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Hello,everyone. We are group 19. I'm Ruisi Ma, I’m Gloria Zhou. Our research topic is Economic Disparities Among U.S. States in 2023：An Analysis of Regional Data from the (BEA), Bureau of Economic Analysis .

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We used the Regional dataset through BEA’s API. Specifically, we aim to explore 1.How do the U.S. States differ in employment density/GDP/Personal Consumption Expenditure/Growth operating surplus/income?

2.How do these indicators of economic disparities correlate with each other?

3.How does geographical proximity(praak·**si**·muh·tee) associated with economic disparities?Our 5 key indicators include PerCap personal Income，Employment PerThousand, PerCap Real GDP, PerCap GOS, PerCap PCE .

We retrieve data from three tables and self-calculate some variables.Eventually, after data cleaning and rejoining, the merged dataset we created contains 50 columns, 22 variables.

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For descriptive analysis, we used the geographical boundary data of 50 states from the usmap. package and our merged dataset to illustrate the geographic distribution of five key economic variables. The colors range from dark to light, representing the values of each economic indicator from low to high across the states.

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Also, We did linear regression analysis.*(transit)*

In this scatter plot, there is a red trend line, suggesting a linear relationship between these two variables. It actually shows a positive correlation between PerCap Real GDP and PerCap PCE. As PerCap Real GDP increases, PCE also tends to increase. The blue dots are scattered around the trend line, indicating variability in the data. So, overall, this visualization can be used to understand how economic growth (measured by Real GDP) impacts consumer expanding behaviors (measured by PCE) on a per capita basis.

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Here, we present a visualization of clusterings via Dendrogram and a Clustered States Map. The dendrogram employs Ward's method for clustering, illustrating the hierarchical clustering of US states based on various economic indicators. States are grouped into clusters, highlighted by red boxes. Then, six primary clusters are identified.

The map visualizes how states with similar conditions are geographically distributed, colored by their respective clusters that are numbered from 1 to 6. States within the same cluster are often geographically proximate, suggesting regional economic similarities and disparities.

In summary, we may conclude that 1) Economic indicators such as employment density, GDP, PCE, GOS, and income display consistent geographical patterns across states. 2) Economic disparities indicators like GDP and PCE show a strong positive correlation. 3) Generally, geographical proximity is associated with economic disparities.States located in close proximity to each other often show similarities in their levels of economic development.

That’s all. Thank you. (*together*)