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Examining The Relationship Between Poverty and Supplemental Nutrition Assistance Programs

This research examines the potential correlation between state-level policies on Supplemental Nutrition Assistance Program (SNAP) and income inequality within the United States. Given that the U.S. has one of the most significant income inequality disparities worldwide, this study seeks to analyze any positive relationship between inclusive SNAP policies and states demonstrating low poverty levels. Inclusive SNAP policies are methods that ease recipient access to SNAP benefits within the context of certification time, online applications, call center availability and reporting type.

The Supplemental Nutrition Assistance Program (SNAP) is a government-sponsored initiative that offers nutritional aid to low-income individuals and families who meet the eligibility criteria. The motivation behind this research project is rooted in personal interest in Economics and policy. Findings reveal that there exists a slight correlation between inclusive SNAP policies and low poverty levels. However, additional investigation is necessary to obtain a clearer picture.

METHODS / DATA

Data Sets Overview:

SNAP Policy Choices: This dataset was compiled by John Snow Labs. It serves as a centralized information source regarding state policy choices from 2003 to 2016. This data is crucial for analyzing how different SNAP policy implementations affect poverty and household income metrics across various states.

US County Level Poverty & Median Household Income: Obtained from the U.S. Census Bureau, this dataset provides detailed insights into poverty rates and median household incomes across U.S. counties from 2003 to 2016. Using income before tax, poverty level is determined by each year's money income thresholds, where if a family's total income is less than the families threshold, each individual is considered in poverty

Data Cleaning and Trimming:

Selection of Relevant Columns*:* For analysis relevant to the research thesis, only specific columns were pulled from both datasets. In SNAP Policy Choices dataset: *Observation_Year, State_Abbreviation, Average_Certification_Period, Call_Center_Availability, Is_Simplified_Reporting_Option_Available, Online_Snap_Submission, Units_1_to_3_Months_Recertification.* In US County Level Poverty & Mean Household Income dataset: *Month, Year_Only Date_Re, Year*, *% Poverty Estimate (All Ages).*

State-Level Analysis Focus: The research targets the 10 highest and 10 lowest poverty-level states, identified based on the cumulative average poverty rates from December figures spanning 2003 to 2016. The average percentage of state populations across the ten lowest and highest poverty states that are in poverty are 10.11% and 20.67%. For further analysis, some columns were analyzed on all 50 states, sorted by states which reported poverty above and below the mean.

Time Frame Adjustment: Both datasets were trimmed to ensure consistency, focusing on the years 2003 to 2016. Moreover, the study concentrates on end-of-year figures, specifically for the month of December.

Handling Missing Data: Missing values (NaNs) were filled with 0, under the assumption that no data could be collected for those instances.

Data Synchronization: For simplicity of date conversion, three columns were added to the excel dataset US County Level Poverty & Mean Household Income: *Month, Year_Only and Date_Re,* to split up the original *Year* column.

Certification Values for 2016: Due to incomplete data for the year 2016 in the certification metrics, these values were excluded from the analysis.

Column Renaming: For ease of merging datasets, the *State* column was standardized to *State_Abbreviation* across both datasets.

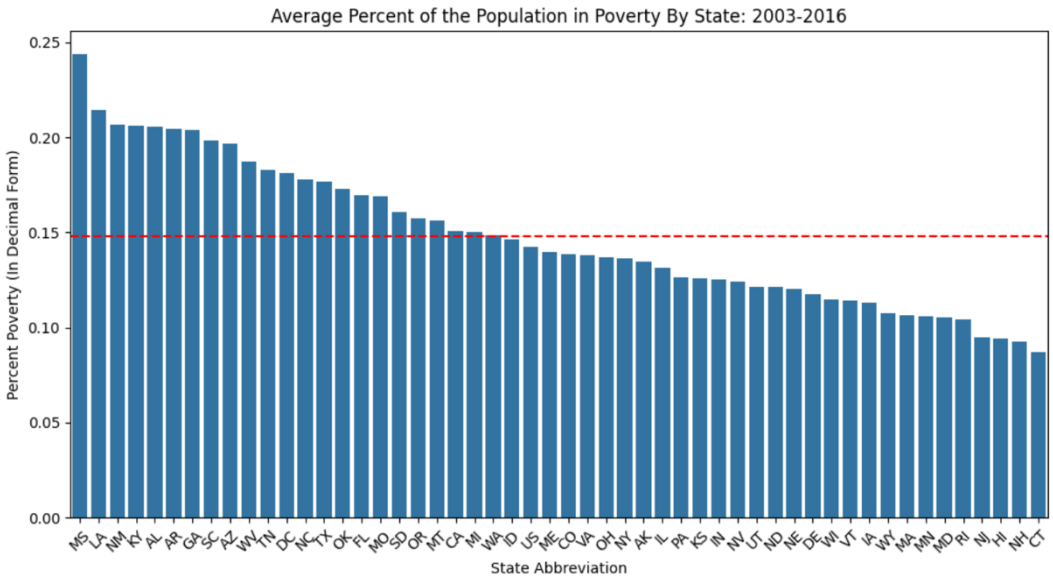
Analysis Methods:

Descriptive Statistics: To summarize and understand the distribution of the data.

Exploratory Data Analysis: To visualize differences in categorical variables through histograms.

Correlation Analysis: To investigate the relationships between different policy implementations and poverty levels.

Regression Models: To assess the correlation of online application availabilities and call center accessibilities on the mean levels of poverty by state.

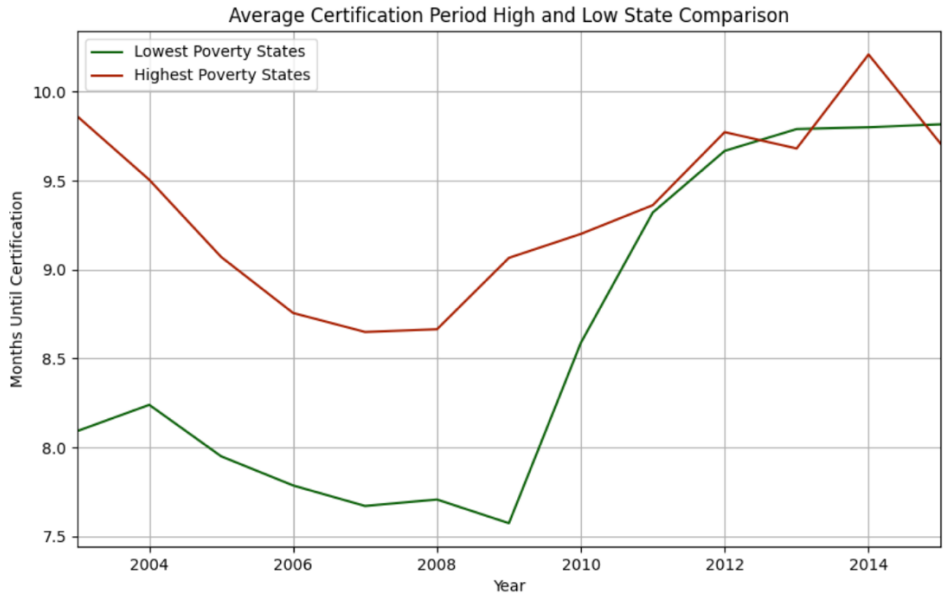


RESULTS

Average Certification:

The average certification time for high-poverty states ranged between 7.57 and 9.81 months, and the average certification time for low-poverty states ranged from 8.64 to 10.2 months.

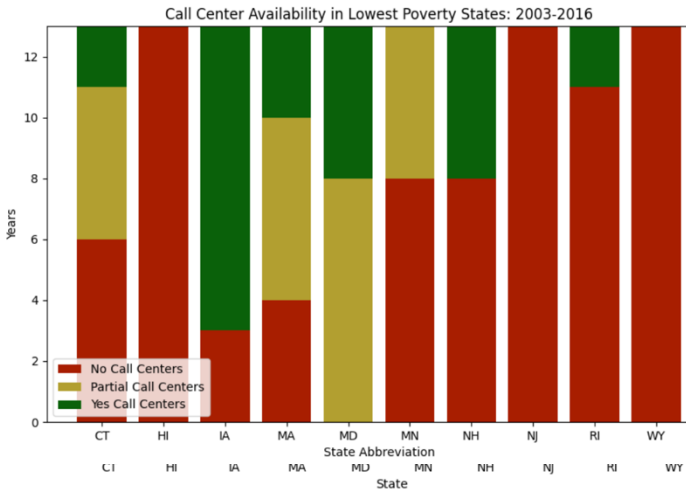
A further examination of the certification period proved to reject the hypothesis. With a higher required frequency of benefit certification, a higher 1–3-month certification range would indicate a restrictive policy. The average percent of low-poverty and high-poverty states that require recertification every 1-3 months is 4.26% and 0.83%, respectively.

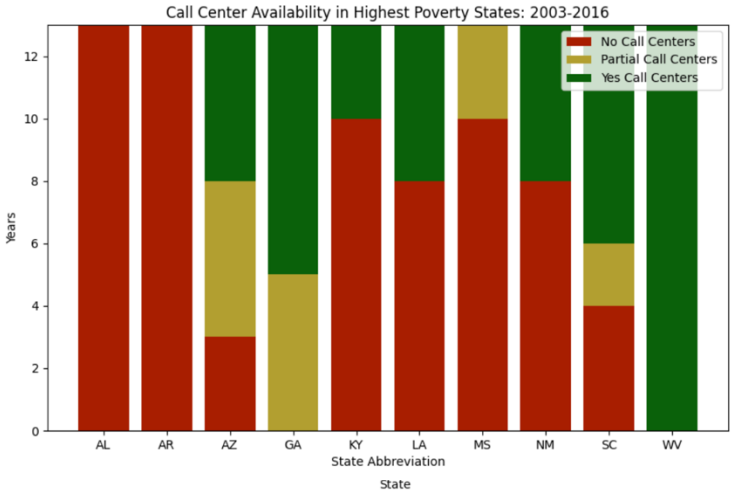


Online Availability:

For the highest poverty states, online SNAP application availability on average for 2003-2016 was provided for 6.2 years, not provided for 6.7 years, and provided in select cities for 0.1 years. For the lowest poverty states, online SNAP application availability on average for 2003-2016 was provided for 6.7 years, not provided for 6.2 years, and provided in select cities for 0.1 years.

Further analysis delves into the averages for the 25 states above and below the means. Online snap application availability for states above and below the mean poverty level was 6.43 years and 7.5 years. The lack of online availability for those above and below was 7.5 years and 5.7 years, and availability in select cities was 0.04 and 0.78.





Call Center Availability:

The average number of years without a call center for the highest-poverty states was 6.9, compared to 7.9 in the lowest-poverty states. The highest-poverty states supplied call centers for an average of 4.6 years compared to 2.7 years. Partial call center availability was 1.5 years for the highest-poverty states and 2.4 years for the lowest-poverty states.

Upon further analysis, the 25 states below the poverty mean had an average of 13.44 years of simplified reporting, whereas those above the poverty mean had an average of 11.16. Simplified reporting occupied 2.24 years in below poverty and 1.72 years for above poverty.

Simplified Reporting:

The mean of simplified reporting for the highest and lowest poverty states from 2003-2016 are 12.6 and 11.1 years. The mean of no simplified reporting available for the highest and lowest states are 1.4 and 2.9 years.

Upon further analysis, the states above the poverty mean that offered simplified applications for 2003-2016 were 12.13 years, and the lack thereof was 1.87 years. For states below mean poverty, the offering and lack of simplified applications was 12 years and 2 years.

DISCUSSION

The average certification period is a measure of the pace at which legal processes for SNAP recipients are carried out in each state. The Supplemental Nutrition Assistance Program (SNAP) is often sought by applicants with urgent needs for resources; a lower certification period is indicative of more accessible policy. It is notable that states with lower poverty rates consistently exhibit a lower average certification period. This observation begs the question of why these states saw an increase in certification time in 2009, and why they now hover around the same timeframe. Further analysis can be conducted by examining the 1-3 month, 4-6 month, and 7-12 month columns to determine the most prevalent timeframes.

Online submissions enhance accessibility to federal aid, particularly for individuals with disabilities, limited transportation options, or extended work hours. Additionally, online submissions expedite the application process, enabling benefits to be granted expeditiously. The difference of 1.07 years in outlier states and 1.8 years in other states weakly suggests that higher poverty states have less accessible measures for SNAP benefits. Two of the ten highest poverty states did not offer online submissions, and no state provided online submissions every year. In contrast, one state never offered online submissions, and one state offered online submissions every year. Further analysis is required to substantiate this claim.

Call center availability increases accessibility by providing faster problem resolution and making information readily accessible. The data for the highest and lowest states, as well as all 50 states, does not support the hypothesis that call center availability affects accessibility.

Simplified reporting enhances accessibility by simplifying and expediting the application process, thereby benefiting individuals with limited literacy or English comprehension. Simplified reporting was much more available in higher poverty states than in lower poverty states, disproving the hypothesis that accessibility is greater in lower poverty states.

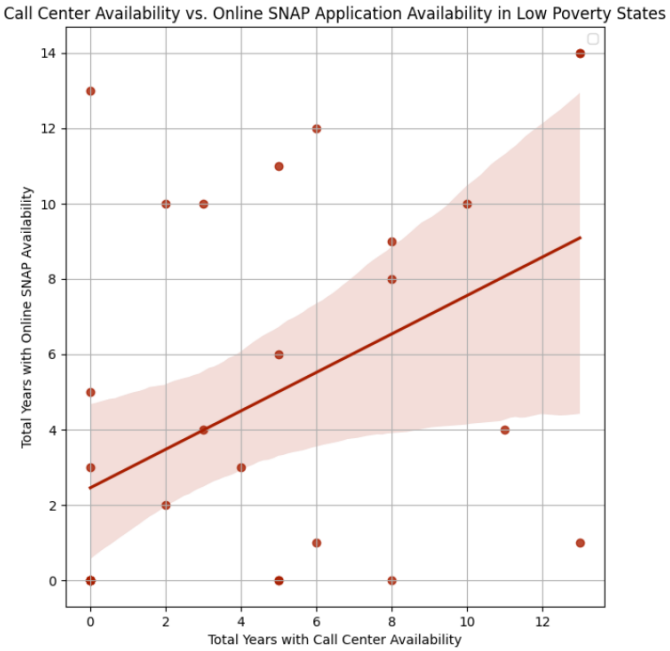
One possible explanation for the accessibility of call centers and simplified reporting is that states with higher poverty rates experienced a higher demand for SNAP benefits. This demand may have motivated these states to establish efficient systems. Further exploration of this claim requires additional data.

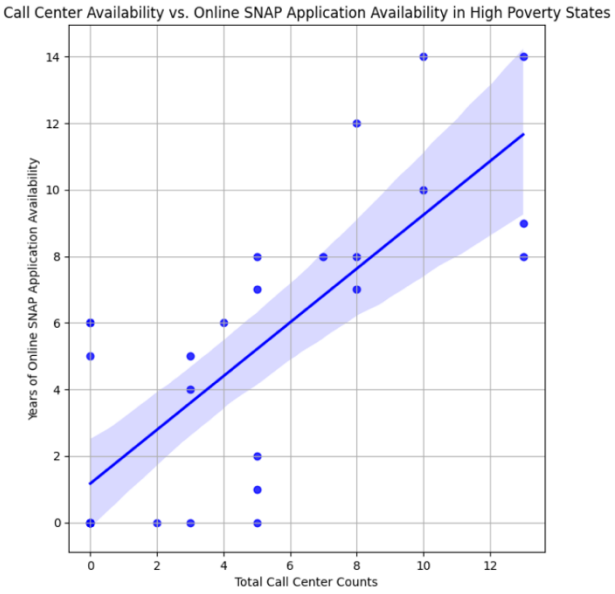
CONCLUSION

The findings of this study indicate that a positive correlation exists between states with high poverty rates and policy measures that are not inclusive, particularly with respect to the availability of average certification and online applications. However, the availability of call centers and simplified reporting disproves this relationship. The relationship between online availability and average certification is weak, and no causation can be established. While the research questions were not fully addressed, the findings provide valuable insights into the role of policy in shaping the accessibility of SNAP (Supplemental Nutrition Assistance Program) and suggest areas for further research.

APPENDIX

A regression analysis was conducted to investigate the reason behind the higher availability of call centers in high-poverty states. The analysis aimed to determine if there was any relationship between call center availability and online application availability. The results showed a positive correlation between the two. Moreover, high-poverty states exhibited a more significant correlation, which requires more data to understand the underlying reasons.





A supplementary analysis that could have strengthened this study is conducting linear regression analyses between poverty levels and the duration of online availability, call center availability, and simplified reporting. These analyses would provide more evidence to support the correlation between poverty levels and the accessibility of SNAP policies.