Effects of DI Wait Time on Health and Financial Well-Being

Sarah Prenovitz

Cornell University

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Abstract

Individuals who apply for Social Security Disability Insurance (DI) receive initial decisions within a few months but often appeal or reapply following a denial, resulting in substantially longer waits. Applicants waiting in the determination process face strong incentives to remain out of the labor force and receive no benefits from the program. A substantial literature in economics has considered the effects of DI on workforce participation and earnings, but the effects of the determination process have received much less attention. I use linked survey and administrative data and construct instruments that reflect average or expected waits to identify the effect of time spent waiting for a decision on health and financial well-being. A longer wait decreases the likelihood of requesting a reconsideration, decreases the likelihood of having had benefits terminated at the time of survey, decreases subjective health, and decreases the likelihood of having forgone needed mental health care due to cost.

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1. Introduction

In order to qualify for Social Security Disability Insurance (DI) benefits, applicants must demonstrate that they are unable "to engage in any substantial gainful activity (SGA) by reason of any medically determinable physical or mental impairment(s) which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months" (Social Security Act, 1965). Those who earn more than a set amount per month, $1,130 for non-blind individuals in 2016, are considered to be engaging in SGA. The average DI applicant waits about four months for an *initial* determination. However, because those whose claims are denied can appeal that decision at multiple levels, the total waiting time is much longer. On average, applicants wait over a year for a final decision, with around 10 percent of applicants waiting three years or longer (Autor, Maestas, Mullen, & Strand, 2015).

Beneficiaries are eligible for DI benefits five months after onset or after a favorable decision. Although those who are awarded benefits more than five months after onset are eligible for retrospective payments, the DI system provides no support, income or otherwise, while applicants are waiting for decisions. In addition to monthly DI benefits when approved, beneficiaries become eligible for Medicare coverage 29 months after disability onset, unless they are still in the application process at that time—in this case coverage starts with a favorable decision. For those who are ultimately denied there is no compensation for the time spent waiting for a determination.

A substantial literature in economics has considered the effects of being awarded DI benefits on workforce participation and earnings. Estimates of the size of these effects vary based on the source of identification, time period, and counterfactual considered, but have generally been consistent with a 20-25 percent decrease in labor force participation (Bound, 1989, Chen & van der Klaauw, 2008, Maestas

Mullen & Strand, 2013, French & Song, 2014)[1]. Only two studies have used causal designs to examine the effects of the waiting time applicants face, but it appears to play a substantial role in the effect of DI – taking wait time into account increases the effect of DI on employment by about 50%, suggesting that the previous consensus understated the impact of the program substantially (Autor et al., 2015). Longer waits for initial decisions have also been found to increase the likelihood of appealing a denial and the take-up of SNAP benefits (Autor et al., 2015, Coe, Lindner, Wong, & Wu, 2013). In a survey of applicants, 80 percent reported that their wait affected finances and 30 percent reported that it impacted their access to medical care (SSA 2009). Those whose went through more levels of review, and thus in general waited longer, were more likely to report that their waits had affected their lives.

I use the 1997-2005 National Health Interview Survey (NHIS) linked to two SSA administrative files – the Master Beneficiary Record (MBR) and 831 File – through 2007 to examine the effects of waiting time on health, health care access, and financial well-being. Individual wait time depends in part on individual characteristics such as the type of disability an individual has and the information they submit, as well as decisions to appeal denials. As a result, those with long wait times are probably quite different from those who face shorter waits. In order to eliminate this confounding factor I construct average expected wait times by state and month of application, and use these as instruments for individual wait time.

I find evidence that wait time affects application behavior by decreasing the likelihood of appeal. I also find that wait time decreases the likelihood of reporting that needed mental health care was forgone due to cost, as well as of reporting excellent or very good health. Wait time also appears to decrease the likelihood that respondents had benefits terminated at the time of the survey.

DI award and waiting times could affect health and financial well-being through several channels, including changes to income, health insurance coverage, and work activity. Increases in income appear

[1] Bound (1989) finds a decrease in labor force participation of no more than 50 percent, which he argues is likely an overestimate. Other estimates fall into the 20-25 percent range.

to improve health (see Apouey & Clark 2010 for a summary of the existing literature). Similarly, increases in income should improve financial well-being, particularly for a population which is on average low-income and by definition has (at least temporarily) very low earnings, and thus is likely to face credit constraints.

Research has shown that access to health insurance appears to lead to meaningful improvements in at least some aspects of health as well as financial well-being (Finkelstein et al. 2012, Baicker et al. 2013, Card, Dobkin & Maestas, 2009, Gross and Notowidigdo, 2011). Insurance might be particularly important for DI awardees who, by definition, have a serious medical condition and have rates of un-insurance over 20 percent at decision (Livermore, Claypool & Stapleton, 2009). Results from the Accelerated Benefit Demonstration (ABD) suggest that removing the Medicare waiting period for awardees decreases unmet medical needs and large out of pocket medical expenses, and improves self-

The effects of DI on outcomes other than work and earnings have rarely been considered in a setting that allows for identification of causal effects. One exception to this rule is Moore (2015), noted above. The Accelerated Benefits Demonstration (ABD) provides information on the value of Medicare coverage to beneficiaries, but its conclusions are limited to those who receive awards and to a particular component of the DI package. An analysis of changes to the Dutch DI system suggests that changes to income and work can have implications for the health of DI beneficiaries, but it does not explicitly address the effects of either DI award or waiting time, and the Dutch system is quite different from that in the US (Garcia-Gomez & Gielen, 2014). To my knowledge these are the only applications of plausibly causal designs to this topic. Though they are an important start, they do not directly address the effects of DI on financial well-being or health aside from mortality, and do not directly consider the role of the time spent waiting for a determination. My analyses begin to address this gap in the literature.

If DI affects health and financial well-being, this can be one channel through which it affects employment and earnings. There is some evidence that for those who lose eligibility for benefits, having

received benefits for about three years can increase earnings compared with those who have been on for a very short time (Moore, 2015). This period may allow awardees time to recover, receive needed care, or adjust to new limitations. Financial health may also be important for the ability of disabled workers – and their spouses – to obtain employment, as many employers check credit reports before making final hiring decisions and many work expenses must be incurred before a paycheck is received.

2. Data and Methods

2.1 Data

I use the 1997-2005 National Health Interview Survey (NHIS) linked to two SSA administrative files – the Master Beneficiary Record (MBR) and 831 File – through 2007. The NHIS is a cross-sectional household survey that covers the civilian noninstutionalized population of the United States (National Center for Health Statistics, 2006). From the survey I draw information on demographics, state of residence, and a host of indicators of health, health care access, and financial well-being. The MBR and 831 files include information on DI applications, decisions, primary disabling condition, and program status.

The linked data provides information for all NHIS respondents who provided SSNs and consent to be linked, for whom a successful link was performed, and who applied to DI between 1988 and 2007. From this information I identify those who applied before interview as my main sample. For individuals with more than one application I find the most recent initial application at time of survey and consider this as their application of interest. I identify the initial decision as the earliest decision associated with that initial application date, and the final decision as the latest decision associated with that application date recorded in the 831 file. Unfortunately the 831 file does not record detailed information on most decisions that are appealed beyond the reconsideration step. The MBR contains some information on these decisions, but my extract of the file does not include them in the format needed to accurately trace their path. I drop the handful of applications considered under the Quick Disability Determination

program. I also drop those for whom the wait time for the initial decision cannot be determined due to missing or inconsistent information. These restrictions result in a sample of 13,988 individuals who applied to SSDI and responded to the NHIS.

Applicants are on average 51 years old at survey, and were about 46 at their most recent application (Table 1). Those who are initially allowed are older than those initially denied. Similarly, those who have had a successful DI application by the end of 2007 are older than those who have not. A little more than half the sample is male, and about half identifies as non-Hispanic White. Those whose applications are never accepted are less likely to have less than a high school education than those who are eventually accepted, and those whose applications are initially denied are less likely to have more than a high school education than are those whose applications are initially accepted. A majority of applicants are married or partnered, with most of the rest either widowed or never married. Musculoskeletal impairments are most common, followed by mental health and cardiovascular conditions.

On average DI applicants in my sample wait 105 days for an initial decision, or about 3.5 months. Sixty-four percent receive an initial denial. About 38 percent have a reconsideration recorded for the current application, and including reconsideration time the average decision takes 175 days, around six months. Seventy-eight percent of the sample eventually receives benefits, either through this or another application. For those who do, benefits begin around 90 days after application for those initially accepted, but almost two years after application for those who are initially denied. This apparently quick turnaround for initially accepted applicants highlights the difference between application date and disability onset date. Benefits are not paid until at least five months after onset, so this would suggest initially allowed applicants have onset dates about two months before applications are recorded in the system.

Most applicants have a least one activity limitation and almost half have at least one functional limitation, with both more common among those who are initially (eventually) accepted. Despite this, almost half report being in good or better health. As would be expected, accepted applicants are in general sicker, with more bed days in the past year and a higher probability of dying before the end of 2007. About half of applicants responded that they experienced one or more of the mental health symptoms queried most of the time or more, but differences by decision are small and mostly insignificant.

Twenty-four percent of applicants reported that they had not received needed medical care due to cost in the previous year, while 27 percent had delayed care for financial reasons. Both were more common among those denied benefits but still relatively common among beneficiaries. About 16 percent of applicants had no source of health insurance, with this response much more common among those with initial denials or who did not receive DI by the end of the data period. A slight majority had experienced household out of pocket medical expenses of more than $500 in the past year, while 22 percent had spent over $2,000. Both were more common among accepted applicants. This could be because accepted applicants were sicker, so required more care, or because Medicare requires more out of pocket spending than some options used by denied applicants, particularly Medicaid. Almost 27 percent of applicants had family incomes that placed them at or below the federal poverty line (FPL). Those whose applications were initially denied were more likely to be below FPL, 200% of FPL, and 300% of FPL. Those who received benefits at some point by 2007 are more likely to be above the FPL but also more likely to be below 200% of the FPL. The average DI payment for June 2016, $1,166 a month, is above the FPL for a household of one and below that for a household of two (SSA 2016, ASPE 2016).

2.2 Method

As outlined above, wait time could affect DI applicants in a variety of ways. Because wait times are not randomly assigned to applicants simply comparing the outcomes and characteristics of those

with shorter and longer wait times would confound the true effects of waiting for a decision and the circumstances that cause some to face longer waits than others. Instead I exploit average wait time for an initial decision that prevailed in the month and state in which the application was made. I determine average wait-times in two ways. First, I use the data for NHIS respondents to calculate leave-one-out averages. That is, for individual i who applied in state s and month m, I calculate the average wait time for new applications – from submission to first decision - among all other applicants in state s and month m[2]. I construct an instrument for initial allowance rate in a similar manner.

I also use publicly available information on the number of cases, new applications, and decisions to determine the average wait time new applicants could expect in a given state and month. The publically available information details the number of decisions, receipts, and pending applications for each state for each month from October 2000 to the present. From this I construct the number of months it would take the DDS to process an application submitted in a given month, assuming applications are considered in the order they are received and decisions are made at the rate that prevails in that month.

These instruments are valid if they are both relevant and exogenous. Tests for instrument strength address the first concern but is more difficult to establish exogeneity. If, conditional on observable characteristics, individuals who face different wait times would have the same outcomes were it not for the wait they face, my estimates will reflect the causal effects of wait times. There are three reasons this might not be the case. First, some states, months, and years have higher wait times in general, which may be correlated with unobserved differences in other characteristics. For example applicants in December may be different from those in other months, and also face different wait times. I address this concern by including fixed effects for state, month, and year of application. Second,

[2] I also experimented with constructing this measure separately for those whose decisions are made at stages 1-3 vs. 4 and 5, but found that it was not substantially stronger than the instrument at the state-month level and could not be defined for many applicants.

applications generally increase when employment prospects are poor, lengthening wait times. This is a problem both because the applicants who are induced to apply by poor economic conditions are probably different from other applicants and because the state of the economy can have independent effects on some of the outcomes I consider. In later work I will control for employment rates in order to address this concern. Third, applicants could know something about wait times and decide when to apply based on that information. This is unlikely to be a major factor for those who are not working just before application, but could be a consideration for disabled workers deciding to leave a job and pursue DI benefits. However, because current month wait time is unknown at the time of application individuals only have information on previous waits on which to base their expectations. In future work I will control for average wait times in the previous month and year to ensure that my results are not confounded by differences across applicants based on their expectations of wait time.

3. Results

3.1 First Stage

I begin by evaluating the strength of my instruments for wait time and DI award. Average state-month wait, based on the NHIS sample, is a weak predictor of individual initial wait time. An additional day of average wait is associated with 0.07 days of initial individual wait, and the instrument has a Kleibergen-Papp F-statistic of 2.5 (Table 2a). A higher allowance rate, as constructed from the NHIS data, actually predicts a slightly lower chance of having an initial application accepted (Table 2b). The state-month acceptance rate based on the NHIS sample is also a weak instrument for initial and eventual acceptance with F-statistics of 0.6 and 1.3 respectively.

SSA summary data is a better predictor of wait time. An additional month of backlog predicts an initial wait that is 19 days longer, and the instrument has an F-statistic of almost 60. For this reason the following results focus on analyses using the SSA summary instrument. Unfortunately the SSA summary data is only available from October 2000 forward, so this instrument can only be used to analyze the

outcomes of the 2,906 respondents with an application after that date. This restriction is bad for sample size, but focusing on more recent applicants probably improves the generalizability of my findings to those currently in the application process.

3.2 Effects of Wait Time

Wait time is associated with a higher likelihood of receiving DI, and the relationship persists after controlling for demographic information (Table 3a). However, there is no evidence that this relationship is causal. A month of additional waiting time causes a four percentage point decrease in the likelihood of asking for a reconsideration. This could reflect a perception that the application has been seriously considered, or limits to the time marginal applicants are willing to pursue benefits. I also find that those with longer waits are less likely to have had their benefits terminated at the time of survey. Most terminations take place because the beneficiary either ages out of the program or dies. As there is no evidence of an effect on mortality (Table 3b) and the IV specifications control for age this could point to a decrease in the less-common reasons for termination, which include medical recovery and termination due to work. My estimate of 2.2 percentage points is much larger than the decrease in work activity found by Autor et al., but it is quite noisy, so more plausible effect sizes would be well within a 95% confidence interval.

Those with longer waiting times are more likely to report being in excellent or very good health, less likely to report more than 20 days in which they were unable to get out of bed for part of the day, and less likely to die by the end of 2007 (Table 3b). After controlling for demographics only the difference in bed days is significant. However, the IV estimate suggests that an additional month of wait time decreases the likelihood of reporting that one is in excellent or very good health by about 3 percentage points. Although there is no evidence of changes in activity or functional limitations, subjective health may be sensitive to more subtle shifts.

Those with longer wait times were less likely to report having a usual place for care, but this relationship loses significance after including controls. Interestingly, wait time appears to decrease the likelihood have having needed but been unable to afford mental health care the in past year. This variable is somewhat difficult to interpret, as the decrease could reflect decreased need, increased access, or a combination of the two. I do not find any evidence of decreased need for mental health services (Table 3d). The questions about mental health in the NHIS may not be the ideal way to capture need, but this suggests that access may be an important margin. Given that about half of applicants answered at least one of these questions positively, and almost 20 percent listed a mental impairment as their primary disabling condition, the ability to obtain mental health care is likely quite important for this population.

Those with longer wait times are slightly less likely to own a home, more likely to have used SNAP in the past year, but these relationships disappear after including demographic controls and there is no evidence that they are causal (Table 3e). Those with longer wait times are also less likely to have faced out of pocket medical expenses over $2000 in the past year and more likely to be low-income, defined as household income at or below either 100 or 200 percent of FPL. The relationship between wait time and poverty survives the inclusion of demographic controls but is not statistically significant in the IV analysis.

4. Conclusion

As of June 2016, over 10 million individuals received benefits from the DI program, totaling over $11 billion in that month alone (SSA 2016). Little work has addressed the relationship between the DI program and outcomes other than employment, or the effects of the application process.

While Autor et al. (2015) find that a longer wait increases the likelihood of a reconsideration, I find the opposite. This could be the result of slightly different time periods studied – 2000-2005 in my case, 2005 in theirs. It could also be caused by differences in the source of variation. Taken together the

two estimates would imply that applying in a state and month with a longer wait time decreases the likelihood of appealing a denial to the reconsideration stage, but that having a decision made by a slower examiner increases it. If there are other characteristics of applicants in "slow" state-months that are not controlled for but affect reconsideration requests that could explain the discrepancy. This would be the case if more marginally disabled individuals applied in those months, perhaps due to economic factors that made benefits more attractive in comparison to other alternatives, and those individuals were less likely to pursue their application to the reconsideration stage (either because they knew they were less likely to be accepted or because they had greater ability to work). If this were the case, however, I would expect "slow" state-months to be associated with better health on at least some metrics. Instead I find that a longer decision time decreases the likelihood of reporting very good or excellent health.

It could also be that applicants know something about the speed at which other applicants received decisions, so that a given processing speed sends different messages depending on what other similar applicants experience. In any case, this difference highlights the need for more work to understand what drives application and appeal decisions.

As noted above, I find that wait time decreases the likelihood of reporting very good or excellent health. Although no other indicators of health are significant in the IV analysis, subjective health is probably more sensitive to small changes. In addition to being important to the well-being of applicants, feeling like one is in good health could be important for one's ability and willingness to successfully pursue employment. My finding that a longer wait decreases the likelihood of having had benefits terminated at time of survey may be related. Interestingly, there are no significant differences in DI status in 2007, two to seven years after survey, which may suggest that effects are short-lived.

I also find that a longer wait for initial decision decreases the likelihood of having forgone needed mental health care due to cost in the past year, but no effect of wait time on mental health as

measured by the NHIS. While the survey questions address several common symptoms of depression and anxiety they do not cover all mental health conditions and the questions or my analysis of them may not be sensitive enough to catch small changes in mental health. However, if unmet need changes and underlying need does not, that would suggest that a longer wait increases applicants' access to mental health care. It is unclear how or why this would occur.

This paper investigates the effects of waiting for a SSDI decision on health, health care access, and financial wellbeing. All of these are important for the quality of life of applicants and beneficiaries, and should be factored into discussions about investments in making the decision process more efficient. They are also components of the effects of DI application on earnings and employment. If longer applications decrease subjective health they also likely depress applicants' ability to work. If a longer wait improves access to needed mental health care, however, this may improve applicants' ability to work. Importantly, the solutions to these problems are very different from the solutions to decaying work skills or lost workforce attachment, and are probably not well-addressed by current efforts to change program incentives or develop job skills.

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The Social Security Act, Title II, § 223(d)(1)(A), 42 U.S.C. § 423 (d)(1)(A) and Title 16, § 1614(a)(3)(A), 42 U.S.C. § 1382c(a)(3)(A).

Table 1. Descriptive Statistics

	All Applicants		Initial Denial		Initial Allowance		Final Denial		Final Allowance	
N	13,988		8,990		4,998		3,038		10,950	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age at survey	51.120	0.105	49.801	12.098	53.489	12.409	42.455	9.338	53.521	11.985
Age at most recent application	45.918	0.101	44.538	11.501	48.395	12.110	37.572	9.298	48.230	11.456
male	0.526	0.004	0.510	0.500	0.555	0.497	0.533	0.499	0.524	0.499
White	0.504	0.004	0.484	0.500	0.541	0.498	0.444	0.497	0.521	0.500
Black	0.194	0.003	0.205	0.404	0.176	0.381	0.225	0.418	0.186	0.389
Other	0.173	0.003	0.183	0.386	0.154	0.361	0.204	0.403	0.164	0.370
< HS	0.289	0.004	0.293	0.455	0.281	0.450	0.238	0.426	0.303	0.460
HS	0.287	0.004	0.289	0.454	0.283	0.451	0.298	0.457	0.284	0.451
> MS	0.176	0.003	0.161	0.368	0.204	0.403	0.180	0.384	0.175	0.380
Education unknown	0.248	0.004	0.256	0.437	0.232	0.422	0.284	0.451	0.237	0.425
Married/partnered	0.569	0.004	0.578	0.494	0.553	0.497	0.573	0.495	0.568	0.495
Divorced	0.068	0.002	0.063	0.242	0.077	0.267	0.023	0.151	0.080	0.271
Widowed	0.217	0.003	0.221	0.415	0.208	0.406	0.207	0.405	0.219	0.414
Never Married	0.144	0.003	0.135	0.342	0.160	0.367	0.191	0.393	0.131	0.338
Unknown	0.002	0.000	0.003	0.054	0.001	0.037	0.005	0.068	0.002	0.042
Musculoskeletal	0.358	0.004	0.444	0.497	0.202	0.402	0.436	0.496	0.336	0.472
Senses and speech	0.033	0.002	0.024	0.154	0.048	0.213	0.025	0.157	0.035	0.183
Respiratory	0.041	0.002	0.037	0.189	0.046	0.210	0.034	0.181	0.042	0.201
Cardiovascular	0.102	0.003	0.096	0.295	0.111	0.315	0.051	0.221	0.116	0.320
Digestive	0.020	0.001	0.022	0.147	0.016	0.125	0.021	0.145	0.019	0.138
Genito-urinary system	0.016	0.001	0.006	0.076	0.035	0.184	0.006	0.077	0.019	0.137
Endocrine	0.052	0.002	0.050	0.218	0.056	0.230	0.039	0.192	0.056	0.230

	All Applicants		Initial Denial		Initial Allowance		Final Denial		Final Allowance	
Neurological	0.082	0.002	0.063	0.242	0.117	0.322	0.059	0.235	0.089	0.284
Mental	0.197	0.003	0.155	0.362	0.272	0.445	0.193	0.395	0.198	0.398
Neoplastic	0.027	0.001	0.019	0.136	0.041	0.199	0.018	0.133	0.029	0.169
Immune	0.015	0.001	0.013	0.115	0.017	0.131	0.015	0.123	0.015	0.120
Other	0.046	0.002	0.058	0.234	0.026	0.158	0.089	0.285	0.035	0.183
Wait for initial decision	105.456	2.076	96.583	147.484	121.416	359.496	98.405	197.462	107.413	257.270
Wait for "final" decision	174.708	2.554	199.813	251.263	129.551	372.306	132.728	222.379	186.355	319.686
Reconsideration (MRS application	0.379	0.004	0.575	0.494	0.025	0.156	0.305	0.460	0.399	0.490
Any reconsideration	0.439	0.004	0.640	0.480	0.076	0.265	0.375	0.484	0.457	0.498
Stage of decision										
1	0.000	0.000	0.000	0.022			0.001	0.027	0.000	0.014
2	0.208	0.004	0.332	0.471			0.383	0.486	0.163	0.370
3	0.211	0.004	0.001	0.035	0.565	0.496	0.014	0.118	0.262	0.440
4	0.210	0.004	0.334	0.472			0.265	0.441	0.196	0.397
5	0.370	0.004	0.332	0.471	0.435	0.496	0.337	0.473	0.379	0.485
Time until first benefits	384.317	9.469	632.501	1203.299	91.444	248.645				
Payment status at survey										
Current	0.653	0.004	0.504	0.500	0.921	0.270			0.834	0.372
Suspended	0.009	0.001	0.006	0.078	0.013	0.113	0.002	0.041	0.011	0.102
Terminated	0.062	0.002	0.078	0.268	0.034	0.182	0.084	0.277	0.057	0.231
Never a beneficiary	0.276	0.004	0.412	0.492	0.031	0.174	0.914	0.280	0.099	0.298
Payment status 12/2007										
Current	0.603	0.004	0.530	0.499	0.733	0.442				
Suspended	0.006	0.001	0.005	0.072	0.009	0.092	0.005	0.068	0.007	0.083
Terminated	0.071	0.002	0.081	0.274	0.052	0.222	0.085	0.279	0.067	0.250
Never a beneficiary	0.320	0.004	0.383	0.486	0.206	0.405	0.910	0.286	0.156	0.363

	All Applicants		Initial Denial		Initial Allowance		Final Denial		Final Allowance	
Reports ever applying for DI	0.724	0.004	0.650	0.477	0.860	0.348	0.386	0.487	0.821	0.384
Reports ever applying for SSI	0.320	0.004	0.315	0.464	0.329	0.470	0.299	0.458	0.326	0.469
Ever applied for SSI	0.554	0.004	0.610	0.488	0.455	0.498	0.730	0.444	0.505	0.500
Any activity limitation	0.707	0.004	0.641	0.480	0.825	0.380	0.452	0.498	0.778	0.416
Any functional limitation	0.427	0.004	0.410	0.492	0.459	0.498	0.311	0.463	0.460	0.498
Good or better health	0.447	0.004	0.469	0.499	0.408	0.492	0.635	0.482	0.395	0.489
Very good or better health	0.171	0.003	0.193	0.394	0.133	0.339	0.303	0.460	0.134	0.341
Health status 5-point scale	3.538	0.010	3.472	1.151	3.659	1.081	3.050	1.163	3.674	1.082
Seen dentist past 6 months	0.305	0.005	0.302	0.459	0.312	0.463	0.313	0.464	0.303	0.460
Seen dentist past 12 months	0.450	0.006	0.451	0.498	0.448	0.497	0.475	0.500	0.443	0.497
Needed but couldn't afford in last 12 months										
Prescription medicine	0.234	0.005	0.255	0.436	0.199	0.399	0.270	0.444	0.225	0.418
Mental health care	0.082	0.003	0.091	0.287	0.066	0.249	0.109	0.312	0.075	0.263
Dental Care	0.236	0.005	0.255	0.436	0.203	0.402	0.264	0.441	0.228	0.420
Did not get needed medical care due to cost	0.238	0.004	0.261	0.439	0.197	0.398	0.269	0.443	0.229	0.420
Delayed needed medical care for financial reasons	0.269	0.004	0.289	0.454	0.233	0.422	0.291	0.454	0.263	0.440
Delayed needed medical care for non-financial reasons	0.077	0.003	0.072	0.259	0.086	0.281	0.069	0.254	0.079	0.271

	All Applicants		Initial Denial		Initial Allowance		Final Denial		Final Allowance	
Has usual place for care	0.912	0.003	0.891	0.312	0.950	0.218	0.815	0.388	0.937	0.243
>= 1 bed day in past year	0.571	0.006	0.572	0.495	0.569	0.495	0.542	0.498	0.579	0.494
>20 bed days in past year	0.242	0.005	0.235	0.424	0.255	0.436	0.175	0.380	0.260	0.439
Bed days in past year	65.259	2.238	62.402	190.469	70.309	202.523	47.007	169.900	69.940	200.597
Workloss days in past year	24.027	1.315	22.089	60.084	30.235	72.079	18.704	55.260	27.710	67.969
>20 workloss days in past year	0.171	0.008	0.161	0.368	0.204	0.403	0.134	0.341	0.197	0.398
Felt __ some of the time or more										
Sad	0.144	0.004	0.152	0.359	0.130	0.336	0.145	0.353	0.143	0.351
Nervous	0.174	0.004	0.178	0.383	0.165	0.371	0.156	0.363	0.178	0.383
Hopeless	0.106	0.004	0.111	0.314	0.096	0.295	0.099	0.299	0.107	0.309
That everything was an effort	0.211	0.005	0.215	0.411	0.204	0.403	0.202	0.402	0.213	0.410
Restless	0.202	0.005	0.211	0.408	0.185	0.389	0.205	0.404	0.201	0.401
Worthless	0.103	0.004	0.104	0.306	0.100	0.300	0.084	0.278	0.107	0.310
Feelings interfered with life	0.599	0.007	0.602	0.490	0.593	0.491	0.568	0.496	0.606	0.489
Number of MH questions answered positively	0.935	0.019	0.968	1.660	0.875	1.556	0.889	1.587	0.946	1.633
Any MH questions answered positively	0.467	0.004	0.468	0.499	0.465	0.499	0.495	0.500	0.459	0.498
Died by 12/2007	0.233	0.004	0.186	0.389	0.317	0.465	0.092	0.288	0.272	0.445
Ever homeless	0.150	0.005	0.167	0.373	0.122	0.327	0.224	0.417	0.131	0.337
Owns home	0.567	0.004	0.551	0.497	0.596	0.491	0.480	0.500	0.591	0.492
Used SNAP past year	0.164	0.003	0.184	0.388	0.128	0.334	0.202	0.402	0.154	0.361

	All Applicants		Initial Denial		Initial Allowance		Final Denial		Final Allowance	
Used subsidized housing past year	0.259	0.007	0.256	0.436	0.267	0.442	0.223	0.416	0.273	0.446
Used TANF past year	0.040	0.002	0.050	0.217	0.050	0.217	0.050	0.217	0.030	0.172
Used WIC past year	0.017	0.002	0.020	0.139	0.011	0.105	0.024	0.154	0.014	0.116
No health insurance coverage	0.159	0.003	0.207	0.406	0.072	0.259	0.331	0.471	0.111	0.314
> $500 out of pocket	0.522	0.004	0.503	0.500	0.555	0.497	0.445	0.497	0.543	0.498
> $2000 out of pocket	0.218	0.004	0.203	0.402	0.246	0.431	0.162	0.369	0.234	0.423
<= 100% FPL	0.274	0.004	0.293	0.455	0.240	0.427	0.301	0.459	0.267	0.442
<= 200% FPL	0.592	0.005	0.603	0.489	0.572	0.495	0.583	0.493	0.594	0.491
<= 300% FPL	0.765	0.004	0.772	0.420	0.754	0.431	0.757	0.429	0.768	0.422

Notes: Statistics describe the sample of NHIS respondents who provided their SSN to interviewers, were linked to SSA records, had applied for DI benefits between 1988 and 2007, were interviewed after that application, and had usable data to construct wait times. Initial allowance and denial refer to the initial decision on the most recent new application at the time of survey. Final allowance and denial refer to whether the individual ever received benefits by the end of the data period, December 2007.

Table 2a. First stage – Effect of State*Month Average Wait Time on Applicants' Wait Time

Instrument	State*Month average wait (SSA summary)			State*Month average wait (NHIS data)		
	Coeff	SE	P-value	Coeff	SE	P-value
Instrument	19.06	2.47	0	0.07	0.04	0.112
Age	-0.19	2.01	0.925	-3.69	2.20	0.094
Age^2	0.00	0.02	-0.07	0.03	0.02	0.163
Male	-0.93	4.09	0.82	-2.47	4.81	0.608
< HS education	-3.55	5.09	0.485	-6.16	5.95	0.3
Education unknown	-0.73	6.73	0.914	-1.12	6.54	0.864
> HS education	-13.62	4.96	0.006	-10.09	5.87	0.086
Black	-6.34	5.37	0.238	14.63	7.38	0.048
Hispanic	3.97	5.66	0.482	-21.26	9.17	0.02
Divorced	14.57	6.43	0.023	2.55	3.68	0.488
Widowed	1.44	3.67	0.694	9.07	4.57	0.047
Never married	7.12	7.71	0.356	31.04	12.05	0.01
Unknown	-37.98	14.46	0.009	114.52	108.91	0.293
Musculoskeletal	25.58	9.32	0.006	19.08	5.87	0.001
Senses and speech	21.91	11.47	0.056	37.73	16.01	0.018
Respiratory	35.06	10.20	0.001	28.53	6.04	0
Cardiovascular	46.51	10.08	0	39.21	6.12	0
Digestive	15.74	10.83	0.146	10.86	6.35	0.087
Genito-urinary system	-0.96	13.81	0.945	-16.42	6.77	0.015
Endocrine	29.02	9.94	0.004	26.39	6.16	0
Neurological	32.31	10.46	0.002	24.21	6.79	0
Mental	52.34	10.26	0	68.01	9.80	0
Neoplastic	-13.88	9.78	0.156	0.33	6.95	0.962
Immune	15.36	10.90	0.159	24.78	22.05	0.261
Other	53.50	19.86	0.007	40.26	13.84	0.004
Constant	33.78	51.90	0.515	166.70	62.77	0.008
N	2,906			13,815		
F-stat on instrument	59.5984			2.5281		

Notes: F statistics are the Kleibergen-Papp F-statistic, adjusting for clustering at the state-month-year level. SSA summary data is available from October 2000 through the end of the data period in December 2007, so can only be used with the sample that applied during that period. Average state*month wait based on the NHIS sample is constructed for all states-months in which more than one sample member submitted an application.

Table 2b. First Stage: Effect of State*Month Allowance Rate on Applicants' Allowance Rate

Instrument	State*Month Acceptance Rate (NHIS)			State*Month Acceptance Rate (NHIS)		
Outcome	Initial Acceptance			Ever Accepted		
	Coeff	SE	P-Value	Coeff	SE	P-Value
Instrument	-0.010	0.014	0.448	-0.012	0.010	0.244
Age	-0.008	0.002	0	-0.003	0.002	0.164
Age^2	0.000	0.000	0	0.000	0.000	0
Male	0.043	0.008	0	-0.017	0.007	0.013
< HS education	-0.006	0.010	0.553	0.009	0.009	0.307
Education unknown	-0.009	0.010	0.405	-0.014	0.009	0.125
> HS education	0.021	0.012	0.068	-0.012	0.010	0.225
Black	-0.028	0.010	0.006	-0.042	0.009	0
Hispanic	0.036	0.012	0.002	0.042	0.011	0
Divorced	0.016	0.017	0.357	0.012	0.010	0.258
Widowed	-0.005	0.010	0.583	0.019	0.008	0.023
Never married	0.062	0.012	0	0.060	0.012	0
Unknown	-0.077	0.069	0.264	-0.118	0.081	0.146
Musculoskeletal	-0.150	0.037	0	-0.074	0.034	0.03
Senses and speech	0.167	0.043	0	0.024	0.037	0.517
Respiratory	0.032	0.041	0.441	-0.039	0.036	0.279
Cardiovascular	-0.018	0.038	0.637	-0.010	0.034	0.771
Digestive	-0.049	0.045	0.283	-0.008	0.040	0.85
Genito-urinary system	0.439	0.047	0	0.169	0.039	0
Endocrine	0.024	0.040	0.557	0.005	0.036	0.89
Neurological	0.157	0.039	0	0.041	0.035	0.245
Mental	0.177	0.037	0	0.059	0.034	0.086
Neoplastic	0.170	0.045	0	0.016	0.038	0.666
Immune	0.104	0.049	0.034	0.077	0.044	0.08
Other	-0.126	0.039	0.001	-0.167	0.038	0
Constant	0.643	0.140	0	0.329	0.098	0.001
N	13,815			13,893		
F-stat on instrument	0.5776			1.3456		

Notes: F statistics are the Kleibergen-Papp F-statistic, adjusting for clustering at the state-month-year level.

Table 3a. Estimated effects of an additional month of wait time on SSA Status

Ever Receives SSDI	Status at Survey				Status 12/2007				Reconsideration on most recent at survey	Reports ever applying
	Current	Suspended	Terminated	Never Benefits	Current	Suspended	Terminated	Never Benefits		
OLS										
0.003**	0.002	0.000	0.002	-0.004**	0.005**	0.001	0.001	-0.007***	-0.001	-0.004
(0.002)	(0.002)	(0.000)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)
OLS with Controls										
0.004***	0.004*	0.000	0.001	-0.004**	0.005**	0.000	0.000	-0.005***	0.002	-0.002
(0.002)	(0.002)	(0.000)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)
IV (State*Month Average, SSA Summary)										
-0.004	0.031	0.005	-0.022**	-0.014	0.026	0.002	-0.013	-0.015	-0.043**	0.010
(0.016)	(0.020)	(0.005)	(0.011)	(0.020)	(0.019)	(0.004)	(0.011)	(0.018)	(0.020)	(0.021)
59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	56.268

Notes: Table reports the results of 3 sets of models: OLS without controls, OLS with controls, and IV using state*month average wait time as an instrument. Clustered standard errors appear in parentheses. Kleibergen-Papp F-statistics appear below IV estimates. Significance at the 0.1 level is noted with *, at the 0.05 level with **, and at the 0.01 level with ***.

Table 3b: Estimated effects of an additional month of wait time on health

Activity Limitation	Functional Limitation	Problems with ADLs	Problems with IADLs	Good or better health	Excellent or very good health	More than 20 bed days/yr	Number of bed days	Dead by 2007
				OLS				
0.001	0.003	-0.003	-0.005**	0.000	0.005	-0.003**	-0.062	-0.004***
(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.725)	(0.001)
				OLS with Controls				
0.003	0.004	-0.003	-0.005*	-0.002	0.004	-0.003**	-1.188	0.001
(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.870)	(0.001)
				IV (State*Month Average, SSA Summary)				
0.011	-0.005	0.015	0.010	-0.017	-0.029**	-0.005	-4.762	-0.021
(0.018)	(0.020)	(0.012)	(0.019)	(0.020)	(0.014)	(0.028)	(12.013)	(0.016)
59.715	59.65	59.65	59.65	59.147	59.147	20.43	22.279	59.65

Notes: Table reports the results of 3 sets of models: OLS without controls, OLS with controls, and IV using state*month average wait time as an instrument. Clustered standard errors appear in parentheses. Kleibergen-Papp F-statistics appear below IV estimates. Significance at the 0.1 level is noted with *, at the 0.05 level with **, and at the 0.01 level with ***.

Table 3c. Estimated effects of an additional month of wait time on health care access

		Needed but couldn't afford in last 12 months					
Dentist visit last 12 mo	Dentist visit last 6 mo	Prescription medicine	Mental health care	Dental Care	Delayed medical care - financial	Delayed medical care - not explicitly financial	Usual Place for care
OLS							
-0.002	0.000	0.001	0.001	0.002	0.002	0.002	0.002**
(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
OLS with controls							
-0.002	0.000	-0.001	-0.001	0.001	0.001	0.002	0.002
0.506	0.979	0.833	0.727	0.791	0.636	0.279	0.109
IV (State*Month Average, SSA Summary)							
-0.012	0.006	-0.012	-0.053**	0.011	-0.011	0.015	0.014
(0.029)	(0.030)	(0.031)	(0.023)	(0.028)	(0.021)	(0.017)	(0.017)
25.135	25.135	24.173	24.01	24.189	58.665	24.173	24.923

Notes: Table reports the results of 3 sets of models: OLS without controls, OLS with controls, and IV using state*month average wait time as an instrument. Clustered standard errors appear in parentheses. Kleibergen-Papp F-statistics appear below IV estimates. Significance at the 0.1 level is noted with *, at the 0.05 level with **, and at the 0.01 level with ***.

Table 3d. Estimated effects of an additional month of wait time on mental health

Felt __ sometimes or more often								
Sad	Nervous	Hopeless	That everything was an effort	Restless	Worthless	Feelings interfered with life	Number MH symptoms	any MH
OLS								
0.003	0.005	0.002	0.004	0.007*	0.002	0.001	0.021	-0.002
(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.015)	(0.003)
OLS with Controls								
0.001	0.002	-0.001	0.002	0.005	0.001	-0.002	0.007	-0.002
(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.013)	(0.003)
IV (State*Month Average, SSA Summary)								
-0.035	0.005	-0.003	0.034	0.019	-0.015	0.034	0.003	-0.010
(0.023)	(0.032)	(0.021)	(0.029)	(0.031)	(0.020)	(0.035)	(0.111)	(0.020)
26.635	22.967	26.935	26.836	22.889	27.087	15.31	27.002	59.65

Notes: Table reports the results of 3 sets of models: OLS without controls, OLS with controls, and IV using state*month average wait time as an instrument. Clustered standard errors appear in parentheses. Kleibergen-Papp F-statistics appear below IV estimates. Significance at the 0.1 level is noted with *, at the 0.05 level with **, and at the 0.01 level with ***.

Table 3e. Estimated effects of an additional month of wait time on financial well-being

Homeless at least one night	Own home	Used SNAP in past year	Used subsidized housing past year	Used TANF past year	Used WIC past year	No Health Insurance	More than $500 out of pocket	More than $2000 out of pocket	<= FPL	<= 200% FPL
					OLS					
0.000	-0.006**	0.006**	0.000	0.002*	0.000	0.000	-0.002	-0.004***	0.014***	0.011***
(0.002)	(0.003)	(0.003)	(0.004)	(0.001)	(0.000)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
					OLS with Controls					
-0.003	-0.001	0.002	-0.002	0.001	-0.001	-0.001	0.001	-0.002	0.008***	0.006***
(0.002)	(0.003)	(0.003)	(0.004)	(0.001)	(0.000)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
					IV (State*Month Average, SSA Summary)					
-0.030	-0.018	0.016	-0.012	0.001	-0.005	-0.024	0.008	-0.027	0.028	0.028
(0.023)	(0.020)	(0.019)	(0.040)	(0.009)	(0.009)	(0.020)	(0.022)	(0.020)	(0.022)	(0.023)
22.393	59.828	58.768	12.528	58.385	28.514	59.516	55.217	55.217	62.328	62.328

Notes: Table reports the results of 3 sets of models: OLS without controls, OLS with controls, and IV using state*month average wait time as an instrument. Clustered standard errors appear in parentheses. Kleibergen-Papp F-statistics appear below IV estimates. Significance at the 0.1 level is noted with *, at the 0.05 level with **, and at the 0.01 level with ***.