CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

COUNTY-LEVEL DRIVERS OF DISABILITY BENEFIT CLAIMS IN TIMES OF COVID-19

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Abstract

The COVID-19 pandemic likely affected applications and awards for Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI). This paper uses Social Security Administration (SSA) administrative data on applications and awards, combined with county-level data on COVID-19 severity, unemployment, and proximity to an SSA field office, to understand drivers of application and award rates. Specifically, it examines how changes from 2019 to 2020 in SSI and SSDI application and award rates were related to county-level factors affected by the pandemic.

The paper found the following:

- Counties that were closer to as SSA field office experienced larger declines in SSI and SSDI application and award rates between 2019 and 2020 compared with counties further away from the nearest field office.
- SSDI application rates grew more in counties with a larger increase in unemployment rates.
- Changes in SSI and SSDI application and award rates were not consistently associated with levels of COVID-19 cases and deaths.

The findings have several policy implications:

- Applying for disability benefits in person at an SSA field office seems to be an important factor. When field offices closed early during the pandemic, it affected potential applicants for SSI and SSDI who would have otherwise likely applied in person and were less likely to do so due to field office closures.
- Beyond the closure of field offices, the COVID-19 pandemic did not systematically disrupt SSI and SSDI applications and awards during our analysis period (which went to the end of 2020).

Introduction

The COVID-19 pandemic meaningfully disrupted life in the United States starting in March 2020. Economic and labor market activity sharply declined as new cases and virus-related deaths increased (see, for example, Coibion et al. 2020 and Goda and Soltas 2022). To slow the spread of the virus, policymakers and public health officials imposed lockdowns, closed businesses, and enacted other restrictions that further affected employment and demand for goods and services (see, for example, Arnon et al. 2020). Economic conditions have improved as new mitigation strategies, treatments, and vaccines were developed, but the pandemic's impacts still have implications for people affected by the virus and for government programs that support people with health conditions or disabilities.

Applications and awards for Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI)—the primary income support programs for people with disabilities in the United States—are sensitive to demographics and economic conditions. Applications to SSI and SSDI can increase for a variety of reasons, such as the aging of the general population or a decline in labor market conditions (Maestas et al. 2015). The potential effects of a decline in labor market conditions on SSI and SSDI award rates are more difficult to determine, in part because it is unknown whether those induced to apply during an economic downturn are more likely to be eligible than people who applied before it.

The economic, health, and program impacts of the COVID-19 pandemic could have affected applications and awards for SSI and SSDI. When labor market conditions deteriorated at the start of the pandemic, some people with disabilities could have applied to SSI or SSDI for income support because they were laid off or could not find work. Some others who contracted the virus but did not fully recover might have applied for SSI or SSDI benefits because their ongoing symptoms made them unable to work. In response to the pandemic, the Social Security Administration (SSA), which administers the SSI and SSDI programs, closed all its field offices. For many communities, the closure of all SSA field offices removed an important link between SSA and potential SSI and SSDI applicants, which could have affected applications and awards. Understanding the relationship between the pandemic's effects and SSI and SSDI application and award rates has important implications for administering and improving these programs.

Evidence about how the COVID-19 pandemic has affected the SSI and SSDI programs is only starting to emerge. Maestas and Mullen (2022) used federal statistics to explore how the

pandemic has influenced SSDI and did not find a positive relationship between the unemployment rate and SSDI applications and awards. Other studies examined the effects of the pandemic on programs administered by SSA that are not connected to disability, most notably the Old Age and Survivors Insurance program (for example, see Biggs 2020 or Goda et al. 2022). Evidence is only starting to emerge because the effects of the pandemic on outcomes such as SSI and SSDI awards, which can take years to decide after appeals, are still developing. Nevertheless, this study and others focused on how the pandemic has affected disability programs to date make important contributions by documenting associations between the pandemic and programmatic outcomes at this early stage and discussing the potential longer-term implications for disability programs and policies.

We used county-level administrative data from SSA to examine changes in SSI and SSDI application and early award rates between 2019 and the initial months of the pandemic in 2020. By focusing on the first few months of the pandemic, our analysis captured changes in disability benefit applications and awards likely driven by the economic disruptions and office closures due to the pandemic. COVID-19 infections, and especially long COVID, may eventually contribute to increasing eligibility for and receipt of SSI and SSDI (Hereth et al. 2022), but these long-term effects are beyond the scope of this paper. We first explored monthly application and award rates for both programs from 2016 through 2021 to determine whether changes in trends occurred at the start of the pandemic. We then used regression analyses to examine correlations between changes in SSI and SSDI application and award rates from 2019 to 2020 and three factors affected by the pandemic: the unemployment rate, COVID-19 cases and deaths, and proximity to an SSA field office.

Background

SSI provides income support to certain Americans with limited income and assets, such as children and working-age adults with disabilities. The federal SSI payment amounts in 2022 are $841 for an eligible individual and $1,261 for an eligible couple.[1] In contrast to SSDI benefits, the federal portion of SSI payments are financed by general funds from the U.S. Treasury. Some states also provide an additional supplemental SSI payment at their discretion. In September 2022, SSI made payments of about $4.9 billion in total to people with disabilities,

[1] https://www.ssa.gov/oact/cola/SSI.html, accessed November 4, 2022.

including 6.5 million people ages 18 and older and 1 million children with disabilities and their families.[2] SSI recipients in most states are eligible for Medicaid benefits.

SSDI is the primary income replacement program for Americans who can no longer work because of a disability. The program pays a monthly cash benefit to disabled workers and their eligible dependents. Workers must be vested in the program and have a qualifying disability to receive benefits. SSDI benefits are paid from the Disability Insurance (DI) Trust Fund, which is financed by a portion of the Federal Insurance Contributions Act tax. The amount each beneficiary receives is determined by their contributions to the DI Trust Fund, with higher earners receiving a lower overall level of income replacement. In September 2022, SSDI paid out about $11 billion in total benefits to 7.7 million disabled workers; 93,000 spouses of disabled workers; and 1.2 million children of disabled workers.[3] Most SSDI beneficiaries become eligible for Medicare benefits 24 months after their first month of entitlement to benefits, though beneficiaries with certain conditions are immediately eligible for Medicare benefits.

The COVID-19 pandemic created significant disruptions to daily life in the U.S. that might have affected SSI and SSDI applications and benefit payments. As of October 2022, there have been at least 96.6 million confirmed infections and 1.06 million COVID-19-related deaths.[4] Details are still emerging about the condition, but some people who contract the virus get long COVID—cases of COVID-19 in which the symptoms persist beyond the first few weeks or months after infection (Sheikh and Belluck 2022). To slow the spread of the virus during the pandemic, starting in March 2020 governments at all levels enacted a variety of policies, such as issuing stay-at-home orders or closing or restricting capacity at businesses or other in-person settings (Adolph et al. 2021). These restrictions and prohibitions have mostly been cancelled or discontinued as vaccinations and effective treatments for COVID-19 have reduced the risk of severe illness.[5] Nevertheless, the COVID-19 pandemic and public health policies designed to prevent the spread of the virus disrupted the U.S. labor market. From 2019 to 2020, the employment-to-population ratio decreased from 38.9 percent to 38.4 percent for people with disabilities and from 78.6 percent to 75.8 percent for people without disabilities (Institute on Disability 2021). To mitigate the economic impact of the pandemic, the federal government and

[2] https://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/, accessed November 4, 2022.
[3] https://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/, accessed November 4, 2022.
[4] https://www.nytimes.com/interactive/2021/us/covid-cases.html, accessed October 13, 2022.
[5] https://www.cdc.gov/media/releases/2022/p0811-covid-guidance.html, accessed October 13, 2022.

many state governments provided stimulus payments and other forms of relief. However, it is possible that some people who unexpectedly stopped working or were unable to find work because of the COVID-19 pandemic were induced to apply to SSI or SSDI for income support. People who contract long COVID or otherwise have substantive functional limitations because of contracting the virus might also apply for SSI or SSDI benefits.

In response to the COVID-19 pandemic, SSA altered key processes in ways that could have affected SSI and SSDI applications and benefit payments. SSA has more than 1,200 field offices that assist applicants to and recipients and beneficiaries of programs administered by SSA.[6] On March 17, 2020, SSA closed all field offices to help slow the spread of the virus.[7] While the offices were closed, people could not apply for benefits or receive assistance in person. The offices did not reopen until April 2022.[8]

Data Sources and Summary Statistics

Our analysis focused on SSI and SSDI outcomes derived from SSA administrative data. Our analysis sample included SSI adults and SSDI disabled workers—and not their dependents. The sample included all applications and awards observed in administrative data. We accessed the Structured Data Repository (SDR) for information on SSDI claims, the Master Beneficiary Record (MBR) for information on SSDI awards, and the Supplemental Security Record (SSR) for information on SSI applications and awards. We pulled the data for the 50 U.S. states and the District of Columbia from January 2018 through December 2021 in May 2022 and aggregated individual claims and award data to the county-month level, determining how many people applied for or were awarded disability benefits in each county and each month. (For our regression analyses, we only used data through January 2021.) Due to data privacy reasons, we did not observe county-month units with fewer than five applications or awards. In these cases, we imputed a value by randomly assigning a number between 0 and 4 with equal probability. We expressed all outcomes in rates per 100,000 individuals, using the number of individuals ages 18 to 64 on the county level from the 2019 American Community Survey to scale statistics

[6] https://www.ssa.gov/policy/docs/statcomps/supplement/2021/2f1-2f3.html, accessed October 14, 2022.
[7] https://www.forbes.com/sites/kellyphillipserb/2020/03/16/social-security-offices-closing-due-to-coronavirus/?sh=3ccaed18a005, accessed October 14, 2022.
[8] https://www.disabilityscoop.com/2022/04/05/social-security-reopening-offices-nationwide/29791/, accessed October 14, 2022.

from SSA administrative data. Table 1 shows summary statistics for SSI and SSDI application and award rates on the county-month level. In the remainder of this section, we describe the data sources and the measures we derived from them in more detail.

Table 1. *Summary Statistics for SSI and SSDI Outcomes on the County-Month Level per 100,000 Individuals Ages 18 to 64, January 2018 to December 2021*

	SSI applications	SSI awards	SSDI applications	SSDI awards
Mean	71.35	33.96	92.04	41.38
Standard deviation	50.14	43.25	55.21	43.77
Minimum	0.47	0.13	2.17	0.01
Maximum	632.41	399.20	2072.16	474.93
Observations	151,104	165,996	147,360	156,650

Notes: SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Our SSDI application data are from the SDR. The SDR collects information from the Electronic Disability Collect System, which SSA field offices use to collect and track data related to SSDI applicants' disabling conditions. For each individual in the SDR, we identify the earliest SSDI application and include individuals with an earliest application date of January 2018 or later. We then deduplicated applications whenever an initial claim was followed by another SSDI application within 180 days. We deduplicated applications in this way because a rapid reapplication likely does not reflect a new decision to apply for disability benefits but rather a need to address an issue with the initial application. In the case of duplicate SSDI applications, we only kept the first instance. To aggregate individual level SDR data to the county level, we matched zip codes from individual records to counties using a crosswalk from the Missouri Census Data Center.[9] For zip codes that span multiple counties, we used the population shares contained in the crosswalk to calculate weighted sums of claims and awards. There were about 92 SSDI applications per 100,000 individuals per county and month, on average. This corresponds to about 198,000 SSDI applications per month nationwide.

We used the MBR to construct county-level SSDI awards. The MBR contains information on each claimant who has applied SSDI, Old Age and Survivors Insurance, and other types of benefits. We used the date of current SSDI benefit entitlement as the SSDI award

[9] https://mcdc.missouri.edu/geography/ZIP-resources.html, accessed November 29, 2022.

date. The MBR contains county of residence, so we directly calculated the total number of SSDI awards for each county and month. On average, 41 per 100,000 individuals were awarded SSDI benefits per county and month, corresponding to about 89,000 awards nationwide. We did not use the MBR to capture SSDI applications, because the MBR does not include pending applications.

Data on SSI come from the SSR—a database that captures information on all individuals who have applied for or received SSI payments. We identified application dates directly and used initial payment dates as the dates of award. Similar to the MBR, the SSR contains county-level information for each individual, so it was straightforward to create county-level SSI application and award statistics for January 2018 through December 2021. There were about 71 SSI applications and 34 SSI awards, on average, per 100,000 individuals per county and month. Nationwide, this would be about 153,000 and 73,000 per month.

The award rates we examined for SSI and SSDI are preliminary, because a meaningful number of appeals for claims initially denied in 2020 have not been adjudicated. There are various levels of appeal, and final decisions sometimes occur years after the initial denial. For example, appeals adjudicated in August 2022 at the Administrative Law Judge level—which occurs after initial decisions and a redetermination—had a 7–24 month wait time depending on which office held the hearing.[10] Applicants who appeal often have their initial denial reversed. For SSDI applicants in 2016, 35.9 percent of the 1,554,336 initial SSDI applications were allowed, and 49.8 percent of the 386,135 appeals decided at the Administrative Law Judge level or higher were allowed.[11] Because of this program feature, our findings for the SSI and SSDI award rates should be considered preliminary.

In addition to SSI and SSDI outcome measures derived from SSA administrative data, our analysis also used several covariates, including health, labor market, and demographic information. To assess how the COVID-19 pandemic affected SSDI and SSI application and award rates, we used two county-level measures: cases and deaths per 100,000 individuals. We obtained these data from COVID Act Now's U.S. COVID Tracker.[12] Cases and deaths are measured daily, and we sum them up to the monthly level. To help capture the labor market

[10] https://www.ssa.gov/appeals/DataSets/01_NetStat_Report.html, accessed November 7, 2022.
[11] https://www.ssa.gov/policy/docs/statcomps/di_asr/2020/sect04.html#table61, accessed November 21, 2022.
[12] https://covidactnow.org/, accessed November 29, 2022.

effects of the pandemic, we accessed monthly county-level unemployment rates from the Bureau of Labor Statistics' Local Area Unemployment Statistics.[13] Finally, to account for the effects of SSA field office closures, we determined which counties had a field office. For counties without a field office, we calculated in miles the distance from the county centroid to the closest field office using the fastest route according to Google Maps. For counties with a field office, we set this distance to zero, although field offices are not located in the center of the county. Finally, we accounted for county-level demographic and socio-economic variables that we obtained from the American Community Survey. Specifically, we included total population size; population density; rurality; median age; fractions female; White, Black, Asian, and Hispanic; percentage of the population living in group quarters; with a college degree or higher education; speaking English very well or better; and median income. Table 2 contains summary statistics for the county-level and county-month-level explanatory variables.

Table 2. *Summary Statistics for Explanatory Variables*

County-level covariates	Mean	Standard deviation
SSA field office in county	0.275	0.446
Distance to closest SSA field office in counties without a field office (miles)	34.4	46.4
Population size, ages 18 to 64	66,855	220,551
Population density	0.497	0.288
Rural	0.627	0.484
Median age	41.4	5.4
Percent female	50.0	2.3
Percent Hispanic	11.6	19.4
Percent White	82.5	17.2
Percent Black	9.2	14.6
Percent Asian	1.3	2.8
Percent living in group quarters	3.4	4.5
Percent with college education or higher	22.0	9.5
Percent who speak English less than very well	3.2	4.4
Median household income	$52,643	$14,989
County-month level covariates		
Unemployment rate	5.0	2.8
COVID-19 cases per 100,000 individuals	32.4	43.9
COVID-19 deaths per 100,000 individuals	0.47	0.76

Note: Our sample included 3,219 counties and up to 157,788 county-month observations.
SSA = Social Security Administration.

[13] https://www.bls.gov/lau/, accessed November 29, 2022.

Methods

To assess how SSI and SSDI application and award rates were associated with county-level covariates measuring the severity of the pandemic, its economic consequences, and field office closures, we estimated linear regression models using the following functional form:

$$y_{c,\Delta} = X_c\beta + Z_c\gamma + \mu_{s(c)} + u_c$$

In the model, $y_{c,\Delta}$ is the outcome of interest: the percentage change in SSI or SSDI applications or awards per 100,000 individuals ages 18 to 64 per month from a period in 2019 to the same period in 2020 in county c. We considered the periods April through June, April through September, and April through January of the following year to capture the short-term and medium-term effects of the pandemic's onset. For each time period, we summed up the corresponding county-month-level counts of SSI and SSDI application and award rates. For example, for the April through June period, we calculated the outcome as the percentage change in the total number of SSI or SSDI applications or awards per 100,000 people ages 18 to 64 between April to June 2019 and April to June 2020. X_c includes our main covariates of interest: the corresponding percentage change in the unemployment rate, COVID cases and deaths per 100,000 population, an indicator whether there was an SSA field office in the county before March 2020, and distance to the closest field office (for counties without a field office). We measured unemployment and COVID-19 cases and deaths in the periods March through May, March through August, and March through December, according to the period for the outcome variable. That is, we lagged changes in the unemployment rate and COVID-19 cases and deaths by one month relative to the disability benefit outcomes on the left-hand side of the regression. We took the monthly means for COVID-19 cases and deaths and the unemployment rate over the respective months. Z_c includes the demographic and socio-economic controls listed in Table 2, $\mu_{s(c)}$ is a state fixed effect, and u_c is an error term. The parameters of interest are the vector β, which measures the association between the county-level covariates of interest and the change in SSI and SSDI outcomes. In the results section below, we report standardized beta coefficients to facilitate the interpretation of associations between the various regressors and the outcomes. Beta coefficients show by how many standard deviations the outcome changes when a regressor increases by one standard deviation. We used Stata, version 17.0 to estimate the regressions and obtained robust standard errors.

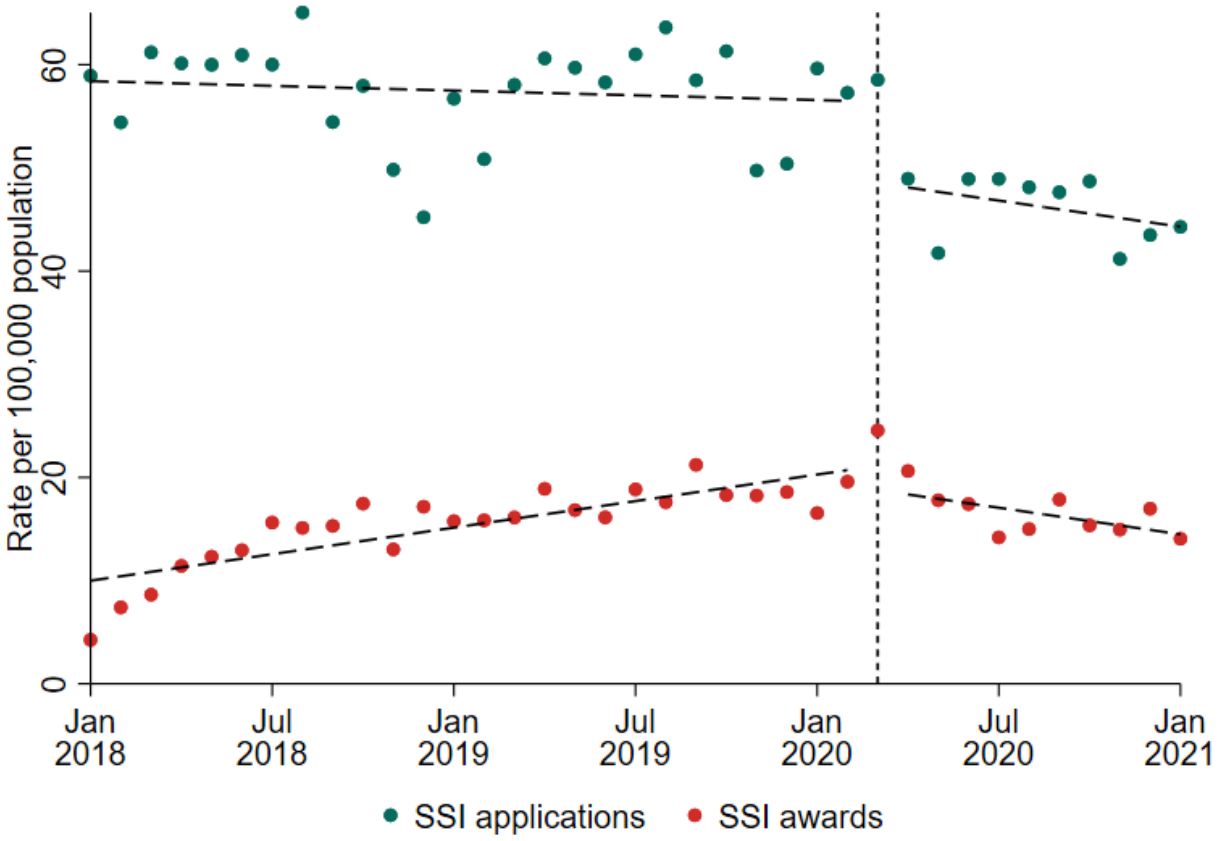
Results

In this section, we initially describe trends in our outcomes of interest—SSI and SSDI application and award rates—from 2018 through the end of 2021 and then estimate the relationship between the outcomes and factors we hypothesized were associated with them.

Summary of SSI and SSDI Application and Award Rates

A visual inspection of unadjusted SSI and SSDI application and award trends show a noticeable decline at the start of the pandemic, especially for SSI. In Figure 1 and Figure 2, we plot average SSI and SSDI application and award rates per 100,000 individuals, respectively. We weighted by county population size when calculating month-level means. SSI application rates experienced a sharp decline when the COVID-19 pandemic began in March 2020 and then continued on a downward trend. The decline in SSI award rates at the start of the pandemic was not as pronounced as for SSI applications, but there was a visible decline in March 2020. SSI applications steadily increased before the pandemic, but this trend reversed after March 2020. Similarly, SSDI application and award rates slightly decreased or were flat before the pandemic. After March 2020, the trends in both SSDI outcomes became more negative.

Figure 1. *Monthly SSI Application and Award Rates Over Time*



Notes: The vertical dashed line represents the start of the COVID-19 pandemic. The dashed lines superimposed on the scatter plot show the best linear fit, separately for the periods before and after the start of the pandemic.
SSI = Supplemental Security Income.

Figure 2. *Monthly SSDI Application and Award Rates Over Time*

Notes: The vertical dashed line represents the start of the COVID-19 pandemic. The dashed lines superimposed on the scatter plot show the best linear fit, separately for the periods before and after the start of the pandemic. SSDI = Social Security Disability Insurance.

The outcomes of interest in our regression analyses also suggest that SSI and SSDI application and award rates declined in 2020 after the COVID-19 pandemic began. Table 3 shows the percentage change in SSI and SSDI application and award rates between three periods in 2019 and the corresponding three periods in 2020: April to June, April to September, and April to January. SSI applications, SSDI applications, and SSDI awards declined between 2019 and the corresponding period in 2020 for all three periods. For SSI and SSDI applications, the declines were 10 to 12 percent and 7 to 8 percent, respectively. For SSDI awards, the magnitude of the decline increased with the length of the time period, ranging from 3 to 11 percent. In contrast, SSI award rates increased for all three periods. As shown in Figure 1, SSI award rates increased over time during the pre-pandemic period. Though SSI award rates started to decline after March 2020, this did not fully compensate for the increase in SSI award rates that occurred,

for example, between July 2019 and March 2020. When we lengthened the time period to the April–January window, however, the decline in the SSI award rate became smaller and approached zero.

Table 3. *Summary Statistics for SSI and SSDI Application and Awards per 100,000 Population Ages 16 to 64 and per Month in 2019 and 2020*

	April–June			April–September			April–December		
	2019	2020	Percentage change	2019	2020	Percentage change	2019	2020	Percentage change
SSI applications	87.98 (137.08)	76.26 (121.10)	-10.22 (33.98)	89.32 (121.86)	77.68 (112.33)	-12.18 (23.23)	87.26 (124.00)	76.73 (120.36)	-12.23 (18.90)
SSI awards	43.36 (79.63)	45.07 (80.84)	19.08 (54.72)	44.01 (80.02)	43.62 (76.13)	4.22 (31.68)	43.22 (75.65)	43.22 (75.65)	0.72 (24.90)
SSDI applications	107.17 (159.63)	95.32 (153.30)	-8.39 (30.24)	106.57 (127.33)	97.88 (148.54)	-7.75 (20.80)	103.62 (127.79)	96.22 (135.15)	-7.16 (16.59)
SSDI awards	54.46 (84.75)	50.71 (82.66)	-2.60 (44.14)	54.22 (82.83)	51.44 (83.15)	-5.06 (28.25)	53.89 (81.28)	49.88 (82.99)	-10.59 (22.75)

Notes: The table shows means and standard deviations (in parentheses) for SSI and SSDI outcomes for the three indicated time periods on a per-month basis. SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Regression Results

We now turn to our estimation model, which regresses the percentage change in SSI and SSDI application and award rates between 2019 and 2020 on changes in unemployment rates, COVID-19 cases and deaths, proximity to SSA field offices, and county-level demographics. Each table reports estimates for three time periods: April to June, April to September, and April to December. The regressors are lagged by one month. For example, when the outcome is measured from April to June, the regressors are measured from March to May (see Section 4).

SSI Applications and Awards. We did not find a strong relationship among SSI application rates, employment, and measures of severity of the pandemic (Table 4). The change in unemployment rates between 2019 and 2020 was unrelated to the change in SSI application rates during the same time frame. Though none of the estimated coefficients for the covariates that measure the severity of the pandemic were statistically significant, the point estimates for the relationship between unemployment and SSI applications increased for larger spans of time. Among the pandemic-related measures, COVID-19 cases per 100,000 population was only statistically significant in the second specification that measured the outcome during the April–September period and deaths per 100,000 population was significant for the April–December period. There is not a strong overall relationship between severity of the pandemic and SSI applications.

Conversely, we found a strong relationship between proximity to an SSA field office and SSI applications (Table 4). In counties with a field office, the SSI application rate decreased significantly across all three time periods. To put these standardized coefficients into perspective, the standard deviation of the changes in SSI application rates in the April–June period was about 34, while the mean was about –10 percent. The field office variable is an indicator variable with a standard deviation of about 0.45. Hence, going from a county without a field office to one with a field office implies a larger reduction in SSI application rates by –6 percentage points in the average county,[14] and the implied differential in the change in SSI application rates for the other two periods were –3.8, and –2.8 percentage points. These effects are thus large but decrease over time. In addition to the presence of an SSA field office in the county, the distance to the nearest field office in counties that do not have a field office was also associated with SSI application rates. Specifically, the further a county is from the nearest field

[14] We calculated the implied effect at the average county as $-0.0795 \times 34 \times 0.45^{-1} = 6.01$.

office, the larger the percentage increase in SSI applications. Increasing the distance to nearest field office by 100 miles was linked to increases in SSI application rates of 4.6 to 5.0 percentage points.[15] Together, these two findings imply that SSI application rates declined less in areas that were further away from a field office.

Table 4. *Regression Results for Change in SSI Application Rates*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0263	0.0478	0.0540*
	(0.931)	(1.581)	-1.687
COVID-19 cases per 100,000 population	0.0227	-0.0778**	0.00756
	(0.738)	(-2.365)	(0.222)
COVID-19 deaths per 100,000 population	-0.0316	-0.0256	-0.0557**
	(-1.287)	(-0.871)	(-2.153)
SSA field office in county	-0.0795***	-0.0746***	-0.0673***
	(-3.713)	(-3.687)	(-3.270)
Distance to nearest SSA field office	0.0681**	0.0673**	0.108***
	(2.233)	(2.276)	(3.542)
Observations	3107	3107	3107
R-squared	0.116	0.146	0.179

Notes: The outcome is the percentage change in SSI applications per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSI = Supplemental Security Income.

We found a positive relationship between the change in unemployment rate and the change in SSI award rates but did not find a strong and consistent link for the other exogenous characteristics (Table 5). The only other exception was for the April–December period, for which we found a negative correlation between SSI awards and the presence of an SSA field office in the county, and the April–June period where we found a negative correlation with presence of a field office in the county. The absence of a consistent significant relationship in these regressions implies that SSI award rates were not affected by county-level factors related to the COVID-19 pandemic, except for changes in unemployment. This finding is consistent with the unadjusted SSI award trend described above. In contrast to SSI application rates, there was not a sharp decline in SSI award rates but rather a reversal in the trend.

[15] The standard deviation of distance to the closest field office is 46 miles.

Table 5. *Regression Results for Change in SSI Award Rates*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0502**	0.0586**	0.0459*
	(2.149)	(2.481)	(1.954)
COVID-19 cases per 100,000 population	-0.0196	-0.0372	-0.0623**
	(-0.917)	(-1.543)	(-2.307)
COVID-19 deaths per 100,000 population	-0.00469	-0.0196	0.00295
	(-0.209)	(-0.814)	(0.138)
SSA field office in county	-0.0208	-0.0339	-0.0601**
	(-0.827)	(-1.344)	(-2.438)
Distance to nearest SSA field office	-0.0653***	0.00421	0.0202
	(-2.733)	(0.149)	(0.709)
Observations	3098	3098	3098
R-squared	0.062	0.061	0.085

Notes: The outcome is the percentage change in SSI awards per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSI = Supplemental Security Income.

SSDI Applications and Awards. Turning to SSDI applications and awards, we found a positive and statistically significant association between SSDI applications and the change in unemployment rates for the April–September and April–December time periods (Table 6). An increase of one standard deviation in the change in the unemployment rate was associated with an increase in the change in the SSDI application rate of about 2.2 percentage points.16 To help contextualize this finding, the average unadjusted change in the SSDI application rate was about –8 percent. The severity of the COVID-19 pandemic was not consistently associated with the change in SSDI application rates. We found that COVID-19 deaths were negatively associated with changes in SSDI applications during the April–June period only.

Proximity to an SSA field office was partially associated with the change in SSDI application rates. In contrast to SSI application rates, the presence of a field office in the county was not correlated with changes in SSDI applications. However, the further a county without a field office was away from the nearest field office, the larger the change in SSDI application rates. A one standard deviation (46-mile) increase in distance to the nearest field office was

[16] The standard deviations for the change in unemployment were 75 and 65 percent for the April–September and April–December periods, respectively.

associated with an increase in the change in SSDI applications of 2.6, 1.7, and 1.4 percent for the April–June, April–September, and April–December periods, respectively. With an unadjusted average change in SSDI application rates of between –7.2 and 8.4 percent, these correlations are relatively large. Hence, though SSDI applications declined by less on average in counties that were further away from an SSA field office compared to counties closer to a field office, the presence of a field office in the county itself was not linked to changes in SSDI applications as it was for SSI applications.

Table 6. *Main Regression Results for Change in SSDI Application Rates*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0241	0.0990**	0.118***
	(0.821)	(2.327)	(3.046)
COVID-19 cases per 100,000 population	0.0268	-0.00623	0.0434
	(1.027)	(-0.144)	(0.917)
COVID-19 deaths per 100,000 population	-0.0336	-0.0456	-0.0582*
	(-1.244)	(-1.557)	(-1.873)
SSA field office in county	-0.0227	-0.0349*	-0.0358*
	(-1.096)	(-1.690)	(-1.791)
Distance to nearest SSA field office	0.0899**	0.0854**	0.0832**
	(2.415)	(2.213)	(2.377)
Observations	3107	3107	3107
R-squared	0.100	0.118	0.140

Notes: The outcome is the percentage change in SSDI applications per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSDI = Social Security Disability Insurance.

Finally, changes in the unemployment rate and measures of COVID-19 severity were generally not associated with changes in SSDI awards (Table 7). There was a negative, statistically significant association between COVID-19 case rates and change in SSDI award rates in the April–December period. We also found a consistent and statistically significant relationship between proximity of the nearest field office and changes in SSDI award rates. Counties with a field office had a larger decline in awards, on average. In addition, the further away a county is located from the nearest field office, the larger the change (smaller decline) in award rates, at least for the April–September and April–December periods. This is the same

pattern that we observe for the change in SSI application rates and, to some extent, for the change in SSDI application rates. For the average county, these estimates imply that going from no field office to having a field office in the county reduces the change in SSDI award rates by 7.5, 3.3, and 3.3 percentage points for the April–June, April–September, and April–December periods, respectively. A 100-miles further distance to the closest field office increases the change in SSDI award rates by 4.1 and 5.9 percentage points for the April–September and April–December periods, respectively. The unadjusted average changes in SSDI award rates in those periods were –2.6 to –10.6 percent, so the estimated correlations we found were large.

Table 7. *Main Regression Results for Change in SSDI Award Rates*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0446*	0.0519*	0.0177
	(1.677)	(1.936)	(0.723)
COVID-19 cases per 100,000 population	-0.0246	-0.0249	-0.102***
	(-0.993)	(-0.834)	(-3.175)
COVID-19 deaths per 100,000 population	0.000970	0.0249	0.0612***
	(0.0372)	(0.995)	(2.650)
SSA field office in county	-0.0765***	-0.0536**	-0.0656***
	(-3.441)	(-2.435)	(-3.125)
Distance to nearest SSA field office	0.0380	0.0680**	0.120***
	(1.432)	(2.141)	(4.024)
Observations	3102	3102	3102
R-squared	0.053	0.075	0.140

Notes: The outcome is the percentage change in SSDI awards per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSDI = Social Security Disability Insurance.

Robustness Checks

As we describe in Section 3, we had to impute county-month-level observations with cell sizes under five to comply with SSA data privacy regulations. To ensure that our findings above are not affected by these imputations, we redid the analyses with county-level observations that did not have any imputed values during the time periods we considered. For example, when assessing associations between SSI applications and the covariates in the April–June period, we excluded counties that had fewer than five SSI applications in April, May, or June of 2019 or

2020. Effectively, this left larger counties with more SSI applications in our analysis sample. The number of observations for SSI and SSDI application rates is roughly cut in half when considering the longest period, April to January, but the number of observations for SSI and SSDI award rates are much lower due to smaller cell size on the county-month level. Appendix Tables 1 through 4 show the estimates for these robustness checks. Generally, these estimates do not differ qualitatively from our main estimates above. In some instances, the association between covariates and the outcome became stronger, for example, for the association between presence of a field office and the change in SSI application rates. On the other hand, some associations we observed in our main results lost their statistical significance, such as distance from the nearest SSA field office and SSI application rates. This is likely due to the smaller sample sizes.

Discussion

We hypothesized that the pandemic affected application and award rates for disability benefits differently. For applications, we hypothesized that the sharp decline in labor market conditions at the start of the pandemic led to an increase in applications for both programs. However, we believed the effect of the pandemic on SSI and SSDI award rates was unclear, because it depends on the technical and medical eligibility of individuals who were induced to apply for benefits because of the pandemic. To explore our hypotheses, we did not examine how the pandemic directly affected SSI and SSDI application and award rates. Instead, we estimated correlations between SSI and SSDI application and award rates and three sets of measures that were either directly tied to or strongly affected by the pandemic.

Our analysis of SSI and SSDI application and award rates during the COVID-19 pandemic found some meaningful relationships with key characteristics. Most notably, we found that losing proximity to an SSA field office during the pandemic was strongly associated with declines in application rates for SSI and award rates for SSDI. In addition, for counties without a field office, the further the county centroid was from a closed field office, the larger the increase in SSDI applications during the pandemic. These findings suggest that some potential SSI and SSDI applicants who would have applied for benefits at a field office did not apply online for benefits instead. In contrast, the severity of the pandemic and unemployment rates were not consistently associated with disability benefit application and award rates. The only exception

was for the change in the unemployment rate, which was positively associated with changes in the SSDI applications across all three periods we examined.

We were surprised by the lack of a consistent correlation between application and award rates and measures of COVID-19 new cases and deaths. Throughout the pandemic, there has been meaningful geographic variation in where the pandemic has been most active. For example, in spring 2020, major cities like New York City experienced a spike in new cases and deaths, whereas rural areas had much lower infection rates. However, if initial behavioral changes in response to the pandemic—like layoffs, lockdowns, and applications for SSI or SSDI benefits—were somewhat uniform across the country, then there would be no county-level correlation between the severity of the pandemic and changes in SSI and SSDI application and award rates.

The closure of SSA field offices in response to the pandemic and its apparent effects have important lessons for policy. Especially for those who live close to them, the field offices are a vital link between potential applicants and the SSI and SSDI programs. (See also Deshpande and Li 2019.) Also, opening additional field offices near population centers that are currently far away from a field office might increase SSI and SSDI applications and improve the quality of applications in a way that increases SSDI award rates. Our findings also suggest SSA operations might consider experimenting with new online platforms that could help potential applicants who live far from a field office perceive that applying for benefits online is an adequate substitute for applying in person at a field office. Such an alternative venue for applying for disability benefits may be particularly useful in future public health emergencies.

The increase in SSDI applications with increasing unemployment rates across all three periods is consistent with the idea that applications for SSDI benefits increase as labor market conditions deteriorate. A causal relationship between labor market conditions and SSDI applications has been established before, using data from the Great Recession and other business cycles (Maestas et al. 2015). Some people looking for work or currently employed might have a condition that meets the medical eligibility criteria for SSI or SSDI benefits. When labor market conditions deteriorate and it becomes more difficult to find or maintain employment, some individuals who are potentially eligible for SSI or SSDI might apply to receive income support.

Our analysis has three important limitations. First, our analysis is correlational, so the statistically significant relationships we found between the explanatory variables and outcomes

of interest are not necessarily causal in nature. These correlational relationships are still important, however, because they have implications for policy and might suggest causal relationships. Second, a substantive number of SSI and SSDI applications during the COVID-19 pandemic period have not been fully adjudicated. In 2021, the average processing time for an initial SSI or SSDI application decision was 165 days.[17] For the large number of initial denials that are appealed, the time needed to fully adjudicate them can be considerable. Hence, the SSI and SSDI award rates for applications during the pandemic period might change meaningfully over time based on the results of appeals. There may be value in replicating our analysis in a few years for the award rate outcomes when more complete data are available. Third, the effects of the pandemic on disability are still unfolding. For example, long COVID might increase future SSI or SSDI applications and awards.

[17] https://www.ssa.gov/open/data/program-service-centers.html, accessed November 7, 2022.

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Appendix: Tables for Robustness Checks

Appendix Table 1. *Robustness Check for Change in SSI Application Rates: No Imputation of Outcome*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0322	0.0654*	0.120***
	(1.028)	(1.764)	(3.198)
COVID-19 cases per 100,000 population	0.0404	0.00939	0.0580
	(1.082)	(0.201)	(1.191)
COVID-19 deaths per 100,000 population	-0.0373	-0.0601	-0.0673*
	(-0.957)	(-1.631)	(-1.843)
SSA field office in county	-0.122***	-0.183***	-0.205***
	(-3.076)	(-4.425)	(-4.695)
Distance to nearest SSA field office	0.0474	-0.0224	-0.0442
	(1.116)	(-0.518)	(-0.966)
Observations	1806	1694	1588
R-squared	0.191	0.237	0.278

Notes: The outcome is the percentage change in SSI applications per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSI = Supplemental Security Income.

Appendix Table 2. *Robustness Check for Change in SSI Award Rates: No Imputation of Outcome*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	-0.00713	0.0123	0.00301
	(-0.152)	(0.249)	(0.0576)
COVID-19 cases per 100,000 population	-0.0597	-0.0729	-0.0829
	(-0.944)	(-0.886)	(-1.163)
COVID-19 deaths per 100,000 population	-0.0674	-0.0570	-0.0306
	(-1.113)	(-0.823)	(-0.495)
SSA field office in county	0.0335	0.0163	-0.00551
	(0.511)	(0.261)	(-0.0862)
Distance to nearest SSA field office	0.0602	0.0308	0.0118
	(0.901)	(0.425)	(0.165)
Observations	781	676	634
R-squared	0.252	0.317	0.390

Notes: The outcome is the percentage change in SSI awards per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSI = Supplemental Security Income.

Appendix Table 3. *Robustness Check for Change in SSDI Application Rates: No Imputation of Outcome*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0372	0.0705*	0.123***
	(1.267)	(1.739)	(3.028)
COVID-19 cases per 100,000 population	0.0154	-0.0276	0.0598
	(0.464)	(-0.618)	(1.405)
COVID-19 deaths per 100,000 population	-0.0289	-0.0377	-0.0753**
	(-0.845)	(-1.078)	(-2.276)
SSA field office in county	-0.0732**	-0.0831**	-0.101***
	(-2.131)	(-2.268)	(-2.772)
Distance to nearest SSA field office	0.0383	0.0548	0.0398
	(0.960)	(1.241)	(0.925)
Observations	2061	1971	1891
R-squared	0.164	0.222	0.253

Notes: The outcome is the percentage change in SSDI applications per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSDI = Social Security Disability Insurance.

Appendix Table 4. *Robustness Check for Change in SSDI Award Rates: No Imputation of Outcome*

	(1) April–June	(2) April–September	(3) April–December
Change in unemployment rate	0.0880**	0.134***	0.153***
	(1.964)	(2.609)	(2.607)
COVID-19 cases per 100,000 population	-0.0608	-0.0296	-0.0289
	(-0.787)	(-0.480)	(-0.427)
COVID-19 deaths per 100,000 population	0.00479	0.0798	0.00830
	(0.0817)	(1.267)	(0.135)
SSA field office in county	-0.0356	-0.0628	-0.0542
	(-0.585)	(-0.981)	(-0.756)
Distance to nearest SSA field office	0.00464	-0.0631	-0.0155
	(0.0736)	(-1.011)	(-0.221)
Observations	1094	981	850
R-squared	0.111	0.201	0.251

Notes: The outcome is the percentage change in SSDI awards per 100,000 individuals between 2019 and 2020 for the indicated time periods. We report standardized (beta) coefficients. The *t*-statistics are in parentheses.
* p < 0.1; ** p < 0.05; *** p < 0.01.
SSA = Social Security Administration; SSDI = Social Security Disability Insurance.

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