently reciprocal in nature, these exceptions apply similarly to foreign workers in the United States.

Appendix B: Hypothetical Totalization Benefit Calculation

Assume a worker born on January 2, 1951 filed for retirement benefits in January 2017. The worker was employed for 8 years in the United States—from 1980 through 1987—and earned the maximum amount subject to Social Security taxes each year. The worker has therefore accrued 32 QCs, which is not enough to qualify for retirement benefits with U.S. coverage alone. However, this worker also accrued coverage in Switzerland. Because the United States and Switzerland have a totalization agreement in place and the worker has at least 6 QCs, the worker's Swiss coverage can be credited toward entitling him or her to a totalized benefit. The worker's U.S. benefit is computed in the steps outlined below.

The process begins with the calculation of a theoretical earnings record. For each year in which the worker earned at least one QC, SSA divides the worker's actual earnings by the average wage for all U.S. workers. Table B-1 shows the results for our hypothetical worker.

The overall average of the ratios (in this example, an 8-year average) is called the relative earnings position, which equals 2.2871073 for our hypothetical worker. That amount is then multiplied by the national average wage for each year in what would constitute an entire career. That period begins with the year in which the worker attained age 22 (in this case, 1973) and ends with that in which the worker attained age 61 (2012). The result is called the theoretical earnings record; this represents the U.S. Social Security–covered earnings the worker would have accrued if he or she had worked his or her entire 40-year career in the United States assuming a constant relative earnings position of 2.2871073.

The theoretical earnings record is subject to the standard benefit calculation rules. Earnings for each year from age 22 through age 61 are indexed, and

Table B-1.
Constructing a theoretical earnings record: Actual earnings, national average wage, and ratio of actual earnings to average wage, 1980–1987

Year	Actual earnings	National average wage	Ratio
1980	25,900	12,513.46	2.0697713
1981	29,700	13,773.10	2.1563773
1982	32,400	14,531.34	2.2296636
1983	35,700	15,239.24	2.3426365
1984	37,800	16,135.07	2.3427230
1985	39,600	16,822.51	2.3539888
1986	42,000	17,321.82	2.4246875
1987	43,800	18,426.51	2.3770101
Relative earnings position (8-year average)	. . .	. . .	2.2871073

SOURCES: Authors' calculations and SSA 2018 (Table 2.A8).

NOTES: "Actual earnings" are for a hypothetical worker whose annual earnings were equal to the Social Security taxable maximum.

. . . = not applicable.

5 "dropout" years—those with the lowest indexed earnings—are subtracted from the worker's entire career of 40 years. The benefit formula thus considers 35 *computation years.* The sum of the indexed earnings for each of the 35 computation years is divided by 420 (12 months × 35 years) to calculate the worker's average indexed monthly earnings (AIME). After indexing, the hypothetical worker's theoretical earnings record for all 35 computation years sums to $3,387,761.56; dividing that amount by 420 results in an AIME of $8,066.

The next step is to determine the theoretical PIA. The U.S. Social Security benefit formula uses two AIME thresholds, called bend points, to ensure that benefits replace a greater proportion of preretirement earnings for lower lifetime earners than they do for higher lifetime earners. The PIA consists of 90 percent of AIME to the first bend point plus 32 percent of AIME between the first and second bend points plus 15 percent of AIME exceeding the second bend point. Bend points are adjusted annually. The benefit computation uses the bend points for the year in which the claimant reached age 62, regardless of age at which the benefit is claimed. The bend points for 2013, when our hypothetical worker reached age 62, were $791 and $4,768. Thus, for the hypothetical worker with AIME of $8,066:

$$\text{Theoretical PIA} = (0.9 \times 791) + (0.32 \times 3{,}977) + (0.15 \times 3{,}298)$$
$$= \$2{,}479.20$$

This worker's theoretical PIA is the amount to which he or she would have been entitled had he or she worked an entire career under U.S. Social Security coverage and retired in 2013. However, by deferring her or his claim for retirement benefits until 2017, this worker is also entitled to cost-of-living adjustments (COLAs) for the intervening years. The annual COLAs for 2013–2016 were 1.5 percent, 1.7 percent, 0.0 percent, and 0.3 percent, respectively; thus, the cumulative effect of the four COLAs brings the worker's final theoretical PIA, as of January 2017, to $2,566.60.

SSA prorates this amount based on the periods worked in the United States to determine the PIA of record. The worker's 8 years of U.S. employment (1980–1987) provided 32 QCs, equivalent to about 23 percent of an entire career worked in the United States (which would have amassed 140 QCs, or 4 × 35 computation years). SSA calculates that proportion of the theoretical PIA:

$$2{,}566.60 \times \frac{32}{140} = 586.65$$

Thus, the hypothetical worker's prorated PIA, rounded down to the nearest dime based on the benefit formula, is $586.60. The worker would be entitled to a U.S. Social Security benefit of $586.60 per month beginning in January 2017.

Table C-1.
U.S. totalization agreements as of October 31, 2018, by partner country

Country and type	Date—		Identifier[a]
	Signed	Effective	
Australia			
Agreement and administrative arrangement	27 Sep 2001	1 Oct 2002	TIAS 13169
Austria			
Agreement and administrative arrangement	13 Jul 1990	1 Nov 1991	TIAS 12037
Supplementary agreement	5 Oct 1995	1 Jan 1997	TIAS 12696
Belgium			
Agreement	19 Feb 1982	1 Jul 1984	TIAS 11175
Administrative arrangement	23 Nov 1982	1 Jul 1984	TIAS 11175
Protocol	23 Nov 1982	1 Jul 1984	TIAS 11175
Brazil			
Agreement and administrative arrangement	30 Jul 2015	1 Oct 2018	Pending
Canada			
Agreement	11 Mar 1981	1 Aug 1984	TIAS 10863
Administrative arrangement	22 May 1981	1 Aug 1984	TIAS 10863
Supplementary agreement	10 May 1983	1 Aug 1984	TIAS 10863
Understanding and administrative arrangement with the province of Quebec	30 Mar 1983	1 Aug 1984	TIAS 10863
Second supplementary agreement	28 May 1996	1 Oct 1997	TIAS 12759
Chile			
Agreement and administrative arrangement	16 Feb 2000	1 Dec 2001	TIAS 01-1201
Czech Republic			
Agreement and administrative arrangement	7 Sep 2007	1 Jan 2009	TIAS-09-101.2
Supplementary agreement	23 Sep 2013	1 May 2016	TIAS 16-501
Denmark			
Agreement and administrative arrangement	13 Jun 2007	1 Oct 2008	TIAS 08-1001.1
Finland			
Agreement and administrative arrangement	3 Jun 1991	1 Nov 1992	TIAS 12105
France			
Agreement	2 Mar 1987	1 Jul 1988	TIAS 12106
Administrative arrangement	21 Oct 1987	1 Jul 1988	TIAS 12106
Germany [b]			
Agreement	7 Jan 1976	1 Dec 1979	30 UST 6099; TIAS 9542
Administrative arrangement	21 Jun 1978	1 Dec 1979	30 UST 6099; TIAS 9542
Supplementary agreement and administrative arrangement	2 Oct 1986	1 Mar 1988	TIAS 12115
Second supplementary agreement and administrative arrangement	6 Mar 1995	1 May 1996	H. Doc. 104-123
Greece			
Agreement and administrative arrangement	22 Jun 1993	1 Sep 1994	H. Doc. 103-198
Hungary			
Agreement and administrative arrangement	3 Feb 2015	1 Sep 2016	TIAS 16-901
Iceland			
Agreement and administrative arrangement	27 Sep 2016	Pending	Pending

(Continued)

Table C-1.
U.S. totalization agreements as of October 31, 2018, by partner country—*Continued*

| Country and type | Date— | | Identifier[a] |
	Signed	Effective	
Ireland			
Agreement and administrative arrangement	14 Apr 1992	1 Sep 1993	TIAS 12117
Italy			
Agreement	23 May 1973	1 Nov 1978	29 UST 4263; TIAS 9058
Administrative protocol	22 Nov 1977	1 Nov 1978	29 UST 4263; TIAS 9058
Supplementary agreement	17 Apr 1984	1 Jan 1986	TIAS 11173
Japan			
Agreement and administrative arrangement	19 Feb 2004	1 Oct 2005	TIAS-05-1001
Korea (South)			
Agreement and administrative arrangement	13 Mar 2000	1 Apr 2001	H. Doc. 106-243
Luxembourg			
Agreement and administrative arrangement	12 Feb 1992	1 Nov 1993	TIAS 12119
Mexico			
Agreement	29 Jun 2004	Pending	Pending
Netherlands			
Agreement and administrative arrangement	8 Dec 1987	1 Nov 1990	H. Doc. 100-182
Protocol	7 Dec 1989	1 Nov 1990	State Department Archives
Second protocol	30 Aug 2001	1 May 2003	H. Doc. 107-234
Norway			
Agreement and administrative arrangement	13 Jan 1983	1 Jul 1984	TIAS 10818
Superseding agreement and administrative arrangement	30 Nov 2001	1 Sep 2003	TIAS 13177
Poland			
Agreement and administrative arrangement	2 Apr 2008	1 Mar 2009	TIAS-09-301
Portugal			
Agreement and administrative arrangement	30 Mar 1988	1 Aug 1989	TIAS 12121
Slovak Republic			
Agreement and administrative arrangement	10 Dec 2012	1 May 2014	TIAS 14-501
Slovenia			
Agreement and administrative arrangement	17 Jan 2017	Pending	Pending
Spain			
Agreement and administrative arrangement	30 Sep 1986	1 Apr 1988	TIAS 12123
Sweden			
Agreement and administrative arrangement	27 May 1985	1 Jan 1987	TIAS 11266
Supplementary agreement	22 Jun 2004	1 Nov 2007	TIAS-07-1101
Switzerland			
Agreement with protocol	18 Jul 1979	1 Nov 1980	32 UST 2165; TIAS 9830
Administrative arrangement	20 Dec 1979	1 Nov 1980	32 UST 2165; TIAS 9830
Supplementary agreement and administrative arrangement	1 Jun 1988	1 Oct 1989	TIAS 12126
Superseding agreement and administrative arrangement	3 Dec 2012	1 Aug 2014	H. Doc. 113–75

(Continued)

Table C-1.
U.S. totalization agreements as of October 31, 2018, by partner country—*Continued*

Country and type	Date—		Identifier[a]
	Signed	Effective	
United Kingdom			
Agreement and administrative arrangement	13 Feb 1984	[c] 1 Jan 1985	TIAS 11086
Supplementary agreement and administrative arrangement	6 Jun 1996	1 Sep 1997	TIAS 12776
Uruguay			
Agreement and administrative arrangement	10 Jan 2017	1 Nov 2018	Pending

SOURCES: Department of State and U.S. House of Representatives.

a. Most agreements are identified according to one or more of the following sources: *Treaties and International Acts Series* (TIAS), published by the State Department; *United States Treaties and Other International Agreements* (UST), also published by the State Department; and Documents of the U.S. House of Representatives (H. Docs.).

b. Agreements signed prior to October 3, 1990 were negotiated with the Federal Republic of Germany (West Germany) and were extended to include the former German Democratic Republic (East Germany) as of that date.

c. Applies to provisions to eliminate double social security taxation. Provisions that enabled individuals who worked in both countries (and met certain conditions) to qualify for totalized benefits were effective January 1, 1988.

Notes

[1] This also applies to workers whose employers temporarily transfer them to a company that has entered into an agreement with the Treasury Department under section 3121(l) of the Internal Revenue Code. These companies are typically referred to as "affiliates" and must pay U.S. Social Security taxes on behalf of all U.S. nationals or residents employed abroad by that affiliate.

[2] One exception to this rule is the agreement with Italy, which permits certain transferred workers to elect the social security system under which they will be covered. No other U.S. totalization agreement contains a similar rule.

[3] An agreement can only contain one of these rules, not both. Thus, agreements assign self-employment coverage based either on transferred work activity or on residence.

[4] Like the detached worker rule, this period is considered temporary if it is not expected to exceed 5 years from the time the worker transfers his or her self-employment activity to the other country.

[5] A QC is an earnings amount rather than a period of time. The amount is adjusted annually. In 2018, earnings of $1,320 constitute a QC. A worker can earn no more than 4 QCs in a calendar year, but the worker can reach that threshold by earning $5,280 ($1,320 × 4) in any span within that year.

[6] For the national average wage for each year from 1951 through 2016, see SSA (2018, Table 2.A8).

[7] The Treasury Department will not issue payments to persons residing in Cuba or North Korea.

[8] For a full list of these exceptions, see 20 C.F.R. § 404.460 (b).

[9] Auxiliary beneficiaries of countries with which the United States has a Friendship, Commerce, and Navigation treaty obligation are exempt from this additional requirement.

[10] Although most agreements remove payment restrictions that apply to all residents of the two countries, the agreements with Austria, Belgium, Denmark, Germany, Sweden, and Switzerland remove payment restrictions only for nationals of the two countries, or stateless persons and refugees residing in the two countries.

[11] Almost all of the FCN treaties are still in effect today and nullify the payment restrictions on nonresident aliens outside the United States stipulated in section 202(t) of the Social Security Act. Thus, German, Greek, Irish, Israeli, Italian, Japanese, and certain Dutch nationals are treated the same as U.S. nationals with respect to payment of benefits outside U.S. territory.

[12] In the intervening years, the United States had also concluded an agreement with West Germany, which was likewise in legal limbo until the 1977 amendments were enacted.

[13] Note that section 233 of the Social Security Act is codified at 42 U.S.C. § 433.

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WHEN EVERY DOLLAR COUNTS: COMPARING REPORTED EARNINGS OF SOCIAL SECURITY DISABILITY PROGRAM BENEFICIARIES IN SURVEY AND ADMINISTRATIVE RECORDS

by David C. Wittenburg, Jeffrey Hemmeter, Holly Matulewicz, Lindsay Glassman, and Lisa Schwartz*

This article examines differences between survey- and administrative data–based estimates of employment and earnings for a sample of Social Security Disability Insurance and Supplemental Security Income beneficiaries. We use linked records from the Social Security Administration's National Beneficiary Survey and administrative earnings records from the agency's Master Earnings File. We find that estimated employment rates and earnings levels are consistently higher in administrative data than in survey data. The differences between survey- and administrative data–based estimates of employment rates and earnings are larger in absolute and proportional terms for beneficiary sociodemographic subgroups whose survey-reported employment rates are lower than those of beneficiaries overall. Nonetheless, we estimate beneficiary employment rates of less than 20 percent from both survey and administrative data, suggesting that both sources provide plausible estimates for the overall beneficiary population.

Introduction

The Social Security Administration (SSA) aims to make the best use of administrative and survey data for research and program operations, particularly in measuring employment and earnings. Both sources offer advantages in monitoring program operations, capturing beneficiary characteristics, and measuring the effects of demonstration projects. However, information on how the sources might produce differing estimates is limited. A better understanding of these differences might be critical to identifying important evaluation outcome measures and/or designing interventions to customize supports for SSA disability program beneficiaries.

This article compares employment and earnings outcomes for disability program beneficiaries based on linked data from SSA's National Beneficiary Survey (NBS) and administrative records from the agency's Master Earnings File (MEF). NBS respondents are a nationally representative sample of people who received benefits from Social Security Disability Insurance (DI), Supplemental Security Income (SSI), or both. We use NBS data to construct annual measures of employment and earnings for 2003 through 2005 that we then compare with linked annual employment and earnings

Selected Abbreviations

DI	Disability Insurance
MEF	Master Earnings File
NBS	National Beneficiary Survey
SSA	Social Security Administration
SSI	Supplemental Security Income

reports in the MEF (which are not accessible to the general public). We present detailed comparisons of survey and administrative data on employment and earnings for DI beneficiaries, comprising those who receive DI benefits only and those who receive DI and SSI benefits concurrently. We also summarize similar comparisons for individuals who receive SSI payments but no DI benefits, and present detailed tables for that population in Appendix A.

We find that employment rates and earnings levels are higher in administrative records than in survey reports for SSA disability program beneficiaries overall and for all major sociodemographic subgroups. The proportional differences between the administrative and survey records can be substantial because the employment rates of DI and SSI beneficiaries are low. For example, employment rates for DI beneficiaries in our sample were about 40 percent higher in administrative records than in survey data, although the absolute difference is only 5.6 percentage points (19.2 percent versus 13.6 percent). Among subgroups, we find that the largest relative differences between administrative and survey data are for beneficiaries with survey-reported employment rates and earnings levels that are lower than the average survey-reported employment rate and earnings level of DI beneficiaries overall. For example, the survey and administrative data differ significantly for beneficiaries with a musculoskeletal primary disabling condition,[1] and that subgroup's employment rate and earnings are considerably lower than those of DI beneficiaries overall. Absolute differences between two relatively low employment rates or earnings levels would thus be proportionally greater than similar absolute differences among subgroups with higher employment rates or earnings.

Background

Measuring employment outcomes poses challenges for both survey and administrative data collection. Several studies suggest using both survey and administrative data to identify potential underreporting associated with one source or the other (Abowd and Stinson 2011; Barnow and Greenberg 2014; Ford and others 2014). Using both sources can be especially advantageous for data on subpopulations that may be underrepresented or prone to reporting error in one of the sources. As Davies and Fisher (2009) noted, researchers have used matched survey and administrative data to assess the accuracy of the survey data and used the resulting information to adjust for error in the survey-based estimates.

Several studies have shown that administrative data produce higher estimated employment rates and earnings levels than survey data (Coder and Scoon-Rogers 1996; Pedace and Bates 2000; Gottschalk and Huynh 2005). Most authors have speculated that administrative earnings records are higher because survey respondents tend to underreport earnings from seasonal or temporary jobs (Moore, Marquis, and Bogen 1996; Kornfeld and Bloom 1999). For example, survey respondents might be prone not to recall earnings from each of multiple part-time or seasonal jobs, whereas those earnings would be recorded in the administrative data whenever they were provided by employers. Incomplete recall by respondents might also explain why administrative estimates of earnings tend to be higher than survey-based estimates for short-term, marginal, or overlapping jobs (Bridges, Del Bene, and Leonesio 2003; Hurd, Juster, and Smith 2004; Abraham and others 2009) as well as for highly variable or unpredictable sources of income. Alwin, Zeiser, and Gensimore (2013) found that administrative data–based estimates for irregular earnings, such as those from short-term employment, were higher than estimates from surveys. Bound and others (1994) also speculated that administrative data–based earnings estimates are higher than survey estimates because respondents might have trouble accurately recalling earnings for hourly work, which are automatically recorded in the administrative data.

In general, proportional differences between administrative and survey data on earnings tend to be larger among subgroups with lower earnings—again, with estimated earnings based on administrative data tending to be higher than corresponding estimates from the survey data. The lower estimates in survey data could reflect recall error for work at sporadic or multiple jobs (Rodgers, Brown, and Duncan 1993; Pischke 1995; Gottschalk and Huynh 2005). Recall error aside, people who work more sporadically tend to have lower earnings than other workers, and a $50 difference between two earnings estimates for a low earner is proportionally greater than a $50 difference between two earnings estimates for a higher earner.

Information on differences in administrative and survey records by demographic or disability characteristics is scarce. A key challenge in measuring these differences is that the sample sizes of many of the subgroups in national surveys that are linked to administrative data are small (Kornfeld and Bloom 1999; Monti and Gathright 2013). For example, many of the studies mentioned above draw on data

https://www.ssa.gov/policy/docs/ssb/

from national surveys such as the Current Population Survey and the Survey of Income and Program Participation that have been linked to administrative records. Although those surveys have large samples overall, the samples of specific subgroups—such as DI and SSI beneficiaries—are limited.

Program Descriptions, Data Sources, and Methodology

To qualify for DI or SSI benefits, an applicant must demonstrate an inability to engage in substantial gainful activity (SGA) because of a medically determinable impairment that is expected to last at least 12 months or to result in death. SGA is determined by a monthly earnings level; each year, SSA adjusts the SGA definition, if needed, based on changes in the national average wage. In 2018, SSA defines SGA as monthly earnings of $1,180 or more for nonblind applicants and $1,970 or more for blind applicants.

DI and SSI eligibility rules differ in ways that might influence employment outcomes. DI eligibility is contingent on having sufficient levels of recent and lifetime Social Security–covered employment. By contrast, SSI is a means-tested program, with eligibility subject to strict income and asset limits. Individuals may qualify for both programs if their income (including DI benefits) and assets are low enough to meet the SSI limits. Perhaps not surprisingly, DI beneficiaries tend to be older and have more extensive work histories than SSI recipients (Mamun and others 2010). Finally, there are important differences in DI and SSI benefit reductions resulting from work earnings. DI beneficiaries face a "cash cliff" (that is, benefit payments stop altogether) for earnings above a certain threshold, whereas SSI payments decline incrementally, generally being reduced by $1 for every additional $2 of earnings.

Previous studies have examined the employment and earnings outcomes of DI beneficiaries and SSI recipients using survey and administrative data separately. Livermore (2009) documented the work activities of all DI beneficiaries and SSI recipients using 2004 survey data and found that 13 percent reported working during the previous year and 9 percent were working as of the date of the interview. A much higher proportion had aspirations of work: 40 percent of working-age disability program beneficiaries reported having work goals or expectations. Mamun and others (2010) used administrative earnings records to find that 12 percent of disability program beneficiaries had at least $1,000 in earnings in 2007.

Our analysis extends the literature by comparing the survey data on employment and earnings from the NBS to similarly constructed measures in the administrative data. The NBS, which is sponsored by SSA and was developed and implemented as part of the agency's Ticket to Work (TTW) program evaluation, collects cross-sectional data from a national sample of DI beneficiaries and SSI recipients and a sample of TTW program participants. Its primary purpose is to provide information on work-related activities of SSI and DI beneficiaries, particularly as they relate to TTW implementation. The survey collects information on respondent employment status, employment services used in the past year, disability status, experience with SSA programs, health and functional status, health insurance, earnings, income support, and sociodemographic characteristics (Livermore and others 2011). Proxy respondents are permitted for individuals whose disabilities make the interview prohibitively challenging and for people who cannot be contacted and interviewed directly.

We pooled data from three rounds of the NBS—fielded in 2004, 2005, and 2006—to obtain a larger sample of beneficiaries with earnings than a single round would provide. Our total pooled sample includes 7,987 observations for individuals aged 21–64 at the time of the NBS interview. We generated statistics using survey weights (adjusted for pooling); all standard errors used to compute tests of statistical significance account appropriately for the complex NBS sampling design.

We used the MEF to generate administrative estimates of employment and earnings. The MEF contains annual earnings data from Internal Revenue Service Form W-2, quarterly earnings records, and annual income tax forms (Olsen and Hudson 2009). Annual earnings are defined as the maximum of (1) Social Security–taxable wages and self-employment earnings (capped at $127,000 in 2017), (2) Medicare-taxable wages and self-employment earnings, or (3) total compensation (which captures earnings taxable by neither Social Security nor Medicare). Earnings not reported on a W-2 are not included in the underlying data and are thus not included in the analysis. Additionally, earnings from known "third-party payers"—that is, insurance, pensions, and similar nonwork earnings—are subtracted from our earnings measure.

We linked MEF data to survey results for each NBS respondent. Survey questions covered the year prior to the interview; for example, the 2004 NBS covered employment and earnings for 2003. Therefore, we

merged 2003 MEF earnings data with the 2004 NBS results, and so forth, to produce comparable survey- and administrative data–based estimates.

We developed an annual frame for definitions of employment and earnings to facilitate comparisons between the survey and administrative data. The choice of an annual frame was necessary to allow the survey data to be consistent with the annual reporting in the administrative data described above. The NBS includes questions about earnings from each respondent's work that lasted for at least 30 days in the prior year. Hence, we defined annual employment as the presence of any earnings from a job the NBS respondent reported working that year. The sum of earnings for each reported job establishes the annual earnings measure.[2] The earnings values in both the survey and administrative data are reported in nominal dollars (that is, they are not adjusted for inflation).

The earnings estimate we derive from the administrative data is likely to be higher than that from the survey data for two reasons. First, the survey questions potentially impose a burden on respondents to recall detailed information about all jobs in which they received earnings during the past year, which might be more difficult for those who held multiple jobs. Respondents who were frequently paid on a piece-rate basis rather than by the hour or with an annual salary might face similar recall challenges. Second, given the potential benefit reductions for SSI and DI beneficiaries with work earnings, NBS respondents may choose to underreport job and earnings information out of concern that full disclosure in a survey sponsored by SSA could jeopardize their disability program benefits.

Table 1 provides descriptive statistics for our sample of DI beneficiaries. These statistics provide context for the types of jobs held, the resultant earnings, and the nature of employment overall for this population. The majority of individuals in the sample (74.8 percent) received only DI benefits; the other 25.2 percent received SSI payments as well. Of the entire sample, 20.7 percent had a musculoskeletal primary condition, 18.3 percent had a psychiatric condition, 5.7 percent had an intellectual condition, 3.4 percent had a sensory condition, and 47.5 percent had conditions of other types. Most beneficiaries were middle-aged or older: 84.7 percent were older than 39 and 59.5 percent were older than 49. The division by sex was almost equal, with slightly more women than men. Nearly three-fourths of the sample was white only,

18.2 percent was black or African American only, and the remainder represented other racial groups. The majority of survey respondents self-reported data; less than 20 percent of the interviewees were proxies.

In Tables 2–5, we examine differences in employment and earnings statistics between administrative and survey data. In each table, we find that administrative data produce higher estimates than survey data. We measure absolute differences in percentage-point or dollar terms by subtracting the survey estimate from the administrative estimate. We measure proportional differences in percentage terms by dividing the absolute difference by the survey estimate. The absolute differences are relatively uniform across beneficiary subgroups while the proportional differences offer the context of relative magnitude, which is relevant to understanding the extent of the disparity between the survey estimate and the administrative data. The proportional difference is therefore particularly useful for researchers interested in understanding the potential undercount of earnings if survey records are the only available source of earnings information.

Findings

Table 2 presents employment-rate estimates for DI beneficiaries based on administrative and survey data, overall and by subgroup. For the full sample, we find a higher employment rate in the administrative data (19.2 percent) than in the survey data (13.6 percent). Given the relatively low employment rate of this population, the absolute difference of 5.6 percentage points means that the administrative estimates are 41.3 percent higher than the survey estimates.

The absolute differences between administrative data– and survey-based employment rates are relatively consistent among subgroups. With two minor exceptions (the "missing data" disabling condition and "other" race), administrative estimates of employment are from 3.6 to 7.1 percentage points higher across all subgroups. However, the proportional differences vary substantially because the employment rates themselves can vary by subgroup. The largest proportional differences (70 percent or more) are seen for subgroups that have some of the lowest employment rates (beneficiaries with musculoskeletal conditions and those aged 50 or older). Notably, this pattern would hold if we defined "proportional difference" as the absolute difference divided by the administrative estimate. In any event, although the absolute differences are relatively small, the proportional differences for many

Table 1.
Descriptive statistics for the DI beneficiary study sample, 2003–2005

Characteristic	Number (weighted) [a]	Percentage distribution	Standard error [b]
Total	6,233,868	100.0	. . .
Benefit type			
DI only	4,661,112	74.8	0.9
Concurrent DI/SSI	1,572,756	25.2	0.9
Primary disabling condition			
Psychiatric	1,140,178	18.3	0.7
Intellectual	355,518	5.7	0.4
Musculoskeletal	1,290,348	20.7	0.7
Sensory	209,490	3.4	0.3
Other	2,959,033	47.5	0.8
Missing [c]	279,301	4.5	0.4
Sex			
Men	2,968,716	47.6	0.9
Women	3,265,152	52.4	0.9
Age			
21–29	261,801	4.2	0.2
30–39	692,642	11.1	0.3
40–49	1,571,112	25.2	0.5
50–59	2,241,472	36.0	1.0
60–64	1,466,841	23.5	1.0
Race			
White only	4,654,797	74.7	2.0
Black or African American only	1,135,446	18.2	1.9
Other	443,625	7.1	0.8
Ethnicity			
Non-Hispanic	5,697,871	91.4	1.5
Hispanic	535,997	8.6	1.5
Type of survey response			
Self-report	5,084,438	81.6	0.7
Proxy report	1,149,430	18.4	0.7

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTE: . . . = not applicable.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 7,987.

b. Estimated using the complex survey weights provided in the data, which control for the clustering and stratification of the survey.

c. Not reported in the matched MEF record.

of the subgroups are quite large. In summary, we find that the subgroups of beneficiaries with the lowest estimated employment rates (regardless of the data source) tend to exhibit higher proportional differences between the survey- and administrative data–based estimates of their employment rates. This is consistent with prior literature citing potential issues related to recall error or underreporting of earnings in surveys.

Table 3 compares administrative data– and survey-based mean annual earnings estimates for DI beneficiaries overall and by subgroup. The data cover all DI beneficiaries regardless of employment status and hence include many individuals who have no earnings.

The average earnings of the overall sample are $1,125 based on the administrative data and $514 based on survey data. Consistent with the employment-rate results, we find that estimated earnings based on administrative data are higher than those based on survey data for all subgroups. The consistency in patterns between Tables 2 and 3 is not surprising given that the definitions for the employment and earnings measures are directly related. In absolute dollar amounts, the differences in the earnings estimates by subgroup range from $262 (individuals receiving concurrent DI/SSI benefits) to $778 (beneficiaries with a sensory condition).

Table 2.

Estimated mean annual employment rates of DI beneficiaries: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on—				Absolute difference (MEF minus NBS)			Propor- tional difference [b] (%)
		MEF		NBS					
		Employ- ment rate (%)	Stan- dard error	Employ- ment rate (%)	Stan- dard error	Percent- age points	Stan- dard error	p-value	
Total	6,233,868	19.2	0.9	13.6	0.7	5.6	0.5	0.0	41.3
Benefit type									
DI only	4,661,112	19.1	1.0	12.8	0.8	6.2	0.6	0.0	48.4
Concurrent DI/SSI	1,572,756	19.5	1.2	15.7	1.0	3.8	0.8	0.0	24.0
Primary disabling condition									
Psychiatric	1,140,178	23.3	1.6	19.7	1.5	3.6	1.1	0.0	18.2
Intellectual	355,518	35.0	3.0	29.3	2.8	5.7	2.6	0.0	19.5
Musculoskeletal	1,290,348	14.4	1.4	8.0	1.0	6.4	1.1	0.0	79.8
Sensory	209,490	28.0	3.7	22.7	3.4	5.3	4.3	0.2	23.3
Other	2,959,033	16.0	1.0	9.6	0.8	6.4	0.7	0.0	66.4
Missing [c]	279,301	31.2	2.9	29.3	2.9	2.0	1.7	0.3	6.7
Sex									
Men	2,968,716	19.4	1.0	12.3	0.8	7.1	0.7	0.0	57.6
Women	3,265,152	18.9	1.1	14.7	0.9	4.2	0.6	0.0	28.9
Age									
21–29	261,801	39.3	1.9	34.5	2.2	4.8	1.3	0.0	13.8
30–39	692,642	30.5	1.3	25.2	1.2	5.3	0.8	0.0	21.1
40–49	1,571,112	21.5	1.1	16.9	1.0	4.7	0.7	0.0	27.6
50–59	2,241,472	14.9	1.3	8.8	1.0	6.2	1.0	0.0	70.5
60–64	1,466,841	14.2	1.5	8.2	1.2	6.0	1.1	0.0	73.8
Race									
White only	4,654,797	19.7	1.0	13.9	0.9	5.8	0.5	0.0	41.3
Black or African American only	1,135,446	19.3	1.5	12.6	1.2	6.7	1.2	0.0	53.7
Other	443,625	13.3	1.5	12.2	1.2	1.1	1.4	0.4	8.8
Ethnicity									
Non-Hispanic	5,697,871	19.5	1.0	13.9	0.8	5.6	0.5	0.0	40.1
Hispanic	535,997	15.4	1.3	9.6	1.2	5.8	1.2	0.0	60.0
Type of survey response									
Self-report	5,084,438	18.4	0.9	12.6	0.7	5.8	0.5	0.0	46.1
Proxy report	1,149,430	22.4	1.8	17.7	1.5	4.7	1.1	0.0	26.2

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTE: MEF estimates account for individuals with any earnings reported in the year. NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 7,987.

b. Calculated using unrounded employment-rate estimates.

c. Not reported in the matched MEF record.

Table 3.

Estimated mean annual earnings of DI beneficiaries: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on—				Absolute difference (MEF minus NBS)			Propor-tional difference (%)
		MEF		NBS					
		Earnings (nominal $)	Stan-dard error	Earnings (nominal $)	Stan-dard error	In dollars	Stan-dard error	p-value	
Total	6,233,868	1,125.28	73.95	513.79	39.70	611.49	66.60	0.0	119.0
Benefit type									
DI only	4,661,112	1,257.83	93.70	528.49	49.56	729.33	87.49	0.0	138.0
Concurrent DI/SSI	1,572,756	732.41	60.00	470.23	43.33	262.18	57.30	0.0	55.8
Primary disabling condition									
Psychiatric	1,140,178	1,143.80	107.42	639.99	75.90	503.81	75.17	0.0	78.7
Intellectual	355,518	856.35	104.14	586.26	83.35	270.09	74.36	0.0	46.1
Musculoskeletal	1,290,348	1,028.98	171.91	395.23	95.74	633.75	150.40	0.0	160.3
Sensory	209,490	2,128.24	393.97	1,350.64	277.91	777.60	251.07	0.0	57.6
Other	2,959,033	1,054.07	127.09	354.36	41.06	699.70	121.72	0.0	197.5
Missing [b]	279,301	1,839.80	319.68	1,516.44	269.73	323.36	192.50	0.1	21.3
Sex									
Men	2,968,716	1,033.99	84.92	433.58	47.31	600.41	78.16	0.0	138.5
Women	3,265,152	1,208.29	106.77	586.73	52.02	621.56	93.46	0.0	105.9
Age									
21–29	261,801	1,767.22	141.22	1,234.88	131.61	532.35	92.79	0.0	43.1
30–39	692,642	1,653.52	120.07	947.02	91.71	706.51	107.28	0.0	74.6
40–49	1,571,112	1,369.21	131.85	700.72	57.98	668.49	118.28	0.0	95.4
50–59	2,241,472	866.12	121.68	288.89	56.45	577.23	119.80	0.0	199.8
60–64	1,466,841	896.07	172.50	324.02	86.33	572.05	143.44	0.0	176.6
Race									
White only	4,654,797	1,136.14	91.17	524.00	48.06	612.14	81.47	0.0	116.8
Black or African American only	1,135,446	1,142.81	107.70	487.36	73.00	655.45	92.49	0.0	134.5
Other	443,625	966.54	340.17	474.34	85.20	492.20	333.89	0.1	103.8
Ethnicity									
Non-Hispanic	5,697,871	1,137.65	77.77	527.17	42.12	610.49	68.87	0.0	115.8
Hispanic	535,997	993.77	105.80	371.62	58.89	622.16	102.84	0.0	167.4
Type of survey response									
Self-report	5,084,438	1,200.18	78.11	550.15	45.62	650.04	68.26	0.0	118.2
Proxy report	1,149,430	793.89	147.03	352.94	46.35	440.94	143.83	0.0	124.9

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTES: Earnings estimates represent the mean amounts for all beneficiaries, regardless of whether they had earnings during the year.

Of beneficiaries with earnings, MEF estimates account for all individuals with nonzero earnings reported in the year, and NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year; the NBS estimates reflect the sum of earnings from all such jobs.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 7,987.

b. Not reported in the matched MEF record.

Repeating the patterns seen for employment rates, subgroups with the highest average earnings have most of the lowest proportional differences between administrative data– and survey-based estimates. For example, higher-earning subgroups include those with sensory conditions, for whom we find a 57.6 percent relative difference between administrative and survey data; and beneficiaries aged 21–29, for whom we find a 43.1 percent relative difference. Conversely, subgroups with lower average earnings tend to have higher proportional differences, including beneficiaries with musculoskeletal or "other" impairment conditions, those aged 50–64, and those who are Hispanic (all with relative differences exceeding 160 percent).

In Table 4, we restrict our analysis to beneficiaries who have nonzero annual earnings reported in both administrative and survey data. This table provides a useful contrast to Table 3 because it includes only those survey respondents who recall having some earnings. Hence, all else being equal, we would expect survey-estimated earnings to have closer concordance with administrative data for these beneficiaries than we would see for a sample that might include individuals who had earnings they did not recall.

As in Table 3, administrative records produce higher average-earnings estimates than survey records do ($6,402 versus $4,181, respectively, for employed beneficiaries overall); but not surprisingly, the proportional difference (53.1 percent) is much lower than that in Table 3 (119.0 percent). In a change from previous tables, we find that the relationship between average earnings levels and proportional differences between administrative data– and survey-based estimates varies across subgroups in Table 4. For example, employed beneficiaries with musculoskeletal disabilities had both the highest MEF-based mean earnings and a very high proportional difference between the data sources, with administrative data–based earnings that were 79.5 percent higher than the survey-based estimates.[3] Other higher-earning subgroups, however, exhibit the opposite relationship: For beneficiaries with sensory disabilities, administrative earnings estimates were only 31.1 percent higher than survey estimates. Among the subgroups with the lowest earnings, beneficiaries with intellectual disabilities had the smallest difference between data sources in absolute terms but the proportional difference of 38.5 percent is in the middle range of proportional differences among the subgroups.

We also examined median earnings estimates to assess whether the differences between survey and administrative data were consistent with the patterns seen for mean earnings (not shown). Overall and by subgroup, the median absolute differences were similar in magnitude to the mean differences. For some subgroups, we observed some proportional differences in the median earnings estimates that departed substantially from the mean proportional differences. However, those departures arose because the survey medians were substantially lower than the survey means, given that many beneficiaries had low earnings.

Finally, we examined whether the differences shown in Table 4 persisted if we measured earnings reported in *either* administrative or survey data, but not necessarily in both (not shown). Specifically, we ran the same estimates shown in Table 4 for (1) any earnings reported in the survey and (2) any earnings reported in the administrative records. As with our findings described above, we found that mean earnings estimated with administrative data were consistently higher than those estimated with survey data.

Results for SSI-Only Recipients

Table 5 provides a summary comparison of survey- and administrative data–based earnings differences for the total DI beneficiary sample and the SSI-only recipient sample. (Appendix Tables A-1 through A-4 repeat Tables 1 through 4 for the SSI-only sample.) SSI-only recipients have lower employment rates than do DI beneficiaries—13.6 percent versus 19.2 percent, respectively, based on administrative data. The difference based on survey data is smaller (11.6 percent versus 14.2 percent).

As with the patterns for DI beneficiaries discussed above, the administrative estimates of employment rates and earnings for SSI-only recipients are higher than the survey estimates. Specifically, administrative records for SSI-only recipients consistently show a higher employment rate (14.2 percent) and average earnings ($786) than survey records do (11.6 percent and $603, respectively).

However, administrative- and survey-reported earnings of SSI-only recipients differ less than those of DI beneficiaries, particularly when viewed in proportional terms. For example, average earnings among all SSI-only recipients is 30.3 percent higher in administrative sources than in survey sources;

Table 4.

Estimated mean annual earnings of employed DI beneficiaries: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on—				Absolute difference (MEF minus NBS)			Proportional difference (%)
		MEF		NBS					
		Earnings (nominal $)	Standard error	Earnings (nominal $)	Standard error	In dollars	Standard error	p-value	
Total	714,704	6,402.06	361.49	4,181.25	264.61	2,220.81	363.07	0.0	53.1
Benefit type									
DI only	505,261	7,263.49	505.85	4,586.36	357.51	2,677.13	500.18	0.0	58.4
Concurrent DI/SSI	209,443	4,323.96	288.05	3,203.95	228.62	1,120.00	310.28	0.0	35.0
Primary disabling condition									
Psychiatric	185,574	5,472.39	405.94	3,746.68	344.73	1,725.71	326.92	0.0	46.1
Intellectual	91,959	3,010.69	262.94	2,173.88	257.73	836.81	230.20	0.0	38.5
Musculoskeletal	87,229	9,466.25	1,902.86	5,272.36	1,292.31	4,193.89	1,776.80	0.0	79.5
Sensory	35,565	9,388.18	1,505.71	7,158.96	1,365.14	2,229.22	733.27	0.0	31.1
Other	240,622	6,791.85	660.89	4,102.68	371.62	2,689.17	730.98	0.0	65.5
Missing [b]	73,754	6,634.06	942.26	5,307.51	850.02	1,326.54	665.61	0.0	25.0
Sex									
Men	323,305	5,483.63	337.96	3,791.32	325.28	1,692.31	269.26	0.0	44.6
Women	391,399	7,160.70	659.27	4,503.34	382.46	2,657.36	637.44	0.0	59.0
Age									
21–29	79,633	5,176.43	326.56	3,792.14	300.02	1,384.30	266.41	0.0	36.5
30–39	154,251	5,852.72	403.87	4,026.28	346.32	1,826.44	345.11	0.0	45.4
40–49	230,996	7,046.49	738.21	4,522.37	369.75	2,524.12	689.49	0.0	55.8
50–59	156,778	6,404.15	1,157.05	3,773.42	681.89	2,630.73	1,223.04	0.0	69.7
60–64	93,046	6,758.35	1,718.79	4,611.48	1,051.78	2,146.87	983.44	0.0	46.6
Race									
White only	554,619	6,055.85	425.89	4,190.54	308.83	1,865.31	374.07	0.0	44.5
Black or African American only	123,076	7,234.57	712.67	4,085.28	507.96	3,149.29	716.47	0.0	77.1
Other	37,009	8,821.90	3,537.33	4,361.21	816.93	4,460.70	3,630.02	0.2	102.3
Ethnicity									
Non-Hispanic	672,729	6,349.97	384.67	4,167.87	276.36	2,182.11	377.81	0.0	52.4
Hispanic	41,975	7,236.86	757.96	4,395.75	596.00	2,841.11	785.19	0.0	64.6
Type of survey response									
Self-report	540,221	7,344.27	481.88	4,826.08	315.54	2,518.19	474.98	0.0	52.2
Proxy report	174,482	3,484.85	222.72	2,184.77	218.60	1,300.08	211.08	0.0	59.5

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTES: MEF estimates account for individuals with nonzero earnings reported in the year. NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year and reflect the sum of earnings from all such jobs.

. . . = not applicable.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 1,357.

b. Not reported in the matched MEF record.

Table 5.
Estimated mean annual employment rates and earnings: Differences between administrative (MEF) and survey (NBS) data, DI beneficiaries and SSI-only recipients, 2003–2005

| | Estimate based on— | | | | Difference in estimates | | | |
| | MEF | | NBS | | Absolute (MEF minus NBS) | | Proportional (%) | |
Outcome	DI	SSI only	DI	SSI only	DI	SSI only	DI	SSI only
Employment rate (%)	19.2	14.2	13.6	11.6	5.6	2.6	41.3	22.0
Mean annual earnings (nominal $)								
All beneficiaries [a]	1,125.28	785.79	513.79	603.07	611.49	182.72	119.0	30.3
Employed beneficiaries	6,402.06	7,147.56	4,181.25	6,338.34	2,220.81	809.22	53.1	12.8

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTE: MEF estimates account for individuals with any earnings reported in the year. NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year and reflect the sum of earnings from all such jobs.

Earnings estimates represent the mean amounts for all beneficiaries, regardless of whether they had earnings during the year.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file.

for all DI beneficiaries, the administrative estimate is 119.0 percent higher than the survey estimate. These widely differing proportions might reflect several substantive differences between DI and SSI, including differences in the characteristics of the beneficiary populations and in program requirements for reporting earnings. For example, SSI recipients tend to be younger and have considerably less work experience than DI beneficiaries. In addition, SSI recipients are required to report their earnings more frequently than DI beneficiaries do, because SSI has lower caps on allowable earnings and lower maximum benefit levels.

Discussion

We find that estimated employment rates and earnings levels are consistently higher in administrative data than in survey data, particularly among beneficiary subgroups with employment rates below the national beneficiary average. Further, the divergence in administrative data– and survey-based estimates is greater, in both absolute and proportional terms, for subgroups with lower survey-reported employment rates than that for beneficiaries overall.

We speculate that survey respondent recall error is the main factor driving the differences. Complete and accurate recall may be particularly difficult for individuals who work part-time and/or part-year. Furthermore, although all respondents are guaranteed confidentiality, some may be wary of potential negative consequences of fully disclosing their earnings. Hence, some respondents may be reluctant to provide

accurate earnings information if they believe that it could jeopardize the benefits they receive from the same agency that sponsors the NBS.

The findings here can inform decisions about when and where to make the best use of survey questions related to employment and earnings. For example, administrative reports on earnings might be a valid substitute for survey data when the variable of interest is annual earnings. This substitution might be desirable to free up questionnaire space when a limited amount of survey data can be collected within a project's scope or budget. Such considerations may be especially useful for projects in which administrative records on annual earnings are accessible to program staff and can be linked to survey respondents.

These findings can also inform policymakers considering whether to use surveys to identify target populations for future demonstration projects to support working beneficiaries. Our findings indicate that administrative records might provide more reliable information on employment and earnings, but they do not diminish the need for survey information on measures not recorded in administrative data (for example, health status) and even on some employment-related measures.

Although administrative data appear to offer greater precision than survey data in measuring annual employment and earnings, they are extremely limited in measuring other characteristics of employment. For example, administrative data do not include information on hours, wage rates, monthly earnings,

occupations, or the specific time period or duration of employment. Thus, researchers and policymakers can benefit from levering both sources to improve overall data quality and expand the coverage—from any source—for important employment-outcome estimates.

Future analyses could examine differences between administrative data and estimates from other SSA-sponsored surveys of beneficiaries. With the survey-sponsor variable held constant, such work could isolate certain aspects of the other surveys, such as an emphasis on employment or a linkage to a specific employment-focused demonstration project, and examine their potential effects on reported employment and earnings. Focusing on surveys conducted as part of employment-focused demonstration projects could provide insight into whether treatment- and control-group differences in reported earnings change with differing survey contexts. Recent examples of such SSA-sponsored surveys have been conducted for the Accelerated Benefits Demonstration, the Youth Transition Demonstration, and the Mental Health Treatment Study. Each survey focuses on employment with its own context. Comparing the results of these surveys with the administrative data could thus add contextual depth to our understanding of the differences in employment-outcome estimates.

Appendix A. Tables for SSI-Only Recipients

Table A-1.
Descriptive statistics for the SSI-only recipient study sample, 2003–2005

Characteristic	Number (weighted) [a]	Percentage distribution	Standard error [b]
Total	2,676,172	100.0	. . .
Primary disabling condition			
Psychiatric	652,293	24.4	1.2
Intellectual	279,063	10.4	0.7
Musculoskeletal	407,657	15.2	1.0
Sensory	87,604	3.3	0.5
Other	1,060,306	39.6	1.1
Missing [c]	189,248	7.1	0.5
Sex			
Men	1,528,509	57.1	1.2
Women	1,147,663	42.9	1.2
Age			
21–29	433,213	16.2	0.5
30–39	457,720	17.1	0.5
40–49	674,485	25.2	0.8
50–59	719,101	26.9	1.1
60–64	391,654	14.6	1.0
Race			
White only	1,578,527	59.0	2.9
Black or African American only	795,797	29.7	3.0
Other	301,848	11.3	1.6
Ethnicity			
Non-Hispanic	2,282,085	85.3	2.6
Hispanic	394,087	14.7	2.6
Type of survey response			
Self-report	1,962,696	73.3	1.1
Proxy report	713,476	26.7	1.1

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTE: . . . = not applicable.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 5,054.

b. Estimated using the complex survey weights provided in the data, which control for the clustering and stratification of the survey.

c. Not reported in the matched MEF record.

Table A-2.

Estimated mean annual employment rates of SSI-only recipients: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on— MEF Employment rate (%)	Estimate based on— MEF Standard error	Estimate based on— NBS Employment rate (%)	Estimate based on— NBS Standard error	Absolute difference (MEF minus NBS) Percentage points	Absolute difference (MEF minus NBS) Standard error	Absolute difference (MEF minus NBS) p-value	Proportional difference [b] (%)
Total	2,676,172	14.2	0.8	11.6	0.7	2.6	0.5	0.0	22.0
Primary disabling condition									
Psychiatric	652,293	23.3	1.6	19.7	1.5	3.6	1.1	0.0	18.2
Intellectual	279,063	14.5	1.4	12.0	1.5	2.5	1.4	0.1	20.7
Musculoskeletal	407,657	20.9	2.1	16.5	1.7	4.4	1.0	0.0	26.8
Sensory	87,604	7.8	1.6	5.5	1.2	2.3	1.7	0.2	42.2
Other	1,060,306	20.0	4.5	19.3	4.4	0.7	1.7	0.7	3.8
Missing [c]	189,248	23.9	2.9	22.0	2.6	1.8	2.0	0.4	8.4
Sex									
Men	1,528,509	12.3	1.0	9.7	0.8	2.6	0.6	0.0	26.8
Women	1,147,663	16.7	1.1	14.2	1.0	2.5	1.0	0.0	17.7
Age									
21–29	433,213	29.5	1.4	24.4	1.3	5.1	0.9	0.0	21.0
30–39	457,720	20.2	1.3	15.6	1.2	4.7	0.9	0.0	29.9
40–49	674,485	14.2	1.1	11.2	1.0	3.0	0.8	0.0	26.5
50–59	719,101	6.5	1.3	6.1	1.6	0.3	1.5	0.8	5.6
60–64	391,654	4.4	1.7	3.8	1.4	0.7	1.7	0.7	17.5
Race									
White only	1,578,527	14.9	1.1	12.7	0.8	2.2	0.6	0.0	17.5
Black or African American only	795,797	14.8	1.3	10.7	1.3	4.1	1.1	0.0	38.3
Other	301,848	8.9	1.4	8.6	1.7	0.3	1.6	0.8	3.8
Ethnicity									
Non-Hispanic	2,282,085	14.9	0.9	12.2	0.8	2.7	0.6	0.0	22.6
Hispanic	394,087	10.0	1.6	8.5	1.3	1.5	1.1	0.2	17.7
Type of survey response									
Self-report	1,962,696	13.2	1.0	11.2	0.8	2.0	0.7	0.0	17.8
Proxy report	713,476	17.0	1.4	12.9	1.1	4.2	0.9	0.0	32.3

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTE: MEF estimates account for individuals with any earnings reported in the year. NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 5,054.

b. Calculated using unrounded employment-rate estimates.

c. Not reported in the matched MEF record.

Table A-3.

Estimated mean annual earnings of SSI-only recipients: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on—				Absolute difference (MEF minus NBS)			Propor- tional difference (%)
		MEF		NBS					
		Earnings (nominal $)	Stan- dard error	Earnings (nominal $)	Stan- dard error	In dollars	Stan- dard error	p-value	
Total	2,676,172	785.79	57.05	603.07	64.39	182.72	42.66	0.0	30.3
Primary disabling condition									
Psychiatric	652,293	625.85	103.02	487.90	97.60	137.96	99.88	0.2	28.3
Intellectual	279,063	799.15	120.60	525.11	96.99	274.03	90.22	0.0	52.2
Musculoskeletal	407,657	477.70	138.77	361.74	139.79	115.96	64.66	0.1	32.1
Sensory	87,604	1,552.40	562.85	971.44	304.40	580.96	501.27	0.3	59.8
Other	1,060,306	760.94	96.76	582.93	84.24	178.01	70.86	0.0	30.5
Missing [b]	189,248	1,765.46	303.14	1,577.18	330.78	188.27	117.64	0.1	11.9
Sex									
Men	1,528,509	654.28	58.50	492.12	58.35	162.16	39.93	0.0	33.0
Women	1,147,663	960.96	109.30	750.84	110.45	210.12	81.39	0.0	28.0
Age									
21–29	433,213	1,474.48	143.84	1,118.17	148.88	356.30	141.78	0.0	31.9
30–39	457,720	1,097.95	101.76	917.52	129.45	180.43	120.19	0.1	19.7
40–49	674,485	920.54	140.86	763.14	146.67	157.40	64.16	0.0	20.6
50–59	719,101	390.25	125.87	220.25	95.61	170.00	85.57	0.1	77.2
60–64	391,654	153.41	68.61	93.05	51.96	60.36	41.04	0.2	64.9
Race									
White only	1,578,527	833.89	80.70	696.13	83.36	137.76	61.68	0.0	19.8
Black or African American only	795,797	737.79	88.72	468.89	82.59	268.90	67.73	0.0	57.3
Other	301,848	660.82	178.00	470.15	157.28	190.67	124.73	0.1	40.6
Ethnicity									
Non-Hispanic	2,282,085	758.76	59.42	623.73	72.59	135.03	40.25	0.0	21.6
Hispanic	394,087	942.32	219.79	483.42	130.26	458.90	168.31	0.0	94.9
Type of survey response									
Self-report	1,962,696	817.57	72.56	663.54	82.77	154.03	50.44	0.0	23.2
Proxy report	713,476	698.38	109.41	436.72	79.09	261.66	74.11	0.0	59.9

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTES: Earnings estimates represent the mean amounts for all recipients, regardless of whether they had earnings during the year.

Of recipients with earnings, MEF estimates account for all individuals with nonzero earnings reported in the year, and NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year; the NBS estimates reflect the sum of earnings from all such jobs.

. . . = not applicable.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 5,054.

b. Not reported in the matched MEF record.

Table A-4.

Estimated mean annual earnings of employed SSI-only recipients: Differences between administrative (MEF) and survey (NBS) data, 2003–2005

Characteristic	Number (weighted) [a]	Estimate based on— MEF Earnings (nominal $)	MEF Standard error	NBS Earnings (nominal $)	NBS Standard error	Absolute difference (MEF minus NBS) In dollars	Standard error	p-value	Proportional difference (%)
Total	240,835	7,147.56	483.35	6,338.34	596.56	809.22	390.66	0.0	12.8
Primary disabling condition									
Psychiatric	52,575	5,755.93	894.78	5,451.56	1,115.26	304.37	801.60	0.7	5.6
Intellectual	41,405	4,663.59	662.33	3,472.30	575.70	1,191.29	512.63	0.0	34.3
Musculoskeletal	11,720	11,209.77	3,080.74	11,442.57	3,322.67	-232.80	842.61	0.8	-2.0
Sensory	14,653	9,131.43	1,993.39	5,426.61	1,455.94	3,704.82	2,551.04	0.2	68.3
Other	87,234	7,675.92	783.27	6,875.69	836.75	800.23	578.86	0.2	11.6
Missing [b]	33,248	8,749.02	924.62	8,502.49	1,165.07	246.53	612.67	0.7	2.9
Sex									
Men	118,843	6,546.97	521.81	6,046.86	567.06	500.11	258.56	0.1	8.3
Women	121,992	7,732.65	696.95	6,622.29	866.21	1,110.36	659.08	0.1	16.8
Age									
21–29	92,388	5,761.29	402.88	5,050.97	631.22	710.32	435.91	0.1	14.1
30–39	59,319	6,852.44	699.59	6,577.56	894.47	274.88	774.83	0.7	4.2
40–49	55,696	9,738.76	1,040.76	8,720.11	1,256.26	1,018.65	627.38	0.1	11.7
50–59	25,466	7,824.03	2,544.34	5,804.20	2,274.87	2,019.83	1,650.59	0.2	34.8
60–64	7,966	5,143.30	988.65	4,542.38	1,247.38	600.91	300.31	0.1	0.1
Race									
White only	160,904	7,070.87	605.44	6,423.76	702.98	647.11	517.81	0.2	10.1
Black or African American only	63,985	6,964.29	639.67	5,577.96	734.80	1,386.33	484.22	0.0	24.9
Other	15,946	8,656.81	1,736.70	8,527.47	1,929.67	129.34	1,046.89	0.9	1.5
Ethnicity									
Non-Hispanic	215,418	6,754.35	482.50	6,236.29	649.50	518.06	347.47	0.1	8.3
Hispanic	25,417	10,480.21	1,329.17	7,203.24	1,343.88	3,276.97	1,522.84	0.0	45.5
Type of survey response									
Self-report	162,526	7,998.16	633.56	7,546.23	837.40	451.93	444.55	0.3	6.0
Proxy report	78,308	5,382.18	820.44	3,831.41	637.47	1,550.77	598.99	0.0	40.5

SOURCE: Authors' calculations using linked MEF and NBS data.

NOTES: MEF estimates account for individuals with nonzero earnings reported in the year. NBS estimates account for respondents who reported working at least one job held for 30 days or more in the year and reflect the sum of earnings from all such jobs.

 . . . = not applicable.

a. The weights for the survey data have been adjusted to reflect the three NBS rounds (2004, 2005, and 2006) combined into a single file. The unweighted total sample size is 688.

b. Not reported in the matched MEF record.

Notes

[1] Beneficiaries may have more than one disabling condition.

[2] The specific questions from the NBS include:

> In what month and year did you start working there? In what month and year did you stop working there? How many hours per week did you usually work at this job? How many weeks per year did you usually work at this job, including paid vacation and holidays? On your job were you paid by the hour? What was your regular hourly pay, including tips and commissions? Before taxes and other deductions, how much were you paid on this job, including tips and commissions? Were you paid daily, weekly, bi-weekly, twice a month, monthly, or annually?

We used the information on hours worked per week and number of weeks worked to construct the survey-based estimate of annual earnings.

[3] Only for the relatively small "other" race subgroup do we see a greater proportional difference between administrative and survey records (102.3 percent).

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Social Security Administration Payments to State Vocational Rehabilitation Agencies for Disability Program Beneficiaries Who Work: Evidence from Linked Administrative Data

by Jody Schimmel Hyde and Paul O'Leary*

This article links administrative data from the Social Security Administration (SSA) and the Department of Education's Rehabilitation Services Administration (RSA) to evaluate SSA's investment in vocational rehabilitation (VR) services for disability program beneficiaries. SSA offers payment to state VR agencies that provide services to beneficiaries who subsequently maintain substantial work. SSA's Disability Analysis File includes information on the value of cash benefits forgone by beneficiaries who work and RSA case closure files include information on VR outcomes for beneficiaries. We track outcomes for beneficiaries who applied for VR services in 2002 and compare the amounts SSA paid to state agencies with the amounts of benefits forgone for work. The cumulative value of cash benefits forgone for work exceeded the cumulative value of VR payments more than tenfold, though we cannot say what portion of this difference is due specifically to VR services.

Introduction

The federal-state vocational rehabilitation (VR) program is administered by the Department of Education's Rehabilitation Services Administration (RSA) to offer counseling, medical and psychological services, job training, and other individualized assistance to people with disabilities. VR is increasingly viewed as a widely available early-intervention program to keep workers with disabilities from becoming dependent on federal disability benefits (Stapleton and Martin 2012; Schimmel Hyde, Honeycutt, and Stapleton 2014; Dean and others 2014). Disability program beneficiaries may face more obstacles to finding work than other potential VR clients because they have impairments that met the stringent evidentiary standards for program eligibility; nevertheless, many of them seek VR services to pursue employment. In fact, disability program beneficiaries represent more than one-quarter of VR applicants. Among recipients of VR services, employment outcomes are poorer for disability program beneficiaries than for nonbeneficiaries, in part because work earnings might affect benefits (Stapleton and Erickson 2004). Beneficiaries who receive VR services are more likely to be employed than are those who do not (Dean and others 2014), and beneficiaries' earnings often increase after receiving VR services, although not frequently to the level that would

Selected Abbreviations

BFW	benefits forgone for work
DAF	Disability Analysis File
DI	Disability Insurance
EN	employment network
IPE	individualized plan for employment

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allow them to forgo disability benefits (Government Accountability Office 2007).

Recognizing the important role of the VR program, the Social Security Administration (SSA) offers compensation to state VR agencies (SVRAs) that assist beneficiaries who maintain substantial work and thereby exit the disability rolls (SSA 2012). SVRAs can be compensated by SSA in one of two ways. Under the first, SSA reimburses SVRAs for the cost of services provided when beneficiaries sustain employment. Under the second, the Ticket to Work (TTW) program authorizes SSA to offer specified payment amounts to SVRAs if beneficiaries achieve certain employment-related benchmarks. We describe the payment schemes in more detail later. During our study period (2002–2012), SSA paid approximately $100 million annually in SVRA cost reimbursements; its TTW payments, much lower at the outset, increased steadily in that span, reaching nearly $28 million in 2012 (SSA 2016).[1] Compared with RSA and state contributions to the VR program, SSA's payments to SVRAs are modest. The majority of VR funding comes from the Department of Education through formula grants to states amounting to more than $3 billion annually; in addition, states are required to match federal funding at a rate of 21.3 percent. Each state has one or two SVRAs; many operate with tight financial resources and have to prioritize services based on need when demand is particularly high (Honeycutt and Stapleton 2013; Schimmel Hyde, Honeycutt, and Stapleton 2014). For SVRAs that are particularly effective in assisting disability program beneficiaries to maintain substantial work, SSA payments might free up resources that can be used to serve additional clients or to offer more extensive services.

In this article, we examine SSA payments to SVRAs and assess how they relate to the long-term employment-related outcomes of beneficiaries seeking VR services. To conduct our analysis, we use SSA data on beneficiary status, cash benefits, personal characteristics, and agency payments to SVRAs; we then link that information to RSA case-closure records known as RSA-911 files. The data from this combination of administrative sources allow us to determine the outcomes for virtually all beneficiaries who sought VR services during calendar year 2002, and to track their outcomes for more than a decade after VR application. By grouping beneficiaries based on their demographic characteristics, impairment types, and VR service receipt patterns, we are able to assess the relative value of SSA's investment, which might in turn inform better targeting of VR services. Additionally, the linkage to SSA data allows us to compare VR payment amounts with the amounts of disability benefits forgone for work (BFW), a particularly salient measure with which to assess SSA's investment in VR services.

From SSA's perspective, paying for VR services is a sound investment if the payment amounts provide a positive return on investment for the agency. Two factors determine the return on VR payments: (1) the value of cash benefits forgone when a beneficiary leaves the program rolls because he or she sustains work at a substantial level, and (2) the proportion of those savings that are attributable to VR services. Because it is possible that the benefits would have been forgone without the services, VR may be responsible for only some, or even none, of the change. Yet beneficiaries seek these services believing them to have some value, so it is reasonable to expect that VR is responsible for at least some of the benefit reductions we see. If 100 percent of the cash benefit reductions of VR service recipients were directly attributable to the services, the dollar value of those reductions would merely have to exceed the VR payment amounts to provide a positive net return for SSA; thus, if VR services are responsible for only part of the benefit reductions, a positive return on SSA's investment requires a greater differential between BFW and VR payments. In other words, the more the BFW exceed the VR payments, the more confidence we can have that SSA realizes a positive net return. This cost-benefit calculation need not be positive for each beneficiary who receives VR services, yet it should be in the aggregate. It is also important to note that calculating the net return for SSA excludes any consideration of the positive effects of VR services for the client beneficiaries themselves, in terms of both the monetary and nonmonetary rewards of meaningful workforce engagement.

In this analysis, we rely on advances in data rather than improved analytic methods. From SSA's perspective, previous analyses of the utility of VR services to disability program beneficiaries had two major drawbacks. First, nearly all such studies used the earnings of the VR client to measure success (for example, Dean, Dolan, and Schmidt 1999). Although SSA is interested in the earnings of VR clients, the question of more direct policy importance is whether VR services lead to a decreased reliance on cash benefits, and more specifically whether the reduction in benefits linked to VR services is greater than what SSA pays for those services. Past studies have relied on earnings data by necessity, because benefit-savings data were unavailable. Recent versions of SSA's Disability Analysis File (DAF), however, include an algorithm that provides monthly estimates of BFW that can be summed to calculate values accrued over time.[2] By linking VR data from RSA with the DAF data, we are now able to assess a cost-benefit relationship that is of direct interest to SSA and policymakers.

The second drawback of past studies—that VR effects cannot be assessed using experimental evaluation methods because VR is a nationally available and voluntary program—remains an obstacle. To date, researchers have used various nonexperimental methods to examine the effectiveness of VR services using comparison groups of individuals who are deemed to be similar to participants. These techniques generally find positive returns on VR investment for client earnings (for example, Dean and others 2001). However, we can infer that the comparison groups in those studies, nonparticipants, differ from those who did receive services based on their decision to seek VR, and as such, earlier studies are limited by inherent differences between the treatment and comparison groups. Although we do not purport to solve this methodological dilemma in this article, we note that advancements in data and measurement can enable us to better understand the relationship between services and outcomes for beneficiaries with disabilities. Although it is not definitive, such information can provide useful evidence of VR's effectiveness. In particular, by assessing the relationship between SSA payments to SVRAs and the decrease in benefits paid by SSA to beneficiary VR clients in the months and years after receipt of services, we can determine the extent to which the evidence supports a hypothesis that VR services reduce benefit outlays. Benefit reductions that exceed SSA costs certainly do not prove VR effectiveness, but they are a necessary condition of

any such effectiveness; and relatively greater reductions in the postservice benefits of VR clients at least suggest possible positive effects.

We will show that among all disability program beneficiaries who applied for VR services in 2002, relatively few generated payments from SSA to SVRAs; only 3.0 percent did so within 4 years of VR case closure, and 3.6 percent did so by the end of 2012. The average VR payment generated by these individuals was around $13,500. Among all applicants, the average value of BFW after VR application was more than 10 times the average value of SSA's total VR payments.[3] This outcome suggests that if just 10 percent of the BFW were attributable to VR, SSA's overall investment in these services produced net savings.

Across beneficiary subgroups, we find substantial differences in the likelihood of generating a VR payment, the payment amount, and BFW. However, for every subgroup of beneficiaries we consider, we find that the ratio of total BFW to total VR payments was greater than 1, generally ranging from 4 to 10.[4]

The analysis in this article highlights outcomes for beneficiaries who sought VR services in 2002 and our findings are similar to those for beneficiaries who sought services in 2003 through 2007 (Schimmel Hyde and O'Leary 2017). The relatively low share of beneficiaries generating VR payments highlights opportunities to better identify potential beneficiary VR applicants who might be eligible for services that would generate a payment. Likewise, differences in the ratio of BFW to payments across beneficiary subgroups may offer avenues for considering additional investments, as we will explore.

SSA Payments to SVRAs

SSA's cost reimbursement system for VR services has been in place for decades. SVRAs are reimbursed for qualifying service costs once a client beneficiary attains earnings at or above an annually adjusted threshold designated as substantial gainful activity (SGA)[5] in 9 out of 12 consecutive months. Once the SVRA can properly document that the beneficiary has met these conditions, it can request reimbursement (SSA 2012).[6]

SVRAs can also be compensated by SSA for providing services to beneficiaries through the TTW program. These payments are not tied to the cost of services provided to a beneficiary. Instead, they are paid in predetermined amounts that accrue in months when beneficiaries achieve specified

earnings outcomes, and are the same whether the services are delivered by an SVRA under TTW or by another provider type known as an employment network (EN). SVRAs and ENs must choose from one of two TTW payment schemes ("milestone-outcome" and "outcome-only"), which they must then use for all beneficiaries they assign under TTW. Unlike ENs, SVRAs can choose whether to seek cost reimbursement or TTW payments on a beneficiary-by-beneficiary basis (SSA 2012). Most SVRAs serve most or all SSA disability program beneficiaries under the cost-reimbursement system, and those using TTW largely do so under the milestone-outcome payment scheme (Schimmel Hyde and Stapleton 2015).

Data Sources

To conduct our analysis, we combined administrative data from SSA (the DAF) and the Department of Education (the RSA-911 files). The DAF aggregates information from multiple sources to create a research data set with one record for each beneficiary who is aged from 18 through SSA's full retirement age and who received a Disability Insurance (DI) or Supplemental Security Income (SSI) benefit in at least one month from 1996 onward. We used the DAF to identify participation in DI and SSI at a monthly level, along with beneficiary work activity and benefit payment amounts. The DAF also contains information on payments from SSA to SVRAs for both payment systems at the beneficiary level, using cost-reimbursement records housed in the VR Reimbursement Management System (VRRMS)[7] and TTW records (both milestone and outcome payments) housed in the EN Payment System.

We used RSA data to identify annual cohorts of VR applicants who were also disability program beneficiaries. The RSA-911 files contain information on all VR cases that close in a fiscal year, regardless of the reason for closure. We stacked data from the closure files to allow us to observe all VR closures from fiscal years 2002 through 2012. To track client experiences from the time they first sought services, we reoriented the closure records to sort by application date. From these files, we identified individuals who first sought VR during calendar year 2002. Approximately 92 percent of VR cases close within 4 years of application and 98 percent close within 7 years (Schimmel Hyde, Honeycutt, and Stapleton 2014). By including case closure records through fiscal year 2012, we expect that our RSA-911 analysis file contains data on virtually all beneficiaries who applied for VR in 2002.

We also linked the 2002 VR applicant file based on the RSA-911 data to the administrative information contained in the DAF. A key advantage of using these linked data is that we can use administrative records to verify beneficiary status during the VR spell; using RSA-911 data alone would provide information on beneficiary status at application only as collected by the agency and would be subject to errors relative to the beneficiary's actual status. From the universe of first-time applicants who sought services in 2002, we selected those who had at least 1 month during their VR service spell (between application and case closure) during which the SSA records identified the person as a beneficiary of the DI program, the SSI program, or both. By considering beneficiary status at any point during the VR spell, we aimed to identify all VR applicants who might have been eligible to generate a payment from SSA to the SVRA. To focus on first-time applicants for whom we could reasonably assume that the receipt of VR services would be correlated with the observed outcomes, we excluded from our analysis those beneficiaries who had also applied in the 4 calendar years preceding 2002.

In light of SSA rules regarding payment to SVRAs, we intentionally cast a broad net in identifying beneficiaries to include in our analysis. We included those in current-payment status, those suspended or terminated for work, and those suspended or terminated for any other reason in at least 1 month between VR application and case closure, provided the beneficiary was aged 18 or older, up to full retirement age, in the month that he or she met this definition. Sixteen percent of our study sample did not meet our definition of beneficiary in their VR application month, but began to receive DI or SSI benefits prior to case closure (comparable to findings in Stapleton and Martin 2012; and in Schimmel Hyde, Honeycutt, and Stapleton 2014). Approximately 2 percent of those identified as beneficiaries during their VR spell had had their benefits terminated prior to their application month, but of these, 26 percent returned to current-payment status at some point during their VR spell.

Outcomes of Interest

We used information in the DAF to measure SSA payments to SVRAs and the cash benefits that beneficiaries gave up when they found work after applying for VR services. Here again, we capitalized on the linkage of the administrative records; by using the DAF in conjunction with the RSA-911 files, we were able to follow applicant outcomes for many years,

even after the VR case closed and the SVRA no longer tracked the client.

VR Payments

VR payments is a measure that aggregates all payments by SSA to SVRAs regardless of payment system (traditional cost reimbursement or TTW). We included all payments that were triggered by a client's work activity between the VR application month and December 2012 (provided the payment had been processed by mid-2013, when the data were extracted for the DAF). We identified a single VR payment value for each beneficiary. Cost-reimbursement payments accounted for more than 90 percent of the total amount SSA paid to SVRAs for vocational services, consistent with other evidence on VR payments under the two competing payment systems (Schimmel and others 2013).

BFW

BFW is a measure available in the 2012 DAF of the inflation-adjusted monthly dollar amount that a beneficiary would have received if his or her benefits had not been reduced, suspended, or terminated because of work. We did not count benefits that are reduced, suspended, or terminated for reasons other than work in this measure, even if work was a contributing factor. The DAF includes separate BFW measures for DI and SSI benefits because of differences in each program's work incentives and eligibility rules, but we combined the forgone DI and SSI benefit amounts to create a single measure for each beneficiary.

Under DI, BFW do not begin to accumulate until after a beneficiary has exhausted a 9-month trial work period plus a 3-month grace period. Thereafter, the beneficiary enters suspended-benefit status and receives no cash benefit for any month in which earnings exceed the SGA level. The SGA level is a value that SSA adjusts for inflation each year and which, for nonblind beneficiaries, ranged from $780 per month in 2002 to $1,010 per month in 2012. SSA reduces the amount due to SSI recipients based on their earnings levels. Generally, SSA excludes the first $80 in monthly income in this calculation and reduces the amount due to the SSI recipient by $1 for each $2 in earnings above $80. If earnings are high enough to reduce the amount due to $0 through this calculation, SSA considers the SSI recipient's eligibility to be suspended. Because SSI recipients in suspended status generally remain eligible for Medicaid as long as they meet the medical criteria for SSA disability programs,

their SSI eligibility is rarely terminated because of work activity. The BFW calculation effectively estimates the difference between the cash benefits DI and SSI beneficiaries would have received had they not worked and the benefit amount they actually received, then sums these values across the months and years the beneficiaries are in reduced-, suspended-, or terminated-benefit status because of work.

We included all BFW from the date of VR application through December 2012, the last date available in the 2012 DAF. This reflects an assumption that VR services might affect BFW in any month after VR application, but there is no way of knowing whether receipt of VR services actually affected BFW in any or all of the months counted. In fact, as we discuss later, many applicants do not ultimately receive VR services, although some of those applicants accrue BFW.

We consider BFW through December of 2012 to provide the most complete picture of the benefits not paid because of work after seeking VR, even though that extends the study period to many years after the month of application. Thus, some would argue that we should not attribute BFW to VR services in these later years even though SVRAs may still qualify for payments from SSA. To provide a more conservative estimate, we also present alternative findings for a narrower specification in which we only count BFW accrued by the end of the 4th calendar year following VR case closure. As we will show, that time period accounts for most of the accrued VR payments.

We report all BFW and VR payment values in 2012 dollars using SSA's annual cost-of-living adjustment (SSA n.d. a). Payment values are adjusted based on the month in which they were made, which can be months or even years after the triggering work activity, depending on how quickly a claim is filed by the SVRA and processed by SSA.

Comparing VR Payments to BFW

Although we expect to find a positive correlation between VR payments and BFW following VR participation because both outcomes are predicated on beneficiary work activity, there are multiple reasons not to expect a deterministic relationship. For example, DI beneficiaries are allowed a 9-month trial work period during which they can earn any amount without losing benefits. If a VR applicant's work activity occurs entirely during that period, SSA could pay the SVRA under the cost reimbursement system without the beneficiary accruing any BFW. Similarly,

SSA could pay SVRAs under the TTW program if DI beneficiaries have low levels of work earnings that generate milestone payments but do not result in cash benefits being suspended for work. Further, SVRAs must request payments from SSA; SVRAs that lose track of clients may not receive payments even when those clients meet the work requirements for VR payment and generate a string of BFW months.

The ratio of BFW to VR payments conveniently summarizes the relative value of SSA's investments in VR and allows comparisons across subgroups; the higher the ratio, the greater the indicated return on the investment. Although the ratio offers a useful metric to assess the relative strength of SSA's investment for each applicant subgroup, we must interpret the ratio with care in some circumstances. Specifically, if the VR payment (the denominator) is particularly small, the ratio can be quite high even when the BFW value is small as well. This is most pronounced in subgroups for which relatively few beneficiaries generate any VR reimbursement, as may occur if a substantial proportion of beneficiaries who apply for VR drop out before any services are provided. In such cases, when we include large proportions of $0 VR payments in the denominator, any BFW in the numerator will exaggerate the ratio relative to the ratios for other client subgroups. Likewise, a lower ratio does not necessarily indicate against offering services to particular subgroups, a point we revisit in our conclusions.

Beneficiary VR Applicant Characteristics

Using the beneficiary selection criteria outlined above and limiting the data to applications to SVRAs in the 50 states and the District of Columbia, we identified 266,039 first-time beneficiary VR applicants in calendar year 2002 (Table 1). For brevity, we refer to this cohort simply as "applicants" hereafter, noting that "application" in this context is for VR services rather than for DI or SSI benefits. Although disability program beneficiaries represent a meaningful share of individuals who seek VR in a given year, VR applicants are a small share of the overall beneficiary population. In 2002, there were about 11.3 million beneficiaries in current, suspended, or terminated payment status (Schimmel and others 2013); of those, about 2.4 percent sought VR.[8]

The attributes of DI and SSI beneficiaries who are VR applicants may affect the likelihood that they achieve the earnings levels required to trigger VR payments. Work-related characteristics affect eligibility for SSI and DI benefits differently, so we would

expect results for these beneficiary types to differ as well. Mamun and others (2011) estimated the distribution of disability program beneficiaries by program for 2007 as about 60 percent for DI only, 29 percent for SSI only, and 11 percent for concurrent DI and SSI. Relative to those estimates, our sample of VR applicants has a higher proportion that receives SSI only (40.1 percent) and a lower proportion that receives DI benefits only (32.7 percent). The share of applicants that received concurrent DI and SSI benefits during the study period (27.2 percent) also exceeds that group's share of 2007 beneficiaries overall, although this finding mainly reflects our inclusive definition of concurrent receipt for this analysis. We categorize a beneficiary as being in both programs if he or she had at least 1 month in DI and at least 1 month in SSI over the duration of the VR spell, even if the month(s) did not coincide.

DI eligibility rules generally require a claimant to have a work and earnings history that qualifies for a cash benefit. As such, qualifying DI beneficiaries are also more likely than SSI recipients to have other savings or pensions they can rely on to supplement their cash benefit. Because other resources are more likely available, and because beneficiaries exited the labor force before seeking benefits, DI-only beneficiaries may have weaker incentive to supplement their cash benefit through work; further, those who want to work are more likely to have employment skills that make VR services less necessary. SSI-only recipients, by comparison, tend to receive lower amounts from SSA and have few supplemental income resources, sparse work histories, and fewer employment skills. Together, these circumstances make work an attractive means of supplementing or replacing SSI, and often make VR critical to attaining a successful work outcome. Stapleton and Martin (2012) also suggested that SSI recipients may apply for VR so they can work enough to become eligible for DI and, eventually, Medicare. The circumstances of individuals who receive concurrent SSI and DI benefits lie between these SSI-only and DI-only extremes: They have substantial work histories, but low benefits and resources. Such beneficiaries are more likely to have work skills from their time in the labor force, but those skills may not lead to earnings opportunities that make employment an attractive option. VR services could supplement those skills to make work more remunerative for these beneficiaries. In some cases, DI-eligible SSI recipients may apply for VR during the 5-month DI waiting period and convert to DI soon after their VR application, meeting

Table 1.
Characteristics of disability program beneficiaries who first applied for VR services in 2002

Characteristic	All Number	All Percentage distribution	With an individualized plan for employment (IPE) [a] Number	With an individualized plan for employment (IPE) [a] Percentage distribution	Percentage with an IPE
Total	266,039	100.0	159,126	100.0	59.8
Program					
DI only	87,117	32.7	53,157	33.4	61.0
SSI only	106,646	40.1	60,609	38.1	56.8
Concurrent DI and SSI	72,276	27.2	45,360	28.5	62.8
Sex					
Men	143,449	53.9	85,712	53.9	59.8
Women	122,590	46.1	73,414	46.1	59.9
Race					
White	182,370	68.6	111,845	70.3	61.3
African American	66,481	25.0	38,799	24.4	58.4
Other	17,188	6.5	8,482	5.3	49.3
Ethnicity					
Hispanic	19,715	7.4	11,558	7.3	58.6
Non-Hispanic	245,421	92.3	147,448	92.7	60.1
Educational attainment					
Less than high school diploma	71,895	27.0	41,149	25.9	57.2
High school diploma or equivalent	122,006	45.9	74,493	46.8	61.1
Some postsecondary education, no degree	37,852	14.2	22,712	14.3	60.0
Postsecondary degree	32,685	12.3	20,772	13.1	63.6
Age					
17 or younger	10,761	4.0	8,415	5.3	78.2
18–25	53,318	20.0	33,290	20.9	62.4
26–29	18,520	7.0	11,070	7.0	59.8
30–39	61,045	22.9	35,875	22.5	58.8
40–49	76,473	28.7	43,699	27.5	57.1
50–59	40,533	15.2	23,447	14.7	57.8
60 to full retirement age	5,389	2.0	3,330	2.1	61.8
Years as a beneficiary at time of VR application					
0 (became a beneficiary after VR application)	28,011	10.5	20,370	12.8	72.7
2 or fewer	56,046	21.1	29,906	18.8	53.4
3–5	32,838	12.3	18,729	11.8	57.0
6–10	54,610	20.5	32,025	20.1	58.6
More than 10	94,534	35.5	58,096	36.5	61.5
SSA impairment group [b]					
Sensory/communication	17,807	6.7	13,430	8.4	75.4
Musculoskeletal	18,392	6.9	9,233	5.8	50.2
Nervous system	12,290	4.6	7,507	4.7	61.1
Psychiatric	80,455	30.2	44,525	28.0	55.3
Intellectual	37,687	14.2	25,550	16.1	67.8
Other [c]	99,408	37.4	58,881	37.0	59.2

(Continued)

Table 1.

Characteristics of disability program beneficiaries who first applied for VR services in 2002—*Continued*

Characteristic	All		With an individualized plan for employment (IPE) [a]		
	Number	Percentage distribution	Number	Percentage distribution	Percentage with an IPE
Employment status at time of VR application					
Not employed	232,530	87.4	136,576	85.8	58.7
Employed	30,425	11.4	22,537	14.2	74.1
Less than 20 hours per week	9,104	3.4	6,622	4.2	72.7
20–34 hours per week	10,731	4.0	7,922	5.0	73.8
35 hours or more per week	8,689	3.3	6,562	4.1	75.5

SOURCE: Authors' calculations using the 2012 DAF linked to RSA-911 closure files.

NOTE: Percentage distributions may not sum to 100.0 because of rounding or because data coded as "missing" or "unknown" (comprising less than 1 percent of total observations for any subgroup) are omitted.

a. Signing an IPE indicates agreement between the applicant and the VR counselor on services to be provided. It typically represents the formal beginning of VR service receipt.

b. As of the first month during the VR spell in which the individual met the definition of "beneficiary."

c. Including "missing" or "unknown."

our definition for concurrent benefits although the two benefits never actually overlap.

Beneficiaries in our applicant cohort are concentrated in younger age groups with lower education levels (Table 1), groups in which beneficiaries typically are less likely to earn at high levels. Reflecting the relative distribution of applicants across SSI and DI, it is not surprising that applicants tend to be younger. One-quarter of 2002 applicants were aged 25 or younger, in contrast with 2.0 percent who were aged 60 or older. Younger applicants may be more likely to work, but may also do so at lower wages. This may be especially likely given that the majority of applicants in 2002 had low education levels: 27.0 percent had not finished high school, while another 45.9 percent had no more than a high school diploma or its equivalent.

Among impairment categories, psychiatric conditions accounted for the largest share of beneficiary VR applicants (30.2 percent), followed by intellectual disabilities (14.2 percent). Applicants with a musculoskeletal condition represented 6.9 percent of all applicants, lower than that category's share among all beneficiaries.[9] A small minority of applicants were already working when seeking VR services (11.4 percent), and about one-quarter of those reported working full-time at application.

Share of Applicants Who Received VR Services

In most instances, VR service delivery formally begins when an applicant signs an individualized plan for employment (IPE), which is recorded in the RSA-911 file and indicates that the applicant and VR counselor have agreed to a set of services to be provided. Not every applicant receives services before his or her case is closed. There are a variety of reasons why an IPE may not be signed. For instance, applicants may choose not to follow through once seeing their service plan; or, they cannot be located once the SVRA has space for them. Many SVRAs have limited resources. They may not have the capacity to offer an IPE to all clients, and must prioritize services based on applicant need.

About 60 percent of applicants in our analysis sample received an IPE, which is consistent with statistics for both nonbeneficiaries and beneficiaries in other years (Schimmel and others 2013; Schimmel Hyde and O'Leary 2017). Signed IPEs were notably more likely among the youngest applicants (78.2 percent of those aged 17 or younger at VR application), those who were not yet beneficiaries when they applied for services (72.7 percent), those who had sensory or communication impairments (75.4 percent), and those who were already working when they applied for VR services (74.1 percent).

Cumulative VR Payments and BFW

By year-end 2012, beneficiaries who applied for VR during 2002 had accounted for $1.48 billion in BFW and generated $128 million in VR payments (Chart 1). From the outset, BFW increased much more rapidly than VR payments, reflecting the lag effect of the cost-reimbursement model, which requires a client to attain 9 months of earnings at or above the SGA level before the SVRA can submit a claim. This lag effect may also reflect cases in which clients have either short-term success that generates BFW but not a VR payment, or longer-term success for which the SVRA never requested payment. Further, SSA processes some claims quickly; these may reflect milestone payments under TTW, which can occur even if earnings do not reach SGA level. Because TTW was not fully rolled out in the first years of the study period, early payments may have been less common than they were in later years.

Few clients who applied in 2002 generated VR payments (Table 2). Among the 266,039 members of the 2002 applicant cohort, 9,510 (3.6 percent) generated any payment by the end of 2012. Among that group, the average VR payment amount was $13,517

Chart 1.
Cumulative BFW and VR payment amounts for disability program beneficiaries who first applied for services in 2002
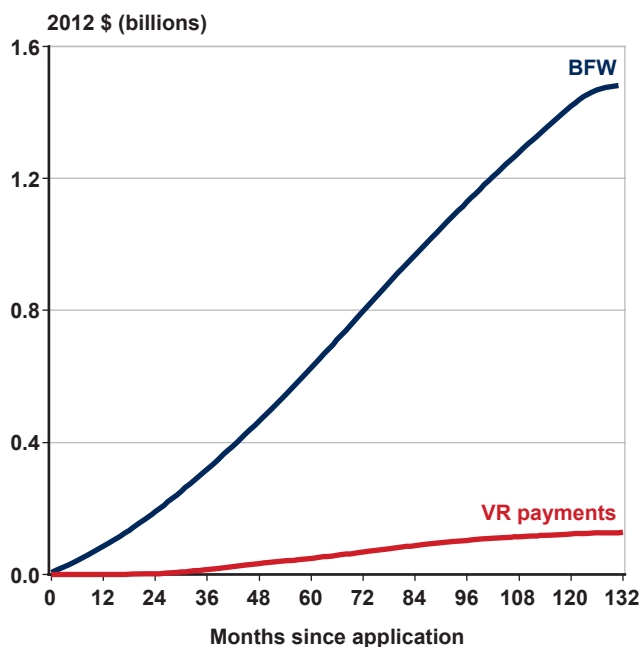
SOURCE: Authors' calculations using the 2012 DAF linked to RSA-911 closure files.

(roughly consistent with statistics published in SSA n.d. b). Median values (not shown) were lower than the mean values, in part reflecting much higher payments to SVRAs serving blind individuals, who constitute a small share of total VR clients.

BFW were many times higher than VR payments for 2002 applicants. For the entire cohort, BFW accumulated through year-end 2012 were 11.5 times the cumulative amount of VR payments. By the end of 2012, virtually all VR payments that would ever be generated had been paid, yet BFW can continue to accrue until beneficiaries return to the disability rolls, reach retirement, die, or have their benefits terminated for another reason. Between the end of the 4th calendar year after case closure and year-end 2012, VR clients generated an additional 10 percent of VR payments, but they accounted for an additional 40 percent of BFW. When limiting follow-up to the end of the 4th calendar year after VR case closure, the ratio of BFW to payments was 7.8.

Differences in BFW and Payments Based on the Receipt of VR Services

Although 40.2 percent of 2002 VR applicants did not sign an IPE, that group accrued about 21 percent of the total BFW through the 4th calendar year after case closure and about 28 percent of the total BFW through 2012. The group's disproportionately low share of BFW may indicate that a lack of VR services left them underprepared for a successful job search relative to those who received services. Conversely, failure to sign an IPE could also signal that this group was less likely to work. However, the group accrued more than one-quarter of the total BFW by year-end 2012, suggesting that many of the applicants who did not receive VR services were nevertheless interested in and able to work at a significant level.

Applicants who signed an IPE accounted for 60 percent of the applicants overall but they accounted for 86 percent of the clients who generated VR payments by year-end 2012. This finding is predictable because the SVRA must document the provision of services to claim reimbursement. However, it also implies that 14 percent of the beneficiaries who generated payments did not receive an IPE prior to closure of their 2002 application. Because receipt of services is required for a payment to be generated, these applicants therefore must have later reapplied for VR, received services, and worked at a level sufficient to generate a payment. For those who did not sign an

Table 2.
VR payments and BFW generated by disability program beneficiaries who first applied for VR services in 2002

Measure	All		With an IPE		With no IPE	
	Through 4th calendar year after VR case closure	Through 2012	Through 4th calendar year after VR case closure	Through 2012	Through 4th calendar year after VR case closure	Through 2012
Sample size	266,039		159,126		106,913	
Cases that generated a VR payment						
Number	8,000	9,510	7,277	8,167	723	1,343
As a percentage of full sample	3.0	3.6	4.6	5.1	0.7	1.3
VR payment amounts (2012 $)						
Total (millions)	109.7	128.5	103.6	115.2	6.1	13.4
Average—						
Per case generating a payment	13,712	13,517	14,234	14,104	8,455	9,947
Per sample member	412	483	651	724	57	125
BFW among full sample (2012 $)						
Total (millions)	860.6	1,481.2	676.0	1,071.8	184.6	409.4
Average	3,235	5,568	4,248	6,735	1,727	3,829
Ratio of BFW to VR payment amount	7.8	11.5	6.5	9.3	30.2	30.6

SOURCE: Authors' calculations using the 2012 DAF linked to RSA-911 closure files.

NOTE: All dollar values are adjusted using SSA cost-of-living adjustments through 2012.

IPE, the ratio of BFW to VR payments as of year-end 2012 is substantially higher (30.6) than the ratio for those who did sign an IPE (9.3). This last finding is driven, at least in part, by the relatively small number of non-IPE cases with a VR payment, which tends to exaggerate the BFW-to-VR payment ratio.

VR Payments and BFW by Applicant Subgroup

The likelihood that beneficiaries will work at a level that generates VR payments and accrues BFW varies depending on their individual characteristics. Table 3 presents statistics on VR payments, BFW, and the ratio of BFW to payments through the 4th calendar year after case closure for each applicant subgroup. Although only 3.0 percent of applicants overall generated a VR payment, some subgroups were much more likely to do so; for example, 7.0 percent of those categorized by SSA as having a sensory or communication impairment and 6.5 percent of those whose VR case was not closed in less than 4 years. Payments were relatively less likely for VR cases that were closed quickly (a maximum of 1.8 percent of applicants with closure in less than a year) and for older applicants (no more than 1.7 percent of those who applied at age 50 or older).

Relative to the other subgroups within each category, the ratio of BFW to VR payment amounts was higher for DI-only and SSI-only applicants, men, African Americans, older applicants, applicants with longer periods as beneficiaries or with intellectual impairments, applicants who were already working when they sought VR, and those whose cases were closed relatively quickly. The reasons for these differences may vary across groups. Older applicants, for example, may have a higher ratio than younger applicants because they generally have higher monthly benefit amounts to forgo; but they are also less likely to generate a VR payment than younger applicants are. This type of difference also explains the relatively high ratio for applicants with intellectual impairments—many of those individuals likely receive only SSI and forgo a relatively small amount over many months as they sustain work, but do not accrue work earnings sufficient to generate VR payments.

To better understand the differences in the ratios across subgroups, Table 3 also shows the percentage distributions of all applicants, of applicants who generated a VR payment, of VR payment amounts, and of BFW, by subgroup for each characteristic category. For example, DI-only beneficiaries represented 32.7 percent of all applicants, 42.1 percent of

Table 3.

Selected VR outcomes by characteristics of disability program beneficiaries who first applied for VR services in 2002, through the 4th calendar year after VR case closure

Characteristic	All	Cases that generated a VR payment		Among all applicants, average—		Ratio of BFW to VR payments	Percentage distribution of—			
		Number	Percent	VR payment (2012 $)	BFW (2012 $)		Applicants overall	Cases that generated a VR payment	VR payment amounts	BFW amounts
Total	266,039	8,000	3.0	412	3,235	7.8	100.0	100.0	100.0	100.0
Program										
DI only	87,117	3,364	3.9	510	4,141	8.1	32.7	42.1	40.5	41.9
SSI only	106,646	2,181	2.0	277	2,245	8.1	40.1	27.3	26.9	27.8
Concurrent DI and SSI	72,276	2,455	3.4	494	3,604	7.3	27.2	30.7	32.5	30.3
Sex										
Men	143,449	4,489	3.1	420	3,455	8.2	53.9	56.1	54.9	57.6
Women	122,590	3,511	2.9	404	2,977	7.4	46.1	43.9	45.1	42.4
Race										
White	182,370	5,695	3.1	446	3,275	7.3	68.6	71.2	74.1	69.4
African American	66,481	1,826	2.7	335	3,165	9.5	25.0	22.8	20.3	24.4
Other race	17,188	479	2.8	287	308	1.1	6.5	6.0	4.5	0.6
Ethnicity										
Hispanic	19,715	690	3.5	466	3,394	7.3	7.4	8.6	8.4	7.8
Non-Hispanic	245,421	7,302	3.0	409	3,227	7.9	92.3	91.3	91.6	92.0
Educational attainment										
Less than high school diploma	71,895	1,555	2.2	305	2,144	7.0	27.0	19.4	20.0	17.9
High school diploma or equivalent	122,006	3,350	2.7	347	2,948	8.5	45.9	41.9	38.6	41.8
Some postsecondary education, no degree	37,852	1,534	4.1	627	4,022	6.4	14.2	19.2	21.6	17.7
Postsecondary degree	32,685	1,523	4.7	655	5,765	8.8	12.3	19.0	19.5	21.9
Age										
17 or younger	10,761	511	4.7	945	3,211	3.4	4.0	6.4	9.3	4.0
18–25	53,318	1,926	3.6	561	3,496	6.2	20.0	24.1	27.3	21.7
26–29	18,520	703	3.8	541	4,297	7.9	7.0	8.8	9.1	9.2
30–39	61,045	2,057	3.4	454	4,036	8.9	22.9	25.7	25.2	28.6
40–49	76,473	2,040	2.7	323	2,981	9.2	28.7	25.5	22.5	26.5
50–59	40,533	690	1.7	167	2,007	12.0	15.2	8.6	6.2	9.5
60 to full retirement age	5,389	73	1.4	80	819	10.2	2.0	0.9	0.4	0.5

(Continued)

Table 3.
Selected VR outcomes by characteristics of disability program beneficiaries who first applied for VR services in 2002, through the 4th calendar year after VR case closure—*Continued*

Characteristic	All	Cases that generated a VR payment		Among all applicants, average—		Ratio of BFW to VR payments	Percentage distribution of—			
		Number	Percent	VR payment (2012 $)	BFW (2012 $)		Applicants overall	Cases that generated a VR payment	VR payment amounts	BFW amounts
Years as a beneficiary at time of VR application										
0 (became a beneficiary after VR application)	28,011	764	2.7	491	2,331	4.7	10.5	9.6	12.5	7.6
2 or fewer	56,046	1,633	2.9	437	2,967	6.8	21.1	20.4	22.3	19.3
3–5	32,838	1,202	3.7	461	3,714	8.1	12.3	15.0	13.8	14.2
6–10	54,610	1,774	3.2	405	3,518	8.7	20.5	22.2	20.2	22.3
More than 10	94,534	2,627	2.8	361	3,331	9.2	35.5	32.8	31.2	36.6
SSA impairment group [a]										
Sensory/communication	17,807	1,250	7.0	1,363	6,958	5.1	6.7	15.6	22.1	14.4
Musculoskeletal	18,392	610	3.3	405	3,744	9.2	6.9	7.6	6.8	8.0
Nervous system	12,290	497	4.0	653	4,021	6.2	4.6	6.2	7.3	5.7
Psychiatric	80,455	2,476	3.1	337	3,068	9.1	30.2	31.0	24.7	28.7
Intellectual	37,687	841	2.2	235	2,910	12.4	14.2	10.5	8.1	12.7
Other [b]	99,408	2,326	2.3	342	2,635	7.7	37.4	29.1	31.0	30.4
Employment status at time of VR application										
Not employed	232,530	6,765	2.9	397	2,868	7.2	87.4	84.6	84.2	77.5
Employed	30,425	1,212	4.0	565	6,154	10.9	11.4	15.2	15.7	21.8
Less than 20 hours per week	9,104	366	4.0	549	4,115	7.5	3.4	4.6	4.6	4.4
20–34 hours per week	10,731	448	4.2	506	5,541	11.0	4.0	5.6	4.9	6.9
35 hours or more per week	8,689	368	4.2	678	10,108	14.9	3.3	4.6	5.4	10.2
Months from application to case closure										
0–2	21,708	150	0.7	61	1,650	27.2	8.2	1.9	1.2	4.2
3–5	34,153	403	1.2	85	2,125	25.1	12.8	5.0	2.6	8.4
6–11	60,436	1,082	1.8	131	2,824	21.6	22.7	13.5	7.2	19.8
12–17	41,231	1,111	2.7	219	3,168	14.4	15.5	13.9	8.2	15.2
18–23	27,845	978	3.5	342	3,363	9.8	10.5	12.2	8.7	10.9
24–35	34,425	1,516	4.4	526	3,815	7.2	12.9	19.0	16.5	15.3
36–47	18,679	979	5.2	760	4,235	5.6	7.0	12.2	12.9	9.2
48 or more	27,562	1,781	6.5	1,695	5,324	3.1	10.4	22.3	42.6	17.1

SOURCE: Authors' calculations using the 2012 DAF linked to RSA-911 closure files.

NOTE: Percentage distributions may not sum to 100.0 because of rounding or because data coded as "missing" or "unknown" (comprising less than 1 percent of total observations for any subgroup) are omitted.

a. As of the first month during the VR spell in which the individual met the definition of "beneficiary."

b. Including "missing" or "unknown."

applicants generating a VR payment, 40.5 percent of VR payment dollars, and 41.9 percent of BFW. When a subgroup's share of applicants with a given outcome is greater than that subgroup's share of all applicants, the members of that subgroup had a disproportionately strong outcome. Therefore, DI-only beneficiaries generated disproportionate shares of payments and BFW relative to their share of the applicant pool. Conversely, when a subgroup's share of all applicants is greater than its share of applicants with a given outcome, members of that subgroup had a weaker result for that outcome.

Although the ratio of BFW to VR payments was the same among SSI-only and DI-only applicants (8.1), SSI-only applicants accounted for disproportionately low shares of VR payments and BFW, in contrast with DI-only beneficiaries. Although BFW can accrue for each month in which an SSI-only recipient works, the SSI monthly amount received tends to be low and work often does not result in full loss of cash benefits in the month. Moreover, SSI recipients generally lack significant work experience, reducing the likelihood of working at the level required to generate a VR payment.

The ratio of BFW to VR payments is significantly lower among applicants younger than 18 (3.4) than that of applicants aged 50–59 (12.0). The difference is driven largely by the lower share of applicants generating a VR payment for the older group (8.6 percent, versus that group's 15.2 percent share of applicants overall) in contrast with the higher share for the younger group (6.4 percent, versus their 4.0 percent share of applicants overall). For the younger group, the share of VR payment dollars (9.3 percent) is even higher than the share of applicants generating payments; this might reflect expenditures for more extensive vocational, training, or postsecondary education programs for this group. Because these beneficiaries could accrue BFW for many years, successful returns to work are particularly important for this group and we would likely find that their BFW dwarfs the payments they generate to SVRAs if we followed them for longer periods.

Beneficiaries who had been on the disability rolls for longer periods when seeking VR had a higher ratio of BFW to VR payments than did those who were recent awardees (9.2 for those who had been beneficiaries for more than 10 years and 6.8 for those who had been receiving benefits for 2 years or less). A more recent onset of beneficiary status may indicate relatively less stable health and disability status, leading to less stable employment as well, which could underlie the reduced BFW we see for this group. Individuals who received SSI as children but sought VR after completing school as young adults would have been on the rolls for many years and could begin accruing BFW soon after applying for VR. Some applicants may have already begun accruing BFW when seeking VR, looking for additional assistance to maintain employment. These possibilities also explain why, in this category, the subgroup with the lowest ratio of BFW to VR payments is the individuals who were not receiving benefits at the time of VR application; they had fewer potential months of observation as current-pay beneficiaries and therefore had fewer opportunities to accrue BFW during the study period.

Among SSA impairment categories, applicants with sensory and communication disorders had the lowest ratio of BFW to VR payments while those with intellectual impairments had the highest ratio.[10] Applicants with sensory impairments accrued a disproportionately large share of VR payment dollars, perhaps reflecting the cost of funding workplace accommodations such as screen readers for those with visual impairments; Schimmel Hyde and O'Leary (2017) showed that the average payment amounts for SVRAs that serve blind clients are much higher than those for SVRAs serving nonblind clients. Applicants with intellectual impairments had a low share of VR payment dollars but a relatively higher share of BFW. Individuals with intellectual impairments often receive SSI and may work at modest wage levels for sustained periods, which could result in BFW for each month worked at a level that does not generate a VR payment under the cost-reimbursement system.

Applicants whose cases remained open for longer periods had lower ratios of BFW to VR payments than did those whose cases closed relatively quickly. Very short spells are likely to be concentrated among those who applied but did not receive an IPE for reasons related to the limited availability of services or lack of client interest in continuing with services. It could also be that those with short spells found jobs on their own before VR services became available. If so, those jobs were not particularly successful, given the subgroup's relatively low average BFW values relative to those for other groups. Strikingly, the subgroup with a VR spell lasting at least 48 months represents about 10 percent of all applicants but more than 40 percent of VR payment dollars. Longer spells could indicate that the SVRA had a long-term service relationship with the client resulting in a successful work outcome

(because the client was receiving education or training or because the case was left open until the beneficiary had earnings high enough to generate a payment) or because the accrued cost of providing long-term services eventually led the SVRA to seek payment.

Interestingly, we did not find large variations in outcomes based on the time spent waiting for services (not shown; those results are presented in Schimmel Hyde and O'Leary 2017). Honeycutt and Stapleton (2013) found that the more an SVRA had to resort to placing DI-beneficiary VR applicants on wait lists in a given month, the poorer the clients' employment outcomes 48 months later. Our findings may at first seem inconsistent with theirs, in part reflecting that their waiting-time measure was defined from the perspective of the agency and not the applicant. Additionally, the discrepancy may highlight the importance of length of follow-up for beneficiaries who applied for services. Individuals who face a long delay in receiving services may be slower to attain positive employment outcomes, such that they are not realized until after the end of a 48-month observation period. Moreover, although the length of the wait for services did not seem to affect the *likelihood* that those services

would lead to BFW and VR payments, waiting for services would certainly have delayed *when* BFW and VR payments occurred, which has meaningful implications for beneficiaries, SVRAs, and SSA.

Subgroup Differences in BFW and VR Payments Conditioned on the Receipt of VR Services

As described above, the likelihood of signing an IPE and receiving services varies across subgroups. Because receiving services is requisite for generating a payment (at least for the current VR spell), Table 4 shows VR payments, BFW, and ratio of BFW to payments through the 4th year after case closure for applicants who signed an IPE, by subgroup. For every subgroup of applicants with an IPE, the ratio of BFW to VR payments is considerably lower than the overall ratio for applicants without an IPE. Beneficiaries who signed an IPE generated 94 percent of total VR payments but accounted for only 79 percent of the BFW, as we can calculate from Table 2. Because the BFW-to-VR payment ratios of IPE signers reflect the comparatively high VR payments in the denominator, their ratios are lower than those of applicants without an

Table 4.

Applicants who signed an IPE: Number, and average VR payment and BFW through the 4th calendar year after VR case closure, by characteristics of disability program beneficiaries who first applied for services in 2002

Characteristic	Number	Share of all VR applicants (%)	Average VR payment (2012 $)	Average BFW (2012 $)	Ratio of BFW to VR payments
Total	159,126	59.8	651	4,248	6.5
Program					
DI only	53,157	61.0	788	5,275	6.7
SSI only	60,609	56.8	456	3,064	6.7
Concurrent DI and SSI	45,360	62.8	751	4,628	6.2
Sex					
Men	85,712	59.8	664	4,548	6.9
Women	73,414	59.9	635	3,899	6.1
Race					
White	111,845	61.3	688	4,249	6.2
African American	38,799	58.4	543	4,188	7.7
Other race	8,482	49.3	657	4,519	6.9
Ethnicity					
Hispanic	11,558	58.6	751	4,555	6.1
Non-Hispanic	147,448	60.1	643	4,224	6.6
Educational attainment					
Less than high school diploma	41,149	57.2	511	2,941	5.8
High school diploma or equivalent	74,493	61.1	536	3,771	7.0
Some postsecondary education, no degree	22,712	60.0	993	5,328	5.4
Postsecondary degree	20,772	63.6	966	7,367	7.6

(Continued)

Table 4.

Applicants who signed an IPE: Number, and average VR payment and BFW through the 4th calendar year after VR case closure, by characteristics of disability program beneficiaries who first applied for services in 2002—*Continued*

Characteristic	Number	Share of all VR applicants (%)	Average VR payment (2012 $)	Average BFW (2012 $)	Ratio of BFW to VR payments
Age					
17 or younger	8,415	78.2	1,184	3,699	3.1
18–25	33,290	62.4	847	4,519	5.3
26–29	11,070	59.8	833	5,640	6.8
30–39	35,875	58.8	730	5,339	7.3
40–49	43,699	57.1	531	4,013	7.6
50–59	23,447	57.8	271	2,645	9.8
60 to full retirement age	3,330	61.8	126	924	7.3
Years as a beneficiary at time of VR application					
0 (became a beneficiary after VR application)	20,370	72.7	642	2,836	4.4
2 or fewer	29,906	53.4	784	4,341	5.5
3–5	18,729	57.0	751	4,944	6.6
6–10	32,025	58.6	647	4,525	7.0
More than 10	58,096	61.5	556	4,319	7.8
SSA impairment group [a]					
Sensory/communication	13,430	75.4	1,713	7,949	4.6
Musculoskeletal	9,233	50.2	758	5,562	7.3
Nervous system	7,507	61.1	1,012	5,381	5.3
Psychiatric	44,525	55.3	566	4,120	7.3
Intellectual	25,550	67.8	329	3,494	10.6
Other [b]	58,881	59.2	549	3,478	6.3
Employment status at time of VR application					
Not employed	136,576	58.7	639	3,832	6.0
Employed	22,537	74.1	726	6,773	9.3
Less than 20 hours per week	6,622	72.7	725	4,554	6.3
20–34 hours per week	7,922	73.8	657	6,068	9.2
35 hours or more per week	6,562	75.5	852	11,184	13.1
Months from application to case closure					
0–2	660	3.0	124	3,208	25.9
3–5	7,486	21.9	180	4,226	23.5
6–11	29,265	48.4	202	4,059	20.1
12–17	27,876	67.6	303	3,790	12.5
18–23	21,833	78.4	421	3,775	9.0
24–35	29,329	85.2	606	4,052	6.7
36–47	16,692	89.4	848	4,441	5.2
48 or more	25,985	94.3	1,797	5,482	3.1

SOURCE: Authors' calculations using the 2012 DAF linked to RSA-911 closure files.

NOTE: Signing an IPE indicates agreement between the applicant and the VR counselor on services to be provided. It typically represents the formal beginning of VR service receipt.

a. As of the first month during the VR spell in which the individual met the definition of "beneficiary."

b. Including "missing" or "unknown."

IPE. Table 4 shows little variation in the ratios across the subgroups of applicants with an IPE, with most ranging between 6 and 7. Overall, though, the cross-subgroup patterns of the ratios shown in Table 3 for all applicants are not substantively different from those seen in Table 4 for applicants who signed an IPE.

Discussion and Conclusions

We find that relatively few of the beneficiaries who sought VR services generated a payment from SSA to an SVRA. This may reflect two factors. First, beneficiaries face substantial barriers to entering the labor force, and even if they succeed, they may not sustain work at a level that triggers VR payment. This may be especially relevant under the cost-reimbursement system that SVRAs use for most beneficiary applicants, which requires earnings at or above SGA level to be sustained for 9 out of 12 consecutive months. This means that beneficiaries who work at SGA level but only for a few months, or those who work for many months but at a lower level, would not generate a payment. Under the TTW milestone-outcome payment system, payments may be generated for lower levels of work earnings, but relatively few SVRA applicants have been assigned to that system, even in recent years (Schimmel Hyde and Stapleton 2015).

The relative rarity of applicants who generate a VR payment may also reflect instances of SVRAs failing or opting not to request payment, even for beneficiaries who work at the level that would warrant one. Schimmel Hyde and O'Leary (2017) identify differences across SVRAs in the share of applicants who generate a payment, even in cases with comparable BFW amounts. SVRAs differ in how well they follow clients who have found work, how well they document costs for which they request reimbursement, and how difficult they find the process for requesting reimbursement. SVRAs that are relatively less financially constrained by the funding they receive from RSA may see less value in seeking reimbursement from SSA. The Government Accountability Office (2009) reported that SVRA staff members often thought the costs of tracking beneficiaries outweighed the benefit of reimbursement. Similarly, ENs participating in the TTW program noted difficulty in tracking applicants; once clients are stabilized in work, they often lose interest in providing current earnings information. When that occurs, ENs can find it challenging and time-consuming to track client earnings, ask SSA for payment, and follow up accordingly (Altshuler and others 2011). Even agencies that can effectively track

clients over time may perceive or observe that the costs and paperwork involved in doing so outweigh the value of the reimbursement.

After our analysis period ended, SSA instituted changes that may have increased the likelihood that SVRAs receive payments for which they are eligible. Specifically, starting in 2013, the agency offered to alert SVRAs when their beneficiary clients attained earnings above SGA level, if so requested. Since then, the number and value of payments made by SSA to SVRAs have been markedly higher; in fiscal year 2015, SSA paid more than 12,000 claims—more than double the number paid in fiscal year 2012 (SSA n.d. b). We do not know the extent to which this increase was because of the new SGA-alert program versus other influences such as an improved economy. Additionally, even with the number of payments doubling, the share of applicants who generate one for their SVRA is still low. Revisiting this analysis using data for 2013 and later might indicate whether additional improvements are possible.

Even if the share of applicants who generated a VR payment were to increase significantly, the return on SSA's investment may still be good if payments are judged relative to BFW. We find that BFW for 2002 applicants amounted to about 10 times the value of VR payments; even under our more conservative accounting using a shorter follow-up period, the ratio is about 8. As such, payments would have to rise substantially to equal the BFW amount that accrues after application for VR services. Most VR payments are made through the cost-reimbursement system, so SVRAs already recoup all or most of their client rehabilitation costs when SSA pays them. Total VR payment amounts could feasibly increase only if SVRAs:

1. Increase the share of SSA program beneficiaries served,

2. Provide more expensive/intensive services per beneficiary than they do now,

3. Extend employment services for clients approaching the threshold that generates a VR payment (for example, by providing additional support to clients who work at or above the SGA level for 8 months and are served under the cost-reimbursement system), or

4. Improve the monitoring of employed clients so that the SVRA can claim and receive payments for a higher proportion of clients with long-term success.

Options 1 and 2 seem reasonable in that they would likely increase BFW amounts as well as VR payment costs and could thereby represent improved

outcomes for beneficiaries, SVRAs, and SSA. Still, even with the possibility of additional VR payments, SVRAs are likely to be constrained by other factors that will hinder or prevent their expansion of services. Since 2008, SSA has encouraged option 3 through an initiative called Partnership Plus, which enables a client whose SVRA services conclude to continue to receive services from an EN. Additionally, as mentioned above, SVRAs can request an SSA alert when a client beneficiary has earnings above SGA level, and this initiative may bear additional fruit in the near future. Increased VR payments from SSA, even if they equaled BFW, would still be small relative to the total funding provided to SVRAs by RSA and state matching funds, and could free SVRA resources to provide additional services. In this way, additional payments made possible through option 4 could make more services available through options 1 and 2, and could improve service outcomes under option 3. This is particularly important in light of our finding that a significant number of beneficiaries who are not served on their initial VR spell reapply, generate BFW, and go on to generate a VR payment after reapplying. Letting these beneficiaries fall through the cracks—even if temporarily—seems like a lost opportunity in terms of their work activity, well-being, and potential BFW.

Although our work identified the subgroups that are most likely to receive services, generate a payment, and accrue BFW, we did not delve into cross-group differences. A multivariate consideration of characteristics might identify the factors most likely to predict employment success and thus could allow SSA to identify target groups, inform them of employment opportunities, and encourage them to consider and pursue their employment options.

More study is also needed to identify whether VR services *cause* beneficiaries to find work—and if so, the types of services that might be most beneficial. Our analysis was designed to document an association between VR payments and BFW and was not meant to capture the extent to which VR services resulted in either outcome. In fact, our work suggests that the relationship is not strictly causal, given the finding that many applicants who never signed an IPE had BFW. For that group, VR services seemed not to be necessary to lead to employment. However, our results also showed that some beneficiaries in that group reapplied for VR services—indicating that they saw value in assistance—and we do not know if outcomes may have been better, had services been received, among those who did find work.

Designing a study that identifies a causal mechanism between certain VR services and employment outcomes will continue to be a challenge because those services are available to all SSA disability program beneficiaries and application is voluntary. The difficulty of identifying causation underlies past studies that consider the effect of VR services on client outcomes and, as such, no nonexperimental study of VR has provided definitive answers. The inherent weakness of nonexperimental analysis of employment programs has been quantified by reanalyzing experimental findings using nonexperimental methods (see, for example, Bloom and others 2002; and Glazerman, Levy, and Meyers 2003). Beyond this general problem, there is evidence that nonexperimental methods may be less accurate for persons with disabilities because there tends to be a poor correlation between available observable characteristics and the likelihood of successful employment for those populations. Peikes, Moreno, and Orzol (2008) compared experimental and nonexperimental outcomes specifically for employment supports for SSA program beneficiaries with disabilities. They found the two methods gave results that differed in both magnitude and direction, likely because unobservable characteristics, such as motivation, locus of control, and health status were more important than the extensive observable characteristics that were available for the treatment and comparison groups. O'Neill and others (2015) similarly found that matching on observable characteristics might not fully account for differences between SSA disability program beneficiaries in treatment and comparison groups. More recent examinations have used improved nonexperimental methods to examine the marginal effect of VR (Dean and others 2014), but whether these methods provide true estimates of VR effects remains unresolved.

Although the causal relationship is important, data-driven approaches can also shed light on the likely effectiveness of the VR program. In the absence of reliable nonexperimental methods, it is useful to know that BFW after VR application not only exceed the VR payment amounts but, in general, are 8 to 10 times their size. This is not conclusive proof, but it is at least consistent with the notion that VR services are effective. It will remain important to develop and weigh the other available evidence to determine whether it too indicates a positive return on VR investment. To borrow from legal jargon, in the absence of evidence beyond a reasonable doubt, a preponderance of the evidence provides the best available guidance to policymakers on these important services.

Notes

[1] Our study period encompasses calendar years; the SSA payment amounts are reported for fiscal years.

[2] During the period of our analysis, the DAF was a restricted-use data file. It is compiled annually from various administrative files and is available to SSA employees, contractors, and other agencies and organizations that have formal agreements with SSA. Information and documentation on the DAF are available at https://www.ssa.gov/disabilityresearch/daf.html. Within that resource, information specifically about BFW is in "Volume 3: Tips for Conducting Analysis with the DAF14." SSA recently released selected variables from the DAF for a sample of beneficiaries contained in that file at https://www.ssa.gov/disabilityresearch/documents/daf_puf/DAFPublicUseFileDocumentation.pdf.

[3] A study based on VR cases closed in 1975 made a similar comparison based on the Beneficiary Rehabilitation program, an earlier version of the SVRA cost reimbursement system we consider here. That study found that every dollar spent on services resulted in cost savings to the DI Trust Fund ranging from $1.39 to $2.72 (McManus 1981).

[4] In this article, all ratios are expressed with the numerator only; the denominator in all instances is 1.

[5] In 2018, SGA for nonblind beneficiaries is defined as earnings of at least $1,180 per month.

[6] SSA's *Vocational Rehabilitation Providers Handbook* describes the conditions for SVRA reimbursement, including (1) the individual must be a Disability Insurance (DI) or Supplemental Security Income (SSI) beneficiary at the time the services are provided; (2) the services must have contributed to the person's going to work and reaching earnings at or above the SGA amount; (3) the services must be determined to be reasonable and necessary; and (4) savings to the trust fund (for DI) or general fund (for SSI) must be achieved as a result of the individual going to work and reducing or eliminating benefit dependency. Our discussions with SSA staff revealed that the fourth condition is an objective rather than a requirement, in that SSA does not formally calculate whether savings accrued. For example, it is unlikely that SSA would reimburse $50,000 for VR services provided to a beneficiary 1 year from retirement. There are reimbursable circumstances in which program savings will not yet have been realized, as we will discuss.

[7] The DAF-linkable VRRMS contains data for only three VR spells that generated a claim for reimbursement—the first and the two most recent. Although the inclusion of only three claims may at first seem like a significant limitation of the DAF-linkable VRRMS, practically speaking, it is not. Claims within a single spell are generally aggregated into a single record, even if payments were made to more than one provider or service. Approximately 95 percent of the beneficiary applicants in our subpopulation filed only one claim. Of the 5 percent who had two or three claims recorded in the DAF-linkable VRRMS during our study period (January 2002 through June 2013), 93 percent had only two claims. Thus, the inability to measure more than three claims leads to very little bias relative to using the full VRRMS, although to the extent that beneficiaries had more than three claims, we would underestimate total VR payments. For spells earlier than the most recent, the DAF-linkable VRRMS does not specify when the payment was made, which complicates efforts to adjust for inflation. Based on statistics from the most recent spell, we assumed that all earlier payments were made 18 months after closure. This assumption affected relatively few payments and should not substantively affect our findings.

[8] We provide this comparison for context, but note that it is not representative of the share of all beneficiaries who seek VR services. First, our definition of beneficiary includes those who receive benefits at some point during their VR spell, not only those receiving benefits in 2002. Second, we are considering only first-time applicants during 2002 and therefore do not count those applying for VR in other years or applying for a second (or subsequent) time during the year.

[9] In 2016, 29.0 percent of DI beneficiaries and 11.6 percent of disabled SSI recipients were diagnosed with a musculoskeletal system impairment (SSA 2017a, Table 11; 2017b, Table 38).

[10] Substituting the RSA impairment classifications for the SSA categories produced the same results.

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