LOAN PROGRAM ANALYSIS REPORT

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ABSTRACT: This report presents an in-depth analysis of two significant financial assistance programs in the United States: the Paycheck Protection Program (PPP) and the Economic Injury Disaster Loan (EIDL) program. By examining the adjusted total loan amounts and the number of loans distributed across various states, regional disparities in program benefits are found. More specifically, the findings reveal notable variations in loan distribution, with certain states receiving substantial support while others received comparatively less. Additionally, the potential impact of these programs on consumer spending trends between North Carolina and Michigan is assessed.

1 Introduction

The COVID-19 pandemic caused unprecedented economic disruptions, prompting the U.S. government to introduce the PPP and the EIDL program. These initiatives aimed to provide critical financial support to businesses, helping them retain employees and maintain operations. In particular, the PPP was established to assist small businesses in retaining their workforce during the pandemic. By providing loans to cover payroll costs, rent, utilities, and other essential expenses. The EIDL program, on the other hand, offered long-term, low-interest loans to small businesses and non-profit organizations facing temporary revenue loss due to the pandemic.

To prepare the data for analysis, the PPP and EIDL datasets were loaded and processed. For the PPP data, 10% of the records were sampled, and for the EIDL data, 20% of the records were sampled to ensure the datasets had a comparable number of observations. Relevant columns were extracted, each record was tagged with the respective ”PPP” or ”EIDL” label, and the data was cleaned and formatted for consistency. Finally, the two datasets were concatenated to form a unified dataset.

2 Exploratory Data Analysis

To understand the distribution and the impact of the PPP and EIDL programs, the total loan amounts by state were analyzed.

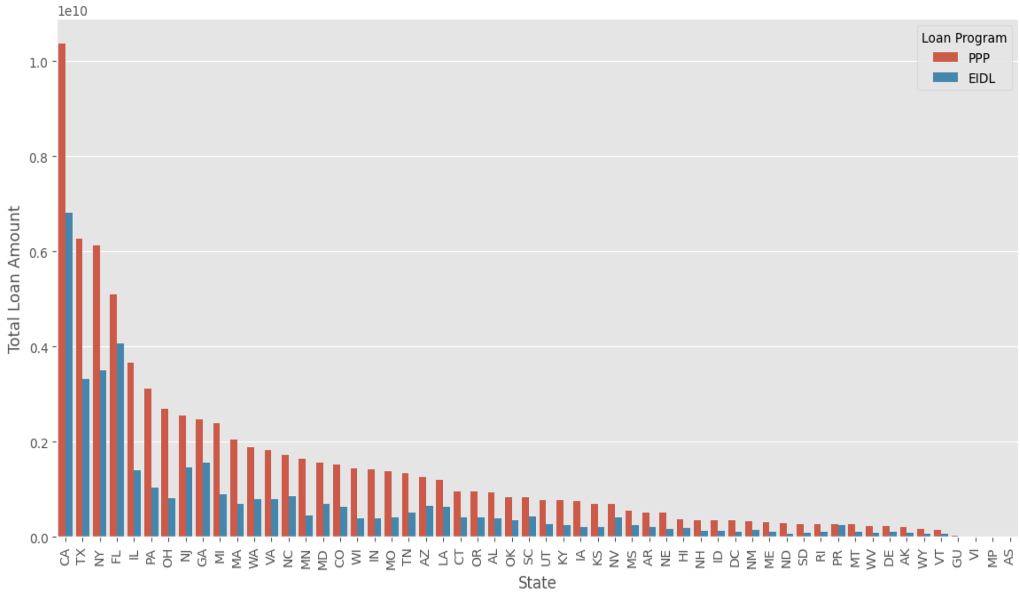

Figure 1: Total Loan Amount by State for PPP and EIDL

The plot of Figure 1 reveals variations in loan amounts, with California, Texas, New York, and Florida receiving the most support, reflecting their larger economies. Furthermore, the plot shows that PPP loans generally exceeded the corresponding amount for the EIDL, a finding which demonstrates the US government policy focus on payroll support.

3 Data Adjustment and Visualization

The unified dataset was aggregated by state and industry code to assess the total loan amounts and the number of loans issued. This aggregation provided a better view of the distribution of loans across different industries within each state. To ensure consistency, industry codes were standardized, and the aggregated loan data was merged with census data, which included the number of employees and firms in each state and industry. Employee ranges were converted into numeric values, and firm counts were verified for accuracy.

To ensure a fair comparison across states with varying sizes and economic activities, it is essential to adjust the loan data. This adjustment modifies the loan amounts and counts based on relevant factors such as the number of employees and the number of firms in each state. This process helps to account for inherent differences between states, providing a clearer picture of the relative impact of the PPP and the EIDL program.

Following the adjustment, heat maps were created to visually represent the data. The first heat map (Figure 2) illustrates how the total loan amounts were distributed relative to the number of employees in each state. This map highlights areas where businesses received more substantial financial support per employee. Notably, New York and North Dakota stand out as the states which received the most significant financial support per employee.

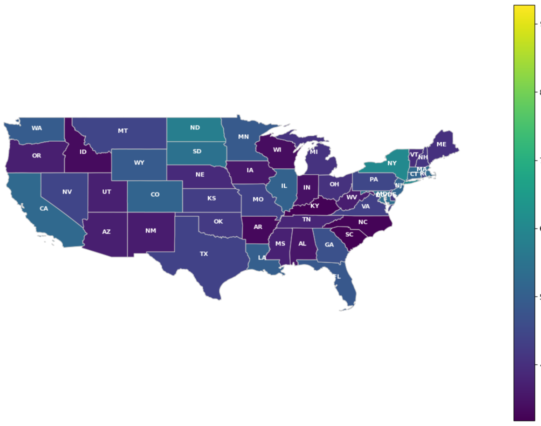

Figure 2: Heat Map of Total Loan Amount Adjusted by EMP

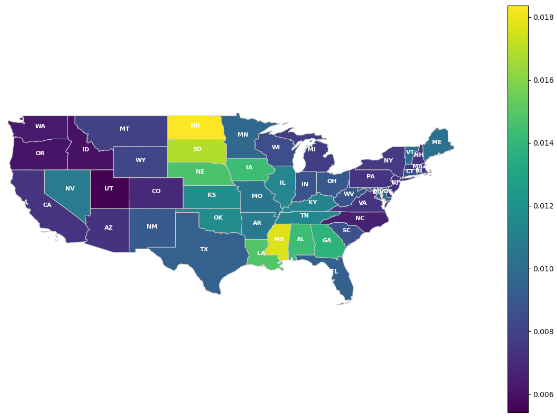

Figure 3: Heat Map of Loan Count Adjusted by FIRM-PDEMP

The second heat map (Figure 3) shows how the number of loans was distributed relative to the number of firms in each state. This visualization reveals that states such as Mississippi, North Dakota, and South Dakota have higher loan counts relative to the number of firms, indicating that businesses in these areas were more successful in securing loans. Thus, it remains an open question for further investigation to identify the reasons behind the observed discrepancies in the loan counts: Was it due to superior outreach and accessibility efforts or due to the fact that the larger proportions of enterprises were heavily affected by COVID-19 in these states?

4 Consumer Spending Analysis

The analysis of the loan data and payrolls reveals that Michigan received a total loan amount of \$3.3 billion, which is 28.33% higher than North Carolina's \$2.6 billion. Similarly, Michigan's total annual payrolls amounted to \$4.2 billion, 14.40% higher than North Carolina's \$3.6 billion. The adjusted metrics further highlight that Michigan had higher financial support per employee and firm compared to North Carolina. The observed differences in financial support correlate with consumer spending trends, where Michigan experienced a 91.7% increase, significantly higher than North Carolina's 11.7% increase as of June 18, 2021. This suggests that PPP and EIDL programs were more effective in Michigan, contributing to higher consumer spending due to the increased financial support provided, thus underscoring the programs' substantial impact on economic activity in the state.

5 Conclusion

The findings indicate variations in the distribution of financial support from the PPP and EIDL programs across different states. States with larger populations and economies, like California, Texas, New York, and Florida, received the bulk funding. Moreover, the adjusted data showed that some states received more assistance per employee, while others excelled in securing more loans. Finally, regarding the evaluation of the economic impact of the examined programs, it is evident that they were essential in aiding businesses during the pandemic, helping maintain employment and boosting economic recovery through increased consumer spending.