Measuring the Business Dynamics of Firms that Received Pandemic Relief Funding: Findings from a New Experimental BDS Data Product

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Abstract

This paper describes a new experimental data product from the U.S. Census Bureau's Center for Economic Studies: the Business Dynamics Statistics (BDS) of firms that received Small Business Administration (SBA) pandemic funding. This new product, BDS-SBA COVID, expands the set of currently published BDS tables by linking loan-level program participation data from SBA to internal business microdata at the U.S. Census Bureau. The linked programs include the Paycheck Protection Program (PPP), COVID Economic Injury Disaster Loans (COVID-EIDL), the Restaurant Revitalization Fund (RRF), and Shuttered Venue Operators Grants (SVOG). Using these linked data, we tabulate annual firm and establishment counts, measures of job creation and destruction, and establishment entry and exit for recipients and non-recipients of program funds in 2020-2021. We further stratify the tables by timing of loan receipt and loan size, and business characteristics including geography, industry sector, firm size, and firm age. We find that for the youngest firms that received PPP, the timing of receipt mattered. Receiving an early loan correlated with a lower job destruction rate compared to non-recipients and businesses that received a later loan. For the smallest firms, simply participating in PPP was associated with lower employment loss. The timing of PPP receipt was also related to establishment exit rates. For businesses of nearly all ages, those that received an early loan exited at a lower rate in 2022 than later loan recipients.

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1 Introduction

At the begining of the COVID-19 pandemic, Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act, which was signed into law on March 27, 2020 and provided $350 billion in appropriations to give grants and loans to businesses through the Paycheck Protection Program (PPP). Two additional tranches of funding, approved during the next 12 months, brought the total amount distributed to businesses to $800 billion. This program represented an unprecedented government expenditure on direct support for businesses in a time of general economic distress. However little is known about how businesses fared after receiving pandemic assistance and how this was correlated with business characteristics. In this paper we partially fill this gap by introducing a new Census Bureau experimental data product that tracks program recipients over time.

The PPP program, and three additional programs that were added to aid businesses, were administered by the Small Business Administration (SBA), which processed applications, dispersed money, and maintained a database of grant and loan recipients. In 2022, SBA shared microdata with the Census Bureau on loans and grants for four programs: Paycheck Protection Program (PPP), COVID Economic Injury Disaster Loans (COVID-EIDL), Restaurant Revitalization Fund (RRF), and Shuttered Venue Operators Grant (SVOG). These data were matched to the Census Bureau Business Register (BR), a list of nearly all businesses operating in the United States, which is maintained to facilitate collecting data needed to produce economic statistics. After the matching, the linked records were incorporated into the system that produces the Business Dynamics Statistics (BDS).[1] This paper describes the matching process and provides an overview of the statistics produced as part of the new experimental product, Business Dynamics Statistics of firms that received SBA pandemic funding (BDS-SBA COVID).[2]

Business owners requesting funds from any of the four programs provided tax identifiers for either themselves or the business as part of the application process. These identifiers enabled the Census Bureau to link close to 90% of loans to business entities found in the BR between

[1] https://www.census.gov/programs-surveys/bds/about.html.

[2] https://www.census.gov/programs-surveys/ces/data/public-use-data/experimental-bds/bds-sba-covid.html.

2019 and 2021, including both employers and non-employers. These links included 5.6 million unique Employer Identification Numbers (EINs) of which 70% matched to an employer record in 2020 and 20% matched to a non-employer record, with the remainder matching only to businesses with no BR data for 2020. While not all loans can be matched to Census business data, the overall high rate gives us confidence that we have identified the majority of program recipients and can track them over time.

The goal of the new BDS-SBA COVID statistical tables is to show what kinds of firms received financial assistance from one or more of these programs and what type of employment outcomes were observed for these firms in subsequent years. We provide descriptive statistics on firm age, firm size, industry sector, and urban/rural status of PPP recipients and then show job destruction and net job creation rates, as well as establishment exit rates for firms that received PPP funds. We show similar statistics for COVID-EIDL, RRF, and SVOG. We observe differences in job destruction rates and exit rates for PPP recipients versus non-recipients, with variation across firm size and age classes. For the youngest and smallest firms, the timeliness of loan receipt was an important correlate with eventual outcomes. Those firms that received a PPP loan in the first three weeks of April had lower job destruction rates and were less likely to exit in 2022. For older and larger firms, quantity of loans was also a significant factor. Those with multiple PPP loans had lower job destruction rates in 2022. There were fewer differences in outcomes than expected across the urban-rural spectrum but substantial heterogeneity across industries. In Construction, Administrative Support, and Food and Accommodations, PPP recipients had lower rates of job destruction while in Information the rate was about the same between recipients and non-recipients. Results from the other three programs are more mixed and there are indications of bias in outcomes due to selection effects.

The results highlighted in this paper represent only a small number of the statistics included in the BDS-SBA COVID tables. In total, the new product has 38 tables, with 10 specific to PPP, 9 each for COVID EIDL, RRF, and SVOG, and one for recipients of multiple loan programs. Each table spans the time period 2007-2022, allowing users to observe trends among recipients and non-recipients both pre- and post-pandemic. Tables can be downloaded in CSV format at https://www.census.gov/programs-surveys/ces/data/public-use-data/experimental-bds.html. Current plans call for an annual release of the BDS-SBA COVID tables, with an additional year

of data each time, extending the time series post-pandemic to follow program recipients even further into the future.

This paper proceeds as follows. In Section 2 we give a brief background with important facts about each of the four financial assistance programs. In Section 3 we briefly describe the methodology behind the BDS tabulations and explain the process of linking the SBA data to the Census business data. Section 4 provides notable findings for businesses that participated in each program, and Section 5 concludes.

2 Program Definitions

2.1 Paycheck Protection Program

The Paycheck Protection Program (PPP) was an SBA-backed loan program that provided uncollateralized loans to small businesses (firms) with fewer than 500 employees to help blunt the negative effects of the pandemic. Alternatively, if a business had 500 or more workers and thus didn't meet the SBA's core definition of "small", it could have qualified for PPP by using one of the SBA's industry-specific size standards.[3] Another important detail is that the size threshold was generally firm-specific. However, businesses operating in the NAICS 72 sector, which includes hotels and restaurants, were able to meet the size threshold at the establishment level, meaning firms with more than 500 total employees could qualify if individual establishments were small.

Importantly, PPP loans were fully forgivable if recipient businesses maintained employment and wages at pre-pandemic levels in the months after receiving payment. Recipient businesses were also able to qualify for forgiveness through two "safe harbor" options which either extended the timeframe to restore employment and wages to pre-pandemic levels or completely absolved businesses of this requirement if they could document in "good faith" that lockdowns and local restrictions made it impossible to return to full business activity. The vast majority of

[3] https://www.sba.gov/document/support-table-size-standards

all PPP loans (92 percent) were forgiven. [4]

In total, there were three tranches of funds appropriated by Congress which totaled roughly $800 billion. Starting in late March 2020 eligible businesses were able to apply for a "first draw" loan of up to $10 million from the first two tranches of funding. The third tranche helped distribute loans to first-time recipients in early 2021 as well as businesses that qualified for a "second draw" loan. To promote greater access to funding during the first several weeks of 2021, loan applications were only accepted from community financial institutions and first-time borrowers in low- or moderate-income neighborhoods with no more than 10 employees. Businesses were eligible for a second PPP loan of up to $2 million if they met three conditions. These included having already received and appropriately depleted a first draw loan, being able to show a reduction in gross receipts of at least 25 percent between comparable quarters in 2019 and 2020, and finally meeting a more stringent definition of "small" which was fewer than 300 employees. Lasting for roughly a year and a half, PPP ended at the end of May 2021.

2.2 COVID Economic Injury Disaster Loans

Although smaller in scale, the COVID Economic Injury Disaster Loans (COVID-EIDL) program provided an alternative source of funding to businesses during the pandemic starting around the same time as PPP. Unlike PPP, COVID-EIDL loans did not have a forgiveness condition. Each loan came with a term of 30 years and fixed interest rate between 2.75 percent for private-sector, non-profit organizations and 3.75 percent for private-sector, for-profit businesses with payments being deferred for the first two years. COVID-EIDL loans were eventually distributed up to $2 million and were to be used for operating expenses, such as payroll, rent, mortgage payments, debt, and other ordinary business expenses. Also in departure from PPP, COVID-EIDL loan recipients were required to provide collateral for loans in excess of $25,000. While some businesses only received COVID-EIDL funds, many businesses also received PPP.

[4] https://www.sba.gov/document/report-2022-ppp-forgiveness-platform-lender-submission-metrics-reports

2.3 Restaurant Revitalization Fund

The SBA also backed two additional and more targeted loan programs. The first was the Restaurant Revitalization Fund (RRF), which launched in May 2021. RRF was designed to provide emergency funds to eligible restaurants, bars, and other qualified businesses that were impacted by the pandemic. Other qualified businesses included food trucks, caterers, and snack bars, as well as bakeries, breweries, wineries, and inns that had on-site sales to customers amounting to at least one third of gross receipts. Eligible businesses received funding up to $10 million per business. Similar to the loan forgiveness nature of PPP, recipients of RRF were not required to repay the funding as long as the funds were put toward eligible uses. For many RRF recipients, these funds were a supplement to PPP loans. Nearly thirteen times as many businesses received both PPP and RRF as received RRF alone.

2.4 Shuttered Venue Operators Grants

The final program that operated during the pandemic was the Shuttered Venue Operators Grant (SVOG) program, which launched in April 2021. This program was aimed at providing pandemic assistance to operators of live venues, theaters, live performing arts organizations, museums, and motion picture theaters, as well as talent representatives. Businesses that were born after February 2020 were not eligible for SVOG. Additionally, venues or promoters that received a PPP loan after December 27, 2020 were still eligible, but their SVOG funds would be reduced by the amount of their PPP loan. The maximum grant amount for eligible businesses was $10 million and similar to PPP, these funds were forgivable.

3 Methodology

The BDS-SBA COVID product is an experimental product of the U.S. Census Bureau and was developed by the Center for Economic Studies (CES) in collaboration with SBA. This product is a supplement to the core BDS, published annually by the Census Bureau to provide information to the public on growth and decline in employment and entry and exit of businesses. All

published BDS statistics are tabulated from the Longitudinal Business Database (LBD) which combines IRS tax filings with Census Bureau survey data to track employment over time at the establishment level (see Chow, Fort, Goetz, Goldschlag, Lawrence, Perlman, Stinson, and White (2021) for more details on the LBD). This experimental product follows the methodology of the core BDS (see https://www.census.gov/programs-surveys/bds.html for a full description of BDS definitions and methodology). Employment is measured in the pay period containing March 12th and job creation/destruction is calculated as employment in year t minus employment in year t-1, with positive changes labeled as job creation and negative changes labeled as job destruction. Establishment entry is defined as a place of business that had no employment in year t-1 but positive employment in year t. Establishment exit is the reverse: employment in year t-1 but no employment in year t. The BDS tabulates total job creation, destruction, entry and exit for groups of establishments that share a common characteristic. These include age and size of the firms that own the establishments, and geography and industry classification of the establishments themseleves.

In order to create the BDS-SBA COVID product, SBA loan-level data were matched to LBD firms and establishments prior to tabulation. The rest of this section describes the matching process, explains how we define program receipiency for firms and establishments, describes the linking across time, and ends with a discussion about how we chose to stratify the final tables.

3.1 Matching loan-level SBA data to the Census Bureau's Business Register and Longitudinal Business Database

The first matching step was to link the loan-level SBA data to the BR, which provides a comprehensive database of nearly all business establishments and firms in the United States. This was done in two phases. In the first phase, a deterministic matching process used tax identifiers to match records in the loan-level data to the BR. Specifically we used the Employer Identification Number (EIN) from the loan application to match to tax filing data in the BR, including annual revenue returns and quarterly payroll returns. In addition, if the loan application provided information that enabled the Census Bureau to assign a Personal Identification Key (PIK) to the

business owner, we matched the PIK to 1040 Schedule C filings of sole proprietorships with employees and to self-employed individuals. If records were not matched using a tax identifier, we used a probabilistic linking procedure to find matches by comparing the name and street address of the business from the loan application to names and addresses on the BR. This process was done separately for each of the four programs.

Table 1 shows the high-level outcomes of the PPP loan matching process. The PPP loan database shared with the Census Bureau by SBA contained 12.5 million loans. Approximately 1 million of these had a status of "Voluntary Termination" or "Fully Canceled" and were dropped. Of the remaining 11.5 million loans, 90% of them matched to the Business Register in the time period of 2019-2021. Table 2 breaks down the types of PPP-BR matches. Most of these loans (70%) have both an associated EIN (of the business) and PIK (of the business owner) and either the EIN, the PIK, or both matched to the BR. Among the remaining matched loans, 24% only matched by PIK, because they were non-employer businesses (i.e., self-employment) which were also allowed to apply for PPP loans, and 6% only matched by EIN. Less than one percent of loans matched only by name and address.

We require an EIN in order to match a loan to an employer business, and thus drop all loans that matched to the BR solely by PIK and did not have an EIN before matching to the LBD. Because of the dual-draw nature of PPP, EINs may appear more than once in the loan-level data. Collapsing to one record per EIN, we were left with roughly 5.6 million unique EINs belonging to businesses that received at least one draw from PPP.

Next we matched the list of unique EINs that were found in both the BR and PPP loan data to the LBD for the year 2020 in order to identify employers. These results are shown in Table 3. We found approximately 70% of these EINs in the 2020 LBD. About 92% of matched EINs are in scope for BDS tabulation.[5] It is notable that a very small share of these EINs (less than 1 percent) also match to the non-employer universe. These EINs belong to businesses that operated as employers in 2019, but in 2020 they both received PPP funds and transitioned into a non-employer business.

[5]In BDS tabulation, establishments are considered in scope if the following conditions are satisfied: They must have positive employment in either year t-1 or year t, operate within a state (not a U.S. territory), and must not be classified in crop production or public administration.

As shown in Table 4, approximately 30% of EINs do not match to the LBD, and among these, 65% matched to the universe of 2020 non-employer (self-employment) businesses also found in the BR. A little over half of the non-employer matches reported having only one or zero employees on the PPP form, suggesting that these applicants were indeed self-employed. However, the remaining 47% of non-employer matches reported more than one employee on their PPP application. It is likely that this reported employment is a noisy measure of the true employment of the business but it is also possible that some non-employer records in the BR are incorrectly missing employment and are misclassified. The BDS-SBA COVID product includes only employers and all non-employer matches are dropped prior to tabulation.

The remaining 35% of non-LBD-matches do not link to either a non-employer or employer record for 2020. The group contains 578,000 EINs in total and makes up approximately 10% of all unique PPP EINs that were found in the BR. These are cases which matched to an EIN found in an alternate BR year (2019 or 2021). On the PPP loan application, 58% of these cases reported employment of one job or less. These could have been non-employers in an earlier year and either ceased economic activity in 2020 or have a missing tax return. The remaining 42% of records report having employees. There are a few possible explanations for this. First, the business could have two EINs, one used for payroll and one used for filing business income tax returns. If the business used its income tax EIN instead of its payroll tax EIN to file for a PPP loan, it is difficult to link the PPP loan to the employer business. Second, the business might have used a Professional Employer Organization (PEO) to handle its payroll. In this case, the business does not show up as a separate entity in the LBD, but instead has its employment reported as part of the PEO in NAICS 56133. If the business used an EIN of its own (maybe one used to file IRS income tax) to apply for the PPP loan, this record will not match to the LBD.

Finally, we attempted to link non-matched EINs to the LBD in 2021 and found 75,000 additional matches. This could be explained by businesses switching back and forth between using a PEO and managing their payroll internally; or tax filing issues in 2020 that create missing BR data for these businesses in the year of PPP application; or new businesses that formed early in 2021 and received very late first draw loans.

3.2 Defining program recipiency

In the BDS-SBA COVID PPP tables, establishments and their parent firms are binned into one of seven groups: four recipient and three non-recipient bins. The recipient groups include establishments belonging to firms that only received an early first-draw loan, firms that only received a later first-draw loan, firms that received both an early first-draw and an eventual second-draw loan, and finally firms that received both a later first-draw loan and an eventual second-draw loan. For non-recipients, we distinguish between those that were in scope in 2020, either as active firms with employment in March 2020 or exiting firms that had employment in March 2019 but not 2020, those that died early enough that they were not in scope in 2020, and those that were born after March 2020.[6] This provides data users more flexibility in choosing an appropriate comparison group for any of the recipient categories. However, given that we cannot match all PPP loans to the LBD, we caution that the non-recipient bins likely include some PPP recipients, although this percentage is probably small. EINs that do not match to either a nonemployer or employer record in 2020 make up only 10% of all the unique PPP EINs that were identified in the BR and of these, less than half, or about 4% of all EINs, report having more than one employee on their PPP application.

In addition to preserving the first- versus second-draw nature of PPP, we draw from the recent economic literature (Autor, Cho, Crane, Goldar, Lutz, Montes, Peterman, Ratner, Villar, and Yildirmaz, 2022) and add the concept of timing, which has been shown to be an important factor in businesses' ability to retain employment and avoid shutdown. To distinguish between early versus later first-draw loans, we utilize the dates in which the first two tranches of program funds were signed into law. The Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law on March 27, 2020 and provided $350 billion in appropriations. The Paycheck Protection Program and Health Care Enhancement Act became law on April 24, 2020 and added an additional $320 billion in appropriations which served as the second tranche of PPP funding. For the purposes of this experimental data product, businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business

[6]Establishments are counted as exits in the year they first have zero March employment. Establishments with no March 2019 employment will be counted as exits in 2019 and are classified in the "died before 2020" group in the BDS tables. This group contains any establishment exit recorded prior to 2020.

that received a later first-draw loan had their funding approved on or after April 24, 2020. The final tranche of funding was approved by Congress at the end of December 2020 as part of the annual appropriations process. Some applicants continued to receive first draw loans from this new funding in early 2021. In addition, all second draw loans followed this approval and were distributed between January and May of 2021. In summary, we label first-time PPP loans made between March 27 and April 23 as early first draw loans; first-time loans made between April 24, 2020 and May 2021 as later first draw loans; and second-time loans made between January and May 2021 as second draw loans.

The remaining three programs, COVID-EIDL, RRF, and SVOG, do not have the same timing element as PPP and so there is only one recipient category. However for these programs, data on applicants who were denied loans are also available. Hence tables for these programs report program status in three bins: applicant recipients, applicant non-recipients, and non-applicant non-recipients. Importantly, this last group includes both businesses that never applied to one of these programs and businesses that applied but did not use an EIN that matched to an employer record in the BR.

3.3 Tracking businesses throughout time

Because the BDS-SBA COVID experimental data product reports annual statistics for employer businesses starting in 2007, recipient and non-recipient establishments in 2020 need to be followed longitudinally backward in time. This process begins by first identifying which establishments in the LBD use an EIN that is also found in the loan program data. For single-unit firms this process is straightforward as there is a one-to-one correspondence between the EIN and the establishment. For multi-unit firms, there are instances where some, but not all, of the firm's establishments use an EIN that matches to the loan program data. After a firm received pandemic relief through PPP or any of the other loan programs, there were no rules that prohibited the firm from distributing those funds to all of its establishments. Hence we paint a broad brush and classify all of the firm's establishments as having been treated if at least one uses an EIN that matches with the loan program data. This method converts seemingly "partially" treated firms into fully treated.

For multi-units with multiple recipient EINs, the early versus later designation of first-draw PPP loans is determined by the EIN with the earliest loan approval date. In addition to program status, each set of tables includes a loan size variable. For all four loan programs, the program-specific loan size is calculated as the sum of loans received by all of the firm's EINs. Importantly, as establishments are longitudinally linked backward in time, their treatment status and loan size follows them. Figure 1 provides a simple two-firm example across two years. Starting in the upper left, Firm A has three establishments in 2020, each with the program status of "early first draw only" and loan size of "a) up to $24,999." For the year 2020, Firm A would be tabulated in one program status bin and one loan size bin. Tracking this firm's three establishments backward in time reveals that in 2019, establishment 1 belonged to Firm B. Since treatment status follows each establishment throughout time (both forward and backward), Firm B in 2019 would be tabulated in two program status bins and two loan size bins: early first draw only and non-recipient. Although this approach does not preserve the ability to vertically sum firm counts in the BDS tables, it more cleanly identifies the establishments that were treated and those that were not, an approach that does not rely on choosing an arbitrary dosage of treatment required to be classified as "treated." Thus, in every year of the BDS tables, firms will be tabulated in any bin for which they have at least one establishment present. Establishment counts will sum vertically as each establishment is tabulated in a treatment status bin that is constant over time.

3.4 BDS table stratification

The BDS-SBA COVID data product contains 38 tables with 10 specific to PPP, 9 each for COVID-EIDL, RRF, and SVOG, and one for recipients of multiple loan programs. For each program, we create separate tables that stratify the statistics by firm age, firm size, loan size, loan size and state, metro/non-metro, rural/urban, industry sector, and state. Due to the size of the PPP program, we are able to include an additional PPP table stratified by both sector and firm size. Finally, since firms often received funding through more than one SBA pandemic relief program, the product also includes a combined table that examines dual recipients who participated in two or more programs.

In alignment with the core BDS, this experimental data product uses the standard coarse

definition for firm size. Although generally these programs were limited to firms with less than 500 employees, there are recipients in the 500+ category bins for each program. There are several reasons for this. First, coarse firm size is determined by the average of firm-level employment between the prior year and current year during the March 12 reference pay period. It is not specific to one period in time. For example, if a firm received pandemic assistance in 2020 and had an average employment level of 500 in that year, it could have employed 510 workers in March 2019 and only 490 in March 2020. Based on the SBA size requirement in 2020, this firm would have been eligible for pandemic relief, but its coarse firm size bin would be 500+. Second, larger businesses in some industries qualified for pandemic relief using the SBA's industry-specific size standards, which, for example, allowed restaurants to apply on the basis of establishment not firm size. Thus, there are valid reasons for recipients to be tabulated in the 500+ bin.

Because the RRF program was much more targeted to restaurants and businesses operating in the NAICS 72 sector, we include a detailed industry breakout by program status. This includes the following NAICS industries: 721 (accommodation), 7223 (special food services), 7224 (alcoholic drinking places), 722511 (full-service restaurants), 722513 (limited-service restaurants), 722514 (cafeterias, grill buffets, and buffets), and 722515 (snack and non-alcoholic beverage bars). This breakout can be particularly useful for data users looking to compare, for example, full-service restaurants with limited-service restaurants or bars, all of which were impacted by stay-at-home requirements during the beginning parts of the pandemic. The "other" bin in these tables includes several industries that were eligible for RRF but were not classified under NAICS 72.[7] In contrast, the SVOG tables report an "other" bin that includes all two-digit NAICS sectors other than NAICS 51, 71, and 72, which were the most-common recipients.

New with the release of this experimental data product are tables that present statistics across

[7] These include the following NAICS industries: 312120 (breweries), 311811 (retail bakeries), 312130 (wineries), 311812 (commercial bakeries), 312140 (distilleries), 445110 (supermarkets and other grocery stores, except convenience), 445299 (all other specialty food stores), 445310 (beer, wine, and liquor stores), 445120 (convenience stores), 445291 (baked goods stores), 447110 (gasoline stations with convenience stores), 445292 (confectionary and nut stores), 445210 (meat markets), 445220 (fish and seafood markets), 445230 (fruit and vegetable markets), 447190 (other gasoline stations), 454210 (vending machine operators), 713950 (bowling centers), 713990 (all other amusement and recreation industries), and 713120 (amusement arcades).

an urban-rural continuum. Using population data from the 2020 Decennial Census, counties are classified into four categories: predominantly urban counties have at least 80 percent of their population living in urban areas; mostly urban counties have between 50 and 80 percent of their population living in urban areas; mostly rural counties have between 20 and 50 percent of their population living in urban areas; and predominantly rural counties have less than 20 percent of their population living in urban areas. Establishments are tabulated according to the urban-rural attribute of the counties in which they operate. In some instances, businesses are considered "statewide" if they are not assigned to a specific county or "unclassified" if it is not possible to determine where the business operates. Both of these represent a very small share of the data.

It is important to note one way in which we do not stratify our BDS tables. Since 92 percent of all PPP loans were forgiven, our data lack meaningful variation along this dimension. Hence, we do not split firms by whether their PPP loans were forgiven.

4 Notable Findings

4.1 Paycheck Protection Program

4.1.1 What share of firms received PPP funds?

We begin our discussion of notable findings with a description of how many and what share of businesses participated in PPP, the largest pandemic-era program administered by SBA. We find that 66 percent of firms employing fewer than 500 workers received PPP funding. This amounts to more than 3.5 million small firms. With nearly 48 million workers at small firms supported by PPP, the employment-weighted small-firm take-up rate measures 78 percent. In addition, approximately 7,600 firms employing 500 or more workers also received PPP funding, for a take-up rate of 36 percent. Since these shares rely on successful matching in order to identify recipients, they should be viewed as a lower bound.

Figure 2 further breaks out PPP recipiency by three firm size categories. This reveals that the

take-up rate among the smallest firms, with fewer than 20 workers, was more than 20 percentage points lower compared to mid-size firms employing between 20 and 499 workers: 64 percent versus 84 percent. There are several potential explanations for this finding. Mid-size businesses might be more likely to have internal accounting or legal departments that were better able to discern the particulars of the loan program and the application process. It could also be that most unmatched loan recipients belong to this smallest firm-size group, suggesting a higher take-up rate for this group. If all 578,000 fully unmatched EINs were PPP recepients in the 1-19 size bin, the take-up rate would be 76 percent. It seems unlikely that all unmatched EINs are actually employers given that over half of them report at most one employee, but even under this strong assumption, a gap remains in the firm-size-specific take-up rate.[8]

Turning to the distribution of PPP across firm-age groups, Figure 2 reveals two important findings: PPP participation generally increased with firm age and even start-ups participated in the program. Indeed, while 65 percent of young firms between 1 and 5 years old received PPP funding, the take-up share for firms that had been in operation for more than 10 years measured more than 68 percent. For the nation's start-ups that began operating right before the pandemic (between March 2019 and March 2020), more than half received at least one draw from PPP.

Although these take-up shares provide some context regarding the distribution of PPP funding, it is also useful to examine whether any firm-age groups were over- or under-represented by recipient status. Figure 3 addresses this question. Displayed are five bar charts that each represent a specific recipient group, including non-recipients. Within a recipient group, for each firm-age group (on the horizontal axis), the vertical bars represent the difference between the share of firms that participated in PPP and the economy-wide share of firms. Positive bars indicate that firms of a particular age within a certain recipient group were over-represented. Negative bars indicate under-representation. For example, firms in the 11+ firm-age group that only received an early first draw PPP loan, as depicted by the dark blue bar in the first graph, represented 44 percent of all employer firms in 2020, but accounted for more than 50 percent of early first draw only recipients; the difference of 6 percent is the height of the bar. Figure 3 reveals that this over-representation of older firms occurred in the early weeks of PPP. It appears

[8]It is not clear whether small firms are more likely to either use a PEO for payroll processing or have more than one EIN.

that older firms were first to access funding, while younger firms remained under-represented until later in the program. The extent to which the timing of funding receipt played a role in determining business resilience is discussed below.

We next turn to take-up rates by degree of county urbanicity, or the percentage of the county-level population living in urban areas. The predominantly urban classification is the most urban (and least rural), while the predominantly rural classification is the most rural (and least urban). Figure 4 reports PPP recipient shares by urban-rural classification and reveals that PPP loans were overall distributed uniformly, regardless of the degree of urbanicity. Firms operating in counties considered predominantly or mostly urban logged take-up rates of 66 percent, while firms in mostly or predominantly rural counties logged take-up rates of 65 and 64 percent, respectively.

Although overall take-up rates were similar across the urban-rural spectrum, the timing of PPP loans differed. While only 22 percent of businesses operating in predominantly urban counties received an early first draw (44 percent received a later first draw), this take-up share was noticeably higher for businesses in mostly urban (33 percent), mostly rural (34 percent), and predominantly rural (34 percent) counties. It could be that businesses operating in counties not classified as predominantly urban had better banking relationships, which helped expedite the application process. As reported by the Federal Deposit Insurance Corporatrion (FDIC), community banks held a disproportionately high share of PPP loans (31 percent compared to only 15 percent of total loans).[9] Another possibility is that businesses operating in densely populated cities that were the original COVID-19 hot spots faced unique challenges in *quickly* submitting PPP applications due to the rapid spread of contagion from the virus.

We next turn to a description of take-up shares by sector. Figure 4 shows that program participation was not uniform across all sectors. Indeed, NAICS 72, accommodation and food services, which is comprised of mostly hotels and restaurants, had the highest take-up share, measuring more than 78 percent. This is not surprising given the decline in business and leisure travel and the imposition of stay-at-home mandates. The face-to-face nature of these industries meant that they were particularly hard hit in 2020. In fact, Beem, Goetz, Stinson, and Wang

[9] https://www.fdic.gov/system/files/2024-06/article1_5.pdf.

(2022) find that single-unit firms in NAICS 72 recorded the second-most-negative net job creation rate in 2020q2 among all sectors. And more specifically, NAICS 7225 (restaurants and other eating places) was the single-largest contributor to the decline in the essential-industries net job creation rate.

With these take-up shares in mind, in the next section we explore the extent to which sectors were able to preserve employment and prevent establishment exit.

4.1.2 Measuring the business resilience of PPP recipients

In this section, we explore whether businesses that participated in PPP were more resilient than non-recipients from a job destruction standpoint. In other words, did recipient businesses destroy jobs at lower rates compared to businesses that did not receive PPP funding? For comparison purposes, we define non-recipients as businesses that were in scope for BDS tabulation in 2020 but did not participate in PPP, omitting businesses that died before 2020 and those that were born after 2020. Doing so creates a cleaner comparison with recipients. To measure business resilience among PPP recipients, we focus our analysis on the job destruction rate and establishment exit rate from 2022. Given that reported employment changes in the BDS are between March 12th of consecutive years and the fact that PPP funding was still flowing to some businesses through May 2021, the first year fully post-treatment for all firms is 2022. Thus we are looking at outcomes that happened up to a year after the last funds were received and in some cases, such as receipt of an early first draw loan only, almost two years after. As an extension from the take-up shares described above, this section will explore job destruction by firm size, firm age, sector, and urban-rural classification.

Figure 5 plots the 2022 job destruction rate for each recipient group (including non-recipients) by firm size. Three interesting findings emerge. First, we find that job destruction rates among the smallest recipients were uniformly lower compared to non-recipients. Regardless of how many PPP loans a firm received or when the funding was received, the smallest recipient firms destroyed jobs at a lower rate compared to firms that did not participate in the program. Second, the number of loans seemed to have mattered for mid-size and large firms. Dual recipients in the two largest firm-size groups, the firms that received a first draw *and* second draw, destroyed

jobs at lower rates than recipients of a single draw. Taken together with the previous finding, it appears that while simply participating in PPP helped the smallest firms, mid-size and large firms benefited from *full* participation, from an employment preservation standpoint. And finally, as is true in many pre-pandemic years, it appears that the job destruction rate decreases with firm size.

Turning next to Figure 6, we examine job destruction by firm age. Not surprisingly, the youngest firms, which, even in the absence of a global pandemic, faced a higher likelihood of exit than older firms, destroyed jobs at the highest rates in 2022. However, when comparing recipients and non-recipients within the youngest age group, the timing of PPP receipt mattered. Receiving an early first draw correlated with a lower job destruction rate, regardless of whether a follow-up second draw was received. This finding does not necessarily hold true for the other firm-age groups. For older firms the patterns more closely resemble the firm size findings. Recipients that belonged to firms who got both first and second draw loans destroyed fewer jobs.

As described in Section 4.1.1, not all sectors participated in PPP equally, with some sectors having higher take-up rates than others. Figure 7 reveals that there exists heterogeneity in job destruction rates *across* sectors and *within* sectors between recipients and non-recipients. Interestingly, the information sector (NAICS 51), which includes movie theaters, destroyed jobs at the highest rate across all sectors.[10] Recipients fared only marginally better than non-recipients, as depicted by the vertical distance between the green bars and gold circles. There are, however, several sectors that destroyed jobs at lower rates after their participation in PPP, including construction (NAICS 23), accommodation and food services (NAICS 72), and administrative and support (NAICS 56). PPP recipients in the construction sector destroyed jobs at a rate 4.4 percentage points lower than non-recipients. During the height of the pandemic, construction activity slowed dramatically, with construction spending declining 3.5 percent between March and

[10]Like other businesses offering physical services, in-person cinema struggled due to the contagious spread of the COVID-19 virus and stay-at-home orders. With more time spent at home, streaming subscriptions surged. Indeed, Netflix reported nearly 16 million new paid subscriptions in the first quarter of 2020, substantially more than in the prior four quarters. See https://s22.q4cdn.com/959853165/files/doc_financials/2020/q1/updated/FINAL-Q1-20-Shareholder-Letter.pdf. To be clear, this does not necessarily mean that at-home movie streaming *substituted* for in-person cinema, but it does help describe how the industry began to change during the onset of the pandemic.

May 2020, and delinquent construction loans increasing to $3.67 billion in 2020q1, up nearly 24 percent from 2019q4.[11,12] Participation in PPP potentially limited employment loss in an environment when the near-term future of the industry (especially commercial construction) remained uncertain. Firms in the accommodation and food services sector, which participated in PPP at the highest rate, also benefited from PPP. Recipients in this sector destroyed jobs at a rate 2.5 percentage points lower than non-recipients. And for the administrative and support sector, this difference measured 3.8 points.

Next, Figure 8 utilizes our urban-rural classifications to examine job destruction. As depicted in the graphs for firms operating in predominantly urban, mostly urban, and mostly rural counties, the lowest job destruction rates were among businesses that received an early first draw with a follow-up second draw PPP loan. Perhaps more notable is the difference for firms operating in predominantly rural counties. Businesses operating in these counties that received their first draw early destroyed jobs at a lower rate than businesses that participated in the program later. Similar to the finding for young firms, the timing of receipt appears to have mattered for businesses operating in the most rural parts of the country. One surprising finding is that non-recipients in predominantly rural areas had lower job destruction rates than any of the recipient groups. It is worth noting that non-recipients in predominantly rural areas did record the highest job destruction rate in 2020, at the onset of the pandemic, but this was followed by two years of decline. Looking at pre-pandemic data reveals that job destruction rates in predominantly rural areas generally moved in tandem between recipient and non-recipient groups. More analysis is needed into the differences between recipient and non-recipients in these predominantly rural counties.

We now focus our attention on establishment exit among recipients and non-recipients. Whereas job destruction can be viewed as an intensive-margin measure of business decline, establishment exit helps provide a sense of business decline along the extensive margin. We analyze the 2022 establishment exit rate which is the rate at which establishments with employment in March 2021 switched to having no employment in March 2022. By definition, these

[11] https://www.census.gov/construction/c30/c30index.html

[12] https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/construction-loan-delinquencies-at-us-banks-climbed-23-8-in-q1-59101573.

firms survived from the time of their PPP receipt until March 2021. We begin with Figure 9, which displays the establishment exit rate by firm size and recipient bin. For the smallest firms, the timing of receipt mattered. Receiving an early first draw correlated with a lower establishment exit rate compared to recipients of a later first draw and non-recipients. This stair-step pattern suggests that participating in PPP later, as opposed to not at all, helped prevent establishment exit, but not to the same extent as for businesses that accessed the program in the first few weeks.

Turning next to mid-size firms with 20-499 workers, we see that simply participating in PPP is correlated with lower establishment exit rates. Interestingly, dual-draw recipients that received their first draw later recorded the lowest exit rates compared to the other three recipient bins, although the differences are very small and unlikely to be statistically significant.

Finally for the largest firms, there is some evidence of endogeneity of loan applications. Establishments belonging to large firms that got second PPP draws were more likely to exit in 2022, suggesting that perhaps large firms in decline were more likely to have gone back for additional PPP funding. We point out that many large firms operate in multiple locations and hence the exit of one establishment does not mean the entire firm closed. Instead this finding means that a higher share of large firms with multiple PPP draws shrank by closing at least one location relative to firms with only a single draw.

Establishment exit rates across the firm-age spectrum, as depicted in Figure 10, also reveal that the timing of loan receipt mattered, not just for young firms but for most firms except the very oldest. Indeed, businesses that received an early first draw exited at a lower rate than businesses that received a later first draw as well as non-recipients. In fact, the establishment exit rate for the youngest firms that received only an early first draw was more than 30 percent lower than young firms that received only a later first draw and roughly half that of non-recipients. Among older firms, PPP participation was also associated with lower establishment exit rates, with *early* participants having the largest declines.

Returning to our urban-rural classifications, Figure 11 continues to display the common theme that timing mattered: early first draw recipients exited at lower rates than businesses that participated in PPP later, including non-recipients. This is true for businesses operating in

predominantly urban, mostly urban, mostly rural, and predominantly rural counties. It is also notable that across the urban-rural spectrum, the rate of establishment exit within a recipient bin remains stable. By 2022 at least, geography does not seem to be correlated with outcomes of PPP recipients. However we note that the difference between non-recipients and recipients is highest in predominantly urban areas.

Up until this point, we have focused on measures of business resilience that deal with a decline in business activity: job destruction and establishment exit. Our next question is whether recipients of PPP funding actually expanded employment post-receipt. Were businesses that participated in the program able to add jobs on net as the economy recovered and did they do so at differential rates from non-recipients? To answer this question, we turn to Figure 12, which displays the net job creation rate in 2022 for each PPP recipient group, including non-recipients. As described above, 2022 is the first year in which measures of business activity can be analyzed *after* all of the PPP funds had been distributed. We find that dual-draw recipients, or those businesses that received a first and second draw from PPP, actually created jobs on net in 2022, whereas single-draw recipients recorded net job creation rates near zero. The large positive net job creation rates among dual recipients do not appear to be a function of small levels in the prior year. Rather, these businesses also posted the largest level gain in net job creation in 2022. It is also worth noting that in 2021, net job creation across all recipient groups was negative. Even two years after the initial PPP funding had been distributed, it appears that being a recipient, and a dual recipient more specifically, is associated with higher rates of job creation.

4.2 COVID Economic Injury Disaster Loans

4.2.1 What share of firms received COVID-EIDL funds?

Some businesses applied for and received COVID-EIDL funding, either in addition to or instead of PPP loans. Unlike PPP, however, COVID-EIDL loans did not have a forgiveness condition and for sufficiently large loans, businesses were required to provide collateral. Figure 13 displays recipient shares (top) and establishment exit rates (bottom) by firm-age group. The recipient shares reveal that participation in the program declined with firm age. Generally speaking,

young firms participated at higher rates than older firms and a higher share of applicants were approved among young firms. Twenty-four percent of businesses in the 1 to 5 firm-age group applied for and received COVID-EIDL funding, three times the participation rate of the oldest employer firms. Interestingly, Misera (2024), who uses data from the Small Business Credit Survey, finds that businesses with a primary business owner over the age of 65 were more likely to participate in COVID-EIDL than businesses with a younger primary owner. While our experimental BDS data product does not attribute business owner characteristics to firms, other work at the Census Bureau is investigating the ownership characteristics of firms that received SBA funding.

4.2.2 Measuring the business resilience of COVID-EIDL recipients

Following the intuition above, we examine the establishment exit rate from 2022 to get a sense of how resilient COVID-EIDL recipients were compared to non-recipients and applicants that ultimately did not participate in the program. Figure 13 reports the establishment exit rate for each firm-age group. Young businesses age 1-5 that received COVID-EIDL funding exited at a much lower rate (11 percent) compared to young businesses that neither applied nor received funding (19 percent). The fact that applicant non-recipients exited at only marginally higher rates than recipients suggests that the act of applying is correlated with the business attributes that affect exit. It is also possible that applicant non-recipients received funding from another pandemic-era program, such as PPP, which had the potential to influence establishment exit. Finally, while participation in COVID-EIDL might have dampened the rate of exit among young firms, this relationship is not present for older firms. Most interesting is the fact that the oldest firms that participated in the program exited at higher rates than non-recipients that did not apply for funding. To this point, Misera (2024) finds that COVID-EIDL recipients were more likely to have elevated amounts of outstanding debt. Our data are consistent with a pattern where COVID-EIDL applicants were more financially strained than other firms in their age class.

4.3 Restaurant Revitalization Fund

4.3.1 What share of firms received RRF funds?

Turning next to RRF, which provided pandemic funding to restaurants, bars, and other qualified businesses including food trucks, caterers, and bakeries, etc., Figure 14 reports the recipient shares for each firm-age group, restricted to firms in eligible industries. Among the set of eligible industries, take-up rates ranged from 10 percent for start-ups to 12 percent for firms in the 6 to 10 firm-age group. The lowest recipient share belonged to the oldest firms born before 1976. While this recipient share appears low across firm-age groups, recall that this program began approximately 14 months after PPP, when there was much more heterogeneity in the effect of the pandemic on restaurants.

4.3.2 Measuring the business resilience of RRF recipients

In Figure 15, we plot the 2022 establishment exit rate for several eligible industries by recipient status. Of particular interest is the distinction between full-service (NAICS 722511) and limited-service (NAICS 722513) restaurants. We find that full-service restaurants that received RRF funding exited at lower rates than non-recipients, including those who applied and were denied. In contrast, exit rates for limited-service restaurant recipients were higher compared to applicants who were denied. Other industry groups were divided. Drinking places, cafeterias, and snack and beverage bars were similar to full-service restaurants and had lower exit rates if they applied for and received RRF grants. However for hotels and caterers, just applying for RRF was associated with a lower exit rate, regardless of whether the business received funds.

4.4 Shuttered Venue Operators Grants

4.4.1 What share of firms received SVOG funds?

Finally, we turn to a brief analysis of the Shuttered Venue Operators Grants program, which provided emergency assistance to performing arts businesses that were impacted by the pandemic. This program was launched well after the start of PPP and COVID-EIDL, the two largest pandemic-era programs, and around the same time as RRF, which, similar to SVOG, was much more targeted. Less than 0.2 percent of employer firms applied for and received SVOG funding. Although small in scale, this program provided funding to a set of businesses that faced serious hardship during the pandemic, due to the difficulty of gathering in close quarters.

4.4.2 Measuring the business resilience of SVOG recipients

In Figure 16, we report the 2022 establishment exit rate for three selected sectors: information (NAICS 51), arts, entertainment, and recreation (NAICS 71), and accommodation and food services (NAICS 72), which were most represented among recipients. We also show the establishment exit rate for a catch-all "other" group, which includes all other sectors in the economy. We see that in sectors 51 and 71, recipients of SVOG support exited at lower rates in 2022 compared to both types of non-recipients. Among the "other" group, recipients and non-recipients that never applied for SVOG funding exited at about the same rate in 2022 while applicant non-recipients exited at a much higher rate. This again shows the potential for endogeneity bias as program applicants might be more financially distressed than non-applicants.

5 Conclusion

This paper introduces a new experimental data product, BDS-SBA COVID, that measures the business dynamics of firms that received pandemic assistance in the form of SBA-backed funding, most notably, the Paycheck Protection Program. Following recipient and non-recipient businesses over time, we track job creation and destruction and entry and exit pre- and post-

pandemic. This data product aims to help answer critical questions concerning the distribution of pandemic assistance to businesses and whether participating businesses were better able to weather the economic decline that accompanied the pandemic. We describe the take-up share, or percentage of businesses that participated in PPP and find that mid-size firms (20-499 employees) participated at the highest rate (80%), compared to small firms (1-19 employees) at just over 60%. In terms of timing, older businesses were more likely to be early participants in PPP. While the final distribution of PPP was nearly uniform across counties by urban-rural classification, businesses operating in predominantly urban counties were more likely to receive their first draw later, after the second tranche of funds became available in late April 2020. Not surprisingly, the NAICS 72 sector, comprised of hotels and restaurants, reported the highest take-up share among all sectors in the economy.

A unique feature of this new data product, consistent with the core BDS, is the ability to explore the *dynamics* of businesses across a wide variety of dimensions. In exploring the public-use statistics, we uncover several interesting findings. For the youngest firms that received PPP, the timing of receipt mattered; receiving an early first draw correlated with a lower job destruction rate compared to non-recipients and businesses that received a later first draw. For the smallest firms, simply participating in PPP is associated with a lower degree of employment loss, something also seen when looking across sectors. When looking at our measure of establishment exit, the data show that the timing of PPP receipt was important for businesses of nearly all ages. Businesses that received an early first draw exited at a lower rate than later first draw recipients. This exit pattern is also true for the smallest firms. And while the timing of loan receipt appears to be correlated with measures of job destruction and establishment exit, the *number* of loans appears to be correlated with net job creation. We find that dual recipients, or businesses that received a first and second draw from PPP, actually created jobs on net in 2022.

With respect to the other three programs, COVID-EIDL, RRF, and SVOG, the results are more mixed. For these programs, we have the advantage of being able to compare recipients to other businesses that applied and were denied. We see that some types of firms had lower exit rates in 2022 compared to applicants who were denied funds or non-applicants but this was dependent on detailed establishment industry and firm age.

In general, these findings reveal that participating in one of the four pandemic-era loan pro-

grams, most notably PPP, was associated with lower rates of job destruction and establishment exit. However it is important to note that, while the descriptive statistics presented in this paper help paint a picture of how businesses fared during unprecedented economic times, they do not represent causal relationships. Future work is needed to measure the causal link between program participation and business outcomes that takes account of potential endogeneity in which businesses received loans from these programs. We hope that these descriptive data will help motivate future research on this topic.

Table 1: Matching the Census Bureau's Business Register and SBA PPP Loan File

	Loan Count			Share
Total loans in SBA file	12,500,000			
Total number of loans terminated or cancelled		1,000,000		
Total loans eligible for matching		11,500,000		
Total loans matched to BR			10,360,000	90%
Total loans not matched to BR			1,140,000	10%

Note: This table describes the loan-level matching from the SBA's PPP data to the Census Bureau's Business Register. The share represents the share of total loans eligible for matching. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Table 2: Matching Breakdown by Type of Link

	Loan Count	Share
Loans with EIN and PIK	7,227,000	69.8%
Loans with EIN only	648,000	6.3%
Loans with PIK only	2,439,000	23.5%
Loans without EIN and PIK (name/address match)	46,000	0.4%
Total loans matched to BR	10,360,000	100.0%

Note: This table provides a breakdown of the loan-level matching by type of link. EIN = Employer Identification Number. PIK = Protected Identification Key. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Table 3: PPP EINs that Match to the Longitudinal Business Database

	EIN Count (share)		
Total unique EINs in PPP and BR	5,663,000		
LBD match		3,998,000 (71%)	
BDS in-scope			3,659,500 (92%)
BDS out-of-scope			338,500 (8%)

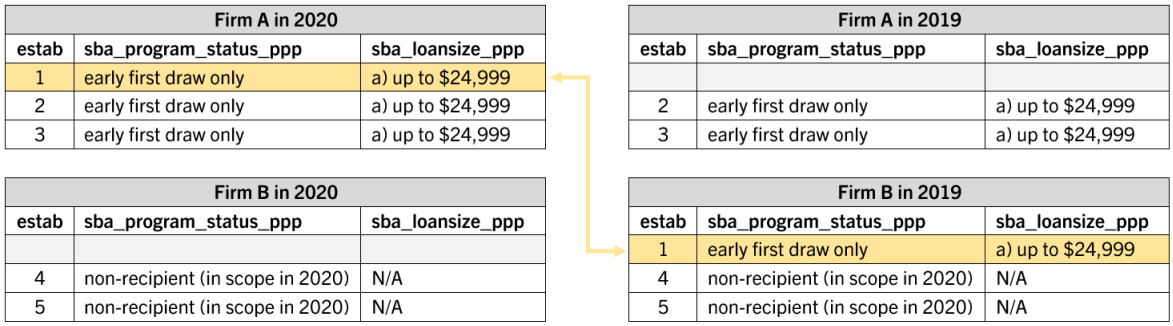
Note: This table provides a breakdown of the EINs that match to the LBD, including those that are in-scope and out-of-scope for BDS tabulation. EIN = Employer Identification Number. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Table 4: PPP EINs that Do Not Match to the Longitudinal Business Database

	EIN Count (share)			
Total unique EINs in PPP and BR	5,663,000			
LBD non-match		1,665,000 (29%)		
Match non-employer			1,087,000 (65%)	
Reported jobs = 1 or less on PPP				574,000 (53%)
Reported jobs > 1 on PPP				513,000 (47%)
Do Not Match non-employer			578,000 (35%)	
Reported jobs = 1 or less on PPP				334,000 (58%)
Reported jobs > 1 on PPP				244,000 (42%)

Note: This table provides a breakdown of the EINs that do not match to the LBD. EIN = Employer Identification Number. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 1: Longitudinally Linking Establishments and their Treatment Status for PPP



Firm A in 2020		
estab	**sba_program_status_ppp**	**sba_loansize_ppp**
1	early first draw only	a) up to $24,999
2	early first draw only	a) up to $24,999
3	early first draw only	a) up to $24,999

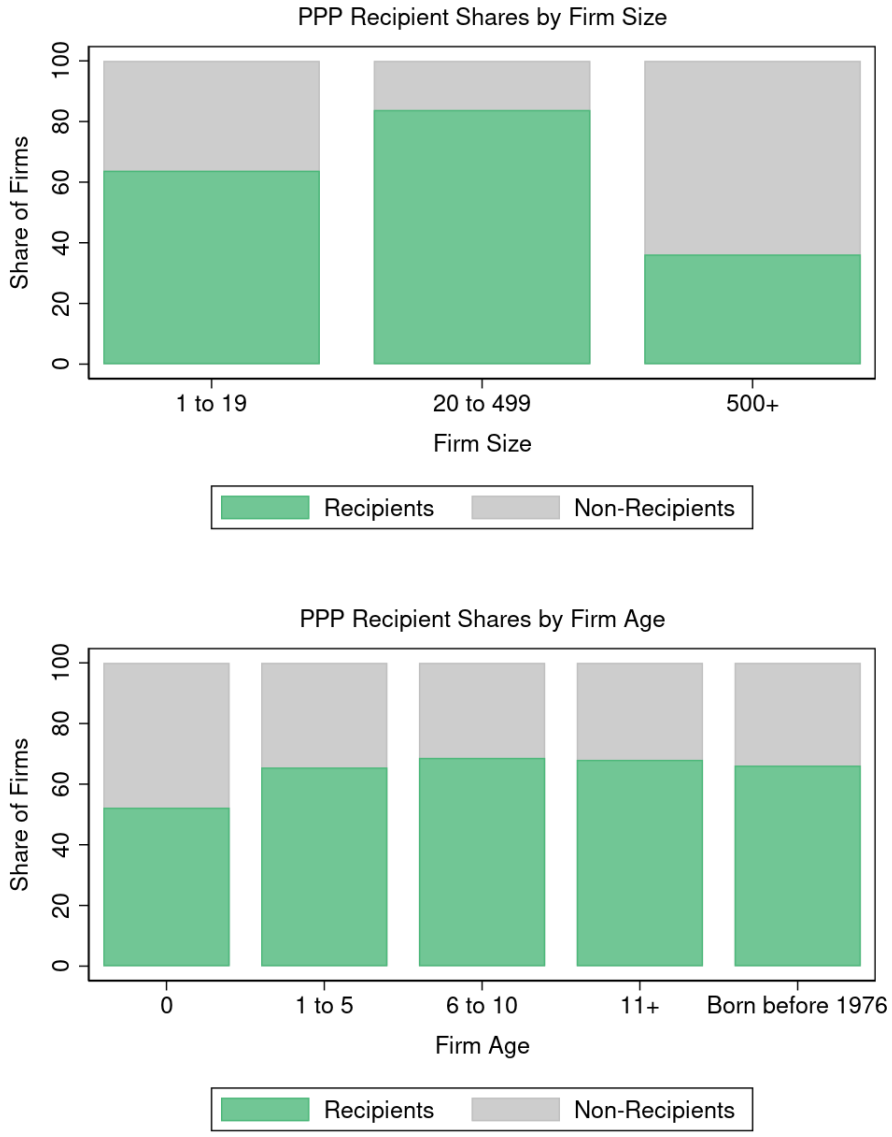
Firm A in 2019		
estab	**sba_program_status_ppp**	**sba_loansize_ppp**
2	early first draw only	a) up to $24,999
3	early first draw only	a) up to $24,999

Firm B in 2020		
estab	**sba_program_status_ppp**	**sba_loansize_ppp**
4	non-recipient (in scope in 2020)	N/A
5	non-recipient (in scope in 2020)	N/A

Firm B in 2019		
estab	**sba_program_status_ppp**	**sba_loansize_ppp**
1	early first draw only	a) up to $24,999
4	non-recipient (in scope in 2020)	N/A
5	non-recipient (in scope in 2020)	N/A

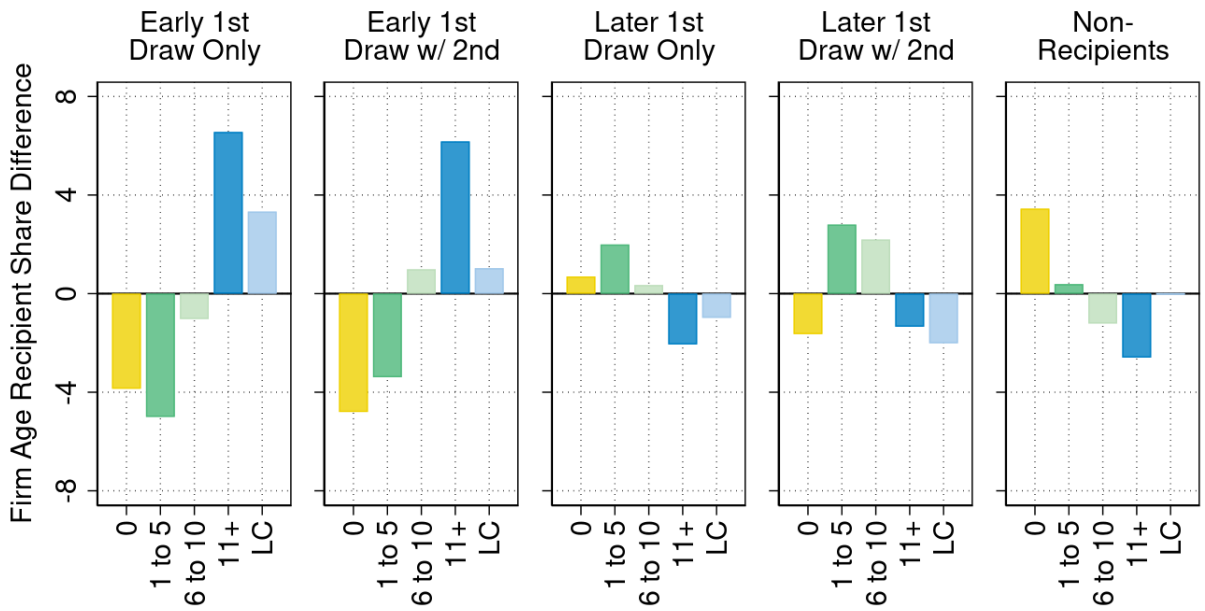
Note: This figure provides an example of how establishments are longitudinally linked forward and backward in time. The illustrative example above utilizes two years and two firms. In every year of the BDS tables, firms will be tabulated in the bins for which they have at least one establishment present. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 2: PPP Recipient Shares by Firm Size and Firm Age



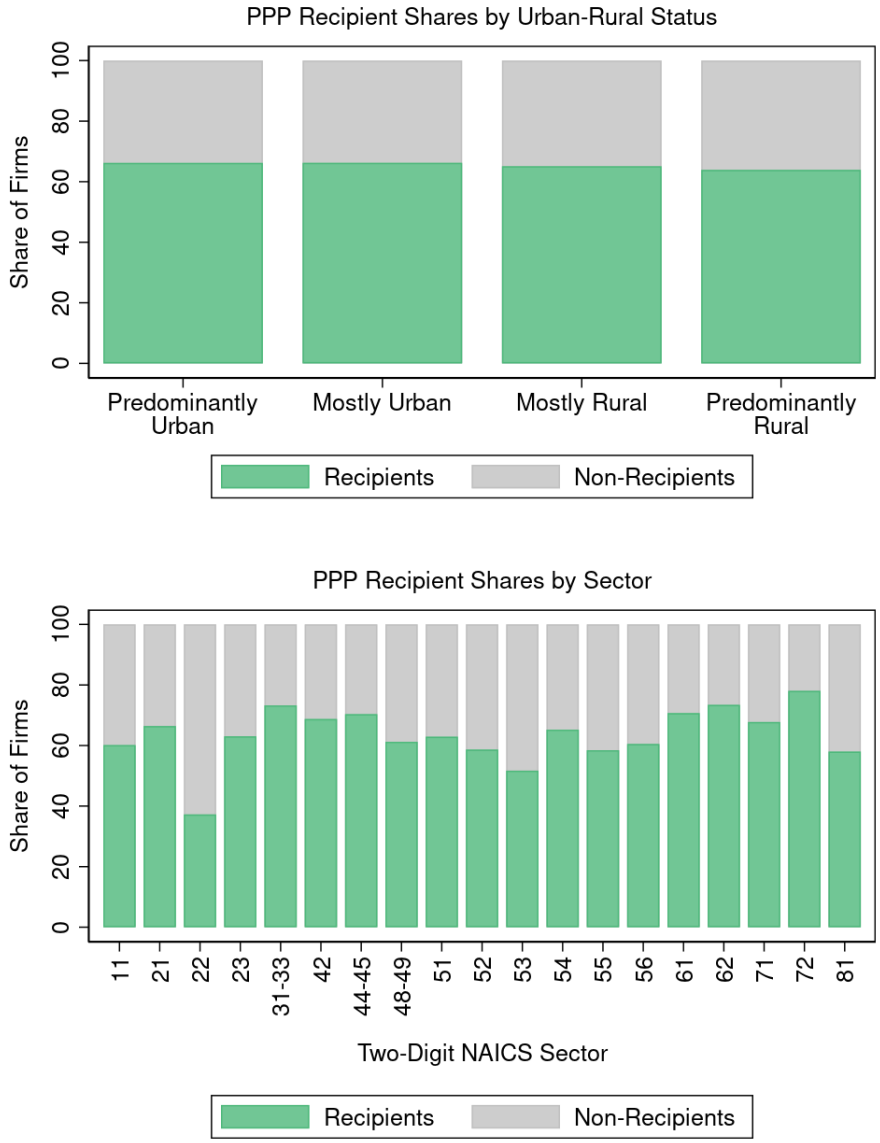
Note: This figure displays the share of employer businesses that received PPP by firm size (top) and firm age (bottom). Each share is derived from 2020 data. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 3: Were Older Firms Over-Represented During the Early Weeks of PPP?



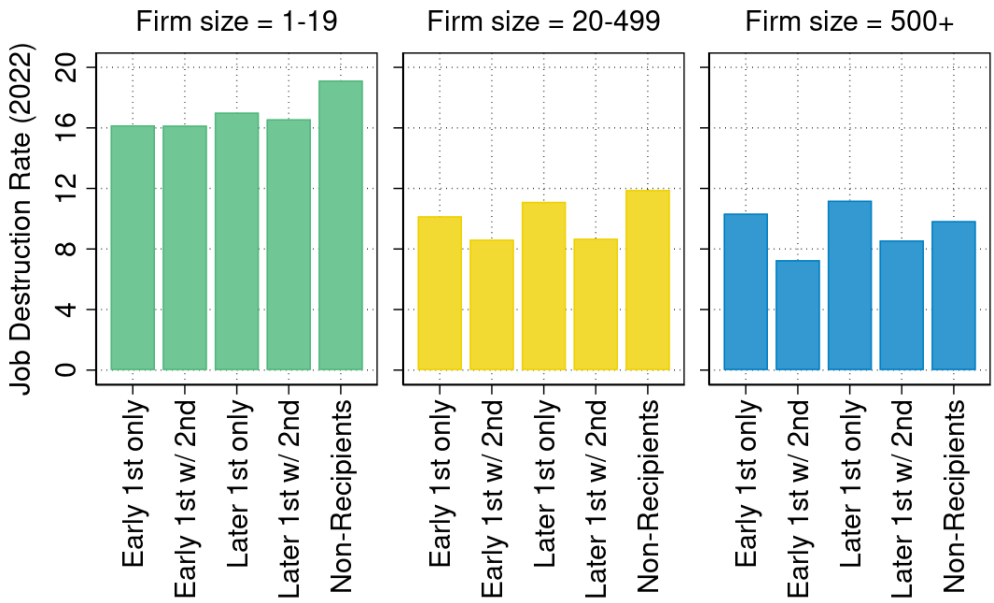
Note: This figure explores the extent to which firm-age groups are over- or under-represented by recipient status. Each vertical bar represents the difference between the recipient share of firms and the economy-wide share of firms for each firm-age group. Positive vertical bars suggest that firms in a particular firm-age group were over-represented for a specific recipient status, while negative vertical bars suggest that firms were under-represented. The "LC" firm-age group represents firms born before 1976. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 4: PPP Recipient Shares by Urban-Rural Status and Sector



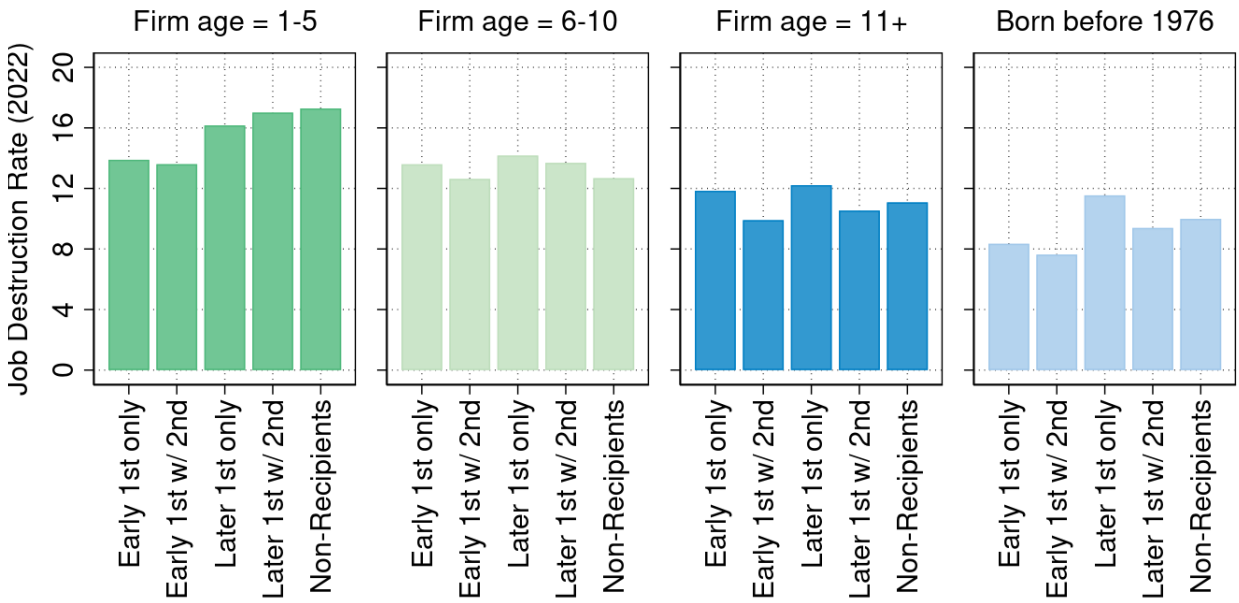
Note: This figure displays the share of employer businesses that received PPP by urban/rural classification (top) and sector (bottom). Each share is derived from 2020 data. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. The following defines each sector reported. NAICS 11: Agriculture, Forestry, Fishing and Hunting; NAICS 21: Mining, Quarrying, and Oil and Gas Extraction; NAICS 22: Utilities; NAICS 23: Construction; NAICS 31: Manufacturing; NAICS 42: Wholesale Trade; NAICS 44: Retail Trade; NAICS 48: Transportation and Warehousing; NAICS 51: Information; NAICS 52: Finance and Insurance; NAICS 53: Real Estate and Rental and Leasing; NAICS 54: Professional, Scientific, and Technical Services; NAICS 55: Management of Companies and Enterprises; NAICS 56: Administrative and Support and Waste Management and Remediation Services; NAICS 61: Educational Services; NAICS 62: Healthcare and Social Assistance; NAICS 71: Arts, Entertainment, and Recreation; NAICS 72: Accommodation and Food Services; NAICS 81: Other Services. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 5: Measuring Job Destruction among PPP Recipients by Firm Size



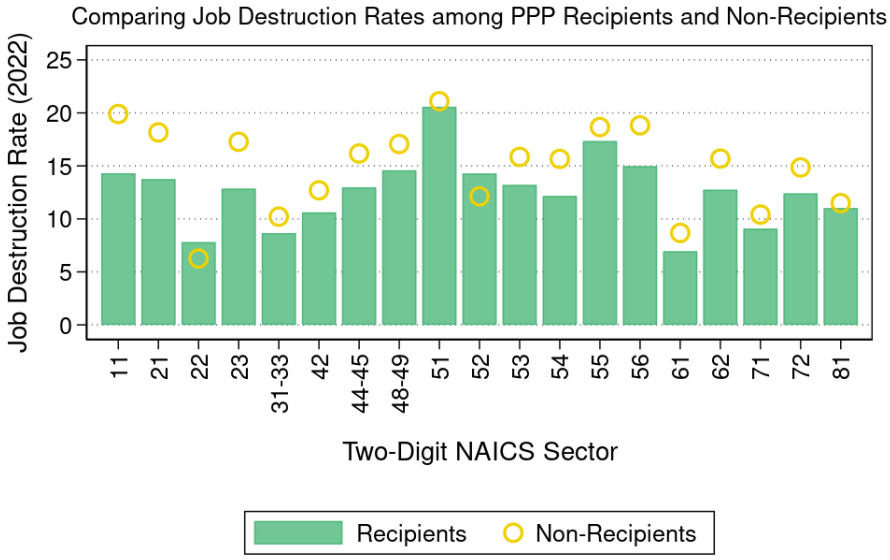
Note: This figure displays the 2022 job destruction rate by firm size and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 6: Measuring Job Destruction among PPP Recipients by Firm Age



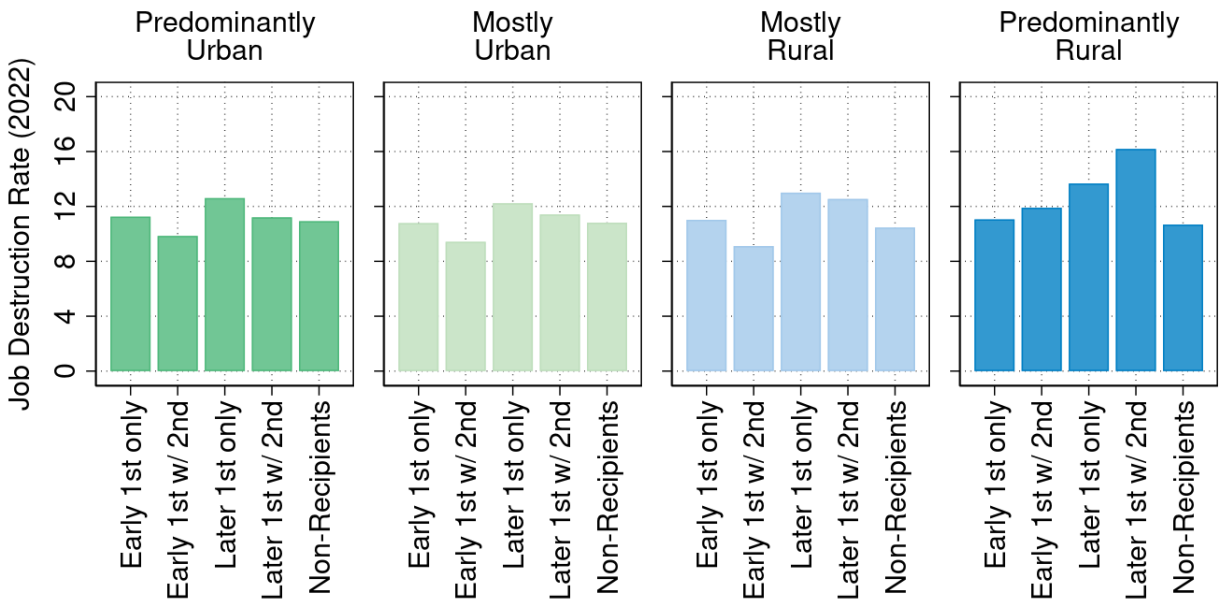
Note: This figure displays the 2022 job destruction rate by firm age and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 7: Measuring Job Destruction among PPP Recipients by Sector



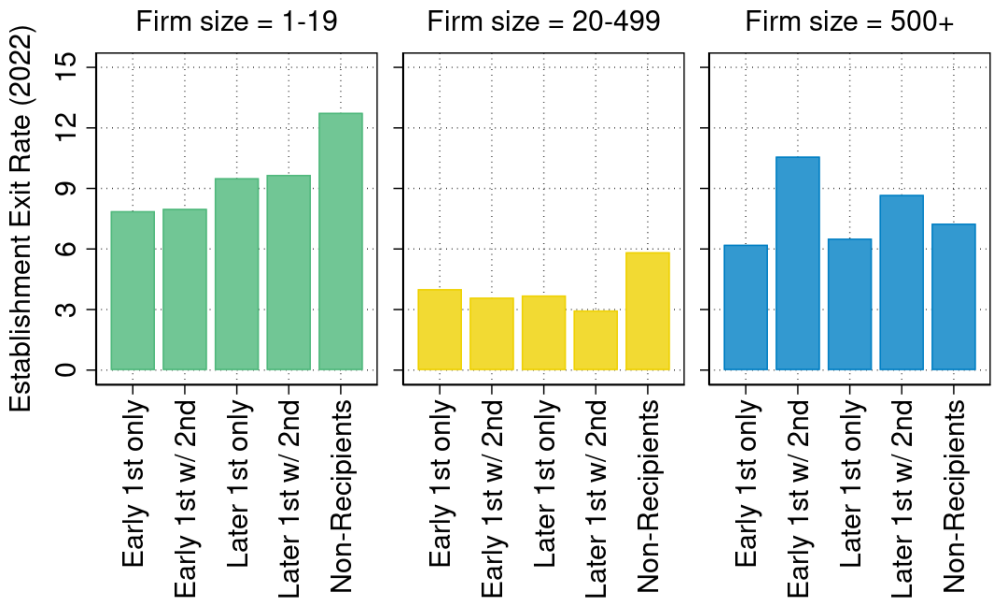
Note: This figure displays the 2022 job destruction rate by sector and recipiency status. The recipient classification in this graph includes all four recipient bins. The following defines each sector reported. NAICS 11: Agriculture, Forestry, Fishing and Hunting; NAICS 21: Mining, Quarrying, and Oil and Gas Extraction; NAICS 22: Utilities; NAICS 23: Construction; NAICS 31: Manufacturing; NAICS 42: Wholesale Trade; NAICS 44: Retail Trade; NAICS 48: Transportation and Warehousing; NAICS 51: Information; NAICS 52: Finance and Insurance; NAICS 53: Real Estate and Rental and Leasing; NAICS 54: Professional, Scientific, and Technical Services; NAICS 55: Management of Companies and Enterprises; NAICS 56: Administrative and Support and Waste Management and Remediation Services; NAICS 61: Educational Services; NAICS 62: Healthcare and Social Assistance; NAICS 71: Arts, Entertainment, and Recreation; NAICS 72: Accommodation and Food Services; NAICS 81: Other Services. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 8: Measuring Job Destruction among PPP Recipients by Urban-Rural Classification



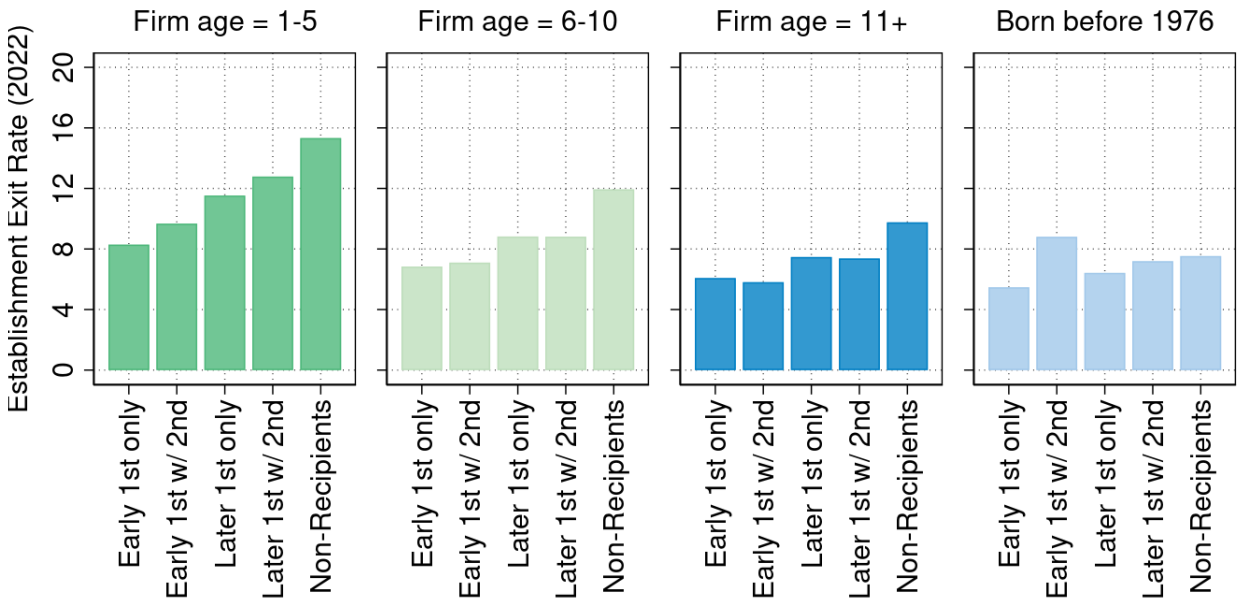
Note: This figure displays the 2022 job destruction rate by urban-rural classification and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. Using population data from the 2020 Decennial Census, counties are classified into four categories: predominantly urban counties have at least 80 percent of their population living in urban areas, mostly urban counties have between 50 and 80 percent of their population living in urban areas, mostly rural counties have between 20 and 50 percent of their population living in urban areas, and predominantly rural counties have less than 20 percent of their population living in urban areas. It is important to note that establishments are tabulated according to the urban-rural attribute of the county in which they reside. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 9: Measuring Establishment Exit among PPP Recipients by Firm Size



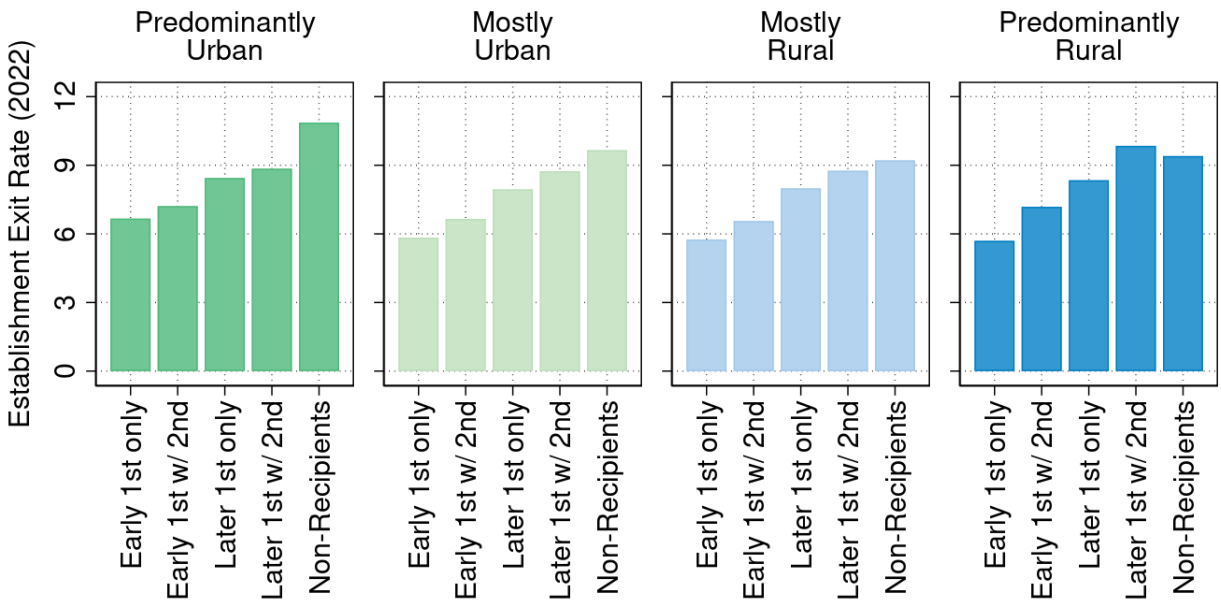
Note: This figure displays the 2022 establishment exit rate by firm size and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 10: Measuring Establishment Exit among PPP Recipients by Firm Age



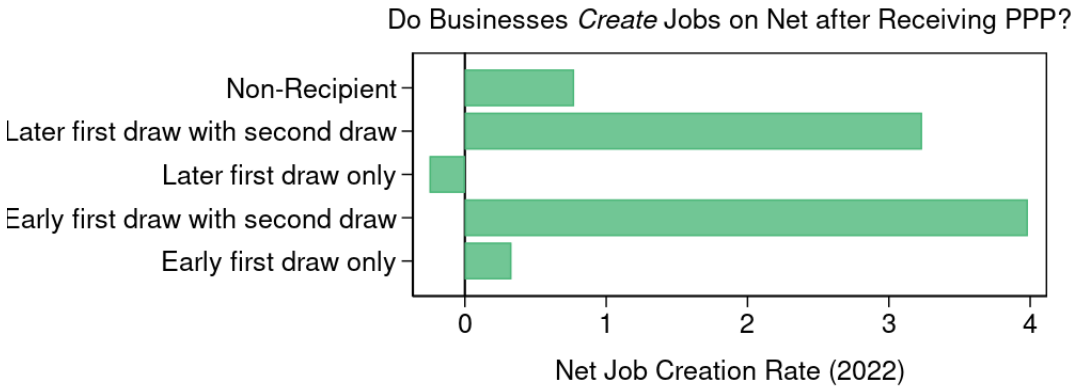
Note: This figure displays the 2022 establishment exit rate by firm age and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 11: Measuring Establishment Exit among PPP Recipients by Urban-Rural Classification



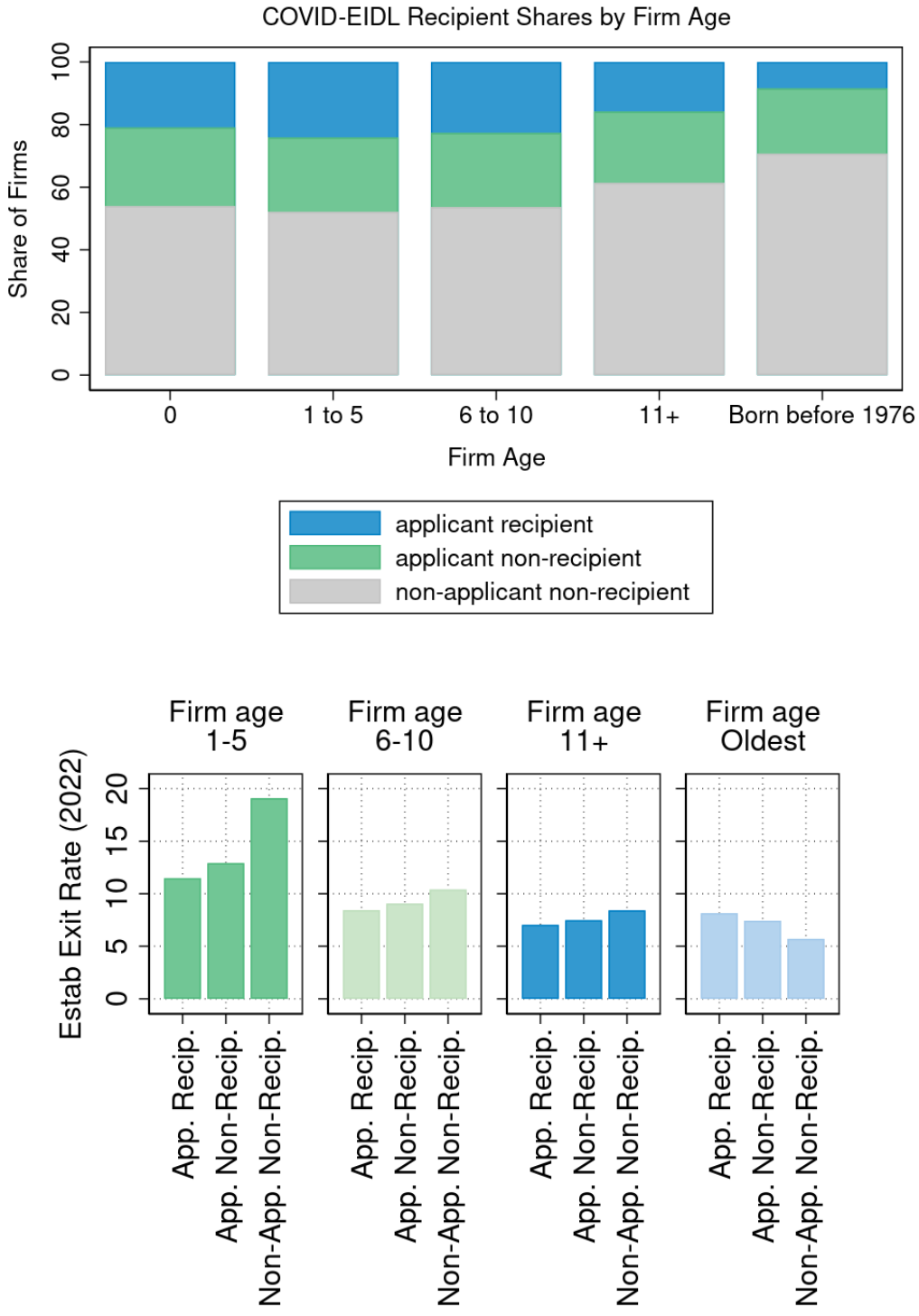
Note: This figure displays the 2022 establishment exit rate by urban-rural classification and recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. Using population data from the 2020 Decennial Census, counties are classified into four categories: predominantly urban counties have at least 80 percent of their population living in urban areas, mostly urban counties have between 50 and 80 percent of their population living in urban areas, mostly rural counties have between 20 and 50 percent of their population living in urban areas, and predominantly rural counties have less than 20 percent of their population living in urban areas. It is important to note that establishments are tabulated according to the urban-rural attribute of the county in which they reside. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 12: Measuring Net Job Creation among PPP Recipients



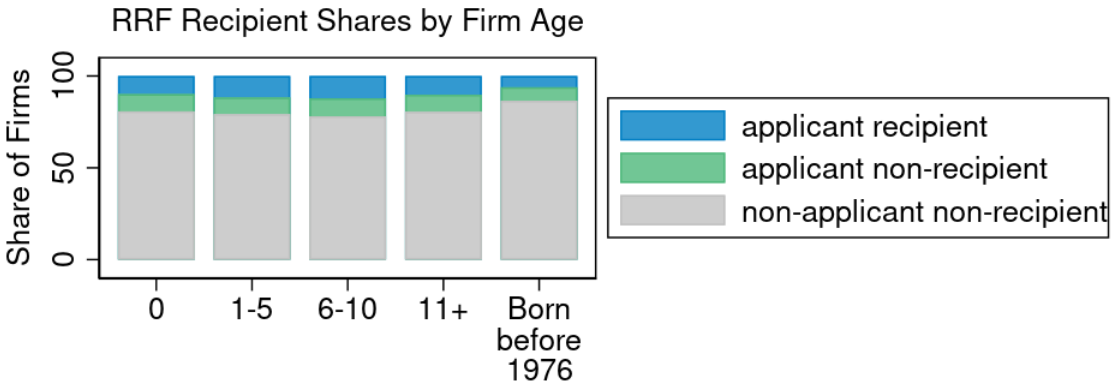
Note: This figure displays the 2022 net job creation rate by recipiency status. Businesses that received an early first-draw loan were approved for funding after CARES but before April 24, 2020. Any business that received a later first-draw loan had their funding approved on or after April 24, 2020. Second draw loans were distributed in 2021. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 13: COVID-EIDL Recipient Shares and Establishment Exit Rates by Firm Age



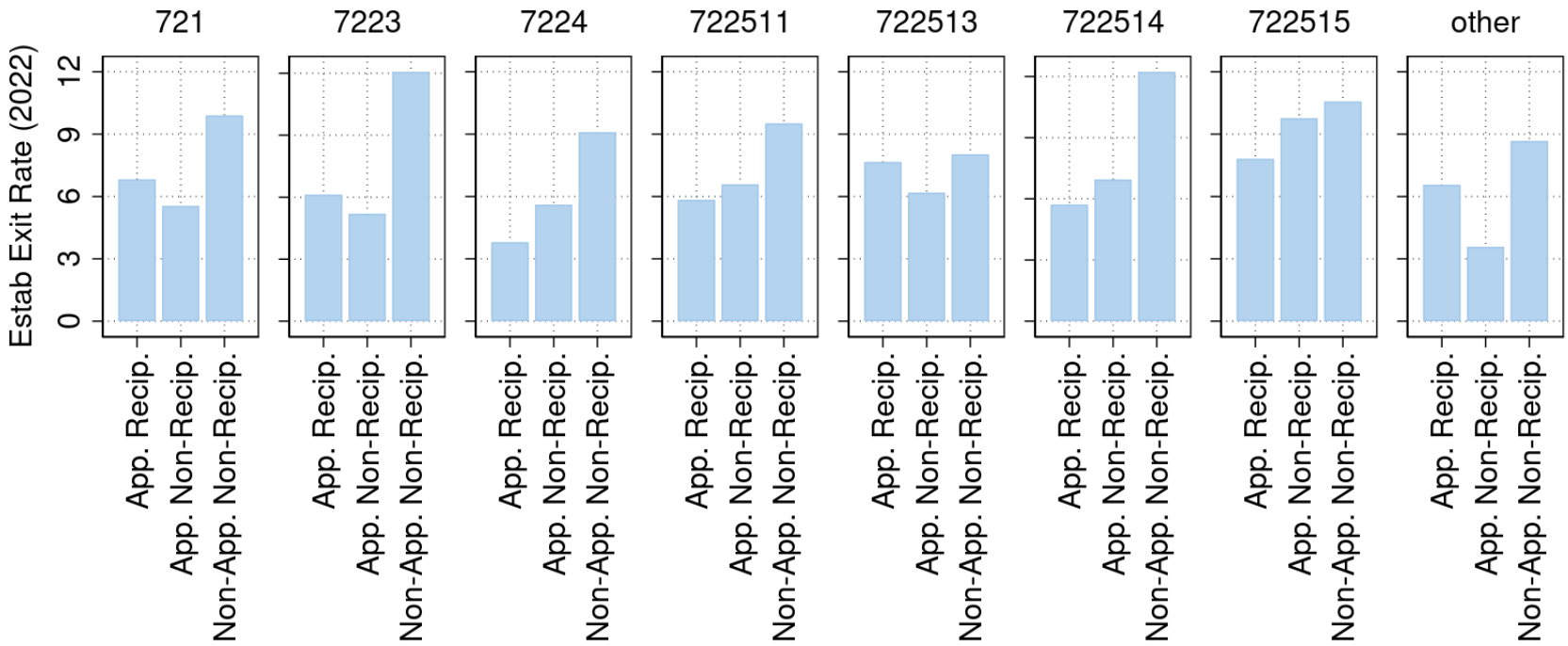
Note: This figure displays the share of employer businesses that received COVID-EIDL funding and the 2022 establishment exit rate by firm age and recipiency status. Each share is derived from 2020 data. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 14: RRF Recipient Shares by Firm Age



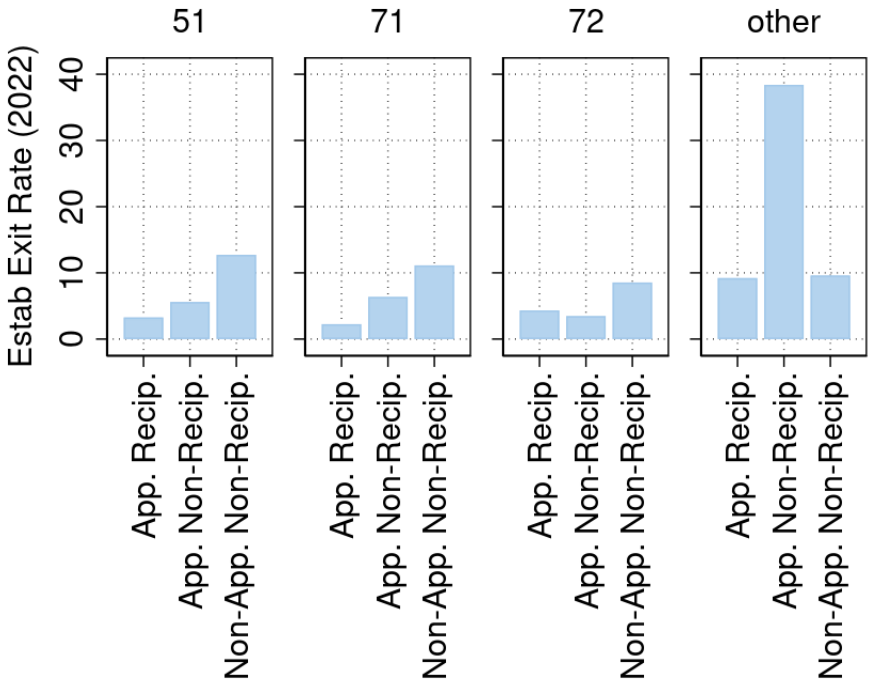
Note: This figure displays the share of RRF-eligible employer businesses that received RRF funding. Each share is derived from 2020 data. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 15: RRF Establishment Exit Rates by Industry



Note: This figure displays the 2022 establishment exit rate by industry and recipiency status. The following defines each industry reported. NAICS 721: Accommodation. NAICS 7223: Special Food Services. NAICS 7224: Drinking Places (Alcoholic Beverages). NAICS 722511: Full-Service Restaurants. NAICS 722513: Limited-Service Restaurants. NAICS 722514: Cafeterias, Grill Buffets, and Buffets. NAICS 722515: Snack and Nonalcoholic Beverage Bars. The "other" category includes breweries, retail bakeries, wineries, commercial bakeries, distilleries, supermarkets and other grocery stores (except convenience), all other specialty food stores, beer, wine, and liquor stores, convenience stores, baked goods stores, gasoline stations with convenience stores, confectionary and nut stores, meat markets, fish and seafood markets, fruit and vegetable markets, other gasoline stations, vending machine operators, bowling centers, all other amusement and recreation industries, amusement arcades, fitness and recreational sports centers, and golf courses and country clubs. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

Figure 16: SVOG Establishment Exit Rates by Sector



Note: This figure displays the 2022 establishment exit rate by sector and recipiency status. The following defines each industry reported. NAICS 51: Information. NAICS 71: Arts, Entertainment, and Recreation. NAICS 72: Accommodation and Food Services. The "other" category includes all other sectors in the economy. The source of the underlying data come from the 2022 vintage of an experimental BDS data product: BDS SBA COVID. DRB approval numbers: CBDRB-FY24-0487, CBDRB-FY24-0446.

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