

Worksheet (1 of 2)

Links:

https://public.tableau.com/views/Data_Visualization_Project_Scatter_1_DM/Scatter_Income_vs_Unemployment?:language=en-US&:sid=&:redirect=auth&publish=yes&showOnboarding=true&:display_count=n&:origin=viz_share_link

Summary:

This scatter plot compares state median household income, measured in U.S. dollars, to the state unemployment rate, measured as the percentage of the labor force unemployed. Each point represents a state, with bubble size indicating total population and a red-to-green color scale encoding unemployment severity, where red represents higher unemployment and green represents lower unemployment.

A clear insight from this visualization is that Puerto Rico is a significant outlier, exhibiting the highest unemployment rate at approximately 18% while also having the lowest median household income, below \$20,000. By contrast, the next closest state, Mississippi, has an unemployment rate near 11% with a substantially higher median income of about \$40,000. This stark difference illustrates how unemployment is not evenly distributed across income levels.

Overall, the fitted linear regression line shows a strong negative association between income and unemployment: as median household income increases, unemployment rates tend to decline, suggesting that states with stronger income structures generally experience more stable labor markets.

Design:

A scatter plot was selected to analyze the relationship between two continuous variables: median household income (USD) and unemployment rate (%). A linear regression model is overlaid to summarize the overall trend.

Bubble size encodes total state population, ensuring that states representing larger labor markets are visually prominent without obscuring smaller states.

Color is encoded using a red-to-green diverging palette, with red representing higher unemployment and green representing lower unemployment, providing intuitive semantic mapping. A discrete income-band checkbox filter enables stratified analysis by allowing users to include or exclude predefined income ranges, making it possible to compare unemployment patterns within specific economic cohorts.

Axis labels, formatted currency values, and consistent tooltips were applied to ensure that the visualization remains focused on its primary finding: the inverse relationship between income and unemployment at the state level.

Resources: N/A

[Worksheet \(2 of 2\)](#)

Links:

https://public.tableau.com/views/Data_Visualization_Project_Scatter_2_DM/Scatter_Poverty_vs_Unemployment_Filtered?:language=en-US&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Summary:

This scatter plot explores the relationship between the state poverty rate, measured as the percentage of residents living below the federal poverty threshold, and the state unemployment rate, measured as the percentage of the labor force unemployed. Each point represents a state and is color-encoded using the same red-to-green palette, where red indicates higher unemployment and green indicates lower unemployment.

A clear insight from this visualization is that North Dakota exhibits the lowest unemployment rate at approximately 2.68%, while also maintaining a relatively low poverty rate of about 11.47%. Although North Dakota does not have the absolute lowest poverty level, it remains among the lowest-poverty states, reinforcing the broader pattern observed in the fitted linear regression line: as poverty rates increase, unemployment rates tend to increase as well.

This insight is relevant because it demonstrates that poverty remains an important structural factor in labor market outcomes even after controlling for income tier. All findings are descriptive and correlational only and do not imply causation.

Design:

A scatter plot was chosen because both poverty rate (%) and unemployment rate (%) are continuous quantitative variables, and this chart type best supports visual correlation analysis. A linear regression model is included to summarize the overall trend.

The red-to-green color palette was reused to maintain visual consistency across the project and to preserve semantic clarity, where warmer colors indicate greater unemployment stress. The inclusion of a discrete income-tier checkbox filter allows stratified exploration by income cohort, preventing misleading comparisons across widely different economic contexts.

Tooltips were designed to include state name, county count, unemployment rate (%), median household income (USD), and total population, providing sufficient contextual detail without cluttering the visual. Axis labels and currency/percentage formatting ensure the plot is self-explanatory and focused on its central finding: higher poverty rates are associated with higher unemployment across U.S. states within similar income tiers.

Resources: N/A

Dashboard

Links:

https://public.tableau.com/views/Data_Visualization_Project_Dashboard_DM/Dashboard_Geographic_Filtered_Analysis?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Summary:

This dashboard combines a geographic map of state unemployment rates with a bar chart displaying unemployment by state, allowing users to examine how unemployment varies across the United States within selected median household income tiers. A discrete income-band checkbox filter applies to both visuals simultaneously, limiting the analysis to states whose median income falls within the selected ranges. The map encodes state unemployment rate (%) using a consistent red-to-green color gradient, where red indicates higher unemployment and green indicates lower unemployment, while the bar chart presents unemployment percentages for precise state-to-state comparison.

A clear insight emerges when filtering for states with median household income greater than \$70,000. Within this high-income cohort, unemployment rates vary substantially — ranging from approximately 5.2% in Hawaii to nearly 9.8% in Alaska.

Notably, all states appearing in this income tier are coastal states, revealing that even among the highest-income states, unemployment outcomes differ meaningfully and exhibit distinct geographic patterns. This demonstrates that income alone does not fully explain unemployment differences and points toward underlying structural regional factors.

Design:

This dashboard integrates two complementary chart types — a map and a bar chart — to support both spatial and comparative analysis. The map allows users to identify regional clustering of unemployment, while the bar chart provides precise state-to-state comparisons within the same income cohort.

A discrete income-tier checkbox filter is positioned prominently on the dashboard and configured to control both visuals, enabling income-stratified exploration. This interaction design ensures that users compare only economically similar states, improving interpretability.

The same red-to-green color encoding used throughout the project was retained to maintain visual consistency and semantic clarity, with red representing higher unemployment and green representing lower unemployment. Axis titles, chart labels, and formatted tooltips were applied to ensure the dashboard clearly communicates its central finding without unnecessary visual elements.

Resources: N/A