

The Importance of State Anti-Discrimination Laws on Employer Accommodation and the Movement of their Employees onto Social Security Disability Insurance

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Abstract

The rate of application for Social Security Disability Insurance (SSDI) benefits, as well as the number of beneficiaries has been increasing for the past several decades, threatening the solvency of the SSDI program. One possible remedy is to promote continued employment amongst those experiencing the onset of a work limiting disability through the provision of workplace accommodations. Using the Health and Retirement Study data linked to Social Security administrative we find that the provision of workplace accommodation reduces the probability of application for SSDI following disability onset. We estimate that receipt of an accommodation reduces a worker's probability of applying for SSDI by 7.4 percentage points over five years and 5.7 percentage points over 10 years. We then attempt to control for the potential endogeneity of accommodation receipt by exploiting exogenous variation in the implementation of state and federal anti-discrimination laws to estimate the impact of workplace accommodation on SSDI application in an instrumental variables (IV) model. In contrast to our expectations, we find that the IV estimates are actually larger in magnitude than the standard estimates, implying a reduction in the probability of applying within five years of 26 percentage points, and applying within 10 years of 39 percentage points. Overall our results imply that increasing accommodation is a plausible strategy for reducing SSDI applications and the number of beneficiaries.

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Rising Social Security Disability Insurance (SSDI) program costs have resulted in calls for major disability policy reforms (Autor and Duggan 2010; Burkhauser and Daly 2011) aimed at encouraging employers to provide greater accommodations for their workers following the onset of a work limitation and hence slow down their movement onto the SSDI program rolls. But there is little empirical evidence that past government efforts to increase accommodation have been successful in doing so or even that employer accommodation slows the movement of workers onto SSDI. In this paper, we use Health and Retirement Study (HRS) data from 1992 – 2008 linked to Social Security Administration (SSA) administrative records on application for SSDI to estimate the effects of employer accommodation on workers' application for SSDI benefits following the onset of a work limitation.

SSDI is the primary income replacement program for working age Americans whose health-based work limitations prevent them from performing any substantial gainful activity. But in most cases the onset of work limitation does not result in an immediate movement onto the SSDI rolls. Burkhauser, Butler, and Gumus (2004) using data from the Health and Retirement Study (HRS) show there is on average a seven year window between the onset of a work limitation and application for benefits. This timing varies by the severity of the impairment, but it also varies by the social environment the worker faces, including whether the employer provides the impaired worker with an accommodation.

When a worker experiences the onset of a work limitation—whether it is employment related or not—the employer may be able to facilitate continued employment with the provision of some form of workplace accommodation. Typical accommodations provided include altering the employees' work environment, job type or schedule, retraining, and the provision of special tools or special transportation. Policy makers have encouraged employers to make such accommodations with the implementation of various state and federal laws preventing discrimination against those with disabilities, and in some cases mandating workplace accommodations for them. While the most prominent of these laws was the

Americans with Disabilities Act of 1990 (ADA), numerous state anti-discrimination and accommodation laws had been implemented prior to the passage of the ADA, starting with Wisconsin in 1965 and ending with Delaware and Idaho in 1988 (Jolls and Prescott 2004).

Burkhauser, Butler, Kim, and Weathers II (1999) and Burkhauser, Butler, and Gumus (2004) estimate that workplace accommodations significantly extended the duration before a worker applied for SSDI benefits. However, these studies were unable to control for important but unobserved worker characteristics. Employers are more likely to accommodate workers whose unobserved characteristics make them more likely to continue working if accommodated, suggesting that these previous studies overstated the impact of accommodation. This paper attempts to overcome this limitation by using state and federal laws as instrumental variables (IV) for accommodation. Previous research has demonstrated that state and federal anti-discrimination and reasonable accommodation laws increased the likelihood that workers were accommodated following the onset of a work limitation (Burkhauser, Schmeiser, and Weathers II 2012).

Using standard logit models, consistent with the previous literature, we find that the provision of workplace accommodation reduces the probability of application for SSDI following disability onset. However, the magnitude of the effect we estimate is somewhat smaller than that found in past studies focused on earlier cohorts of workers. We further attempt to control for the potential endogeneity of accommodation receipt to SSDI application by exploiting exogenous variation in the implementation of state and federal anti-discrimination laws to estimate the impact of workplace accommodation on SSDI application. Contrary to our expectations, the coefficients on the IV estimates are significantly larger in magnitude than those from the standard logit model, but more closely in line with previous literature, suggesting that workplace accommodation is extremely effective at reducing SSDI application.

I. Background

A. *History of Accommodation-*

Employment protection laws make discrimination against qualified individuals with a disability illegal and may also require employers to provide “reasonable accommodation” to them. The first federal law affecting persons with disabilities was the Rehabilitation Act of 1973, which included antidiscrimination standards for public employers. The Americans with Disabilities Act of 1990 (ADA) was the first federal disability based anti-discrimination law covering all workers. The ADA was intended to “establish a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities” and hence to minimize the barriers faced by people with disabilities to participate in all aspects of American society. The ADA consists of four titles, with Title I focused on disability-based discrimination on the part of employers. Title I requires employers to provide “reasonable accommodation” to their employees with disabilities. The law defines discrimination as: “...not making reasonable accommodations to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or an employee, unless such covered entity can demonstrate that the accommodation would impose an undue hardship on the operation of the business of such covered entity.” (Americans with Disabilities Act, 1990)

Title I provides several examples of “reasonable accommodation.” The examples include: making facilities used by employees readily accessible to and usable by individuals with disabilities; job restructuring; part-time or modified work schedules; reassignment to a vacant position; acquisitions or modifications of examinations, training materials or policies, the provision of qualified readers or interpreters; and other similar accommodations for individuals with disabilities. Finally, Title I defines “undue hardship” as an action requiring significant difficulty or expense.

However, even before the implementation of the ADA in 1992, most states had in place some type of disability employment protection law and several, like the subsequently implemented ADA, included reasonable accommodation requirements (Jolls and Prescott 2004; Hotchkiss 2003). Figure 1 presents a map of state anti-discrimination laws in place at the time the ADA was implemented. By 1990 only

three states—Arkansas, Mississippi, and Alabama—and the District of Columbia had no form of anti-discrimination law in place. Amongst the remaining states, 29 had anti-discrimination laws in place that did not include reasonable accommodation provisions, and 18 states had anti-discrimination laws that included reasonable accommodation provisions. There is also substantial variation across time in the introduction of the state-level anti-discrimination laws. Figure 2 shows that 28 states introduced some type of anti-discrimination legislation before 1975, another 9 introduced them between 1975 and 1980, and 10 introduced them after 1980. Figure 3 shows the 9 states introduced reasonable accommodation provisions between 1977 and 1983 and the 9 states introduced reasonable accommodation provisions after 1983.

B. Incidence of Workplace Accommodations

A significant body of research has examined the incidence of workplace accommodation for disabled workers under a variety of disability policy regimes. Prior to the 1990 passage of the ADA, a substantial minority of workers who experienced the onset of a disability received a workplace accommodation from their employer at onset. Using data from the 1978 Survey of Disability and Work, Burkhauser, Butler, and Kim (1995) show that prior to the passage of the ADA, about 30 percent of men with work limiting disabilities received a workplace accommodation. This estimate is robust across studies and data sources; prior to the implementation of the ADA about 27 percent of male and female HRS respondents who experienced the onset of a disability while employed received a workplace accommodation (Daly and Bound 1996; Burkhauser, Butler, and Weathers II 2002).

There is also evidence that employer accommodation increased after the passage of the ADA. Charles (2004) uses the HRS cohort of people aged 51-61 who were first interviewed in 1992 and subsequently interviewed in 1994 and 1996 to show that the incidence of workplace accommodation increased after passage of the ADA. Employer accommodation was 28 percent for those whose

disability onset was before the ADA. It was 33 percent for those whose disability onset was afterward, an effective increase of 5 percentage points.

More recent work by Burkhauser, Schmeiser, and Weathers II (2012) also used data from the HRS, but included subsequent cohorts and waves of the HRS, and examined the effect of pre-existing state laws on accommodation, as well as the incremental effect of the ADA on accommodation. Moreover, they examined the differential effect of these laws on workers who were injured on the job, and therefore potentially subject to Workers' Compensation laws, and workers who were not injured on the job. They find that prior to the implementation of these state laws employers were more likely to accommodate workers if their disability onset was work related and hence likely to be covered by State Workers' Compensation laws. After States implemented their anti-discrimination laws, the probability of receiving a workplace accommodation increased, but only for workers whose work limitations were not work related. Implementation of the ADA further increased the likelihood of accommodation for all workers.

C. The Effect of Workplace Accommodation on Job Tenure and SSDI Application

Several previous studies have examined the effect of workplace accommodation on job tenure and time to SSDI application. Burkhauser et al. (1999) used data from the 1978 Survey of Disability and Work and the 1992 wave of the HRS in a continuous time hazard model to examine the time it takes employed men to apply for SSDI benefits following the onset of a work limitation. They estimated that workplace accommodation reduces the probability of SSDI benefit application by 27 percent within 10 years. Burkhauser, Butler, and Weathers II (2002) extended this analysis by adding variation in state level SSDI program administration to the model and found that accommodation reduces SSDI applications within 10 years by 28 percent.

One limitation of these studies is that they both relied on data from 1992 or earlier, and focused on the cohort of individuals born prior to the Second World War. As the nature and type of occupations has changed considerably over the past 50 years, focusing exclusively on an older cohort may yield unrepresentative estimates of the effectiveness of accommodation in preventing SSDI application. The use of pre-1992 data also omits any secular changes in accommodation or SSDI application resulting from the implementation of the ADA. We thus extend the set of cohorts examined to those born through 1953 to capture a broader segment of the population. Moreover, we use longitudinal data on these individuals spanning 1992 to 2008, allowing us to capture not only retrospective reports of disability onset and accommodation, but also current onset and accommodation post-ADA.

II. Data

A. Health and Retirement Study Data

We use data from three successive HRS cohorts who enter the study when the respondent or spouse is between age 51 and 61. The HRS is a nationally representative panel study that collects information on a wide variety of topics including demographics, health, employment, income, wealth, disability and program participation. A detailed discussion of the HRS data can be found in Juster and Suzman (1995). The original HRS cohort consists of 9,802 persons born between 1931 and 1941 or married to someone born during those years. Members of the cohort were first interviewed in 1992 and have been re-interviewed once every two years. To remain representative of older adults, successive cohorts have been added including the War Babies cohort (2,701 respondents added in 1998, 1942 - 1947 birth cohort and spouses) and the Early Boomers (added in 3,256 respondents added in 2004, 1948 - 1953 birth cohort and spouses). Combined, these cohorts provide information on the receipt of

workplace accommodations before and after implementation of all state employment protection laws, as well as the ADA.

The HRS asks sample members, “Do you have any impairment or health problem that limits the kind or amount of paid work you can do?” Those who say yes are then asked, “Is this a temporary condition that will last for less than three months?” Those who respond that their condition is not temporary are considered persons with a disability. Over 50 percent of persons in each cohort who report a disability also report that they were employed at the time that their work limitation began. Those employed at the time of disability onset were asked, “At the time your health started to limit your ability to work, did your employer do anything special to help you out so that you could stay at work?” We use responses to this question to construct our indicator variable for receipt of workplace accommodation. Overall our data sample consists of 3,877 individuals aged 18 to 62 when they first experienced a work limitation (see Table 1). These work limitations occurred from 1948 to 2008. Of these individuals that experienced a work limitation while employed 27 percent were provided with workplace accommodations by their employer.

The summary statistics largely conform to expectations regarding the likely recipients of a workplace accommodation. As shown in the column labeled “Accommodated” relative to the column labeled “Not Accommodated”, those accommodated were more likely to be white, have some college or a college degree, and have their work limitation result from the nature of their work or have been injured on the job. The accommodated were also less likely to have comorbidities and experienced onset when unemployment rates were lower.

We use respondents’ state of residence and the year that their work limitation occurred to classify the state and federal accommodation policies that were in effect at disability onset. At the time of their disability onset, 13 percent of those in our sample resided in a state with no disability

employment protection law, 35 percent of our sample were covered by a state anti-discrimination law, 10 percent were covered by a state accommodation law, and 42 percent were covered by the ADA. Federal laws encapsulated by the ADA came into effect in 1992 and 56 percent of our sample experienced the onset of their disability post-1992 when the ADA superseded all state laws (or lack thereof).

Demographic and health information on an individual are also sourced from the HRS. State unemployment rates are used to capture the labor market conditions in each state and are sourced from the Bureau of Labor Statistics¹.

B. Social Security Administrative Data

The HRS has been linked to Social Security Administration records on earnings history, application for SSDI or Social Security Old-Age benefits, and receipt of these benefits. These data allow for the identification of the exact date in which an individual first applied for SSDI benefits. We thus calculate the exact time period elapsed between when an individual reports the onset of their work limitation and when they file for SSDI benefits. We focus on the decision to apply for benefits rather than acceptance onto the SSDI rolls as the application decision is within the worker's control, whereas numerous factors beyond the worker's control interact to determine the timing of the decision on their application and whether they are accepted or rejected for benefits.

III. Empirical Approach

To analyze the effect of workplace accommodation on subsequent application for SSDI benefits following the onset of a work limitation, we use a series of logit models to estimate application for SSDI within 1, 2, 3, 5, and 10 years of onset. Specifically, we estimate:

¹ State unemployment data starts in 1976. For data prior to 1976 we use the national unemployment rate as this allows us to extend our sample back to 1948.

$$DI_{ist} = \alpha + \beta X_i + \delta A_i + \sigma S_{st} + \gamma_1 T_t + \varepsilon_{ist}, \quad (1)$$

where DI is alternately an indicator for application to the SSDI program within 1, 2, 3, 5 and 10 years of onset, X is a vector of individual specific characteristics, A is an indicator that takes the value of one if an individual received an accommodation from their employer and zero otherwise, S is the state unemployment rate at the time of disability onset used to capture how underlying economic conditions affect the amount of time to SSDI application, as we expect that higher unemployment rates to lead to faster application for SSDI, T is year of onset, and ε is the error term.

The X vector captures individual specific economic, health, and demographic characteristics consistent with previous research using the HRS. In particular, to account for variations in health in our sample, we include a measure of co-morbidity, as around one-third of the respondents in our sample have more than one health condition.² A priori we expect individuals with multiple conditions to leave the workforce more quickly. The most common health conditions among SSDI recipients are arthritis, cardiovascular disease, back problems, and other musculoskeletal conditions. We include an indicator variable for each of these three specific health conditions to capture differences in terms of how chronic and acute they are, and their potential effect on SSDI application.³ Previous research by Burkhauser, Schmeiser, and Weathers (2012) has demonstrated that whether or not a disability is the result of a work related injury has a significant effect on the likelihood of receiving an accommodation. Thus, indicator variables capturing whether the work limitation was a result of a work accident or the nature of the respondent's work are also included in the model. In terms of demographics we include variables on age at onset, age at onset squared, race, gender, and education. The average person in our sample is a white male age 48 who has completed high school.

² Health conditions are reported at the time of the survey and were not necessarily present at the time of onset.

³ The data sample excludes individuals who had either cancer, tumors, paralysis or stroke given the debilitating nature of these conditions. The exclusion of individuals with these conditions from our sample had no significant effect on our estimates.

The coefficient we are primarily interested in is δ , as this tells us how the provision of a workplace accommodation affects an individual's decision to apply for SSDI benefits. However, the coefficient on accommodation may be biased by individual specific unobserved determinants of both receipt of an accommodation and subsequent SSDI application. It is likely that employers are strategic in their provision of accommodation in ways that are unobservable in the data. These unobserved characteristics resulting in accommodation for certain employees may also be related to subsequent application for SSDI. For example, employers may be more willing to provide accommodation to workers who are more motivated to work. Independent of accommodation, those with work limiting conditions who are more motivated to work will also be *less* likely to apply for SSDI. We would expect the exclusion of these unobserved characteristics to bias our coefficients *upward*, thus overstating the reduction in subsequent SSDI application of a workplace accommodation. To address this concern, we implement an instrumental variables estimation strategy by exploiting exogenous variation in accommodation driven by variation in the presence of state and federal employment protection laws at the time of onset of a work limitation.

The basis for our identification strategy is the Charles (2004) finding that the passage of the ADA increased the probability that a worker received an accommodation, as well as the Burkhauser, Schmeiser, and Weathers (2012) findings that state anti-discrimination and accommodation laws increased the probability of workplace accommodation, as did the ADA. Our primary source of identifying variation is the pre-ADA implementation of these state level anti-discrimination laws. As previously discussed, there was substantial variation both in the dates of implementation of these state level anti-discrimination laws, as well as their nature (whether or not the law contained a reasonable accommodation provision).

In the first-stage, whether or not an individual is provided with a workplace accommodation is estimated using the legal regime in their state of residence at the time of their disability onset, with indicators for state anti-discrimination laws, state workplace accommodation laws, or the ADA used as instruments. The majority (almost 60 percent) of the workers we observe experienced the onset of their disability prior to 1992 and just over 45 percent were covered by some form of state anti-discrimination or state accommodation law at the time of their work limitation, leaving 14 percent uncovered by any law at the time of onset. The remaining 40 percent experienced the onset of their disability after 1992 and thus were covered by the ADA.

IV. Effects of Workplace Accommodation on SSDI Application

Given that a significant body of literature has previously estimated the impact of workplace accommodation on SSDI application using data from the HRS and a variety of non-IV strategies, we first estimate our model using a standard logit in order to verify that our estimates are consistent with the previous findings. Our logit results are presented in Table 2.

Our initial findings are similar to those of previous research, as we find that the provision of workplace accommodation reduces the probability of application for SSDI following disability onset. As shown in the first column of results in Table 2, receipt of a workplace accommodation reduces the probability of SSDI application within the subsequent year by 4.6 percentage points. The magnitude of the effect of workplace accommodation on SSDI application increases with time, as it decreases the probability of SSDI application within two years by 5.4 percentage points, within three years by 6.3 percentage points and within five years by 7.4 percentage points. However, the effect of accommodation of SSDI application appears to moderate over an extended period of time, as it reduces the probability of SSDI application within ten years by only 5.7 percentage points.

The remaining coefficients in Table 2 are generally consistent with our hypothesized effects on the timing of application for SSDI. The work limitation resulting from an accident at work is associated with a 5.8 percentage point increase in the probability of applying for SSDI benefits within five years, while the work limitation resulting from the nature of the respondent's work reduces the probability of SSDI application within five years by 2.9 percentage points. The probability of applying for SSDI increases with age at onset, is higher for non-Whites, is lower for females, and decreases with level of education. The presence of co-morbidities substantially increases the probability of SSDI application. Those with co-morbidities are 6.9 percentage points more likely to apply for SSDI within one year of onset, 11 percentage points more likely to apply within five years of onset, and 12 percentage points more likely to apply within 10 years of onset. Somewhat surprisingly, having either arthritis, back pain or a musculoskeletal condition are associated with a reduction in the probability of SSDI application, while having a cardiovascular condition increases the probability of SSDI application. Those who experience onset during periods of high unemployment are more likely to apply for SSDI; although the effect is modest in comparison to the other factors affecting SSDI application as a one percentage point increase in the unemployment rate at onset increases the probability of SSDI application within five years by one percentage point. Lastly, the year at onset coefficient is positive and significant, suggesting that the probability of applying for SSDI has increased over time.

Our five year estimates of the effect of accommodation on SSDI application are similar to those found in Burkhauser et al. (1999) who estimate that workplace accommodation decreases the probability of SSDI application within five years by 10 percentage points using HRS data relative to our finding of 7.4 percentage points. However, they estimate that accommodation results in a reduction in SSDI application of 13 percentage points within 10 years of onset, whereas we find that the effect of accommodation diminishes over time, falling to a 5.7 percentage point decrease in the probability of

application. Burkhauser et al. (1999) observe an increasing reduction in the probability of SSDI application out to ten years, whereas our estimated effect declines in magnitude after more than five years post-onset.

IV Estimates

In an attempt to address the potential endogeneity of accommodation to SSDI application we estimate an IV model using the variation in state accommodation and anti-discrimination laws, as well as the ADA, as a plausibly exogenous source of variation in receipt of accommodation. As we have previously argued, the provision of a workplace accommodation to an employee by a firm is likely dependent in part on various characteristics of the employee that are unobservable in our data, such as productivity, work effort, intelligence, severity of the disability and the nature/cost of the accommodation needed to maintain the employee, which may be correlated with subsequent application for SSDI application.

We hypothesize that, all else equal, employers are more likely to accommodate more potentially productive workers, those with less severe disabilities, and those with lower accommodation costs all of which are less likely to apply for SSDI regardless of whether or not they receive employer accommodation. Thus we expect the exclusion of these unobserved characteristics to bias our coefficients *upward*, thus overstating the reduction in subsequent SSDI application of a workplace accommodation.⁴

Table 3 presents results from the first stage of our model. The coefficients on both the ADA and the presence of state employment protection laws are in the expected direction, indicating that they increase the probability of receiving an accommodation. All coefficients are significant at the 5 percent

⁴ As there is no built-in Stata command for estimating an IV logit, we instead use a two-stage residual inclusion estimation procedure, with bootstrapped standard errors.

level or better; however, we obtain an F-statistic for the joint significance of our IVs of only five, which falls below the generally accepted threshold of 10.

Table 4 presents the results of our IV estimates. In contrast to our hypothesized direction of the bias due to unobserved heterogeneity we actually observe a substantial increase in the magnitude of our coefficients on the accommodation variables, suggesting that the effect of accommodation on SSDI application is actually *understated* in standard estimates. Our estimates imply that accommodation reduces the probability of SSDI application within one year by 26 percentage points, within five years by 38 percentage points, and within 10 years by 39 percentage points. Despite the relative weakness of our IVs, all estimates are significant at the 0.1 percent level. In contrast to our non-IV estimates the effect of accommodation in reducing the probability of SSDI application does not diminish with time in the IV model.

V. Conclusions

While several studies have estimated the effect of workplace accommodation on subsequent application for SSDI benefits, they have done so for only a select demographic group, using retrospective reports of disability and accommodation prior to 1992. This study updates these estimates using a broader set of the population and includes both current and retrospective reports of disability onset and accommodation linked to administrative records on SSDI application. Our estimates confirm that accommodation effectively reduces the probability of application for SSDI following the onset of a work limitation. While our non-IV estimates are somewhat smaller in magnitude than the effects estimated in previous studies, our IV estimates are significantly larger. We find that providing an employee with an accommodation following the onset of a work limitation would reduce applications to

the SSDI program by 26 percentage points within one year of onset, 38 percentage points within five years of onset, and 39 percentage points within 10 years of onset.

To our knowledge this is the first study to attempt to estimate the effect of accommodation on SSDI application using an IV strategy to control for the endogeneity of accommodation receipt and thus produce unbiased estimates. In contrast to our expectations, the change in the coefficient estimate between the non-IV and IV estimates suggests that the unobservable heterogeneity in receipt of accommodation is biasing the magnitude of the effect on SSDI application downwards. We had anticipated that the use of the IV would result in the magnitude of the coefficient decreasing as employers were expected to be more likely to accommodate more productive and less severely impaired workers who would be less likely to apply for SSDI benefits regardless of whether or not they received employer provided accommodation. Instead, when we use our IV to control for these unobservables, the magnitude of the accommodation effect increased. Hence we find no evidence that, by failing to control for these unobservables, past research overstated the importance of employer provided accommodations as a mechanism for reducing SSDI application and some evidence that this effect may be even more powerful than previous research suggests.

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Table 1. Summary Statistics by Receipt of Workplace Accommodation

	Not		Accommodated		Full Sample	
	Accommodated		Mean	SD	Mean	SD
	Mean	SD	Mean	SD	Mean	SD
Application for SSDI within 1 Year	0.1919	0.3939	0.1391	0.3463	0.1775	0.3821
Application for SSDI within 2 Years	0.2362	0.4248	0.1739	0.3792	0.2192	0.4138
Application for SSDI within 3 Years	0.2654	0.4417	0.1919	0.3941	0.2454	0.4304
Application for SSDI within 4 Years	0.2899	0.4538	0.2031	0.4026	0.2662	0.4421
Application for SSDI within 5 Years	0.3055	0.4608	0.2114	0.4086	0.2799	0.4490
Application for SSDI within 10 Years	0.3410	0.4742	0.2573	0.4375	0.3182	0.4659
Received Workplace Accommodation	0.0000	0.0000	1.0000	0.0000	0.2727	0.4454
State Anti-Discrimination Law	0.3597	0.4801	0.3310	0.4709	0.3519	0.4777
State Accommodation Law	0.0975	0.2967	0.1043	0.3059	0.0994	0.2992
ADA	0.4051	0.4910	0.4492	0.4978	0.4171	0.4932
Disability Caused by Accident at Work	0.2164	0.4119	0.2754	0.4470	0.2325	0.4225
Disability Caused by Nature of Work	0.3801	0.4855	0.4395	0.4967	0.3963	0.4892
Age at Disability Onset	48.0991	8.2112	47.9541	8.5072	48.0595	8.2916
White	0.7513	0.4324	0.7830	0.4125	0.7600	0.4272
Non-White	0.2487	0.4324	0.2170	0.4125	0.2400	0.4272
Female	0.5271	0.4994	0.5243	0.4998	0.5264	0.4994
Less than High School	0.3415	0.4743	0.3018	0.4594	0.3307	0.4705
High School	0.3540	0.4783	0.3408	0.4743	0.3504	0.4772
Some College	0.1877	0.3906	0.2114	0.4086	0.1942	0.3956
College	0.1168	0.3213	0.1460	0.3534	0.1248	0.3305
Presence of Comorbidities	0.3410	0.4742	0.3338	0.4719	0.3390	0.4735
Has Arthritis	0.1924	0.3943	0.1502	0.3575	0.1809	0.3850
Has Back Pain	0.2367	0.4252	0.2712	0.4449	0.2461	0.4308
Has Musculoskeletal Condition	0.1632	0.3696	0.1919	0.3941	0.1710	0.3766
Has Cardiovascular Condition	0.1064	0.3084	0.1113	0.3147	0.1077	0.3101
State Unemployment Rate at Onset	6.2105	1.8661	6.0390	1.8460	6.1638	1.8619
Year of Onset	1988.5290	9.3443	1988.8550	9.6434	1988.6180	9.4261
Observations	3877					

Table 2. Estimates of Application for SSDI Benefits following Disability Onset, by Years Post Onset

	(1)	(2)	(3)	(5)	(10)
	Application for SSDI within 1 Year	Application for SSDI within 2 Years	Application for SSDI within 3 Years	Application for SSDI within 5 Years	Application for SSDI within 10 Years
Received Workplace Accommodation	-0.0463*** (0.0085)	-0.0538*** (0.0078)	-0.0634*** (0.0100)	-0.0738*** (0.0113)	-0.0572*** (0.0119)
Disability Caused by Accident at Work	0.0298* (0.0138)	0.0520** (0.0178)	0.0577** (0.0185)	0.0582** (0.0178)	0.0462** (0.0170)
Disability Caused by Nature of Work	-0.0329* (0.0132)	-0.0366** (0.0140)	-0.0345* (0.0144)	-0.0289* (0.0137)	-0.0297 (0.0163)
Age at Disability Onset	0.0253*** (0.0067)	0.0361*** (0.0070)	0.0425*** (0.0071)	0.0507*** (0.0080)	0.0550*** (0.0080)
Age at Disability Onset Squared	-0.0003*** (0.0001)	-0.0004*** (0.0001)	-0.0005*** (0.0001)	-0.0006*** (0.0001)	-0.0007*** (0.0001)
Non-White	0.0504*** (0.0147)	0.0534** (0.0171)	0.0610*** (0.0182)	0.0707*** (0.0195)	0.0787*** (0.0183)
Female	-0.0333** (0.0103)	-0.0455*** (0.0109)	-0.0389*** (0.0111)	-0.0446*** (0.0126)	-0.0508*** (0.0149)
High School	-0.0545*** (0.0102)	-0.0628*** (0.0111)	-0.0666*** (0.0112)	-0.0681*** (0.0138)	-0.0636*** (0.0142)
Some College	-0.0595*** (0.0120)	-0.0639*** (0.0122)	-0.0717*** (0.0138)	-0.0854*** (0.0150)	-0.0769*** (0.0169)
College	-0.0739*** (0.0151)	-0.0889*** (0.0171)	-0.1069*** (0.0186)	-0.1149*** (0.0210)	-0.1169*** (0.0272)
Presence of Comorbidities	0.0694*** (0.0112)	0.0805*** (0.0124)	0.0996*** (0.0114)	0.1106*** (0.0120)	0.1234*** (0.0122)
Has Arthritis	-0.0909*** (0.0139)	-0.0995*** (0.0156)	-0.1012*** (0.0154)	-0.1057*** (0.0146)	-0.1061*** (0.0155)
Has Back Pain	-0.0716*** (0.0138)	-0.0903*** (0.0135)	-0.0982*** (0.0164)	-0.1035*** (0.0176)	-0.1093*** (0.0181)
Has Musculoskeletal Condition	-0.0895*** (0.0147)	-0.0957*** (0.0168)	-0.1016*** (0.0172)	-0.1049*** (0.0183)	-0.1174*** (0.0202)
Has Cardiovascular Condition	0.0204 (0.0174)	0.0239 (0.0209)	0.0307 (0.0210)	0.0283 (0.0193)	0.0373 (0.0221)
State Unemployment Rate at Onset	0.0074 (0.0040)	0.0097* (0.0039)	0.0086 (0.0046)	0.0104 (0.0053)	0.0148** (0.0056)
Year of Onset	0.0038*** (0.0009)	0.0037*** (0.0009)	0.0042*** (0.0011)	0.0041*** (0.0012)	0.0032** (0.0011)
Observations	3877	3877	3877	3877	3877

* p<0.05, ** p<0.01, ***p<0.001

Notes: Models estimated using a logit. Standard errors were clustered at the state level. Coefficients are average marginal effects calculated using the delta method.

Table 3. First Stage Estimates of Receipt of an Accommodation, by Years Post Onset

	Receipt of Accommodation
State Anti-Discrimination Law	0.2597 (0.1592)
State Accommodation Law	0.3913 (0.2043)
ADA	0.6446** (0.2237)
Disability Caused by Accident at Work	0.2240* (0.1061)
Disability Caused by Nature of Work	0.0799 (0.0883)
Age at Disability Onset	0.0651 (0.0349)
Age at Disability Onset Squared	-0.0008* (0.0004)
Non-White	-0.1017 (0.0900)
Female	-0.0448 (0.0778)
High School	0.1520 (0.0928)
Some College	0.2781** (0.1065)
College	0.4240*** (0.1215)
Presence of Comorbidities	-0.0725 (0.0797)
Has Arthritis	-0.0351 (0.1138)
Has Back Pain	0.2191* (0.1088)
Has Musculoskeletal Condition	0.1878 (0.1122)
Has Cardiovascular Condition	0.3109* (0.1293)
State Unemployment Rate at Onset	-0.0297 (0.0219)
Year of Onset	-0.0117 (0.0081)
Observations	3,877

* p<0.05, ** p<0.01, *** p<0.001

Notes: Models estimated using a logit model. Standard errors clustered at the state level.

Table 4. IV Estimates of Application for SSDI Benefits following Disability Onset, by Years Post Onset

	(1)	(2)	(3)	(5)	(10)
	Application for SSDI within 1 Year	Application for SSDI within 2 Years	Application for SSDI within 3 Years	Application for SSDI within 5 Years	Application for SSDI within 10 Years
Received Workplace Accommodation	-0.2570*** (0.0692)	-0.2884*** (0.0815)	-0.3220*** (0.0761)	-0.3759*** (0.0555)	-0.3908*** (0.0422)
Disability Caused by Accident at Work	0.0436* (0.0176)	0.0684*** (0.0206)	0.0769*** (0.0209)	0.0844*** (0.0208)	0.0751*** (0.0205)
Disability Caused by Nature of Work	-0.0293* (0.0126)	-0.0324* (0.0135)	-0.0296* (0.0142)	-0.0220 (0.0135)	-0.0219 (0.0157)
Age at Disability Onset	0.0281*** (0.0066)	0.0393*** (0.0070)	0.0463*** (0.0069)	0.0560*** (0.0076)	0.0610*** (0.0079)
Age at Disability Onset Squared	-0.0003*** (0.0001)	-0.0004*** (0.0001)	-0.0005*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)
Non-White	0.0436** (0.0156)	0.0456* (0.0179)	0.0518** (0.0193)	0.0581** (0.0200)	0.0644*** (0.0186)
Female	-0.0359*** (0.0105)	-0.0485*** (0.0110)	-0.0425*** (0.0110)	-0.0496*** (0.0129)	-0.0565*** (0.0145)
High School	-0.0467*** (0.0127)	-0.0536*** (0.0141)	-0.0556*** (0.0138)	-0.0527** (0.0165)	-0.0461** (0.0170)
Some College	-0.0464** (0.0164)	-0.0481** (0.0179)	-0.0530** (0.0173)	-0.0596** (0.0188)	-0.0463* (0.0219)
College	-0.0551** (0.0196)	-0.0665** (0.0249)	-0.0810** (0.0277)	-0.0776** (0.0291)	-0.0724* (0.0362)
Presence of Comorbidities	0.0645*** (0.0113)	0.0749*** (0.0128)	0.0930*** (0.0122)	0.1016*** (0.0132)	0.1133*** (0.0127)
Has Arthritis	-0.0921*** (0.0135)	-0.1010*** (0.0151)	-0.1029*** (0.0153)	-0.1082*** (0.0150)	-0.1091*** (0.0159)
Has Back Pain	-0.0616*** (0.0139)	-0.0787*** (0.0153)	-0.0844*** (0.0184)	-0.0842*** (0.0195)	-0.0868*** (0.0197)
Has Musculoskeletal Condition	-0.0812*** (0.0157)	-0.0854*** (0.0194)	-0.0892*** (0.0202)	-0.0872*** (0.0216)	-0.0971*** (0.0239)
Has Cardiovascular Condition	0.0385 (0.0198)	0.0449 (0.0240)	0.0555* (0.0247)	0.0620** (0.0212)	0.0756** (0.0250)
State Unemployment Rate at Onset	0.0055 (0.0039)	0.0075 (0.0041)	0.0060 (0.0049)	0.0067 (0.0056)	0.0106 (0.0057)
Year of Onset	0.0043*** (0.0010)	0.0042*** (0.0009)	0.0048*** (0.0011)	0.0049*** (0.0012)	0.0041*** (0.0011)
First Stage Residual	0.1338* (0.0632)	0.1555* (0.0789)	0.1827* (0.0846)	0.2515** (0.0948)	0.2807** (0.0882)
Observations	3877	3877	3877	3877	3877

* p<0.05, ** p<0.01, ***p<0.001 Notes: Models estimated using a residual inclusion logit model. Standard errors were bootstrapped with 500 replications. Coefficients are average marginal effects calculated using the delta method.

Figure 1

Pre-ADA State Disability Discrimination Laws

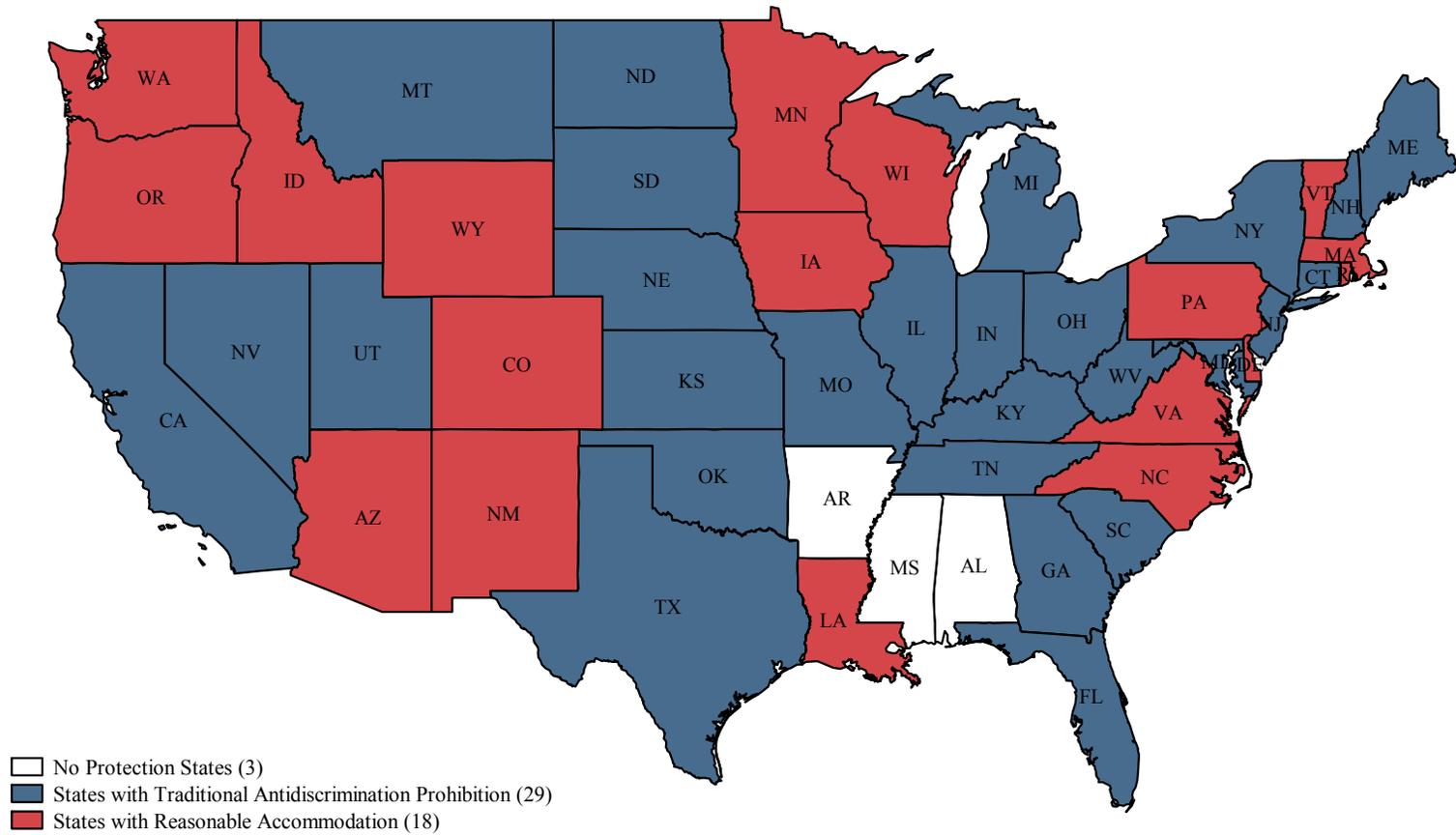


Figure 2

Pre-ADA State Disability Discrimination Laws Year of Enactment of Traditional Antidiscrimination Prohibition

