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LEGAL REPRESENTATION IN DISABILITY CLAIMS

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ABSTRACT

Legal representatives play a prominent role in the Social Security Disability Insurance adjudication process, earning fees totaling \$1.2 billion in 2019. Long ubiquitous in appellate hearings, disability representatives—including attorneys and non-attorneys—have begun appearing more frequently at the beginning of cases, during the initial review. This development has raised questions about the motives of disability law firms, who are sometimes perceived to prioritize their own interests in response to incentives in the fee structure set by the Social Security Administration. We provide the first estimates of the causal impact of legal representation on case outcomes when representatives are engaged from the initial stage. To address selection into representation, we instrument for initial representation using geographic and temporal variation in disability law firm market shares in the closely related but distinct appellate market. We find that representation increases the probability of initial awards, reduces the probability of appeals, and induces no detectable change in the ultimate probability of award. This pattern indicates that legal representation in the initial stage leads to earlier disability awards to individuals who would otherwise be awarded benefits only on appeal. Furthermore, by securing earlier awards and discouraging unsupported appeals, representation reduces total case processing time by nearly one year.

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1. Introduction

The U.S. social safety net provides protection against involuntary job loss, poverty in childhood and old age, sickness, and the loss of the ability to work.¹ These programs consist of complicated and detailed sets of eligibility criteria and lengthy application processes (Herd and Moynihan 2018). This raises concerns about low program take-up rates (Currie 2006) and that the people who need assistance the most are the least able to navigate the system (e.g., Shafir and Mullainathan 2013, Bhargava and Manoli 2015, Deshpande and Li 2019).

In this paper, we examine the high-stakes area of Social Security Disability Insurance (SSDI), where former workers must prove they are no longer able to work because of a long-lasting, medically determinable disability. If they succeed, they are awarded monthly income support and Medicare benefits for their remaining lifetime.² SSDI provides annual benefits totaling \$128 billion to 7.9 million former workers and their dependents. The SSDI program is unique in the U.S. social safety net in that legal representatives play a prominent role in the application process and are paid for their services directly by the Social Security Administration (SSA). We examine the effects of representatives on case outcomes and targeting – that is who does and does not receive benefits.

Legal representatives are ubiquitous in SSDI cases at the appellate level,³ most likely because appellate cases are argued before an administrative law judge (ALJ).⁴ Representation is

¹ Programs include Unemployment Insurance, Workers' Compensation, Social Security Old Age and Survivors Insurance, Supplemental Security Income, Supplemental Nutrition Assistance Program, Temporary Assistance for Needy Families, Medicaid and Medicare, and Social Security Disability Insurance.

² When SSDI beneficiaries reach full retirement age (FRA), their cash benefits convert to OASI retirement benefits, but continue at the SSDI rate – that is, without actuarial reduction for early claiming prior to FRA.

³ We calculate that 82 percent of appellate claimants used a representative between 2007 and 2014.

⁴ In this study, we use the term “appellate level” to refer to a hearing before an ALJ. Other appellate levels that we do not consider include reconsideration (which occurs before the ALJ hearing level in states that perform reconsideration), and review by the Appeals Council or appeal to Federal Court (both of which follow a denial at the ALJ hearing level). Only a small number of cases proceed beyond the ALJ level (Social Security Administration, 2018).

much less common at the initial review stage, where cases are decided by disability examiners in state agencies and do not involve a judicial hearing. But surprisingly, representation rates among initial applications rose by 40 percent between 2009 and 2011 (Social Security Advisory Board (SSAB) 2012) and have continued to rise. This development has raised concerns about the financial motives of large disability law firms, which earn standardized fees on a contingency basis—that is, if the case is won and if the applicant is awarded retroactive benefits (“backpay”). Fees paid to legal representatives in SSDI cases nearly tripled between 2001 and 2010 (from \$585 million to \$1.66 billion in 2019 dollars) as shown in Figure 1. Fees subsequently fell between 2010 and 2015 and then stabilized at around \$1.2 billion. Figure 1 also shows that the drop in fee payments followed a sharp decline in the appellate hearing allowance rate—from 79 percent in 2008 to 55 percent in 2017. This program tightening resulted from SSA initiatives to improve decision consistency and policy compliance at the appellate level (Ray and Lubbers 2015). Since representatives are compensated only if they win, the decline in the hearing allowance rate resulted in substantial lost compensation for representatives, contributing to the bankruptcy of the largest for-profit disability law firm at the time (Schwartz 2018). The increase in representation at the initial level since 2009—shown in Figure 2—follows the retrenchment at the appellate level. This suggests some disability law firms may have sought a new market—initial disability claims—in order to recoup losses in the market for appellate representation. This connection between the decline in profitability of the appellate market and the rise of representation in initial claims motivates our study design.

In this paper, we provide the first estimates of the causal effects of legal representation in the SSDI application process. Using newly assembled administrative data from SSA, we estimate the effects of representation at the *initial application stage* on the full life cycle of the application, examining effects on initial allowance, appeal, final allowance, and length of time

until final decision. Since representation is not randomly assigned to disability claimants, to isolate the causal effect of early legal representation on initial and subsequent SSDI case outcomes, we develop novel instrumental variables using geographic and temporal variation in law firm market shares in the *appellate market*. Firms with greater appellate market shares were more exposed to financial losses from the tightening at the hearing level and thus had stronger motives to represent initial claims. As we show, legal representation by disability law firms in appellate cases varies considerably by geographic area and across years, and initial claimants are more (less) likely to enlist legal representation from a disability law firm if they live in an area with a high (low) degree of disability firm penetration in the appellate market in the month preceding their application. Importantly, there is no overlap between the appellate cases we use to construct the market-share instruments and the initial claims that are the focus of our analysis (since the appellate cases were decided before the initial claims were filed). Furthermore, the appellate market-share instruments are unlikely to affect outcomes for the initial claims in our analysis through a channel other than initial representation. Our research design identifies the local average treatment effect (LATE) of representation on application outcomes. We provide evidence establishing the strength of the first stage, monotonicity of the instruments, and exogeneity of the instruments. We also characterize the distribution of compliers and their characteristics. Together, this shows that conditions for validity of the multiple IV approach and interpretation of the LATE are satisfied.

Little is known about the impact of legal representation on disability cases. In other civil settings, legal representation has been shown to improve outcomes for indigent clients and gains in efficiency for the courts (Currie and Cassidy 2022; Seron et al. 2001; Eagly and Shafer 2015, Greiner et al. 2013). In the disability setting, a representative might increase the claimant's odds of award by helping them understand complex rules and documentation requirements, by

connecting medical evidence to specific regulatory criteria, or by obtaining supporting evidence in a timely fashion. Representation might also reduce the amount of time it takes to obtain a disability award. Nearly half of SSDI beneficiaries received their award on appeal, having been denied once or twice by their state agency and waiting an average of two years for an appellate hearing (in our sample). If the “right” decision could be reached during the initial review, those with qualifying claims would receive benefits in a matter of months and the rest might be deterred from a lengthy appeal and prolonged period of work inactivity. The reduction in appellate workload could generate substantial federal cost savings.

On the other hand, the contingent-fee payment structure has prompted concerns about incentives and allegations that certain representatives intentionally slow down cases, increasing the total time until the final decision (SSAB 2012). In addition, journalistic and Congressional investigations have exposed fraudulent behavior by particular disability attorneys (e.g., Paletta 2011). More generally, large disability law firms have been accused of aggressive marketing practices and of placing their financial interests ahead of the claimant’s interests (SSAB 2012). Most of the media attention has been focused on the appellate process.

Our analysis yields several key findings. First, we document that the rate of representation in initial disability claims nearly doubled in 2010-2014, rising from 8 to 15 percent nationally, and exhibiting wide geographic variation; in some areas of the country, initial representation rates are as high as 25 percent. Second, disability representatives are highly selective about the cases they accept. While not surprising given the contingency-fee structure, case selection generates large biases (away from finding any positive effect of representation) in observational estimates.

Third, our IV estimates reveal that legal representation increases the probability of disability award at the initial level of review by 23 percentage points, relative to a mean of 32

percent. Nearly all of the award effect is due to awards for automatically-qualifying medical conditions, and not for awards made on the basis of vocational criteria such as age, education, experience and skills.⁵ Strikingly, initial representation results in no increase in the probability of final award (accounting for any appeals), implying that while representation does not increase the total number of disability awards, representatives obtain earlier awards for claimants who would otherwise wait to be allowed on appeal.

Additionally, the IV results show that initial representation reduces the probability of appeal to the hearing level by 45 percentage points. Our theoretical model suggests this is the combined effect of the negative signal about a claimant's prospects (from the initial denial) and sunk costs that reduce the representative's expected net payoff from continuing the case. Overall, by securing earlier awards and discouraging appeals, initial representation reduces total case processing time by 316 days—nearly one year. This large effect suggests initial representation improves administrative efficiency, an important finding in light of persistent case processing backlogs at the appellate level. Although it is alleged that representatives delay cases to maximize their fee payment, we find evidence of delays only for cases that are decided rapidly and these delays are offset by significantly shorter processing times for cases that are decided slowly. On balance, there is no increase in processing time at either the field office or the DDS. Notably, we find representatives obtain approval for more distant disability onset dates, which increases the claimant's back pay (and thus the representative's fee payment) *without adding processing time*.

Lastly, our investigation of the mechanisms by which representatives improve case outcomes reveals that representatives are effective at obtaining decisive, early decisions for claimants with mental impairments, in large part by demonstrating that their clients' conditions

⁵ For a description of the 5-step determination process, see Wixon & Strand (2013).

are automatically qualifying under SSA's *Listing of Impairments*. In contrast, there is little benefit to representation for claimants with back pain (which rarely meets the listings), and some benefit for claimants with other musculoskeletal conditions that meet the listings. In addition, representatives file claims electronically at greater rates, creating further administrative efficiencies.

This paper contributes to three literatures. The first relates to target efficiency. This literature argues that transfer programs can improve target efficiency by imposing application burdens or restrictions on eligibility (Nichols and Zeckhauser 1982). If application burdens are large enough, individuals who have less need for income support and greater work ability will be deterred from seeking benefits. In the SSDI context, this is an often-heard rationale for onerous application requirements, long application processing times, and the waiting periods for cash benefits and for Medicare. But recent work finds burdens can reduce target efficiency in some settings, because the incidence of the burdens falls more heavily upon disadvantaged individuals (e.g., Deshpande and Li 2019, Bhargava and Manoli 2015, Shafir and Mullainathan 2013).⁶ Our analysis suggests that legal representation at the initial stage of disability claims reduces the burdens associated with obtaining benefits, and in so doing *improves* productive efficiency (for the claimant and SSA) *with no loss* in target efficiency, and possibly even gains in target efficiency for individuals who do not know their impairments are automatically qualifying under the listings.

Second, our paper makes a novel contribution to the literature on disability insurance. This literature documents at least two critical issues for the disability insurance system: missing information about true work capacity giving rise to moral hazard and unexplained

⁶ This is not a settled question. Alatas et al. (2016) and Finkelstein and Notowidigdo (2019) find the opposite, that hassles improve target efficiency.

inconsistencies in decision outcomes across adjudicators and between initial and appellate outcomes where award rates, and also representation rates, differ enormously (see e.g., Maestas, Mullen and Strand 2013, French and Song 2014, GAO 2017). Our analysis suggests representatives improve the information content of disability claims and enable adjudicators to make better justified decisions at a much earlier point in the process. Representatives also perform a screening function: the contingency-fee structure incentivizes representatives to screen out claimants who are unlikely to meet SSA's eligibility criteria. We are aware of no prior peer-reviewed literature on this topic.⁷

Finally, we contribute to the law literature by providing new, quasi-experimental evidence on the effect of legal representation in an understudied area of civil law.⁸ We find that legal representation in initial disability claims is inefficiently low, likely owing to the contingency-fee structure, even though initial claimants on the margin of representation would benefit from legal representation.

The paper proceeds as follows. In Section 2, we describe the SSDI application process and the role that representatives play in this process. In Section 3, we present a model that illustrates the potential benefits and costs of representation from the perspectives of both claimants and legal representatives. In Section 4 we describe our administrative data. Sections 5 and 6 present our empirical strategy and main results, respectively. In Section 7, we interpret our

⁷ GAO (2003, 2010) first noted that representation in appellate claims was associated with a three-fold increase in the hearing allowance rate. The Social Security Advisory Board (2011) drew attention to the rise in representation at the initial level and allegations that representatives appeared to slow down processing. Hoynes, Maestas and Strand (2016) documented the descriptive patterns of representation at the initial level and correlates with case outcomes. Lastly, a new working paper by Tuttle and Wilson (2021) documents a positive reduced form relationship between application processing times and increases in the representative fee cap that occurred in 2002 and 2009, controlling for the effects of co-occurring recessions.

⁸ There is no federal right to counsel at public expense in civil matters, including SSDI cases. Nonetheless, some states guarantee counsel in civil matters of family law, involuntary commitment, medical treatment, and domestic violence (Abel and Rettig 2006) to protect low-income individuals from unfair disadvantage by their inability to afford legal fees.

estimates in the context of the model in Section 3 to draw implications about the value of representation for claimants and SSA, and in Section 8 we conclude.

2. Social Security Disability Programs, the Application Process, and the Role of Representatives

The U.S. Social Security Disability Insurance (SSDI) program is a contributory social insurance program that pays monthly cash benefits to individuals who become disabled, provided they are insured for benefits and meet the program's medical and vocational criteria. SSDI is closely related to the Supplemental Security Income (SSI) program, which is a federal welfare program that pays cash benefits to individuals who are disabled (in addition to elderly adults), provided they have very low income and assets and meet the same medical and vocational criteria as SSDI. Applications for SSDI and SSI benefits are processed by the same administrative review structure and are evaluated concurrently for both programs when the non-medical eligibility criteria are met for both.⁹

Individuals are insured for SSDI benefits if they have earned at least one work credit (and made corresponding payroll tax contributions) for every calendar year elapsing between age 21 and the year they became disabled, and if half of the work credits were earned recently.¹⁰ Because of the recency requirement, people can lose their insured status if too much time lapses between their last employment spell and the time they apply for benefits. SSDI benefits are a function of average career earnings, similar to Social Security retirement benefits (but without

⁹ The SSDI program provided cash benefits to 7.9 million disabled workers and 1.3 million dependent spouses and children, for a total annual expenditure of approximately \$128 billion in 2021 (SSA 2021c, Table 2; monthly benefits annualized). The SSI program provided cash support to 4.4 million non-elderly disabled adults and 1.1 million disabled children, for a total expenditure of approximately \$43 billion in 2021 (SSA, 2021c, Table 3; monthly benefits annualized). Caseload figures include 1.25 million people who receive benefits from both SSDI and SSI (SSA, 2021c, Table 1).

¹⁰ In 2022, one work credit is earned for every \$1,510 in annual earnings, up to a maximum of four work credits per year.

actuarial reduction for early claiming), and the average monthly benefit for disabled workers was \$1,282 in 2021 (SSA 2021c, Table 2). There is no tax contribution requirement for SSI, which is financed from general fund revenues. SSI payments are based on the federal benefit rate, which is \$841 per month for an individual in 2022. In addition to cash benefits, both disability programs confer eligibility for health insurance—Medicare in the case of SSDI and Medicaid in the case of SSI.

Unlike other federal benefit programs administered by SSA (e.g., retirement benefits), the process of claiming disability benefits can be long and complicated, and a favorable outcome is not assured—even for people who have made the required payroll tax contributions to become insured for SSDI. This is because insured status is necessary but not sufficient. SSA must also determine that the applicant is “*unable to engage in any substantial gainful activity (SGA) because of a medically-determinable physical or mental impairment(s) that is expected to result in death or that has lasted or is expected to last for a continuous period of at least 12 months.*” The practical application of this standard to modern disability cases requires complex judgments, and results in substantial variation in outcomes across disability adjudicators (Maestas, Mullen and Strand, 2013).

To apply for SSDI or SSI benefits, *Form 16 Application for Disability Benefits* and *Form 3368 Adult Disability Report* can be filed online, or in person at a local Social Security Field Office.¹¹ Field office staff first verify that the applicant is not currently engaging in substantial gainful activity—defined as earning \$1,350 per month or more in 2022. Next field office staff assist applicants in developing their applications. This can involve interviewing the applicant in order to complete items on Form 3368. Form 3368 collects personal information about the

¹¹ Applicants can also call SSA’s toll-free telephone number, which provides them with an appointment at their local field office.

applicant, including English language proficiency, current work activity, job history (over the last 15 years), a report of medical conditions, a list of medications, and a description of medical treatments received from each medical provider. Medical records from relevant providers can be submitted with the application.

Next, the field office forwards the application electronically to the state office of the Disability Determination Service (DDS), where it is assigned to a disability examiner. The examiner will request any relevant medical records not already included with the application and may request that the applicant undergo a consultative medical exam by an SSA medical consultant. If the applicant refuses, a possible outcome is a denial for refusal to submit to the consultative medical exam. If the application is not adequately documented and the applicant does not provide additional information as requested, a possible outcome is denial for insufficient evidence.

Once requested documentation is received, the examiner uses a five-step sequential decision process to decide whether the applicant meets SSA's disability standard. The first step is to verify that the applicant is not earning above the SGA level and as noted above, this step is done by field office staff. In Step 2, the examiner screens the application for short-duration or non-severe impairments and denies those cases. In Step 3, the examiner checks the applicant's medical diagnoses against SSA's [*Listing of Impairments*](#) (severe medical conditions for which it is presumed the claimant has no residual work capacity) and allows those cases. The remaining cases proceed to Steps 4 and 5, where the examiner uses vocational information—education, training, work history, and age—in combination with an assessment of the claimant's physical and/or mental residual functional capacities. In Step 4, the examiner considers the applicants' work history and assesses whether the applicant has the functional capacity to perform any of his or her past jobs. If yes, the application is denied. If no, then the examiner proceeds to Step 5, in

which the applicant's education, training, work experience, age and residual functional capacity are used to determine if the applicant has the capacities to perform *any* job in the national economy. If so, the applicant is denied. If not, the applicant is allowed.

Applicants who are denied benefits in their initial review have the option of appealing. The first level of appeal is called Reconsideration (available in most, but not all states during our study period). This entails a second review of the application by another examiner in the same DDS office. If the application is denied on Reconsideration, the applicant can request a hearing before an Administrative Law Judge (ALJ). Most hearings are conducted at the nearest Social Security regional hearing office in the presence of the claimant—and any legal representative enlisted by the claimant. Depending on the applicant's ability to travel and other factors, hearings may be done by video or (during our analysis period) before traveling judges. If an applicant is denied by an ALJ, a further appeal can be pursued with the SSA Appeals Council, and then Federal Court. At the appellate level, the same five-step decision process is used; that said, appeals often involve the submission of updated medical evidence, which if the applicant's condition has worsened, can increase the likelihood of an award.¹²

If a claimant's application is successful, they receive any past-due benefits in the form of a lump-sum back payment. The back payments cover the number of months between the established date of disability onset and the date of approval minus a five-month waiting period. Retroactive benefits are available for SSDI awardees up to a maximum of 12 months.¹³ While

¹² To address allegations that representatives often suppressed unfavorable evidence—for example, evidence related to the applicant's recovery, new regulations took effect in 2015 that require claimants to submit all known evidence relating to their disability. Accordingly, SSA revised its rules of professional conduct to state that representatives have a responsibility to help claimants comply with this requirement; those who do not comply can be referred for investigation, sanctions, and penalties.

¹³ The maximum back payment occurs when the disability onset date is determined to be at least 17 months before the applicant's filing date. SSA then withholds five months' worth of benefits to account for the SSDI waiting period, for a maximum retroactive period of 12 months. For SSI, the applicant's filing date is the disability onset date, so there is no allowable retroactive period of disability extending prior to application (nor is there a waiting period).

initial determinations are rendered in just over three months' time on average (Table 3) (including slightly less than one week at the field office), pursuit of an appeal at the hearing level extends total processing time for appellants to nearly two years on average (authors' calculations).

In order to enlist the services of a representative, the applicant must file a statement with SSA appointing the representative. To receive direct payment of an authorized fee, the representative must register with SSA and meet SSA's criteria. Under SSA's fee agreement policy, the representative agrees to receive payment on contingency—that is, only if the claim results in an allowance, and only if there is back pay owed. If a case is successfully awarded and a representative has submitted a signed fee agreement prior to the date of the first favorable determination, a payment is made to the representative equal to 25 percent of the back pay up to a maximum payment of \$6,000. SSA pays authorized fees directly to the representative by direct deposit, after withholding the fees from the claimants back pay.¹⁴ Importantly, representatives are forbidden from collecting fees from applicants outside of an SSA-authorized Fee Agreement or Fee Petition and doing so can result in disbarment from SSA hearings and other sanctions.¹⁵

While all attorneys are eligible for direct payment of authorized fees if they register with the agency, only certain non-attorneys are eligible. In 2010, Congress allowed qualified non-lawyers to receive direct payment through fee withholding provided they met certain criteria.¹⁶

¹⁴ In unusual cases in which a fee agreement was not filed before the date of the first favorable determination or decision, the claimant revokes the representative's appointment, or a denial was issued but representative services were performed on the client's behalf, the representative can file a Fee Petition with SSA after the determination or decision. Although a fee petition need not follow the payment structure described above, the fees authorized under this process are likely lower on cases determined at the initial level. SSA determines a reasonable fee under the fee petition process based on the services provided; there would potentially be fewer services provided on a claim that did not proceed beyond the initial level of review, lending itself to a lower "reasonable" fee. Over ten times more dollars are paid through the fee agreement process than through fee petitions (Social Security Advisory Board, 2012); thus, we focus on the incentives of fee agreements in this paper.

¹⁵ If a third party is paying the representative's fee, other conditions apply (see 20 CFR 404.1720 and 416.1520).

¹⁶ See Public Law 111 - 142 - Social Security Disability Applicants' Access to Professional Representation Act of 2010. Beginning in 2010, SSA can apply fee withholding procedures and make direct payments of authorized fees,

As a result, representatives need not be lawyers and firms that are active in the initial and appellate markets can use lawyers and non-lawyers on cases. By our estimates, attorneys comprise 82.5 percent of appointed representatives from law firms in initial SSDI cases and 83.6 percent of appointed representatives from law firms in appellate cases.¹⁷ The rest are non-attorneys. We use the terms legal representation and law firm throughout this study to refer to representation by attorneys and non-attorneys.

Despite many potential advantages to claimants, the way in which representatives are compensated for their services may create unintended incentives on the margin, particularly among representatives who operate in for-profit settings. The structure of SSA's fee policy implies that the fee payment is maximized when cases move slowly, but ultimately result in a favorable decision. In extensive interviews with a variety of stakeholders and participants in the determination process, including field office and DDS office staff, the SSAB (2012) heard a number of troubling allegations about representatives, usually attorneys. Among these were that some representatives appear to deliberately slow down cases, filing incomplete or partially developed applications and failing to respond to requests, all for the suspected purpose of delaying the case long enough to maximize the applicant's back pay—and their fee. Further allegations include withholding relevant information and introducing new evidence at disability hearings that could have been presented earlier.

In the next section, we provide a framework for understanding the incentives at play, from both the claimant and representative perspectives.

to eligible non-attorney representatives who hold bachelor's degrees or equivalent qualifications, pass a social-security law examination, secure malpractice insurance, go through a criminal background check, and satisfy requirements for continuing legal education.

¹⁷ These shares are calculated among the representatives who have registered for the direct payment system, which we track through SSA's Appointed Representative Data Base.

3. A Model of SSDI Representation

Given the complexities of the application process, there are many ways in which initial representation may benefit applicants. A representative can help the applicant understand eligibility concepts and craft strategies for presenting the case. They can identify needed medical records and expedite the process of obtaining them. Their involvement could enhance the completeness and quality of the application resulting in initial allowances for cases that would otherwise be allowed on appeal, and initial denials that are more decisive signals of an applicant's ultimate prospects. Additionally, a representative can discourage appeals for clients who have little chance of ever being allowed; this can facilitate a quicker return to the labor market and less decay of human capital. It can also reduce costs to SSA. In this section, we develop a simple model of representation in the SSDI program, considering the incentives for applicants to use a representative and the representative to take on the case.

3.1 Decision Rule of Claimant

To illustrate the value of representation to the claimant, let $V(r)$ be the present discounted value of lifetime benefits, which is a function of r , a dichotomous variable equal to 1 if the applicant enlists a representative at the initial level and 0 otherwise. $V(r)$ includes two components: past-due benefits or back pay (K) and future benefits (B), where $V(r) = K(r) + B$. The back pay equals the monthly benefit b times the number of months between the established onset date $o(r)$ and the decision date $t(a(r))$ minus the 5-month waiting period or $K(r) = b * [t(a(r)) - o(r) - 5]$. The back payment is a function of r since representatives may affect case processing time through the established onset date or through the decision date, which is affected by the probability of appeal, $a(r)$. Future benefits B are the present discounted value of the monthly benefit b received from the decision date until the applicant reaches full retirement age.

If the applicant enlists representation, the applicant pays the representative's fee $F =$

$\min[0.25 * K, 6000]$, but only if benefits are awarded.¹⁸ Benefits are awarded on initial review with probability $p^I(r)$. If the applicant is initially denied, which occurs with probability $1 - p^I(r)$, they appeal with probability $a(r)$. Benefits are awarded on appeal with probability p^A and are discounted by δ to account for the additional processing time. Since the vast majority of those who appeal use representation, we model p^A as a scalar; thus everyone who reaches the appellate stage uses a representative and, if benefits are allowed, pays F). Putting it all together, the applicant enlists initial representation if:

$$p^I(1)[V - F] + (1 - p^I(1))a(1)p^A\delta[V - F] \geq p^I(0)[V] + (1 - p^I(0))a(0)p^A\delta[V - F], \quad (1)$$

that is, if the expected payoff from initial representation is greater than the expected payoff from not having initial representation. Simplifying (1) gives expression (2):

$$F [p^I(1) + \Delta\pi^A] \leq V [\Delta\pi^I + \Delta\pi^A], \quad (2)$$

where $\Delta\pi^I$ is the effect of initial representation on the initial allowance rate, $p^I(1) - p^I(0)$, and $\Delta\pi^A$ is the effect of initial representation on the appellate allowance rate, $p^A\delta[(1 - p^I(1))a(1) - (1 - p^I(0))a(0)]$.

Expression (2) says the applicant benefits from initial representation as long as the expected increase in lifetime SSDI benefits from using a representative at the initial level exceeds the expected increase in the fee payment from using a representative at the initial level. The larger the expected gain the larger the fee that the applicant is willing to pay.

The value of the expected benefits versus costs of initial representation depends on two elements that we estimate in this paper: a) the effect of initial representation on the probability of initial allowance $\Delta\pi^I$, and b) the effect of initial representation on the probability of appeal,

¹⁸ If there is no back pay, the fee is zero. Should the applicant choose not to enlist representation, there is no fee.

$a(1) - a(0)$. First, suppose both effects are zero, $\Delta\pi^I = \Delta\pi^A = 0$. In this case, it would never be worthwhile to enlist initial representation for any fee amount F . Second, suppose initial representation increases the initial allowance probability, $\Delta\pi^I > 0$, but there is no appellate option ($p^A = 0$). Then (2) simplifies to $F \leq V \left[\frac{\Delta\pi^I}{p^I(1)} \right]$ and shows that the larger the expected gain in initial allowance rate from representation, the larger the fee that the applicant is willing to pay. In the presence of an appellate option ($p^A \neq 0$), differentiating the expression confirms that an increase in $p^I(1)$ holding all else constant will lead to an increase in the benefit from initial representation. Third, using the same approach we can see that an increase in $a(1)$ leads to an increase in the benefit from representation. In sum, if representatives improve the cases at the initial level and increase initial allowance rates, this will lead to *higher* expected benefits relative to expected costs. But if representatives reduce appeals (because they are costly) they will *reduce* the benefits relative to the costs. We quantify each of these effects in our empirical model below.

Applicant heterogeneity can be introduced as an additional determinant of the applicant's initial allowance probability (e.g., $p^I(r, x)$), where x could for example be type of disability. We can also add a monetized cost of applying for SSDI without representation that varies with x (e.g., $g(x)$). Application costs increase the gains to representation, relative to the costs, and if they are higher than the representative's fee payment, then the applicant would be better off enlisting representation (as long as representatives do no harm to an applicant's chances).

3.2 Decision Rule of Representative

Representatives are selective about which types of cases they accept since they are only paid if they win and if back pay is owed. The representative will take the case at the initial level as long as the expected fee payment, $F[p^I(1, x) + p^A\delta(1 - p^I(1, x))a(1)]$ is greater than the costs of representing the applicant, $c(a(1), x)$. Note, to capture the potential heterogeneity

across cases, we model the initial allowance rate and cost function to vary with applicant characteristics x . The representative's cost function also is increasing in the rate of appeal (which requires additional effort). The representative takes the case if (3) is satisfied:

$$F \geq \frac{c(a(1), x)}{p^l(1, x) + p^A \delta [1 - p^l(1, x)] a(1)} \quad (3)$$

This condition has several implications for our analysis. First, representatives will be selective. As the fee probability rises (in the denominator) or expected costs fall (in the numerator), the representative will accept a lower minimum fee. This could imply that representatives are less likely to take on complex cases or those with low probability of success. Second, represented cases will tend to have larger back payments. This can be achieved by either increasing processing time or by alleging an earlier disability onset date (since back pay is owed from the established disability onset date until the decision date). Third, although appeals increase processing time and may generate a larger fee (up to the fee cap), appeals also increase costs ($\frac{\partial c(a, x)}{\partial a} > 0$). This implies that representatives will be less likely to continue representing initially denied claimants on appeal, since they may not be willing to incur additional costs.

We return the claimant's and representative's decision rules in Section 7 where we use our estimated parameters (from Section 6) to calculate the benefits of representation for applicants of different types. We also draw inferences about the range of costs representatives are willing to incur.

4. Data and Summary Statistics

4.1 Administrative Data

Our analysis draws upon multiple administrative datasets, some combined for the first time. We obtained the universe of SSDI applications filed from 2010 through 2014 from the

Management Information Electronic Disability Folder (MEDIB). We extracted all SSDI applications that received an initial medical determination by a state DDS, for a total of 7,431,904 applications.¹⁹ The MEDIB contains information from multiple sources, including the application intake forms (e.g., Disability Report SSA-3368), which contain information about the claimant's age, male/female gender, completed education, English language literacy, medical conditions (including height and weight, presence of pain), alleged disability onset date, recent work activity, and any prior vocational training. This information is self-reported and not modified by SSA staff or corrected to conform to statutory definitions. The data fields are applicable to all claimants and have very low rates of item non-response.²⁰

The MEDIB also contains administrative information about the claim. We use the DDS code to identify the state DDS handling the claim. We use the Regulation Basis Code assigned by the DDS examiner to determine if the claim was allowed or denied at the initial level, and for what reason. We identify two types of allowances, whether the claim was allowed for meeting the listings or for meeting the medical-vocational criteria. We identify two types of denials that are considered negative procedural outcomes—denials for insufficient evidence and refusal to submit to a consultative medical examination. These outcomes often reflect communication difficulties between the DDS examiner and the applicant or the applicant's representative; if the full set of medical evidence is not made available within a reasonable time period, the examiner may decide the case with these denial codes. We also identify two case file characteristics that could be considered positive procedural outcomes because they may speed processing—whether the claim was filed electronically and whether an email address was given. We make use of the

¹⁹ Our sample excludes applicants who only apply for SSI and not SSDI. We also exclude 777,886 applications (10.5 percent) that were not decided by a state DDS (which included the Federal DDS and DDS offices in U.S. territories), or where the DDS code did not correspond to a known DDS.

²⁰ By comparison, other administrative data sets may contain information only for beneficiaries or may contain individual data items that are only recorded if the information is relevant to the determination.

body system and primary diagnosis codes assigned by the DDS examiner, as well as processing flags indicating the claim was evaluated concurrently for SSI eligibility, eligible for expedited handling,²¹ or pulled for random Quality Assurance (QA) review.²² Date stamps were used to calculate the number of days a claim was in process at the field office and the DDS.

To identify whether a claimant had a legal representative, we merge the MEDIB data with administrative information from two databases that record the appointment of representatives. The Appointed Representative Data Base (ARDB) records representatives who have registered for the direct payment system and the Modernized Claim System (MCS) records other types of representatives, including those who would potentially be paid through a fee petition and those who waive payment.²³ In instances where the two data systems contradict each other, we use the information from the ARDB. The appointment records are timestamped, which allows us to identify at what point during the initial claim process a representative was appointed. In our analyses, we focus on representatives who are either attorneys or non-attorneys (these are referred to as “eligible for direct pay non-attorneys” (EDPNAs)), who have registered for direct payments and who are part of firms. We choose this group for two reasons: they operate within the incentive structure of the direct payment system and they are likely to be most responsive to the changing conditions in the appellate market (our instrumental variables approach, discussed below).

We further linked our MEDIB extract with information drawn from the Case Processing

²¹ The expedited handling flags are Quick Disability Determination (QDD), Compassionate Allowance (CAL), Terminal Illness (TERI) and Wounded Warrior (WW). These expedited handling flags are associated with faster processing times at the DDS. In our data, for claims filed in 2014, when controlling for the set of covariates described here and later, the QDD flag is associated with a reduction in processing time of 45.4 days on the basis of a mean of 92.2 days. The CAL flag is associated with 20.6 fewer days, TERI with 12.0 fewer days, and wounded warrior with 9.2 fewer days. See Rajnes (2012) for descriptions of these programs.

²² Claims flagged with QA review are associated with longer processing times. In our data, for claims filed in 2014 that are randomly selected for QA review, processing time increases by 6.2 days.

²³ The information in the ARDB and MCS data bases are now available in a single dataset called the Registration, Appointment and Services for Representatives (RASR) database.

Management System (CPMS), which contains the universe of *appellate* cases. This had two purposes. First, we used the CPMS to track whether the initial applications in the MEDIB (if denied) were ever appealed to the ALJ hearing level, and if so, the outcome and date of the ALJ decision (by December 2018). We used this date to calculate total case processing time for cases observed on appeal; for cases not observed on appeal, we use the DDS decision date to calculate total processing time. Similarly, we use the ALJ decision outcome as the final case outcome for cases observed on appeal; otherwise, we use the DDS decision outcome as the final case outcome.²⁴

The second purpose of using the CPMS was to construct our instrumental variables. We first identify all appellate cases in 2009 and 2010 in the CPMS and whether they had representation (a time period prior to our main analysis period). We next construct appellate case counts by firm (using the *firm name* field), and classify firms as large, medium and small based on the distribution of firm case counts across the entire U.S. in these two years.²⁵ The distribution is highly concentrated. Large firms encompass the largest 8 firms, which represented 16.7 percent of all appellants with representation (“clients”) during this period. The approximately 1,300 next largest firms, which we call medium sized, represented the majority of clients, 71.3 percent. The remainder, approximately 4,000 small firms, represented 12.0 percent of clients.

This gives us non-time varying, non-place varying, firm-size “tags” for each of these

²⁴ This is an approximation of the final outcome and total processing time for two reasons. First, initially denied applicants may request “reconsideration” of their claims by the DDS and, when denied, choose not to continue the appeal to the appellate level. Of applications filed in 2014, 0.6 percent had this pathway (Social Security Administration, 2020a). Second, applicants may pursue further review after denial at the appellate level, including at the Appeals Council or in federal court. Of applications filed in 2014, 4.5 percent had this pathway (ibid). In both cases, we underestimate total processing time.

²⁵ We selected the thresholds for large, medium, and small based on visually identified break points in the distribution of firm case counts. We did this because the market is highly concentrated; a small number of super-sized firms dominate the market with case counts that are an order of magnitude greater than the typical medium-sized firm. At the other extreme are a large number of small firms that handle just one or two cases per year.

firms that appear in the appellate data in the 2010-2014 period. We then calculate “market-share” variables—the percent of all appellate cases represented by large firms, medium firms, and small firms for each hearing office and each month.²⁶ The reference category for the market share variables includes unrepresented appellate cases, cases that are represented by individuals (i.e., non-firms), and cases represented by firms operating outside of SSA’s direct payment system.²⁷ Next, we use a geographic crosswalk to assign these hearing office market shares to each observation in the initial claims data on the basis of their zip code and month of filing. We explored different lags between appellate market conditions and representation at the initial level and find that a one-month lag has the most explanatory power. Importantly, there is no overlap between the instruments and our main analysis sample by construction. For example, an initial claim filed in September 2012 would be assigned instruments based on appellate cases decided in August 2012 (and filed in 2011 or earlier). Hence, the cases observed in the appellate sample making up the instruments were decided before the initial cases in our main analysis were filed.

Our base case model uses these three “market share” variables (share large, medium and small) as instruments for initial representation. This allows the different-sized firms to have different marginal impacts on initial representation. For robustness tests, we consider two other instrumental variables approaches. First, we sum the three market shares to form a single instrument – the share of appellate cases represented by *Any Firm*. While this constrains the marginal impact to be the same across firm sizes, the single instrument captures the total law firm share in the appellate market and is helpful for testing validity, when operationalizing tests with multiple instruments is complicated (Mogstad et al. 2020). Second, we use the three

²⁶ Representatives register as individuals and payments are also made to individuals; however, we aggregate by the associated firm if one exists. Thus, we use the shorthand that applicants can be represented by a firm.

²⁷ The reference group also includes a small number of firms that did not operate in the disability market in 2009 or 2010 but appeared later.

appellate market share instruments adjusting for appellate case characteristics (we discuss these “residualized instruments” below).

4.2 Summary Statistics

Summary statistics for our initial applications analysis sample are shown in Tables 1-4. Table 1 presents demographic and claim characteristics and shows that applicants are evenly split between males and females and nearly one-half are ages 50-67.²⁸ Almost 70 percent have no more than a high school degree or GED, and 27 percent report vocational training. Over half of applications were evaluated concurrently for SSI benefits, indicating the applicant had very low income and assets. A little less than 10 percent have a processing flag for expedited handling or QA review. Table 2 presents diagnosis and health characteristics and shows that more than half of applicants have either a mental health impairment (major affective 12 percent, schizophrenia/psychoses 1.4 percent, anxiety/neurotic 3.3 percent, other mental 3 percent) or a musculoskeletal impairment (back 19.1 percent, other musculoskeletal 16.4 percent). Almost 93 percent report pain, and only 25 percent have BMI in normal range.

Table 3 presents the mean and standard deviation of our outcome variables. The outcomes we analyze are initial allowance (=1 if yes), type of allowance (meet/equal listings or medical-vocational), processing time at the field office (in days), processing time at the DDS (in days), and total processing time (in days). To understand mechanisms, we examine the negative procedural outcomes, denial for insufficient evidence (=1 if yes) and denial for failure/refusal of medical exam (=1 if yes), as well as the positive procedural outcomes, claim filed electronically (=1 if yes) and email address given (=1 if yes). We analyze whether an appeal is sought (=1 if

²⁸ Our sample includes a small number of SSDI applicants who had reached full retirement age (ages 66-67), and thus would have no longer been eligible for SSDI. However, if their disability onset date occurred before full retirement age, these applicants could have been awarded SSDI benefits retroactively. This is especially advantageous because SSDI benefits convert to *full* Social Security retirement benefits, which are not actuarially reduced for early claiming the way Social Security retirement benefits are.

yes) as well as the final decision outcome (=1 if allowance, including allowance on appeal). These outcome variables are well suited for estimating the value of representation to applicants and for testing the theory of representative behavior that we discuss above in Section 3. They allow us to explore the effect of representation on delays in the case, reason for delays, as well as the ultimate success of the case. Table 3 shows that 47 percent of cases are ultimately allowed, with 32 percent allowed at the initial level and the rest allowed on appeal. 4.3 percent are initially denied for insufficient evidence and 2.6 percent are initially denied for refusal to submit to a consultative medical examination. Total case decision time averages 316 days, with 6.4 days at the field office and 92 days at the DDS.

4.3 Facts about Representation at the Initial Review Level

Table 4 presents descriptive statistics for representation at the initial level as well as our instruments. The top panel shows that in our initial claims sample covering 2010-2014, 12.4 percent of claimants used representatives, based on our measure of representation, direct-pay attorney or EDPNA in firms. Another 2.5 percent have direct pay representatives (attorney or EDPNA), not in firms, and a total of 5.4 percent are not direct pay. Figure 2 shows the percent of initial cases with a representative appointed prior to initial filing, by year. There is a clear rise over the period, from 7.9 percent in 2010 to 14.9 percent in 2014, an increase of almost 90 percent over this four-year period.²⁹

Representation is not only increasing over time but exhibits significant variation across local areas. Appendix Figure 2 plots the share of representation at initial determination for 2010 (Panel A) and 2014 (Panel B) by 3-digit zip code. These maps show tremendous spatial variation in the extent of initial representation. In 2010, there are relatively higher rates of representation

²⁹ We compare our data series to other SSA data series in Appendix Figure 1.

in Utah, Minnesota, Florida, Southern New York, parts of Missouri, Illinois and west Texas. These representation rates reach more than a quarter in the highest utilization areas. Notably, by 2014 many more areas exhibit these high rates of representation.

Representation rates also vary by demographic, health, diagnosis, and other claim characteristics (Tables 1 and 2, column 2). Representation rises sharply with age: 6 percent of those under age 30 use representation compared to 15 percent among those ages 50-59. Rates of representation do not exhibit much variation by gender or education. Importantly, we see that expedited cases that have *high* rates of allowance (e.g., wounded warrior, terminal illness) have *low* rates of representation. In contrast, primary diagnoses with *lower* rates of allowance (e.g., back, musculoskeletal) have *higher* rates of representation. This highlights the fact that representation is not randomly assigned to cases; applicants select into representation, and representatives select applicants.

The bottom panel of Table 4 presents the means and standard deviations of the three market share instruments after linking them to our analysis sample of initial claims by zip code and month of filing, as described above. Initial claimants live in areas where large firms represent on average 5.9 percent of appellate cases, medium firms represent 24.4 percent of appellate cases, and small firms represent 4.1 percent. The instrument *Any Firm* is the sum of the three market-share instruments, and thus initial claimants live in areas where firms handle on average 34.3 percent of appellate cases.³⁰ These market shares exhibit tremendous spatial and temporal variation as shown in Appendix Figure 3, which plots the three market share instruments for 2010 and 2014 by 3-digit zip code. The figure also reveals modest losses in market share occurring in the medium-firm market and to a lesser extent the small-firm market,

³⁰ As shown in Table 4, 80 percent of appellate cases use a representative. Firms account for 43 percent of representatives at the appellate level ($34.5 / 79.9 = 43$) while they account for 61 percent at the initial level ($12.4 / 20.3 = 61$).

and modest gains in market share occurring among large firms.

5. Empirical Approach

Our empirical approach starts with the following model:

$$y_{idt} = \alpha + \beta r_{idt} + \pi' X_{idt} + \eta_t + \theta_d + \varepsilon_{idt} \quad (4)$$

where y_{idt} is a disability application outcome for individual i based in DDS office d in period t and r_{idt} is a dichotomous variable equaling 1 if the applicant used a representative at the initial stage. The model includes controls for demographics, claim characteristics, and health (X_{idt}) (see full list in Tables 1 and 2), as well as fixed effects for year-month of application (η_t) and DDS office (θ_d). Standard errors are clustered on DDS office.

An observational ordinary least squares approach is not likely to lead to a causal estimate of the effect of representation on disability outcomes. As shown in Tables 1 and 2 and discussed above, there is significant cross-sectional variation in the use of representation. This raises concerns about selection into representation that could bias the OLS estimate of β .

Figure 3 explores the potential bias by plotting estimates from two models – in one model we regress application outcome y on control variables (those in Tables 1 and 2) and in the other model we regress representation r on the same variables. Here, for y , we use initial allowance, a dichotomous variable equaling one if the case was allowed at the initial level. For each control variable, we plot its coefficient from the representation regression (horizontal axis) against its coefficient from the initial allowance regression (vertical axis). The size of the circle reflects the relative number of observations with this characteristic. This provides insight, and quantification, of the incentives for representatives discussed above, and allows us to illustrate the nature and extent of selection into representation. The top panel of Figure 3 shows that diagnoses with lower rates of initial allowance—back, musculoskeletal, and anxiety/neurosis—have higher rates of

representation. In contrast, cases with higher rates of initial allowance—neoplasms, intellectual, and sensory diagnoses—have lower rates of representation. This pattern suggests that OLS would be biased downward, away from finding a positive effect of representation. The coefficients on demographic and administrative variables (bottom panel of Figure 3) show less of a clear pattern for the direction of the bias, although, as above, cases flagged for expedited handling have a higher rate of allowance and are least likely to have representation. Of course, we control for all of these variables in our models, but if the unobservable determinants of case outcomes follow these same patterns, we would expect OLS to be biased downwards.

For the instrumental variables model, we estimate a first stage equation:

$$r_{idt} = \alpha + \gamma'Z_{dt} + \vartheta'X_{idt} + \eta_t + \theta_d + \varepsilon_{idt} \quad (5)$$

where Z_{dt} is our vector of instrumental variables. Our instrumental variables take advantage of the considerable geographic and time variation in the market for representation *at the appellate level*. As described above, representatives are relatively new at the initial level, whereas for decades most applicants who appeal their case to the hearing level have had representation. With the substantial decline in allowance rates on appeal—from 79 percent in 2008 to 55 percent by 2017 (Figure 1)—revenues for representatives declined by nearly 30 percent (Figure 1) and this may have led to development of new business models around the initial claim process. We use the evolution—across geography and time—in the market shares of large, medium and small firms at the appellate level as instruments for “upstream” representation at the initial level. This empirical approach identifies the local average treatment effect (LATE) – the causal effect of representation for applicants on the margin of taking on a representative. We discuss this and more generally, the assumptions for validity of the IV approach below.

6. Empirical Analysis of Legal Representation and SSDI Case Outcomes

Before proceeding to the instrumental variables estimates, we discuss and provide evidence on the conditions required to interpret the two-stage least squares estimates as the causal effect of representatives. We begin by demonstrating relevance, that the instruments are strongly and significantly associated with representation at the initial level. We then assess independence of the instruments with a series of balance tests and presentation of the reduced form. Next, we discuss the exclusion restriction condition and provide supporting evidence that our instruments only affect outcomes through a single channel, the probability of having a legal representative. Finally, we provide evidence on monotonicity, the fourth condition needed to interpret our two-stage least squares estimates as the LATE effect of representation.

6.1 First-Stage Estimates

Table 5 presents the first-stage estimates. In our base case model, we have three instruments, the share of appellate cases handled by representatives associated with large, medium and small law firms in the applicant's geographic area the month before their initial claim was filed. The coefficients on all three instruments (see column 1) are positive and statistically significant with an F-Statistic of 11.83, confirming instrument relevance. The coefficient on the large firm market share of 0.109 implies that a 1 percentage point (pp) increase in the appellate market share of large firms leads to a 0.11 pp increase in initial representation. In our sample, the range of the large firm instrument is 20 pp, implying that 2.2 percent ($0.11 \times 0.20 = 0.022$) of the sample is a large-firm complier (holding fixed the other instruments). The coefficient on medium market share is 0.081, which given an instrument range of 43 pp, implies that 3.5 percent of the sample is a medium-firm complier. The coefficient on small firm market share is 0.146, which given an instrument range of 12 pp, implies that 1.7 percent of the sample is a small-firm complier. Thus, each instrument alone moves about 2-4 percent of applicants into

initial representation.³¹ We cannot reject equality across these three instruments.

6.2 Independence and Exclusion Restriction

To examine validity with respect to independence of the instruments from potential outcomes and treatments, we present a balance test in Appendix Table 1. In particular we identify a set of predetermined and “hold-out” characteristics, including events prior to filing (number of days between stopping work and filing, number of days between onset and filing, whether there were changes made to work activities prior to stopping work), English language skills, and filing date information (day of the month, day of the week). We regress each of these characteristics on our three instruments, as well as the controls (those listed in Tables 1 and 2) and fixed effects for DDS and year-month. Of the 36 coefficients (3 instruments x 12 balance variables) we have four statistically significant at the 5 percent level. We take this as confirming of a key assumption of the IV approach – that the instruments are not correlated with the unobservable determinants of case outcomes.

Appendix Table 2 presents the reduced form estimates, which can be interpreted as causal if independence holds. The results show greater market share of firms in the appellate market (lagged) leads to an increase in initial allowance, (a weak) reduction in appeals, reduction in time to decision, and no effect on final allowance.

We next assess the exclusion restriction. Our first test, presented in Appendix Table 3, shows that the instruments are not related to the overall *quantity* of initial applications. In particular, we collapse the data to the DDS-month level and we regress $\log(\text{applications})$ on the instruments and fixed effects for DDS and month, weighted by the DDS-area population.

³¹ The complier shares are calculated after trimming the top and bottom 1 percent of the instrument following Dobbie et al. (2016). Note that the sum of the implied complier shares for each instrument separately holding the others fixed (7.4 percent) is below the complier share for all three instruments when efficiently combined in a *single instrument index* (10.2 percent, Table 6). As we discuss below, this is because additional complier groups arise from combinations of the instruments.

Although the small firm market share is positively related to the number of initial applications filed (col. 1), its effect is offset by negative effects from the large and medium firm market shares, for a net effect that is negative and statistically indistinguishable from zero.³² This is also the case with our alternative *Any Firm* instrument (col. 2).

A second test of the exclusion restriction is presented in Appendix Table 4. There we show alternative first stages, where we use alternative definitions for who we classify as legal representatives (that is, our measurement of the endogenous variable). Our base case definition (col. 1) includes all direct pay attorneys and EDPNAs in firms. Alternatively we consider direct pay attorneys and EDPNAs not in firms (col. 2), attorneys and EDPNAs not direct pay (col. 3), and other non-direct pay (col. 4). These results show that our instruments operate to significantly affect the “disability law firm market” (direct pay, in firms) but not the other types of representation. This fits with our reading of the events in the representative market.

A third concern is that the reduction in the hearing-level allowance rate that drives our market-share instruments may also directly impact outcomes among the cases in our analysis. This is unlikely to be true for case outcomes at the initial level since there is no interaction between the federal appellate hearing system and the state agencies that handle initial determinations. It is also unlikely to be true for case outcomes on appeal since we find no reduced form relationship between our market-share instruments and the probability of allowance on appeal (which occurs on average two years later) among our initial claims (see Appendix Table 2). Thus, we conclude that the appellate market-share instruments are unlikely to affect case outcomes for the initial claims in our analysis through a channel other than initial representation.

³² The predicted effect on log(applications) of the three market share instruments combined, evaluated at the average market shares for each firm size in our sample (see Table 4), is -0.033.

6.3 Monotonicity and Interpretation of LATE

Monotonicity conditions are more restrictive for multiple instrumental variables than for a single instrument (Angrist and Imbens 1995). For a single instrument, monotonicity requires that applicants who use a representative under conditions with low market shares in appellate cases also use one when faced with higher market shares. For multiple instruments, monotonicity additionally requires that the relative responsiveness across the instruments is the same for all applicants—that *all applicants* would be more likely to use a representative in response to higher market shares for small firms than for large firms or medium firms (see Table 5). Mogstad et al. (2020) show that under a weaker “partial monotonicity” condition, applicants may differ in their relative responsiveness to the instruments and the two-stage least squares estimates retain their interpretation as positively weighted averages of LATEs. Partial monotonicity is satisfied when monotonicity holds for each instrument separately, holding the other instruments constant (Mogstad et al. 2020).

To examine the monotonicity assumption, we present graphical representations of the first stage by fitting a local linear regression of legal representation against our instruments, one instrument at a time. In Figure 4, each panel plots the local linear first stage for one instrument after partialing out the other two instruments and the exogenous covariates (right axis), along with a histogram of the instrument (left axis).³³ Across the first three panels, we see that each instrument is positively related to the rate of initial representation and exhibits monotonicity over the range of the instrument. In the fourth panel, we repeat the exercise for our alternative single

³³ Estimating the local linear regressions in Figure 4 requires 2 steps. First, we remove the effects of the covariates and fixed effects from the endogenous variable by estimating the linear first stage regression with the full set of control variables and instruments (as in Table 5), and then we recombine the first-stage residual with the first-stage coefficient on one of the instruments (and the mean of the dependent variable for scaling). Next, the local linear regression is performed by regressing the endogenous variable net of covariates, fixed effects and the other instruments on the relevant instrument. In generating the figures, the local linear regression function and the histogram are both trimmed by 1 percent at the top and bottom of the distribution of the instrument, following Dahl et al. 2014 and Dobbie et al. 2016.

instrument *Any Firm*, the sum of the three market share instruments.³⁴ Here too, the *Any Firm* instrument is positively related to the rate of initial representation and exhibits monotonicity over nearly the entire range.³⁵ These results confirm that the conditions for partial monotonicity are met; each instrument separately has a positive first-stage relationship and satisfies monotonicity across its full range, sufficient for a causal interpretation of our two-stage least squares estimates as a positively-weighted average of LATEs for all complier groups (Mogstad et al. 2020).

A further implication of monotonicity is that the first stage estimates should be non-negative for all subsamples. We explore this in Appendix Table 5 by estimating the first stage for subgroups using defined by gender, age, educational attainment, obesity, concurrent enrollment, and impairment type. Panel A presents the subgroup first-stage estimates for our three-instrument model and Panel B presents the results for the *Any Firm* single instrument model. The first stage estimates are consistently non-negative and nearly all (50 out of 52) are statistically significant for each subsample, supporting the monotonicity assumption.

To understand and interpret the LATE, it is useful to quantify and characterize the compliers. In our setting with multiple continuous instruments, there are multiple complier subgroups reflecting applicants who comply with various combinations of changes in the instruments (Mogstad et al. 2020). To calculate the total complier share,³⁶ we construct a “single instrument index” equal to the weighted sum of the three market-share instruments, where the weight for each instrument is its respective first-stage coefficient. We then follow the approach in Dahl et al. (2014) and Dobbie et al. (2016) for single, continuous instruments. The complier results are presented in Table 6. Panel A shows that 10.2 percent of the sample are compliers,

³⁴ The corresponding linear first stage estimates for the *Any Firm* model are in column 2 of Table 5 and show that a 1 pp increase in firm representation at the appellate level leads to a 0.089 pp increase in representation at the initial level (an F statistic of 33.3). Given a range of 49 pp on the *Any Firm* instrument, the complier share is 4.3 percent.

³⁵ There is small violation of monotonicity in the right tail of the distribution; results using this alternative instrument are not sensitive to the inclusion or exclusion of this part of the sample.

³⁶ The complier subgroup shares are not separately identified (Mogstad et al. 2020).

meaning their use of initial representation depends entirely on the (lagged) measure of the market shares of firms handling appellate cases. We also find that 8.2 percent are always takers (i.e., they will use representatives at the initial level even in the lowest market share settings) and 81.7 percent are never takers (i.e., they will not use representatives at the initial level even in the highest market share settings). This high percentage of never takers makes sense given that initial representation rates peak at 16 percent in our sample period (Figure 2).

Panel B of Table 6 presents the complier characteristics. Compliers are more likely to be older than age 55, have higher income and assets (not apply for SSI concurrently), and have completed college. They are also more likely to have musculoskeletal conditions.³⁷

6.4 Instrumental Variables Estimates

Our two-stage least squares estimates, for our base case three-instrument model, are presented in Table 7. In total, we investigate eight distinct case outcomes: the likelihood of initial allowance, for any reason (column 1), for meeting/equaling the listing of impairments (column 2) or meeting the medical/vocational criteria (column 3); initial denial for insufficient evidence (column 4) or refusing a medical exam (column 5); the probability of appeal to the hearing level (column 6); total case processing time across all levels of review (column 7); and the final allowance rate, accounting for outcomes on appeal (column 8). These outcome variables are well suited for testing the theory of representative behavior that we discuss above in Section 3. They allow us to explore the effect on delays in the case, reason for delays, as well as the ultimate success of the case. In all models we control for demographics (age, age squared, and indicators for female, educational attainment, vocational training), health (BMI and BMI squared, pain indicated at application, major diagnosis class), claim characteristics (SSI

³⁷ It is also possible to calculate the complier characteristics for each instrument separately, holding the others fixed or for the single *Any Firm* instrument. In all cases, the complier characteristics were qualitatively similar to those reported in Table 6. These are available on request.

concurrent claim, random QA sample, quick disability determination, compassionate allowance, terminal illness, wounded warrior) and fixed effects for year-month of filing and DDS office.

We find that, among those on the margin of obtaining representation, legal representation increases the probability of initial allowance by a statistically significant 23 percentage points. Given a mean allowance rate of 32 percent at the initial level, this indicates very large effects among applicants whose representation status can be influenced by developments in the representation market structure.³⁸ Most of this effect arises from a substantial 19.7 percentage point increase in the probability of allowance for having an automatically-qualifying condition on the listings (and a small 0.035 statistically insignificant effect of representation on the probability of allowance meeting the medical-vocational criteria). Perhaps surprisingly, legal representation leads to a 10.3 percentage point *increase* in the likelihood of denial for insufficient evidence (a very large effect relative to the mean of 4.3 percent), but has a very small and statistically insignificant effect on the likelihood of denial for refusing a required medical exam. Speculatively, while denial for insufficient evidence is an undesirable processing outcome, it may reflect representatives “cutting their losses” in circumstances where a claimant’s medical and other evidence turn out to be less compelling than originally anticipated.

Applicants on the margin who had representation for their initial determination are 45.3 percentage points less likely to file an appeal to the hearing level. This is large relative to the mean appeal rate of 0.510. Overall, using a representative in the initial claim process leads to a statistically significant reduction in total case processing time of 316 days; this is a direct result of more initial allowances and fewer appeals since there is *no increase* in processing time at

³⁸ Using the approach in Dahl et al (2014) we calculate the mean initial allowance rate among compliers (if untreated) is 0.145.

either the field office or the state DDS (shown in Table 10). Finally, we do not detect a statistically significant effect of representation on the likelihood of final allowance. For each of these outcomes, Table 7 also reports the p-value for the Hansen J statistic overidentification test. We reject the null hypothesis for 4 of the 8 outcomes, indicating likely treatment effect heterogeneity for these outcomes (e.g., initial allowance) but not the others (e.g., final allowance) (Angrist and Imbens 1995).

Taken together, this evidence lines up well with the predictions of the model of representation. Increasing representation would facilitate a more efficient process – leading to more approvals at the initial stage and fewer approvals at the (more costly) appellate stage. Representatives accomplish this by recognizing when an applicant’s medical condition meets the listing of impairments, and thus should be automatically qualifying regardless of their residual functional abilities. This makes a certain degree of sense. The listing of impairments—a long, complex document filled with medical terminology—requires expertise to interpret.³⁹ Furthermore, increasing legal representation in the initial stage would appear to *deter* some applicants from pursuing their claims on appeal, resulting in a dramatic reduction in *total* processing time.

6.5. OLS and the Biases in Observational Estimates

As discussed above, OLS estimates of the effect of legal representation on SSDI case outcomes are unlikely to represent causal effects. The results in Figure 3 illustrate that cases diagnoses with higher rates of initial allowance, e.g., neoplasms, intellectual, sensory, and cases flagged for expedited handling, have systematically lower rates of representation. Likewise, cases with lower rates of initial allowance, e.g., musculoskeletal and anxiety/neurosis, are more

³⁹ The Listing of Impairments for adults can be accessed at <https://www.ssa.gov/disability/professionals/bluebook/AdultListings.htm>

likely to use representatives in the initial application process. If the unobservable determinants of case outcomes follow these same patterns, we would expect OLS to be biased downwards, away from finding a positive effect of representation on the rate of initial allowance.

We present the OLS estimates in Table 8. The table follows the same structure as the IV results in Table 7, displaying the OLS coefficient on legal representation for each of the eight outcome variables (across the columns). Each model includes the same covariates and fixed effects as Table 7. Overall, the observational results present a markedly different picture of legal representation than the IV estimates, consistent with the theorized bias due to nonrandom selection into representation.

The OLS estimates show that representation is associated with a 0.66 percentage point increase in the likelihood of initial allowance (column 1); although statistically significant, the effect is small compared to the IV estimate of 23 percentage points. The effect of representation on *type* of allowance is the reverse of the IV results: in the observational data representation is associated with a -0.011 reduction in the probability of allowance for meeting the listings (col. 2) and a 0.018 point increase in the likelihood of allowance on medical-vocational criteria (col. 3). Further, columns 3 and 4 show two types of administrative denials that arise *more* frequently with representation—denial for insufficient evidence (8.6 percent effect) and denial because the claimant refused a required medical exam (3.4 percent effect). The observational results show that applicants are 26.8 percentage points *more* likely to file an appeal to the hearing level (col. 5), again this is the opposite sign from the IV results. Accounting for outcomes on appeal as well as the initial outcome, representation is associated with a 4.6 percentage point (9.7 percent) increase in the probability of final allowance (col 8). Overall, the OLS estimates show that representation is associated with 17.4 days of case processing time (col. 7).

Appendix Table 6 reweights the OLS estimates using the characteristics of the compliers.

The results are similar to the unweighted OLS estimates, implying that it is selection bias rather than differential complier characteristics that explain the difference between IV and OLS estimates. Moreover, the differences between the OLS estimates and the IV estimates are stark, indicating that confounding factors contribute substantial bias to the OLS estimates. The OLS results, taken at face value, would lead to the conclusion that representation at the initial level leads to a slower, more costly process, with more appeals and fewer cases being allowed for meeting the listings. However, the evidence is compelling that these observational comparisons instead reflect the characteristics of cases that select into representation. Our model (Section 3) suggests this selection is likely to originate from both the representative and claimant sides. Selection on the representative side and is likely to originate from the contingency-fee structure. Representatives may screen potential cases for those with the highest award probabilities and that would take the least amount of effort over an extended period of time. Selection into representation on the claimant side may arise from applicants who need help with complex cases.

6.6 Subgroup IV Estimates and Mechanisms for the Findings

Returning to the IV model, Table 9 examines how the estimates vary across primary diagnoses. We provide estimates for four subgroups: back, other musculoskeletal, mental impairments (major affective, schizophrenia/psychoses, anxiety/neurotic, other mental), and all other types of cases combined. We present six outcomes: initial allowance, allowed for meeting the listing of impairments, initial denial for insufficient evidence, appeal conditional on initial denial, total case processing time, and final allowance. On the margin, we find that legal representation leads to large increases in initial allowance for applicants with mental health conditions but much smaller and statistically insignificant effects for the other diagnoses. The effects on initial allowance for meeting the listings and the effects on denial due to insufficient evidence are more consistent across the diagnosis groups. Overall, across these initial application

outcomes, there is a consistent finding of smaller (and often statistically insignificant) effects for back and other musculoskeletal diagnoses, and stronger effects for all others, especially mental diagnoses. The effects on seeking an appeal are qualitatively consistent across diagnosis groups – all showing that representation leads to large and statistically significant declines in appeals. The point estimates on the effect of representation on the total case processing time are all negative, though the effects are statistically significant only for mental diagnoses. Effects on final allowance across diagnosis groups mirror the effects in the full population in that they are not statistically different from zero except in the case of other musculoskeletal conditions, for which the point estimate is *negative* and significant.

Table 10 presents evidence on possible mechanisms for our main findings of a positive effect of representation on disability claim outcomes. The first two columns show that legal representation leads to increases in claims being filed electronically (41 percentage point increase relative to a mean of 36 percent) and with an email address given (41 percentage point increase relative to a mean of 31 percent). These actions may increase the efficiency of administrative activities and communication around these claims.

The remainder of Table 10 presents estimates for different elements of *case processing time*: field office processing time (col. 3), DDS processing time (col. 4), and an indicator equaling one if the time from onset to DDS decision being larger than 5 months (col. 5). We find that legal representation has positive but statistically insignificant impacts on field office processing time and mean DDS processing time. However, legal representation increases the fraction of cases that take more than five months from onset to DDS decision by 33 percentage points relative to a mean of 84 percent, consistent with incentives for representatives to get back-payments beyond 5 months and receive positive fees). Appendix Figure 4 offers additional insight into the effects on case processing time. Panel A presents the IV estimate of

representation on a series of models for whether time from onset to DDS is less than or equal to month m (for $m = 1$ to 70) along with 95 percent confidence intervals. Panel B presents similar estimates for months at the DDS. The results show that representatives reduce the probability of shorter onset to DDS decisions (between 1 and 10 months, Panel A) but do not significantly change the amount of processing time at the DDS (Panel B). This shows that representatives work to get more distant onset dates, consistent with incentives of fee structure, yet they do not add processing time.

6.7 Robustness

We also explored the robustness of our estimates to the instrument set. The results are presented in Appendix Table 7. In Panel A, we present the IV results for the single instrument *Any Firm* (the sum of market shares across small, medium and large firms). In Panel B we present the IV results where we included residualized versions of our three-instrument base case model. In particular, we adjust the appellate level firm size market shares for appellate case characteristics. This adjustment addresses the possibility that, even though the instrument is constructed from the universe of appellate applicants, these applicants might share characteristics with the initial applicants in our sample because they live in the same area.⁴⁰ The first stage estimates for the residualized instruments, presented in Table 5 column 3, are quite similar to our base case (Table 5, col.1) and the F Statistic is similar at 11.75 (versus 11.83 for our base case).

The two alternative instrument approaches generate qualitatively similar findings to our

⁴⁰ These include characteristics at the time of application filing (the local unemployment rate, age and age squared), at the time of the initial decision (the allowance rate at that DDS in that month, the step of the determination process at which the decision was made, whether the case was expedited, and the affected body system), and at the time of the appellate decision (the proportion of decisions allowed by Senior Attorney Advisors in that office in that month, whether the application was concurrently evaluated for SSI eligibility, whether it originated in a state without a DDS reconsideration process (so-called prototype states), and whether case flags indicate the applicant was a noncitizen, in jail, suicidal, in dire need, or had a terminal illness). The Senior Attorney Advisor initiative was part of the overall agency plan to reduce pending workloads for judges beginning in 2007. SAAs are able to issue allowances based on the evidence in the record. As a result, these cases do not require a hearing with a judge.

main results, showing that representation at the initial application level leads to significant increases in the rate of allowance for meeting the listings and the rate of denial for insufficient evidence, significant decreases in going on to an appellate hearing, and insignificant effects on the final allowance rate. The effect on initial allowance and total processing time, however, is smaller and less precise.

7. The Value of Representation

In this section, we use our estimated coefficients and the model in Section 3 to calculate the value of representation for applicants and implications for the types of cases that representatives will accept. We then discuss cost implications for the SSDI program.

7.1 Optimal Fee Payment

We begin by combining the decision rules for the claimant (2) and representative (3) to yield an expression defining the range of the optimal level of F :

$$\frac{c(a(1))}{p'(1) + p^A \delta [1 - p'(1)] a(1)} \leq F \leq V \left[1 - \frac{p'(0)}{p'(1) + p^A \delta [(1 - p'(1))a(1) - (1 - p'(0))a(0)]} \right] \quad (6)$$

where we suppress the notation for individual heterogeneity. Equation (6) says the optimal fee payment ranges between the expected cost of representing the claimant and the expected value of using a representative at the initial level.

7.1 The Value of Representation for Applicants

In equation (2), the value of representation hinges upon two parameters: the effect of initial representation on the initial allowance rate and the effect of initial representation on the rate of appeal. Our IV estimates for all applicants (Table 7, cols. 1, 6) show that initial representation increases the initial allowance by 23 percentage points and reduces appeal by 45 percentage points. Applying these estimates to equation (2) shows that the gain to representation

is 28.8 percent, meaning the representative’s fee payment could be as high as 28.8 percent of the claimant’s expected benefits before the applicant is financially worse off. Moreover, the gains to representation vary substantially by disability type. Using the parameter estimates for the disability type subgroups (Table 9, cols. 1, 4), we find the gain to representation is 69.8 percent for people with mental diagnoses, 16.6 percent for the “all other” group, and -13.5 and -44.2 percent for people with back and other musculoskeletal impairments, respectively. The very large gain for people with mental health diagnoses reflects the large positive causal effect on initial allowance for this group. In contrast, the expected loss for people with back or other musculoskeletal impairments mean these groups are better off *without* initial representation – not because representatives harm their chances (recall there is no effect on the initial allowance probability for this group) but because they close off the appellate option after initial denial.⁴¹

Additionally, we estimate that the present value of SSDI benefits (V) for an applicant who would receive the average benefit award from the average applicant age of 47 until age 65 is \$358,442.⁴² For a low-income, concurrent SSDI-SSI applicant, the present value of SSDI benefits is \$194,072.⁴³ Adding Medicare benefits, worth \$293,876⁴⁴, increases the SSDI present value to \$652,318 and the concurrent SSDI-SSI present value to \$487,948.

⁴¹ An exception would be if application burdens experienced by applicants are so costly that they offset the gain from delaying hiring a representative until the appellate stage.

⁴² This calculation uses the average monthly SSDI benefit of \$1,424 for new awards in 2020 (SSA 2021b), a projected annual cost of living adjustment of 2.4 percent (Office of the Chief Actuary, SSA 2020) and a projected real discount rate of 1.3 percent, equal to projected 10-year Treasury yields (CBO 2021).

⁴³ The concurrent SSDI-SSI calculation uses as the benefit amount the SSI federal benefit rate of \$771 per month in 2019. Other assumptions are the same.

⁴⁴ We obtained this figure by assuming no Medicare spending in the year of entitlement (due to the Medicare waiting period) or at age 65 (since nearly all individuals qualify for Medicare at age 65), inflating average Medicare spending per beneficiary in 2019 (\$13,987; Boards of Trustees 2020) by an estimate of projected medical inflation between 2023-2030 (3.5%), and applying a projected real discount rate of 1.3% (CBO 2021). CBO (2020) provides projections of the CPI-All index through 2030, but not the CPI-Medical index. To estimate projected medical inflation, we use the fact that average annual growth in the CPI-Medical index between 2010-2019 (2.5%) was 157% of average annual growth in the CPI-All index (1.6%). Applying this ratio (157%) to CBO’s projected annual growth rates for the CPI-All index for 2023-2030 (2.2%), we obtain an estimate of the projected annual growth rate in the CPI-Medical index of 3.5%. We obtained CPI values for 2010-2019 from U.S. Bureau of Labor Statistics (2021).

Combining these present values with our model estimates of the benefits to representation, we can identify the maximum fee the applicant would be willing to pay for representation. Our calculations indicate that an average SSDI applicant would be willing to pay up to \$103,367 ($0.288 \times \$358,442$) or \$188,115 for combined SSDI and Medicare. A concurrent SSDI-SSI applicant would be willing to pay up to \$55,966 (\$140,714 with Medicare). An average SSDI applicant with a mental impairment would be willing to pay up to \$250,151 (\$455,242 with Medicare) and an SSDI-SSI applicant with a mental impairment would be willing to pay up to \$135,440 (\$340,531 with Medicare). In contrast, applicants (of any type) with a back or musculoskeletal impairment would *not* be willing to pay for initial representation.

These figures stand in sharp contrast to the statutory maximum fee payment of \$6,000 (or the average fee payment of \$3,000). The expected gain to initial representation is large for most applicants on the margin of initial representation. With the notable exception of those with back or musculoskeletal impairments, applicants would be willing to pay far more for representation than is currently permitted by law because of the value representation provides.

7.2 Representative Incentives and Optimal Fee

If we knew the representation cost function $c(a(1), x)$, we could use equation (3) to calculate the minimum fee payment necessary to ensure participation of representatives in SSDI cases. Since that information is unobserved but the statutory fee structure is known, we can instead solve equation (3) for the maximum costs representatives are willing to incur under the current contingency-fee structure. At the estimated parameter values for our main model, the maximum cost a representative is willing to incur for an SSDI case is \$3,312 (\$1,656) given the maximum (average) fee of \$6,000 (\$3,000). The maximum cost is higher for a claimant with a mental health diagnosis—\$6,000 (\$3,000) (equivalent to the fee itself because representatives win these cases with high probability)—but much lower for an individual with a back or

musculoskeletal disorder at \$2,541 (\$1270) and \$1,745 (\$872) (because they are only slightly more likely to win than lose).

Although we cannot calculate the optimal fee, economic theory suggests the current statutory fee is too low. In a principal-agent framework where the effort spent by the representative on the client's case is imperfectly observed by the claimant and cannot be contracted upon, the optimal representative fee structure maximizes the claimant's chances of award, at the same time as it balances the representative's risk of financial loss against any incentives that would arise from fully "insuring" the representative against losses (e.g., if there were a fee guarantee or if the federal government provided salaried "public" representatives). But because representatives work on contingency, representatives bear full risk for negative outcomes under SSA's current fee structure. This ensures incentive compatibility—the representative's own interests are aligned with the claimant's best interest. But full risk-bearing also affects participation. The contingency-fee structure may cause representatives to be so highly selective of clients that they are unwilling to accept many disability cases (and accept only those expected to be low cost), rendering the supply of representation in disability cases inefficiently low. At the same time, it may also incentivize large-scale production models that minimize effort (and thus costs) per case, or utilize cheaper forms of labor than attorneys, such as paralegals.⁴⁵ In contrast, the optimal fee payment would consist of a mix of contingency pay (to ensure effort) and guaranteed pay (to ensure participation in SSDI cases).

7.3 Implied Cost-Savings for SSA

⁴⁵ This provides a potential explanation for two striking features of the disability representation market: the presence of super-sized firms that have developed high-throughput business models around paralegals and the presence of an exceptionally large number of small firms that take on just one or two disability cases a year. Court documents from the Binder & Binder bankruptcy state that prior to filing in October 2014, the firm had 47,729 active cases (of which 15,718 were initial or reconsideration applications) and employed 288 "caseworkers" who each handled 166 cases (In re Binder & Binder – The National Social Security Disability Advocates (NY), LLC., Chapter 11 Case No. 14-23728; December 18, 2014).

Overall, our estimates imply substantial savings in SSDI processing costs.

Representatives who are hired at the time of the initial case filing increase the initial allowance rate and reduce appeals without affecting final allowance decisions. The unit cost of processing an initial claim is \$1,187, the cost of a hearing is \$3,653, and the cost of reconsideration is \$585 per claim (J. Feinleib, Social Security Advisory Board, personal communication, December 7, 2017). Therefore, for claims that go to the hearing level to be allowed, the total cost per claim is $\$1,187 + \$585 + \$3,653 = \$5,425$. Final decisions determined at the initial level, by avoiding appeal, reduce the cost of processing a claim by 78 percent ($1 - 1187/5425$). Using our IV estimates (Table 7), we find that the 15 percent initial-claims representation rate for 2014, the last year in our sample, generated a reduction in processing costs of \$400 million compared to the counterfactual of no representation at the initial claims level. This amounts to a 13.1 percent reduction in processing costs.

8. Conclusion

Applying for SSDI is complicated and lengthy, and attorney and non-attorney representatives have long played a role in assisting with the preparation of these claims. While representation was once thought to be present only in appellate hearings, the Social Security Advisory Board (2012) noted a pronounced increase in representation at the initial level since 2009. However, much of the existing evidence on the role that representatives play in the process is anecdotal owing to data limitations. While there are many potential benefits of representation to both claimants and the disability system, representatives can receive larger payments for allowed claims that take longer to process. Related to these incentives, SSAB (2012) reports allegations that some representatives deliberately slow down cases, file incomplete and less fully developed applications, and fail to respond to requests. However, little systematic evidence has

been available to evaluate these contentions.

In this paper, we comprehensively investigate the impact of claimants' representatives on case outcomes. In addition to exploring the validity of these allegations, we investigate the objectives of representatives and the extent to which they are or are not aligned with the objectives of claimants. Our analysis is made possible by new administrative data measuring representation in the application process. We use the universe of initial applications for the period 2010-2014 and focus on initial level representation owing to its rising importance and because most cases are finally decided at this level. We follow these applications over their life cycle to identify any appellate filings and outcomes that occur through 2018.

We find that the increase in representation at the initial level arising from changes in market structure at the appellate level improved the efficiency of the disability claim process. Use of a representative at the initial claim level led to an increase in initial allowances that is economically and statistically significant, and a very large reduction in the share that seek appeals. Taken together, we find that representation in initial claims led to a reduction in total processing time of a little less than a year while not leading to a statistically significant change in final allowance rates. Using estimates of the cost of administering the initial and appeals processes, we find that the 2014 representation rate of 15 percent generated a 13 percent reduction in SSDI processing costs compared to the counterfactual of no initial claims representation. Our estimates also imply that applicants at the margin of initial representation would be willing to pay far more for representation than the current statutory fee structure currently permits. The current contingency-fee structure with low fee cap incentivizes representatives to select only low-cost cases and to minimize effort, leading to underprovision of representation. If SSA were to consider policy changes that encouraged more representation at the initial level, our results indicate that there would be large efficiency gains for applicants at

the margin, for representatives and for SSA.

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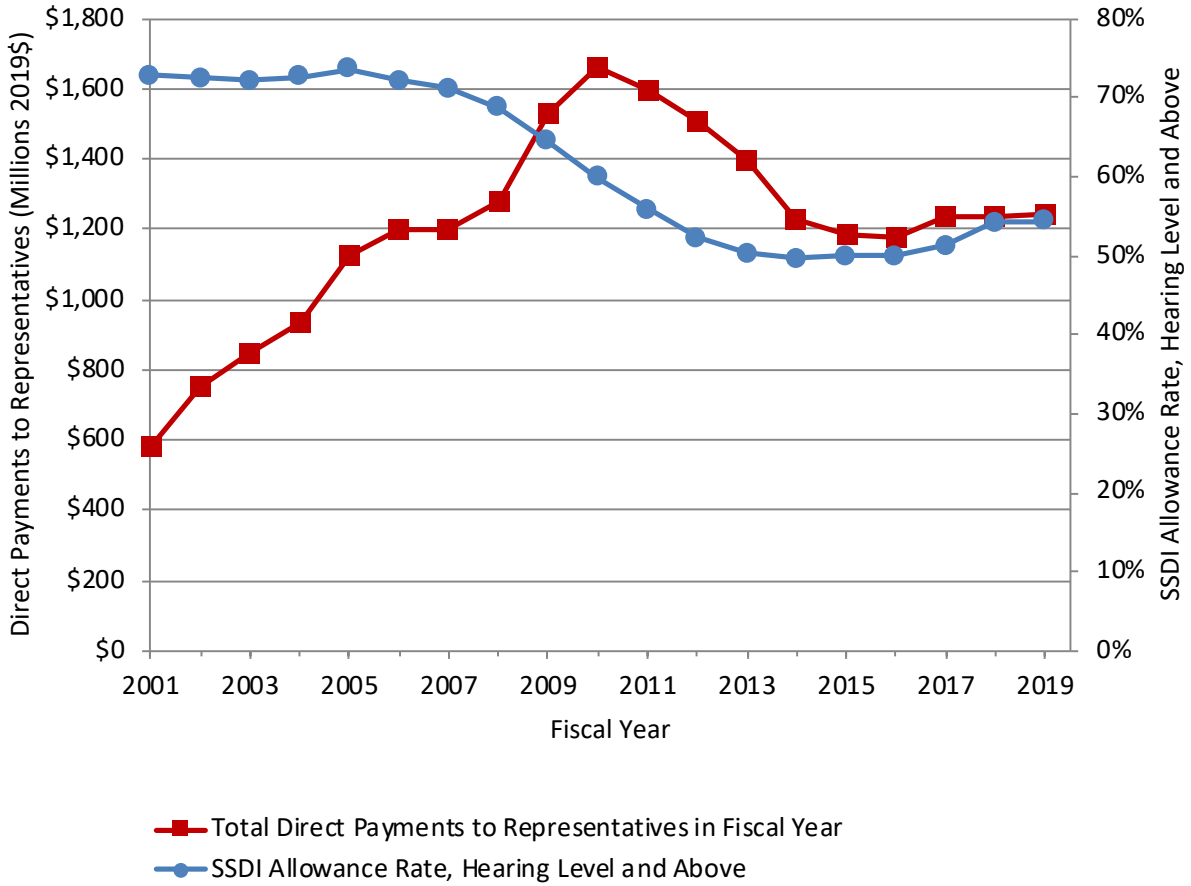
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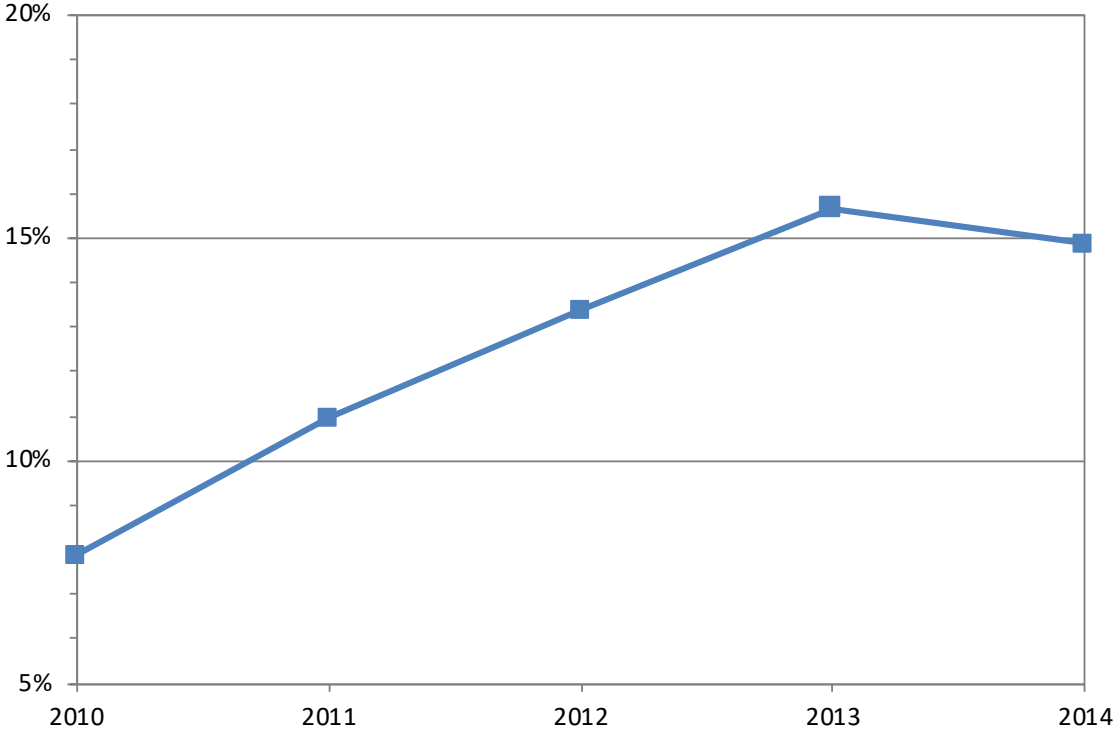
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Figure 1. Direct Payments to Representatives and Appellate Allowance Rates, by Year



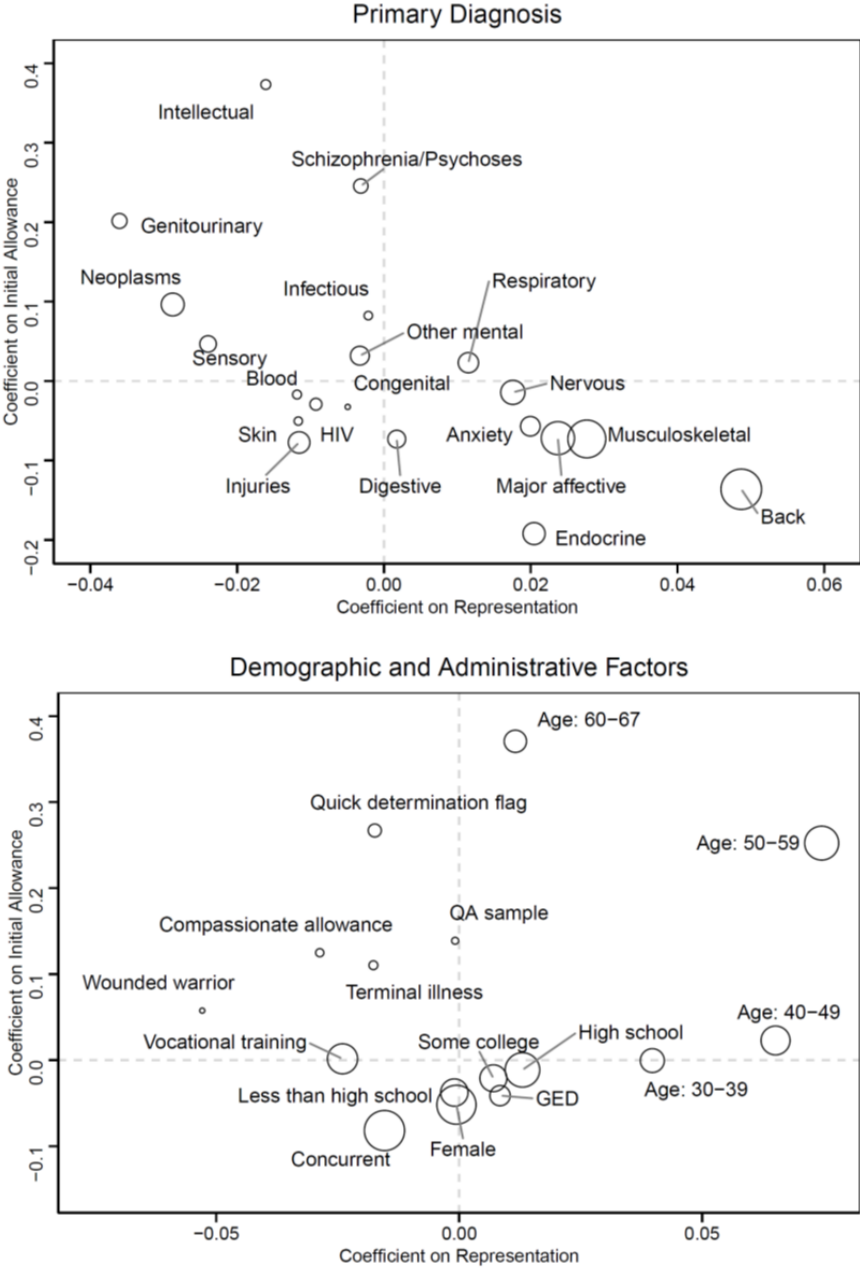
Sources: SSDI Allowance Rate for Hearing Level and Above is from Social Security Administration (2021a; Table 63 All Decisions, Workers). Direct Payments to Representatives is from Social Security Administration (2020b).

Figure 2. Percent of Initial Claims with Legal Representation, by Year



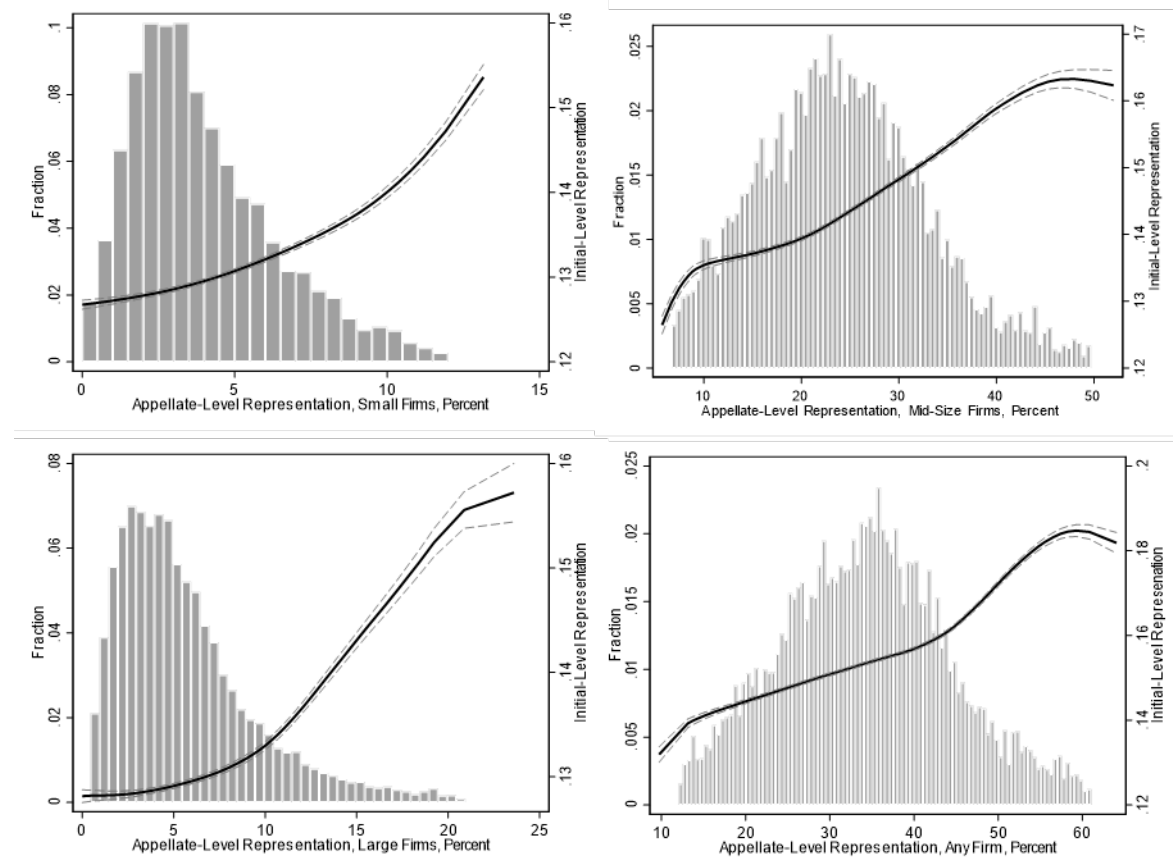
Notes: This and subsequent figures based on authors' tabulations of 7,431,904 initial claims recorded in Social Security Administration databases for years 2010-2014 (data sources described in Section 4.1).

Figure 3. Correlation of Observable Characteristics with Outcome versus Correlation of Observable Characteristics with Endogenous Regressor



Notes: The scatterplots plot estimates from two regressions. In one model we regress Initial Allowance on control variables in Tables 3 and 4. In the second model we regress Initial Allowance on the same controls. For each control variable, we plot its coefficient from the Representation regression (horizontal axis) against its coefficient from the Initial Allowance regression (vertical axis). The top panel plots the coefficients for Diagnosis types (excluded diagnosis is circulatory) and the bottom panel plots the demographic and administrative controls (excluded are male, college, no vocational, age 18-29, and not concurrent). We omit the coefficient pairs for BMI and Pain for visual clarity. The size of the circle reflects the relative number of observations with this characteristic.

Figure 4. Distribution of Instruments and Local Linear First Stages



Notes: Each figure plots a fitted local linear regression of initial representation (right axis) and the histogram of the instrument (left axis). To construct the fitted local linear regressions in panels 1-3 we first remove the effects of the covariates and fixed effects from the endogenous variable by estimating the linear first stage regression with the full set of control variables and instruments (as in Table 5), and then we recombine the first-stage residual with the first-stage coefficient on one of the instruments (and the mean of the dependent variable for scaling). Next, the local linear regression is performed by regressing the endogenous variable net of covariates, fixed effects and the other two instruments on the relevant instrument. Each figure (histogram and local linear regression) uses data that trims the top and bottom 1 percent of the instrument.

Table 1: Demographic and Claim Characteristics

	Category Share of Sample (1)	Share of Sample Category with Legal Representation (2)
All	100.0%	12.4%
Female	49.2%	12.6%
Male	50.8%	12.2%
Educational Attainment		
Less than high school	21.8%	11.3%
High school	37.2%	13.0%
GED	10.7%	12.9%
Some college	20.8%	12.4%
College	9.5%	11.8%
Vocational Training		
Yes	27.1%	11.3%
No	72.9%	12.8%
Age Group		
18-29	10.1%	6.1%
30-39	15.8%	11.2%
40-49	24.8%	14.1%
50-59	36.0%	15.0%
60-67	13.4%	8.5%
Concurrent Claim		
SSDI and SSI	52.5%	11.5%
SSDI only	47.5%	13.4%
Processing Flags		
Random Quality Assurance (QA) Sample	1.2%	12.2%
Quick Disability Determination (QDD) Flag	3.7%	6.6%
Compassionate Allowance (CAL)	1.5%	4.7%
Terminal Illness (TERI)	1.7%	5.8%
Wounded Warrior (WW)	1.1%	6.4%
Not flagged	90.8%	12.8%

Notes: Table based on authors' tabulations of 7,431,904 initial claims recorded in Social Security Administration databases for years 2010-2014 (data sources described in Section 4.1).

Table 2: Health Characteristics

	Category Share of Sample (1)	Share of Sample Category with Legal Representation (2)
All	100.0%	12.4%
Primary Diagnosis		
Major Affective	12.0%	12.3%
Schizophrenia/psychoses	1.4%	8.3%
Anxiety/ neurotic	3.3%	11.4%
Other mental	3.0%	8.4%
Intellectual	0.4%	4.5%
Back	19.1%	16.8%
Musculoskeletal (other than Back)	16.4%	14.4%
Infectious/parasitic	0.3%	11.2%
HIV/AIDS	0.8%	8.9%
Neoplasms	4.9%	6.7%
Endocrine/nutritional	4.5%	13.2%
Blood	0.3%	8.9%
Sensory	2.1%	6.9%
Nervous	5.6%	12.6%
Circulatory	9.4%	11.5%
Respiratory	3.6%	12.4%
Digestive	2.5%	11.3%
Genitourinary	1.6%	6.8%
Skin	0.3%	9.6%
Congenital	0.1%	8.6%
Injuries	4.2%	9.7%
Other/unknown codes	4.5%	8.1%
Pain Indicated		
Yes	92.7%	12.9%
No	7.3%	6.7%
Body Mass Index (BMI) Categories		
Underweight	2.2%	10.2%
Within normal range	25.0%	11.1%
Overweight	29.8%	12.3%
Obese	42.9%	13.4%

Notes: Table based on authors' tabulations of 7,431,904 initial claims recorded in Social Security Administration databases for years 2010-2014 (data sources described in Section 4.1).

Table 3: Determination Outcomes - Summary Statistics

	Mean	Standard Deviation
	(1)	(2)
Claim filed electronically	36.4%	48.1%
Email address given	30.7%	46.1%
Initial allowance	32.0%	46.7%
Meets or equals the listings	12.8%	33.4%
Medical-vocational allowance	19.2%	39.4%
Initial denial for insufficient evidence	4.3%	20.3%
Initial denial for refusal to submit to consultative medical exam	2.6%	15.8%
Appellate hearing before Administrative Law Judge observed	37.7%	48.4%
Appellate hearing before Administrative Law Judge, conditional on denial	51.0%	50.0%
Final allowance	47.0%	49.9%
Time at field office (days)	6.4	10.5
Time at Disability Determination Service (days)	92.2	52.4
Total time (days)	315.8	355.3

Notes: Table based on authors' tabulations of 7,431,904 initial claims recorded in Social Security Administration databases for years 2010-2014 (data sources described in Section 4.1).

Table 4: Claimant Representation at the Initial Level - Summary Statistics

	Mean (1)	Standard Deviation (2)
<u>Panel A: Representation at Initial Application</u>		
Direct Pay		
Atty or EDPNA in firms [baseline model, endogenous variabl	12.4%	33.0%
Atty or EDPNA not in firms	2.5%	15.8%
Not Direct Pay		
Atty or EDPNA	2.3%	15.0%
Other	3.1%	17.3%
<i>Any representation</i>	<i>20.3%</i>	<i>40.2%</i>
<u>Panel B: Appellate Market Share Assigned to Initial Cases, One Month Lag</u>		
Representatives in Firms [baseline model, instruments]		
Large Firm	5.9%	4.5%
Medium Firm	24.4%	9.3%
Small Firm	4.1%	2.5%
<i>Any firm (sum of small, medium, large)</i>	<i>34.3%</i>	<i>10.7%</i>
Representatives not in Firms	45.5%	13.1%
<i>Any representation</i>	<i>79.9%</i>	<i>8.5%</i>

Notes: Table based on authors' tabulations of 7,431,904 initial claims recorded in Social Security Administration databases for years 2010-2014 (data sources described in Section 4.1).

Table 5: First Stage Estimates of Legal Representation at the Initial Level

	(1)	(2)	(3)
% Appellate Representation Large Firm	0.109*** (0.029)		0.097*** (0.026)
% Appellate Representation Medium Firm	0.081*** (0.014)		0.077*** (0.014)
% Appellate Representation Small Firm	0.146*** (0.049)		0.135*** (0.045)
% Appellate Representation Any Firm		0.089*** (0.016)	
Residualized Instrument	No	No	Yes
F Statistic	11.83	33.27	11.75
Mean of the Dep. Var.	0.124	0.124	0.124
Observations	7,431,904	7,431,904	7,422,492
R-squared	0.04	0.04	0.04

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. F statistic is the Kleibergen-Papp rk Wald F statistic. *p<0.10 ** p<0.05 *** p<0.01. Covariates used in forming residualized instruments include the following characteristics of appellate applications: age, age squared, time from onset to filing, indicators for prototype states, concurrent applications, non-citizens, applicant is in jail, applicant is suicidal, applicant is in dire need, the percentage of claims in that area that are decided by Senior Adjudicative Attorneys and the characteristics of the application when it was at the initial level, including expedited handling flags, QA sample, adjudicative step, body system code, and the allowance rate in the DDS at the time of decision.

Table 6: Characteristics of Compliers

Probabilities	Share	P(X=x) Full sample	P(X=x complier)	P(X=x complier)/ P(X=x)
<i><u>A. Complier Shares</u></i>				
Compliers	10.2%			
Always Takers	8.2%			
Never Takers	81.6%			
<i><u>B. Complier Characteristics</u></i>				
Female		49.2%	45.9%	0.93
Concurrent		52.5%	31.8%	0.61
Age 55+		27.8%	30.7%	1.11
Less than High School		21.8%	14.0%	0.64
High School		37.2%	42.7%	1.15
GED		10.7%	7.5%	0.70
Vocational Training		27.1%	21.6%	0.80
Some College		20.8%	19.9%	0.95
College		9.5%	10.0%	1.05
Obese		42.9%	42.7%	0.99
Mental Impairment		19.6%	13.9%	0.71
Musculoskeletal Impairment		35.4%	48.6%	1.37

Notes: Compliers are defined by the difference in the probability of representation from the 1st to 99th percentiles of the single instrument index. The single instrument index efficiently combines the three instruments by weighting each by the first-stage coefficient.

Table 7: IV Estimates of the Effect of Legal Representation on Case Outcomes

	Initial Allowance			Initial Denial		Appellate Hearing Observed	Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Medical-vocational	Insufficient Evidence	Refused Medical Exam			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legal Representation	0.232** (0.118)	0.197*** (0.061)	0.035 (0.105)	0.103*** (0.038)	0.006 (0.020)	-0.453** (0.181)	-316.1** (151.3)	-0.144 (0.159)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
Over ID test P value	0.012	0.012	0.019	0.974	0.280	0.377	0.040	0.592
Mean Dep. Var.	0.320	0.128	0.192	0.043	0.026	0.357	315.8	0.470

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10
 ** p<0.05 *** p<0.011

Table 8: OLS Estimates of the Effect of Legal Representation on Case Outcomes

	Initial Allowance			Initial Denial		Appellate Hearing Observed	Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Medical-vocational	Insufficient Evidence	Refused Medical Exam			
	(1)	(2)	(3)	(4)	(5)			
Legal Representation	0.007*** (0.002)	-0.011*** (0.001)	0.018*** (0.001)	0.004*** (0.001)	0.001** (0.000)	0.268*** (0.004)	17.36*** (4.085)	0.046*** (0.003)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
R-squared	0.251	0.27	0.205	0.054	0.043	0.159	0.087	0.184
Mean Dep. Var.	0.32	0.128	0.192	0.043	0.026	0.357	315.8	0.47

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01

Table 9: IV Estimates of the Effect of Legal Representation on Selected Case Outcomes, By Type of Impairment

	Initial Allowance		Initial Denial		Appellate Hearing Observed	Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Insufficient Evidence				
	(1)	(2)	(3)	(4)			
<u>Main Results, Full Sample</u>							
Legal Representation	0.232** (0.118)	0.197*** (0.061)	0.103*** (0.038)	-0.453** (0.181)	-316.1** (151.3)	-0.144 (0.159)	
Mean Dep. Var.	0.320	0.128	0.043	0.357	315.8	0.470	
<u>Panel A: Subgroup = Mental Diagnosis (sample share = 0.20)</u>							
Legal Representation	0.790** (0.341)	0.419*** (0.124)	0.122** (0.059)	-0.962*** (0.325)	-749.1** (319.4)	0.229 (0.315)	
Mean Dep. Var.	0.268	0.122	0.053	0.366	324.1	0.388	
<u>Panel B: Subgroup = Back (sample share = 0.19)</u>							
Legal Representation	0.040 (0.085)	0.018 (0.017)	0.065*** (0.024)	-0.270** (0.134)	-196.0 (134.9)	-0.235 (0.146)	
Mean Dep. Var.	0.331	0.014	0.031	0.468	329.5	0.502	
<u>Panel C: Subgroup = Other Musculoskeletal (sample share = 0.16)</u>							
Legal Representation	0.019 (0.078)	0.071** (0.035)	0.040 (0.029)	-0.298* (0.167)	-235.9* (123.2)	-0.288** (0.147)	
Mean Dep. Var.	0.248	0.040	0.029	0.375	376.5	0.463	
<u>Panel D: Subgroup = All Other (sample share = 0.45)</u>							
Legal Representation	0.153 (0.110)	0.330*** (0.114)	0.175** (0.073)	-0.426** (0.210)	-206.2 (151.1)	-0.244 (0.170)	
Mean Dep. Var.	0.371	0.212	0.049	0.299	281.0	0.499	

Notes: The All Other category includes impairments in the following categories: Infectious/parasitic diseases, HIV/AIDS, Neoplasms, Endocrine, Blood, Sensory, Neurologic, Circulatory, Respiratory, Digestive, Genitourinary, Skin, Congenital, Injuries, and Other/unknown.

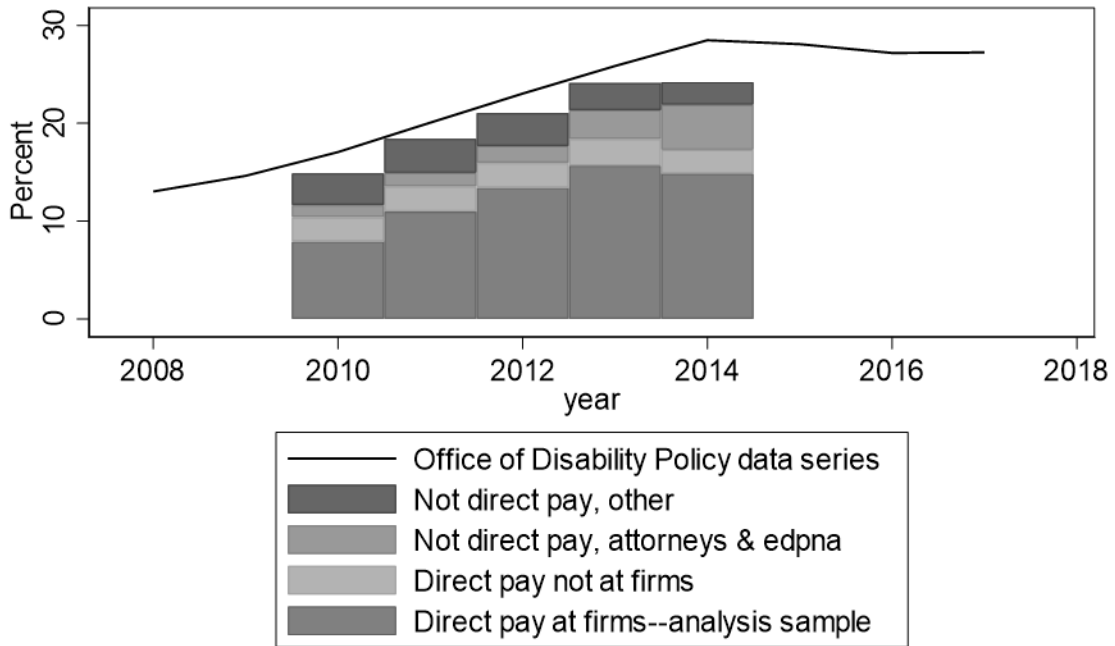
Table 10: IV Estimates of Intermediate Outcomes and Causal Mechanisms

	Electronic Communication		Time Segments		
	Claim Filed Electronically	Email Address Given	Field Office Processing Time	DDS Processing Time	Time from Onset to DDS Decision greater than 5 Months
	(1)	(2)	(3)	(4)	(5)
Legal Representation	0.416** (0.200)	0.405* (0.219)	9.057 (7.106)	62.84 (40.96)	0.313*** (0.101)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
Mean Dep. Var.	0.364	0.307	6.353	92.24	0.844

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office.

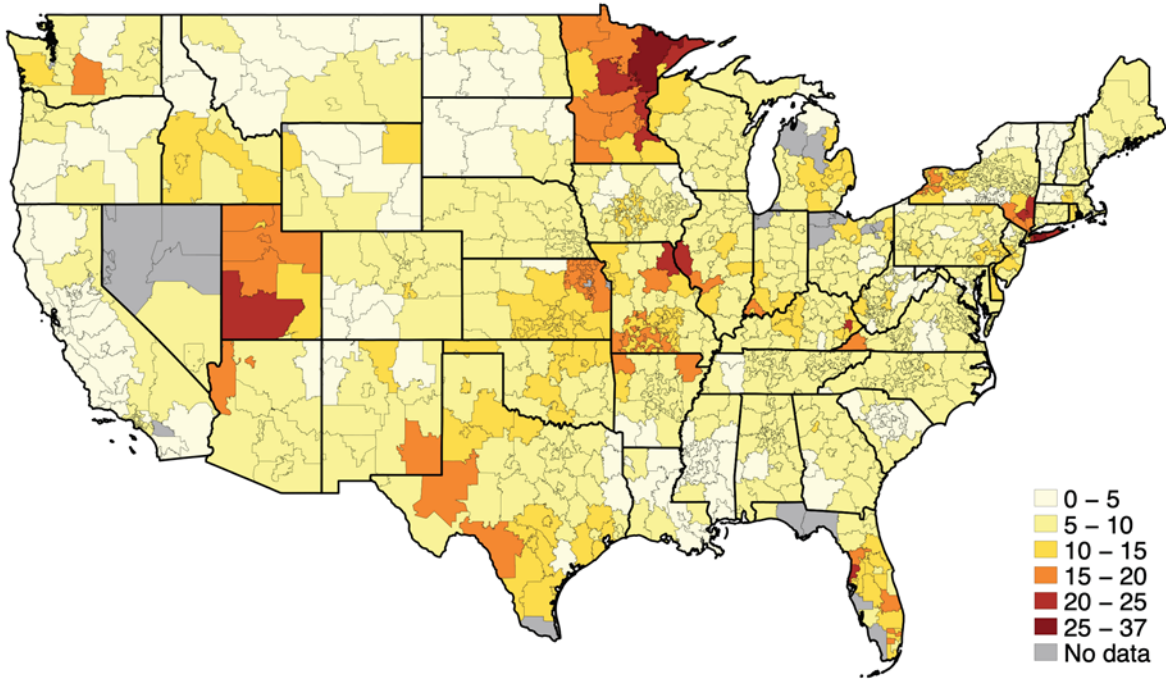
*p<0.10 ** p<0.05 *** p<0.01

Appendix Figure 1. Comparison of Different SSA Measures of Representation at Initial Level

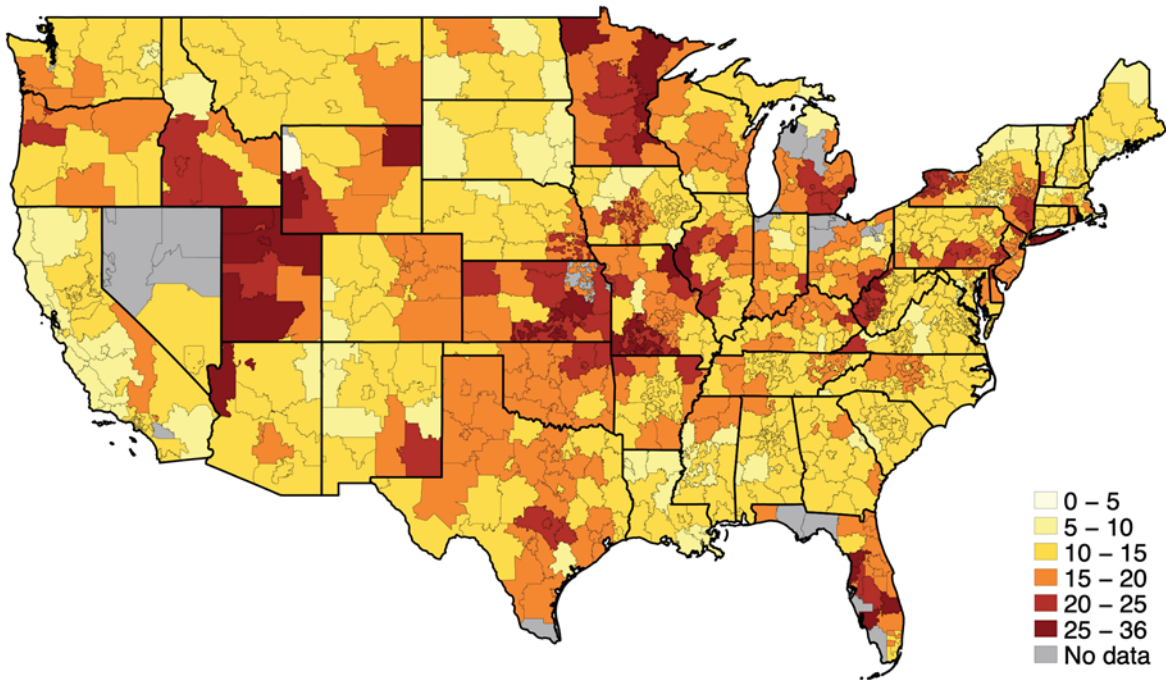


Sources: Data shown in solid line are from the Office of Disability Policy (unpublished data series). Data shown in bar charts are based on authors' tabulations of Social Security Administration databases as described in Section 4.2.

Appendix Figure 2. Representation Rate (%) at Initial Level by 3-Digit Zip Code, 2010 and 2014



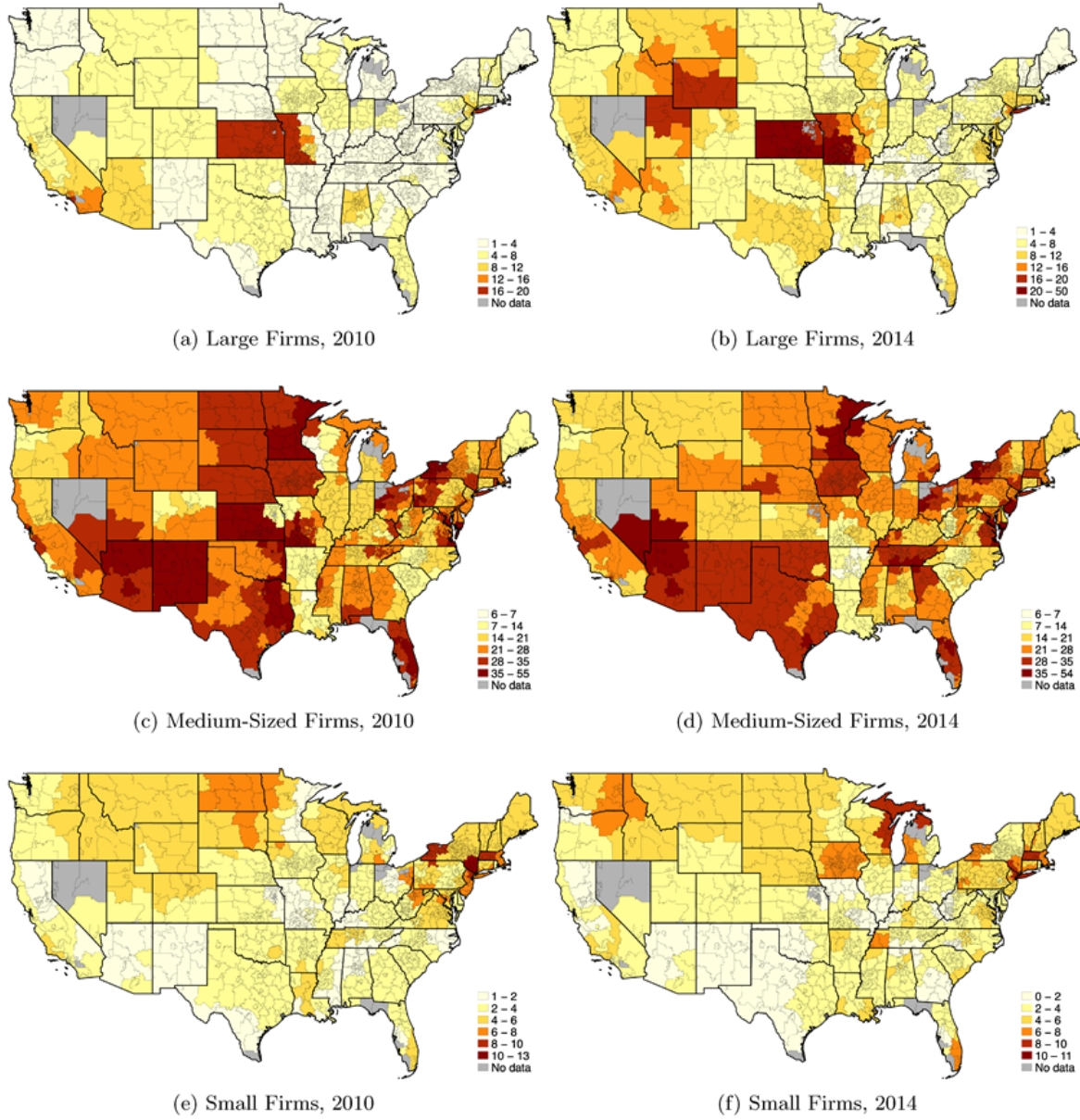
(a) 2010



(b) 2014

Notes: Author's calculations.

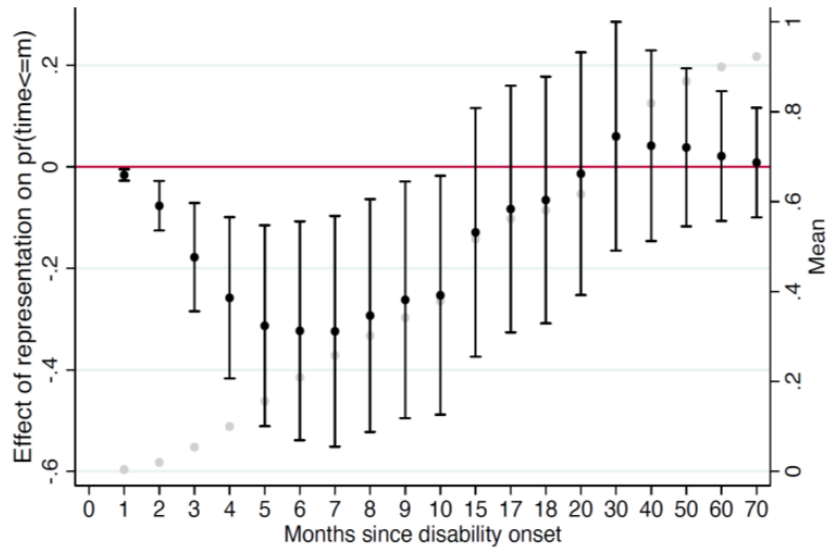
Appendix Figure 3. Appellate Market Share (%) Instruments by 3-Digit Zip Code, 2010 and 2014



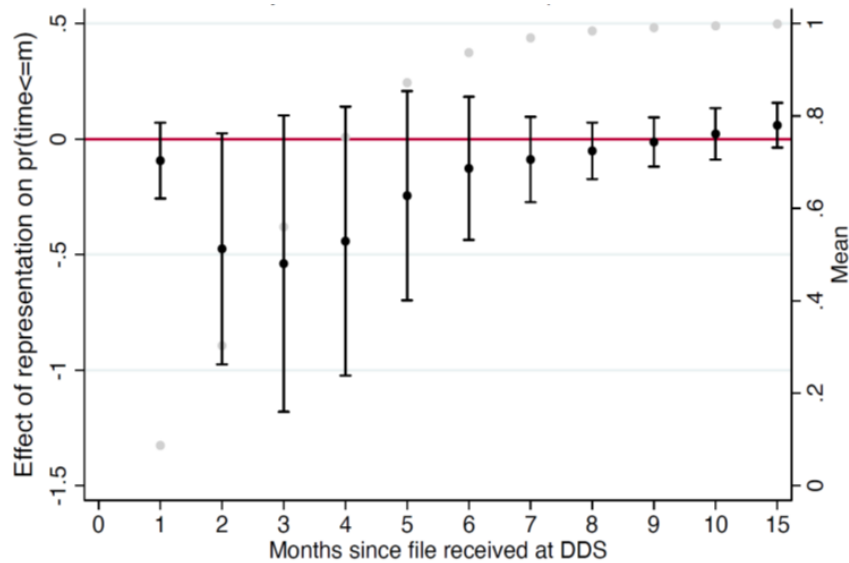
Notes: Author's calculations.

Appendix Figure 4. Effects of Representation on Time at DDS

Panel A. Effects of Representation on Time from Onset to DDS Decision



Panel B. Effects of Representation on Time from Filing to DDS Decision



Notes: In each panel, each point is the estimate from an IV regression where the dependent variable equals one if the number of months from disability onset to DDS decision (top panel) or number of months from filing to DDS decision (bottom panel) is less than or equal to month m . The model is identical to Table 7. The light grey dots (right axis) are the mean of each outcome variable. 95 percent confidence intervals are provided.

Appendix Table 1. Balance Test

	Events Prior to Filing				Filing Date Information							
	Stop work to filing (days)	Onset to Filing (days)	Stopped work b/c of condition	to work activities prior to stopping work	Read English	Speak English	Write English	Day of the month (1-31)	Day of the week (1-7)	Monday	Tuesday	Wednesday
% Appellate Rep. Large Firm	-20.41 (33.53)	42.84 (51.01)	0.0283* (0.015)	-0.016 (0.032)	-0.010 (0.046)	-0.014 (0.056)	-0.007 (0.046)	0.150 (0.225)	0.049 (0.081)	0.001 (0.013)	0.002 (0.013)	-0.013 (0.015)
% Appellate Rep. Medium Fi	16.08 (17.21)	7.84 (28.92)	0.008 (0.010)	-0.018 (0.020)	0.023 (0.022)	0.025 (0.027)	0.023 (0.022)	-0.004 (0.086)	0.149*** (0.053)	-0.0136* (0.008)	-0.015 (0.010)	-0.006 (0.008)
% Appellate Rep. Small Firm	-1.24 (51.65)	-86.13 (67.51)	0.019 (0.032)	-0.0978** (0.049)	0.044 (0.070)	0.040 (0.081)	0.048 (0.070)	-0.071 (0.301)	0.205** (0.080)	0.008 (0.015)	-0.011 (0.017)	-0.0627*** (0.016)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
R-squared	0.032	0.073	0.026	0.043	0.224	0.267	0.204	0.005	0.004	0.002	0.001	0.001
Mean of the Dep. Var.	806.2	674.3	0.793	0.256	0.943	0.950	0.940	15.72	3.093	0.171	0.213	0.210

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01

Appendix Table 2. Reduced Form Estimates of Effect of Legal Representation on Case Outcomes

	Initial Allowance			Initial Denial		Appellate Hearing Observed	Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Medical-vocational	Insufficient Evidence	Refused Medical Exam			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Appellate Representation Large Firm	0.035 (0.026)	0.039*** (0.010)	-0.003 (0.022)	0.010 (0.008)	0.007 (0.005)	-0.048 (0.037)	-83.53*** (25.11)	-0.039 (0.029)
% Appellate Representation Medium Firm	0.004 (0.009)	0.008 (0.005)	-0.003 (0.008)	0.008* (0.004)	-0.002 (0.002)	-0.025* (0.014)	-6.47 (13.71)	-0.009 (0.015)
% Appellate Representation Small Firm	0.105*** (0.026)	0.051*** (0.014)	0.054*** (0.021)	0.018 (0.014)	0.002 (0.006)	-0.139*** (0.048)	-79.50* (45.99)	0.0005 (0.047)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
R-squared	0.253	0.271	0.205	0.054	0.043	0.093	0.088	0.184
Mean Dep. Var.	0.32	0.128	0.192	0.043	0.026	0.51	315.8	0.47

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01

Appendix Table 3. Log of Number of Applications Filed by DDS and Month

	(1)	(2)
% Appellate Representation Large Firm	-0.294 (0.198)	
% Appellate Representation Medium Firm	-0.172 (0.113)	
% Appellate Representation Small Firm	0.641** (0.317)	
% Appellate Representation Any Firm		-0.142 (0.102)
Observations	6,081	6,081
R-squared	0.933	0.933

Notes: Data is collapsed to DDS by month cells. 0.86 percent of cells are lost due to zero observations. Covariates include fixed effects for month and DDS office. Regressions are weighted by DDS-area population and standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01

Appendix Table 4. First Stage Estimates by Alternative Measures of Representation

	Direct Pay		Not Direct Pay	
	Atty or EDPNA in Firms [BASECASE]	Atty or EDPNA not in Firms	Atty or EDPNA	Other
% Appellate Representation Large Firm	0.109*** (0.025)	-0.015* (0.008)	0.024*** (0.007)	-0.025** (0.010)
% Appellate Representation Medium Firm	0.081*** (0.014)	0.007 (0.008)	0.007** (0.003)	-0.004 (0.007)
% Appellate Representation Small Firm	0.146*** (0.049)	-0.054** (0.021)	0.011 (0.009)	0.009 (0.016)
F Statistic	11.83	3.01	5.41	2.81
Mean of Dep. Var.	0.124	0.025	0.023	0.031
Observations	7,431,904	7,431,904	7,431,904	7,431,904
R-squared	0.04	0.02	0.01	0.01

Notes: EDPNA indicates Eligible for Direct Payment Non-Attorney Representatives. Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. F statistic is the Kleibergen-Papp rk Wald F statistic. *p<0.10 ** p<0.05 *** p<0.01

Appendix Table 5. First Stage Estimates of Legal Representation at the Initial Level, by Subgroup

	All	Female	Aged 55+	Less than High School	High School	GED	Vocational	Some College	College	Obese	Concurrent	Mental Impairment	Musculoskeletal Impairment
<u>Panel A: 3-Instrument Model</u>													
% Appellate Representation Large Firm	0.109*** (0.029)	0.0948*** (0.0285)	0.132*** (0.0257)	0.0706** (0.0343)	0.118*** (0.0297)	0.0958** (0.0387)	0.0847*** (0.0300)	0.112*** (0.0265)	0.151*** (0.0309)	0.110*** (0.0303)	0.0491 (0.0329)	0.0888*** (0.0319)	0.162*** (0.0344)
% Appellate Representation Medium Firm	0.081*** (0.014)	0.0775*** (0.0134)	0.0936*** (0.0156)	0.0601*** (0.0134)	0.0911*** (0.0159)	0.0599*** (0.0135)	0.0638*** (0.0138)	0.0851*** (0.0144)	0.0951*** (0.0168)	0.0845*** (0.0150)	0.0535*** (0.0116)	0.0648*** (0.0134)	0.109*** (0.0190)
% Appellate Representation Small Firm	0.146*** (0.049)	0.120** (0.0463)	0.149*** (0.0525)	0.0861** (0.0433)	0.154*** (0.0536)	0.136*** (0.0443)	0.112** (0.0491)	0.166*** (0.0515)	0.174*** (0.0560)	0.141*** (0.0519)	0.0432 (0.0404)	0.125*** (0.0405)	0.201*** (0.0645)
<u>Panel B: 1-Instrument Model</u>													
% Appellate Representation Any Firm	0.089*** (0.016)	0.0827*** (0.0143)	0.103*** (0.0165)	0.0632*** (0.0131)	0.0986*** (0.0172)	0.0694*** (0.0133)	0.0697*** (0.0139)	0.0943*** (0.0160)	0.110*** (0.0191)	0.0915*** (0.0163)	0.0523*** (0.0109)	0.0723*** (0.0135)	0.122*** (0.0210)
Mean Dep. Var.	0.124	0.126	0.114	0.113	0.130	0.129	0.113	0.124	0.118	0.134	0.115	0.113	0.157
Observations	7,431,904	3,655,076	2,063,293	1,618,867	2,763,818	794,331	2,016,093	1,547,920	706,968	3,187,724	3,899,695	1,457,482	2,634,414
F Statistic, 3-Instrument Model	11.83	11.87	14.07	7.85	11.71	9.57	8.71	12.41	11.98	11.25	7.89	10.07	12.37
R-squared, 3-Instrument Model	0.04	0.032	0.044	0.034	0.039	0.033	0.032	0.037	0.035	0.034	0.034	0.034	0.035

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01.

Appendix Table 6. OLS Estimates of the Effect of Legal Representation on Case Outcomes, Weighted by Complier Characteristics

	Initial Allowance			Initial Denial			Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Medical-vocational	Insufficient Evidence	Refused Medical Exam	Appellate Hearing Observed		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legal Representation	0.013*** (0.002)	-0.009*** (0.001)	0.021*** (0.002)	0.004*** (0.001)	0.0004 (0.0004)	0.236*** (0.004)	15.49*** (3.85)	0.053*** (0.003)
Observations	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904	7,431,904
R-squared	0.234	0.195	0.218	0.040	0.027	0.153	0.086	0.163
Mean Dep. Var.	0.32	0.128	0.192	0.043	0.026	0.357	315.8	0.47

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Complier weights constructed by predicted quartiles of representation interacted with dummy for concurrent SSI. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01

Appendix Table 7. IV Estimates of Attorney Representation on Outcomes, Alternative Instruments

	Initial Allowance		Initial Denial		Appellate Hearing Observed	Total Processing Time (Days)	Final Allowance
	Any reason	Meets Listing of Impairments	Insufficient Evidence	Refused Medical Exam			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Panel A: Alternative Instrument: One Instrument Any Firm</u>							
Legal Representation	0.168 (0.115)	0.165*** (0.0591)	0.102** (0.0410)	-0.000230 (0.0205)	-0.398** (0.175)	-247.9 (152.2)	-0.141 (0.160)
<u>Panel B: Alternative Instrument: Residualized Three Instruments</u>							
Legal Representation	0.144 (0.092)	0.145*** (0.055)	0.130*** (0.045)	0.00285 (0.021)	-0.417** (0.173)	-231.0* (131.3)	-0.209 (0.149)
Observations	7,422,492	7,422,492	7,422,492	7,422,492	7,422,492	7,422,492	7,422,492
Mean Dep. Var.	0.320	0.128	0.043	0.026	0.357	315.7	0.470

Notes: Covariates include age, age squared, and indicators for female, education attainment, vocational training, SSI concurrent claim, BMI and BMI squared, pain indicated at application, random QA sample, quick disability determination flag, compassionate allowance flag, terminal illness flag, wounded warrior flag, major diagnosis class, and fixed effects for month and DDS office. Standard errors in parentheses, clustered by DDS office. *p<0.10 ** p<0.05 *** p<0.01. Covariates used in forming residualized instruments include age, age squared, time from onset to filing, indicators for prototype states, concurrent applications, non-citizens, applicant is in jail, applicant is suicidal, applicant is in dire need, the percentage of claims in that area that are decided by Senior Adjudicative Attorneys and the characteristics of the application when it was at the initial level, including expedited handling flags, QA sample, adjudicative step, body system code, and the allowance rate in the DDS at the time of decision.