

Neighborhood Demographics and the Allocation of Paycheck Protection Program Funds

12.21.20



The federal government's Paycheck Protection Program (PPP) was authorized by the Congress as part of the CARES Act to help small businesses and their employees cope with the adverse financial effects of the Covid-19 pandemic. Administered by the U.S. Small Business Administration (SBA), the PPP provided forgivable loans to help maintain workers on the payroll, facilitate rehiring as conditions improve, and keep small businesses intact. The program incentivized small businesses to retain workers by forgiving the loans conditional on meeting certain requirements governing use of the funds. It opened for applications on April 3, 2020 and ended on August 8, disbursing 5.2 million loans totaling \$525 billion with the participation of nearly 5,500 lending institutions.

In this research note, we utilize detailed loan-level data released by the SBA last August, merged at the ZIP code level with data from other sources, to examine the distribution of PPP funds in relation to the percent minority population of neighborhoods (ZIP codes) and presence of an Opportunity Zone. The latter is an area that has been designated to be an economically distressed community where new investments, under certain conditions, may be eligible for preferential tax treatment. Ours is the first national study of which we are aware that analyzes the distribution of PPP funds across neighborhoods within counties.

The analysis indicates that areas with a high percent minority population received significantly more PPP dollars per small business establishment than other areas. Based on the results of a multivariate model, we find that a zip code in the top quintile of percent minority population received about 37 percent more PPP funds per small business establishment relative to an otherwise comparable zip code in the bottom quintile. Even if we distinguish only between majority-minority and all other areas (where the latter include the first four quintiles of percent minority population and part of the fifth), we still find a statistically significant differential—the majority-minority areas receive 9 percent more PPP funds than the rest.

Moreover, the nation's largest banks—categorized as those with more than \$50 billion in total assets – helped ensure this robust flow of PPP credit into communities with a high proportion of minorities. The PPP program also channeled a relatively large share of funds to neighborhoods that encompass Opportunity Zones.

A newly released analysis by Richardson, Mitchell, and Edlebi (2020), characterized as preliminary by the authors, uses data made available on December 1 by the Treasury Department that includes the street address of each PPP funded small business. These data are then geocoded to the Census tract level for this analysis, which finds that “neighborhoods with higher percentages of people of color received significantly fewer loans and lower amounts.” We find that this is not the case after controlling for number and size of the neighborhood small businesses and for county level economic factors. That is, ZIP codes with relatively high minority population evidently

Paul Calem

202.997.0867

Paul.Calem@bpi.com

Adam Freedman

614.975.7158

Adam.Freedman@bpi.com

were not underserved by the program once important drivers of loan demand have been accounted for.¹

Other previous studies have documented that financial stresses on U.S. small businesses resulting from the Covid-19 pandemic have been particularly severe for minority-owned firms. Fairlie (2020) conducted an analysis of the effect of the pandemic on small business closings, and found that minority owned businesses were disproportionately affected.² Mills and Battisto (2020) examine reasons for the elevated rate of closure of Black-owned small businesses during the pandemic. One reason identified in that study is that Black-owned businesses tend to be concentrated in counties that were harder hit by Covid-19; another is that Black-owned businesses had weaker cash positions preceding the crisis.³ While our study sheds light on PPP lending across neighborhoods with varying minority presence, we cannot measure directly the extent to which the PPP has helped mitigate the financial stresses on minority-owned small businesses, as data on minority ownership by ZIP code are lacking.

The remainder of this note is organized as follows. The next section describes our data sources. This is followed by two sections that develop and present our analysis, and then a final, concluding section.

The Data

Our analysis uses the SBA's loan-level data on the 5.2 million PPP loans originated through the duration of the Program to calculate cumulative PPP loan volume at the ZIP code level. For loans smaller than \$150,000, the data provide the precise dollar amount loaned along with the geographic location (state and ZIP code) of the recipient business. For loans exceeding \$150,000, the ZIP code of each business is also provided, but loan size is identified only within ranges. We therefore set these loan amounts equal to the average loan amount in the corresponding range based on the SBA's August 8th published aggregate report.⁴ We map each loan to a county location based on the reported ZIP code and state.⁵

Given that the primary objective of the PPP loan program is employee payroll and retention, the distribution of PPP loan dollars across ZIP codes can be expected to closely reflect the distribution of small business employees. Thus, analysis of PPP lending patterns should account for the number of small business employees in a ZIP code.

There is no publicly available data source that provides a precise count of number of small business employees by ZIP code. We use the Zip Code Business Patterns (ZBP) 2018 dataset from the U.S.

¹ Although minority population concentrations can generally be located more precisely using data at the Census tract level, conducting the analysis at the ZIP code level provides two important advantages. First, some businesses may be located in non-residential Census tracts adjacent or near to minority areas, and therefore may have ties to those areas as an employer or provider of goods and services. Second, data on number and size of small business establishments are available to the public only at the ZIP code but not at the Census tract level.

² Fairlie (2020) examined data from the Current Population Survey, which is conducted monthly by the U.S. Bureau of the Census and the U.S. Bureau of Labor Statistics and found that 22 percent of small business owners overall had stopped working between February and April 2020. The analysis indicated wide disparities between white and minority owners: 41 percent of African-American, 32 percent of Hispanic, 26 percent of Asian-American, and 17 percent of white business owners had stopped operating.

³ The latter observation has support in a study by Farrell, Wheat, and Mac (2020), which documents that Black- and Hispanic-owned businesses face challenges of lower revenues and profit margins and less cash liquidity.

⁴ Loans exceeding \$150,000 are slotted to the following ranges: \$150,000 – \$350,000; \$350,000 – \$1 million; \$1 million – \$2 million; \$2 million – \$5 million; and \$5 million – 10 million. See page 6 of <https://www.sba.gov/document/report-paycheck-protection-program-report-through-august-8-2020>

⁵ We utilize the ZIP code to county mapping made available by the U.S. Department of Housing and Urban Development, at https://www.huduser.gov/portal/datasets/usps_crosswalk.html#data

Census, which offers a reasonable alternative—the number of small business establishments by employee size range in a ZIP code.⁶

Our analysis below of (log of) PPP loan dollars per establishment in a given ZIP code employs as control variables the share of establishments in size ranges 0-5, 6-9, 10-19, and 20-99 employees. We apply a threshold of 500 or fewer employees to define small businesses, consistent with the primary criterion for eligibility for the PPP.

Salary and wage levels for small business employees can vary by neighborhood within a county due to variation in the types of businesses located in the neighborhood, in turn affecting PPP loan sizes. The ZBP dataset provides total number of employees in a ZIP code and total salaries and wages of these employees, which enables us to control for average pay of all employees in a ZIP code. While this is not the same as average *small business* employee pay, we believe that the two measures are sufficiently correlated.

Our source of information on neighborhood demographic characteristics is the 2010 Decennial Census dataset. Specifically, we obtain from this source the share of the population by Census tract that identifies as non-white (Black or African American, Hispanic, Asian-American, or Native American or Native Hawaiian.) In addition, we obtain the share of the working-age population (which we define as 21 and older) that is under 35 and the share that is over 55 by Census tract. These are useful control variables for our analysis, since the type of small business locating in an area may differ may depend on the concentration of younger or older households residing in the area.

We allocate these tract-level demographic variables to ZIP codes using the tract-to-ZIP mapping available from the U.S. Department of Housing and Urban Development (HUD).⁷ That is, for each ZIP code we calculate the weighted average of each measure using the weights provided by the mapping. The HUD mapping weights each Census tract fully or partially contained within a given ZIP code by the tract's share of the total residential population in that ZIP code.

Finally, to investigate the allocation of PPP loans to neighborhoods belonging to Opportunity Zones, we rely on the list of designated Opportunity Zones by Census tract available from the U.S. Department of the Treasury.⁸ We then construct a measure of the relative size of the Opportunity Zone portion of ZIP codes.

Specifically, we first create an indicator variable assigning a value of one if a Census tract is a designated Opportunity Zone and zero otherwise. Next, we calculate the weighted number of Census tracts in a ZIP code that are Opportunity Zones by calculating the weighted sum of this indicator by ZIP code using the HUD mapping. Lastly, we divide this weighted count of Opportunity Zone tracts by the weighted count of all Census tracts belonging to or overlapping with a ZIP code.

After merging the SBA, ZBP, demographic data, and Opportunity Zone measure by ZIP code, we restrict the sample to counties which contain at least ten zip codes to eliminate noise associated with cross-sectional variation within counties with few ZIP codes. The resulting dataset comprises 21,223 ZIP codes in 1,018 counties, of which 646 are located in metropolitan statistical areas and 372 are in smaller,

⁶ <https://www.census.gov/data/developers/data-sets/cbp-nonemp-zbp/zbp-api.html>

⁷ This cross walk is available from https://www.huduser.gov/portal/datasets/usps_crosswalk.html#data

⁸ See <https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx>

micropolitan areas.⁹ In the Appendix, we present several tables with summary statistics characterizing the sample.

Large banks. In general, the nation's largest banks have different capacities and processes for small business lending compared to smaller regional and community banks and nonbank lenders. According to the FDIC Small Business Survey, larger banks have the resources to meet the demand for credit from bigger small-business borrowers with the appropriate degree of attention to mitigating and managing credit risk. In addition, they can also foster economies of scale and use substantial amounts of quantifiable information to support a high volume of small-business loans and customers. Therefore, we also look separately at PPP lending by large banks. For this purpose, we focus on the group of banks with at least \$50 billion in total assets as of the first quarter of 2020.

In the SBA loan-level data, there are 34 banks in this category. They originated about 1.7 million loans totaling \$188.5 billion, corresponding to 32.6 percent of the total loan count and 35.9 percent of total loan dollars in the dataset.¹⁰ At least one of these banks is present (extended loans) in 15,658 of the 21,223 ZIP codes comprising our sample. The mean and median PPP loan volume of these large banks within a ZIP code is about \$11.2 million and \$2.9 million, respectively.

Multivariate Regression Analysis

We estimate regression equations relating the log amount of PPP loan dollars per small business establishment to percent minority population and presence of Opportunity Zones across ZIP codes, controlling for other relevant neighborhood factors. The equation is estimated with inclusion of county fixed effects and clustering of standard errors at the county-level. The fixed effects control for factors common to all ZIP codes in a county, such as the local economic impact of Covid-19.

PPP loan volume per establishment in a neighborhood would also depend on the size distribution of small businesses. Therefore, we include the share of small business establishments in each of the aforementioned firm size ranges.

As noted previously, average pay per small business employee, and as a result PPP loan volume, could vary across the types of small business establishments present in a neighborhood. Therefore, we include ZIP code average payroll expense.

In addition, we control for the age composition of the ZIP code population, which also might bear a relationship to types of business establishments located there. Specifically, we include the share of working-age population that is under 35 and the share that is over 55.

The relationship between the log of PPP dollars-per-establishment and percent minority population may not be linear. Therefore, in our baseline regression equation we include four dummy variables corresponding to the top four quintiles of the distribution of minority population percentage across ZIP

⁹ Due to the requirement that there be at least 10 ZIP codes in a county, all counties in the sample belong to a Core-Based Statistical Area.

¹⁰ In comparison, the [SBA's aggregate report](#) published on August 8th shows that lenders with over \$50 billion in assets originated 1.7 million individual loans for a total loan amount of \$190.3 billion, corresponding to 32.6 percent of the total loan count and 36.2 percent of total dollars.

codes. These take a value of 1 for a ZIP code with percentage minority in the indicated range, and 0 otherwise. The quintile boundaries are shown in Table 1.

Table 1: Quintiles of the Distribution of % Minority across ZIP Codes

1 st	2 nd	3 rd	4 th	5 th
0 to 4.5%	4.5 to 11.1%	11.1 to 22.7%	22.7 to 45.7%	> 45.7%

We also estimate an alternative specification where we replace the quintile indicators with two dummy variables that distinguish ZIP codes with percent minority greater than 25 and less than or equal to 50 percent, and ZIP codes with percent minority greater than 50 percent, respectively.

Results for aggregate PPP volume. Estimation results for the total lending of all participating institutions are shown in Table 2 below. Column (1) presents the estimated equation for log of PPP dollars-per-establishment in relation to the share of the population identifying as minority. Columns (2) and (3) show the estimated equations where the share of the population identifying as Black or African American, and the share identifying as Hispanic, respectively are included in place of the overall minority share.

The results in column (1) indicate a positive and statistically significant relationship between PPP dollars-per-establishment and the share of the area population that identifies as minority distinguished by quintiles of the minority share distribution. Except for an immaterial difference between the third and fourth quintiles, the log of PPP dollars-per-establishment increases with the percentage of the ZIP code population identifying as minority. In addition, the log of PPP dollars-per-establishment has a positive and statistically significant relationship to the relative size of Opportunity Zone portions of ZIP codes.

The pair of indicators for percent minority in the 25 to 50 percent and greater than 50 percent ranges, respectively, in the column (2) specification, indicate a statistically significant, positive relationship for the greater than 50 percent range. The column (3) specification, which includes only the single indicator for majority-minority zip codes, indicates likewise. Thus, even when we distinguish only between majority-minority areas and all other (where the latter include the first four quintiles of percent minority population and part of the fifth), we still find a statistically significant differential.

The estimated relationship to the size distribution of small businesses in the ZIP code is as expected. That is, average PPP dollar volume increases with the share of neighborhood small businesses having a relatively large number of employees. Also as expected, PPP loan volume increases with average payroll expense.

Table 2: Estimation Results

	Log of PPP loan dollars per small business establishment		
	(1)	(2)	(3)
	Quintiles of Minority Share	Dummies for Minority Share: > 25 and ≤ 50 & > 50%	Dummy for Minority Share > 50%
Share small businesses: < 5 employees	-4.270*** (0.699)	-4.551*** (0.706)	-4.552*** (0.704)
Share small businesses: 5 – 9 emp.	-3.900*** (0.698)	-4.173*** (0.706)	-4.174*** (0.704)
Share small businesses: 10 – 19 emp.	-3.569*** (0.732)	-3.819*** (0.739)	-3.820*** (0.738)
Share small businesses: 20 – 99 emp.	-2.362*** (0.770)	-2.562*** (0.780)	-2.563*** (0.779)
Population % > 21 and < 35 years of age	-1.338*** (0.221)	-1.212*** (0.216)	-1.211*** (0.213)
Population % > 55 years of age	-0.488*** (0.162)	-0.528*** (0.164)	-0.529*** (0.165)
Opportunity Zone designation	0.100*** (0.038)	0.123*** (0.038)	0.123*** (0.038)
Average annual pay (\$)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Quintile 2 of % Minority	0.143*** (0.025)		
Quintile 3 of % Minority	0.209*** (0.033)		
Quintile 4 of % Minority Minority share > 25 and ≤ 50%	0.210*** (0.038)	0.002 (0.020)	
Quintile 5 of % Minority Minority share > 50%	0.302*** (0.049)	0.083*** (0.032)	0.082*** (0.026)
Observations	21,223	21,223	21,223
R ²	0.095	0.092	0.092

Standard errors in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Additional model specifications. Table 3 reports results from three additional specifications. Columns (1) and (2), respectively, show the estimation results from regression equations for PPP lending in relation to percent African-American and percent Hispanic population of neighborhoods. Column (3) shows the estimation results from a regression equation for PPP lending by Large Banks. For consistency across specifications, we use the pair of indicators for percent, Hispanic, and overall minority in the 25 to 50 percent and greater than 50 percent ranges.

Table 3: Estimation Results for Additional Specifications

	Log of PPP loan dollars per small business establishment		
	(1)	(2)	(3)
	African-American	Hispanic	Large Bank Only
Share small businesses: < 5 employees	-4.592*** (0.704)	-4.570*** (0.704)	-8.169*** (1.095)
Share small businesses: 5 – 9 emp.	-4.212*** (0.704)	-4.195*** (0.706)	-8.248*** (1.111)
Share small businesses: 10 – 19 emp.	-3.859*** (0.737)	-3.837*** (0.738)	-7.613*** (1.144)
Share small businesses: 20 – 99 emp.	-2.602*** (0.779)	-2.577*** (0.780)	-5.653*** (1.243)
Population % > 21 and < 35 years of age	-1.218*** (0.216)	-1.208*** (0.214)	-0.839*** (0.243)
Population % > 55 years of age	-0.597*** (0.171)	-0.508*** (0.173)	-0.427** (0.211)
Opportunity Zone designation	0.135*** (0.039)	0.133*** (0.039)	0.044 (0.056)
Average annual pay (\$)	0.005*** (0.001)	0.005*** (0.001)	0.004*** (0.001)
African-American Hispanic Minority share > 25 and ≤ 50%	0.057** (0.027)	0.052* (0.030)	0.052** (0.024)
African-American Hispanic Minority share > 50%	0.048 (0.040)	0.175*** (0.045)	0.090*** (0.033)
Observations	21,223	21,223	15,658
R ²	0.092	0.093	0.083

Standard errors in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

The estimated relationships for African-American and Hispanic shares are similar to those for overall minority share. Neighborhoods with larger shares of African-American or Hispanic residents receive more PPP dollars-per-establishment, although the relationship is not statistically significant in the case of majority African-American ZIP codes (which comprise about 4 percent of the sample’s ZIP codes) and fairly strong for majority Hispanic areas (5 percent of ZIP codes.)

The estimated relationships for lending by Large Banks are similar to those for aggregate PPP lending. Although the relative size of Opportunity Zone portions of ZIP codes is not statistically significant in the Large Bank regression equation, the relationship to percent minority population is more pronounced.¹¹

¹¹ This finding should be interpreted with caution. There is substantial correlation between percent minority population and our measure of Opportunity Zone relative size (30 percent in the full sample and 33 percent in the Large Bank sample.) Thus,

Robustness analysis. We verify robustness of the estimated relationships in various ways. First, we test inclusion of additional explanatory variables based on Census data, namely, the share of the ZIP code’s population that is low- or moderate income, and the share of housing units that are owner-occupied.¹²

These variables are constructed using the same process as for ZIP code percent minority; that is, for each ZIP code we calculate the weighted average of low-or moderate income shares at the Census tract level using the HUD mapping. As is done for percent minority, we include indicator variables for the quintiles of low-or moderate income share across ZIP codes. We also test inclusion of low-or-moderate income share as a continuous variable. The percent of housing units that are owner-occupied is included linearly. We do not observe any notable relationships between these variables and average PPP loan volume, and their inclusion does not materially alter the estimated coefficients of other variables.

We also check robustness to deleting loans of amounts \$5 million or more to businesses identified as belonging to the Accommodation or Food Services industry classification (NAICS code 72). Recall that the CARES Act exempts these businesses from the general size eligibility requirements of the PPP program, if they have more than one physical location and no more than 500 employees at any one location. Therefore, the (headquarters) location associated with a large loan to a business in this industry sector may differ from the locations where many of the employees live, contributing to measurement error in the dependent variable of the regression model. We find that dropping these loans from the sample has no material impact on the estimation results.

Quantitative Relationships from the Estimated Regression Equations. Materiality of the relationships implied by the estimated regression equation can be assessed by applying the estimated coefficients to hypothetical differences in neighborhood characteristics. For this calculation, we explore the effect of varying percent minority population and the relative size of Opportunity Zones with the other, neighborhood-level explanatory variables set to approximately their median values.

Specifically, we calculate predicted dollar amount of PPP lending per small business establishment (both the log amount and absolute amount) based on the regression equation from column (1) of Table 2, for each of 15 hypothesized cohorts. These correspond to the five quintiles of neighborhood percent minority crossed with three Opportunity Zone relative size assumptions: no Opportunity Zones in the ZIP code; 50 percent of ZIP population residing in Opportunity Zones; and the entire ZIP code comprised of Opportunity Zones. We also calculate the percentage difference in dollar amount loans for each cohort relative to the case of the bottom quintile of percent minority and no Opportunity Zones.

Table 4 presents the elements of this calculation, including the assumed parameter values and the regression coefficients (from Table 2, column 1, plus the estimated intercept term), along with the

it simply may be more difficult to disentangle the two relationships in the Large Bank regression, with the reduced number of observations when the sample is restricted to ZIP codes with large bank presence.

¹² The data housing and occupancy data are from the 2010 U.S. Census. The data on low-or moderate income population share by Census tract are from HUD and are derived from 2011-2015 American Community Survey (ACS) and based on Census 2010 geography (https://hudqis-hud.opendata.arcgis.com/datasets/3bd6767dcc5e4937a6232d9db04dd447_0?selectedAttribute=LOWMODPCT)

calculated results. This exercise clearly demonstrates that PPP loan volume is strongly related to neighborhood minority composition and Opportunity Zone status.

For instance, a neighborhood without Opportunity Zones in the bottom quintile of percent minority receives \$41 thousand of PPP funds per small business establishment, while its counterpart in the top quintile receives \$56 thousand, a 35 percent difference. A neighborhood comprised entirely of Opportunity Zones in the top quintile of percent minority receives \$61 thousand per establishment, a 49.5 percent increase compared to a neighborhood in the bottom quintile that has no Opportunity Zones.

Similar calculations can be conducted for the column (2) and column (3) regression equations. For example, when we distinguish only between majority-minority areas and all other (Table 2, column 3), we find that majority-minority areas receive 9 percent more PPP funds than the rest.

Table 4: Estimated Relationships for PPP Lending Across Neighborhoods

Explanatory variable	Assumed Value	regression coefficient	No Opportunity Zones					
			Predicted value	1st quintile % minority	2nd quintile	3d quintile	4th quintile	5th quintile
intercept term	1	14.813	In \$	10.624	10.767	10.833	10.834	10.926
share with < 5 employees	0.63	-4.270	\$	\$41,103	\$47,422	\$50,657	\$50,708	\$55,595
share with 5-9 employees	0.17	-3.900	% increase	0	15.4%	23.2%	23.4%	35.3%
share with 10-19 employees	0.10	-3.569	50% Opportunity Zone					
share with 20-99 employees	0.08	-2.362	In \$	10.674	10.817	10.883	10.884	10.976
share 21 and < 35 years old	0.25	-1.338	\$	\$43,211	\$49,853	\$53,255	\$53,308	\$58,445
share > 55 years old	0.34	-0.488	% increase	5.1%	21.3%	29.6%	29.7%	42.2%
average annual pay	42	0.005	100% Opportunity Zone					
			In \$	10.724	10.867	10.933	10.934	11.026
			\$	\$45,426	\$52,409	\$55,985	\$56,041	\$61,441
			% increase	10.5%	27.5%	36.2%	36.3%	49.5%

Conclusion

Summing up, we have presented a statistical analysis of the distribution of PPP loan volume across neighborhoods differentiated by percent minority population and presence of Opportunity Zones. The analysis controls for differing sizes of small businesses located in different neighborhoods and other relevant factors, including county-specific effects.

The analysis indicates that neighborhoods with a high percent minority population received significantly more PPP dollars per small business establishment than other areas. We also find that the nation's largest banks—categorized as those with more than \$50 billion in total assets – helped ensure this robust flow of PPP credit into communities with a high percentage minority population.

The PPP program also channeled a relatively large share of funds to neighborhoods that encompass Opportunity Zones. Thus, a neighborhood that is comprised entirely of Opportunity Zones and is in the top quintile of percent minority, is estimated to receive about 50% more PPP dollars per small business establishment than an area without Opportunity Zones that is in the bottom quintile, assuming sample median values for other neighborhood variables.

References

Fairlie, Robert W. “The Impact of Covid-19 on Small Business Owners: Evidence of Early Stage Losses from the April 2020 Current Population Survey.” Working Paper No. 27309, National Bureau of Economic Research (June 2020). <https://www.nber.org/papers/w27309>

Farrell, Diana, Chris Wheat, and Chi Mac, “Small Business Owner Race, Liquidity, and Survival.” JPMorgan Chase Institute (July 2020). <https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/institute/pdf/institute-small-business-owner-race-report.pdf>

Mills, Claire Kramer, and Jessica Battisto, “Double Jeopardy: Covid-19’s Concentrated Health and Wealth Effects in the Black Community.” Federal Reserve Bank of New York (August 2020) https://www.newyorkfed.org/medialibrary/media/smallbusiness/DoubleJeopardy_COVID19andBlackOwnedBusinesses

Richardson, Jason, Bruce Mitchell, and Jad Edlebi, “NCRC Paycheck Protection Plan Preliminary Analysis.” National Community Reinvestment Coalition (December 2020) <https://ncrc.org/ncrc-paycheck-protection-plan-preliminary-analysis/>

Appendix: Tables with Summary Statistics for the Dataset

Table A-1 shows the frequency distribution of counties classified by number of ZIP codes in the county, overall and separately for metropolitan and micropolitan areas. About half of metropolitan counties in the sample have fewer than 20 (but at least 10) ZIP codes, compared to 85 percent of micropolitan counties. In metropolitan counties, 20 percent of counties have 30 or more ZIP codes.

Table A-1: Size Distribution of Counties (by number of ZIP codes)

Number of Zip Codes	All Counties		In Metropolitan Areas		In Micropolitan areas	
	Number of Counties	% of Counties	Number of Counties	% of Counties	Number of Counties	% of Counties
[10,20)	652	64%	336	52%	316	85%
[20,25)	88	9%	65	10%	23	6%
[25,30)	70	7%	57	9%	13	3%
≥ 30	208	20%	188	29%	20	5%
Total	1,018		646		372	

Table A-2 shows the frequency distribution of ZIP codes classified by weighted total number of Census tracts in the ZIP code, again overall and separately for metropolitan and micropolitan areas. In metropolitan areas, 40 percent of ZIP codes incorporate two or more Census tracts (after summing the portions of all tracts that are fully or partially within the ZIP code), compared with only 11 percent in micropolitan areas.

Table A-2: Size Distribution of ZIP Codes (by weighted total number of Census tracts)

ZIP code size range (weighted total number of Census tracts)	All ZIP codes		In Metropolitan Areas		In Micropolitan areas	
	Number of ZIP codes	% of ZIP codes	Number of ZIP codes	% of ZIP codes	Number of ZIP codes	% of ZIP codes
(0, 1)	10,110	48%	6,411	39%	3,699	75%
[1, 2)	2,628	12%	1,982	12%	646	13%
[2, 5)	3,825	18%	3,420	21%	405	8%
[5, 10)	3,613	17%	3,451	21%	162	3%
≥ 10	1,047	5%	1,030	6%	17	0%
Total	21,223		16,294		4,929	

Table A-3 shows the frequency distribution of ZIP codes classified by the degree to which they encompass Opportunity Zones (our measure of the relative size of the Opportunity Zone portion.) By our measure, 5 percent of ZIP codes are at least 80 percent comprised of Opportunity Zones, while 73 percent contain no Opportunity Zones.

Table A-3: Distribution of ZIP Codes by Concentration of Opportunity Zones

Range of relative size of Opportunity Zone portion	All ZIP codes		In Metropolitan Areas		In Micropolitan areas	
	Number of ZIP codes	% of ZIP codes	Number of ZIP codes	% of ZIP codes	Number of ZIP codes	% of ZIP codes
0	15,458	73%	11,589	71%	3869	78%
(0, 0.2)	2,701	13%	2,269	14%	432	9%
[0.2, 0.4)	1,267	6%	1073	7%	194	4%
[0.4, 0.6)	523	2%	401	2%	122	2%
[0.6, 0.8)	267	1%	193	1%	74	2%
[0.8, 1)	1,007	5%	769	5%	238	5%
Total	21,223		16,294		4,929	

Sample summary statistics for selected variables are reported in Table A-4. The mean and median PPP loan volume in a ZIP code are about \$22.0 million and \$4.8 million, respectively, indicating that a relatively small number of ZIP codes have a disproportionate share of loan dollars. Similarly, the mean and median number of small business establishments are 316 and 91, respectively, indicating that a relatively small number of ZIP codes have a disproportionate share of establishments. The majority of small businesses in most ZIP codes have fewer than 5 employees.

Table A-4: Sample Summary Statistics for ZIP Codes

Variable	Mean	Median	St. Dev.
Total PPP loan amount (\$)	21,966,670	4,807,641	41,199,510
Number of small business establishments	316.0	91.0	472.0
Share of small businesses with < 5 employees	0.651	0.610	0.194
Share of SB establishments with 5 – 9 employees	0.164	0.177	0.112
Share of SB establishments with 10 – 19 employees	0.098	0.111	0.082
Share of SB establishments with 20 – 99 employees	0.077	0.077	0.078
Share of population identifying as minority	0.259	0.160	0.255
Share of population identifying as Black or African Am.	0.091	0.023	0.163
Share of population identifying as Hispanic	0.111	0.043	0.167
Share of population over 20 that is < 35 years old	0.266	0.242	0.102
Share of population over 20 that is > 55 years old	0.336	0.340	0.094
Average annual pay (\$000s)	43.65	39.86	20.31