

Small Businesses and the Paycheck Protection Program in the Inland Empire (Part III of III: Neighborhood Context)

We devote three issue briefs to our recent study on the allocation of the Paycheck Protection Program (PPP) in the Inland Empire. The PPP is a Small Business Administration (SBA)-backed loan program that helps businesses keep their workforce employed during the COVID-19 crisis. In Issue 1, we introduce the PPP and examine the characteristics of small businesses that have received PPP loans. Then we look at the geographical distribution of PPP loans at the neighborhood level in Issue Brief 2. In Issue Brief 3, we address the question of what neighborhoods received more PPP loans.

QUICK FACTS:

- In general, the PPP was successful in reaching small businesses, if measured by the total number of loans, as neighborhoods' small business counts are highly associated with loan counts.
- Vulnerable businesses did not receive sufficient attention.
- Community vulnerability is negatively associated with the number of PPP loans. However, the relationship between loan counts and vulnerable businesses and the relationship between loan counts and community vulnerability must be understood within local contexts.
- Communities with higher unemployment rates and Black populations received more loans, but, both draws are negatively associated with the proportion of the Hispanic population.
- The implementation and delivery process of the PPP is closely related to the socioeconomic characteristics of local communities.

Introduction

In Research Brief I – An Overview (ICSD, 2021a) and Research Brief II – Spatial Patterns (ICSD, 2021b), we provided an introduction to the Paycheck Protection Program (PPP) program running from April 3, 2020 to May 31, 2021, the general statistics about the PPP loans received by small businesses in the Inland Empire, and the spatial patterns of the PPP allocation at the neighborhood (proxied by census tract) level. While we observe spatial disparities in PPP allocations, the underlying reason and the implication are unclear by solely looking at the PPP data. In this brief, we analyze the PPP data within the neighborhood context to formally address the question of spatial equity. We first provide the context of the research question and then introduce the variables, data, and methodology. This brief is complemented by [an interactive dashboard](#), which allows for an exploration of the relevant variables in the inland region at the census tract level. We conclude with a discussion on the results and policy implications.

Research Background

Existing studies suggest that PPP has benefited small businesses that were able to receive the loans, including retaining workers and paying for utilities, rent, supplies, insurance, and other costs (Bartik et al., 2020). However, these studies also point out that, despite the unprecedented amount of aid, the demand outpaced the supply of funds, and the funds did not reach the businesses that needed the assistance the most. Inefficiency in the process of distribution was due to inaccessible information about the PPP loans and a lack of eligibility guidance. For example, Humphries et al. (2020) point out that the combination of information frictions and the PPP's "first-come, first-served" design disadvantaged the smallest businesses. Specifically, the smallest businesses were less aware of the PPP and less likely to apply. Among businesses that applied for the PPP, smaller businesses applied later, faced longer processing times, and were less likely to have their applications approved. At the same time, many businesses were reluctant to apply because of distrust and concerns about administrative complexity and eligibility, insufficient knowledge about program conditions and application procedures, bureaucratic hassles, and difficulties establishing eligibility (Bartik et al., 2020; Fairlie & Fossen, 2021).

These issues have particularly limited access to emergency resources for minority and women-owned businesses (Fairlie & Fossen, 2021; OES, 2020). Kickul et al. (2021) find that significant differences exist between women- and men-owned businesses, with male-owned firms receiving over 80% of PPP loans during the COVID-19 pandemic. Similarly, small business owners of color reported that they were having difficulties accessing PPP funds (Gamboa, 2020; Santellano, 2021). For example, according to a nationwide survey conducted in June 2020, Latinx-owned businesses had their PPP loans approved at approximately half the rate of white-owned businesses, 10% to

17% (Orozco et al., 2020). According to another nationwide survey, only 12 percent of Black and Latino small business owners who have applied for funds through the SBA, mostly the PPP, reported receiving the amount they asked for, while 26 percent reported only receiving a fraction of the amount they applied for (Unidos US, 2020). Atkins et al. (2021) also find that Black-owned businesses received loans that were approximately 50% smaller than observationally similar White-owned businesses in the PPP.

These challenges are exacerbated for entrepreneurs of color operating in distressed urban regions. As racial minorities are highly concentrated in poor areas, their neighborhoods are often stripped of capital, market, and entrepreneurial resources even before the onset of the pandemic (Light & Rosenstein, 1995; Rubin, 2010; Sanders & Nee, 1987). Under Covid-19, small businesses in under-resourced communities are at high risk of closing permanently. Wang and Zhang (2021) demonstrate that there was a large disparity in both the presence and density of PPP enrolled lenders by the racial composition of the neighborhood, with more heavily Black-concentrated neighborhoods having significantly lower take-up of PPP loans. Likewise, Atkins et al. (2020) find that Black-White disparities in PPP loans appear (marginally) greater in areas with fewer bank branches where Black firm owners may have been less likely to have prior relationships with SBA approved lenders. Moreover, the Black-White disparities in PPP loans decreased during the second round of funding when more non-bank entities were approved by SBA to participate in the program.

Minority-concentrated neighborhoods provide limited resources and information for small businesses. Small businesses and households are mutually dependent in these under-resourced communities. These communities are extremely vulnerable since their workers are more likely to be low-wage workers lacking health insurance and are working in front-line jobs. As such, it is hard to maintain consumer markets and employment since these businesses normally hire and serve locally (Dua et al., 2020; Wial, 2020). Borawski & Schweitzer (2021) find that PPP did have a broad reach to small businesses in low- and moderate-income (LMI) communities; however, it reached higher-income communities to a greater extent than areas with Black, Hispanic, and American Indian or Alaska Native majorities. Santellano (2021) also finds that Hispanic-owned small businesses in Los Angeles face difficulties in accessing PPP loans. The main challenges include the unnecessarily confusing and cumbersome process made by the banks, perceived discrimination of small businesses vs. larger ones, and time constraints, especially for those in food services that do not have the support of someone to help with their application. The study argues that institutional racism is a huge factor that plays a role in minority-owned businesses that struggled to access PPP.

The combination of socioeconomic and spatial vulnerability has made minority neighborhoods extremely vulnerable to the pandemic disruption and affects their capability to recover and reinvent. By examining the distribution of PPP loans across California's 53 congressional districts, Ong et al. (2021) find that districts with small businesses that predominantly provided the weakest economic base in terms of jobs and payroll received only 8 percent of the loan amount, compared

to 35 percent in districts with the strongest economic base. Wealthier districts, which tend to have fewer Black and Latino residents, received a larger share of PPP funds throughout the state compared to lower-income districts. In contrast, although Latinos are the largest ethnic group in California, none of the majority-Latino districts in the state were in the top quintile of districts that received PPP loan dollars. Therefore, they conclude that disparities in PPP lending have widened pre-pandemic economic inequalities across racial groups. Overall, the existing studies suggest significant unevenness in access to government assistance across different neighborhoods by socioeconomic status and racial composition. In particular, ethnic minority- and women-owned businesses face greater challenges in accessing PPP loans.

Data and Methodology

Our data source about the PPP loans in the Inland Empire is the micro PPP loans data (one record for each PPP loan) made available by SBA. It covers the entire lifecycle of the PPP loan program with loans starting on April 3, 2020, and ending on May 31, 2021. The microdata was further aggregated to census tracts, which were usually considered as a proxy for neighborhoods.

We adopt a multivariate linear regression model to analyze the relationship between the number of PPP loans and business, demographic, and socioeconomic characteristics at the neighborhood level (variables representing these characteristics for neighborhoods in the Inland Region are introduced and discussed in the subsequent subsections). The outcome of the number of First (or Second) Draw PPP loans received by census tract y_i , is expressed by the model in Equation (1) where x_{ik} are neighborhood-level characteristics and ϵ_i is the error term assumed to be independently and identically distributed. Our key variables of interest are the aggregate number of small businesses and the indicator for community vulnerability.

$$y_i = \beta_0 + \beta_1 x_{i0} + \dots + \beta_k x_{ik} + \epsilon_i \quad (1)$$

Small Businesses

We acquire the distribution of small businesses from the County Business Pattern's (CBP) latest data release (2019). CBP has provided statistics about establishments with paid employees in the U.S. annually since 1964. CBP 2019 reported a total of 77,626 business establishments in the Inland Empire¹. It does not provide data at the census tract level. Instead, it releases estimates at the ZIP code level. A typical ZIP Code area is larger than a census tract. Out of 170 ZIP Code areas that intersect with the study area, 162 areas had business establishments based on the 2019 CBP. We use the U.S. Department of Housing and Urban Development (HUD) and the United States Postal

Service (USPS) ZIP Code crosswalk files to allocate ZIP Code-level data from the CBP to census tracts. These crosswalk files contain the ratios of three address types in census tracts each ZIP Code overlaps: residential, business, and other (Wilson & Din, 2018). Our allocation process benefits from the detailed business ratio information provided in the crosswalk files, leading to more accurate and reliable tract-level data.

The aggregate number of small businesses is one of the key variables in the model. It ranged from 0 to 1772 with a standard deviation of 158 in this region based on CBP 2019. Like the PPP loan maps, tracts in southwestern San Bernardino County and western Riverside County tend to have a larger number of small business establishments. Furthermore, we include the rate of small business establishments identified to be most vulnerable to the COVID-19 pandemic in our model². The rate of vulnerable small businesses was not defined for the 7 tracts that had 0 small business establishments. The rate for the rest of 815 tracts varied from 0 to 33.3% with smaller rates largely distributed in the western region. The eastern side of the region had a higher rate of vulnerable businesses.

Community Resilience/Vulnerability

To improve disaster preparedness, the U.S. Census Bureau developed the Community Resilience Estimates (CREs) during the pandemic to help identify communities where resources and information may effectively mitigate the impact of disasters. In total, the CREs look at 11 Risk Factors (RFs), including Income-to-Poverty Ratio, absence of household caregivers, housing crowdedness, communication barrier, unemployment, disability, health insurance, elderly, serious heart condition, diabetes, and emphysema or current asthma. The CRE3 (rate of individuals with three or more risk factors) is used in our models as an indicator of community vulnerability. This variable has a wide range, 3% to 81.4%. Its spatial distribution is clustered, with many high values in the eastern area, although some tracts in the western area also have a high level of community vulnerability.

¹The total number of business establishments in the Inland Empire based on CBP 2019 is fewer than the total number of the First Draw PPP loans in this region. Besides the fact that the CBP data is a bit outdated while new businesses are constantly forming, the CBP series excludes data on self-employed individuals, which accounted for about 56.6% of the PPP loan recipients and 81.3% of all business establishments based on the 2018 Nonemployer Statistics.

²Three sectors, namely Accommodation and Food Services (72), Educational Services (61), and Arts, Entertainment, and Recreation (71) are determined to be the most severely impacted based on the Small Business Pulse Survey (SBPS). These sectors ranked the highest based on the average of four indices - Overall Sentiment Index, Operational Challenges Index, Financial Stress Index, and Expected Recovery Index - each of which is calculated and released by the Census Bureau.

Demographic, Socioeconomic, and Housing Variables from American Community Survey (ACS)

A set of demographic, socioeconomic, and housing variables at the census tract level was extracted from 2019 ACS 5-year estimates, including population, unemployment rate, poverty rate, rental burden, property value, income, homeownership rate, education attainment, and racial/ethnic composition. Economic variables measured in dollars including Property and Income were divided by 10,000 to make sure they are on a similar scale to the other explanatory variables. Next, all the explanatory variables were mean-centered so that the intercept represents the expected value of the response variable for an average tract (all the explanatory variables are set to their means). The descriptive statistics and their spatial distributions are provided upon request. A high spatial heterogeneity is observed across all the variables, e.g., education attainment, homeownership, and racial/ethnic composition.

Results

We ran two regression models for each of the two draws: one by the aggregate number of loans and one by the number of loans received by businesses with more than one job (not self-employed). For each model, we build different combinations of the independent variables: Model (1) looks at how the loan counts are associated with the number of small businesses and the rate of small businesses vulnerable to the COVID-19 pandemic. Model (2) further incorporates the community vulnerability variable while controlling for the local population. Model (3) only includes demographic, socioeconomic, and housing characteristics of the community, and Model (4) incorporates both the business and the community characteristics. Since the White test is rejected for each model, indicating the variance of the errors is not constant, we report robust standard errors.

Looking at the regression results for the aggregate number of First Draw and Second Draw PPP loans at the neighborhood level, Models (3) do not include business variables and have the poorest fit based on two measures of goodness of fit of the model - adjusted R squared and AIC. This suggests that the business variables are essential in predicting the number of loans received by neighborhoods in Inland Southern California. The aggregate number of small businesses is always positive and significant regardless of whether the community variables are included. The magnitude is also quite stable—about 0.5 for the First Draw and 0.2 for the Second Draw. This indicates that neighborhoods (or census tracts) where more small businesses were located received a larger number of PPP loans: an increase of ten small businesses in a census tract predicts an increase of five more PPP loans for the First Draw and two for the Second Draw, holding other conditions constant.

Meanwhile, the rate of small businesses vulnerable to the pandemic is less stable in the models - it is only significant for Model (2) of the First Draw, which suggests the neighborhoods with a higher rate of small businesses vulnerable to the pandemic received more First Draw PPP loans when holding other conditions constant. However, after the community-level socioeconomic characteristics are included, this variable loses its significance.

The community vulnerability variable is negatively associated with the number of loans when other socioeconomic variables are not included. It means that even though the number of PPP loans grew with the number of small businesses in the community, the higher the vulnerability of the community to the pandemic, the fewer number of loans it received. This applied to both First and Second Draw PPP loans, suggesting that these communities were less resourceful in obtaining financial assistance³. However, after including additional socioeconomic variables, the community vulnerability variable loses its significance. This suggests that the relationship between the number of loan recipients and community resilience must be understood under local neighborhood socioeconomic characteristics.

At the same time, the unemployment rate and the percentage of the Black population are positively correlated with the number of First Draw and Second Draw loans. In other words, the communities with higher unemployment rates and higher shares of Blacks received more business loans. However, both draws are negatively associated with the proportion of the Hispanic population, suggesting that the loans were less successful in reaching Hispanics-dominated communities. The overall pattern indicates that, although the business loans are targeting small businesses, the receiving process of these aids is closely related to the socioeconomic characteristics of local communities.

We further look at the results for the PPP loans received by small businesses with more than one employee. The results are like the total loan models in that a higher number of small businesses, lower community vulnerability, and more residents predict more loan recipients. However, the rate of vulnerable small businesses becomes negative for both draws. In other words, the neighborhoods with a higher rate of vulnerable businesses received fewer numbers of loans among the small businesses with more than one employee. It suggests one potential deficiency of the loan—it did not effectively reach communities with many vulnerable businesses. This pattern is consistent across all the models for both draws.

Overall, the descriptive and regression analyses suggest that (1) the loans, in general, reached small businesses, if measured by the total number of loans, as neighborhoods' business counts are highly associated with loan counts; (2) vulnerable businesses did not receive sufficient attention; (3) community vulnerability is negatively related to loan counts. However, the relationship between loan counts and vulnerable businesses and the relationship between loan counts and community vulnerability must be understood within local contexts as both variables become insignificant when

³ It is important to keep it in mind that the target of PPP loans is small businesses instead of the neighborhoods.

insignificant when community socioeconomic conditions are incorporated into the model. (4) communities with higher unemployment rates and higher shares of Blacks are receiving more business loans, but, both draws are negatively associated with the proportion of the Hispanic population. Altogether, the results suggest the implementation and delivery process of these aids is closely related to the socioeconomic characteristics of local communities. Indirectly, it suggests the mutual relationship between small businesses and their embedded communities in coping with the pandemic disruptions.

Discussion and Conclusion

The regression results indicate that the total number of businesses plays a significant role in predicting the total number of PPP loans received by census tracts in the Inland Empire. Therefore, if measured by the total number of loans, the PPP has largely reached its target, the small businesses. However, vulnerable businesses may not receive sufficient attention, and the vulnerability of local communities is negatively related to the number of received loans. Nonetheless, vulnerability at both the business and community level must be considered within local contexts as both variables become insignificant when community socioeconomic conditions are incorporated into the model. Specifically, communities with a higher unemployment rate and a larger Black population are receiving more business loans; in contrast, both draws of PPP are negatively associated with the proportion of the Hispanic population. This indicates the close relationship between business recovery or resilience and community socioeconomic conditions.

Unlike existing studies that have emphasized racial inequality in PPP loans, we argue that vulnerability has multiple dimensions and scales. If the PPP loans target vulnerable businesses, it is easier to target certain industries, such as restaurants, tourism, and other industries, which are the focus of some programs. However, the vulnerability could refer to both the traditionally underrepresented social groups in entrepreneurship and business ownership (e.g., women and ethnic minorities) and areas that are stripped of resources and infrastructure in fostering entrepreneurship. The social and spatial dimensions are most often overlapped in U.S. cities. Whether PPP loans should target vulnerable businesses and vulnerable communities (which traditionally have fewer businesses than other communities) certainly deserves attention. However, the program is currently designed to explicitly focus on emergency relief for small businesses. It may be unreasonable to require PPP loans to fulfill both short-term and long-term goals. In other words, PPP loan evaluations could be based on the targeted policy goals rather than requiring the business loan program to meet every need, for both businesses and local communities.

The mismatch between PPP loans and community vulnerability reflects both short-term needs and long-plagued challenges facing entrepreneurship and business development in disadvantaged

communities, in both social and spatial dimensions. In the short term, as minority- and women-owned businesses have limited access to government assistance due to the lack of information, knowledge, and assistance, extra resources are needed to ensure that they have equal access to government assistance to better serve these communities. The long-term challenges that minority- and women-owned businesses face include stereotyping and discrimination, lack of access to financial, human, and social capital, and restricted markets (T. Bates et al., 2018; Fairlie & Robb, 2008; Q. Wang, 2013). Our research has revealed that these long-existing issues have a compounding effect under disastrous events to reinforce the challenges in business operations. Moreover, the Latino community, accounting for over half the region's population, also suffers the highest poverty rate among other races in the region. As a peripheral and socioeconomically disadvantaged region, the negative perceptions of place and opportunity, the rigidity of informal institutions, and lack of resources have long stymied economic resilience and entrepreneurship.

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