**Dashboard 1: "Specialty Cost Explorer"**

**Purpose**: Enable patients to easily compare healthcare costs across different specialties within their chosen location to aid in financial planning and provider selection.

**1. Selection Panel**

* **Filters**: State, County, Specialty
* **User Inputs**: Patients select their state and county, with an optional specialty filter for a more focused view.

**2. Specialty Cost Overview**

* **Chart Title**: "Cost Comparison Across Specialties"
* **Chart Type**: Bar chart
* **Columns Used and Aggregations**:
  + X-axis: **Specialities**
  + Y-axis: Aggregated values of **avg\_medicare\_new\_patient** and **avg\_copay\_new\_patient** to show combined average initial visit cost per specialty.
  + Tooltips: Detailed cost breakdown including **avg\_medicare\_new\_patient**, **avg\_copay\_new\_patient**, **avg\_medicare\_established\_patient**, **avg\_copay\_established\_patient**.

**3. Detailed Cost Breakdown**

* **Chart Title**: "Detailed Costs for Selected Specialty"
* **Chart Type**: Stacked bar chart
* **Columns Used and Aggregations**:
  + X-axis: **Specialities** (filtered by user selection)
  + Y-axis: Separate stacks for **avg\_medicare\_new\_patient**, **avg\_copay\_new\_patient**, **avg\_medicare\_established\_patient**, and **avg\_copay\_established\_patient** to compare cost components within the selected specialty.

**4. Cost Efficiency Guide**

* **Chart Title**: "Explore Cost-Efficient Specialties"
* **Chart Type**: Box plot
* **Columns Used and Aggregations**:
  + Y-axis: Combined average cost (**avg\_medicare\_new\_patient** + **avg\_copay\_new\_patient**)
  + X-axis: **Specialities**
  + Tooltips: Include mode values (**mode\_medicare\_new\_patient**, **mode\_copay\_new\_patient**) for an additional comparative aspect.

**Dashboard 2: "Local Healthcare Pricing Insights"**

**Purpose**: Provide a clear visualization of healthcare costs associated with various specialties in a selected geographical area, helping patients make informed choices based on cost.

**1. Selection Panel**

* **Filters**: State, County
* **User Inputs**: Patients select their state and county to view the range of specialties and associated costs.

**2. Geographic Cost Comparison**

* **Chart Title**: "Healthcare Cost Distribution by County"
* **Chart Type**: Heat map or colored geographical map
* **Columns Used and Aggregations**:
  + Colors represent aggregated average costs combining **avg\_medicare\_new\_patient** and **avg\_copay\_new\_patient**.

**3. Top 5 Most and Least Expensive Specialties**

* **Chart Title**: "Most and Least Expensive Specialties in Your County"
* **Chart Type**: Dual-ranked bar chart
* **Columns Used and Aggregations**:
  + X-axis: **Specialities**
  + Y-axis: Combined average cost (**avg\_medicare\_new\_patient** + **avg\_copay\_new\_patient**)
  + Separate bars for the top 5 most expensive and the top 5 least expensive specialties, allowing for easy comparison.

**4. Comparative Cost Analysis**

* **Chart Title**: "Average Cost per Specialty Compared to County Average"
* **Chart Type**: Bullet chart
* **Columns Used and Aggregations**:
  + Bullet ranges: County average cost based on an aggregation of **avg\_medicare\_new\_patient** and **avg\_copay\_new\_patient** across all specialties.
  + Marks: Specific costs for each specialty, facilitating direct comparison against the county average.

**Per Capita Cost Analysis**

This analysis can normalize the costs by population, giving a more accurate picture of healthcare expenses relative to the size of the community.

**1. Per Capita Healthcare Cost**

* **Chart Title**: "Per Capita Healthcare Costs by County"
* **Chart Type**: Map or heat map
* **Columns Used and Aggregations**:
  + Color or size on the map: Calculate per capita costs by dividing the combined average costs (**avg\_medicare\_new\_patient** + **avg\_copay\_new\_patient**) by the **population** of each county.
* **Tooltip Information**: Provide actual population numbers, total average costs, and per capita figures.

**Comparison of Cost vs. Population Size**

Visualize how costs compare across areas with different population sizes, potentially highlighting whether more populated areas have higher or lower costs.

**2. Cost versus Population Size**

* **Chart Title**: "Comparison of Healthcare Costs and Population Size"
* **Chart Type**: Scatter plot
* **Columns Used and Aggregations**:
  + X-axis: **population**
  + Y-axis: Average total costs (**avg\_medicare\_new\_patient** + **avg\_copay\_new\_patient**)
  + Size or color of marks: Based on the number of specialties available in the county, if interesting to see how service diversity correlates with population and cost.

**Population-Based Demand Insight**

Use population data to infer potential demand for specific specialties based on the population size and existing cost patterns.

**3. Demand Projection by Specialty**

* **Chart Title**: "Projected Demand for Specialties Based on Population"
* **Chart Type**: Bubble chart
* **Columns Used and Aggregations**:
  + X-axis: **Specialities**
  + Y-axis: Combined average costs
  + Bubble size: Based on **population** of each county, adjusted by the average cost to imply demand.

**Cost Accessibility Ratio**

Evaluate how accessible healthcare costs are to the average resident based on local median income levels (if such data can be added or is available).

**4. Cost Accessibility Insights**

* **Chart Title**: "Healthcare Cost Accessibility by County"
* **Chart Type**: Bar chart with an overlay line graph
* **Columns Used and Aggregations**:
  + Bar chart: Average total costs per specialty per county.
  + Line graph: An index of cost to median income ratio (requires additional income data), giving insight into how affordable healthcare is for the average resident in each county.