

Rising Disability Payments: Are Cuts to Workers' Compensation Part of the Story?

Preliminary Results on the Empirical Relationship between Workers' Compensation and Disability Insurance Awards

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Contents

Executive Summary 1

Introduction 3

Analysis 7

Conclusion 15

References 16

Appendix 20

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Executive Summary

There has been a large increase in the number of workers receiving Social Security Disability Insurance (DI) over the last quarter century. While most of this increase is explained by well-known demographic factors, such as the growing number of women in the workforce and the aging of the baby boomers, there is considerable concern that workers are increasingly choosing to collect DI benefits as an alternative to working. This concern has figured prominently in the debate over plans to maintain full funding for the DI program beyond the projected DI trust fund depletion date in late 2016.^{1 2}

This paper examines the extent to which cuts in state workers' compensation (WC) benefits may have contributed to the rise in DI awards. To some extent, these programs may be seen as alternative sources of support for workers with job-related injuries. Insofar as injured workers are less able to receive WC benefits, they may be more likely to turn to the DI program.

At the national level, there is a clear correlation between the sharp decline in WC benefits over the last quarter century and the rise in DI benefits. This paper examines whether there could be a causal relationship between the reduction in WC benefits and the rise in DI benefits by examining state-level data.

It finds:

- In a variety of specifications, there is a strong relationship between the decline in state-level WC beneficiaries and rise in new DI awards. This suggests that people are turning to DI because they are less able to collect WC benefits.
- A test of whether the rise in DI awards by state can be explained by policy changes to the state WC program found some evidence of a relationship. Given the difficulties in capturing the policy changes in the relevant variable, this is strongly suggestive that the rise in DI benefits was in part the result of state-level policy decisions to make WC programs less generous.

1 Autor and Duggan (2006).

2 Liebman (2015).

- These estimates suggest that more than one-fifth of the rise in the number of workers receiving DI awards can be explained by cuts to WC programs.

These results are preliminary. We expect to conduct further tests of the relationship between WC and the DI program, but the results in this analysis strongly suggest that cuts in the former have led to increases in the latter.

Introduction

The rising incidence and cost of the Social Security Disability Insurance (DI) program over the last quarter century has been a major concern in national policy debate. The number of beneficiaries has gone from 25 per thousand workers in 1990 to 59 per thousand workers in 2014.³ As a result of this sharp rise, the DI trust fund is now facing depletion, with the most recent projections showing that incoming revenue and existing reserves will not be sufficient to pay full benefits through the end of 2016.⁴ If Congress doesn't act by that point, automatic benefit reductions will go into effect upon depletion of the trust fund.

There has been considerable debate over the causes of the increase in disability rates. Three factors clearly explain much of the rise:

- *The aging of the population.* Between 1980 and 2010, the share of the population aged 45 to 64 increased from 19.6 to 26.4 percent.⁵ This can affect DI take-up rates because rates of disability increase with age.⁶
- *Women entering the workforce.* As shown in **Figure A1** in the Appendix, women's employment has increased substantially over the last fifty years. In 1967, just 45.2 percent of all women aged 30 to 64 were employed. By 2013, that figure had risen to 65.8 percent. This is important for two reasons. First, the increased rate of employment for women led to an increase in the share of the population eligible for DI benefits. Second, women have higher overall disability rates than men, and employed women end up taking DI at higher rates.⁷
- *Increasing the retirement age.* Between December 2002 and January 2009, the age to receive full Social Security retirement benefits — often referred to as the “full retirement age” —

3 See “The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds” at: <http://www.socialsecurity.gov/OACT/tr/2015/tr2015.pdf>, Table V.C5, page 137.

4 See “A Summary of the 2015 Annual Reports” at: <http://www.socialsecurity.gov/OACT/TRSUM/index.html>

5 Howden and Meyer (2010), p. 6.

6 See Reno (2011) pp. 4–5, Center on Budget and Policy Priorities (2015), O’Leary et al. (2012), and Guo and Burton (2012) for greater discussion.

7 See Reno (2011) p. 1, Reville and Schoeni (2005), Center on Budget and Policy Priorities (2015), O’Leary et al. (2012), and Guo and Burton (2012) for greater discussion.

gradually increased from 65 years to 66 years.⁸ As a result, people who would have been shifted from DI benefits to Social Security retirement benefits at age 65 remain on DI for an additional year. As of December 2010, there were over 300,000 DI beneficiaries who fell into this category.⁹ Full retirement age will remain at 66 through 2020, then will increase to 67 years by 2027.^{10 11}

Other factors that have been linked to the overall rate of DI take-up are health insurance coverage and the weakness of the labor market. Virginia P. Reno, then Vice President for Income Security Policy at the National Academy of Social Insurance, stated in testimony before Congress: “Without health coverage, workers are at risk of missing care that could prevent or delay the onset of conditions that lead to work incapacity.”¹² It could also be the case that, when faced with the prospect of remaining uninsured for a long period of time, more disabled workers apply for DI benefits because they would like to receive Medicare coverage in the future.¹³ High unemployment has also been linked to the percentage of the eligible population applying for DI benefits; however, because the approval rate for DI tends to fall when more workers apply, the increase in approved awards stemming from a weak economy is less than proportional to the increase in applications.¹⁴ The link between DI and the strength of the economy likely explains much of the increase in DI awards in 2008, 2009, and 2010.

In addition to these factors, one often overlooked item that explains part of the increase in the share of eligible workers getting disability payments is the reduced mortality rates among workers collecting DI. In 1991, there were 46 deaths per thousand worker DI beneficiaries. By 2014, that rate had fallen to 28 deaths per thousand.¹⁵

One topic that hasn’t been explored to any significant degree is the link between workers’ compensation (WC) and DI. There has been a sharp drop in the percentage of the workforce receiving WC benefits over the last quarter century. This is a matter of deliberate policy, as most states have tightened eligibility requirements and also reduced the generosity of WC benefits. It is reasonable to believe that a portion of the workers who might have been receiving WC under the

8 See “Retirement Planner: Full Retirement Age” provided by the Social Security Administration, available at: <http://www.ssa.gov/planners/retire/retirechart.html>.

9 Reno (2011), pp. 4–5.

10 See “Retirement Planner: Full Retirement Age” provided by the Social Security Administration, available at: <http://www.ssa.gov/planners/retire/retirechart.html>.

11 See Center on Budget and Policy Priorities (2015), Guo and Burton (2012), and Reno (2011) for greater discussion.

12 Reno (2011), p. 5.

13 Workers receiving disability are eligible to receive Medicare after 29 months from time of approval. See Table A2 in the Appendix for more information.

14 Goss et al. (2013), Rupp (2012).

15 Zayatz (2015), p. 23.

rules in place in 1990, but who are excluded under current rules, may be turning to DI as an alternative.

While these programs are related, there are important differences. WC only covers injuries incurred on the job, as opposed to disability more generally. WC pays workers' medical costs in the event of an injury and provides them with income benefits if they miss work or are injured in such a way as to diminish their earnings capacity. **Table A2** in the Appendix gives a brief comparison of these programs. From a policy perspective, there are three notable issues. First, although all the pertinent rules and regulations relating to WC benefits — including the level of benefits, the types of injuries for which workers can receive benefits, the duration of benefits, the reimbursement rates for various medical treatments, etc. — are determined by state governments, WC is often directly run by private companies. This means that if states tighten WC eligibility rules to exclude disabled workers from WC, they are effectively transferring costs from these companies to the federal government. Second, WC fees are experience-rated. The point is that more dangerous workplaces are expected to pay higher fees to compensate for the greater risk to their employees. If workers suffering from workplace-related injuries are instead covered by DI, employers providing less safe workplaces are effectively transferring the cost of this risk to the larger public. The third issue is that insofar as tighter WC rules are a factor in rising DI rolls, this means that less of the rise needs to be explained by a change in worker behavior.

In addition to the possibility that workers who would have otherwise been eligible for WC turn to DI as an alternative, there is a second even more direct reason to expect a trade-off in spending between the two programs. The relationship between the two is governed by a federal “offset” provision. Under this provision, an injured or disabled worker may receive both DI and WC benefits at the same time, but the total compensation from the two programs may not exceed 80 percent of the worker's pre-injury wage.¹⁶ In most states, once this 80 percent cap is hit, the worker's DI benefits are reduced. In 15 states, a worker's WC benefits are reduced.¹⁷ This means that if a state cuts its WC benefits by a certain amount, DI benefits paid to the worker will increase by the same amount.¹⁸ In some instances, cuts in WC benefits translate to nearly 1-for-1 increases in DI benefits for workers being assisted by both programs.¹⁹

16 Lockhart (2005), p. 1.

17 National Academy of Social Insurance (2014), O'Leary et al. (2012), Reno, Williams, and Sengupta (2005), pp. 5–6. In 1981, Congress determined that states could not pass laws to reduce WC benefits for workers receiving both DI and WC benefits. However, because 15 states *already had* laws that reduced WC benefits rather than DI benefits, certain states were exempt from this provision.

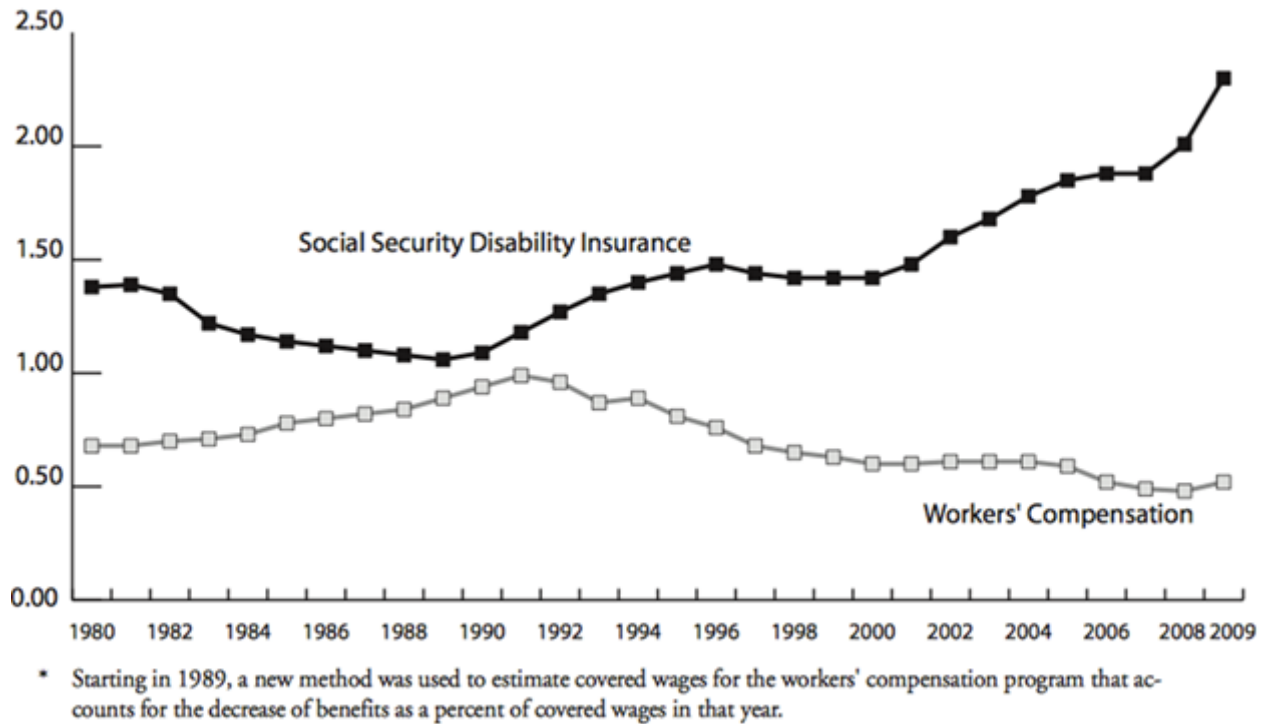
18 There are certain exceptions to this rule, and they are discussed in Box A2 in the Appendix.

19 Guo and Burton (2012).

Several papers have suggested an inverse relationship between spending on WC and DI.²⁰ Sengupta, Reno, and Burton (2011) compared spending levels in the two programs and found a close inverse relationship as shown in **Figure 1** below:

FIGURE 1

Social Security Disability Insurance and Workers' Compensation Cash Benefits Per \$100 of Wages, 1980–2009



Source: Sengupta, Reno, and Burton (2011), p. 45.

Guo and Burton (2012) find a statistically significant negative relationship between WC benefits and DI application rates. Guo and Burton (2012) draw their data from 46 states and use data from the years 1981 to 1999, restricting their analysis to WC benefits for disabled workers receiving Permanent Partial Disability (PPD) or Permanent Total Disability (PTD) benefits.²¹ Their variables for the generosity of WC benefits are expected benefits and compensability rules. The expected benefits variable measures the expected income benefits for workers receiving PPD or PTD benefits. The variable is comprehensive, taking account of the state minimum level of benefits, the maximum level of benefits, the state average weekly wage (SAWW), the wage replacement rate, the duration of benefits, and federal and state taxes. It is expressed as a percentage of the SAWW. The

20 E.g. Reno, Williams, and Sengupta (2005), p. 35, O'Leary et al. (2012), and the Employee Benefit Research Institute (2005), pp. 36–37, and (2009), pp. 365–366.

21 “Total” and “Partial” refer to the extent of disability. *Total* disabilities prevent workers from returning to work in a similar capacity as before the injury, while *partial* disabilities allow the worker to return to a similar job after treatment. The word “Permanent” does not mean that injured workers can *receive benefits indefinitely*, but rather that the injury is expected to *inhibit the worker* for a period of time greater than the state’s duration of “temporary” disability benefits, which often pay benefits for up to two years.

compensability rules variable measures the level of eligibility restrictions applied to each state's WC program. Changes in both variables over time are found to have a negative correlation with changes in the number of DI applications. Even after controlling for state-level changes in unemployment, women's share of employment, the DI acceptance ratio, the DI replacement rate, population age, and disability prevalence, along with year- and state-fixed effects, the authors find that changes in WC law account for 3 to 4 percent of the growth in DI applications during the 1980s and 1990s.

McInerney and Simon (2012) obtain a contrary result. Using data on all but five states from 1986 to 2001, they examine whether increases in maximum weekly PPD benefits are associated with more people taking WC PPD benefits, and whether or not that in turn affects the number of DI awards issued in the state. They note that on average only 28 percent of all workers qualify for their state's maximum level of benefits in a given year.²² While the authors find a slight positive relationship between maximum weekly PPD benefits and the number of workers receiving PPD benefits, they do not find an effect on the number of DI awards.

Analysis

In this analysis, we compare how changes in the number of people receiving WC benefits affect changes in the number of new DI awards. It should be noted that this approach understates the effect of WC on DI *spending* because it fails to account for any increases in DI spending that may be attributed to the 80 percent offset. In 2013, of the 8.9 million workers receiving DI benefits, approximately 1.1 million were "dual eligible" for both WC and DI in 2013 or earlier.²³ Of these "dual eligibles," only 321,079 did *not* have their benefits reduced by the 80 percent cap, though another 88,546 dual eligibles were awaiting decisions on their WC cases.²⁴ Of the remaining beneficiaries, 82,543 had their DI benefits reduced in 2013, 43,817 had their WC benefits reduced in 2013, and 549,802 had had their total benefits reduced in a previous year.²⁵

This analysis compares year-over-year changes in the number of WC beneficiaries with changes in the number of DI awards. Because our analysis looks at the effect of workers' compensation on DI awards, we limit our investigation to DI awards received by *injured workers* rather than the workers' spouses or children. This provision isn't unduly restrictive: as of 2014, of the roughly 10.9 million

22 McInerney and Simon (2012), p. 68.

23 Sengupta and Baldwin (2015), p. 47.

24 Sengupta and Baldwin (2015), p. 47.

25 Sengupta and Baldwin (2015), p. 47.

DI beneficiaries, approximately 9.0 million were injured workers (see **Table A3** in the Appendix). Moreover, injured workers account for a disproportionate share of spending since benefits for disabled workers are much higher than for other persons receiving DI benefits (see Table A3 in the Appendix).

The number of workers annually being awarded DI climbed from a trough of 297,000 in 1982 to a peak of over 1 million in 2010. Since 2010, the number of awards has declined somewhat, falling to 869,000 in 2013 (see **Figure A2** in the Appendix).

It should be noted that this increase appears less substantial when we account for the factors discussed in the Introduction. While the number of injured workers receiving DI has risen substantially, the percentage of covered workers taking DI hasn't increased to the same degree; this can be seen in **Figure A3** in the Appendix. Had the number of workers covered by DI stayed constant from 1982 to 2013 — a proposition that discounts population growth and rising rates of employment — the number of annual DI awards would have gone up by 298 thousand rather than 578 thousand. This means that population growth and higher employment alone account for about half the growth in the number of DI awards. This trend is depicted in **Figure A4**.

Moreover, while the DI take-up rate has risen over the past quarter-century, *the age- and sex-adjusted take-up rate* for disability has actually declined over this period.²⁶ While the unadjusted DI take-up rate has risen by 1.12 awards per 1,000 covered workers since 1991, the age- and sex-adjusted data show that the take-up rate *fell* by 0.44 awards.²⁷ (See **Figure A5** in the Appendix.) Because the take-up rates fluctuate somewhat from year to year, we also present four-year moving averages of the take-up rates in **Figure A6** in the Appendix. Using four-year averages, between 1991 to 1994 and 2011 to 2014, the gross DI take-up rate rose by 1.42 awards per 1,000 covered workers, while the age- and sex-adjusted rate declined by 0.16 awards.

These data indicate that there is no surge in DI awards that needs to be explained. Nonetheless, DI awards may still be higher than would otherwise have been the case without cuts in WC over this period.

To determine the relationship between WC and DI, we draw data from three sources: the *Annual Statistical Bulletin* published by the National Council on Compensation Insurance (NCCI); various

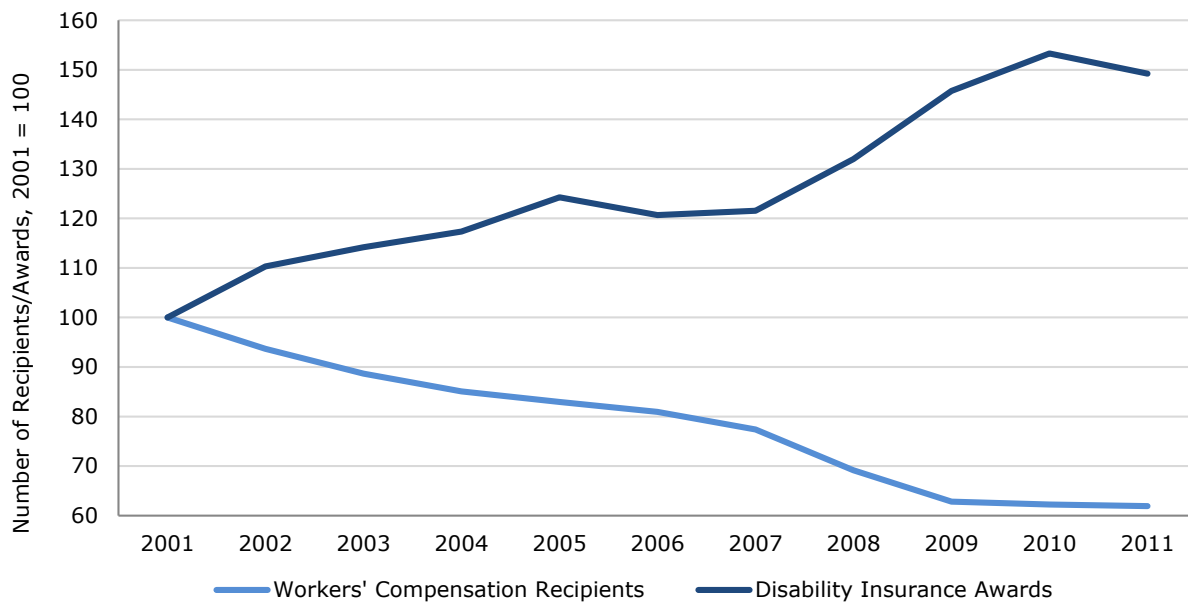
26 This measure shows what the DI take-up rate would have been if the workforce had the same age and gender profile as it did in 2000.

27 A modified version of Figure A4 that starts from the year 1991 is presented as Figure A7 in the Appendix so as to give researchers a constant point of comparison with Figures A5 and A6. Between 1991 and 2014, the number of new DI awards rose by 333,000, though it would only have risen by 172,000 without any increase in the number of covered workers.

reports published by the National Academy of Social Insurance (NASI);²⁸ and the *Annual Statistical Report on the Social Security Disability Insurance Program* published by the Social Security Administration. NCCI's *Annual Statistical Bulletin* provides data, by state, on the number of WC beneficiaries per 100,000 covered workers. By combining NCCI's data with NASI's data on the number of covered workers,²⁹ we are able to determine the number of WC beneficiaries in each state in any given year. Because NCCI's data do not cover North Dakota, Ohio, Washington (state), West Virginia, and Wyoming, our estimates on the number of WC beneficiaries cover 45 states and the District of Columbia (DC). (We will henceforth refer to these 45 states and DC as "46 states.") The Social Security Administration's state-level data on the number of new DI awards go back to 2001; the most recent NCCI data include figures from 2011. As such, our analysis includes data from 46 states for the years 2001 to 2011, as well as from Arkansas, Montana, and South Dakota for 2012. The number of WC beneficiaries in these 46 states has declined dramatically over the past decade, from approximately 6.5 million in 2001 to just over 4 million in 2011. As shown in **Figure 2** the number of WC beneficiaries has fallen at the same time as the number of new DI awards in these 46 states has risen.³⁰

FIGURE 2

The Fall of Workers' Compensation and the Rise of Disability Insurance



Source: Authors' calculations and National Council on Compensation Insurance (2015); National Academy of Social Insurance (2015); Social Security Administration (2014).

28 These are NASI's annual reports on WC programs, titled "Workers' Compensation: Benefits, Coverage, and Costs." These reports are cited as National Academy of Social Insurance (2015).

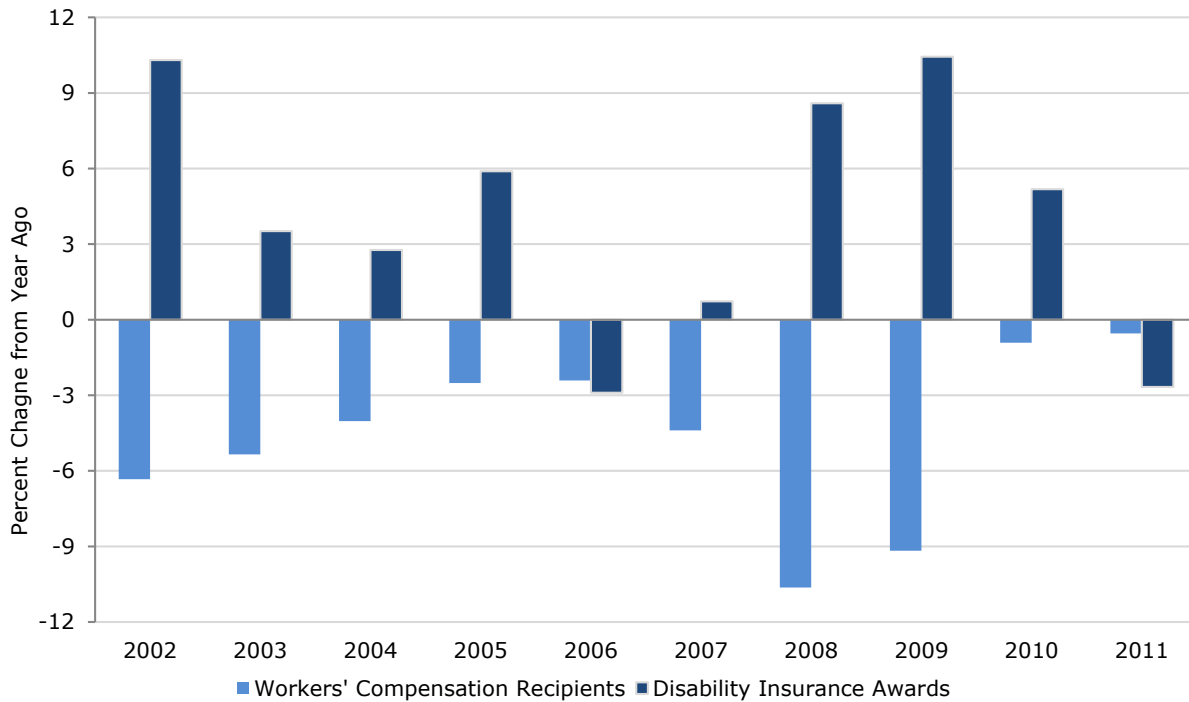
29 This is different than the methodology employed by McInerney and Simon (2012), who use NCCI's data on the number of beneficiaries per 100,000 covered workers without adjusting for changes in coverage rates. As such, any declines in the number of WC beneficiaries that can be attributed to declining coverage won't show up in their data.

30 The number of DI awards in these 46 states rose from a little over 600,000 in 2001 to over 900,000 in 2011.

Furthermore, if we examine year-over-year changes in the number of WC recipients versus the number of DI awards, it appears that greater declines in the number of WC beneficiaries correlate with greater increases in DI awards as shown in **Figure 3**.

FIGURE 3

Larger Drops In Workers' Compensation Associated With Increased Disability Insurance Awards



Source: Authors' calculations and National Council on Compensation Insurance (2015); National Academy of Social Insurance (2015); Social Security Administration (2014).

To determine whether changes in the number of WC beneficiaries affect the number of DI awards, we consider percent changes in both variables from the previous year, by state. Because these variables require a previous year's data, they exclude 2001; this leaves us with percent changes for 46 states from 2002 to 2011, as well as changes in three states in 2012, giving us a total of 463 observations. Descriptive statistics for both variables are provided in **Table 1**.

TABLE 1

Descriptive Statistics		
	WC Changes	DI Changes
Mean	-0.04336	0.04520
Standard Deviation	0.04756	0.09913
Count	463	463

Source: Authors' calculations.

Our first model simply consists of a regression comparing the percent changes in WC beneficiaries to the percent changes in DI awards. The variable “WC Changes” — which measures the percent change in WC beneficiaries from the previous year — is statistically significant at the 1 percent level of confidence. The results indicate that a 1 percent decrease in WC beneficiaries increases the number of DI awards by 0.58 percent, as shown in **Table 2**.

TABLE 2

Changes in Disability Awards and Changes in Numbers Receiving Workers’ Compensation

(Dependent Variable: Changes in Disability Insurance Awards)

	Coefficient	Standard Error	t statistic	p-value	Lower 95%	Upper 95%	Lower 99%	Upper 99%
Intercept*	0.02024	0.00600	3.37290	0.00081	0.00845	0.03204	0.00472	0.03577
WC Changes*	-0.57553	0.09331	-6.16819	0.00000	-0.75889	-0.39217	-0.81687	-0.33419

Source: Authors’ calculations. Adjusted R² = 0.07423. *Significant at the 1 percent level of confidence. **Significant at the 5 percent level of confidence. ***Significant at the 10 percent level of confidence.

Our second model incorporates a trend control by adding dummy variables for year fixed effects. The coefficient for “WC Changes” decreases from 0.58 to 0.27, as can be seen in **Table 3** below. This means that a 1 percent decrease in WC beneficiaries correlates with a 0.27 percent increase in DI awards. The variable is significant at the 5 percent level of confidence. This suggests that the 38 percent decline in the number of WC beneficiaries from 2001 to 2011 was associated with a 10.2 percent increase in the number of new DI awards. Given that there were approximately 604,000 DI awards in our 46 states in 2001, this would imply that the number of DI awards would increase by over 60,000 by 2011 as a result of the decline in WC. Since the number of DI awards actually increased by about 300,000, it seems that a bit over a fifth of the increase can be explained by cuts in WC programs.³¹

To determine whether legislative changes to WC programs could have an effect on workers’ decisions on whether to take WC or DI, we researched the WC legislative changes in all 46 states from 2002 to 2011 (or 2012). We began this research by consulting the changes in WC law documented by ProPublica from 2002 to 2014.³² We also examined data from the Bureau of Labor Statistics and the websites of various state governments to account for any changes not documented by ProPublica. We found a small number of such changes. In order to determine the effective dates as well the importance of these changes, we then tracked down either the individual bills themselves or extra information on the bills. The given change was classified as a *Significant Cut* (in benefits), an *Insignificant Cut*, a *Significant Increase*, or an *Insignificant Increase*.

31 We expect to do further research on this link that will incorporate more variables so as to control for other factors that may be causing the increase in DI awards.

32 Available at: <http://projects.propublica.org/graphics/workers-comp-reform-by-state?state>.

TABLE 3

Changes in Disability Awards and Changes in Numbers Receiving Workers' Compensation

(Dependent Variable: Changes in Disability Insurance Awards)

	Coefficient	Standard Error	t statistic	p-value	Lower 95%	Upper 95%	Lower 99%	Upper 99%
Intercept*	-0.03584	0.01301	-2.75422	0.00612	-0.06142	-0.01027	-0.06950	-0.00218
WC Changes**	-0.26666	0.11306	-2.35858	0.01877	-0.48884	-0.04447	-0.55911	0.02580
2002*	0.13777	0.01927	7.15026	0.00000	0.09990	0.17563	0.08793	0.18761
2003*	0.05432	0.01889	2.87639	0.00421	0.01721	0.09144	0.00547	0.10318
2004*	0.06772	0.01842	3.67629	0.00027	0.03152	0.10392	0.02007	0.11536
2005*	0.08398	0.01837	4.57201	0.00001	0.04788	0.12008	0.03647	0.13150
2006	0.01434	0.01838	0.78022	0.43567	-0.02178	0.05046	-0.03320	0.06188
2007**	0.03848	0.01863	2.06539	0.03946	0.00187	0.07510	-0.00971	0.08668
2008*	0.08703	0.02099	4.14607	0.00004	0.04578	0.12828	0.03273	0.14133
2009*	0.11519	0.02064	5.58046	0.00000	0.07462	0.15575	0.06179	0.16858
2010*	0.09998	0.01834	5.45024	0.00000	0.06393	0.13602	0.05253	0.14743
2012	0.00771	0.05247	0.14703	0.88318	-0.09540	0.11083	-0.12801	0.14344

Source: Authors' calculations. Adjusted R² = 0.21298. *Significant at the 1 percent level of confidence. **Significant at the 5 percent level of confidence. ***Significant at the 10 percent level of confidence.

To determine whether or not such changes had affected the number of workers receiving WC, we ran a regression comparing changes in the number of WC beneficiaries with changes in legislation. In all models, we indexed the number of workers receiving WC to 100 for the year 2001, and the number of workers receiving WC in a given year was thus expressed as a percentage of the number of workers who had received WC in 2001. We then created two indicator variables which showed whether states had significantly increased or decreased benefits in a given year. The indicator variable applied for all years after the change had taken effect. For instance, if a state first cut its WC benefits in 2007,³³ 2007 and all subsequent years (usually 2007 to 2011) had the indicator variable for “Cuts.” Because the number of WC beneficiaries has generally declined over time, we again add a trend control. Our results — which can be seen in **Table 4** — show that legislative cuts to WC have resulted in fewer WC beneficiaries. This variable is significant at the 10 percent level of confidence. The coefficient for “Increases” is positive, as we would expect, but is not statistically significant. We therefore removed the “Increases” variable and re-ran our results, which can be seen in **Table 5** on the next page. The results were similar to those seen in Table 4, though the “Cuts” variable achieved significance at the 5 percent level of confidence. (The absolute value of the “Cuts” coefficient also increased, though it was slight.)

33 If a cut or increase went into effect in the last four months of a given calendar year, we labeled the next year as the first year of the cut/increase. For example, if a legislative cut had gone into effect in December 2004, the year 2005 would have been identified as the year of the cut.

TABLE 4

Changes in Disability Awards and Changes in Numbers Receiving Workers' Compensation								
(Dependent Variable: Number of Workers Receiving WC Benefits, Indexed to 100 in 2001)								
	Coefficient	Standard Error	t statistic	p-value	Lower 95%	Upper 95%	Lower 99%	Upper 99%
Intercept*	64.54642	1.64535	39.22964	0.00000	61.31290	67.77994	60.29023	68.80260
Cuts***	-2.30901	1.19274	-1.93589	0.05351	-4.65305	0.03502	-5.39440	0.77637
Increases	1.48156	1.31852	1.12365	0.26176	-1.10966	4.07277	-1.92918	4.89230
2002*	29.17524	2.21141	13.19306	0.00000	24.82927	33.52122	23.45477	34.89571
2003*	24.51018	2.20255	11.12811	0.00000	20.18163	28.83874	18.81264	30.20773
2004*	22.58396	2.17857	10.36639	0.00000	18.30252	26.86541	16.94843	28.21950
2005*	21.15372	2.16369	9.77670	0.00000	16.90154	25.40591	15.55670	26.75074
2006*	19.56169	2.14426	9.12282	0.00000	15.34769	23.77570	14.01492	25.10846
2007*	16.32329	2.12925	7.66622	0.00000	12.13879	20.50780	10.81535	21.83123
2008*	8.38983	2.11787	3.96146	0.00009	4.22770	12.55197	2.91134	13.86833
2009	1.46009	2.11364	0.69079	0.49005	-2.69374	5.61391	-4.00747	6.92764
2010	0.51252	2.11300	0.24255	0.80846	-3.64006	4.66510	-4.95340	5.97844
2012	-0.41166	6.05135	-0.06803	0.94579	-12.3041	11.48076	-16.0653	15.24197

Source: Authors' calculations. Adjusted R² = 0.52001. *Significant at the 1 percent level of confidence. **Significant at the 5 percent level of confidence. ***Significant at the 10 percent level of confidence.

TABLE 5

Changes in Disability Awards and Changes in Numbers Receiving Workers' Compensation								
(Dependent Variable: Number of Workers Receiving WC Benefits, Indexed to 100 in 2001)								
	Coefficient	Standard Error	t statistic	p-value	Lower 95%	Upper 95%	Lower 99%	Upper 99%
Intercept*	65.02644	1.58939	40.91294	0.00000	61.90292	68.14996	60.91506	69.13782
Cuts**	-2.37278	1.19174	-1.99102	0.04708	-4.71483	-0.03073	-5.45554	0.70998
2002*	28.75964	2.18089	13.18709	0.00000	24.47367	33.04562	23.11816	34.40112
2003*	24.15900	2.18089	11.07757	0.00000	19.87302	28.44497	18.51752	29.80048
2004*	22.23832	2.15738	10.30804	0.00000	17.99856	26.47808	16.65767	27.81897
2005*	20.81224	2.14286	9.71236	0.00000	16.60101	25.02347	15.26914	26.35534
2006*	19.25796	2.12777	9.05076	0.00000	15.07638	23.43954	13.75389	24.76203
2007*	16.11896	2.12209	7.59580	0.00000	11.94855	20.28936	10.62960	21.60832
2008*	8.22464	2.11337	3.89171	0.00011	4.07136	12.37792	2.75782	13.69145
2009	1.39151	2.11337	0.65843	0.51060	-2.76177	5.54479	-4.07530	6.85833
2010	0.47615	2.11337	0.22530	0.82184	-3.67713	4.62943	-4.99066	5.94297
2012	-0.84917	6.04057	-0.14058	0.88827	-12.7203	11.02199	-16.4748	14.77642

Source: Authors' calculations. Adjusted R² = 0.51973. *Significant at the 1 percent level of confidence. **Significant at the 5 percent level of confidence. ***Significant at the 10 percent level of confidence.

These regressions, in tandem, indicate that state-level cuts to WC programs have increased the number of injured workers taking DI. The results presented in Tables 4 and 5 indicate that cuts in WC law have decreased the number of workers receiving WC, and the results presented in Table 3 indicate that decreases in the number of WC beneficiaries correspond with increases in DI awards. As such, it seems that legislative cuts to WC law have caused increases in the number of DI awards.

As an additional check, we re-ran the regression presented in Table 5, but changed the dependent variable from the number of WC beneficiaries to the number of DI awards. In this scenario, the “Cuts” variable is expected to be positive, as legislative cuts to WC should cause increases in the

number of DI awards. The results — presented in **Table 6** below — indicate that cuts to WC have been associated with more DI awards. The “Cuts” variable is significant at the 10 percent level of confidence.

TABLE 6

Changes in Disability Awards and Changes in Numbers Receiving Workers' Compensation								
(Dependent Variable: Number of DI Awards, Indexed to 100 in 2001)								
	Coefficient	Standard Error	t statistic	p-value	Lower 95%	Upper 95%	Lower 99%	Upper 99%
Intercept*	150.15090	3.64256	41.22127	0.00000	142.99241	157.30939	140.72842	159.57338
Cuts***	4.72061	2.73123	1.72838	0.08460	-0.64691	10.08813	-2.34448	11.78569
2002*	-38.30117	4.99818	-7.66302	0.00000	-48.12378	-28.47856	-51.23033	-25.37201
2003*	-34.99832	4.99818	-7.00221	0.00000	-44.82093	-25.17571	-47.92748	-22.06916
2004*	-31.23672	4.94428	-6.31774	0.00000	-40.95341	-21.52003	-44.02647	-18.44698
2005*	-25.19704	4.91102	-5.13072	0.00000	-34.84836	-15.54572	-37.90073	-12.49335
2006*	-27.75153	4.87644	-5.69094	0.00000	-37.33489	-18.16817	-40.36578	-15.13729
2007*	-26.29715	4.86341	-5.40715	0.00000	-35.85491	-16.73940	-38.87769	-13.71662
2008*	-17.41744	4.84343	-3.59610	0.00036	-26.93594	-7.89895	-29.94631	-4.88858
2009	-4.02055	4.84343	-0.83010	0.40692	-13.53905	5.49794	-16.54942	8.50831
2010	5.58617	4.84343	1.15335	0.24938	-3.93233	15.10467	-6.94270	18.11504
2012	15.99198	13.84380	1.15517	0.24863	-11.21439	43.19834	-19.81881	51.80276

Source: Authors' calculations. Adjusted R² = 0.30119. *Significant at the 1 percent level of confidence. **Significant at the 5 percent level of confidence. ***Significant at the 10 percent level of confidence.

It should be noted that the results of the regressions presented in Tables 4 to 6 do not map onto questions of quantifiable increases in DI awards as easily as the results presented in Table 3. This is because our variable for “legislative cuts” does not perfectly quantify the degree of cuts to WC. Our results suggest that significant cuts in WC increase DI awards; however, more insignificant cuts may still have increased the incidence of DI awards, although each insignificant cut will, by itself, have only a small effect. Moreover, within the sphere of significant cuts, our variable does not differentiate between cuts we just barely deemed significant versus those that were even more significant. While we can say that legislative cuts to WC have led to increased DI awards, we cannot quantify the exact degree of increase.

Our results are more in line with those of Guo and Burton (2012) than those of McInerney and Simon (2012). Just as Guo and Burton (2012) find that cuts to WC law are associated with increased DI *applications*, so we find that they are associated with increased DI *awards*. Our results do not necessarily contradict those of McInerney and Simon (2012). Their results indicate that legislated *increases* in maximum weekly PPD benefits don't have an effect on DI awards, which is consistent with our own study not finding a statistically significant relationship between legislated *increases* in WC benefits and decreased DI awards. Nonetheless, it is telling that our two papers' ultimate findings point in opposite directions. There are a number of plausible reasons why McInerney and Simon (2012) may have found results different from our own: they only examine increases in the

maximum level of weekly benefits (which only apply to a minority of all workers); they limit their analysis to only PPD beneficiaries; and they don't differentiate between significant and insignificant legislative changes.

Conclusion

These results indicate that policymakers and academics may have overlooked an important factor behind the rise in DI awards: state-level cuts to WC programs. While researchers have examined a number of factors behind the rise in DI, workers' compensation has received very little attention in this discussion. The research presented in this paper indicates that workers are more likely to take DI benefits in part because they no longer have the option of taking WC benefits. One implication of the decision by many states to cut WC benefits was to transfer costs to the federal government through the DI program. This research suggests that cuts to the WC program may have been responsible for roughly one-fifth of the rise in DI awards over this period.

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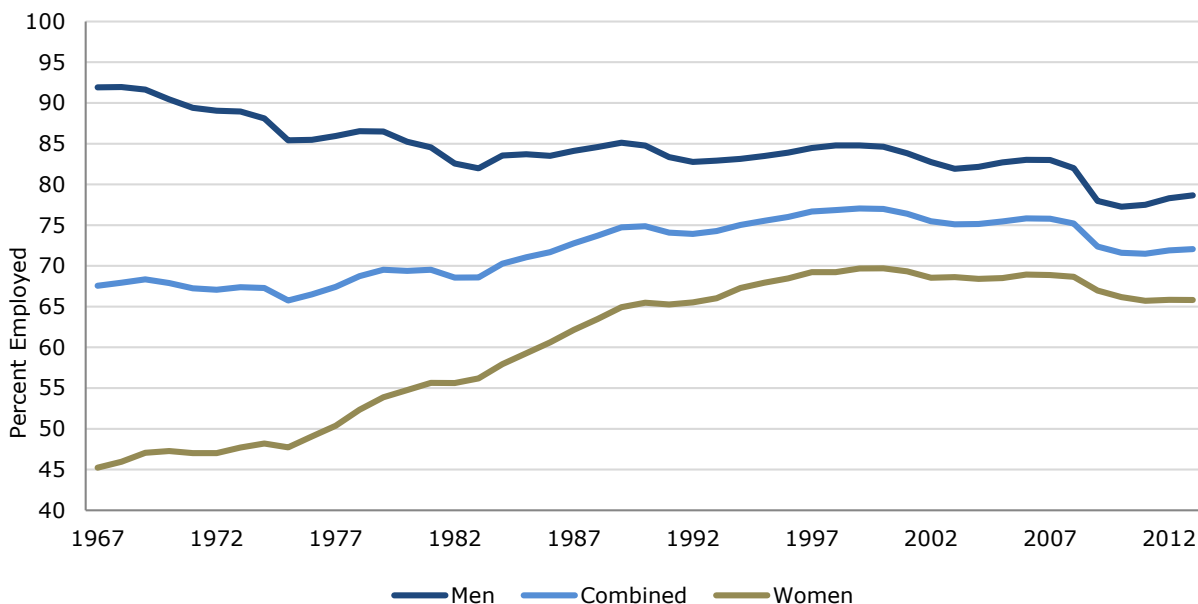
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Appendix

FIGURE A1

Employment Rates, Ages 30 to 64



Source: Authors' calculations, Bureau of Labor Statistics' Current Population Survey.

TABLE A1

Rules for DI Eligibility by Age

Age	Qualifying for DI Benefits: Work Credit Requirements
Under 24	Must have earned six credits in the three years preceding the onset of disability.
24 to 31	Must have earned an amount of credits consistent with the following formula: $2 \times ([\text{Age at date of injury}] - 21)$. For example, a worker who is 29 years old at the date of his injury must have earned 16 credits, because $2 \times (29 - 21) = 16$. Furthermore, these credits must have been earned after turning 21.
31 to 42	Must have earned twenty credits in the 10 years preceding the onset of disability.
42 to 62	Must have earned an amount of credits consistent with the following formula: $20 + ([\text{Age at date of injury}] - 42)$. For example, a worker who is 56 years old at the date of her injury must have earned 34 credits, because $20 + (56 - 42) = 34$. At least 20 of the credits must have been earned in the 10 years preceding the onset of disability.
62 to 66	Must have earned 40 credits, 20 of which must have been earned in the 10 years preceding the onset of disability.

Source: Authors' compilation; information is from the Social Security Administration website, "Benefits Planner: Social Security Credits," at <http://www.ssa.gov/planners/credits.html#&a0=2>. Note: Blind workers are exempt from this system.³⁴

34 See "Disability Planner: Special Rules For People Who Are Blind Or Have Low Vision," at <http://www.ssa.gov/planners/disability/dqualify8.html>.

BOX A1

Additional Requirements for Qualifying for DI Benefits

There are two additional caveats worth noting:

1. Workers over the age of 31 are required not only to have earned a certain number of credits, but also must have earned a certain amount of credits *in the recent past*. More specifically, any worker age 31 or over must have worked five out of the previous ten years in order to qualify for benefits. (See *Social Security Disability Benefits*, page 8, available at <http://www.ssa.gov/pubs/EN-05-10029.pdf>.)
2. The last age group presented in Table A1 is liable to change over time. This is because workers are shifted from receiving DI benefits to receiving OASI benefits when they hit Social Security’s full retirement age. In 2002, before the full retirement age was raised, the last age range would have been “62 to 65.” By 2027, it will be “62 to 67.” The increase in Social Security’s OASI full retirement age has increased the costs of the DI program by forcing the DI program to cover workers over the age of 65.

TABLE A2

Rules and Eligibility: Workers’ Compensation and Disability Insurance

	Workers’ Compensation	Social Security Disability Insurance
Injuries or Illnesses Covered	Covers any injury that occurs at work and inhibits a worker’s earning capacity.	Covers any medical condition that precludes gainful employment regardless of whether an injury occurred at work or not.
Eligibility	Workers are eligible for workers’ compensation benefits beginning with their first day of employment.	See Table A1 and Box A1 above.
Effect on benefits of duration of injury or disability	Covers both short-term and long-term disabilities, with benefits being provided for a shorter duration if the disability impairs the worker for a shorter period of time. (Workers may not receive benefits to compensate their waiting periods, however.)	Covers disabilities that are expected to prevent gainful employment for at least one year or result in death.
Start date for receipt of benefits	States have distinct waiting periods which prohibit workers from receiving income benefits for the first 3 to 7 days after the date of their injury, though medical benefits are available immediately.	There is a five-month waiting period between when workers are approved for income benefits and when they can start receiving them. ³⁵ After the five-month waiting period is over, there is a separate 24-month waiting period before a worker can begin receiving Medicare. ³⁶ (This leads to a total 29-month waiting period after approval.)

Source: Information from National Academy of Social Insurance (2014), EHealth (2012), O’Leary et al. (2012), Medicare Rights Center (2015), Social Security Administration (2015a), Centers for Medicare & Medicaid Services (2012), and Social Security Administration, various sources.³⁷

³⁵ EHealth (2012), National Academy of Social Insurance (2014), Medicare Rights Center (2015)

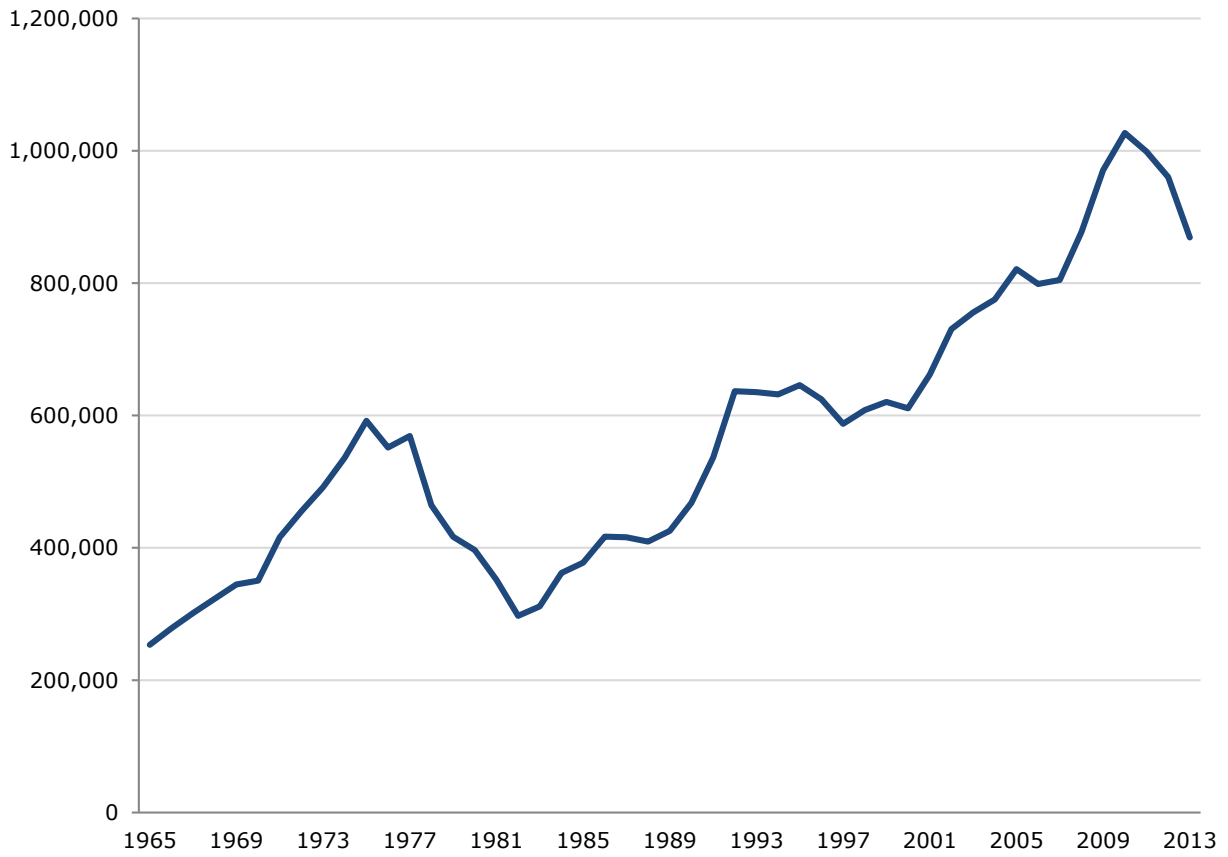
³⁶ Workers with End-Stage Renal Disease or Lou Gehrig’s Disease are exempt from the waiting period.

³⁷ See the following sources:

- “Disability Planner: How We Decide If You Are Disabled.” at: <http://www.ssa.gov/planners/disability/dqualify5.html#&a0=4>.
- “Benefits Planner: Social Security Credits.” at: <http://www.ssa.gov/planners/credits.html#&a0=0>.
- “Disability Planner: How Much Work Do You Need?” at: <http://www.ssa.gov/planners/disability/dqualify2.html>.
- “Contribution and Benefit Rise.” at: <http://www.ssa.gov/oact/cola/cbb.html>.
- “Disability Insurance Benefit Payments.” at: <http://www.ssa.gov/oact/STATS/table4a6.html>.

FIGURE A2

Worker Disability Insurance Awards



Source: Authors' calculations, Social Security Administration (2014); Social Security Administration (2000).

BOX A2

Disability Insurance-Workers' Compensation Offset Scenarios

When injured workers are receiving both DI and WC, their total income benefits from the two programs are capped at 80 percent of the worker's pre-injury wage. When states make cuts to their WC programs, there are four possible outcomes: 1) there is no change in benefits paid by either of the two programs; 2) the cuts in WC benefits translate to higher DI benefits; 3) the worker receives fewer benefits; or 4) a combination of points two and three, in which workers lose WC benefits and some but not all of their benefits are replaced under the DI program. The outcome depends on two factors: 1) whether the worker lives in a state that reduces his WC benefits or his DI benefits; and 2) how great his benefits would have been without the 80 percent cap. Five scenarios describing the four outcomes are given below.

Scenario 1

The worker's pre-injury weekly wage is \$500. He qualifies for WC benefits of up to \$300 per week; he also qualifies for DI benefits of up to \$300 per week. Because this worker lives in a state that reduces WC benefits rather than DI benefits, he receives \$100 a week in WC benefits and \$300 a week in DI benefits.

The Cut: The state reduces its WC benefits from \$300 per week to \$250 per week.

The Outcome: There is no change. The worker still receives \$100 per week in WC benefits and \$300 per week in DI benefits.

Scenario 2

The worker's pre-injury weekly wage is \$500. He qualifies for WC benefits of up to \$300 per week; he also qualifies for DI benefits of up to \$300 per week. Because this worker lives in a state that reduces DI benefits rather than WC benefits, he receives \$300 a week in WC benefits and \$100 a week in DI benefits.

The Cut: The state reduces its WC benefits from \$300 per week to \$250 per week.

The Outcome: The worker's weekly WC benefits are reduced from \$300 to \$250, and his DI benefits increase from \$100 to \$150. As such, there is no reduction in benefits received by the worker, but there is a cost shift of \$50 from the WC program to the DI program.

Scenario 3

The worker's pre-injury weekly wage is \$500. She qualifies for WC benefits of up to \$220 per week; she also qualifies for DI benefits of up to \$220 per week. Because this worker lives in a state that reduces WC benefits rather than DI benefits, she receives \$180 a week in WC benefits and \$220 a week in DI benefits.

The Cut: The state reduces its WC benefits from \$220 per week to \$110 per week.

The Outcome: The worker's weekly WC benefits are reduced from \$180 to \$110. Because the worker was already previously receiving DI benefits of \$220 per week, her DI benefits are unchanged. The worker's total benefits fall from \$400 per week to \$330 per week, a cut of \$70.

Scenario 4

The worker's pre-injury weekly wage is \$500. She qualifies for WC benefits of up to \$220 per week; she also qualifies for DI benefits of up to \$220 per week. Because this worker lives in a state that reduces DI benefits rather than WC benefits, she receives \$220 a week in WC benefits and \$180 a week in DI benefits.

The Cut: The state reduces its WC benefits from \$220 per week to \$110 per week.

The Outcome: The worker's weekly WC benefits are reduced from \$220 to \$110. Because the worker may receive up to \$220 a week in DI benefits, her DI benefits are increased by \$40, from \$180 per week to \$220. As such, \$40 in costs are shifted from the WC program to the DI program, and the worker loses \$70 a week in total benefits.

Scenario 5

The worker's combined WC and DI benefits add up to exactly 80 percent of the worker's pre-injury wage.

The Cut: Not relevant.

The Outcome: Any cut in WC benefits translates to a cut in total benefits paid to the worker of the exact same amount. For example, if WC benefits are reduced by \$100 per week, the worker receives \$100 less in compensation. If WC benefits are reduced by \$300, the worker receives \$300 less in compensation.

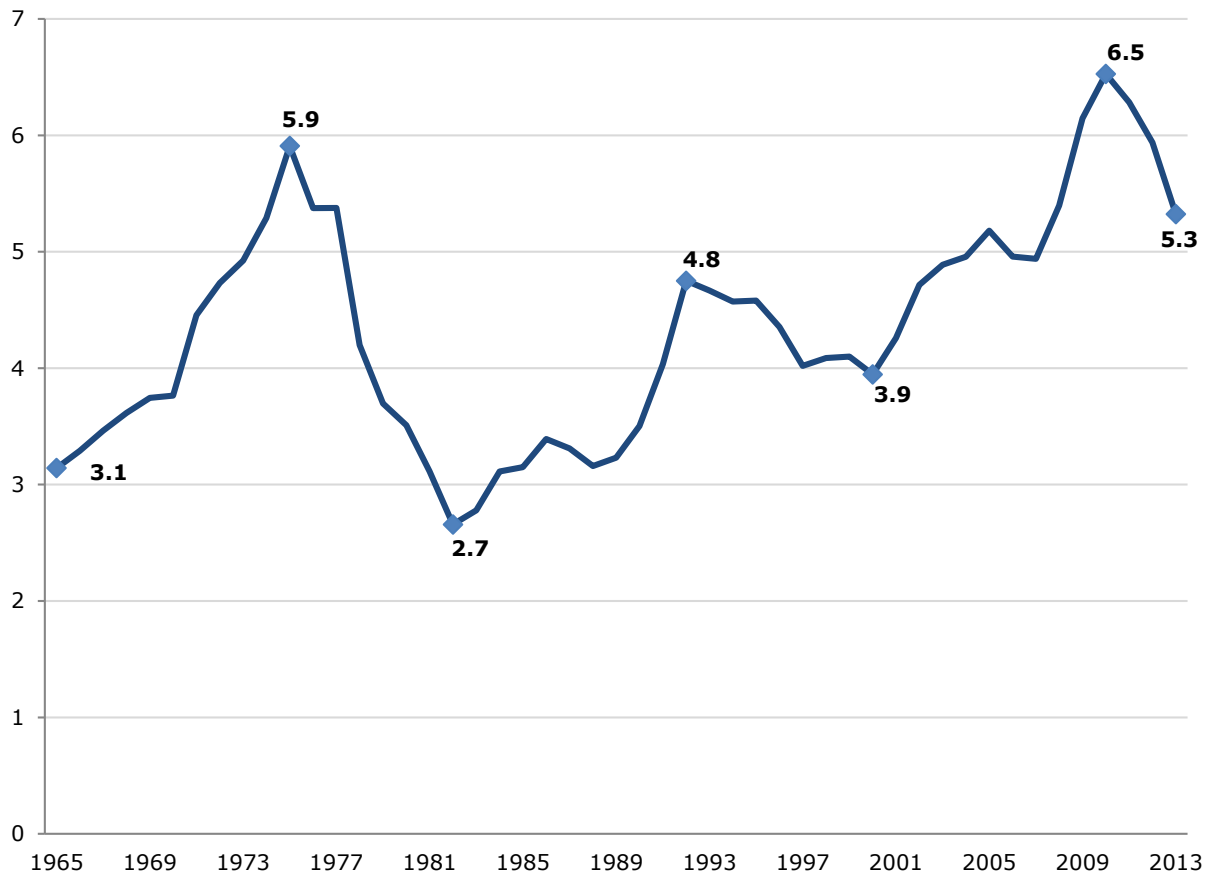
TABLE A3

Social Security Disability Insurance Beneficiaries and Benefits, 2014 (Most Recent Data)					
	Number of Beneficiaries (Thousands)	Benefits Received (Millions)	Average Annual Benefits Per Beneficiary	Percent of Total Beneficiaries	Percent of Total Benefits Received
Workers	8,955	\$132,154	\$14,758	81.9	93.3
Spouses	150	\$598	\$3,987	1.4	0.4
Children	1,828	\$8,870	\$4,852	16.7	6.3
All Groups	10,932	\$141,622	\$12,955	100.0	100.0

Source: Authors' calculations and "The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds," pages 37 and 137, available at <http://www.socialsecurity.gov/OACT/tr/2015/tr2015.pdf>. Note: The categories represent rounded values.

FIGURE A3

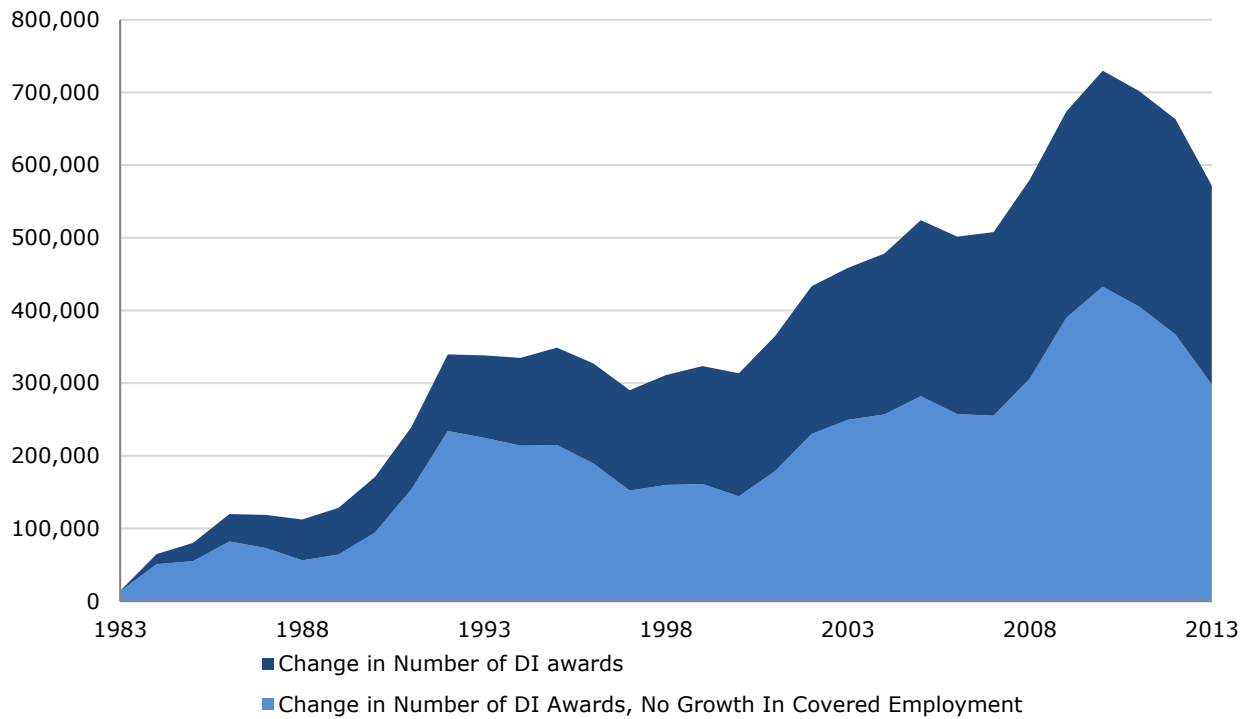
Social Security Disability Insurance Awards Per 1,000 Covered Workers



Source: Authors' calculations, Social Security Administration (2014); Social Security Administration (2000); Social Security Administration (2015). Note: The highlighted peaks, troughs, and start and end dates are 1965, 1975, 1982, 1992, 2000, 2010, and 2013.

FIGURE A4

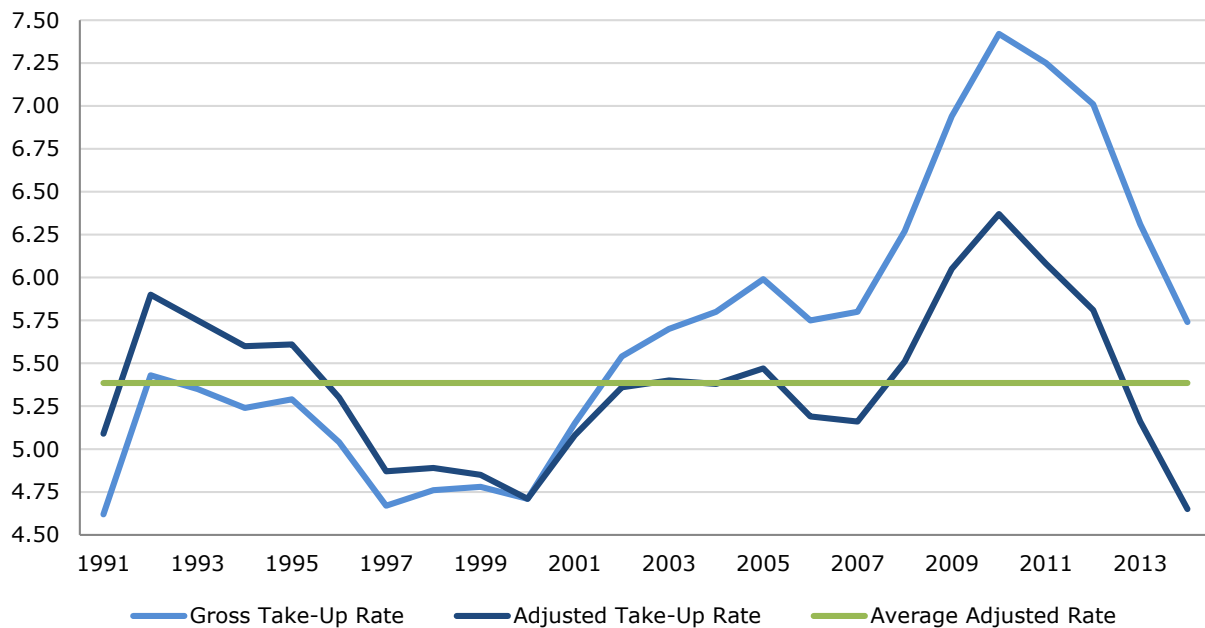
Increase in the Number of Workers Receiving Social Security Disability Insurance Awards, Since 1982



Source: Authors' calculations, Social Security Administration (2014); Social Security Administration (2000); Social Security Administration (2015).

FIGURE A5

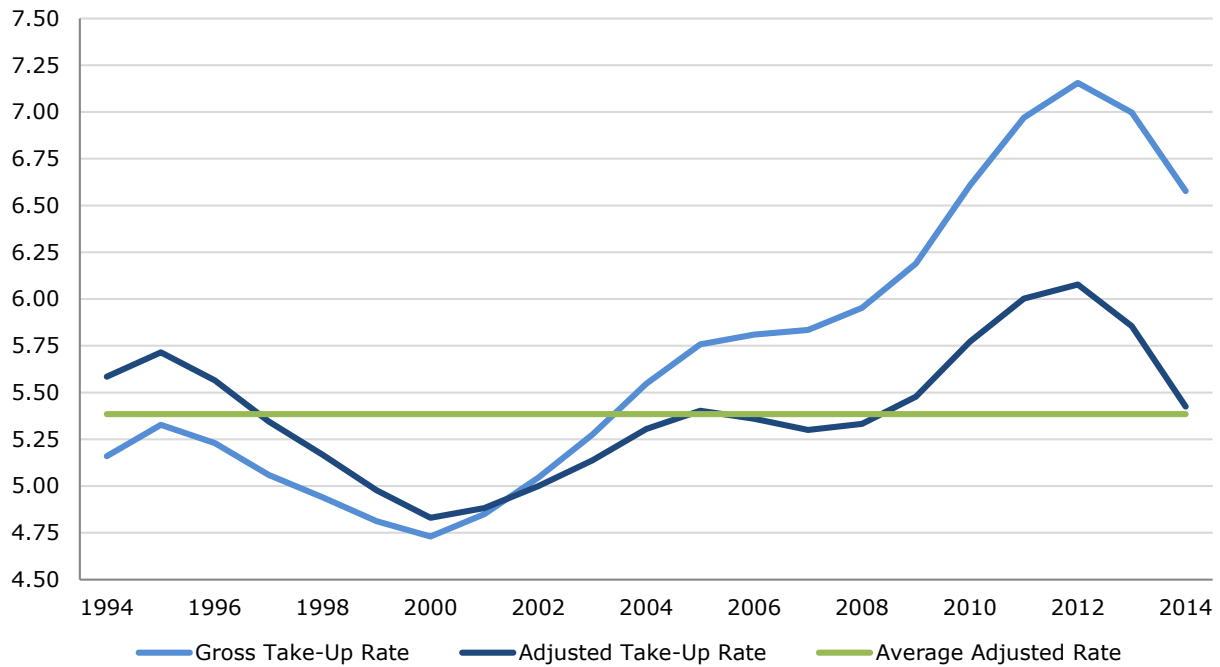
Social Security Disability Insurance Take-Up Rates, Per 1,000 Covered Workers



Source: Authors' Calculations, Zayatz (2015). Note: There's a slight discrepancy between the gross rates presented in Figure A5 and the rates presented in Figure A3.

FIGURE A6

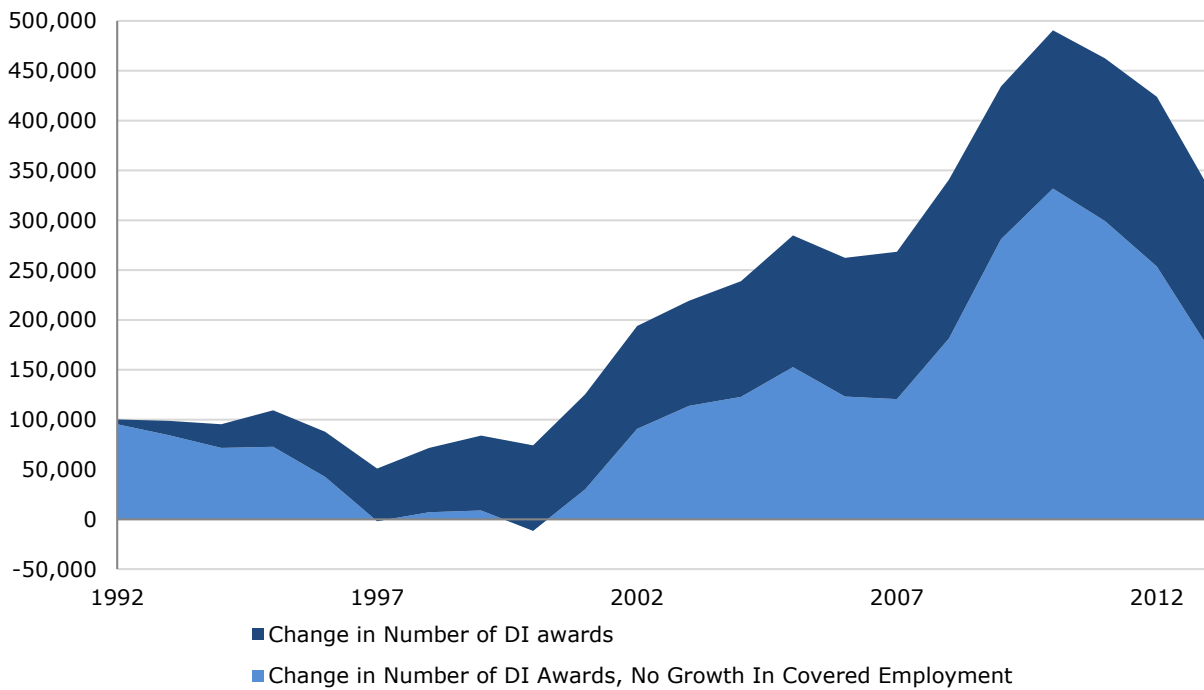
Social Security Disability Insurance Take-Up Rates, Per 1,000 Covered Workers, Four-Year Moving Averages



Source: Authors' Calculations, Zayatz (2015).

FIGURE A7

Increase in the Number of Workers Receiving Social Security Disability Insurance Awards, Since 1991



Source: Authors' calculations, Social Security Administration (2014); Social Security Administration (2000); Social Security Administration (2015).