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IN THIS ISSUE:

- ▶ **When Impairments Cause a Change in Occupation**
- ▶ **Changes to the Ticket to Work Regulations in 2008 Attracted Providers and Participants, but Impacts on Work and Benefits Are Unclear**

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Articles

- 1** **When Impairments Cause a Change in Occupation**
by Alexander Strand and Brad Trenkamp

This study examines workers who had physical or mental impairments that prevented continued work in their pre-onset occupation but did not qualify for Disability Insurance (DI) benefits. More specifically, we examine workers who experienced the onset of such impairments, applied for DI once, were denied benefits on the basis of residual ability to work in other occupations, and did not appeal the decision. In contrast to allowed claimants, this group of individuals continued to participate in the labor market at comparatively high rates. We describe their post-onset labor market experience, including employment rates and earnings losses by type of impairment.

Perspectives

- 15** **Changes to the Ticket to Work Regulations in 2008 Attracted Providers and Participants, but Impacts on Work and Benefits Are Unclear**
by Jody Schimmel Hyde and David C. Stapleton

In this article, the authors use administrative data from the Social Security Administration to explore employment service provider and beneficiary participation in the Ticket to Work program over time and to assess the extent to which participants had earnings sufficient to have their cash benefits suspended or terminated for work. The authors focus on the effects of 2008 regulatory changes to the program on participation and participant earnings.

WHEN IMPAIRMENTS CAUSE A CHANGE IN OCCUPATION

by Alexander Strand and Brad Trenkamp*

This study examines workers who had physical or mental impairments that prevented continued work in their pre-onset occupation but did not qualify for Disability Insurance (DI) benefits. More specifically, we examine workers who experienced the onset of such impairments, applied for DI once, were denied benefits on the basis of residual ability to work in other occupations, and did not appeal the decision. In contrast to allowed claimants, this group of individuals continued to participate in the labor market at comparatively high rates. We describe their post-onset labor market experience, including employment rates and earnings losses by type of impairment.

Introduction

A fundamental and definitional distinction in the evaluation of Social Security Disability Insurance (DI) claims is whether the claimant is capable of work in any job that exists in the national economy. Claimants who are not capable of any such work and meet work history and recency requirements are eligible for DI. However, impairments that are severe and do not allow for continued employment in the pre-onset occupation but do allow for employment in other occupations do not meet the statutory requirements for DI.¹

Private disability insurance analogously distinguishes between more severe impairments that cause the loss of ability to work in all occupations and less severe impairments that cause only the loss of ability to work in one's own occupation. "Any-occupation" insurance protects against the loss of ability to work in any job that exists in the national economy. By comparison, "own-occupation" insurance provides additional coverage against impairments that allow for continued employment in the national economy but not in one's pre-onset occupation. Using these terms, DI provides *any-occupation* insurance but not *own-occupation* insurance.

We study the population with *own-occupation* impairments for two reasons. First, we provide information relevant to early vocational rehabilitation

intervention by describing this group of individuals with impairments and comparatively high rates of post-onset employment. Looking ahead to our results, over half of our sample was employed a few years after the initial denial of DI benefits. This is true even for claimants with low earnings prior to onset. To the extent that DI reform efforts expanding early intervention would retrain workers for employment in different occupations, our study group provides a highly relevant example.² Second, by studying the population with *own-occupation* impairments, a group that does not qualify for DI by design, we provide a benchmark for the DI program. This particular group of individuals did not qualify for DI benefits, yet they nevertheless experienced substantial earnings losses upon further employment. Our results help outline one aspect of the "generosity" of the DI program.

Selected Abbreviations

CWHS	Continuous Work History Sample
DER	Detailed Earnings Record
DI	Disability Insurance
DIODS	Disability Operational Data Store
SGA	substantial gainful activity
SSA	Social Security Administration

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We build upon previous research that focused on the well-being of denied DI claimants or the well-being of the population with impairments (regardless of whether they have claimed benefits).³ One limitation of both types of studies is the difficulty of analyzing workers with high earnings prior to onset. Denied-claimant studies are limited by a preponderance of claimants with low prior earnings, whereas population-level studies can be limited by high rates of survey nonresponse among high earners.⁴ By contrast, we present results across the entire distribution of pre-onset earnings. As a result, we are able to answer this question: When a person at a specific earnings and education level experiences the onset of *own-occupation* impairment(s), what degree of continued labor force participation and what magnitude of earnings loss should be expected?

We answer the question using an administrative indicator of *own-occupation* impairments. Our study sample applied for DI once, was denied benefits, and did not appeal the decision. Because this sample has no additional involvement with the Social Security Administration (SSA) after the denial, it is relevant to the population that has *own-occupation* impairments but does not apply for DI benefits. Also, the sample resembles the population that is targeted by early intervention; that is, workers who experience onset of impairments but could continue to work, perhaps with vocational rehabilitation or other supports.

In the next section, we review what is known about the risk of onset of impairments. Then, we explain the administrative way of identifying *own-occupation* impairments, describe the sample and data, present the study results, and discuss our findings.

The Risk and Consequences of Impairment Onset

The DI program provides *any-occupation* insurance; thus, a measure of the risk of the onset of *any-occupation* impairments can be measured by programmatic entitlement data. In 2009, which contained the recent peak in unemployment rates, 0.69 percent of DI-insured workers became entitled to DI benefits (Zayatz 2011). Compared with 2007, which contained the recent trough in unemployment rates, the incidence rate was up from 0.58 percent (ibid.). When aggregated over the working-age part of the life cycle, these levels of risk imply a disability risk of more than one in four.

Retrospective survey data and actuarial forecasts confirm this overall level of risk. Rank and Hirschl (2014), using retrospective data from the Panel Study of Income Dynamics, find that around one in four heads of households experienced a severe work disability during their working ages. Looking ahead, actuarial forecasts predict that 27.0 percent of a birth cohort that has recently entered the labor force will become DI beneficiaries before they reach the full retirement age (Maleh, Baldwin, and Schultz 2013). This risk is of the same order of magnitude as the risk of not surviving to the full retirement age, 33.9 percent (ibid.).

The risk of *own-occupation* impairment onset, by comparison, is harder to quantify. Rank and Hirschl (2014) note that more than twice as many heads of households reported some sort of impairment as a severe work impairment. This suggests that the risk of impairments that do not qualify for DI may also be large. Using administrative data on claimants, Wixon and Strand (2013) show that around one-fourth of DI claimants appeared to have *own-occupation* impairments when their claim was evaluated by a disability examiner. We discuss the administrative indicators in the next section.

The onset of impairments is strongly associated with labor market outcomes, including lower labor force participation, less consistent labor force participation, lower earnings, and higher rates of poverty (see Brault 2012, for example). For claimants who are awarded DI benefits, employment is relatively rare (Ben-Shalom and Mamun 2013). However, there is significant variation by diagnosis. Grouping diagnoses into broad categories, Mann, Mamun, and Hemmeter (2013) and Ben-Shalom and Mamun (2013) find that beneficiaries with sensory impairments have the highest employment rates and the remaining physical impairments have the lowest employment rates. Mental impairments, by comparison, fall between these two extremes.⁵ Further, Mann, Mamun, and Hemmeter observe that when beneficiaries with physical impairments are employed, they have higher earnings than those with mental impairments, on average.

Previous studies of people receiving vocational rehabilitation services may be more relevant to our study sample. Similar to other studies of beneficiaries, Chan and others (2014) and the Government Accountability Office (2005) find that people with sensory impairments have the highest rates of employment after receiving vocational rehabilitation services. However, after this point of agreement, the impairment/

employment ordering reverses; people with other physical impairments have higher rates of employment than those with mental impairments. Note that, in general, employment rates are three to five times higher for recipients of vocational rehabilitation services than they are for beneficiaries.

Addressing occupational change, Smith and Lilienfeld (1971) provided directly relevant but dated survey evidence. Applying an index of occupational status, those authors found that 39.5 percent of denied claimants who returned to work did so at a different status. The rate is fairly consistent across occupational groups, except for manual laborers—65.2 percent of whom returned to work at a different status. Among all workers who returned to work, 62.8 percent experienced a downward movement in status. The Smith and Lilienfeld study documented that occupational change was common among denied claimants during their study period.

An Administrative Indicator of “Own-Occupation” Impairment

We use an administrative measure of *own-occupation* impairments. In order to understand the indicator, we first describe SSA’s initial disability determination process. Former SSA Commissioner Robert M. Ball (1978, 157) describes the organizing principle:

The idea was to screen quickly the large majority of cases that could be allowed on reasonably objective medical tests and then deal individually with the troublesome cases that didn’t pass the screen.

The “reasonably objective” portion of the determination process involves screens in the first three steps:

- At step 1, claimants who are engaging in substantial gainful activity (SGA) are denied without any consideration of medical criteria,
- At step 2, those without severe impairments are denied, and
- At step 3, those with the most highly disabling or fatal impairments are allowed.

Ball’s characterization is still applicable to the current process, but at least two aspects have changed. First, during and after Ball’s tenure as commissioner, programs have been implemented to expedite claims for which the medical evidence clearly indicates an allowance,⁶ typically determined at step 3. Second, it

is no longer true that a “large majority” of claims can be determined based on the initial screens; vocational steps 4 and 5 now represent more than two-thirds of initial determinations (Wixon and Strand 2013). At step 4, disability examiners evaluate whether the claimant can work at jobs he or she has previously held. If not, at step 5, those examiners determine whether the claimant is capable of work anywhere in the national economy.

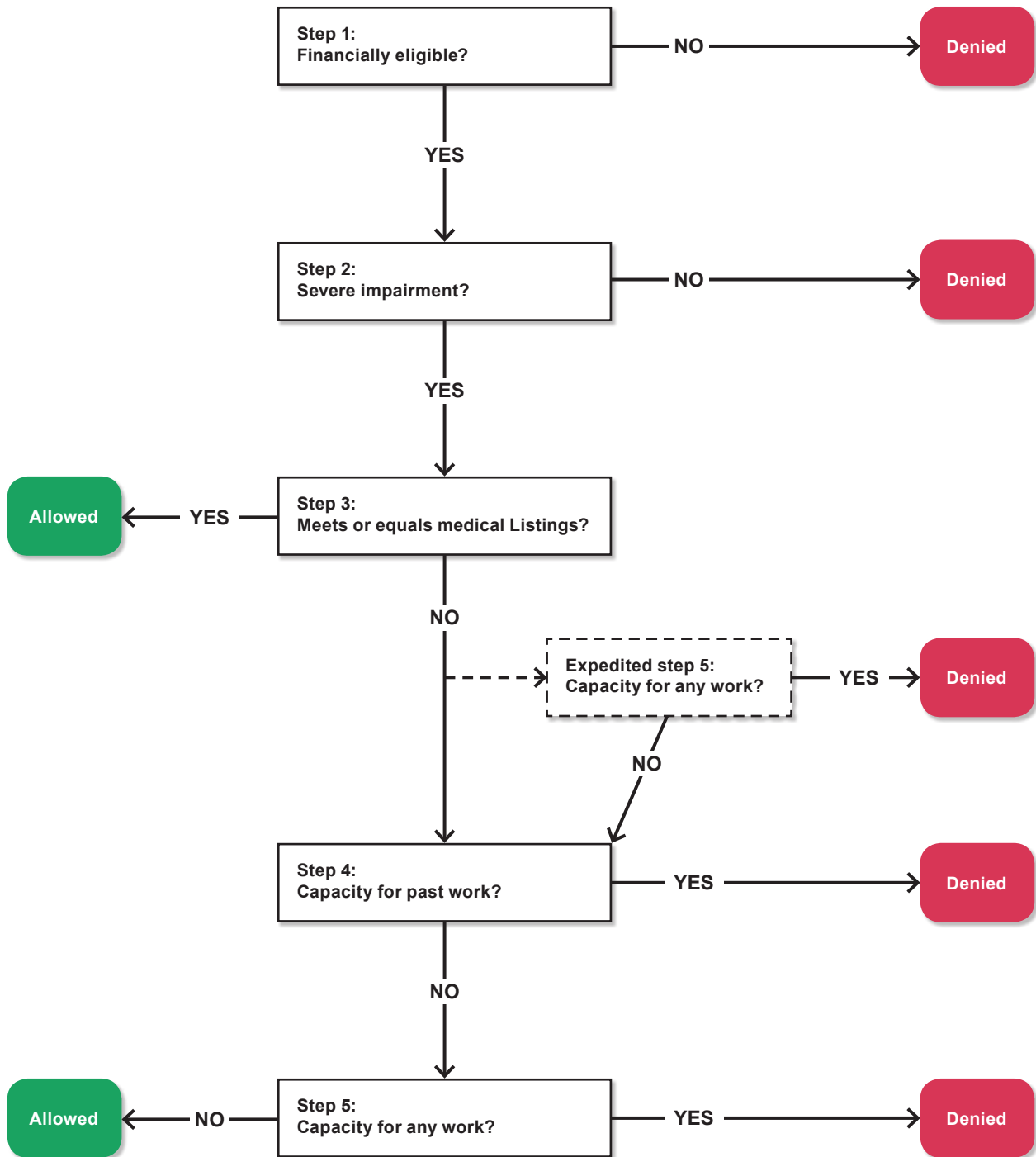
The five steps of the disability determination process are shown in Chart 1. Critically for this study, those steps must usually be followed in sequence. A claimant who does not receive an allowance or denial at steps 1 through 3 has his or her capacity to work in prior jobs evaluated at step 4. A case in which a claimant is not capable of work in his or her prior job but is capable of work in the national economy corresponds to our description of *own-occupation* impairments. There are some exceptions to the sequence of determination steps, however, which obscure the work capacity of the claimant. We describe these exceptions and other sample selection criteria in the next section.

The Study Sample

Our study population comprises claimants who were denied at step 5. Importantly, the determinations for members of this group have revealed that their impairments are severe (step 2), but that they are capable of some sort of employment. A data field in SSA’s administrative data sets, known as the Regulation Basis Code, indicates this outcome. See Wixon and Strand (2013, Tables 1–3) for the classification of this variable into sequential disability determination steps.

Our data include all DI disabled-worker claims that received an initial decision in 2005 (the reference year). The full universe of claimants is observed in the Disability Operational Data Store (DIODS). Other aspects of the claim and possible appeals are observed in the Case Processing and Management System (CPMS), the 831 files, the Payment History Update System (PHUS), and the Master Beneficiary Record (MBR). Annual earnings from tax records are observed in the Detailed Earnings Record (DER), and mortality is observed in the Numerical Identification System (Numident). In addition, we use the Continuous Work History Sample (CWHS) to characterize the distribution of earnings from which disability claimants are drawn. The pre-onset earnings distribution is evaluated for the 1996–2000 period and the

Chart 1.
SSA's sequential disability determination process



SOURCE: Wixon and Strand (2013).

NOTE: SSA = Social Security Administration.

post-decision earnings distribution is evaluated for the 2006–2011 period. We restrict our study sample to people who were aged 18–61 during both time periods or aged 27–55 in 2005. We apply the upper-age restriction in order to remove the effects of claiming retirement benefits at or after age 62.

In order to highlight the effects of *own-occupation* impairments on earnings, we further restrict the analysis sample. First, when the sequence of determination steps can be applied out of the predetermined order—as indicated by the expedited step 5 box in Chart 1, the Regulation Basis Code can be uninformative and we exclude those cases.⁷ Second, because of the central importance of the concept of SGA in the determination process, claimants are in essence required to earn less than SGA levels while they are awaiting a determination decision.⁸ Thus, we exclude claimants who appeal their step-5 denials or reapply with a separate claim.⁹

These sample restrictions have a large impact in combination: A majority of initial denials were appealed, one-quarter of all claims could be processed out of order, and repeated application was also common. In Table 1, which gives summary statistics of our sample, we show that the remaining claims (the study sample after applying our restrictions) were only 37,110 out of 267,821 stage-5 denials, or around 14 percent. Our goal is not to present estimates that are

representative of step-5 denials, however. Rather, we present estimates that are most relevant to the population with *own-occupation* impairments. Our restrictions create a sample that corresponds closely to this group.

Results

Before describing labor market outcomes for claimants with *own-occupation* impairments, we examine the propensities of workers at different parts of the pre-onset earnings distribution to claim DI benefits. Then, we describe labor market outcomes at different points in this distribution.

Disability Claiming Across the Earnings Distribution

We calculate pre-onset earnings of claimants relative to other workers of the same age and sex.¹⁰ Then, we superimpose the distributions of relative earnings for the DI-insured population as a whole and for the group of claimants (Chart 2).¹¹ The most common pre-onset earnings value for claimants (dashed line) was approximately \$25,000 less than the expected level for the DI-insured population (solid line) given the claimants’ age and sex. It follows that claimants are disproportionately drawn from the lower parts of the earnings distribution. This may be because there are more impairments among workers at these earnings

Table 1.
Sample summary statistics

Variable	CWHS: DI-insured population	DIODS: DI claimant population		
		DI claimants	Step-5 denials	Study group ^a
Age (average, years)	40.0	47.2	43.4	41.7
Female (%)	46.9	49.9	44.6	44.2
Earnings (average \$ per year, topcoded), 1996–2000	29,988	21,981	20,971	19,837
Primary insurance amount (monthly \$) ^b	1,138	931	900	901
Step-5 denials (%)	...	25.4	100.0	100.0
Nonprototype state (%)	...	75.3	71.8	100.0
Number of observations	1,320,696	1,055,380	267,821	37,110

SOURCE: Continuous Work History Sample (CWHS) and Disability Operational Data Store (DIODS).

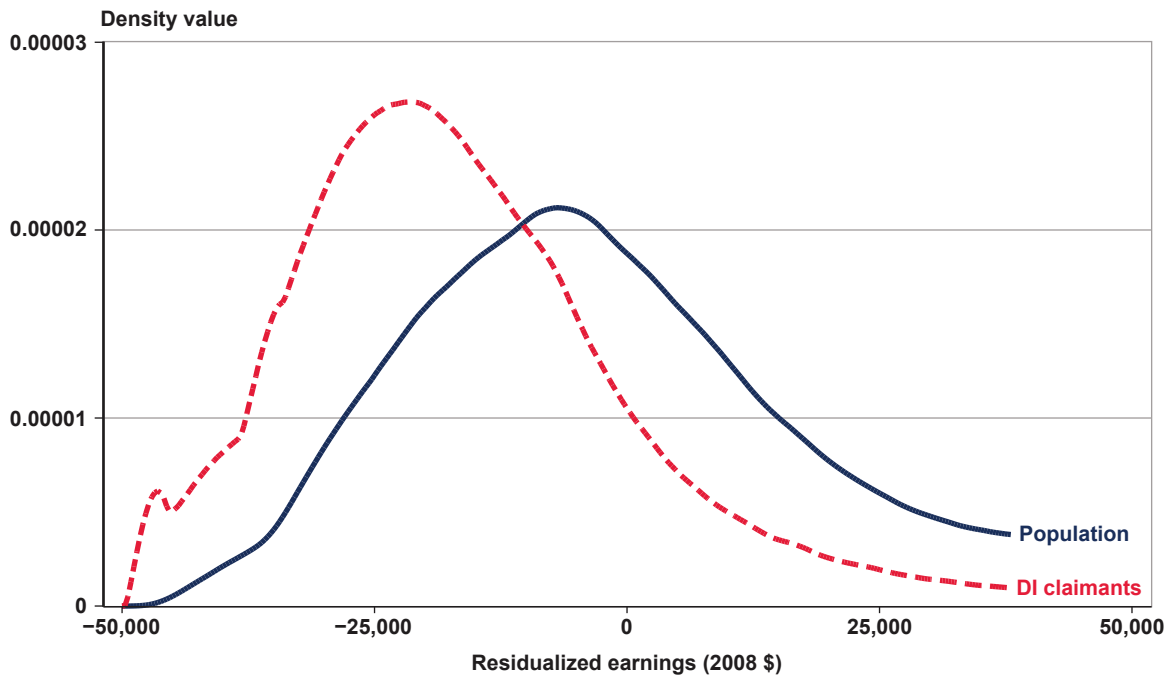
NOTES: Unless otherwise stated, the reference period is 2005.

... = not applicable.

- Comprises claimants aged 27–55 residing in nonprototype states who did not file a previous or subsequent claim for Disability Insurance (DI) or Supplemental Security Income and did not appeal the denial.
- For the DIODS data, the primary insurance amount is calculated on the portion that appears in the CWHS sample; the number of observations for the last three columns is 7,224, 1,908, and 318.

Chart 2.

Kernel density estimates of average Social Security–covered earnings among the DI-insured population and DI claimants in the 1996–2000 period



SOURCES: Continuous Work History Sample, Disability Operational Data Store, and Detailed Earnings Record.

NOTES: Residualized earnings are adjusted for sex, age, and age squared. The portion of the distributions that is subject to topcoding is not shown. The sample is restricted to DI-insured persons aged 27–55 in 2005.

DI = Disability Insurance.

levels, or because of a higher propensity for workers to claim disability for a given level of severity, or both.

We summarize some aspects of these earnings distributions in Table 1. Mean earnings per year were about \$8,000 less for claimants—about \$22,000 compared with about \$30,000. One way the magnitude of the difference in means relates to the differences shown in the distributions is through differences in age. Claimants were older by more than 7 years and, at an average age of 47.2 years, they were not experiencing the high earnings levels that frequently occur around this part of the life cycle in the population. Thus, earnings for claimants near the average age were far below expectations based on patterns observed in the population. Differences in the gender composition of the DI-insured and claimant populations would also have contributed to the differences in earnings relative to expected values.

The primary insurance amount (PIA) represents the potential benefit if awarded DI and is a summary measure of lifetime earnings. The PIA formula gives more

weight to lower levels of earnings. As a result, the differences in PIA between the population and claimants were not as great as the differences in average earnings. Converting to an annual time period, potential benefit amounts were almost \$14,000 per year in the general population and around \$11,000 per year for claimants.

Earnings Paths Around the Time of Claiming

In order to illustrate changes at different parts of the earnings distribution, we divide the sample into deciles of the *population* earnings distribution. This emphasizes differences in effects at different earnings-capacity levels. The extent to which the sample represents the overall population with *own-occupation* impairments and, by extension, the extent to which the estimates apply to that overall population is unknown. Recall, however, that our sample is restricted to claimants who were most similar to those with *own-occupation* impairments in the general population: denied claimants who did not appeal the decision, reapply for benefits, or become eligible for retirement benefits.

The rate of continued employment for our sample is shown in Chart 3. At all parts of the population earnings distribution, labor force participation began to decline 4 years before the denial (2001) and recovered somewhat after the decision. There was another decline in the fourth year after the decision (2009), as unemployment was peaking. Leaving aside the top (10th) decile, the labor force participation rate declined by about 25 percentage points, from 5 years before the determination (2000) to 3 years after (2008). The top decile experienced larger declines.

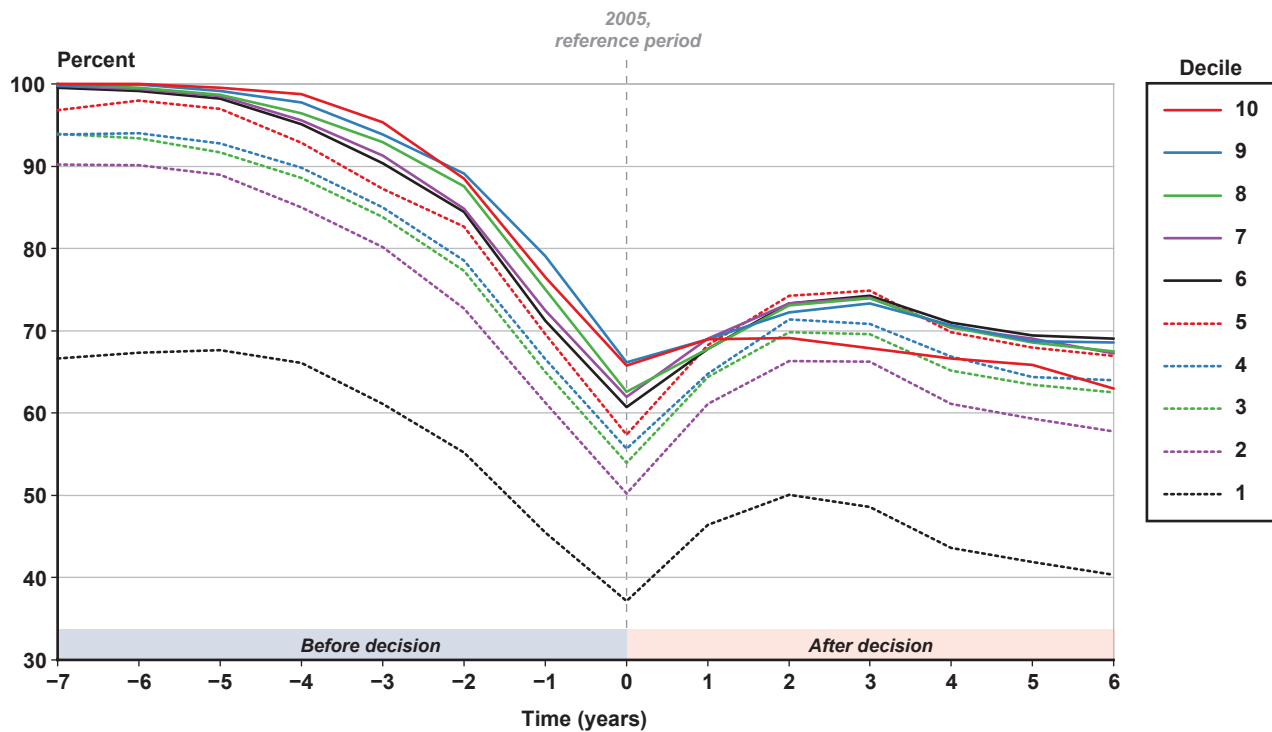
The reasons for nonparticipation in the labor market are unobserved by us. For many workers, the wages offered in the new vocational capacity could have been below their reservation wage. Or, their reservation wage could have increased after onset of the impairment. For other workers, employment in the national economy that corresponds to their residual capacity may not exist in their location; or, more broadly, they may not be able to find such employment. Many other explanations could apply, including unsuccessful

accommodation of the impairment or deterioration of the condition.

Denied claimants who are observed working are more informative about residual work capacity. For those individuals, we can observe capacity as realized in current labor market conditions. Table 2 shows exact figures for two key years. The before period is represented by 2000, before earnings began to decline prior to claiming; the after period is represented by 2008, before earnings began to decline because of the recession. Chart 4 shows the typical earnings path, as measured by median earnings for persons in the study group who work, for selected deciles of the population earnings distribution.

By 2008, median earnings in each decile were above the administrative measure of work capacity known as SGA, even in the lowest deciles.¹² Further, when moving up the earnings deciles, both the absolute and relative magnitudes of the earnings decreases increased. In the highest decile, median earnings decreased from \$87,123 before the determination to \$45,374 afterwards.

Chart 3.
Employment rates among denied DI claimants with *own-occupation* impairments, by deciles of the population earnings distribution and selected years before and after the determination



SOURCES: Disability Operational Data Store and Detailed Earnings Record.

NOTES: Employment is defined as annual earnings greater than \$1,000.

DI = Disability Insurance.

Table 2.

Labor market outcomes among denied DI claimants with *own-occupation* impairments, by each decile of the population earnings distribution and education level

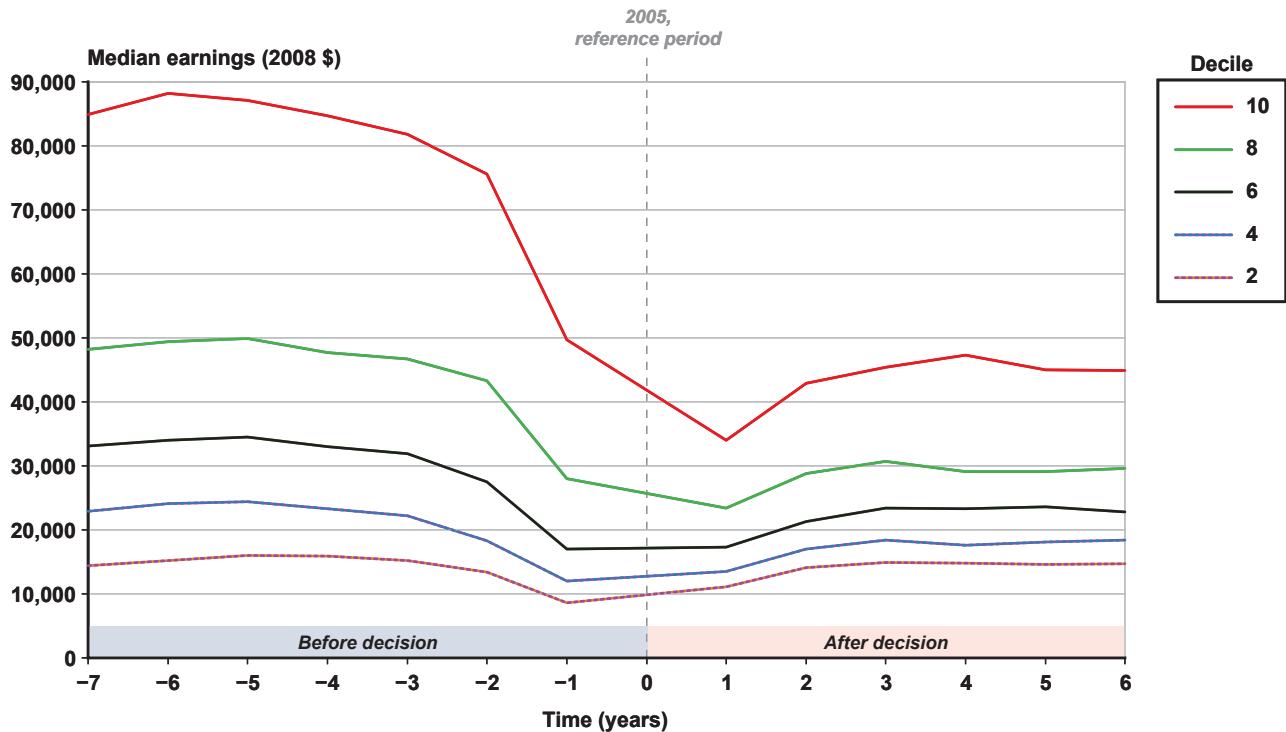
Characteristic	n	Before decision			After decision			Comparisons of before and after periods		
		Single year (2000)		Multiyear average of maximum annual earnings (1996–2004)	Single year (2008)		Multiyear average of maximum annual earnings (2006–2011)	Percentage point difference in employment rates	Ratio of medians	Ratio of maximums
		Employment rate	Median earnings among positive earners		Employment rate	Median earnings among positive earners				
Total	37,110	85.0	19,875	33,095	63.2	17,171	25,362	-21.8	0.77	0.77
Earnings decile										
1st	12,235	67.6	9,943	19,818	48.6	12,700	18,218	-19.1	0.92	0.92
2nd	7,133	88.9	15,991	25,631	66.3	14,933	21,079	-22.7	0.82	0.82
3rd	5,066	91.7	20,636	30,556	69.6	17,199	23,562	-22.2	0.77	0.77
4th	3,378	92.8	24,358	32,422	70.8	18,427	25,568	-22.0	0.79	0.79
5th	2,349	97.0	28,609	36,857	74.8	19,154	27,362	-22.1	0.74	0.74
6th	1,978	98.2	34,513	43,177	74.3	23,454	31,629	-24.0	0.73	0.73
7th	1,477	98.5	41,000	50,437	74.0	26,773	34,701	-24.5	0.69	0.69
8th	1,394	98.7	49,870	60,201	74.0	30,653	39,857	-24.8	0.66	0.66
9th	1,475	99.1	62,740	80,323	73.3	34,882	46,597	-25.8	0.58	0.58
10th	625	99.5	87,123	128,319	67.9	45,374	66,581	-31.7	0.52	0.52
Education										
Missing	1,988	83.3	18,194	30,531	62.8	17,054	23,820	-20.5	0.78	0.78
Less than high school	8,561	81.5	15,266	25,103	58.4	14,320	20,463	-23.1	0.82	0.82
High school	17,115	85.6	20,191	32,333	64.0	17,099	25,002	-21.6	0.77	0.77
Some college	6,954	87.4	23,217	37,083	66.1	19,375	28,057	-21.3	0.76	0.76
College	2,492	87.3	33,634	56,402	66.5	23,239	37,542	-20.8	0.67	0.67

SOURCES: Disability Operational Data Store and Detailed Earnings Record.

NOTE: DI = Disability Insurance.

Chart 4.

Median earnings among denied DI claimants with *own-occupation* impairments, by selected deciles of the population earnings distribution and selected years before and after the determination



SOURCES: Disability Operational Data Store and Detailed Earnings Record.

NOTES: Median earnings by decile conditional on positive earnings.

DI = Disability Insurance.

Part of the difference in earnings trends across deciles is computational. Because our sample is restricted to denied claimants, if those with low work capacity before onset experienced large declines, their resulting capacity would have been below the SGA level and would have qualified them for DI benefits. Thus, there is selection bias in the estimates and possibly differential selection bias across deciles. Because those biases will be smaller at higher earnings levels that are further away from SGA, the results nevertheless support broad characterizations. First, the majority of this population worked in any given year after the initial determination. Second, higher earners experienced earnings declines of one-third to one-half from their pre-onset levels.

Earnings Capacity Before and After Onset

In addition to presenting measures of earnings in particular years, we examine the periods before and after the decision as a whole. Because the members of our study group have all experienced an *own-occupation*

impairment, summary measures of the after period will be strongly influenced by the onset of the impairment and its consequences. More specifically, summary measures of earnings may be influenced by time out of the labor force for treatment or retraining and time in the labor force spent adapting to a new occupation, adapting to assistive technology, or searching for a job. In order to minimize these influences, we present maximum earnings over the entire after period as a measure of the work capacity that can be realized under certain conditions. For example, although labor force participation rates ranged from 55.7 to 63.6 percent in the individual years after the vocational change, 78.1 percent of claimants participated at some point during the period (figures not shown). We emphasize earnings capacity and de-emphasize the consistency of that capacity by examining the whole time period.

The view based on the whole time period after the onset of impairments confirms the view based on single years; again, see Table 2. In both cases, there

are large earnings declines in the upper earnings deciles. Although maximums will be larger than the medians by construction, the before and after ratios are similar for the two measures.

Part of the trends in earnings patterns is due to differences in education and the correlation of education and earnings. Although the administrative measure of education that is collected during the initial determination process is very incomplete, it is recorded at high rates for vocational determinations. In our case, it was recorded for 95 percent of our study group. As with high earners, high-education groups experienced large declines in earnings, as shown in the lower panel of Table 2. College graduates earned only 69 percent of pre-onset earnings in the single-year measure (compare the medians) and 67 percent in the multiyear measures (both medians and maximums).

Employment After Onset by Diagnosis

Other parts of the earnings patterns are due to the specific impairments. In Table 3, we explore continued employment rates and earnings conditional on employment for claimants with the 30 most common alleged primary diagnoses.¹³ In this table, we use the same single-year and multiyear earnings measures as those shown in Table 2. The impairments are listed in order of the magnitude of declines in employment rates, as measured by the percentage point difference (the third to last column), with the largest declines first.

The most common diagnosis group among our study population is disorders of the back. Employment rates declined from 85.3 percent to 63.4 percent for people in that group, a percentage point change that is very close to that for the study population as a whole. Further, the earnings decline among claimants with back disorders who worked—in both the median and maximum measures—is also very close to that for the study population as a whole. By all of these measures, people with back disorders represent the typical experience for those with an *own-occupation* impairment.

Other very common physical diagnoses—such as muscle, ligament, and fascia disorders and osteoarthritis and allied disorders—also result in near-typical continued labor market experience. However, there are a number of less-common physical diagnoses that result in smaller than typical declines in labor force participation. Those diagnoses are listed toward the bottom of Table 3. Many of these diagnoses are also associated with smaller than typical earnings declines. For example, a diagnosis of late effects of cerebrovascular

disease is associated with smaller than average declines in both labor force participation and earnings.

By contrast, mental disorders are overrepresented near the top of the list of diagnoses, indicating that they are associated with larger declines in labor force participation. In fact, if Table 3 were to be sorted by the magnitude of earnings declines, mental disorders would be overrepresented near the top of the list as well. The overall picture is that mental disorders are associated with larger than typical declines in both employment and earnings.

Discussion

We examine people with *own-occupation* but not *any-occupation* impairments. Because we have data on the universe of disability claimants and links to their earnings histories, we are able to place those claimants within the distribution of pre-onset earnings. As a result, we are able to examine claimants with high levels of pre-onset earnings and education, a task that would be difficult using a survey sample.

We find that about one-quarter to one-third of high earners were not employed 3 years after the initial determination. Among those who were employed, earnings decreased by one-third to one-half of their pre-onset levels. These results provide a benchmark for one aspect of the *generosity* of the DI program. Previous high earners who are able to continue to work although at lower earnings are excluded from the DI program by design as long as their capacity remains above the SGA level. For example, a worker who was in the 8th earnings decile prior to onset, with median earnings around \$50,000 annually, had his or her earnings decline to around \$30,000 in our sample. Even though the resulting earnings are substantially above the level of SGA, they may correspond to a meaningful decline in consumption and living standards. Our analysis is less informative for workers at lower pre-onset earnings levels.¹⁴

Although far from definitive, our analysis suggests that certain types of diagnoses may be more attractive targets for early intervention initiatives. Those diagnoses include sensory impairments and other physical impairments besides disorders of the back (which is the most common physical impairment). Diagnosis groups with the highest continued employment rates in our sample include, in descending order, the following:

- Blindness and low vision
- Carpal tunnel syndrome

Table 3.**Labor market outcomes among denied DI claimants with *own-occupation* impairments, by alleged diagnosis**

Diagnosis	n	Before decision			After decision			Comparisons of before and after periods		
		Single year (2000)		Multiyear average of maximum annual earnings (1996–2004)	Single year (2008)		Multiyear average of maximum annual earnings (2006–2011)	Percentage point difference in employment rates	Ratio of medians	Ratio of maximums
		Employment rate	Median earnings among positive earners		Employment rate	Median earnings among positive earners				
Total	37,110	85.0	19,875	33,095	63.2	17,171	25,632	-21.8	0.77	0.77
Chronic liver disease	278	83.8	18,222	37,035	53.7	17,120	28,581	-30.1	0.77	0.77
Organic mental disorders	552	83.7	14,812	29,247	56.9	14,474	21,927	-26.8	0.75	0.75
Anxiety disorders	829	85.0	17,251	30,812	59.3	14,039	20,942	-25.7	0.68	0.68
Essential hypertension	356	78.1	18,988	32,456	53.1	16,966	23,157	-25.0	0.71	0.71
Chronic pulmonary insufficiency	268	80.6	16,636	27,446	56.9	17,082	22,792	-23.7	0.83	0.83
Osteoarthritis and allied disorders	2,150	84.6	21,487	34,295	61.1	18,105	26,247	-23.4	0.77	0.77
Diabetes mellitus	725	82.6	16,966	29,515	59.5	14,751	21,624	-23.1	0.73	0.73
Epilepsy	668	83.4	17,262	29,108	60.3	15,014	22,962	-23.1	0.79	0.79
Affective mood disorders	6,204	86.7	16,870	32,866	64.7	14,593	22,716	-22.1	0.69	0.69
Disorders of back (discogenic and degenerative)	9,197	85.3	22,415	34,837	63.4	18,878	27,256	-22.0	0.78	0.78
Sprains and strains (all types)	650	87.9	19,868	32,026	66.1	17,481	25,801	-21.8	0.81	0.81
Schizophrenic, paranoid, and other psychotic disorders	275	77.5	15,883	36,510	55.7	15,491	22,341	-21.8	0.61	0.61
Other and unspecified arthropathies	916	85.0	19,408	31,465	63.5	16,277	24,729	-21.6	0.79	0.79
Other disorders of the nervous system	255	82.0	22,145	33,872	60.5	22,546	29,700	-21.5	0.88	0.88
Inflammatory arthritis	249	84.3	19,294	31,823	62.9	15,865	24,188	-21.5	0.76	0.76
No predetermined list code applicable	782	87.0	21,740	34,389	65.5	16,834	26,447	-21.5	0.77	0.77
Disorders of muscle, ligament, and fascia	2,264	88.0	22,921	35,245	66.7	17,595	27,050	-21.3	0.77	0.77
Obesity and other hyperalimentation	437	83.5	16,340	25,026	62.2	15,020	20,763	-21.3	0.83	0.83
All other diagnoses	5,932	83.8	19,236	32,206	62.8	17,736	25,672	-21.0	0.80	0.80
Borderline intellectual functioning	234	76.9	9,899	17,363	56.2	11,401	14,902	-20.7	0.86	0.86
Musculoskeletal injuries (amputation)	360	86.4	22,827	33,549	66.3	17,435	27,957	-20.1	0.83	0.83
Cardiomyopathy	269	83.3	23,537	35,665	63.4	21,665	28,118	-19.9	0.79	0.79
Fractures of lower limb	769	85.1	19,321	31,899	65.4	18,107	27,456	-19.7	0.86	0.86
Other disorders of bone and cartilage (osteoporosis)	351	86.3	22,729	35,391	67.6	17,300	28,659	-18.7	0.81	0.81
Asthma	361	78.7	16,428	25,872	60.1	13,509	19,595	-18.6	0.76	0.76
Fractures of upper limb	427	86.2	21,662	35,429	67.7	19,115	28,674	-18.5	0.81	0.81
Late effects of cerebrovascular disease	286	85.3	24,684	35,883	67.3	20,834	29,619	-18.1	0.83	0.83
Chronic ischemic heart disease	570	80.5	22,896	35,303	63.2	21,388	28,545	-17.4	0.81	0.81
Carpal tunnel syndrome	280	87.9	20,713	32,229	70.6	15,736	24,253	-17.3	0.75	0.75
Blindness and low vision	216	81.5	17,820	30,925	64.8	18,796	24,450	-16.7	0.79	0.79

SOURCES: Disability Operational Data Store and Detailed Earnings Record.

NOTE: DI = Disability Insurance.

- Chronic ischemic heart disease
- Late effects of cerebrovascular disease
- Fractures of upper limb
- Asthma
- Other disorders of bone and cartilage (osteoporosis)
- Fractures of lower limb
- Cardiomyopathy
- Musculoskeletal injuries (amputation)

Workers with many of these diagnoses also remained employed at earnings that were closer to pre-onset levels compared with other diagnoses.

We complement prior research indicating that return to employment through receipt of vocational rehabilitation services or other retraining is far more likely before claiming DI benefits than after. Our sample population had return-to-employment rates that were similar to groups that had received vocational rehabilitation services.¹⁵ Further, like prior research on the recipients of vocational rehabilitation services, our results show that the types of diagnoses that were most promising for return to employment among DI beneficiaries were not necessarily the most promising diagnoses among the group of individuals with *own-occupation* impairments. We also complement prior research by adding descriptions of earnings paths before, during, and after the earnings decline associated with the change in occupation. These earnings declines measure one aspect of the degree of financial hardship encountered by the group that does not qualify for DI benefits.

Notes

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¹ “Occupation” is used here as a more general term that summarizes the set of terms referring to prior work used by the Social Security Administration in the disability determination process. Rather than consider the pre-onset occupation, the agency considers the jobs held by the claimant in the 15 years prior to claiming (most frequently) and whether those jobs qualify as substantial gainful activity and were held long enough to acquire the skills necessary to achieve average performance. For more information on these definitions, see <https://secure.ssa.gov/apps10/poms.nsf/lnx/0425005015>.

² See Autor and Duggan (2010) and Burkhauser and Daly (2011) for examples of reform proposals involving early intervention.

³ For an example of the former type of study, see Maestas, Mullen, and Strand (2013); for a recent example of the latter, see Brault (2012).

⁴ Looking ahead, we compare the distribution of earnings in the population with the distribution of earnings among DI claimants (Chart 2).

⁵ See also Livermore, Hoffman, and Bardos (2012). See Mann, Mamun, and Hemmeter (2013) for definitions of the broad classifications.

⁶ In chronological order of implementation date, these initiatives include Terminal Illness (1971), Presumptive Disability (1974), Expedited Reinstatement (2001), Military Service Casualty (2001), Quick Disability Determination (2007), and Compassionate Allowance (2008). See Rajnes (2012) for a summary of each initiative.

⁷ Prior to 2012, when there was insufficient evidence on the claimant’s work history, some examiners were given the discretion to skip step 4 and proceed directly to step 5. This variation in the determination process is referred to as expedited vocational assessment. Accordingly, claimants may have been denied at expedited step 5 if they were judged able to perform work in the national economy without being evaluated on their capability to work in prior occupations. Thus, in this case, the Regulation Basis Code does not indicate *own-occupation* impairments. However, if those claimants were judged not able to perform work in any job in the national economy, the examiner was required to return to and complete step 4. Expedited vocational assessment was implemented in prototype states in 1999 and extended to all states in August 2012. Thus, for our study period, the sequence of steps applied to all states except those that were prototypes (Alabama, Alaska, part of California, Colorado, Louisiana, Michigan, Missouri, New Hampshire, New York, and Pennsylvania).

⁸ See Autor and others (2015) for a discussion of this issue.

⁹ For the same reason, we also exclude claimants who had a separate claim in the 5 years prior to the observation period. Further, we exclude claimants who die before the end of the observation period.

¹⁰ Relative earnings are defined as the residuals in the regression of earnings on sex, age, and age squared. Earnings in the population are measured in the 1 percent sample of the CWSHS. Because earnings decline in the 4 years prior to the initial disability decision (Maestas, Mullen, and Strand 2013, Figure A-3), we measure pre-onset earnings as an average over 5 to 9 years before the decision.

¹¹ Earnings of claimants are measured in the DIODS files linked to the DER. Relative earnings of claimants are defined as the residuals from out-of-sample predicted values using the population regression applied to the DIODS/DER sample. Definitions of the independent and dependent variables in the two data sets are comparable. We apply artificial topcoding to earnings in the DIODS universe in order to match the topcoding in the CWSHS.

¹² In 2008, SGA was \$940 per month or \$11,280 annually; median earnings in the lowest decile were \$12,700.

¹³ This ranking would change if the secondary diagnosis was also considered; some mental diagnoses occur frequently as secondary diagnoses.

¹⁴ Because earnings capacity in the lower earnings deciles is closer to the SGA level, there may be more sample selection bias in this part of the distribution.

¹⁵ Compare with Chan and others (2014), for example.

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CHANGES TO THE TICKET TO WORK REGULATIONS IN 2008 ATTRACTED PROVIDERS AND PARTICIPANTS, BUT IMPACTS ON WORK AND BENEFITS ARE UNCLEAR

by Jody Schimmel Hyde and David C. Stapleton*

The Social Security Administration (SSA) rolled out the Ticket to Work (TTW) program between 2002 and 2004, with goals of expanding employment-related services for disability program beneficiaries and increasing program exits for work. Provider and beneficiary participation were initially low and the program did not measurably increase the extent to which beneficiaries achieved earnings sufficient to forgo benefits. In 2008, SSA revised the regulations in order to make participation more attractive to service providers, but the revisions also reduced provider incentives to help beneficiaries give up their benefits for work. Using administrative data from SSA, we find that provider and beneficiary participation increased substantially after the regulations changed, but the percentage of participants forgoing benefits for work declined. The extent to which that decline reflects the effects of the recession versus an increase in TTW program use by those with a relatively low chance of forgoing benefits for work remains unclear.

Introduction

The Social Security Disability Insurance (DI) and Supplemental Security Income (SSI) programs, administered by the Social Security Administration (SSA), provide income support to individuals who have long-lasting medical impairments and are unable to work at a substantial level. In August 2015, around 13 million working-age adults received benefits from one or both of these programs (SSA 2015). This article presents new statistics on the extent to which beneficiaries have given up their benefits to return to work since the introduction of the Ticket to Work (TTW) program in 2002, particularly in the period before and after July 2008, when SSA significantly changed the program's regulations to spur participation among both beneficiaries and employment service providers.

Many DI and SSI beneficiaries are interested in working, even if they are not able to do so at a significant or sustained level. Eligibility for federal disability

benefits is partially based on the inability to engage in substantial gainful activity (SGA), which in 2015 is defined as equivalent to monthly earnings of \$1,090 for nonblind beneficiaries and \$1,820 for blind beneficiaries. Despite this criterion, several program provisions are designed to allow participants to test their ability to return to work. Under DI, beneficiaries are granted a 9-month trial work period (TWP) within a rolling 60-month window during which they can earn an unlimited amount and yet retain benefits. Following

Selected Abbreviations

DAF	Disability Analysis File
DI	Disability Insurance
EN	employment network
M-O	milestone-outcome
NASI	National Academy of Social Insurance

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Selected Abbreviations—Continued

NSTW	nonpayment status following suspension or termination of benefits because of work
O-O	outcome-only
SGA	substantial gainful activity
SSA	Social Security Administration
SSI	Supplemental Security Income
SVRA	state vocational rehabilitation agency
TRF	Ticket Research File
TTW	Ticket to Work
TWP	trial work period

the completion of the TWP, benefits are suspended for work in any of the following 36 months in which beneficiaries engage in SGA (except for a 3-month grace period). After this 36-month period (and any remaining grace-period months), benefits are terminated in the first month of SGA.¹ SSI rules are quite different; after a small earnings disregard, benefits are reduced by \$1 for every \$2 in earnings, meaning that many beneficiaries may earn approximately twice as much as the federal benefit rate and retain some level of benefits.² Both programs include provisions that allow beneficiaries to maintain associated health insurance coverage (from Medicare in the case of DI and from Medicaid in the case of SSI) even after cash benefits have been terminated because of SGA.

Because of the strict and sometimes lengthy determination process required to prove inability to engage in SGA, beneficiaries often fear losing their disability benefits if they become employed and earn above certain thresholds. Moreover, once individuals with disabilities have left the labor force and met either program's eligibility criteria, they may suffer skills deterioration and loss of human capital that may complicate labor force reentry. A large body of literature has explored the magnitude of the labor-supply disincentive effects of the DI program; two of the most recent examples are Maestas, Mullen, and Strand (2013) and French and Song (2014).

Recognizing that many beneficiaries feared losing benefits and lacked knowledge of program rules and work supports, Congress enacted the Ticket to Work and Work Incentives Improvement Act of 1999 (Ticket Act). That legislation put into place a number of new policies and programs designed to support the return-to-work efforts of disability program beneficiaries. The Ticket Act focused on increasing the extent to

which beneficiaries forgo cash disability benefits, in whole or in part, because of work. The centerpiece of the Ticket Act is the TTW program; its implementation began in February 2002. TTW expanded the ways in which SSA pays service providers for supporting beneficiaries in their employment efforts. Under TTW, providers receive compensation when beneficiaries achieve certain specified earnings levels or, in the case of "outcome payments" (described later), benefit cessation because of work.

This article presents new statistics on TTW participation and participant work activity. First, we present annual statistics from 2002 through 2010 on TTW participation to show that enrollment growth was initially slow, but accelerated after revised program regulations went into effect in July 2008. We also document patterns of TTW participant earnings during this period, focusing on the longitudinal pattern of earnings across successive annual new-participant cohorts. Next, we document TTW participants' likelihood of forgoing cash benefits because of sustained work activity and the duration of the nonpayment periods, comparing the outcomes with those for nonparticipant beneficiaries. Finally, we examine in detail the statistics for participants immediately before and after the revised regulations went into effect. We do not attempt to formally estimate the direct impacts of the 2008 regulatory changes, given the lack of a suitable counterfactual and the confounding effects of the recession during 2007–2009. Nonetheless, the statistics are informative about the effects of the regulatory changes on program participation and participant outcomes.

An important feature of our analysis is the use of a constructed monthly variable that indicates whether the beneficiary is in nonpayment status following suspension or termination of benefits because of work (NSTW). This indicator aggregates information from a variety of administrative sources to provide the first available measure of its kind. It was developed to support the evaluation of the TTW program and has been used extensively for that purpose (Schimmel and Stapleton 2011; Liu and Stapleton 2011; Ben-Shalom and others 2012).³

This article consists of seven sections, beginning with this introduction. In the second section, we describe the history and features of the TTW program. In the third section, we describe our data sources, our study population selection criteria, and the NSTW measure in detail. The fourth section presents statistics on TTW participation and the achievement of SGA-level earnings by successive cohorts of TTW

participants. In the fifth section, we compare outcomes for TTW participants with those for nonparticipant beneficiaries, examining first-time attainment of NSTW status and the likelihood of sustaining that status. The sixth section compares statistics from before and after the 2008 regulatory changes. In the concluding seventh section, we synthesize our findings and discuss their policy implications.

The TTW Program

The TTW program is the result of extensive deliberations that have been taking place since before the Ticket Act was passed. This section highlights the program's underlying principles, its implementation, and subsequent revisions to its initial regulations.

Initial Program Design

The TTW program was established to offer new or broader access to employment services and supports that might enable SGA for participating beneficiaries. Under the program, SSA mails to the beneficiary a ticket that he or she may "assign" to a provider in exchange for employment services. The provider then collects payments from SSA when the client beneficiary reaches certain earnings thresholds. In essence, TTW is a performance-based voucher system; SSA agrees to pay certain amounts to the beneficiary's service provider over a long period based on the beneficiary's attainment of specific objectives, primarily the suspension or termination of benefits because of work.

Before TTW, state vocational rehabilitation agencies (SVRAs) were virtually the only providers eligible to receive payments from SSA for serving beneficiaries.⁴ TTW sought to augment that system with additional providers called employment networks (ENs), which could be public or private entities. TTW would thereby limit SSA's direct role and recognize market forces by compensating providers for successful beneficiary outcomes (Berkowitz 1996; Livermore and others 2003). According to the final rules issued December 28, 2001, TTW was meant to "enhance the range of choices available to Social Security disability and disabled and blind SSI beneficiaries when they are seeking employment services, VR [vocational rehabilitation] services and other support services to obtain, regain or maintain self-supporting employment" (SSA 2001).

In addition to expanding service options, a critical element of the original TTW legislation was that providers would be paid only if their beneficiary clients actually gave up benefits for work, in which case they would receive a share of the benefit savings for a

lengthy period (Berkowitz 1996). The National Academy for Social Insurance (NASI) formed a Disability Policy Panel that summarized that feature as follows:

Under the plan, *new* beneficiaries would receive an RTW [return-to-work] ticket, akin to a voucher, that they could use to shop among providers of rehabilitation or RTW services in either the public or private sector. Once a beneficiary deposited the ticket with a provider, it would constitute an obligation for the Social Security Administration (SSA) to pay the provider after the beneficiary returns to work and leaves the benefit rolls. Providers whose clients successfully return to work would, *each year*, receive in payment *a fraction of the benefits savings* that accrue to the Social Security trust funds because the former beneficiary is at work and not receiving benefits...The Panel believes its incentive-based system of financing rehabilitation and RTW services could bring a doubling or tripling of the rate at which beneficiaries leave the benefit rolls because they have successfully returned to work. While those numbers are small in relation to the size of the beneficiary population, they represent a significant improvement over current experience. (Mashaw and Reno 1996, 101 and 108; emphasis added)

The NASI Panel recognized that initial payments based on earnings objectives that fall short of benefit savings might be needed to entice providers to participate, but recommended starting with payments based on benefit reductions alone, with payments equal to half of the benefit savings over 5 years (Mashaw and Reno 1996, 117).

Program Implementation and Early Results

Reflecting the negotiations that preceded passage of the Ticket Act, the TTW program that rolled out between 2002 and 2004 was substantially different from and more complex than the version recommended by the NASI Panel (Berkowitz 2003; Mashaw and Reno 1996). First, although the Panel recommended offering tickets only to new beneficiaries until the program was well established and showed signs of success, nearly all DI and adult SSI-only disability beneficiaries were eligible to use tickets from the program's inception.⁵ Second, SSA established two new payment systems. One system, outcome-only (O-O), followed the Panel's recommendation of paying

providers only when the beneficiary gave up benefits for work; the other, milestone-outcome (M-O), allowed providers to receive some payments when clients achieved earnings milestones that did not result in a loss of benefits. Each EN was required to choose one of those two systems. Third, SVRAs were allowed to accept tickets as an EN under either of TTW's new payment systems, or to use the traditional SVRA cost-reimbursement system on a case-by-case basis. Details of the initial versions of the O-O and M-O systems appear in the top panel of Table 1 and are discussed in more detail later.⁶

Fourth, instead of basing provider payments on benefit savings for the individual beneficiary, SSA based them on average savings for all beneficiaries in the previous year, with values for DI and SSI-only beneficiaries tabulated separately. As a result, the payment received by a provider for a DI beneficiary was the same amount regardless of whether potential monthly savings to SSA were \$500 or \$1,500. Further, although the NASI Panel suggested paying providers an amount equal to 50 percent of the benefit savings for the individual over 5 years, payments under the initial O-O system were equal to 40 percent of mean

Table 1.
EN payments under the original and revised TTW regulations: 2008 payment amounts (in 2012 dollars)

Payment system, type, and requirement	Payment for—	
	DI beneficiary	SSI-only recipient
Original TTW regulations (rolled out 2002–2004)		
M-O system payments		
Milestone payments		
First month with SGA-level earnings	365	210
3 of the last 12 months with SGA-level earnings	730	419
7 of the last 12 months with SGA-level earnings	1,460	837
12 of the last 15 months with SGA-level earnings	1,825	1,046
Outcome payments		
Each month with SGA-level earnings <i>and</i> no disability benefits (for up to 60 months)	365	210
Total potential M-O payments	21,900	12,600
O-O system payments		
Each month with SGA-level earnings <i>and</i> no disability benefits (for up to 60 months)	430	246
Total potential O-O payments	25,800	14,760
Revised TTW regulations (implemented July 2008)		
M-O system payments		
Phase 1 milestone payments ^a		
1 month with 50 percent of TWP-level earnings	1,288	1,288
3 of 6 months with TWP-level earnings	1,288	1,288
6 of 12 months with TWP-level earnings	1,288	1,288
9 of 19 months with TWP-level earnings	1,288	1,288
Phase 2 milestone payments		
Each month with SGA-level earnings (for up to 11 months for DI beneficiaries and up to 18 months for SSI recipients)	387	222
Outcome payments		
Each month with SGA-level earnings <i>and</i> no disability benefits (for up to 36 months for DI beneficiaries and up to 60 months for SSI recipients)	387	222
Total potential M-O payments	23,341	22,468
O-O system payments		
Each month with SGA-level earnings <i>and</i> no disability benefits (for up to 36 months for DI beneficiaries and up to 60 months for SSI recipients)	719	412
Total potential O-O payments	25,884	24,720

SOURCES: Schimmel and others (2013); Livermore, Hoffman, and Bardos (2012); and <http://www.yourtickettowork.com>.

- a. To trigger the first phase 1 milestone payment, a beneficiary must be employed with earnings that typically would be equal to at least the TWP level. However, if the beneficiary starts work in the middle of the month or starts with reduced hours or pay, the milestone payment can be triggered in the first month in which he or she earns at least 50 percent of the TWP level.

DI benefit savings in the previous year (Thornton and others 2004).

In summary, the TTW implementation opened the market for beneficiary employment services to more providers and, for the first time, explicitly offered to compensate providers for reductions in disability benefit payments; but it did not go as far in the latter direction as recommended by the NASI Panel. Nonetheless, in the program regulations announced on December 28, 2001, SSA pursued the same goals promoted by the Panel. Livermore and others (2003) noted that “overall, the expectation is that TTW will increase the likelihood of self-sustaining employment for DI and SSI beneficiaries, resulting in decreased government expenditures on benefits, increased tax revenues, and a general strengthening of communities and the workforce.”

The initial response to TTW was quite limited in terms of the number of tickets assigned, the number of providers accepting tickets, changes in the services offered, and the extent to which beneficiaries earned enough to forgo benefits (Stapleton and others 2008). The vast majority of assigned tickets were accepted by SVRAs under the traditional payment system. Only a few providers elected the O-O payment system and, as a result, most assignments to ENs were under the M-O system. It also became clear that very few providers were likely to find TTW economically attractive (Thornton and others 2007; Stapleton and others 2008). ENs cited administrative burdens and low payment levels as significant barriers to their TTW participation (Prenovitz, Bardos, and O’Day 2012). Findings from a recent evaluation show that the introduction of TTW increased beneficiary enrollment for services, but had no measurable impact on the number of months in NSTW status that beneficiaries accumulated (Stapleton, Mamun, and Page 2014).

Revised Program Regulations

TTW’s early years provided evidence on the extent to which beneficiaries would prefer earning enough to forgo benefits. Many beneficiaries do in fact work, but only a small minority of them earn enough to leave the program rolls (Liu and Stapleton 2011; Livermore 2011; Schimmel and Stapleton 2011; Ben-Shalom and others 2012). To encourage provider participation in TTW, SSA implemented significant regulatory revisions in July 2008 that increased the amounts that providers could be paid before beneficiaries forgo benefits for work, accelerated the payment schedule for DI-beneficiary clients, and brought payments for

SSI-only clients more in line with those for DI beneficiaries. Although those changes made TTW more financially attractive to providers, they also reduced provider incentives to produce benefit savings.

From 2002 through June 2008, the O-O and M-O payment rules shown in the top panel of Table 1 were in effect (the table shows the payment amounts that SSA established for 2008, expressed in 2012 dollars). The maximum payments under the O-O system totaled \$25,800 for DI beneficiaries (including those receiving concurrent DI and SSI benefits) and \$14,760 for SSI recipients. The maximum total payments under the M-O system were \$21,900 for a DI client (including \$4,380 in milestone payments) and \$12,600 for an SSI-only client (including \$2,512 in milestone payments).

The 2008 revisions, shown in the lower panel of Table 1, had four primary effects. First, they shortened the payment period for DI clients so that ENs could receive full payment within as few as 36 months. Second, they created two phases for milestone payments, allowing providers to receive payments sooner and for lower levels of client earnings. Third, they increased M-O payment amounts so that the maximum would be closer to the maximum O-O payment amount. Fourth, they brought payment amounts for SSI-only recipients more closely in line with those for DI beneficiaries. Under the new regulations, SSA bases phase 1 milestone payments on the TWP income amount—in 2012, equal to gross earnings of \$720 a month—whereas phase 2 milestone payments are based on the original (higher) SGA amount. Under the M-O system, the maximum value of milestone payments is \$9,409 for DI beneficiaries (more than double the pre-2008 amount) and \$9,148 for SSI-only recipients (3.6 times the pre-2008 amount).

Other regulatory and administrative changes implemented by SSA in 2008 sought to reduce the administrative burden on ENs for participating in TTW, further enhancing the program’s financial attractiveness to potential providers. SSA removed the requirement that SVRAs accept actively assigned tickets in order to receive payments under the traditional payment system. Instead, SVRAs would now only need to document for SSA that a ticket was “in use,” meaning that the beneficiary was receiving employment services from the SVRA. When it was introduced, this change applied retroactively, meaning that SVRAs were asked to provide information about client beneficiaries they had served as early as 2002 so that those tickets could be deemed in use. Although SSA requested data on all beneficiaries served, many

SVRAs did not provide identifying information for all client beneficiaries from the early years of TTW.

The revised regulations also allow a beneficiary to use SVRA services under the traditional payment system and subsequently reassign his or her ticket to an EN. This option is called Partnership Plus. If a participating beneficiary works, both the SVRA and EN are eligible to receive payments, although the EN is not eligible for phase 1 milestone payments if the beneficiary is employed at vocational-rehabilitation closure.⁷ In all, the revised regulations were meant to encourage more providers to become ENs, more ENs to accept tickets, and more beneficiaries to assign tickets; to provide more complete and timely records on SVRA delivery of beneficiary services, even if tickets were not formally assigned; and to bring about better employment outcomes.

Data Sources, Study Population, and Measurement of Beneficiary Work Activity

The primary data source used in this study is SSA's Disability Analysis File (DAF), which contains administrative information on all adults with at least 1 month of DI or SSI benefits from 1996 onward. We conducted an initial analysis with the 2010 version of this file (then called the Ticket Research File, or TRF10). When the 2011 data (DAF11) became available, we updated the information on beneficiary work activity. We were also able to take advantage of substantial improvements to the NSTW variable.

We used the TRF10 to identify as TTW participants all beneficiaries aged 18–64 who assigned a ticket during the period 2002–2010.⁸ We categorized beneficiaries with multiple ticket assignments according to the most recent assignment. For instance, if a beneficiary assigned his or her ticket in 2002 but subsequently withdrew it, then reassigned it to another EN in 2008, we used only the information from the 2008 assignment. Practically speaking, withdrawals were rare during the study period, so categorizing by only the most recent assignment should not substantively affect our findings.⁹ To categorize TTW participants by the payment system (M-O, O-O, and traditional SVRA) under which their ticket was assigned, we used the payment system recorded in the month of assignment. When comparing TTW participants with nonparticipants, we stratified our results by benefit type (DI-only, SSI-only, and concurrent DI-SSI) to account for differences in propensity to work and prior work histories across those groups. Because nonparticipants do not have an assignment month, we determined their

benefit type in a given calendar year as that which applied in their first month of current-pay or NSTW status.

The NSTW variable was developed separately for DI and SSI to account for each program's rules. For DI, we regarded benefits as suspended when the administrative data indicated that the beneficiary engaged in SGA in any of the 36 months that followed the TWP and a 3-month grace period. We considered DI benefits to be terminated for work in all months for which the administrative data indicated SGA after month 36 (and any remaining grace-period months). We considered SSI payments to be suspended for work when the recipient had some countable earnings and total monthly countable income exceeded the federal benefit rate, which in 2012 was \$698 for an individual. SSI rules count most income, including DI benefits, dollar-for-dollar after a \$20 monthly disregard; however, only half of earnings above an additional \$65 disregard are countable. There are also disregards for various other expenses related to the SSI recipient's efforts to return to work or become more self-sufficient. Hence, the minimum earnings amount that results in SSI payment suspension for work varies among recipients, depending on other income received and earnings disregards; for many, that level exceeds the SGA amount.¹⁰

The DAF data contain a combined NSTW indicator that aggregates information across the two programs for cases in which the beneficiary has received benefits from each program, but not necessarily concurrently. We used this variable in our analysis. In a given month, for DI-only beneficiaries, this combined indicator simply takes on the value of NSTW status in the DI program; for SSI-only recipients, it reflects that status in SSI. In the case of participants who received benefits from both programs at some point, months in which either program is in current-pay status are not counted as months in NSTW status. This approach is consistent with TTW's outcome-payment rules, under which payments are not due if the beneficiary receives a benefit from either program. Further, the combined indicator is coded as "suspended for work" if benefits have been suspended in one program and terminated in the other.

In our analysis, we did not distinguish between benefit suspensions and terminations. Once benefits were terminated for work, we continued to count the beneficiary's status as NSTW until, according to the administrative record, the beneficiary returned to current-pay status, attained full retirement age,

or died. Moreover, beneficiaries are not necessarily engaged in SGA in every month counted as NSTW. In many months, we know only that the beneficiary left current-pay status because of work in a previous month and has not returned to current-pay status, reached full retirement age, or died. Similarly, we cannot verify that the beneficiary would continue to meet DI or SSI eligibility criteria if he or she were not engaged in SGA.

Many retroactive adjustments to NSTW status occur because of the time it takes SSA to receive and process evidence of work. For that reason, we used DAF11 to allow for as much time as possible between the end of our observation window (December 2010) and the date when the data were pulled from administrative sources (March 2012). Nonetheless, our investigation (described in detail in Schimmel and others 2013) revealed that data-processing lags are still an important consideration for the latest years in our analysis. Specifically, from a preliminary analysis of partial data pulled in May 2013, we calculated NSTW values among participants whose tickets were assigned from July 2008 through June 2009 that were approximately 10 percent higher than our findings using DAF11 (derived from data pulled in March 2012). The difference is much smaller for earlier TTW cohorts; using the May 2013 data, we estimated NSTW values among participants who assigned tickets from July 2006 through June 2007 that were only 2 percent higher than our findings based on DAF11. We did not explicitly correct for these data-processing lags, but we discuss them later in the context of our findings.

Because the NSTW indicator reflects participant earnings only to the extent that they affect cash benefits, we also considered the prevalence of beneficiary

work activity as measured by the presence of any earnings. Participants who receive DI or concurrent DI-SSI benefits are quite likely to have earnings before attaining NSTW status because they can use the TWP and grace period. For their part, SSI-only recipients may have earnings indefinitely without attaining NSTW status. Ultimately, it is total earnings—not just the impact reflected in reduced payment of DI or SSI benefits—that captures the social value of beneficiary work activity. Benefit payment reductions net of EN payments provide a narrow measure of savings to the DI Trust Fund and to general revenues, but total earnings offers a picture of the broader benefits to the program.¹¹

To provide us with beneficiary earnings data, SSA linked the records from our analysis sample to its Master Earnings File. That file contains annual wage data derived from Internal Revenue Service W-2 tax forms, quarterly earnings records, and annual income tax data.¹²

TTW Participation Rates and Participant Employment

TTW was rolled out to groups of states in three waves from 2002 through 2004. After growth during the initial implementation, the number of new ticket assignments under the EN payment systems (M-O and O-O) remained fairly stable from 2005 through 2007 (Table 2). For the rest of the study period, however, the number of new assignments under the EN payment systems sharply increased each year, rising from 4,168 in 2007 to 19,913 in 2010. Although some of this growth simply reflects increasing numbers of beneficiaries eligible to use TTW, those numbers had been climbing in the years prior to 2008 as well. From 2007

Table 2.
Number of new ticket assignments, by provider type and payment system, 2002–2010

Provider type and payment system ^a	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total	22,838	39,864	71,353	61,488	63,767	66,322	79,425	84,397	93,587
Traditional SVRA	20,427	35,339	65,006	56,743	59,251	62,154	69,271	69,580	73,674
ENs	2,411	4,525	6,347	4,745	4,516	4,168	10,154	14,817	19,913
M-O system	2,019	3,501	5,216	3,688	3,323	3,417	9,559	14,272	19,564
O-O system	392	1,024	1,131	1,057	1,193	751	595	545	349
TTW participants as a percentage of all disability program beneficiaries	0.2	0.5	1.1	1.6	2.0	2.5	3.0	3.5	4.1

SOURCE: Authors' calculations based on TRF10.

NOTE: Data reflect the most recent ticket assignment for participants aged 18–64 during the month of assignment.

a. As of the month of ticket assignment.

to 2008 alone, the number of new assignments under the EN payment systems increased by 144 percent, from 4,168 to 10,154, while the number of beneficiaries eligible for TTW rose by only 6 percent. The program continued to grow in subsequent years even as the economic recession took hold and finding employment for beneficiaries became more difficult. Given those circumstances, the timing and the magnitude of the growth in TTW participation clearly suggest that the 2008 changes in the program's regulations were the primary cause of that growth. As described below, the changing regulations encouraged providers to accept tickets—even from beneficiaries who were not likely to leave the disability rolls for work.

From the beginning, most ENs chose the M-O payment system, and that system dominated the number of assignments; but after the 2008 regulatory changes, provider preference of the M-O system over the O-O system for their new ticket assignments only widened. From 2007 to 2010, tickets assigned to ENs using the M-O system increased by 473 percent (from 3,417 to 19,564), while the number of new assignments for which ENs chose the O-O system—far lower to begin with—fell by 54 percent, from 751 to 349. That sharp divergence most likely reflects the increased number of potential milestone payments and the increase in the maximum value of M-O payments relative to the maximum O-O payments, as shown in Table 1.

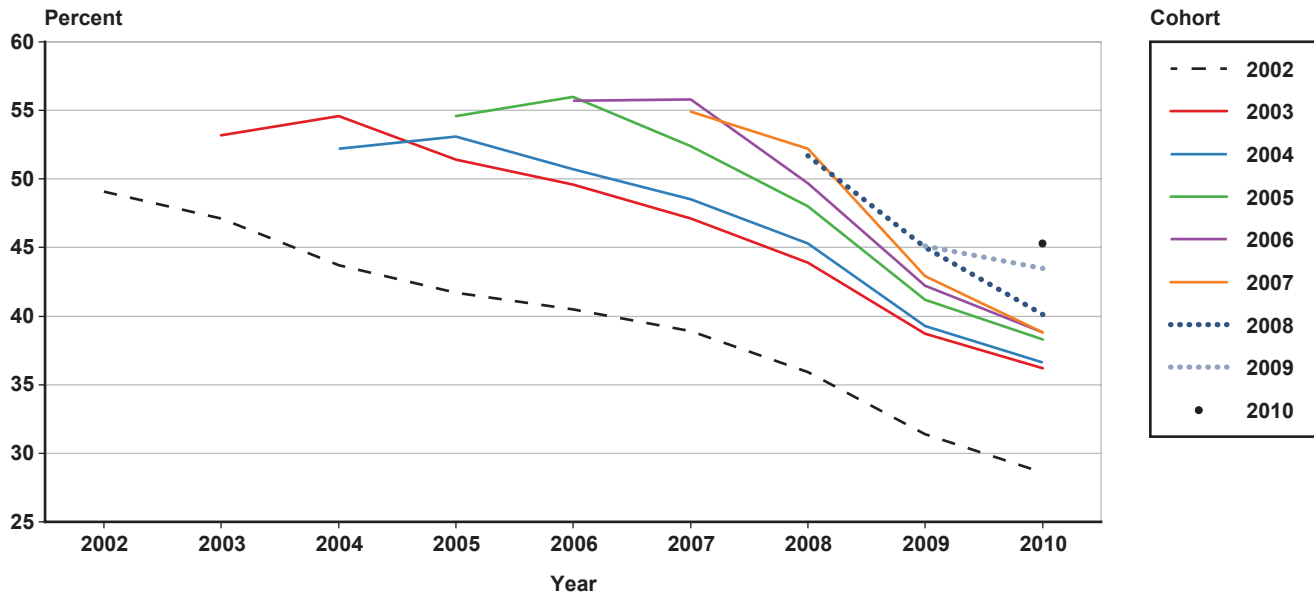
There was a small decline in traditional SVRA assignments from 2004 (the last TTW rollout year) through 2007, followed by modest annual growth through 2010 (Table 2). Thus, the increase in M-O assignments does not simply reflect a shift from SVRA acceptance of assignments under the traditional payment system toward more acceptances under the M-O system. Even though SVRA assignments rose much less rapidly than M-O assignments after 2007, they remained the dominant type of assignment in 2010. One likely factor contributing to the growth in assignments to SVRAs in the later years is a substantial increase in federal grant funding to SVRAs authorized by the 2009 American Recovery and Reinvestment Act (Stapleton and Martin 2012). That temporary expansion in funding allowed SVRAs to respond to an influx of applications from unemployed workers with disabilities and thereby shorten their waiting lists. The administrative change noted earlier, in which SVRAs needed only to document that a ticket was “in use”—in many cases, retroactively—also likely led to the *counting* of a greater number of

tickets assigned to traditional SVRAs than were actually newly assigned.

Charts 1 and 2 track the annual earnings experiences of TTW participants in each of the 2002–2010 ticket-assignment cohorts, followed through 2010 (regardless of whether the ticket remained assigned during the entire period).¹³ Chart 1 shows the percentages of cohort members with any positive earnings; Chart 2 shows the percentages of cohort members with adjusted annual earnings of at least \$12,000, a threshold that approximates the annualized SGA level (note that the scales of the two charts' vertical axes differ). One distinct pattern that emerges from these charts is that the labor market outcomes of participants appear dampened following 2008: In Chart 1, existing downward trends accelerated; in Chart 2, downward trends replaced the preceding years' generally upward or level tracks. That shift has two possible causes. The first is the effect of the recession on labor market outcomes of participants; workers with disabilities fared particularly badly during the economic downturn (Kaye 2010; Livermore and Bardos 2015). The second is that the revised TTW regulations, which increased provider's incentives to participate but reduced their incentives to help clients to earn enough to forgo benefits, encouraged providers to serve beneficiaries who were less likely to give up their benefits for work. How this pattern has changed since 2010, as the economy started to recover, is not yet known.

By showing the percentage of TTW participants with positive earnings, Chart 1 in essence shows the percentage employed in each year, for each annual ticket-assignment cohort. In every cohort before 2010, the two highest rates of work occurred in the year of assignment and the following year; the rates all declined thereafter. Cross-cohort comparisons indicate that the recession had a negative impact on beneficiary employment. The cohorts can be grouped visually into three categories. The first “group” consists of the 2002 cohort alone, which stands apart from the others with its relatively low percentage of members with earnings by the end of its assignment year and far lower percentages with earnings in each subsequent year.¹⁴ The second group consists of the 2003–2007 cohorts (the solid lines in Chart 1), each of which had assignment-year work rates in the 52–56 percent range. After peaking 1 year after assignment, the 2003–2005 cohorts experienced modest work-rate declines in the subsequent years. For all five cohorts, the percentages employed dropped sharply in 2008 and beyond. The

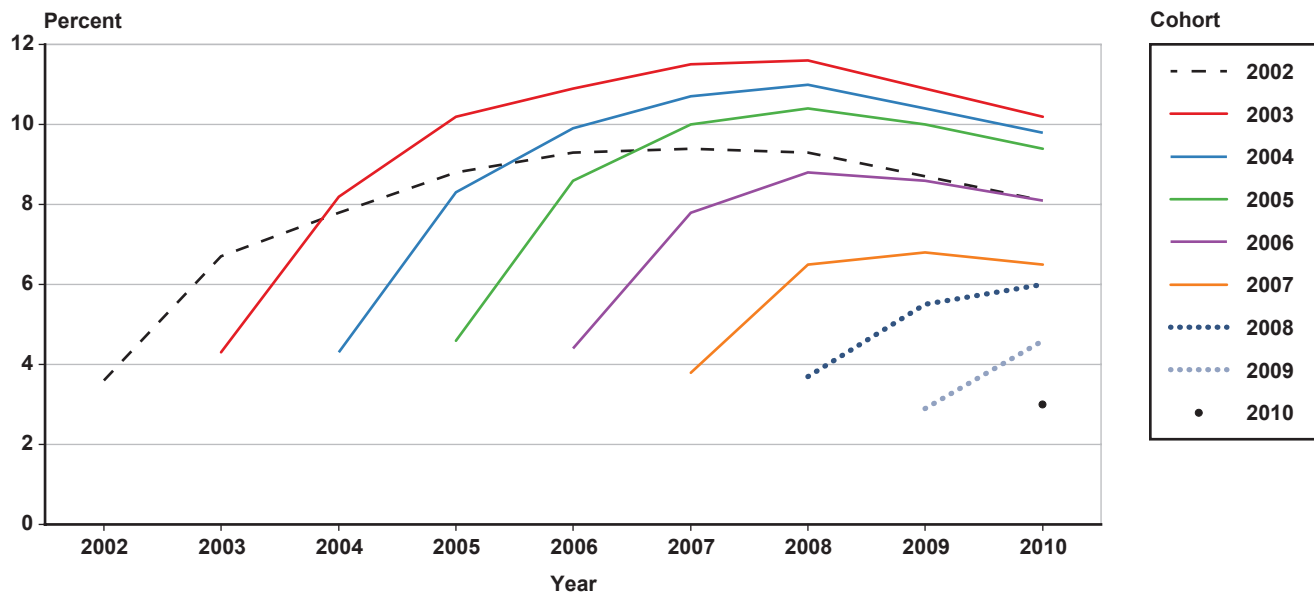
Chart 1.
Percentage of TTW participants with any positive earnings, by ticket-assignment cohort: 2002–2010



SOURCE: Authors' calculations based on TRF10 and DAF11.

NOTE: Cohort is determined by the most recent ticket assignment for participants aged 18–64 during the month of assignment.

Chart 2.
Percentage of TTW participants with earnings of \$12,000 or more, by ticket-assignment cohort: 2002–2010



SOURCE: Authors' calculations based on TRF10 and DAF11.

NOTES: \$12,000 approximates an annualized equivalent of SGA.

Cohort is determined by the most recent ticket assignment for participants aged 18–64 during the month of assignment.

third group comprises the 2008–2010 cohorts, which all exhibit worsening employment outcomes almost immediately after assignment. The assignment-year employment rate for the 2008 cohort was 3 percentage points lower than that for the 2007 cohort, and the corresponding value for the 2009 cohort was approximately 5 percentage points lower still. As noted earlier, this decline might reflect the economic downturn apart from the regulatory changes, but it also might highlight an increased propensity for providers to accept assignments from beneficiaries who were less likely to achieve earnings levels that would lead to benefit suspension or termination.

Although it is encouraging that a majority of participants had some earnings in their first year after ticket assignment, it turns out that earnings levels for many were very low, either because they earned very little each month or because they had earnings in only a few months of the year. Participants who earn above the SGA amount are of special interest, both because that amount is the conceptual standard for DI eligibility and because of the implications for forgoing benefits. Because the SGA amount is a monthly value (\$1,000 for nonblind beneficiaries in 2010) but Master Earnings File data are only reported annually, we compare earnings to the annualized equivalent of the SGA amount for a nonblind beneficiary in 2010 (\$12,000).

Compared with the share of TTW participants who had any earnings, relatively few had earnings above the annualized SGA level (Chart 2). However, the increasing share of participants with earnings above the annualized SGA level suggests that those who did achieve that threshold tended to sustain it. In each cohort, 3–5 percent of participants had earnings of \$12,000 or more by the end of the assignment year. Although the percentage with earnings of at least the SGA level remained relatively low, it increased in the first year after ticket assignment for every cohort followed at least 1 year. Participants who assigned their tickets after 2006 did not achieve the same measure of success reached by those who assigned their tickets earlier. The 2009 and 2010 cohorts especially had lower percentages of beneficiaries with earnings of at least the annualized SGA amount in their assignment year, and the trajectories for the 2007 and 2008 cohorts are lower than those for earlier cohorts. It is difficult to know the extent to which this outcome reflects weakness in the labor market. Once again, the 2008 regulatory changes may have brought about an increase in ticket assignments from beneficiaries who were less likely to attain SGA-level earnings.¹⁵

The contrast in patterns between any earnings and SGA-level earnings is interesting. The downward trajectory of any earnings in Chart 1 suggests that a considerable share of participants initially works at very low levels but is unable to sustain work. The general upward trajectory in Chart 2 shows that participants who are initially able to engage in SGA tend to continue to do so. For each cohort, the set of beneficiaries earning at the SGA level might have changed from year to year, but it seems likely that most who attained that threshold in 1 year also did so in others. Thus, it appears that a small minority of participants achieves and sustains SGA-level earnings.

NSTW Status Among TTW Participants and Nonparticipants

The main goal of TTW is to help beneficiaries to return to work at a level that results in benefit suspension or termination. To ascertain participants' success in achieving that goal, for each calendar year we identify beneficiaries who experienced NSTW status for the first time. We define that as occurring in the month in which a beneficiary first attains NSTW status following a full calendar year in current-pay status. In other words, a beneficiary with an initial month in NSTW status in 2006 is counted as a “first NSTW” beneficiary only if he or she was in current-pay status in every month of 2005.¹⁶ This definition allows us to consider participants and nonparticipants analogously, and it excludes participants who were already in an extended period of NSTW status when they assigned their tickets.

TTW participants achieved their first NSTW month in higher percentages than did nonparticipants in each calendar year (Table 3). For example, in 2007, 3.4 percent of TTW participants experienced their first NSTW status, compared with 0.7 percent of nonparticipants. As a result, a disproportionate share of first NSTW months accrued to participants—10.6 percent of first NSTW months in 2010, although participants constituted only 2.6 percent of all those eligible for first NSTW status in that year (not shown).¹⁷ That difference reflects demographic factors and the work orientation of TTW participants relative to other beneficiaries in addition to any impact of services delivered. The frequency of first NSTW months increased steadily among participants and edged slightly upward among nonparticipants from 2002 through 2007, before declining for both groups thereafter. The decline in the later years could be a product of the recession, or could in part reflect the data-processing lags mentioned earlier.

Table 3.
TTW participants and nonparticipants attaining their first NSTW status, 2002–2010

Benefit type ^a	2002	2003	2004	2005	2006	2007	2008	2009	2010
TTW participants									
<i>Number eligible for their first NSTW status during year (in thousands)</i>									
Total	18.9	50.4	104.2	142.5	174.2	201.0	228.7	251.2	282.3
DI only	9.2	24.3	46.7	63.8	78.4	91.5	106.2	119.0	136.2
SSI only	5.8	15.2	33.3	45.6	54.8	62.6	69.4	74.4	81.6
Concurrent DI-SSI	3.9	10.9	24.1	33.0	40.9	46.9	53.1	57.9	64.5
<i>Percentage of eligible participants attaining their first NSTW status during year</i>									
Total	1.9	2.6	3.0	3.4	3.5	3.4	2.9	2.1	1.8
DI only	1.3	2.3	2.6	3.3	3.4	3.2	2.9	2.2	1.7
SSI only	3.2	3.4	4.0	4.1	4.1	3.9	3.2	2.3	2.3
Concurrent DI-SSI	1.6	2.2	2.4	2.9	3.0	3.1	2.6	1.8	1.5
Nonparticipants									
<i>Number eligible for their first NSTW status during year (in thousands)</i>									
Total	8,120.4	8,425.9	8,741.5	9,076.0	9,387.5	9,656.0	9,903.7	10,205.7	10,579.6
DI only	4,484.3	4,669.9	4,838.3	5,086.3	5,308.4	5,520.4	5,695.8	5,886.5	6,166.2
SSI only	2,491.1	2,526.8	2,563.4	2,595.0	2,622.6	2,664.4	2,693.3	2,743.3	2,764.2
Concurrent DI-SSI	1,145.0	1,229.3	1,339.8	1,394.7	1,456.6	1,471.2	1,514.6	1,575.8	1,649.2
<i>Percentage of eligible beneficiaries attaining their first NSTW status during year</i>									
Total	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.5	0.4
DI only	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.4
SSI only	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.4	0.4
Concurrent DI-SSI	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.5	0.4
TTW participants as a percentage of all disability program beneficiaries with first NSTW status during year									
Total	0.7	2.7	5.8	8.1	8.9	9.2	9.3	9.9	10.6
DI only	0.5	2.3	4.7	7.1	8.0	8.1	8.2	8.5	8.7
SSI only	1.0	3.1	6.9	8.6	9.4	9.8	9.9	12.4	13.5
Concurrent DI-SSI	0.8	3.1	6.5	9.5	10.7	11.8	11.5	11.1	11.8

SOURCE: Authors' calculations based on TRF10 and DAF11.

NOTES: Data are for beneficiaries aged 18–64 who are eligible for DI or SSI benefits. TTW participants are those whose most recently assigned tickets remain in use, regardless of the year of assignment. Nonparticipants are all other beneficiaries, including former or future TTW participants with tickets not currently assigned.

First NSTW status occurs in the first month in which a beneficiary's administrative record is coded for suspended or terminated benefits following a full calendar year in current-pay status. (For recipients of concurrent DI-SSI benefits, this definition requires current-pay status in both programs for the entire previous calendar year.) Eligibility for first NSTW status is restricted to beneficiaries who have at least 1 month in the current year in current-pay or NSTW status.

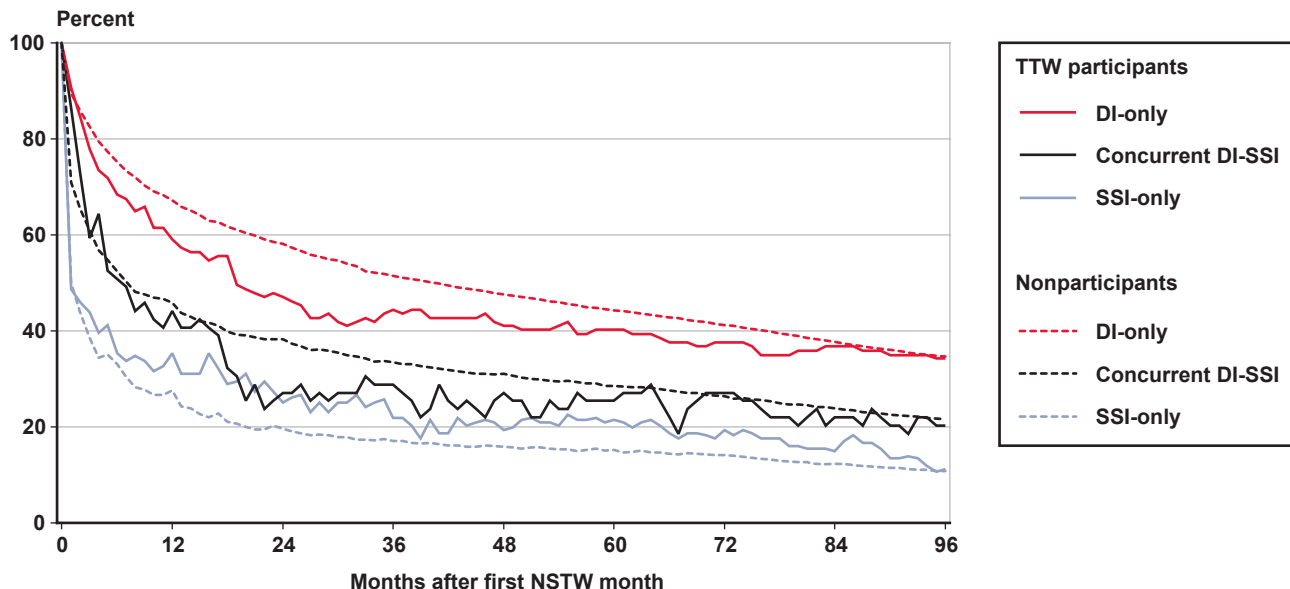
a. As of the first month that benefits are in current-pay, suspended-for-work, or terminated-for-work status.

TTW participants are more likely than nonparticipants to attain first NSTW status, but those who do so are not necessarily more likely than nonparticipants to retain NSTW status in each subsequent month (Chart 3). To make this observation, we followed all beneficiaries with a first NSTW month in 2002 and determined their NSTW status in each subsequent month through 2010. For example, Chart 3 shows that 52 percent of DI-only nonparticipants who achieved a first NSTW month in 2002 were in NSTW status 36 months later. In fact, for those with a first NSTW month in 2002, DI-only nonparticipants were in NSTW status in higher proportions than were DI-only participants in each subsequent month for 8 years. We find a similar pattern among concurrent DI-SSI participants and nonparticipants through almost all of the 60 months (5 years) after the first NSTW month. The opposite is true for SSI-only recipients, however; participants were in NSTW status in greater proportions than were nonparticipants in each of the 96 months (8 years) after the first NSTW month. Interestingly,

for DI-only participants (and, to a lesser extent, for SSI-only and concurrent DI-SSI nonparticipants), the percentage in NSTW status remained approximately constant from about month 36 to month 72, suggesting sustained employment. The decline in the percentages resumed after the recession—from months 72 to 96, which correspond to calendar years 2008 through 2010.

Among TTW participants, throughout the study period, SSI-only recipients were the most likely to enter NSTW status for the first time, with entry rates varying from 2.3 percent to 4.1 percent per year (Table 3). Despite higher entry rates for SSI-only recipients, the likelihood of retaining NSTW status after initial entry is highest among DI-only beneficiaries, followed by concurrent DI-SSI beneficiaries and then SSI-only recipients (Chart 3; note the isolated brief reversals between concurrent DI-SSI beneficiaries and SSI-only recipients). As shown by the sharp initial drop in the chart's blue lines, many SSI-only recipients in first NSTW status returned to current-pay status almost immediately; regardless of TTW

Chart 3.
Beneficiaries who first attained NSTW status in 2002: Percentage retaining NSTW status in each of the 96 months following attainment, by benefit type ^a and TTW participation status



SOURCE: Authors' calculations based on TRF10 and DAF11.

NOTES: Data are for beneficiaries aged 18–64 who are eligible for DI or SSI benefits. TTW participants are those whose most recently assigned tickets remain in use, regardless of the year of assignment. Nonparticipants are all other beneficiaries, including former or future TTW participants with tickets not currently assigned.

First NSTW status occurs in the first month in which a beneficiary's administrative record is coded for suspended or terminated benefits following the full calendar year 2001 in current-pay status. (For recipients of concurrent DI-SSI benefits, this definition requires current-pay status in both programs for the entire calendar year 2001.) Eligibility for first NSTW status is restricted to beneficiaries aged 18–64 who had at least 1 month in 2002 in current-pay or NSTW status.

a. As of the first month that benefits are in current-pay, suspended-for-work, or terminated-for-work status.

participation, more than half of them left NSTW status in the month after they first attained it. The stronger retention of NSTW status among DI-only and concurrent DI-SSI beneficiaries likely reflects differences in SSI and DI rules. Although crossing the threshold from current-pay to suspended status in SSI might result in a very small change in payment amounts, crossing that threshold in DI produces a large reduction in benefits. Hence, an informed DI beneficiary might avoid crossing that threshold before securing sustainable earnings above the SGA level, whereas an SSI-only recipient might give an earnings increase that crosses the threshold no more consideration than any other small change in earnings.

Although TTW nonparticipants are somewhat more likely to retain NSTW status once they first achieve it, they are much less likely than participants to attain a first NSTW month. In fact, the share of all eligible participants who entered NSTW status in 2002 and were in NSTW status 48 months later more than doubles the share for nonparticipants (not shown).

TTW Participation and NSTW Outcomes Before and After the 2008 Regulatory Changes

The revised TTW regulations were intended to increase overall program participation, use of the EN payment systems, and the number of participants who work and earn enough to forgo their reliance on benefits. To assess whether the latter occurred, we compare the experiences of two TTW cohorts, respectively comprising members who assigned their tickets before (July 2006–June 2007) and after (July 2008–June 2009) the regulatory change. These “before” and “after” cohorts are relatively similar in size and composition to the calendar year 2007 and 2009 cohorts described in Table 2, but we have redefined the assignment periods so that neither cohort substantially straddles the regulatory changes, which took effect in July 2008.¹⁸ For each cohort, we identify the number and proportion of participants with a first NSTW month in the 18 months following assignment.¹⁹ We also report the number of NSTW months observed during that period per 1,000 participants and per participant with at least 1 NSTW month.

Despite high growth in both TTW participation overall and EN payment-system use after June 2008, there was no comparable growth in the number of participants achieving NSTW status, which translates to a cross-cohort decline in the proportion of participants experiencing NSTW status (Table 4). Specifically,

members of the after cohort who assigned tickets to an EN were 43 percent less likely to experience at least 1 NSTW month in the 18 months following ticket assignment than were those in the before cohort. If we apply the data-processing factors described earlier to account for lags in NSTW determination, we calculate a 37 percent decline—slightly lower, but still substantial.

The recession almost certainly explains some and possibly most of the adjusted decline in the percentage of participants with at least 1 NSTW month, but other explanations may also apply. In particular, the regulatory changes increased incentives to serve beneficiaries with a lower likelihood of sustaining high levels of earnings—a likely cause of the large increase in M-O assignments relative to O-O assignments. Note, however, that the percentage of participants attaining NSTW status dropped at similar rates for both traditional and EN payment-system participants. Presumably, the regulatory changes produced no direct effect on outcomes for those served under the traditional payment system, although they might have caused a change in the composition of participants within that group.²⁰

After the regulatory changes, the proportion of participants in EN payment systems that attained NSTW status declined; but because of the large increase in the number of participants in EN systems overall, the number that attained NSTW status actually increased. Specifically, the proportion of participants that achieved at least 1 NSTW month declined 43.0 percent (from 14.2 percent to 8.1 percent) but the overall number of EN-system participants increased by 234.4 percent, which translates to a 90.8 percent increase in the number of participants with at least 1 NSTW month.

At the same time, the number of traditional (SVRA) payment system users who achieved NSTW status decreased by 32.4 percent, reflecting the relatively low growth in the number of such participants and the large unadjusted decline in the proportion that achieved NSTW status. In combination, these changes significantly shifted the influence of the new payment systems on participant achievement of NSTW status. SVRA users represented 84 percent of participants with NSTW status in the before cohort, but only 65 percent of them in the after cohort.

If the regulatory changes improved employment outcomes over time, the likelihood of remaining in NSTW status after initial entry should have increased. Once again, the recession’s effects would of course confound any apparent effect of the regulatory

Table 4.
TTW participation and NSTW-status outcomes in the 18 months after ticket assignment, for tickets assigned before and after the 2008 TTW regulatory changes

Provider type and payment system ^a	Before (July 2006–June 2007)	After (July 2008–June 2009)	Percent change after regulatory changes
All TTW participants			
Total	64,797	85,948	32.6
Traditional SVRA	60,649	72,076	18.8
ENs	4,148	13,872	234.4
M-O system	3,191	13,263	315.6
O-O system	957	619	-35.3
TTW participants attaining NSTW status in the 18 months after assignment			
	<i>Number</i>		
Total	3,730	3,246	-13.0
Traditional SVRA	3,143	2,126	-32.4
ENs	587	1,120	90.8
M-O system	371	969	161.2
O-O system	216	151	-30.1
<i>As a percentage of all participants</i>			
Total	5.8	3.8	-34.4
Traditional SVRA	5.2	3.0	-42.3
ENs	14.2	8.1	-43.0
M-O system	11.6	7.3	-37.0
O-O system	22.6	24.8	9.7
Number of NSTW months in the 18 months after assignment			
	<i>Per 1,000 participants</i>		
Total	333	212	-36.3
Traditional SVRA	286	146	-49.0
ENs	1,011	550	-45.6
M-O system	755	474	-37.2
O-O system	1,865	2,162	15.9
<i>Per participant with at least 1 NSTW month</i>			
Total	5.8	5.6	-3.4
Traditional SVRA	5.5	5.0	-9.1
ENs	8.2	7.5	-8.5
M-O system	7.6	7.3	-3.9
O-O system	8.3	8.9	7.2

SOURCE: Authors' calculations based on TRF10 and DAF11.

NOTES: Data reflect the most recent ticket assignment for participants aged 18–64. Participants were followed for 18 months after the month of assignment (19 months in all) unless they died, reached full retirement age, or canceled their ticket assignment during the follow-up period; less than 1 percent of the sample was removed for those criteria.

We estimate that lags in the reporting and processing of earnings data cause the values in this table to understate the likely actual values by about 2 percent for the before cohort and about 10 percent for the after cohort.

a. As of the month of ticket assignment.

changes. For this analysis, we counted all the NSTW months accrued in the 18 months following assignment and generated two separate statistics: the number of NSTW months per 1,000 participants and the number of NSTW months per participant with at least 1 such month during the period.

As measured per participant with at least 1 NSTW month, the regulatory changes do not appear to have substantially changed how quickly participants accumulated NSTW months. That statistic fell by about 9 percent for participants in both traditional and EN payment systems. The apparent decline may be due to data-processing lags; as described earlier, we found NSTW status to be underestimated by 2 percent in the before cohort and 10 percent in the after cohort. The much more substantial decline in NSTW months per 1,000 participants seems almost entirely due to the declines in the proportions of participants with at least 1 NSTW month.

Changes in NSTW months per 1,000 O-O participants were qualitatively different from those for users of the other payment systems. We observe a 9.7 percent increase in the percentage of O-O participants with at least 1 NSTW month, as well as a 7.2 percent increase in NSTW months per participant with any such month. Those increases might be as much as twice as large if not for the difference in data-processing lags. The increases may reflect the shift of assignments from the O-O system to other payment systems. That is, because total provider payments under the M-O system became almost as high as those available under the O-O system after July 2008, the cases that providers now accept in the O-O system are more likely to be for clients whom the providers judge to have a very high probability of achieving NSTW status over a sustained period. As shown elsewhere, almost all providers that continued to accept tickets under this system after the regulatory change used a consumer-directed service model that is attractive by design to participants who are ready to give up their benefits quickly (Schimmel and others 2013).

Conclusion

As documented in this study and elsewhere, the TTW program was in gradual decline from 2004 through 2007, both in terms of provider interest and the number of tickets assigned under the new payment systems. Early statistics on NSTW status showed that some participants were in fact giving up their benefits for work, but the numbers were small, and it was unclear how many of those participants would

have done so even in the absence of TTW. Analyzing providers' revenues and costs also suggested that few providers were likely to find TTW economically attractive (Thornton and others 2007; Stapleton and others 2008). TTW was found to have a positive impact on employment service use, but no evidence emerged of an impact on months in NSTW status (Stapleton, Mamun, and Page 2014).

Based on the statistics presented in this article, we conclude that the 2008 regulatory changes had the intended effect of making TTW more attractive to providers and contributed to rapid growth in ticket assignments to providers using the EN payment systems. The number of new assignments increased from just over 66,000 in 2007 to nearly 94,000 in 2010 (Table 2). Likewise, Schimmel and others (2013) found substantial increases in the number of providers entering the TTW market following the 2008 regulatory changes, in contrast with stagnation in the number of new providers in the preceding years. Taken together, these outcomes support the conclusion that the regulatory changes succeeded in increasing TTW participation.

The overall growth occurred during a severe recession, making it all the more impressive and reinforcing the view that the regulatory changes made the program much more attractive to providers. The recession itself may have contributed to higher numbers of assignments, especially assignments to SVRAs. Beneficiaries who lost jobs during the downturn may have sought help to reenter the workforce. In addition, the 2009 infusion of federal funds under the American Recovery and Reinvestment Act increased the capacity of SVRAs to serve client beneficiaries. Retroactive changes in the criteria for reporting ticket assignments to SSA might also have raised the official count of participants under the traditional SVRA system without reflecting a change in the actual number served. However, that factor alone cannot account for growth in the number of ENs and the number of assignments that they accepted.

Given both the effects of the 2007–2009 recession on the labor market and the reduction in incentives for providers to help beneficiaries give up their benefits for work, it is not surprising that the percentage of beneficiaries achieving NSTW status declined following the July 2008 introduction of the revised regulations. Comparing the July 2008–June 2009 ticket-assignment cohort with the July 2006–June 2007 cohort reveals a decline in both the proportion of TTW participants experiencing NSTW status

and the number of NSTW months per 1,000 participants, although the total number of NSTW months increased because of the growth in participation.

It is not feasible to separate the extent to which the recession and the revised regulations reduced NSTW-status outcomes for participants, but it seems likely that both played a significant role. The importance of the recession is reflected in the lower employment and earnings of all beneficiaries. The role of the provider incentives is reflected in the rapid growth in M-O system use for new ticket assignments and an accompanying decline in O-O system use.

Although the statistics show that the number of beneficiaries exiting the rolls after assigning a ticket is substantial and growing, the growth to date is probably not sufficient for TTW to pay for itself via reduced benefit costs. Thornton (2012) concluded that TTW might be self-financing even if the number of beneficiaries induced to exit the rolls, at least temporarily, were just a small fraction of the 100 percent increase targeted in the Ticket Act; his analysis suggests that the breakeven value for induced exits might be as low as 2,000 per year. Beneficiaries who would have exited without services, or with SVRA services under the traditional payment system, are not counted in that figure. Our data indicate that 1,120 of the beneficiaries who assigned their ticket under a new payment system between July 2008 and June 2009 (our after cohort) had at least 1 month in NSTW status within 18 months of ticket assignment (Table 4). Even allowing for some increase in that figure after 18 months, it is well below the lower end of Thornton's breakeven range. Further, it includes an unknown number of participants who, in the absence of TTW, would have exited the program rolls either without services or with services under the traditional SVRA payment system—a number that is likely to be substantial, based on the findings of Stapleton, Mamun, and Page (2014) for new young DI-only beneficiaries.²¹ On an annual basis, the number of new participants using ENs who eventually exit the program rolls is likely to exceed substantially the number we observed over 18 months for our after cohort. Yet there is no way to know whether that growth would reflect increased use of the EN payment systems by beneficiaries who would have attained NSTW status under the pre-TTW system. It also seems likely that the breakeven value for induced exits has increased substantially since 2009 because of higher TTW administrative costs and the shift toward more milestone payments. Thus, we are unable to determine the extent to which SSA's expanded investment in

TTW is paying off in terms of increased beneficiary earnings and reduced government expenditures.

The lack of evidence that TTW is producing disability program savings could mean that the whole concept is flawed as an approach to managing program costs. There are two important caveats, however. The first is that TTW may be producing savings that cannot be detected with the available statistics, although we are not optimistic that this is true. The increase in NSTW months required to produce program savings is not very large (Thornton 2012)—small enough that it is hard to detect without a pilot test of some sort, because the effect is easily obscured by confounding influences such as the recession.

The second caveat is that TTW as it currently operates is far removed from the initial concept. As noted in this article's program-history section, TTW—even as initially implemented—departed from the original concept in several very significant ways, most notably by *not* basing provider payments exclusively on benefit savings. The 2008 regulations were another step away from the original concept of only paying a share of disability program savings, as a way to make TTW more attractive to providers. Two other important features of the NASI Disability Policy Panel's proposal were also dropped prior to implementation: pilot testing and an initial focus on new beneficiaries.

If policymakers continue to look to TTW for disability program savings, we would encourage them to consider changes that bring the program more in line with the original design. For example, pilot programs could test payment changes that make TTW more attractive to providers by increasing the share of program savings that they receive, rather than increasing payments based on other factors. Because new and relatively young beneficiaries are substantially more likely than other beneficiaries to use their tickets and return to work, any impacts of such a pilot would be easier to detect if the test followed the NASI Panel's recommendation of including only new beneficiaries.

Interestingly, the Panel's proposal did not include an idea put forth by Berkowitz (1996) in his initial description of the TTW concept that takes the proposal to test innovations on new beneficiaries one step further. That idea is to offer a version of the ticket to DI applicants, possibly accompanied by temporary benefits and counseling. Substantial evidence, mostly emerging since 1996 and in contexts other than DI, implies that providing employment support prior to DI entry would more efficiently increase employment and reduce reliance on DI than does providing supports

after program entry.²² In seeking practical means of expanding such supports to address the expected depletion of the DI Trust Fund in 2016, Congress allocated funds to SSA's 2015 budget for testing. Other approaches to providing employment support for prospective beneficiaries before they enter DI have strengths and limitations relative to an expansion of TTW for selected applicants. A distinct advantage of a TTW expansion, however, is that it would build on an existing SSA infrastructure, complete with qualified providers, and could be tested on a small scale within the context of that infrastructure.

Notes

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¹ Thereafter, cash benefits can be reinstated only through reapplication, although the process is expedited if SGA ends within the 60 months following benefit termination.

² The federal benefit rate is an annually adjusted amount that represents the maximum monthly SSI payment; actual payment amounts are calculated on an individual basis. As we will describe in more detail, the maximum monthly SSI payment in 2015 is \$733 and a small amount of the income that would otherwise be counted against the SSI payment amount is exempted by the earnings disregards.

³ Findings presented in earlier work using the NSTW indicator are not strictly comparable to the findings presented here because the measure has been refined by incorporating additional information on beneficiary work activity, particularly for the SSI program. In general, the refinements produce NSTW levels that are somewhat lower than those in previous findings, primarily on the SSI side (which translates into differences for the combined NSTW indicator as well).

⁴ In 1996, SSA implemented the Alternate Participant program, which aimed to allow providers other than designated SVRAs to serve beneficiaries with disabilities. Under that program, SSA entered into contracts with qualified providers and paid them when beneficiaries met the condition for SVRA cost reimbursement. The program, described more fully in Livermore and others (2003), was never widely adopted, for a variety of reasons (Thornton and others 2004).

⁵ The one exception was new DI beneficiaries for whom the Disability Determination Services expected medical

improvement to occur prior to the beneficiary's first continuing disability review.

⁶ SSA made further changes after our study period. For instance, during the period we analyze, SSA mailed a ticket to each beneficiary eligible to participate in the program; starting in June 2011, the agency replaced universal mailings with targeted mailings to subgroups of beneficiaries.

⁷ In other cases in which beneficiaries receive services from both an EN and an SVRA, or from more than one EN, any payments may be split between the organizations. This is handled case by case and is not a part of the Partnership Plus option.

⁸ Although very few beneficiaries were outside the 18–64 age range (or deceased) in the month of ticket assignment, we excluded any such cases to account for potential misinformation about assignment date. We chose 64 as the upper age limit because 65 was the full retirement age for all SSI-only participants during the study period. Some of the younger DI participants had a higher full retirement age, but we used 65 as the retirement age for all participants to simplify the analysis.

⁹ To the extent that withdrawals did occur, one might think that clients were not satisfied with employment outcomes of the first assignment. In effect, then, we would be replacing cases having generally poor employment outcomes from before the revised regulations with the reassigned tickets—although reassigned tickets would not necessarily produce uniformly better employment outcomes.

¹⁰ When payments are suspended for work, SSI recipients may enter what is called Section 1619(b) status, under which they will continue to be eligible for Medicaid and will also be able to return to SSI payment receipt should their earnings decline. To enter and continue in Section 1619(b) status in most states, earnings must exceed the level of countable income at which SSI payments are zero by an amount no larger than the mean annual Medicaid expenditures for disabled enrollees in that state. In some states, however, earnings must exceed that level by the amount of the individual's own Medicaid expenditures, if that amount is higher than the state mean.

¹¹ Beneficiary work activity might reduce expenditures for other benefits such as Medicare and Medicaid (if a beneficiary exhausts extended Medicare benefits in DI or is not eligible for Section 1619(b) status in SSI), but none of these accrue directly to the beneficiary.

¹² SSA use of Internal Revenue Service data is authorized and governed by interagency data-sharing statute; specifically, by Internal Revenue Code §6103(I)(1)(A). SSA's Paul O'Leary executed all analyses that used Master Earnings File data.

¹³ By 2010, about 10 percent of the 2002 cohort had died or reached full retirement age. We analyzed the effect of removing participants from the cohort after death or full

retirement age and found no change to the substantive pattern of our findings.

¹⁴ Chart 1 illustrates how markedly the 2002 cohort differs from all its successors. Potential reasons include labor market differences between the phase 1 states and states that started TTW in later years, selection bias among early assigners, and the behavior of SVRAs in phase 1 states. As the program rolled out in 2002, SVRAs were concerned that beneficiaries to whom they had already provided services would now assign tickets to ENs. To prevent potential TTW payments to ENs for services that the SVRAs had partially provided, the SVRAs secured ticket assignments for all beneficiaries they were already serving as of 2002, including many who were not likely to engage in SGA. As it became clear that TTW did not substantially jeopardize their revenues, SVRAs began to discontinue that practice after 2002.

¹⁵ In 2011, SSA addressed disappointing earnings outcomes (despite increasing TTW participation) by revising the template for the beneficiary's Individual Work Plan (IWP). The revised template clarified the goal of reducing reliance on program benefits by enabling self-sufficiency, as well as the fact that the IWP represents both the beneficiary's and the provider's commitment to that goal. The agency also developed procedures to monitor the provision of ongoing support and began developing performance measures to hold ENs more accountable for their clients' outcomes.

¹⁶ This definition of first NSTW status allows a single beneficiary to have multiple first NSTW spells, provided those spells occur more than 1 calendar year apart. As a result, our measure of months in first NSTW status is higher than it would have been if we were able to look back at the full history for every beneficiary and identify for each one the single first instance of NSTW status. The difference between those two measures would likely be larger in 2010 than in earlier years, reflecting the experience of beneficiaries who were in NSTW status before the recession, returned to current-pay status because of the recession, then reentered NSTW status as the economy gradually improved in 2010.

¹⁷ Of the 10.9 million beneficiaries eligible for first NSTW status in 2010 (by virtue of meeting the sample selection criteria and being in current-pay status in every month of 2009), 282,305 were TTW participants.

¹⁸ Although the first 3 weeks of July 2008 preceded the revised regulations, TTW participants who assigned their tickets during that period are included in the after cohort.

¹⁹ We followed each participant from his or her ticket-assignment month through the following 18 months for a total of 19 months. Doing so maximized the observation period for the after cohort, as we had data available through December 2010. For members of the before cohort, the follow-up period includes some months after the change in regulations. Therefore, our before cohort is not

strictly a baseline assessment of work activity prior to the regulatory changes.

²⁰ As noted earlier, the revised regulations allowed SVRAs to retroactively deem tickets as in use, although SVRAs did not all opt to do so. The effect of this unevenly applied retroactive change on cohort composition likely diminished in the cohorts closer to 2008.

²¹ Specifically, for the period before 2008, the authors found that the number of young DI-only beneficiaries who had assigned their tickets under a new payment system and experienced at least 1 month in NSTW status among their first 48 months in the program was statistically no different from what it would have been in the absence of TTW.

²² A recent summary appears in O'Day and others (2014). A number of European countries have substantially increased employment supports prior to disability benefit awards as a way to reduce expenditures for long-term benefits (Burkhauser and others 2014).

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