The Minimum Wage and Social Security Disability Insurance

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Abstract

Several factors influence the decision to apply for benefits from the Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) programs, which provided valuable benefits to over 16 million individuals in June 2020. In this study, we examine how changes in the minimum wage affect the number of applications to both programs. We leverage changes in the effective minimum wage across states and over the 2000-2015 time period and control for changes in the unemployment rate, other county-level demographic covariates, county- and year-fixed effects, and county-specific linear time trends to control for underlying differences across areas in application rates and their growth over time. While the effect of the minimum wage is positive and statistically significant in our main specification, the effect is economically small: a one dollar increase in the minimum wage increases the total application rate for SSI and SSDI combined by 0.04 percentage points. We find more robust evidence for a relationship between the unemployment rate and the application rate; the effect of a one standard deviation change in the unemployment rate is approximately three times as large as a one standard deviation in the minimum wage.

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I. INTRODUCTION

In 2018, over 2 million people applied for Social Security Disability Insurance (SSDI) benefits, which provides income insurance in the event of a disability that prevents one from working. [1] Approximately 8.3 million disabled workers received benefits from SSDI in June 2020.[2] Each SSDI recipient is also eligible for health insurance through the Medicare program two years after the onset of her disability. The share of the working age population receiving disability insurance benefits increased steadily from the program's inception in 1956 through 2014, though SSDI enrollment rates have actually declined slightly over the last several years.[3]

Several factors have been cited as contributing to the rise in recent decades in SSDI receipt, including the increase in eligibility for benefits from women increasingly participating in the labor force, the aging of the population, changes in program rules, higher earnings inequality that raises benefits relative to wages, and increases in the Social Security "full retirement age", which effectively reduce the value of retirement benefits relative to disability benefits (Autor and Duggan 2006; Duggan, Singleton and Song 2007; Liebman 2015). In addition, there is evidence that SSDI applications increase during times of high unemployment, suggesting that the demand for SSDI benefits is affected by the availability of outside options (Autor and Duggan 2003). Consistent with this, SSDI application rates declined in every year from 2010 through 2019 as the U.S. unemployment rate fell from a high of 10 percent during the Great Recession to less than 4 percent last year.[4]

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[1] "Highlights and Trends," Social Security Annual Statistical Supplement 2019, accessed June 26, 2020, https://www.ssa.gov/policy/docs/statcomps/supplement/2019/highlights.html.
[2] "Disabled worker beneficiary statistics by calendar year, quarter, and month," Social Security, accessed September 7, 2020, https://www.ssa.gov/oact/STATS/dibStat.html.
[3] SSDI enrollment rates actually declined for a few years in the last 1970s and early 1980s following significant tightening in the program's medical eligibility criteria (Autor and Duggan, 2003).
[4] "Disabled worker beneficiary statistics by calendar year, quarter, and month," Social Security, accessed September 7, 2020, https://www.ssa.gov/oact/STATS/dibStat.html.

The Supplemental Security Insurance (SSI) program delivered benefits to more than 8 million aged, blind, and disabled individuals in June 2020.[5] This need-based public assistance program provides over $55 billion in cash payments annually along with Medicaid eligibility to low-income children and adults.[6] Because it is a means-tested program, some have argued and previous research has found evidence that the program can reduce incentives to invest in human capital and work (Neumark and Powers, 2005). However, recent evidence indicates that SSI provides valuable income insurance and does not hold back youth recipients from self-sufficiency (Deshpande 2016) or reduce labor supply among parents of child SSI recipients (Duggan and Kearney 2007).

In this paper, we examine how the proportion of the adult population in a county applying for SSDI and SSI benefits varies when the minimum wage increases, leveraging changes in the minimum wage across areas and over time. Given that minimum wages differentially affect low-wage workers and that low-wage workers differentially apply for and enroll in the SSDI and SSI programs (Autor and Duggan, 2006), it is important to understand how these laws affect both programs. This question takes on additional significance when one considers the growing frequency of state minimum wages changes in recent years, with for example 26 states increasing their minimum wage at least once in the past two years.

Theoretically, the effect of the minimum wage on applications to and enrollment in the SSDI and SSI programs is ambiguous. On the one hand, we might expect that upward pressure on the minimum wage may reduce employment if it is no longer profitable for employers to hire

[5] "SSI Monthly Statistics, June 2020," Social Security, accessed September 7, 2020, https://www.ssa.gov/policy/docs/statcomps/ssi_monthly/2020-06/table02.html.

[6] SSI Annual Statistical Report, 2019, Table 2, "Total payments, by eligibility category and source of payment, selected years 1974–2019," accessed September 7, 2020, https://www.ssa.gov/policy/docs/statcomps/ssi_asr/2019/sect01.html#table2.

workers with a relatively low marginal product of labor. This would, in turn, increase the demand for disability benefits (Autor and Duggan 2003; Duggan et al 2016). On the other hand, higher wages for low-income earners who are still working relative to the average wage in the economy may lower the effective replacement rate (defined as the ratio of potential SSDI or SSI benefits to potential earnings) and thereby reduce the demand for disability benefits. Which effect dominates is ultimately an empirical question and requires empirically estimating the effect of minimum wage policies on program applications and enrollment. The effects on applications and enrollment could differ since those choosing to apply as a result of minimum wage changes may be healthier than the typical applicant and thus much less likely to be awarded benefits.

We find evidence of a statistically significant increase in the application rate for SSI and SSDI as the minimum wage increases. However, the effect is economically small: a one dollar increase in the minimum wage increases the total application rate for SSI and SSDI combined by 0.04 percentage points, which represents just 4 out of every 10 thousand non-elderly adults in a county. This equates to approximately a 2 percent increase relative to the mean application rate of 1.95 percentage points. The effect of a one standard deviation change in the minimum wage is approximately one third as large as a one standard deviation change in the unemployment rate. These effects are similar across the SSI and SSDI programs and across age groups. While our point estimates are slightly less pronounced among those applying with mental disorders, we find no evidence that the effects differ statistically by primary diagnosis. Our preferred specification includes county- and year-fixed effects along with county-specific linear time trends to control for underlying differences across areas in application rates and their growth over time. While we do not separately analyze the effect of minimum wage changes on employment or wages, our results

are consistent with a modest decline in labor market opportunities stemming from a higher minimum wage among those on the margin for applying for benefits from SSI and SSDI.

There has been considerable debate in the economics literature regarding the broader effects of minimum wage policies on earnings and employment. While standard economic models suggest that an increase in the minimum wage reduces employment, estimates of the effect of the minimum wage on labor market outcomes vary widely depending on the methodology, sample and context, with some studies finding evidence that employment declines when the minimum wage increases and others finding either no evidence that employment changes or even that employment among affected groups increases (Neumark and Wascher 1992; Card and Krueger 1994; Lang and Kahn 1998; Neumark and Wascher 2000; Card and Krueger 2000; Neumark and Wascher 2007; Addison, Blackburn and Cotti 2008; Dube, Leister and Reich 2010; Allegretto, Dube and Reich 2011; Meer and West 2013; Guiliano 2013; Hoffman 2014; Dube, Leister and Reich 2016; Gittings and Schmutte 2016; Allegretto, Dube, Reich and Zipperer 2017; Clemens and Wither 2019). These studies generally focus on populations who are most likely to be differentially affected by the minimum wage, including teenagers and low-skilled workers.

In addition to employment, authors have also studied the effects of the minimum wage on other factors related to the labor market, including recidivism (Agan and Makowsky 2018) and educational attainment (Chaplin, Turner and Paper 2003; Neumark and Wascher 2003). However, there has been very little work examining the effect that these changes have on the SSDI and SSI programs. One recent exception, Engelhardt (2020), estimates the elasticities of SSDI applications and awards to the minimum wage using state-level data from the Social Security Administration's State Agencies Monthly Workload Dataset, matched with minimum wage data, and finds no evidence that SSDI applications and awards respond to changes in the minimum wage. We build

on Englehardt's recent work by using county-level SSDI and SSI application and enrollment data, which allows us to conduct a robustness check focusing on border counties across states with differing minimum wages. This analysis enables us to account for the possible endogeneity of minimum wage changes, which may be at least partly driven by economic conditions or other factors that may also influence SSDI or SSI applications and awards. Our data on applications also allows us to analyze the application rates separately by age and primary diagnosis, along with applications for both SSDI and Supplemental Security Income (SSI).

The rest of the paper proceeds as follows. In Section II, we describe background related to the minimum wage and the SSDI and SSI application process, and summarize the data used in the analysis. Section III discusses the empirical specifications, and the results are provided in Section IV. Section V concludes.

II. BACKGROUND AND DATA

A. Background and application process for SSDI and SSI

SSDI is one part of the federal Old-Age, Survivors, and Disability Insurance (OASDI) program. Monthly SSDI benefits are based on an insured worker's career-average indexed earnings in Social Security-covered employment and are designed to provide partial income replacement in the event of disability that prevents an individual from engaging in "substantial gainful activity." Average monthly benefits among SSDI recipients were $1,258 in July 2020.[7]

SSI is a federal assistance program that provides low-income aged, blind, or disabled individuals with a guaranteed minimum income to meet their basic living expenses. The program

[7] "Monthly Statistical Snapshot, July 2020," Social Security, accessed September 7, 2020, https://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/index.html.

is based on need, and claimants must first apply for other assistance programs for which they may be eligible. The basic federal SSI payment is the same for most recipients ($771 monthly in 2019), and may be reduced by the amount of other income that an individual receives, or supplemented by additional state SSI payments. The average monthly payment among non-elderly adult SSI recipients in July 2020 was $606.[8]

While eligibility for SSDI is determined by an individual having sufficient work history in covered employment, SSI applicants need not have a work history but must satisfy age, disability, or blindness criteria and must meet income and asset tests. Individuals may qualify for SSDI, SSI or both. However, benefits received from SSI may be adjusted down if the claimant also qualifies for SSDI benefits.

To qualify for disability benefits under either program, claimants must meet the definition of disability prescribed in the Social Security Act. Disability is defined as the inability to engage in substantial gainful activity (SGA) by reason of a medically determinable physical or mental impairment that is expected to last for at least one year or to result in death. Practically, the individual must be unable to do any kind of substantial work that exists in the national economy, taking into account age, education, and work experience.

As both programs are federally administered by the Social Security Administration (SSA), the application and disability determination processes are essentially identical and use both federal and state offices to determine eligibility for disability benefits. SSA determines whether someone is disabled according to a five-step sequential evaluation process that includes assessing current work activity, the severity of the impairment, and vocational factors. If an individual's application

[8] "Monthly Statistical Snapshot, July 2020," Social Security.

for benefits is denied at any point in the process, he or she has the right to appeal the decision. In recent years approximately one-third of SSDI and SSI disability awards were made on appeal.

Once it is determined that a person is disabled, he or she must be periodically reevaluated to ensure that the individual continues to meet the medical eligibility criteria. In a typical year, benefits for about 1 percent of SSDI recipients are terminated because the recipient no longer meets the medical eligibility criteria, with the share terminated increasing in recent years, which is likely due to rise in the number of continuing disability reviews conducted annually.[9]

B. Data and summary statistics

a. SSI and SSDI application data

Our primary source of data is the number of applications for SSI and SSDI at the county level in each year from 2000 to 2015. These data come from administrative files maintained by SSA that link the annual 831 file to the Supplemental Security Record (SSR) file, the Master Beneficiary Record (MBR) and the Structured Data Repository (SDR). The data were collapsed to the county level with the mapping between zip codes and county fixed at the year 1990 definition. When one zip code was divided into multiple counties, an allocation factor was assigned to each zip code-county pair defined by the share of the population in each county. For example, if two-thirds of a zip code's residents live in county A and the other one-third in county B, then the share of that zip code's SSDI and SSI applicants are allocated in the same proportion. Values less than 10 were omitted from the application dataset, which includes only those applicants who get a decision from the state's Disability Determination Services (DDS). Thus, they exclude

[9] For example 1.4% of SSDI recipients were terminated for no longer meeting the medical eligibility criteria in 2018 versus just 0.6% in 2007. See https://www.ssa.gov/policy/docs/statcomps/supplement/2019/6f.pdf and https://www.ssa.gov/policy/docs/statcomps/supplement/2008/6f.pdf for these figures.

most technical denials when, for example, an applicant does not have sufficient work history to potentially qualify for SSDI benefits.

In our county-level application data for SSDI and SSI applications combined, we have complete data for 2,868 counties. Among the remaining 273 counties, some are missing for just particular years while others are missing for every year. A notable omission in our data throughout our 2000 – 2015 sample period is Miami-Dade County, a large county in Florida with 1,528,177 individuals age 20-64 as of the 2010 census. However, most of the counties with missing data are small, and the average (median) adult (age 20-64) population in 2015 for counties that are missing from our dataset in 2015 is 21,835 (1,762). Our final dataset includes 47,372 county-by-year observations for combined SSDI and SSI applications. This data set is an unbalanced panel, with most counties having data in all 16 years but some having less. While we also have data for SSDI and SSI applications separately, there are additional counties missing from these program-specific data due to more counties not meeting the threshold of having at least 10 applications.

We convert these application numbers for each county to rates by dividing the number of applications by intracensal county-level population estimates from the U.S. Census for the adult population aged 20-64.[10] We cross-validate these application data using two additional sources of data: SSA's State Agencies Monthly Workload Dataset,[11] which provides the number of applications for each state on a monthly basis between 2000 and 2015, and data on the aggregate number of applications in each year from 2000 and 2015 available through the Annual Statistical Reports for the SSDI and SSI programs.[12] In the appendix, we plot the aggregate number of

[10] These data were obtained from https://data.nber.org/data/census-intercensal-county-population-age-sex-race-hispanic.html for years 2000-2010, and from https://www.census.gov/data/tables/time-series/demo/popest/2010s-counties-detail.html for the years 2010-2018.
[11] These data are available at https://www.ssa.gov/disability/data/ssa-sa-mowl.htm.
[12] The SSA SSI statistical report for 2018 is available at https://www.ssa.gov/policy/docs/statcomps/ssi_asr/2018/ssi_asr18.pdf and the SSDI statistical report for 2018 is available at https://www.ssa.gov/policy/docs/statcomps/di_asr/2018/di_asr18.pdf .

applications for SSDI and SSI implied by each of the three data sources for each year in our sample (see Figure B.1 for SSDI data and Figure B.2 for SSI data). The data from the statistical reports provide applications including and excluding technical rejections, and we would expect the data that excludes those who have been technically denied to be closer to the number of applications from the 831 file since that file includes only those that obtain a DDS decision. To address the fact that some counties are missing in the data from 831 file that we use in our analysis, we construct an additional annual series that imputes the numbers of applications in counties that are missing using the average application rate in that state and year multiplied by the counties' adult population.

As the appendix figures show, while there are some level differences between the three sources, the aggregate series generally have similar trends over time. The gaps between the three are likely due to differences in the administrative files underlying each source. In general, the aggregate numbers of SSDI and SSI applications are highest in the State Agency Monthly Workload dataset, and lowest for the data from 831 records. The annual statistical report data excluding technical denials approximates the same levels for the State Agency Monthly Workload data for SSI claims. The missing counties imputation does not change the implied aggregate number of applications substantially, but could be related to the discrepancy since application rates may be higher among the counties that are missing in the 831 records.

If increases in the minimum wage change the demand for SSI and/or SSDI benefits, we would be most likely to see the effects in applications. This is because any additional applicants induced to apply for benefits due to a higher minimum wage would likely have less severe health impairments and would therefore be more likely to be denied benefits. Unfortunately, we do not have information as to the eventual disability determination of the applicants that we examine by

county. We can, however, explore the relationship between the minimum wage and SSDI and SSI enrollment. To the extent that those applying as a result of minimum wage changes are ultimately awarded benefits, this would be captured in the enrollment data for both programs. We obtain enrollment data by county from publicly-available data from Social Security's annual statistical reports for both SSI and SSDI.[13] These data were downloaded and harmonized by county for the years 1999-2018.

Figure 1 displays a "heat map" of the county-level application rates for SSI and SSDI combined by county in 2000 and 2015 as a share of the population age 20-64. In 2015, the latest year of our data, the combined application rate varies from a low of 0.01 percent in Henry County, Georgia to a high of 7.24 percent in Forrest County, Mississippi. As the figure shows and as confirmed in the state-level data summarized in Appendix Table A.10, application rates are generally highest in the southern region of the country, including in states such as Kentucky, West Virginia, Alabama, and Mississippi. Application rates are generally lowest in the West in states including Colorado, Montana, and Utah. Application rates nationally have changed substantially over time, from 1.6 percent in the year 2000 on average across the counties in our sample, increasing to 2.32 percent in the year 2010, and declining to 1.53 percent in the year 2015. In general, the SSDI and SSI application rates are positively correlated within counties across years, with a correlation coefficient of 0.87 between 2000 and 2015.

Figure 2 shows SSI and SSDI application rates separately for 2015. As noted earlier, substantially more counties are missing than in the combined application rate due to the data release requirement of having at least 10 applications in a county, though these omitted counties

[13] SSDI data for 2018 is available at https://www.ssa.gov/policy/docs/statcomps/oasdi_sc/2018/index.html. SSI data for 2018 is available at https://www.ssa.gov/policy/docs/statcomps/ssi_sc/2018/index.html.

account for a relatively small share of the U.S. population. As a result, the number of county-year observations in our dataset when we analyze SSI and SSDI application rates separately is 45,310 rather than 47,372. The unweighted correlation between county-level SSI and SSDI application rates in 2015 is 0.86.[14]

b. Minimum wage data

We obtain data on the minimum wage by state and year from a repository with historical state and sub-state minimum wages, which has been updated through December 2019 (Vaghul and Zipperer 2019). These data were sourced from legislative and media reports regarding the minimum wage changes in each state. Because our data is annual, we calculate the average minimum wage over the year using the month of the minimum wage change to determine the weights.

The federal government changed the U.S. hourly minimum wage 9 times during the 1980 through 2009 period.[15] There have been no changes to the federal minimum wage in the eleven years since though many current proposals in Congress call for increasing the federal minimum wage and this topic continues to be important in media and policy discussions.

Since 1980, many states and localities have changed their minimum wages as well, with some states updating these as often as annually. Currently there are 29 states (30 including D.C.) with minimum wages above the federal minimum wage of $7.25.[16] Many localities have minimum wages that exceed their state minimum wages, and several state and local governments have passed legislation that will further expand their minimum wages in 2020 and future years. In some cases,

[14] While total applications are the sum of the individual SSI and SSDI application numbers, we do not have a separate category that includes the numbers of SSI and SSDI dual applications. Since our data represent an undercount relative to the two other data sources, it is possible that dual applicants are omitted.
[15] These changes occurred in 1980/81 (from 2.90 to 3.10 to 3.35), in 1990/91 (to 3.80 to 4.25), 1996/97 (to 4.75 to 5.15), and 2007/8/9 (to 5.85, 6.55, 7.25).
[16] Note: D.C. is omitted from our applications data so also omitted from the analysis.

these increases depend on the state of the economy, and so may be delayed as a result of the current recession. For the purposes of the analyses that follow, we consider only state-level minimum wage changes while recognizing that some localities – such as Chicago, New York City, and San Francisco - have at times had higher minimum wages than their respective states.

Figure 3 shows the number of minimum wage increases at the state level between 2000 and 2015, including both state and federal changes. As shown in the figure, the increases in the federal minimum wage over the 2007-2008-2009 period affected most states, though some states had even higher minimum wages then so the federal changes did not "bind". Since 2009, all of the minimum wage changes summarized in this figure have been at the state level, with 25 states increasing their minimum wage in 2015 alone. The average minimum wage in states with minimum wages higher than the federal level in 2015 is $8.35, significantly higher than the current federal minimum wage of $7.25 per hour. Approximately one third of the changes summarized in the figure are automatic due to the way we average minimum wages over the calendar year based on the month of implementation, while the other two thirds represent legislated changes.

Figure 4 displays the minimum wage in 2000, 2005, 2010 and 2015 across different states. In this figure, different colors represent different minimum wage ranges. As shown in the figure, all but ten states in the year 2000 had a minimum wage equal to the federal minimum wage of $5.15. By 2005, 17 states had a minimum wage higher than the federal minimum wage of $5.15. In 2010, the federal minimum wage had increased to $7.25, but 14 states had minimum wages higher than the federal level. In 2015, the final year of our SSDI and SSI application data, the federal minimum wage remained at $7.25. However, 29 states had minimum wages higher than the federal minimum wage in this year. In inflation-adjusted terms, the value of the federal minimum wage rose by just 2 percent from 2000 to 2015 (from $7.09 to $7.25), which may

partially explain why states have become increasingly likely to have minimum wages that are higher than the federal government.

c. Additional covariates

Gettens, Lei and Henry (2018) document substantial geographic variation in SSDI/SSI enrollment across counties, and perform a variance decomposition in order to identify its drivers. Motivated by their analysis and to control for other time-varying factors that vary across counties, we collect several other county-level covariates for each year in our analysis. In addition to the population aged 20-64 in each county from the intracensal county population estimates described earlier, we also obtain the share of the age 20-64 population that is aged 50-64, the share that is Black, Hispanic, and female. These variables can account for differences in enrollment rates by age, gender, race, and ethnicity. For example, individuals in their early sixties are several times more likely than their counterparts in their twenties to receive SSDI benefits. Per capita income by county is obtained from the Bureau of Economic Analysis, series CAINC1.[17] Finally, we obtain the unemployment rate by county averaged over each year from the Bureau of Labor Statistics.[18] All else equal, one would expect higher SSDI and SSI applications and enrollment in areas with lower incomes given the negative relationship between health and income (Chetty et al. 2016). Similarly given previous research, one would expect higher unemployment rates to be associated with higher SSDI and SSI application and enrollment rates.

Our final dataset at the county-year level is summarized in Table 1. All SSDI and SSI application rates represent applications as the share of the population aged 20-64 multiplied by 100. The minimum wage is given in dollars per hour in nominal dollars. Per capita income is

[17] These data were obtained from https://apps.bea.gov/regional/histdata/releases/1118lapi/index.cfm.
[18] These data were obtained from https://www.bls.gov/lau/#tables for the years 2000-2015.

expressed in thousands of nominal dollars. The percentages of individuals who are Black, Hispanic, and Female are calculated using the population at all ages in the denominator.

Table 2 reports the results of including each of these covariates in a population-weighted regression to determine their predictive power in explaining variation in SSDI and SSI application rates across counties in 2010, which matches up with data from the 2010 Census and is roughly the midpoint of our timeframe. When we include only the county unemployment rate, we find that there is a strong and statistically significant positive relationship between the unemployment rate and the application rate. As we add in additional covariates, the coefficient on the unemployment rate is approximately cut in half. We see that per-capita income and the percent Hispanic is negatively correlated with the SSDI and SSI application rate, while the share of the adult population aged 50-64, percent Black, and percent female is positively correlated with the application rate. The variation by race and ethnicity is consistent with the differences in age-adjusted death rates by group, with individuals of Hispanic origin having a lower mortality rate (and thus a lower disability application rate) than non-Hispanic whites while Black individuals have a higher mortality rate (and thus higher disability application rate) (Kochanek, Murphy, Xu and Arias 2019). The differences by gender are somewhat surprising, since Kochanek, Murphy, Xu and Arias document that women have lower mortality rates and are also less likely than men to receive SSDI benefits. However, non-elderly adult women are more likely than their male counterparts to receive SSI benefits, which may partly explain our estimates. The adjusted R^2 in Column (6) of the table is 0.398, suggesting that these covariates explain a sizable portion of the cross-sectional variation in SSDI and SSI application rates across counties in a single year.

III. EMPIRICAL METHODS

Our empirical approach leverages variation across areas over time in the minimum wage. Our baseline regression equation is as follows:

$$(1)\ y_{ct} = \alpha_0 + \alpha_1 MINWAGE_{st} + \alpha_2 UNEMP_{ct} + \beta X_{ct} + \gamma_t + \mu_c + \theta_c t + \varepsilon_{ct}$$

where $MINWAGE_{st}$ represents the minimum wage in state *s* in year *t*, $UNEMP_{ct}$ represents the unemployment rate in county *c* in year *t*, and X_{ct} is a vector of county-by-year controls including per capita income, the share of the adult population age 50-64, percent Black, percent Hispanic, and percent female. The variables γ_t, μ_c, and $\theta_c t$ represent year fixed effects, county fixed effects, and county-specific linear time trends. Year fixed effects are included to capture national time trends in application rates due – for example - to macroeconomic fluctuations. County fixed effects account for time-invariant differences in SSDI and SSI application rates across counties. The addition of county-specific linear time trends allows for potentially differential rates of change in application rates across counties. Given that we primarily leverage state-level variation in minimum wages, all of our standard errors are clustered at the state level, and our specifications are weighted by the county's share of the non-elderly adult population in each year so that each year counts equally in the regression.

In our full specification, identification relies on the assumption that outcomes in counties with a higher minimum wage would have evolved in a similar manner as in counties with a lower minimum wage, absent the change, after accounting for differences in the unemployment rate, other county-level covariates, and year and county fixed effects along with county-specific linear time trends.

The outcome variable y_{ct} represents the application rate in county *c* in year *t*. This variable can represent several different application rates in our analysis. Our main specification analyzes the combined SSI and SSDI application rate, as we have the most comprehensive data on the

combined outcome. However, we also investigate the extent to which the results vary for SSI and SSDI separately. We also have data on applications by three distinct age groups: 18-39, 40-54, and 55-64. For these outcomes, we divide the number of applications among each age group by the population corresponding to these age groups rather than the full adult population.[19] Finally, our dataset includes the number of applications across three different categories of primary diagnosis: mental, muscular, and other physical. These three types of conditions are mutually exclusive, and cover the vast majority of the applications in our main dataset.[20]

Because our data is at the county-level, we can also restrict our sample to include only counties at the border of other states with differing minimum wages. This sample restriction reduces our sample by more than 60 percent to 17,740 county-year observations. This sample restriction allows us to restrict attention to more similar counties with minimum wages that differ on either side of the state border.

IV. RESULTS

A. Main Results

We summarize the results of regressing combined SSDI and SSI application rates on the minimum wage, the unemployment rate, and other county-level covariates in Table 3. Column (1) includes only the minimum wage, unemployment rate, and county and year fixed effects. Column (2) adds per capita income, share of non-elderly adult population that is age 50-64, percent Black, percent Hispanic, and percent female. Columns (3) and (4) are similar to Columns (1) and (2) but

[19] For the outcome that represents applications for the 18-39 age group, we divide by the population 20-39 due to limitations in the intracensal population estimates by county.
[20] For the most extreme scenario where we set each censored observation at its maximum (9), there remain 8,232 observations where the total number of applications exceeds the sum of the applications by each of the three conditions by an average difference of 347.

include county-specific time trends. Column (5) is similar to Column (4) but replaces the minimum wage with the lag minimum wage from one year prior. Finally, Column (6) replaces the outcome in Column (4) with the log of combined SSDI and SSI applications.

The results in Table 3 show that regardless of specification, the unemployment rate and the combined SSDI and SSI application rate is significantly positively related: an increase in the unemployment rate by one percentage point is associated with approximately a 0.04 percentage point increase in the combined application rate. This increase is statistically significant at the 1 percent level, and represents a two percent increase in the application rate relative to its mean of 1.952 percentage points. The effect is similar in Column (6) where the coefficient on the unemployment rate represents the percent increase in the application rate from a one percentage point increase in the unemployment rate.

By contrast, the relationship between the minimum wage and the application rate is much weaker. In Columns (1) and (2), without the inclusion of county-specific linear time trends, the estimated coefficients on the minimum wage are small, positive, and statistically insignificant. When we add county-specific time trends in Columns (3) and (4), we find that the estimates increase and are more precisely estimated. Specifically, a one dollar increase in the minimum wage is associated with a 0.04 percentage point increase in the application rate, and this estimate is statistically significant at the 5 percent level. Again, this corresponds to an increase of 2 percent relative to the mean combined application rate, so the effect is relatively small. To better gauge the magnitude of this effect, it suggests that a one dollar increase in the minimum wage throughout the U.S. would induce an additional 80 thousand SSDI and/or SSI applications, which represents about 3 percent of total applications to both programs.

In Column (5), we find that the coefficient on the lagged minimum wage is negative and statistically insignificant. When we move to the log specification, the estimates are smaller in magnitude and do not differ significantly from zero. The coefficients on the additional controls indicate that counties with higher per capita income, higher percent Hispanic, and higher percent female are associated with lower application rates, and counties with a higher share of Black residents are associated with higher application rates. The addition of these controls does not significantly change the estimates on the minimum wage or the unemployment rate.

We can compare the results of the minimum wage with that of the unemployment rate by standardizing the effect by a standard deviation change in the minimum wage (1.09 in Table 1) and a standard deviation change in the unemployment rate (2.75 in Table 1). This implies that the effect of a one standard deviation change in the unemployment rate is roughly three times as large as the effect of a one standard deviation change in the minimum wage. If we look at the most conservative 95 percent confidence interval of the estimates in Columns (2), (4), and (6), we can rule out that a one dollar increase in the minimum wage increases the application rate by more than 5 percent or decreases it by more than 1.2 percent. Therefore, we conclude that the effect of a one dollar increase in the minimum wage is economically small.

Tables 4 and 5 follow the same format as Table 3, but examine SSDI applications (Table 3) and SSI applications (Table 4) separately. The sample differs slightly from Table 3 due to the omission of data from counties with fewer than 10 applications in either SSDI or SSI. However, the results are similar across the two outcomes. In both cases, the results are similar in magnitude relative to the mean of the outcome variable: the point estimate from Column (4) indicates approximately a 2 percent increase in applications for each of SSDI and SSI stemming from a one dollar increase in the minimum wage. In addition, the coefficients on the county-level covariates

are very similar across the two models. As a result, we focus on the combined SSDI and SSI applications outcome in our subsequent analyses.

B. Results by Age and Condition

Our applications data are disaggregated by age group and by primary diagnosis, which allows us to investigate whether the results differ by age or medical condition. In Table 6, we show results from our specification with all of the county-level covariates and county-specific time trends shown in Column (4) of Tables 3, 4 and 5. The different columns in Table 6 represent the application rate for 18-39 year olds in Column (1), 40-54 year olds in Column (2), and 55-64 year olds in Column (3). As in the results from SSI and SSDI applications, the sample size is lower in this table than shown in Table 3 due to missing observations in some of our counties where there were fewer than 10 applications. The results in Table 6 are statistically significant for 40-54 year olds and 55-64 year olds, but are not statistically significant for 18-39 year olds. On the one hand, this difference makes intuitive sense, since middle-aged and near-elderly adults are more likely to receive SSDI than are young adults. But on the other hand, this difference is surprising, since younger adults are more likely to have wages near the minimum wage and thus to be affected by it. In any case, the effects are not statistically different across the specifications and do not vary substantially as a share of the outcome mean, which is similar across age.

We also examine the relationship between the minimum wage and applications for SSDI and SSI by medical condition. Specifically, our data disaggregates the number of applications by mental, muscular, and physical disabilities. While our results for overall applications showed that a one dollar increase in the minimum wage was associated with a two percent increase in applications, the results in Table 7 show that the effect appears to differ somewhat across the three

different types of disabilities. For muscular and other physical disabilities, the results indicate that a one dollar increase in the minimum wage leads to a four percent increase in applications. However, the estimated effect for mental disabilities is statistically insignificant. These results may be surprising in light of concerns that mental disabilities are more difficult to verify and therefore may be more likely to increase in response to economic conditions. It is important to note, however, that the effects for all three diagnosis categories are still smaller than the effects of unemployment, and economically small overall.

C. Border Analysis and Robustness

Many prior investigations of the minimum wage address potential endogeneity in minimum wage policies by performing analysis across state borders where the minimum wage differs. Because our data are at the county level, we are able to restrict our sample to border counties as described earlier, and present a version of Table 3 restricted to this sample in Table 8. We find results that are qualitatively and quantitatively similar to the results presented in Table 3, namely that the addition of county-specific linear time trends gives rise to a marginally significant estimate of the relationship between the minimum wage and SSDI and SSI applications. However, the magnitude is still economically small. In addition, the estimates are noisier due to the reduction in sample size. But the overall conclusions are consistent with those presented with the full sample.

We conduct a number of robustness exercises, including using a subset of counties for which we have a balanced panel, and find results that are qualitatively and quantitatively similar. These results are reported in Table 9. Additionally when we explore the effects of the minimum wage on SSDI and SSI enrollment, our estimated effects are even smaller and not statistically significant. This is perhaps not surprising since, with relatively few induced to apply for the two

programs in response to minimum wage changes, substantially fewer are likely to end up on the program. Furthermore, the enrollment data do not disaggregate by year of application. To the extent that applications in year *t* result in awards in year *t* or in subsequent years, this will add noise to the outcome variable. These results are included in the Appendix in Tables A.7-A.9.

V. DISCUSSION AND CONCLUSION

While the county unemployment rate has a strong relationship with the SSDI and SSI application rate, overall, our results suggest a small role for the minimum wage in explaining changes in the rate of SSDI and SSI applications. While point estimates vary slightly across model specification, a conservative 95 percent confidence interval indicates that a one dollar change in the minimum wage is unlikely to increase the application rate by more than 5 percent or decrease it by more than 1.2 percent. The results do not vary significantly across those who apply to SSI and SSDI separately, nor do they differ across age groups and medical conditions. Our results are in line with those reported in Engelhardt (2020), who finds a statistically insignificant relationship between SSDI applications and the minimum wage.[21] Because Engelhardt uses the State Agency Monthly Workload data, his results are at the state level and he is therefore unable to include county-level covariates, which as we show explain a large share of the variation in application rates across counties.

While our effects are economically small, the direction of our point estimates generally are consistent with the minimum wage slightly reducing employment and labor market opportunities, leading a small fraction to apply for disability benefits through SSI or SSDI, on average. Because

[21] Assuming a $1 increase in the minimum wage corresponds to a 16% change (using the mean min wage from our summary statistics as a reference point), the corresponding estimate from Engelhardt's study is 0.01088 (0.01888), using the estimates from Table 2, Column (1), sum of contemporaneous and lagged min wage effects. This gives rise to a 95% confidence interval for % change in SSDI claims is [-0.02688, 0.04864].

we are examining county-level application rates, we are only able to estimate the net effect on applications and are not able to speak to heterogeneity across individuals. Therefore, it is possible that the higher minimum wages may have reduced the propensity of some individuals to apply to the programs, but job losses among others may have more than offset that effect.

The estimated effect of the minimum wage pales in comparison to the effect of demographic changes, economic conditions, rise in insured status (due to women working more), rising wage inequality (and thus higher replacement rates for low-earners), or increases in the full retirement age. But our point estimates do suggest that SSDI application rate would have fallen by even more than one-third from 2010 through 2019 were it not for the many increases in state minimum wages during that period. If we apply our point estimate to the average minimum wage of $8.45 in the 30 states that are higher than the federal minimum wage, we can determine the counterfactual number of applications if instead the federal minimum wage was in effect everywhere. Our estimates suggest we would have about 60 thousand fewer applications. While this number is small relative to the approximately 3 million applicants, even small relative changes translate to a large number of changes in applications.

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Table 1: Summary Statistics

Variable	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max	Missing
Combined SSDI & SSI Application Rate	1.95	1.06	0.01	1.20	2.49	9.46	0
SSDI Application Rate	0.94	0.42	0.01	0.64	1.18	3.37	2062
SSI Application Rate	1.05	0.68	0.01	0.58	1.35	7.08	2062
Minimum Wage	6.34	1.09	5.15	5.15	7.25	9.47	0
Unemployment Rate	6.45	2.75	1.10	4.50	7.90	28.90	0
Per Capita Income ($000's)	31.88	9.97	10.25	25.32	36.27	202.83	0
Share of Adult Pop 50-64	33.76	5.73	5.45	29.85	37.37	62.25	0
Percent Black	8.77	14.33	0.00	0.45	9.88	85.93	0
Percent Hispanic	7.80	12.92	0.08	1.45	7.44	97.54	0
Percent Female	50.14	2.10	27.85	49.74	51.18	57.37	0
Year	2007.49	4.61	2000	2003	2011	2015	0
$N = 47{,}372$							

Notes: Full sample consists of county-year observations from 2000 to 2015 and excludes 2209 county-year pairs where combined SSDI & SSI applications are < 10. An additional 791 county-year pairs are dropped for missing Per Capita Income data. All application rates represent applications as the share of the population aged 20-64 x 100. Minimum wage given in dollars per hour in nominal dollars. Per Capita Income expressed in 1,000s of dollars. Share of Adult Pop 50-64 represents population aged 50-64 as the share of the population aged 20-64 x 100. Percent Black, Percent Hispanic, and Percent Female calculated using population at all ages in the denominator.

Table 2: Estimated Cross-Sectional Relationship between Applications Rate and Covariates

	DV: Applications Rate (0-100)							
	SSDI & SSI						SSDI	SSI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployment Rate	0.120***	0.079***	0.078***	0.055***	0.062***	0.062***	0.026***	0.036***
	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.003)	(0.004)
Per Capita Income		−0.026***	−0.025***	−0.024***	−0.024***	−0.026***	−0.011***	−0.015***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.0005)	(0.001)
Share of Adult Pop 50-64			0.024***	0.047***	0.041***	0.036***	0.020***	0.016***
			(0.004)	(0.003)	(0.004)	(0.004)	(0.002)	(0.003)
Percent Black				0.033***	0.032***	0.028***	0.006***	0.023***
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Percent Hispanic					−0.003***	−0.003***	−0.004***	0.001
					(0.001)	(0.001)	(0.0004)	(0.001)
Percent Female						0.090***	0.030***	0.059***
						(0.012)	(0.005)	(0.008)
Outcome Mean	2.32	2.32	2.32	2.32	2.32	2.32	1.11	1.26
Adjusted R^2	0.095	0.188	0.199	0.386	0.387	0.398	0.397	0.422
Observations	2,966	2,966	2,966	2,966	2,966	2,966	2,851	2,851

Notes: Table shows the predictive power of covariates using a 2010 cross-section of the sample in Table 1. The outcome variable in Columns (1)-(6) is combined SSDI & SSI applications as a share of the population 20-64, multiplied by 100. The outcome variable in Column (7) and (8) is SSDI and SSI as a share of the population 20-64, multiplied by 100, respectively. Covariates are layered in successively with Columns (6)-(8) representing the full specification. Observations are weighted by county population.
* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Table 3: Estimated Relationship Between SSDI & SSI Applications and Minimum Wage

	DV: SSDI & SSI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	0.026	0.022	0.041**	0.040**		0.012
	(0.031)	(0.027)	(0.019)	(0.018)		(0.012)
Lag Minimum Wage					−0.010	
					(0.014)	
Unemployment Rate	0.042***	0.040***	0.044***	0.049***	0.047***	0.020***
	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.005)
Per Capita Income		−0.003**		0.004	0.004	−0.004**
		(0.001)		(0.003)	(0.003)	(0.002)
Share of Adult Pop 50-64		0.025***		0.055***	0.054***	0.012
		(0.007)		(0.015)	(0.016)	(0.010)
Percent Black		0.024**		0.064*	0.062*	0.037**
		(0.010)		(0.035)	(0.035)	(0.014)
Percent Hispanic		−0.009		−0.069**	−0.073**	−0.006
		(0.006)		(0.028)	(0.028)	(0.014)
Percent Female		−0.044**		−0.110***	−0.111***	0.001
		(0.021)		(0.028)	(0.028)	(0.011)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	1.952	1.952	1.952	1.952	1.952	6.599
Adjusted R^2	0.945	0.946	0.958	0.959	0.959	0.998
Observations	47,327	47,327	47,327	47,327	47,327	47,327

Notes: Table provides results from estimating Equation 1 for sample in Table 1. Dependent variable in Columns (1) - (5) is combined SSDI & SSI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 4: Estimated Relationship Between SSDI Applications and Minimum Wage

	DV: SSDI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	0.014	0.013	0.021**	0.020**		0.019
	(0.013)	(0.012)	(0.009)	(0.009)		(0.014)
Lag Minimum Wage					0.003	
					(0.006)	
Unemployment Rate	0.019***	0.020***	0.021***	0.023***	0.022***	0.020***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Per Capita Income		−0.0005		0.001	0.001	−0.005***
		(0.001)		(0.001)	(0.001)	(0.001)
Share of Adult Pop 50-64		0.009***		0.020***	0.020***	0.008
		(0.003)		(0.006)	(0.006)	(0.010)
Percent Black		0.002		0.015	0.014	0.025**
		(0.003)		(0.011)	(0.011)	(0.012)
Percent Hispanic		−0.005***		−0.032***	−0.033***	−0.013
		(0.002)		(0.008)	(0.008)	(0.011)
Percent Female		−0.024***		−0.036***	−0.037***	−0.005
		(0.008)		(0.009)	(0.009)	(0.010)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	0.9386	0.9386	0.9386	0.9386	5.11	
Adjusted R^2	0.937	0.938	0.951	0.952	0.952	0.997
Observations	45,265	45,265	45,265	45,265	45,265	45,265

Notes: Table provides results from estimating Equation 1 for sample in Table 1. Dependent variable in Columns (1) - (5) is SSDI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of SSDI applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 5: Estimated Relationship Between SSI Applications and Minimum Wage

	DV: SSI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	0.011	0.009	0.020*	0.020*		0.006
	(0.019)	(0.017)	(0.011)	(0.010)		(0.011)
Lag Minimum Wage					−0.013	
					(0.010)	
Unemployment Rate	0.022**	0.020***	0.023***	0.026***	0.025***	0.020***
	(0.008)	(0.007)	(0.007)	(0.006)	(0.007)	(0.005)
Per Capita Income		−0.003***		0.003	0.003	−0.004*
		(0.001)		(0.002)	(0.002)	(0.002)
Share of Adult Pop 50-64		0.016***		0.037***	0.036***	0.014
		(0.005)		(0.010)	(0.010)	(0.011)
Percent Black		0.022**		0.050**	0.048*	0.045***
		(0.009)		(0.024)	(0.024)	(0.016)
Percent Hispanic		−0.004		−0.037*	−0.039*	−0.003
		(0.005)		(0.020)	(0.020)	(0.018)
Percent Female		−0.022		−0.077***	−0.077***	0.012
		(0.014)		(0.020)	(0.020)	(0.014)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	1.055	1.055	1.055	1.055	1.055	5.139
Adjusted R^2	0.942	0.945	0.957	0.959	0.958	0.997
Observations	45,265	45,265	45,265	45,265	45,265	45,265

Notes: Table provides results from estimating Equation 1 for sample in Table 1. Dependent variable in Columns (1) - (5) is SSI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of SSI applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 6: Relationship Between SSDI and SSI Applications and Minimum Wage by Age

	DV: SSDI & SSI Applications		
	Rate (0-100) by Age Group		
	18-39	40-54	55-64
Minimum Wage	0.034	0.054***	0.038**
	(0.020)	(0.020)	(0.017)
Unemployment Rate	0.051***	0.052***	0.045***
	(0.014)	(0.010)	(0.008)
Per Capita Income	0.008**	0.003	−0.001
	(0.004)	(0.002)	(0.002)
Share of Adult Pop 50-64	0.097***	0.044***	0.013
	(0.021)	(0.014)	(0.014)
Percent Black	0.106**	0.037	0.029
	(0.047)	(0.031)	(0.023)
Percent Hispanic	−0.137***	−0.042	0.005
	(0.037)	(0.025)	(0.024)
Percent Female	−0.206***	−0.111***	−0.018
	(0.038)	(0.026)	(0.022)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	2.051	2.076	1.939
Adjusted R^2	0.946	0.950	0.918
Observations	44,506	45,022	43,057

Notes: Table provides results from estimating Equation 1 on application rates by age. Application rates represent combined SSDI & SSI applications as share of the population 20-39 in Column (1), 40-54 in Column (2), and 55-64 in Column (3), multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 7: Relationship Between SSDI & SSI Applications and Minimum Wage by Primary Condition

	DV: SSDI & SSI Applications		
	Rate (0-100) by Primary Condition		
	Mental	Muscular	Physical
Minimum Wage	0.012	0.022***	0.031***
	(0.010)	(0.007)	(0.007)
Unemployment Rate	0.009*	0.013***	0.021***
	(0.005)	(0.003)	(0.006)
Per Capita Income	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)
Share of Adult Pop 50-64	0.015**	0.007**	0.024***
	(0.006)	(0.003)	(0.008)
Percent Black	0.014	0.005	0.023*
	(0.011)	(0.007)	(0.012)
Percent Hispanic	−0.032**	−0.015***	−0.013
	(0.014)	(0.005)	(0.011)
Percent Female	−0.031**	−0.009*	−0.035***
	(0.012)	(0.005)	(0.011)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	0.5336	0.5809	0.7985
Adjusted R^2	0.907	0.921	0.925
Observations	42,041	43,754	44,951

Notes: Table provides results from estimating Equation 1 on application rates by primary condition. Application rates represent combined SSDI & SSI applications for a given condition type as the share of the adult population 20-64, multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 8: Estimated Relationship Between SSDI & SSI Application and Minimum Wage, Border Counties

	DV: SSDI & SSI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	−0.010	0.002	0.037	0.040*		0.001
	(0.036)	(0.031)	(0.023)	(0.022)		(0.013)
Lag Minimum Wage					0.007	
					(0.018)	
Unemployment Rate	0.032**	0.034***	0.035***	0.040***	0.039***	0.013***
	(0.013)	(0.010)	(0.012)	(0.010)	(0.010)	(0.004)
Per Capita Income		−0.003**		0.002	0.002	−0.001
		(0.001)		(0.003)	(0.003)	(0.002)
Share of Adult Pop 50-64		0.022**		0.063***	0.062***	0.014
		(0.009)		(0.021)	(0.022)	(0.013)
Percent Black		0.026**		0.097**	0.098**	0.024
		(0.011)		(0.044)	(0.045)	(0.015)
Percent Hispanic		−0.015***		−0.076***	−0.077***	−0.010
		(0.005)		(0.027)	(0.028)	(0.013)
Percent Female		−0.035		−0.119***	−0.120***	−0.026*
		(0.027)		(0.039)	(0.040)	(0.014)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	1.973	1.973	1.973	1.973	1.973	5.698
Adjusted R^2	0.947	0.949	0.959	0.961	0.960	0.997
Observations	17,740	17,740	17,740	17,740	17,740	17,740

Notes: Table provides results from estimating Equation 1 for the sample in Table 1, restricted to counties along a state border. Dependent variable in Columns (1) - (5) is combined SSDI & SSI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.
* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Table 9: Estimated Relationship Between SSDI & SSI Application and Minimum Wage, Balanced Sample

	DV: SSDI & SSI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	0.024	0.021	0.041*	0.040*		0.011
	(0.031)	(0.028)	(0.019)	(0.018)		(0.012)
Lag Minimum Wage					-0.010	
					(0.014)	
Unemployment Rate	0.042***	0.041***	0.045***	0.049***	0.047***	0.020***
	(0.013)	(0.011)	(0.012)	(0.010)	(0.011)	(0.005)
Per Capita Income		-0.003*		0.004	0.004	-0.004*
		(0.001)		(0.003)	(0.003)	(0.002)
Share of Adult Pop 50-64		0.025***		0.056***	0.055***	0.013
		(0.007)		(0.016)	(0.016)	(0.010)
Percent Black		0.023*		0.066	0.064	0.033*
		(0.011)		(0.038)	(0.038)	(0.013)
Percent Hispanic		-0.009		-0.070*	-0.073**	-0.004
		(0.006)		(0.028)	(0.028)	(0.014)
Percent Female		-0.046*		-0.104***	-0.106***	-0.003
		(0.021)		(0.026)	(0.026)	(0.011)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	1.972	1.972	1.972	1.972	1.972	5.787
Adjusted R^2	0.949	0.951	0.963	0.965	0.964	0.998
Observations	45,888	45,888	45,888	45,888	45,888	45,888

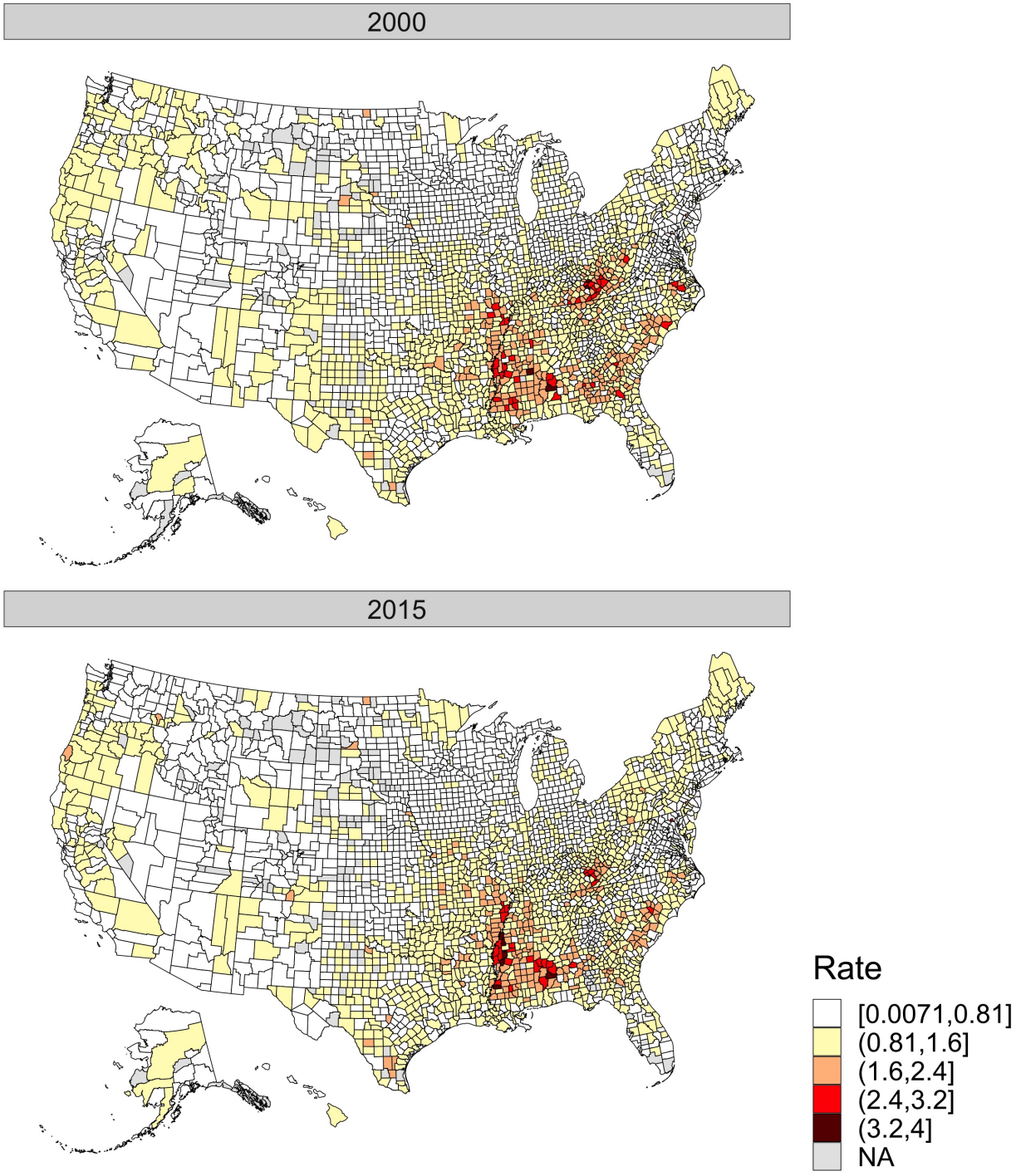
Notes: Table provides results from estimating Equation 1 restricted to a fully balanced sample. Dependent variable in Columns (1) - (5) is combined SSDI & SSI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

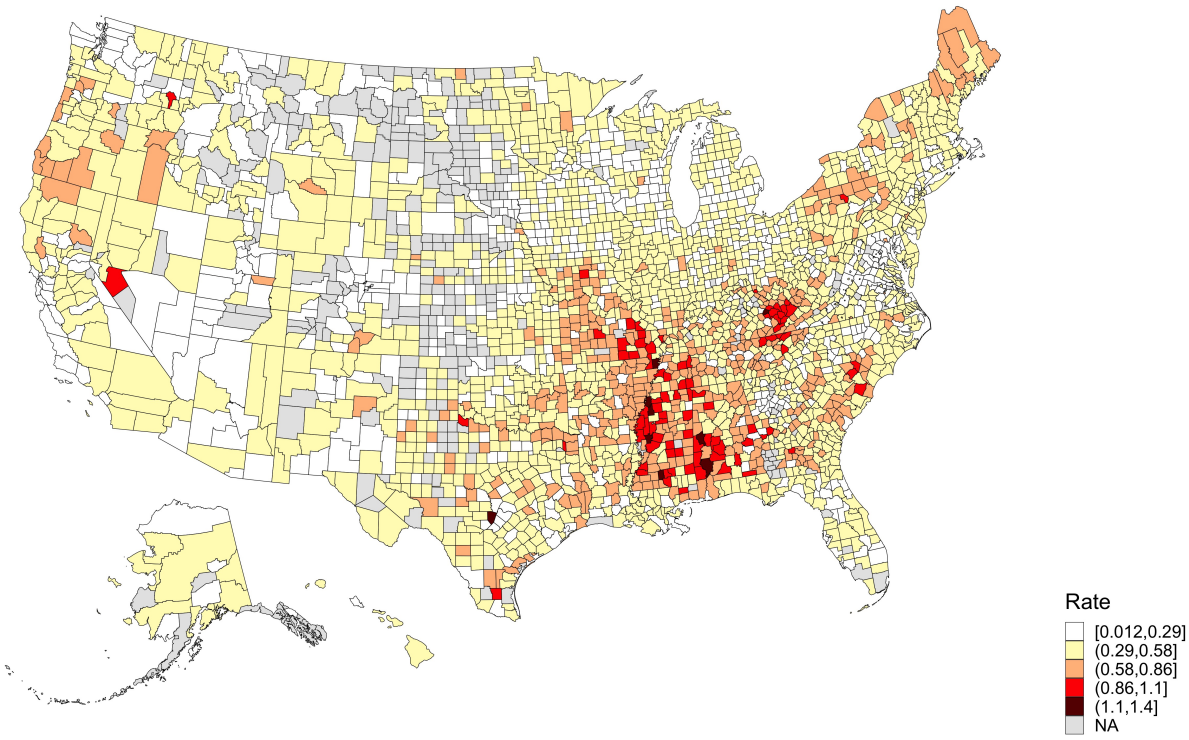
Figure 1: Combined SSDI & SSI Applications Rate, 2000 and 2015



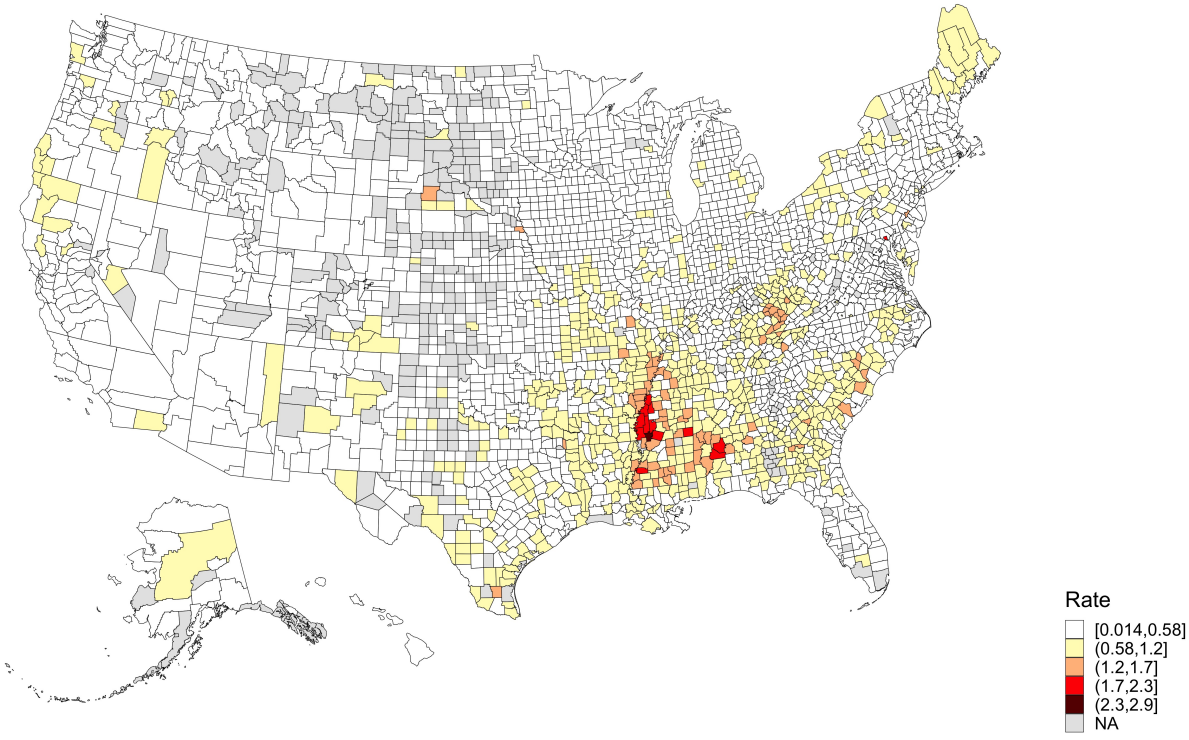
Notes: The maps display the county-level combined SSDI & SSI applications as share of the population 20-64 multiplied by 100 at the beginning (top, 2000) and at the end (bottom, 2015) of the sample. Counties are colored light gray are missing from the sample

Figure 2: SSDI & SSI Application Rate, 2015

(a) SSDI Application Rate

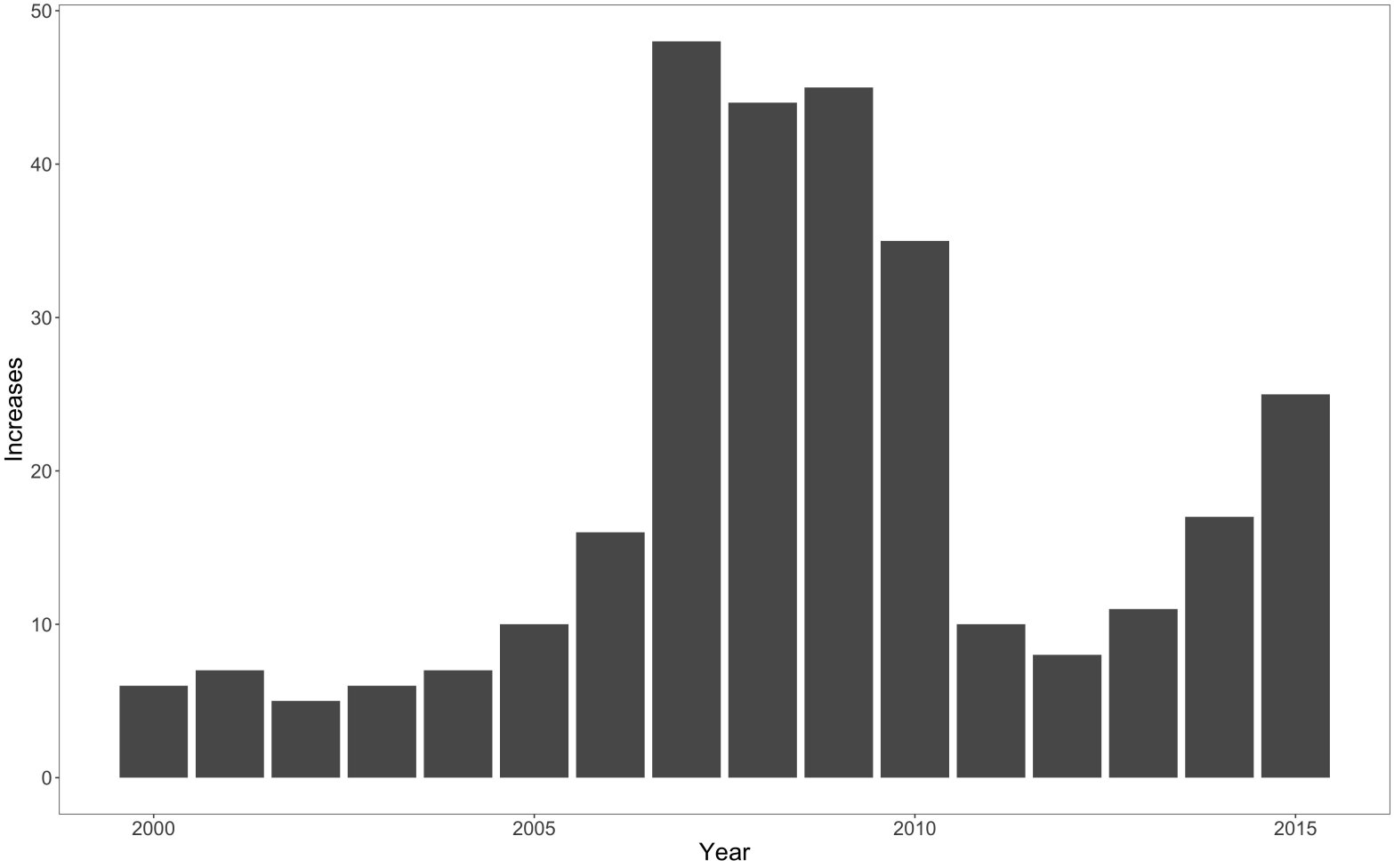


(b) SSI Application Rate



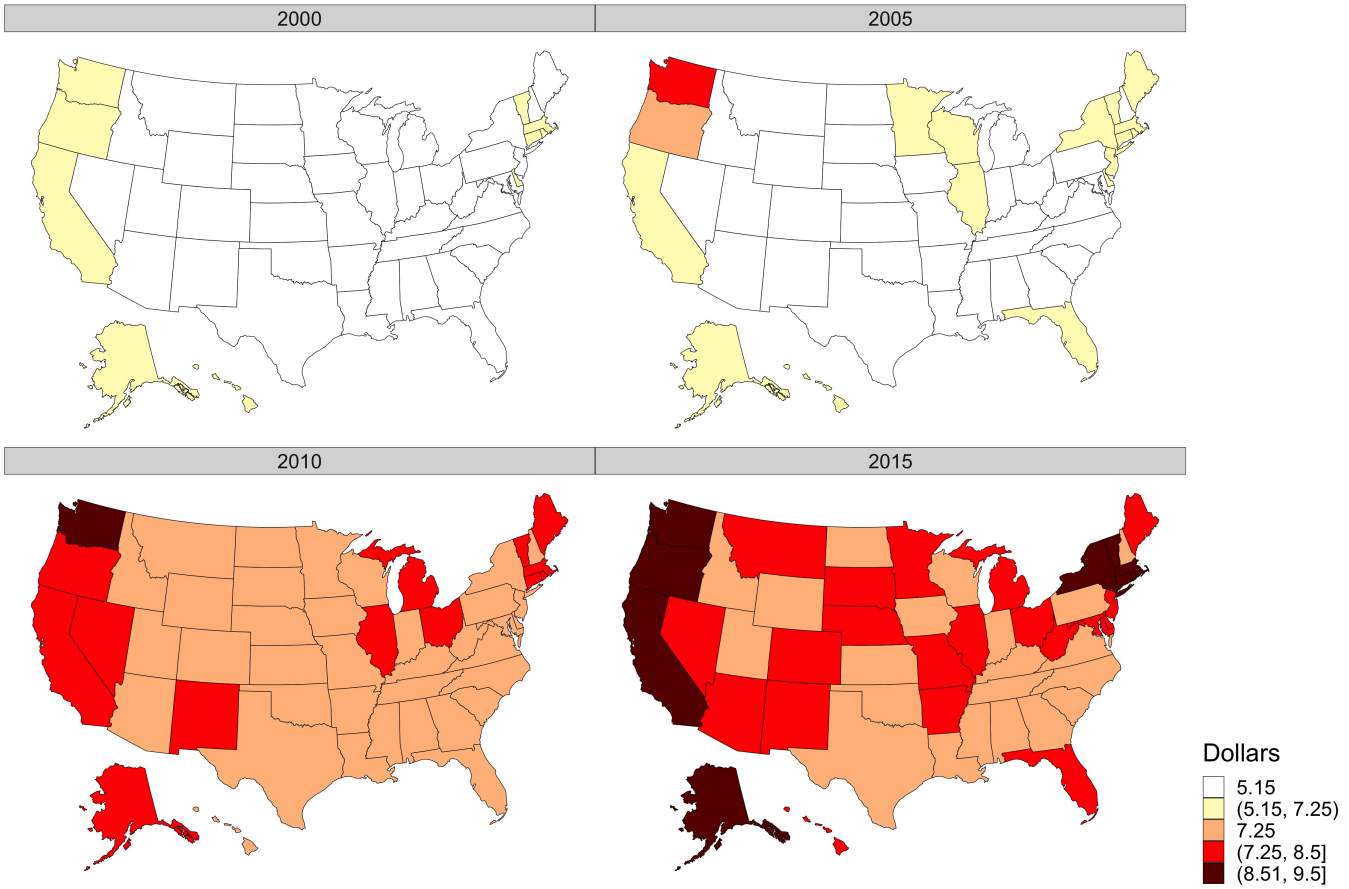
Notes: The map in panel (a) displays the county-level SSDI applications and in panel (b) the county-level SSI applications, both as share of population 20-64, multiplied by 100, in 2015. Buckets are chosen to be of identical length. Counties are colored light gray are missing from the sample.

Figure 3: Minimum Wage Increases by Year



Notes: The figure plots the number of increases in the state-level minimum wage over time. Both federal and state level minimum wage increases are included. Over the sample, the federal minimum wage was increased on three occasions: in 2007 from \$5.15 to \$5.85; in 2008 to \$6.55; and in 2009 to \$7.25.

Figure 4: State Minimum Wage 2000-2015



Notes: The figure plots the state-level minimum wage in nominal dollars over time. In the top panel for the years 2000 and 2005, states at the federal minimum wage ($5.15) are colored white. Similarly, in bottom panel for the years 2010 and 2015, states at the federal minimum wage ($7.25) are colored light orange.

Appendix

Table A.1: Relationship Between SSDI Applications and Minimum Wage by Age

	DV: SSDI Applications		
	18-39	40-54	55-64
Minimum Wage	0.013**	0.028**	0.026*
	(0.006)	(0.012)	(0.013)
Unemployment Rate	0.016***	0.029***	0.027***
	(0.004)	(0.006)	(0.005)
Per Capita Income	0.002**	0.001	−0.001
	(0.001)	(0.001)	(0.001)
Share of Adult Pop 50-64	0.022***	0.021***	0.006
	(0.006)	(0.007)	(0.009)
Percent Black	0.014	0.019	0.015
	(0.008)	(0.015)	(0.012)
Percent Hispanic	−0.047***	−0.028***	0.001
	(0.009)	(0.010)	(0.015)
Percent Female	−0.046***	−0.062***	−0.006
	(0.011)	(0.013)	(0.016)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	0.6434	1.185	1.406
Adjusted R^2	0.923	0.940	0.897
Observations	38,380	39,906	31,032

Notes: Table provides results from estimating Equation 1 on application rates by age. Application rates represent SSDI applications as share of the population 20-39 in Column (1), 40-54 in Column (2), and 55-64 in Column (3), multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.2: Relationship Between SSI Applications and Minimum Wage by Age

	DV: SSI Applications		
	18-39	40-54	55-64
Minimum Wage	0.021	0.026***	0.014*
	(0.015)	(0.009)	(0.008)
Unemployment Rate	0.034***	0.023***	0.018***
	(0.010)	(0.005)	(0.003)
Per Capita Income	0.006*	0.001	0.001
	(0.003)	(0.001)	(0.001)
Share of Adult Pop 50-64	0.080***	0.027***	0.013
	(0.017)	(0.007)	(0.008)
Percent Black	0.099**	0.020	0.021
	(0.041)	(0.016)	(0.014)
Percent Hispanic	−0.094***	−0.016	0.007
	(0.031)	(0.016)	(0.012)
Percent Female	−0.185***	−0.060***	−0.016
	(0.035)	(0.016)	(0.014)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	1.514	0.994	0.6764
Adjusted R^2	0.947	0.952	0.938
Observations	38,380	39,906	31,032

Notes: Table provides results from estimating Equation 1 on application rates by age. Application rates represent SSI applications as share of the population 20-39 in Column (1), 40-54 in Column (2), and 55-64 in Column (3), multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.3: Relationship Between SSDI Applications and Minimum Wage by Primary Condition

	DV: SSDI Applications		
	Rate (0-100) by Primary Condition		
	Mental	Muscular	Physical
Minimum Wage	0.003	0.012***	0.017***
	(0.003)	(0.004)	(0.004)
Unemployment Rate	0.003*	0.007***	0.010***
	(0.002)	(0.002)	(0.003)
Per Capita Income	−0.0001	0.0003	0.0005
	(0.0004)	(0.0005)	(0.0004)
Share of Adult Pop 50-64	0.003	0.004**	0.011***
	(0.002)	(0.002)	(0.004)
Percent Black	0.001	0.004	0.008*
	(0.003)	(0.003)	(0.005)
Percent Hispanic	−0.011***	−0.009***	−0.007*
	(0.003)	(0.003)	(0.004)
Percent Female	−0.006	−0.004	−0.013***
	(0.004)	(0.003)	(0.005)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	0.1769	0.3569	0.4136
Adjusted R^2	0.880	0.918	0.917
Observations	33,230	36,739	39,814

Notes: Table provides results from estimating Equation 1 on SSDI application rates by primary condition. Application rates represent SSDI applications for a given condition type as the share of the adult population 20-64, multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.4: Relationship Between SSI Applications and Minimum Wage by Primary Condition

	DV: SSI Applications		
	Rate (0-100) by Primary Condition		
	Mental	Muscular	Physical
Minimum Wage	0.009	0.010***	0.015***
	(0.007)	(0.003)	(0.004)
Unemployment Rate	0.006	0.006***	0.010***
	(0.004)	(0.001)	(0.003)
Per Capita Income	0.001	0.001	0.001
	(0.001)	(0.0004)	(0.001)
Share of Adult Pop 50-64	0.013**	0.004**	0.015***
	(0.005)	(0.002)	(0.004)
Percent Black	0.015	0.002	0.015*
	(0.009)	(0.004)	(0.009)
Percent Hispanic	−0.023**	−0.006*	−0.005
	(0.011)	(0.003)	(0.007)
Percent Female	−0.035***	−0.006**	−0.027***
	(0.011)	(0.003)	(0.008)
County FE	X	X	X
Year FE	X	X	X
County-Year Trends	X	X	X
Outcome Mean	0.1769	0.3569	0.4136
Adjusted R^2	0.910	0.916	0.922
Observations	33,230	36,739	39,814

Notes: Table provides results from estimating Equation 1 on SSI application rates by primary condition. Application rates represent SSI applications for a given condition type as the share of the adult population 20-64, multiplied by 100. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.5: Estimated Relationship Between SSDI Application and Minimum Wage, Border Counties Only

	DV: SSDI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	0.002	0.004	0.016	0.017		0.002
	(0.016)	(0.014)	(0.011)	(0.011)		(0.014)
Lag Minimum Wage					0.006	
					(0.007)	
Unemployment Rate	0.014***	0.016***	0.017***	0.019***	0.018***	0.013***
	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)
Per Capita Income		−0.0003		0.001	0.001	−0.002**
		(0.001)		(0.001)	(0.001)	(0.001)
Share of Adult Pop 50-64		0.009**		0.023***	0.022***	0.009
		(0.004)		(0.008)	(0.008)	(0.010)
Percent Black		−0.001		0.021*	0.022*	0.015
		(0.004)		(0.012)	(0.013)	(0.011)
Percent Hispanic		−0.006**		−0.030***	−0.030***	−0.013
		(0.003)		(0.010)	(0.010)	(0.011)
Percent Female		−0.022*		−0.043***	−0.043***	−0.025*
		(0.012)		(0.013)	(0.013)	(0.013)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	0.9589	0.9589	0.9589	0.9589	0.9589	5.117
Adjusted R^2	0.934	0.936	0.950	0.952	0.952	0.997
Observations	16,969	16,969	16,969	16,969	16,969	16,969

Notes: Table provides results from estimating Equation 1 for the sample in Table 1, restricted to counties along a state border. Dependent variable in Columns (1) - (5) is SSDI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.6: Estimated Relationship Between SSI Application and Minimum Wage, Border Counties Only

	DV: SSI Applications					
	Rate (0-100)					Log Applications
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	−0.013	−0.003	0.020	0.022*		−0.002
	(0.022)	(0.018)	(0.014)	(0.013)		(0.013)
Lag Minimum Wage					0.001	
					(0.012)	
Unemployment Rate	0.018**	0.018***	0.018**	0.021***	0.020***	0.013***
	(0.008)	(0.006)	(0.007)	(0.006)	(0.006)	(0.005)
Per Capita Income		−0.003***		0.001	0.001	−0.0003
		(0.001)		(0.002)	(0.002)	(0.002)
Share of Adult Pop 50-64		0.014**		0.044***	0.043***	0.019
		(0.006)		(0.014)	(0.014)	(0.015)
Percent Black		0.027***		0.077**	0.077**	0.028
		(0.009)		(0.033)	(0.033)	(0.019)
Percent Hispanic		−0.009**		−0.046**	−0.046**	−0.010
		(0.004)		(0.019)	(0.019)	(0.017)
Percent Female		−0.017		−0.081***	−0.081***	−0.022
		(0.016)		(0.028)	(0.029)	(0.017)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	1.055	1.055	1.055	1.055	1.055	5.117
Adjusted R^2	0.947	0.950	0.959	0.961	0.961	0.997
Observations	16,969	16,969	16,969	16,969	16,969	16,969

Notes: Table provides results from estimating Equation 1 for the sample in Table 1, restricted to counties along a state border. Dependent variable in Columns (1) - (5) is SSI applications as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of applications in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.7: Estimated Relationship Between SSDI & SSI Beneficiaries and Minimum Wage

	DV: SSDI & SSI Beneficiaries					
	Rate (0-100)					Log Beneficiaries
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	-0.192***	-0.103**	0.006	0.009		0.000
	(0.052)	(0.037)	(0.023)	(0.022)		(0.002)
Lag Minimum Wage					0.024	
					(0.026)	
Unemployment Rate	-0.004	-0.030	-0.024*	-0.017	-0.017	-0.008***
	(0.023)	(0.024)	(0.011)	(0.011)	(0.011)	(0.002)
Per Capita Income		-0.056***		-0.001	-0.001	-0.002*
		(0.011)		(0.004)	(0.004)	(0.001)
Share of Adult Pop 50-64		0.124***		0.082***	0.082***	0.007*
		(0.025)		(0.022)	(0.022)	(0.003)
Percent Black		0.056		-0.032	-0.032	0.006
		(0.040)		(0.028)	(0.028)	(0.007)
Percent Hispanic		-0.129***		-0.052	-0.051	0.009
		(0.026)		(0.044)	(0.044)	(0.008)
Percent Female		-0.255**		0.103**	0.103**	0.024*
		(0.090)		(0.039)	(0.039)	(0.012)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	8.44	8.44	8.44	8.44	8.44	7.21
Adjusted R^2	0.964	0.974	0.994	0.994	0.994	1.000
Observations	56,655	56,655	56,655	56,655	56,655	56,655

Notes: Table provides results from estimating Equation 1 for enrollment sample. Dependent variable in Columns (1) - (5) is combined SSDI & SSI beneficiaries as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of combined SSDI & SSI beneficiaries in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.8: Estimated Relationship Between SSDI Beneficiaries and Minimum Wage

	DV: SSDI Beneficiaries					
	Rate (0-100)					Log Beneficiaries
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	-0.107**	-0.050*	0.026	0.026		-0.000
	(0.034)	(0.024)	(0.020)	(0.017)		(0.003)
Lag Minimum Wage					0.022	
					(0.020)	
Unemployment Rate	-0.000	-0.012	-0.011	-0.004	-0.005	-0.007**
	(0.015)	(0.016)	(0.007)	(0.008)	(0.008)	(0.002)
Per Capita Income		-0.037***		0.002	0.002	-0.001
		(0.008)		(0.003)	(0.003)	(0.001)
Share of Adult Pop 50-64		0.086***		0.072***	0.072***	0.009**
		(0.016)		(0.014)	(0.014)	(0.003)
Percent Black		0.013		-0.022	-0.020	0.003
		(0.022)		(0.017)	(0.017)	(0.009)
Percent Hispanic		-0.109***		-0.041	-0.042	0.011
		(0.015)		(0.025)	(0.025)	(0.009)
Percent Female		-0.236***		0.019	0.018	0.019
		(0.060)		(0.027)	(0.027)	(0.012)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	5.40	5.40	5.40	5.40	5.40	6.68
Adjusted R^2	0.955	0.968	0.993	0.994	0.994	1.000
Observations	58,575	58,575	58,575	58,575	58,575	58,575

Notes: Table provides results from estimating Equation 1 for enrollment sample. Dependent variable in Columns (1) - (5) is SSDI beneficiaries as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of SSDI beneficiaries in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table A.9: Estimated Relationship Between SSI Beneficiaries and Minimum Wage

	DV: SSI Beneficiaries					
	Rate (0-100)					Log Beneficiaries
	(1)	(2)	(3)	(4)	(5)	(6)
Minimum Wage	-0.085**	-0.053*	-0.021*	-0.017		-0.003
	(0.028)	(0.021)	(0.009)	(0.010)		(0.004)
Lag Minimum Wage					0.002	
					(0.008)	
Unemployment Rate	-0.004	-0.018*	-0.013**	-0.013**	-0.012*	-0.009***
	(0.009)	(0.009)	(0.005)	(0.005)	(0.005)	(0.002)
Per Capita Income		-0.019***		-0.003*	-0.004**	-0.002***
		(0.003)		(0.001)	(0.001)	(0.001)
Share of Adult Pop 50-64		0.037***		0.010	0.010	0.002
		(0.010)		(0.011)	(0.011)	(0.003)
Percent Black		0.043*		-0.010	-0.011	0.013
		(0.019)		(0.016)	(0.016)	(0.007)
Percent Hispanic		-0.020		-0.010	-0.009	0.005
		(0.014)		(0.022)	(0.022)	(0.009)
Percent Female		-0.016		0.084***	0.086***	0.031**
		(0.034)		(0.016)	(0.016)	(0.011)
County FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
County-Year Trends			X	X	X	X
Outcome Mean	2.97	2.97	2.97	2.97	2.97	6.085
Adjusted R^2	0.973	0.978	0.992	0.993	0.993	0.999
Observations	56,655	56,655	56,655	56,655	56,655	56,655

Notes: Table provides results from estimating Equation 1 for enrollment sample. Dependent variable in Columns (1) - (5) is SSI beneficiaries as share of the population 20-64, multiplied by 100. Dependent variable in Column (6) is log number of SSI beneficiaries in each county-year. Specifications include county fixed effects, year fixed effects and county-specific linear time trends as indicated in table. Observations are weighted by county population and standard errors are clustered at the state level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

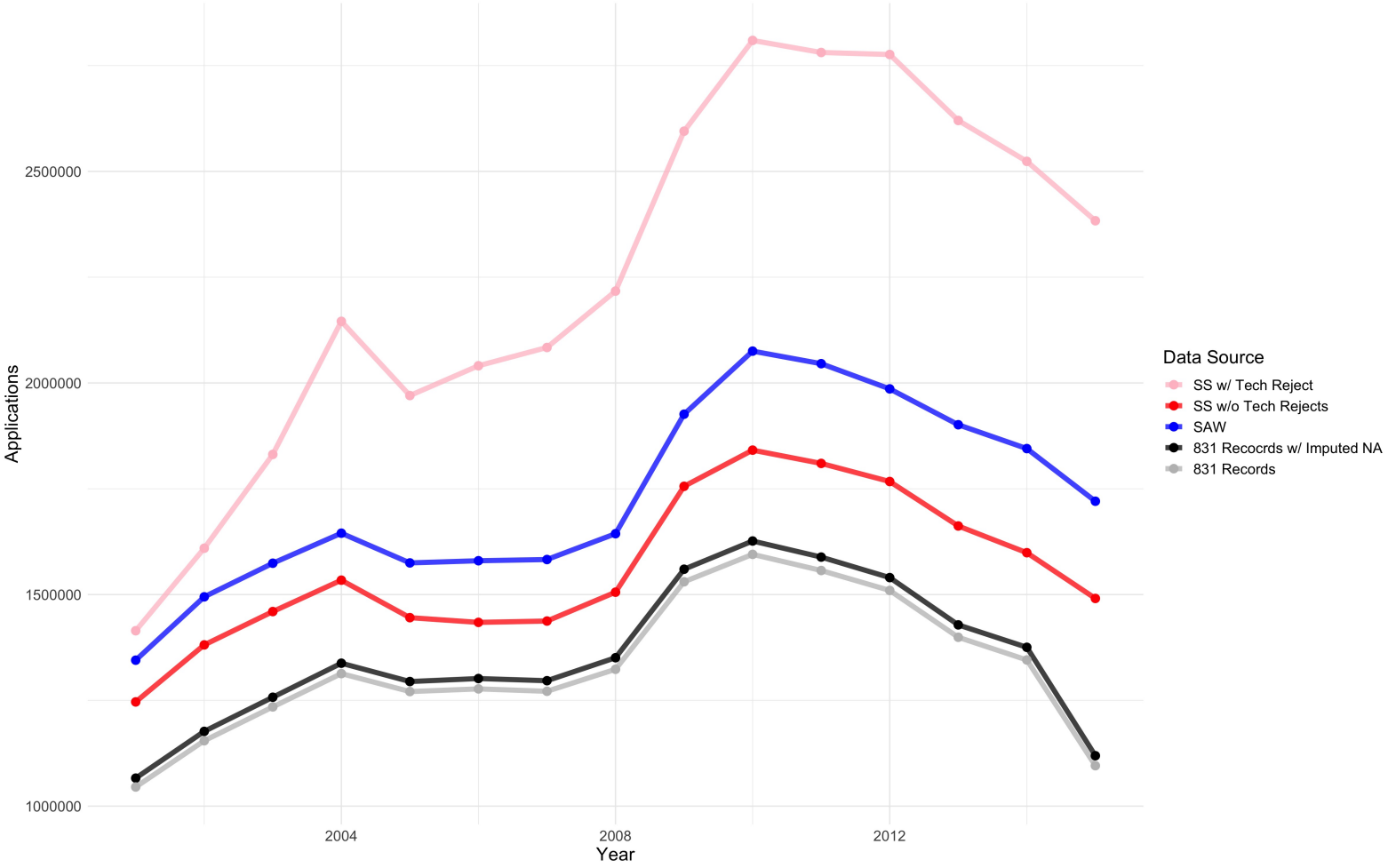
Table A.10: State Summary Statistics, 2000 & 2015

State	Combined SSI & SSDI Application Rate		SSDI Enrollment Rate		SSI Enrollment Rate	
	2000	2015	2000	2015	2000	2015
Alabama	2.09	2.29	4.64	8.18	3.47	4.08
Alaska	1.08	0.98	1.93	2.74	1.50	1.80
Arizona	1.00	0.80	2.89	3.99	1.60	1.79
Arkansas	1.96	1.95	4.96	8.15	3.06	3.93
California	1.13	1.07	2.15	2.96	2.63	2.57
Colorado	0.72	0.62	2.30	3.17	1.25	1.39
Connecticut	1.00	0.95	2.67	3.81	1.54	1.87
Delaware	1.29	1.44	3.13	4.96	1.50	1.91
Florida	1.40	1.30	3.35	4.81	1.96	2.31
Georgia	1.28	1.09	3.15	4.68	2.21	2.61
Hawaii	1.00	1.00	1.91	2.70	1.51	1.70
Idaho	1.15	0.95	2.81	4.73	1.65	2.26
Illinois	1.26	1.20	2.40	3.74	2.08	2.21
Indiana	1.22	1.28	3.07	5.38	1.62	2.33
Iowa	1.07	0.99	2.79	4.35	1.62	1.99
Kansas	1.31	1.19	2.73	4.44	1.53	1.92
Kentucky	2.01	1.63	5.18	7.85	4.70	4.77
Louisiana	1.94	1.61	3.42	5.66	3.66	4.06
Maine	1.44	1.72	4.62	7.42	2.74	3.52
Maryland	0.97	1.04	2.17	3.60	1.55	2.05
Massachusetts	1.18	0.96	3.24	4.94	2.67	2.78
Michigan	1.27	1.09	3.13	5.96	2.37	3.25
Minnesota	0.85	1.08	2.34	3.88	1.39	1.82
Mississippi	2.90	2.83	5.22	7.53	4.34	4.48
Missouri	1.70	1.79	3.78	6.18	2.23	2.77
Montana	1.19	0.86	3.21	4.63	1.84	2.14
Nebraska	1.29	1.16	2.59	3.87	1.41	1.78
Nevada	1.03	1.01	2.56	3.80	1.16	1.72
New Hampshire	0.83	1.26	3.05	5.92	1.09	1.83
New Jersey	1.00	1.17	2.50	3.80	1.52	1.84
New Mexico	1.30	0.99	3.02	5.40	2.50	3.13
New York	1.39	1.40	2.98	4.26	2.92	2.79
North Carolina	1.55	1.28	3.96	5.54	2.11	2.50
North Dakota	0.94	0.91	2.46	3.09	1.38	1.27
Ohio	1.34	1.27	2.93	5.22	2.45	3.21
Oklahoma	1.38	1.33	3.25	5.62	2.16	2.87
Oregon	1.35	1.36	2.75	4.57	1.66	2.40
Pennsylvania	1.44	1.75	3.02	5.38	2.51	3.08
Rhode Island	1.28	1.24	3.81	5.85	2.74	3.36
South Carolina	1.65	1.69	4.25	6.22	2.50	2.66
South Dakota	1.17	0.85	2.83	3.94	1.74	1.92
Tennessee	1.87	1.84	4.17	6.41	2.92	3.22
Texas	1.26	1.34	2.09	3.50	1.62	2.12
Utah	0.79	0.77	1.76	2.85	1.07	1.24
Vermont	1.09	1.06	3.40	6.02	2.26	3.08
Virginia	1.01	0.78	2.93	4.18	1.68	1.95
Washington	1.08	0.85	2.53	4.13	1.84	2.26
West Virginia	1.96	1.42	5.62	8.50	4.73	5.21
Wisconsin	1.02	0.97	2.64	4.74	1.71	2.30
Wyoming	1.09	1.15	2.71	3.83	1.37	1.41

Notes: State application and enrollment rates are calculated by aggregating the county-level data. Each column represents the outcome variable as a share of the state population 20-64, multiplied by 100. Counties with missing application/enrollment information are excluded from the aggregation.

Figure B.1: SSDI Data Comparison

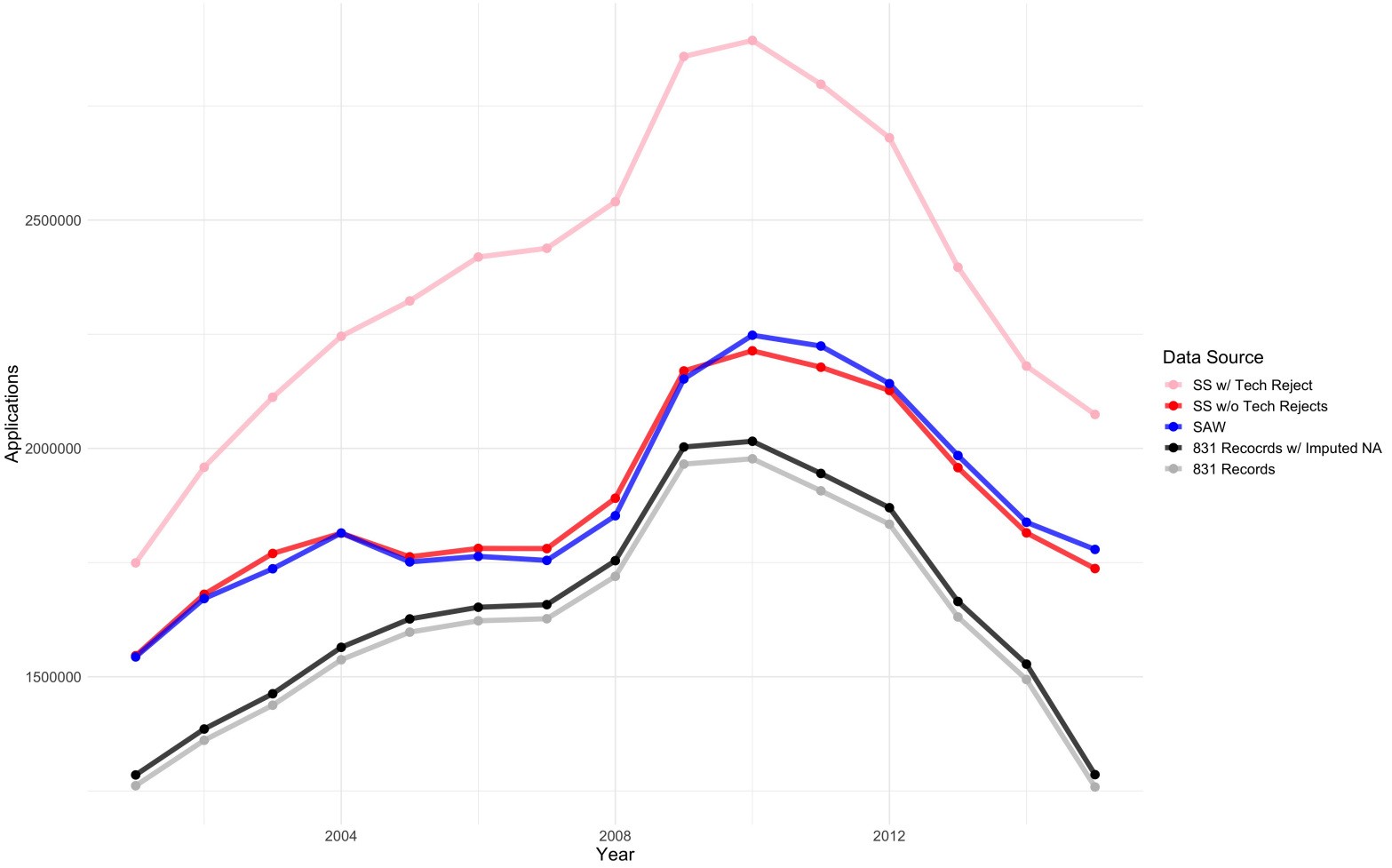
Comparing the SSDI Statistical Supplement (SS), the State Agency Workload (SAW), and 831 Records



Notes: The graph displays the total number of SSDI applications by year according to three different data sources: the SSDI Statistical Supplement (SS), the State Agency Workload (SAW), and the 831 Records. For SS, numbers are presented at the annual level with and without the inclusion of first round technical rejections. SAW figures are maintained at the state-by-month level and 831 numbers are at the county-by-year level. Both are aggregated up to an annual national level. For 831, missing values are imputed by multiplying a county's population in a given year with that county's respective state-year average application rate.

Figure B.2: SSI Data Comparison

Comparing the SSDI Statistical Supplement (SS), the State Agency Workload (SAW), and 831 Records



Notes: The graph displays the total number of SSI applications by year according to three different data sources: the SSI Statistical Supplement (SS), the State Agency Workload (SAW), and the 831 Records. For SS, numbers are presented at the annual level with and without the inclusion of first round technical rejections. SAW figures are maintained at the state-by-month level and 831 numbers are at the county-by-year level. Both are aggregated up to an annual national level. For 831, missing values are imputed by multiplying a county's population in a given year with that county's respective state-year average application rate.