4. Data Analysis:

4.1. Top 5 states Income and Cost of Living:

Cost of Living and Income

Legend: Income (light), Total Cost (dark)

- DC — Income: 116,607 | Total Cost: 120,290
- HI — Income: 99,597 | Total Cost: 104,897
- MA — Income: 100,532 | Total Cost: 101,892
- NJ — Income: 104,246 | Total Cost: 92,575
- CA — Income: 82,922 | Total Cost: 93,179
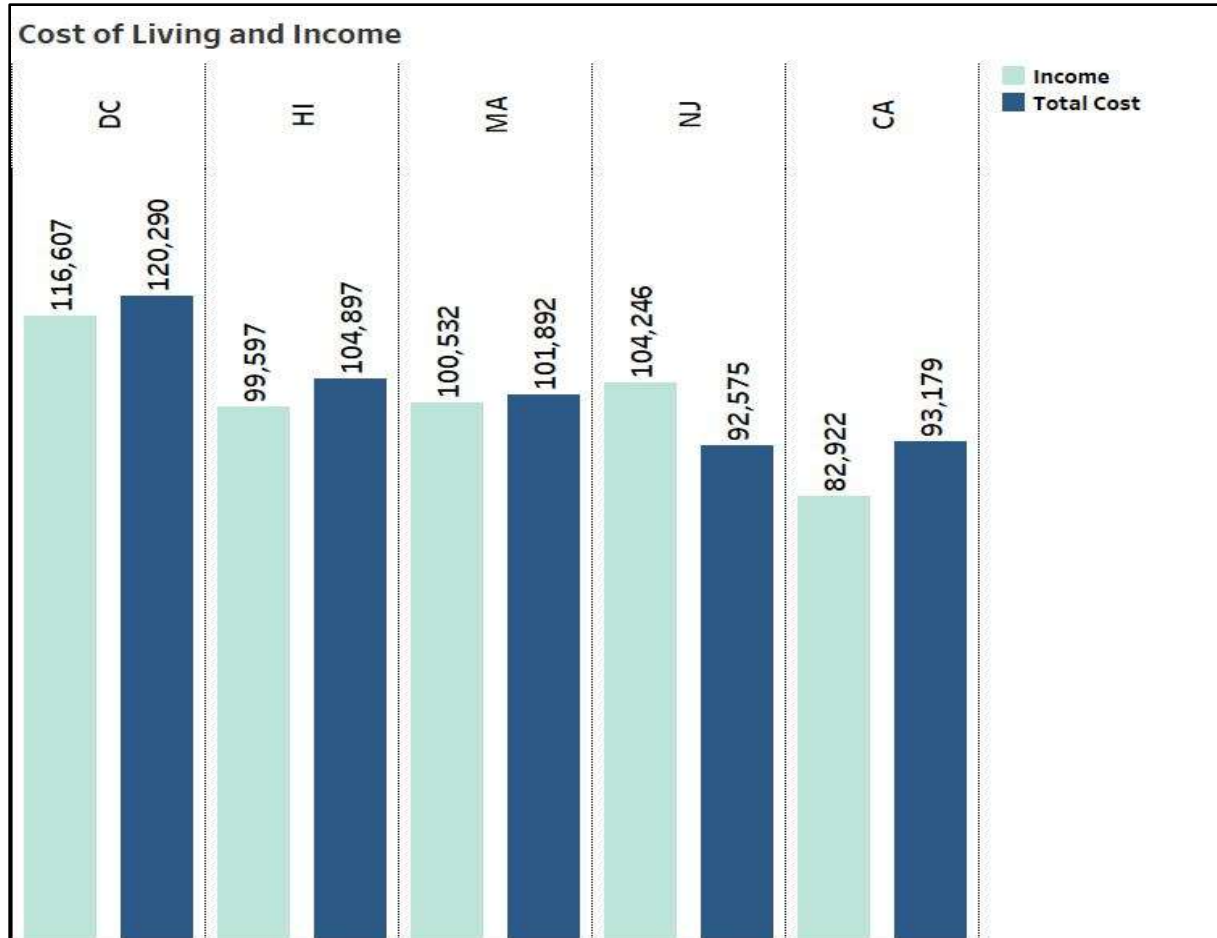
The First analysis, we performed to find the top 5 states that has high expense and high Income. We found that DC is the state that is high in both Income and Total cost, where the family earns $ 116,607 and spends $ 120,290, which indicates that family income is low when compared to the amount they are spending. Except for the state of New Jersey all other state expenses are high when compared to the income they receive. Only in the state New Jersey Income is high where there is high by $11,671 compared to the Total cost of spending. As we can see in California state, the income of Family is approx. 10k less than their average spending.

Methodology:

We used a group chart to find the top 5 states that are expensive in the USA. We compared the details with the Median family column. We put the state and measures (Median income, Total Cost) in the column and measure values in the Rows. We changed the axis alias to Total Cost and Income by Right clicking on the axis and doing the edit alias. We formatted the graph by making the grid

line none and axis ruler in both column and rows to black. We used the filters category to filter the top 5 states.

4.2. Comparing the cost of expense between the Rural and Urban:

Average Total cost in Urban and Rural
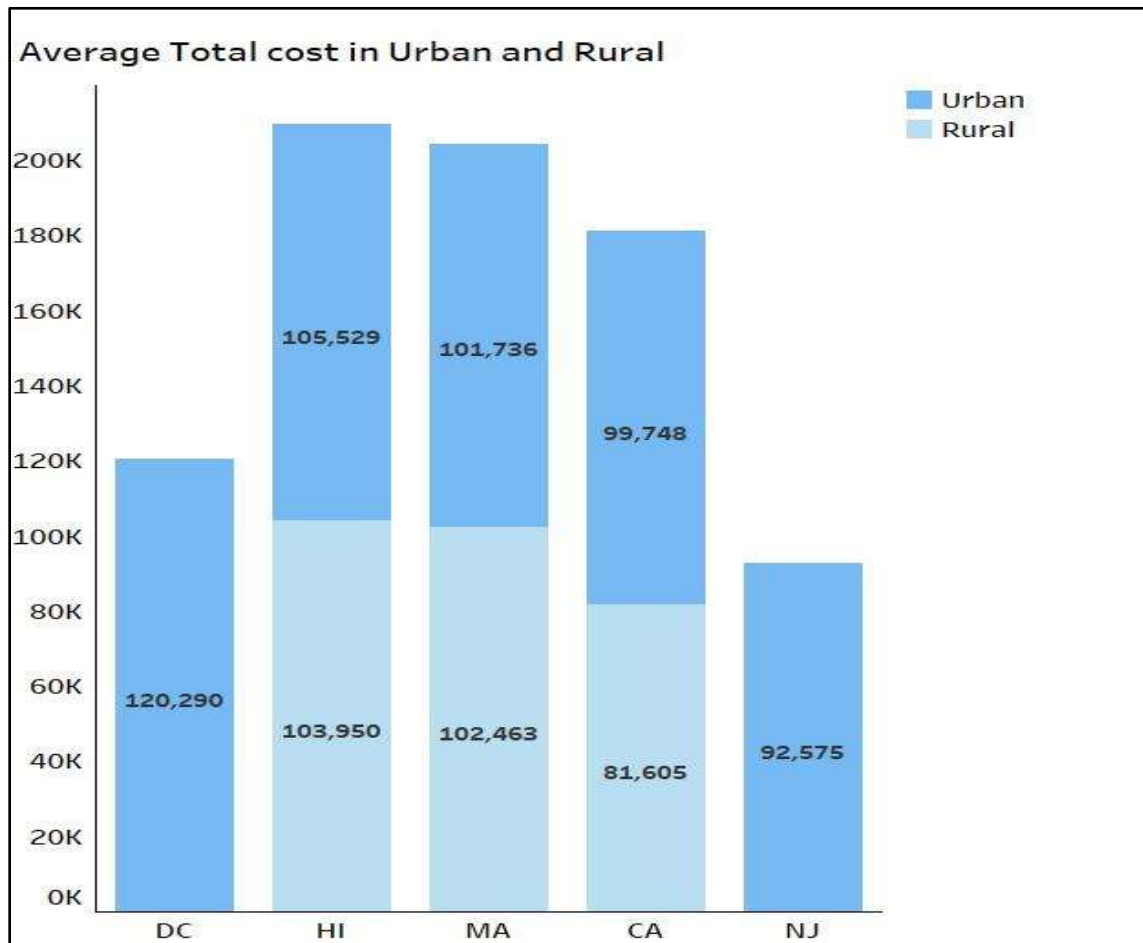
We used stacked bar chart to see how the total cost differs in Urban and Rural County.

As we can see we don't have information about Rural County in DC and New Jersey. DC Urban city more expensive than other states in USA. And Hawaii is expensive among the rural populated states. In the other 3 states, the difference of spending between Urban and Rural is approximately 1000 to 2000 dollars, whereas in California it is almost $10,000 difference between urban and rural. It is visibly seen that in California the Rural is much lesser than the Urban County.

4.3. Percentage of Income Spending on Different Category:
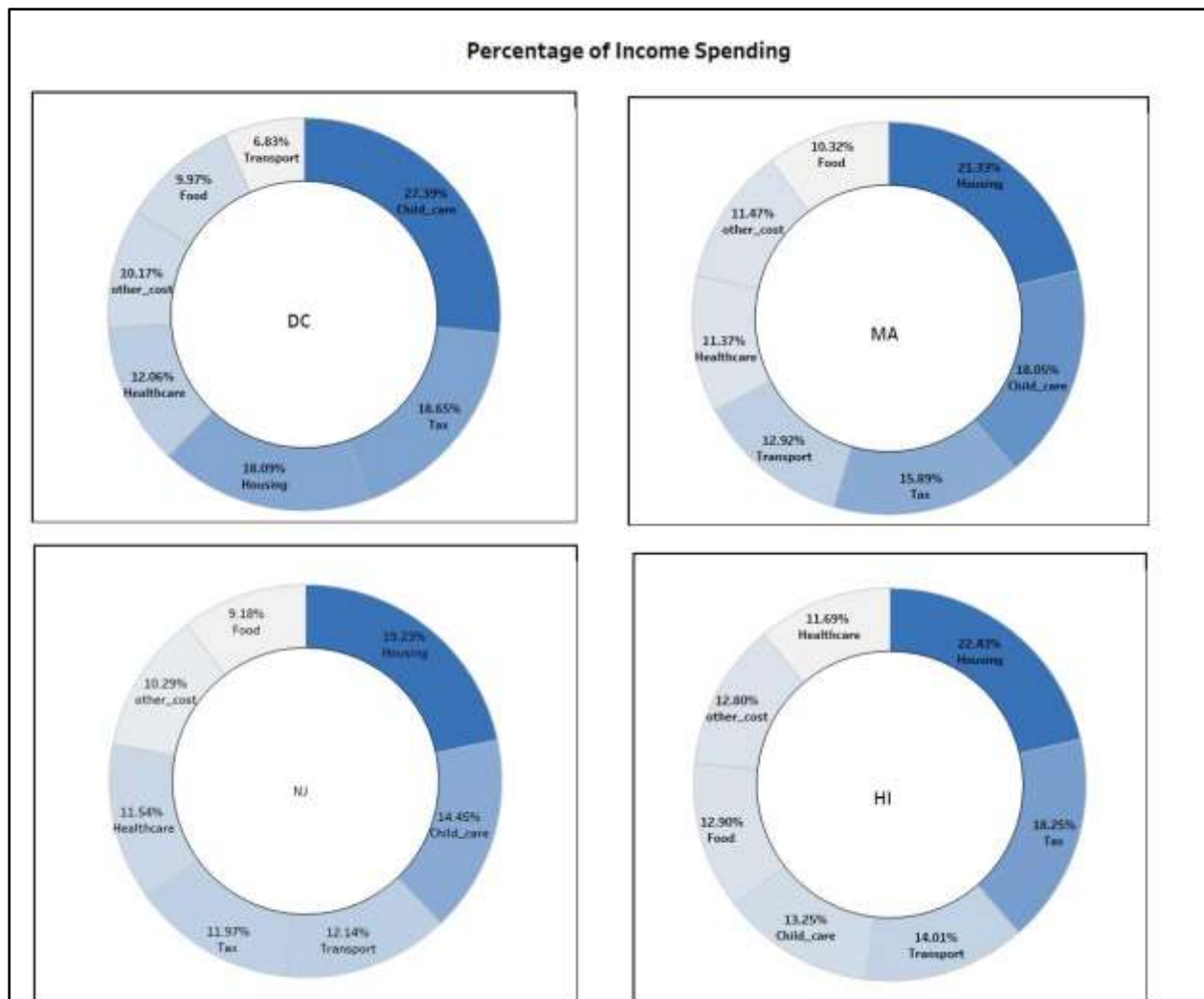
We performed an analysis to find the percentage of income spend by the Residents and families in different category.

As we can see, all the state spends on average of 18% to 22% on housing cost. But in the DC state , on average the family spends more on child_care cost which is 27.39 % which is high compared to the Housing cost in DC, because the housing cost is 18% from their income. Surprisingly the Dc state people spend 6.8% of their income on Transportation which is very low when compared to all other states.

The state of New Jersey spends 11% of their Income in Tax which is low compared to other states. On average all the state families spend 9% to 10% of their Income on Food and 11% to 12% of their Income on Healthcare. Hawaii state has the highest Transportation cost of 14% . We also can see that all the state residents have 10 to 12% of their Income spent on other necessity costs.
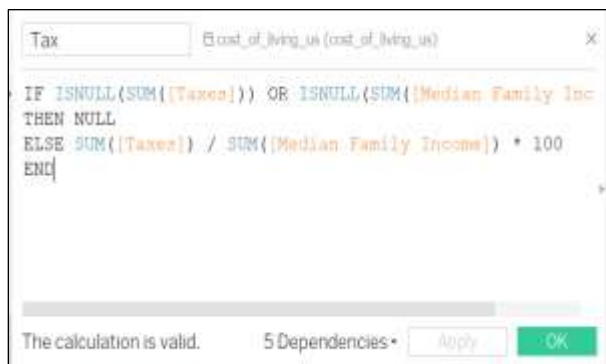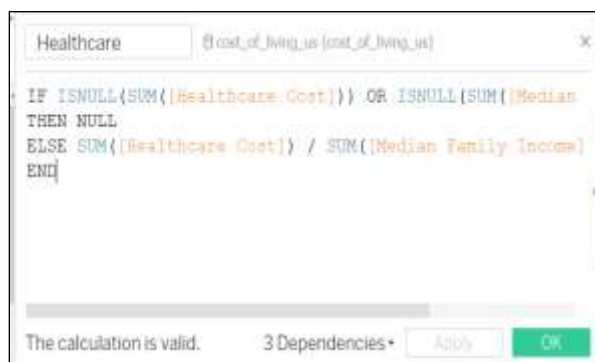
In MA, the family spends 21.33% of their income on housing which is high compared to DC state. They also spend 12% of their income on transportation.

Methodology:

As the donut chart is not explicitly available in the Tableau, we used the Dual Axis Concept to achieve this.

We created the first chart with various different expenses for a family namely Tax, Housing cost, Healthcare, Transport cost, child care cost, Food, Other Cost. We calculated the Percentage of Each cost by comparing it with median family income by creating calculated fields. We applied the Filters to the state data, to Filter the values by state.

Category Used: Calculated Fields, Filters

Housing	cost_of_living_us (cost_of_living_us)	×
IF ISNULL(SUM([Housing Cost])) OR ISNULL(SUM([Median Fam		
THEN NULL		
ELSE SUM([Housing Cost]) / SUM([Median Family Income]) *		
END		
The calculation is valid.	5 Dependencies ▾	Apply OK

Food	cost_of_living_us (cost_of_living_us)	×
IF ISNULL(SUM([Food Cost])) OR ISNULL(SUM([Median Family		
THEN NULL		
ELSE SUM([Food Cost]) / SUM([Median Family Income]) * 10		
END		
The calculation is valid.	3 Dependencies ▾	Apply OK

Healthcare	cost_of_living_us (cost_of_living_us)	×
IF ISNULL(SUM([Healthcare Cost])) OR ISNULL(SUM([Median		
THEN NULL		
ELSE SUM([Healthcare Cost]) / SUM([Median Family Income]		
END		
The calculation is valid.	3 Dependencies ▾	Apply OK

| Tax	cost_of_living_us (cost_of_living_us)	×
IF ISNULL(SUM([Taxes])) OR ISNULL(SUM([Median Family Inc		
THEN NULL		
ELSE SUM([Taxes]) / SUM([Median Family Income]) * 100		
END		
The calculation is valid.	5 Dependencies ▾	Apply OK

Once the Calculated fields are created for each Costs, we placed those in the Angle to differentiate the angle based on its percentage. We also kept the measure names on the label to differentiate the pies.

2nd Pie chart: We create the second pie chart with only Average Median Income and Changed the Automatic Graph setting to Pie Chart and changed the Color to white and placed the Label for the median family income to display the income.
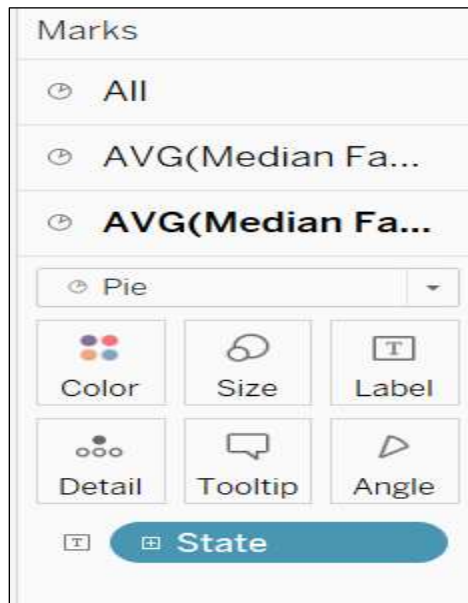
After all the calculation is done, we formatted the Measure values to display the percentage with 2 decimal places and with percentage symbol.
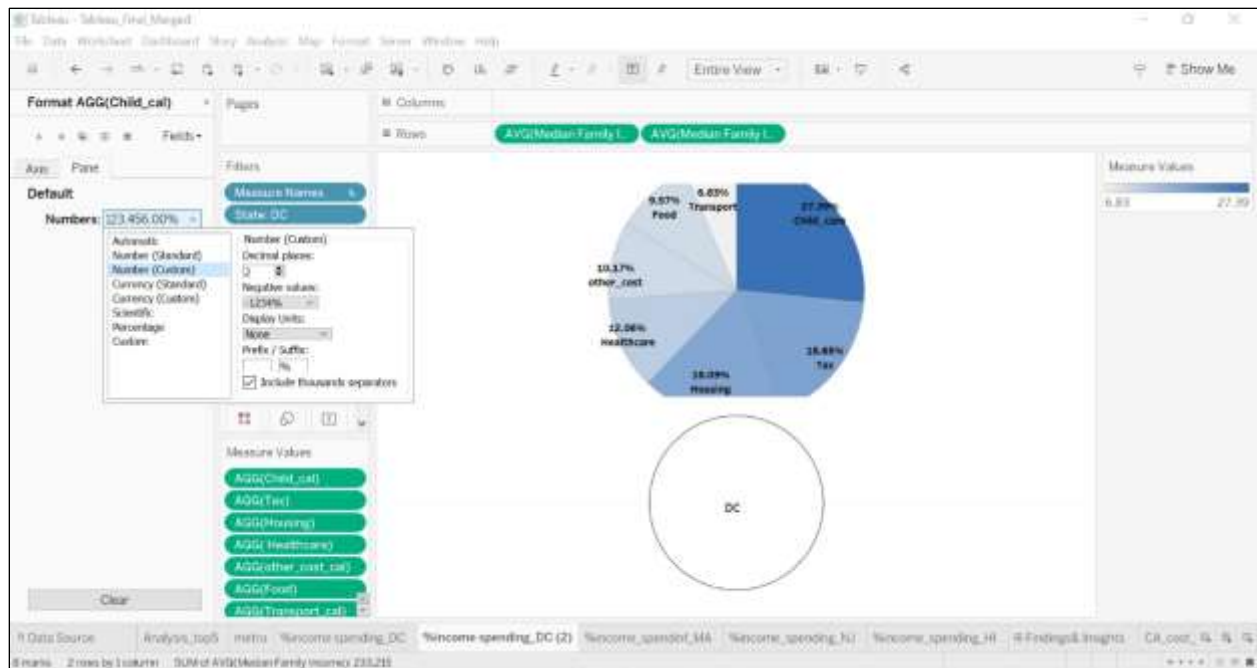
Once everything is done, we enabled the Dual axis in the second value of Average median family income in the Rows. We have filter by state to show the difference of percentage spending in each state.

And we have repeated the same steps for other states, MA, NJ, HI.

Once donut chart is created for all 4 states, we created that as a dashboard for better alignment and better and understanding. We used horizontal and vertical containers to align the different charts perfectly.

5. Interactive Dashboard:
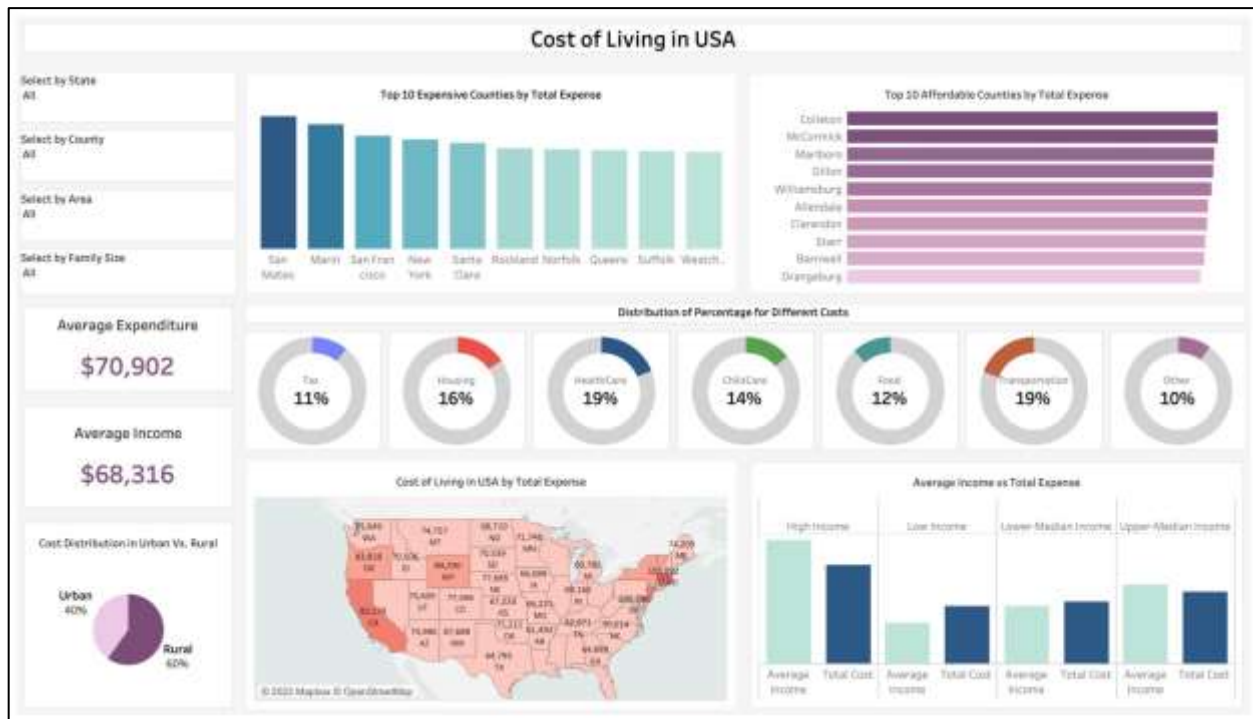
Overview:

The Cost of Living in the USA dashboard offers a comprehensive analysis of financial dynamics across states and counties. The user-friendly interface on the left side provides four filters—State, County, Area, and Family Size—enabling users to tailor their analysis. Two key performance indicators (KPIs), Average Expenditure and Average Income, are prominently displayed, highlighting the prevalent scenario where expenses exceed income in the USA. Cost Distribution is depicted through a pie chart, revealing that rural areas generally experience higher overall expenses compared to urban areas. On the right side, two charts showcase the Top 10 most expensive and affordable counties, allowing users to discern the financial landscape at a granular level. Donut charts provide a detailed breakdown of expenditure percentages for different categories, such as Tax, Housing, Healthcare, Childcare, Food, Transportation, and Other Necessity Costs. These charts offer valuable insights into spending patterns, with Healthcare and Transportation emerging as the predominant expense categories. Geographical insights are conveyed through a Geo Map, emphasizing the cost of living across states. The Average Income vs Total Expense bar chart unveils nuanced findings, indicating that higher-income groups tend to have higher expenses, but their income levels are also correspondingly higher.

We've added additional filters to elevate user interaction, facilitating exploration of the percentage distribution of costs for specific counties. Users can distinguish cost distributions between Urban and Rural areas and gain insights into how high-income and low-income groups allocate their expenses. Furthermore, users can effortlessly extract specific details from the geo map by selecting