

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.

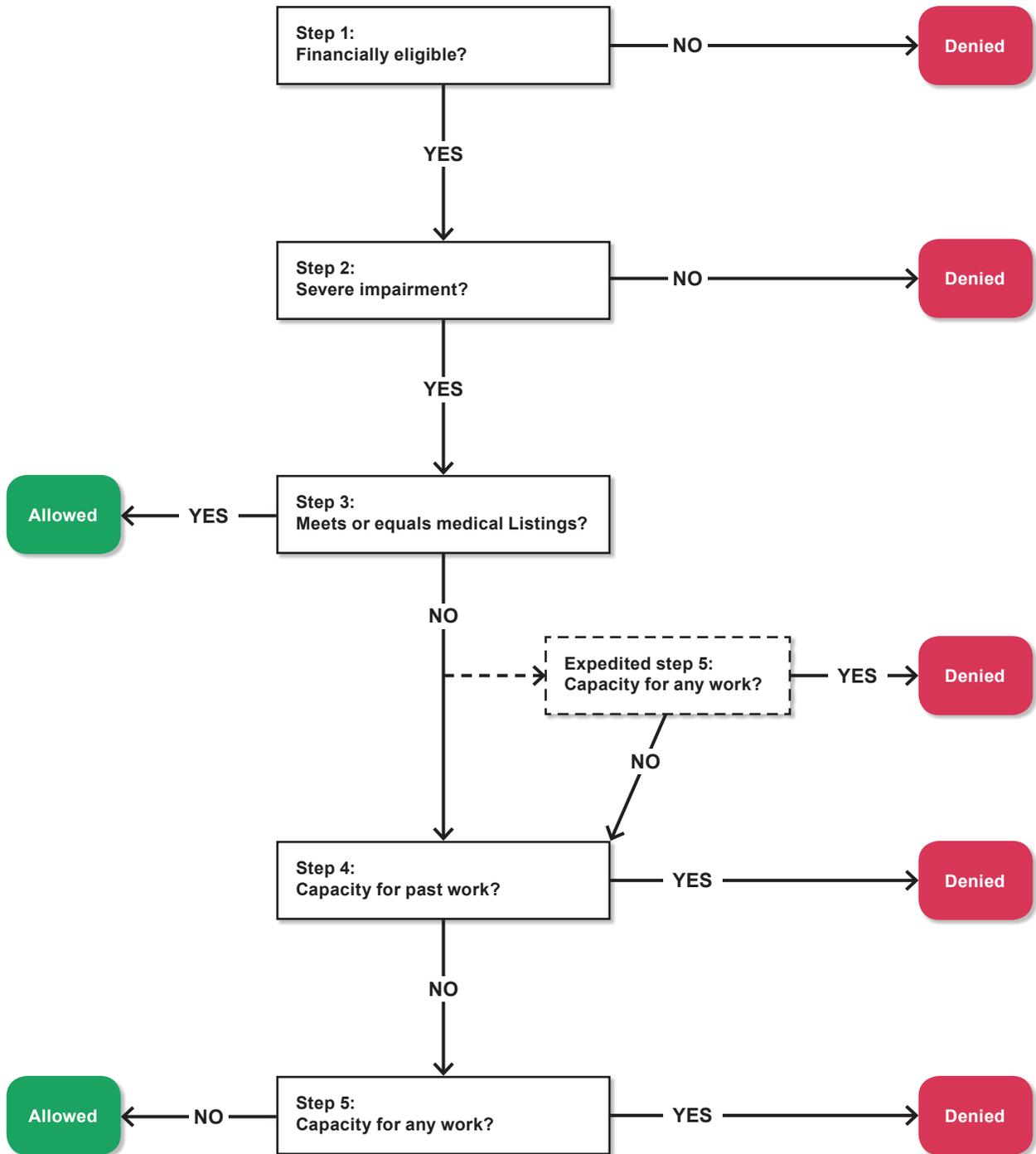
The five steps of the disability determination process are shown in Chart 1. Critically for this study, those steps must usually be followed in sequence. A claimant who does not receive an allowance or denial at steps 1 through 3 has his or her capacity to work in prior jobs evaluated at step 4. A case 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).

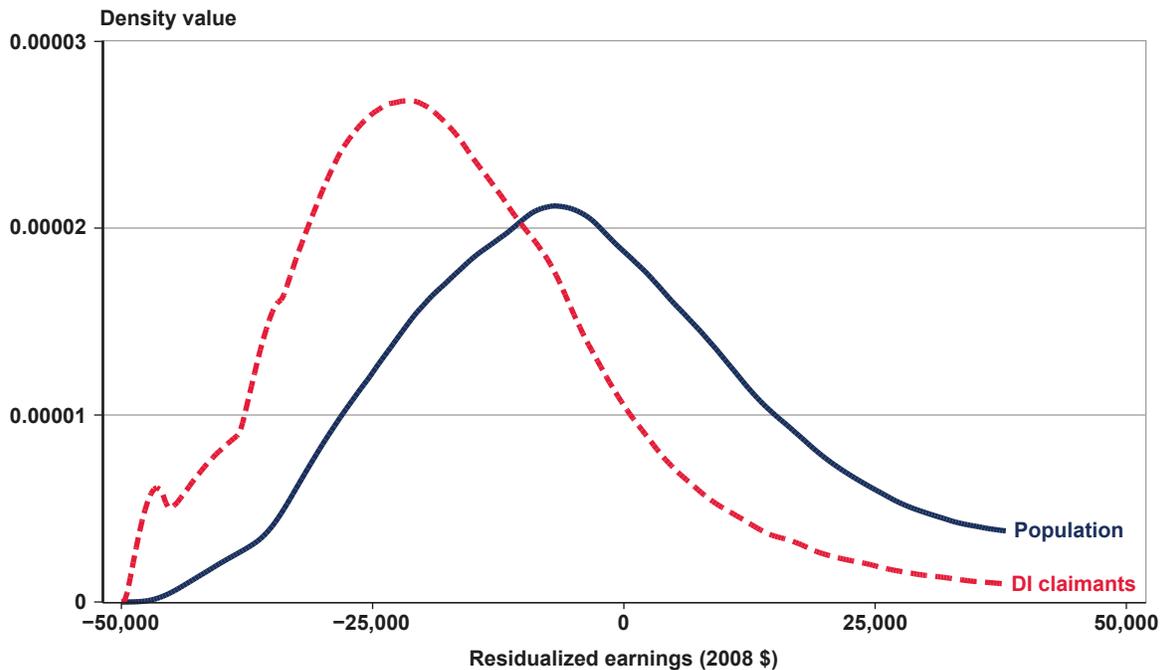
NOTES: Unless otherwise stated, the reference period is 2005.

... = 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.

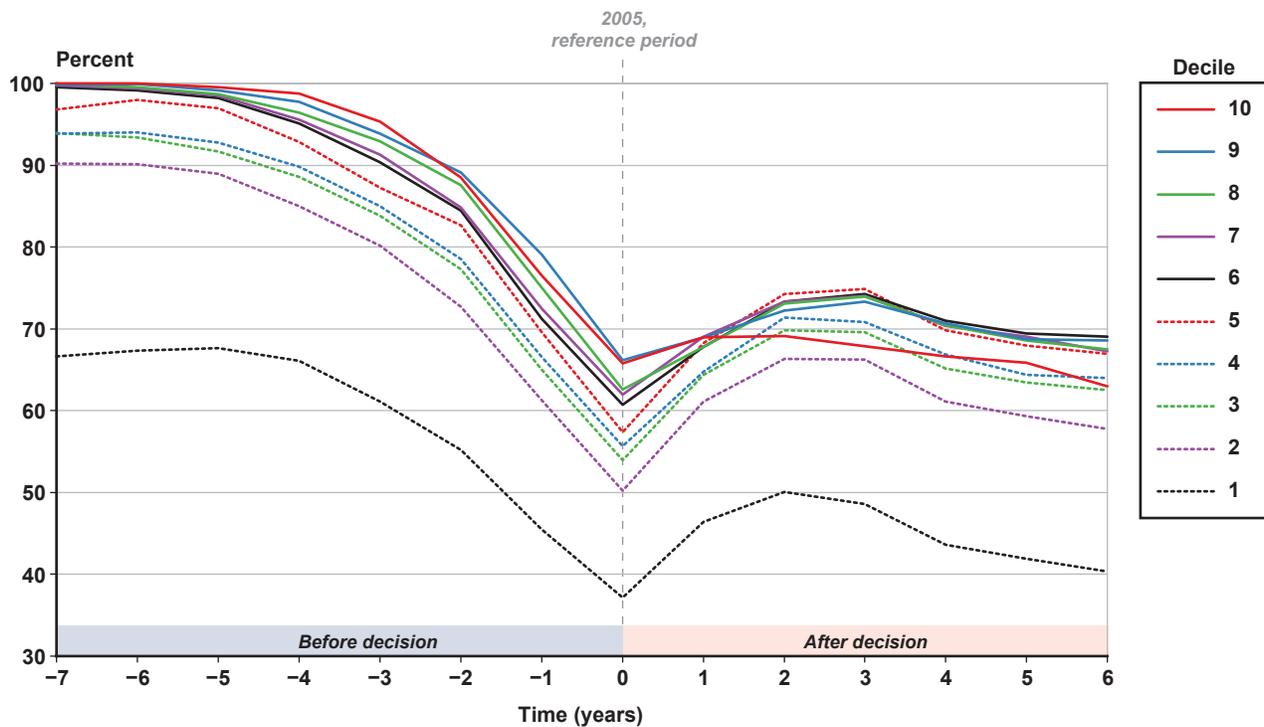
The reasons for nonparticipation in the labor market are unobserved by us. For many workers, the wages offered in the new vocational capacity could have been below their reservation wage. Or, their reservation wage could have increased after onset of the impairment. For other workers, employment in the 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

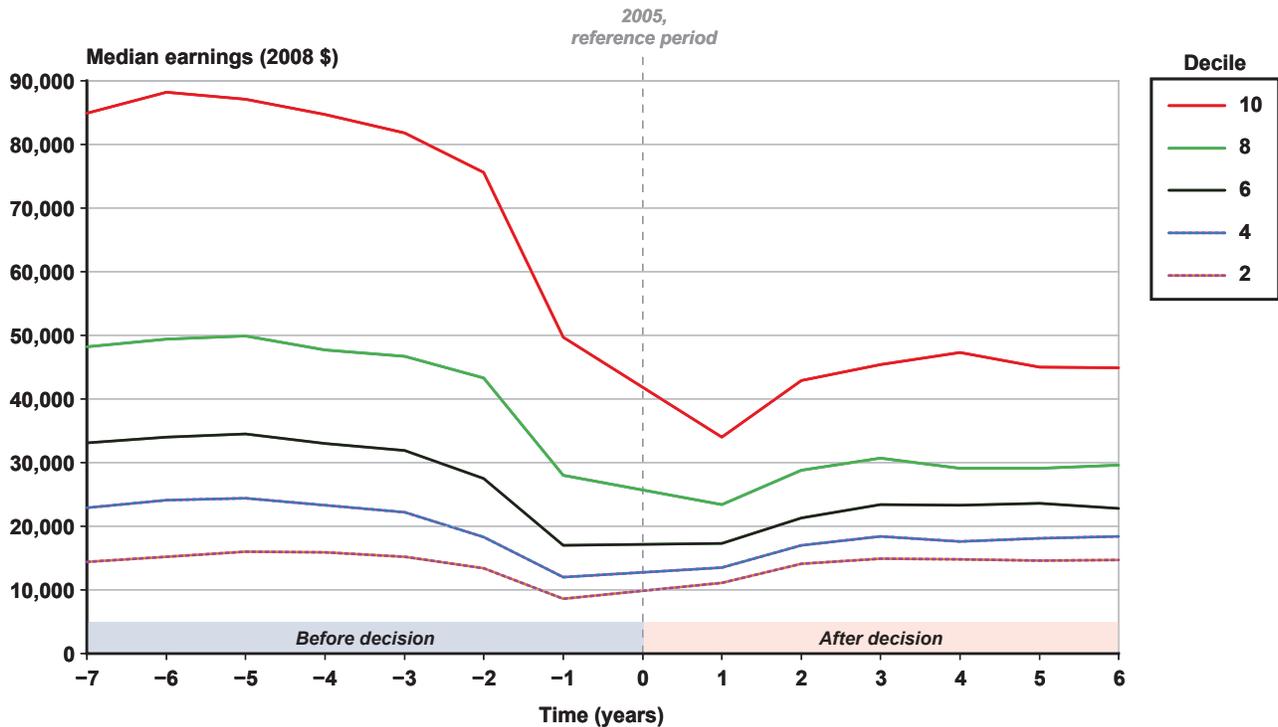
Characteristic	n	Before decision			After decision			Comparisons of before and after periods		
		Single year (2000)		Multiyear average of maximum annual earnings (1996–2004)	Single year (2008)		Multiyear average of maximum annual earnings (2006–2011)	Percentage point difference in employment rates	Ratio 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 CWHS. 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 CWHS.

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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