DATA ANALYSIS

US CENSUS

2015

PREPARED BY

IOULIA KALPAKOULA

INTRODUCTION

In this data analysis project, we explore the intricate relationship between poverty rates, population, and various socio-economic factors across states and counties in the US in 2015. Understanding these dynamics is crucial for informed policy decisions and targeted interventions.

Our dataset spans the year 2015 and includes comprehensive information on poverty rates, population figures, employment, unemployment, and income per capita across different regions.

We begin our journey by exploring the first dashboard, where the canvas reveals the poverty rates across states and counties.

Transitioning to the second dashboard, we uncover the relationship between poverty population and income per capita among states and counties.

On the third dashboard, we unravel the threads connecting the poverty rates to the median household income.

RESOURCES

Kaggle Data Set   Census - Median Household Income   Colour Blindness

Census - Quick Facts   Census - Report Household Income 2015

LINK TABLEAU: STORY

1. How does poverty vary across states and counties?

Summary

The visualization illustrates variations in the poverty rate among states and counties in the US. The size of the circles corresponds to the total population, the colour represents the poverty rate. Upon closer examination, it is evident that the states with the highest poverty rates are Puerto Rico, New Mexico, Louisiana, Alabama, Mississippi, Arkansas, and Kentucky, with Puerto Rico leading at 45.52%.

A more detailed analysis of the counties within these states reveals fluctuations in the poverty rate relative to the total population at the county level. Nevertheless, it is essential to explore states that are not prominently marked. Doing so allows us to uncover counties with the highest and lowest poverty rates. For instance, Maryland, with an overall poverty rate of 10.02%, exposes Baltimore City, with a 23.70% poverty rate, as the county with the highest poverty rate.

This approach aids in identifying poverty levels within a state, delving into counties, and conducting a closer examination of social, ethnic, and gender infrastructure to discern underlying reasons for these rates.

Design

The selection of symbol maps for states and bubbles for counties was based on specific parameters. The map, featuring circles representing states, facilitates an immediate understanding of how the total population varies across states. This map serves as a valuable tool for orientation, particularly in delineating regional differences within the US.

The colouration within the circles denotes the poverty rate, with darker shades indicating higher poverty levels. This visual representation allows for a quick overview and easy comprehension of the variations in poverty rates. The use of bubbles is deemed sufficient for county-level data, as a further breakdown on a map level is unnecessary given the informative state-level view.
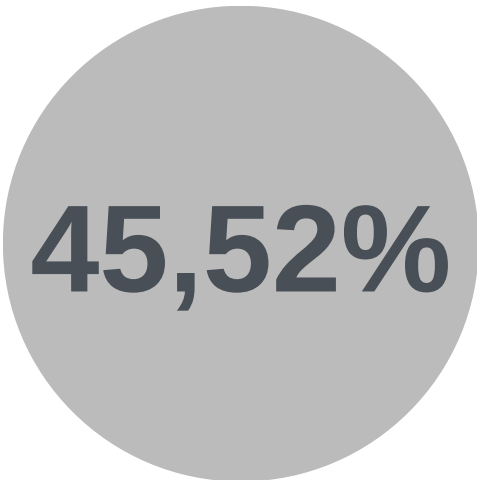
The bubbles, like their state counterparts, depict the total population through size and use colour to convey the poverty rate, with darker shades signifying higher levels. This dual representation enables a comprehensive understanding of the number of counties within a specific range and their respective poverty rates at a glance. The colour choice is based on research to also fit colour-blind people.

1. Analysis & Interpretation

Highest Poverty Rate

Puerto Rico has the highest poverty rate across the US with 45,52% and a total population of 3.583.073 people which makes a total of 1.631.069 people living below the poverty level.

Followed by Mississippi with 22,62% and New Mexico with 21,04% which both are located in the southern part of the US.

45,52%

8,93%

Lowest Poverty Rate

New Hampshire has the lowest poverty rate with a total population 118.217 living below poverty level of a total population of 1.324.201

Second place goes to Maryland with 10,02% and third to Alaska with 10,18%.

Further investigation regarding the population size is essential, as a state or county with a lower poverty rate may still harbour a significant number of individuals in need, depending on its overall population. Moreover, a more comprehensive analysis should extend to factors beyond poverty rates, including education, employment opportunities, access to healthcare, and considerations of diversity within the community

2. How do income per capita and poverty vary by state and county?

Summary

Recognizing that a low poverty rate doesn't necessarily equate to a low number of individuals in need, we examined the relationship between income per capita and the actual poverty population. The visualization depicts variations in the poverty rate across states and counties in the United States concerning income per capita. Upon examination of all states across different regions, it is evident that California stands at the top, demonstrating both a high income per capita and a significant poverty population. This suggests a potentially uneven distribution of income throughout the state.

A closer inspection at the county level reveals that Los Angeles has the highest poverty population despite maintaining the highest income per capita among its total population. Further investigation into parameters such as ethnicity, education, and social infrastructure may provide more insights into the underlying factors contributing to this pronounced distribution.
Similar patterns emerge in Texas, Florida, and New York, where these states exhibit a clear disparity with a high income per capita coexisting with the highest numbers of poverty population. This prompts a closer examination of various factors to gain a comprehensive understanding of the dynamics driving this uneven distribution.

Design

The choice of a scatter plot is the optimal visualization tool to illustrate the connection between two variables and to discern the nature of their relationship, as is the case with income per capita and the poverty population.

The colours assigned to the states correspond to the four regions they are part of. This not only facilitates comparisons between states from different regions but also allows for selective analysis based on regional categorization.

The circles on the plot represent the total population, with their size serving the purpose of enhancing readability. This graphical representation contributes to a more comprehensive understanding of the correlation between income per capita and the population living in poverty.

2. Analysis & Interpretation

Economic disparities in California
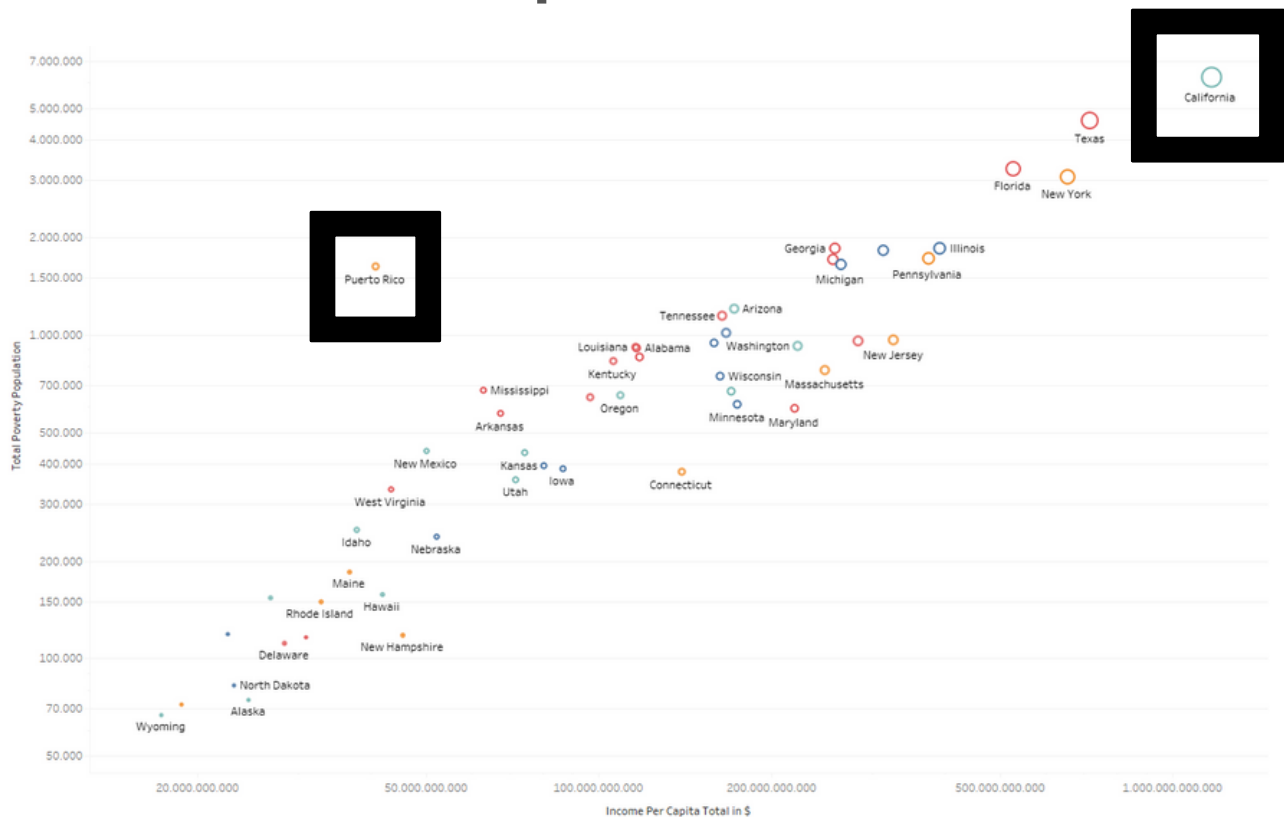
The existence of a large population in poverty alongside a high income per capita in California highlights economic disparities within the state. The positioning of Puerto Rico suggests a different economic scenario. It could indicate that while the overall income per capita might be lower, there is a more even distribution of resources or a different economic structure compared to California.

The high income per capita suggests a robust economic engine, potentially fueled by diverse industries and thriving sectors.

The substantial poverty population signals that economic prosperity hasn't translated uniformly across all demographic groups or regions within the state

3. How do the median household income and the poverty rate vary by state and county?

Summary

The visualization provides insights into the distribution of median household income and poverty rates across states and counties in the United States. A notable observation is the distinct economic conditions of certain regions.

Puerto Rico stands out with its placement on the lower whiskers, indicating a comparatively lower median household income. This positioning suggests significant economic challenges, highlighting the need for targeted interventions and economic development plans in Puerto Rico.

Contrarily, Washington, D.C., exhibits a robust economic condition with a relatively high median income of $70,848. However, the higher poverty rate of 18% signals a substantial portion of the population grappling with economic hardship. This duality in economic indicators highlights the complexity of socio-economic dynamics within D.C.

Critical factors such as the cost of living, employment opportunities, and public policies emerge as pivotal contributors to the observed disparities in median income and poverty rates.

Design

Utilizing a box plot with whiskers to depict the distribution of median household income in comparison to the poverty rate across states and counties offers distinct advantages.

Primarily, this visualization provides a concise and transparent representation of the data's spread, enabling an immediate understanding of both median income and poverty rates within different regions. The box plot facilitates a quick visual comparison of medians, with the central box depicting the interquartile range and the line inside representing the median.

Furthermore, the inclusion of whiskers allows for the identification of potential outliers, aiding in pinpointing states or counties with extreme values in either median income or poverty rates.

Additionally, when comparing multiple categories, such as different states or regions, the box plot's space efficiency becomes apparent, facilitating a clear side-by-side assessment of distribution characteristics for each category.

3. Analysis & Interpretation

The Outlier: District Of Columbia

Poverty Rate

18%

Median Household
Income

70.848
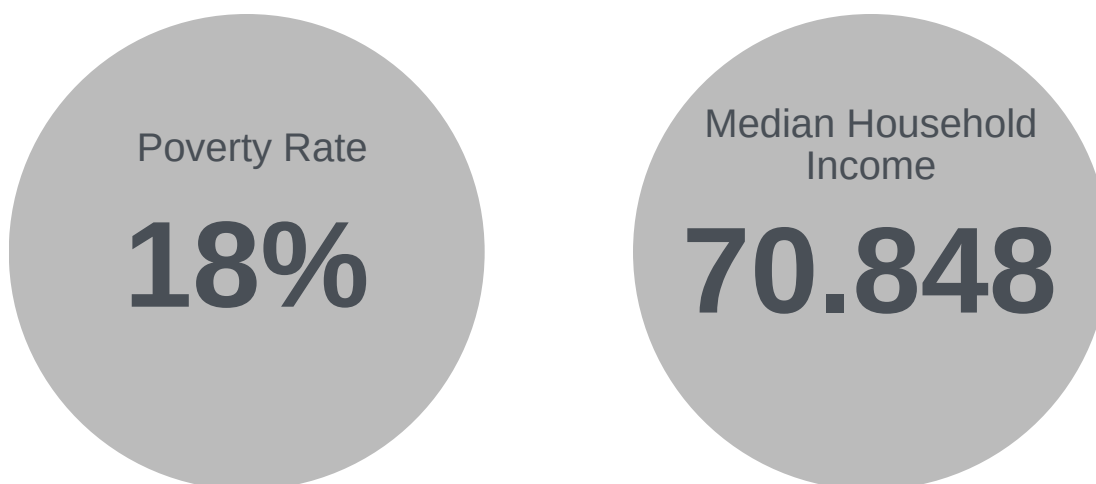
The positioning of Washington, D.C. far above the whiskers with the **highest median household income** among all states in the US signifies a region of significant affluence.

However, the simultaneous presence of a poverty rate of 18% suggests a notable income disparity within the population.

Factors to consider

Cost of Living:
Evaluating housing, transportation, utilities, and essential expenses. High median income might be counterbalanced by elevated living costs.

Income Inequality:
High median income may coexist with significant income inequality. Examination of the concentration of wealth among a small segment of the population.

Employment/Unemployment:
High-paying jobs may exist alongside a significant population struggling to secure stable employment or facing underemployment.

CONCLUSION

Puerto Rico's Economic Challenges:

Puerto Rico facing substantial economic challenges reflected on the symbol map with the highest poverty rate among the represented states. On the boxplot with whiskers, Puerto Rico's placement on the lowest whiskers underscores its economic struggles, with the lowest median household income. The visual representations highlight the need for targeted interventions and comprehensive economic development plans in Puerto Rico

California's Economic Paradox:

The analysis of California reveals a compelling paradox: a state with both a high-poverty population and a high income per capita. This prompts a nuanced examination of economic dynamics, emphasizing that prosperity is not uniformly distributed. The contrast between wealth and poverty underscores the necessity to explore factors contributing to this paradox, including industry composition, regional disparities, and the impact of affordability challenges on a diverse population.

Washington, D.C.'s Duality:

Washington, D.C., presents a unique scenario with the highest median income and a notable poverty rate, challenging conventional expectations. This duality emphasizes the need to consider wealth distribution and economic opportunity accessibility, prompting a deeper exploration into the socio-economic complexities, including cost of living dynamics and employment challenges in the capital city.