Sample-Superstore:
An Exploratory Dashboard Analysis

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Abstract

Exploratory dashboards give users the ability to dive deeper into a subject matter to explore and answer numerous questions about the data. Exploratory dashboards use filters and actions to achieve this interactivity insight. Filters allow users to alter the visualizations on a dashboard by excluding temporary subsets of data based on some criteria presented by the designer of the dashboard. Actions assist in discovery by allowing end users to change the context of the dashboard based on a selection they might make in one of the visualizations. To demonstrate the benefits of exploratory dashboards this report was created as a guide through a particular dataset using screenshots, analytical questions and the rationale for various design techniques for three well-designed data visualizations.

Data

The dataset used to demonstrate the benefits of exploratory dashboards in this report is the Sample-Superstore dataset. The Sample-Superstore dataset is a fictitious financial and geographical dataset available within Tableau's internal data sources. The Sample-Superstore dataset contains three sheets: Orders, People and Returns.

Users

The users of the Sample-Superstore dataset would most likely be people or industries looking to explore questions in regards to financial records, customer behavior, and regional trends. The potential analytical questions within these industries will be explored further in the next section.

Dashboards

Visualization 1: Regional Sales Performance

The *Regional Performance* visualization provides insight into the sales performance of the Superstore by region. In this visualization the profit, profit ratio, quantity, sales, and sales per customer can be explored as a bar chart.

Explanation of Design Techniques

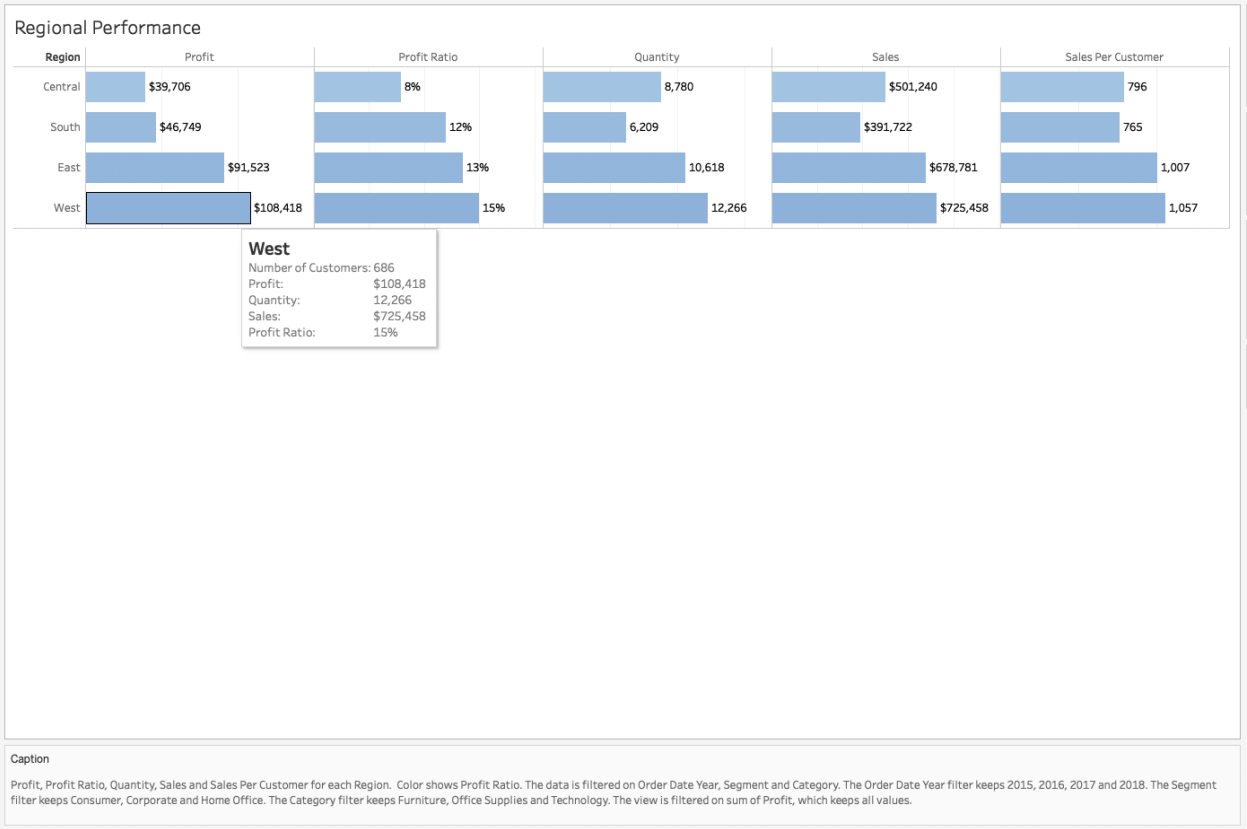
A bar chart was chosen so that the discrete categories of the data could be visualized by the lengths of the different bars in proportion to the size of the category they represent. This technique allows a user to quickly identify trends in the data by 'Region' and 'Measure Names'. The 'Profit Ratio' measure was applied to the color shelf and given a range of -0.5 to 0.5 in order to show each region with profit. The measure 'Sales per Customer' is a calculated field where the sum of 'Sales' is divided by the count distinct to each 'Customer Name'. 'Measure Names' and 'Measure Values' were placed as column names, excluding a few values to decrease visualization clutter. Lastly, the 'tool tip' was edited to display the 'Region' measure larger and provide detailed information at a glance.

Analytical Questions

The analytical questions and queries that can be answered using this visualization are:

- Which region had the highest profit, profit ratio, quantity (of sales), sales and or sales per customer?
- How many total customers are within each region?
- How did the furniture category perform in each region?
- How did the consumer segment perform in each region?
- Additionally, these same questions can be asked in regards to a specific year between 2012 to 2018, instead of all four years together.

Figure 1. Regional Performance with Caption



Visualization 2: Profit vs. Sales Performance

The *Profit vs. Sales Performance* visualization provides insight into the profit versus sales performance of the Superstore. In this visualization a scatter plot allows a user to explore the customer base as a whole and individually.

Explanation of Design Techniques

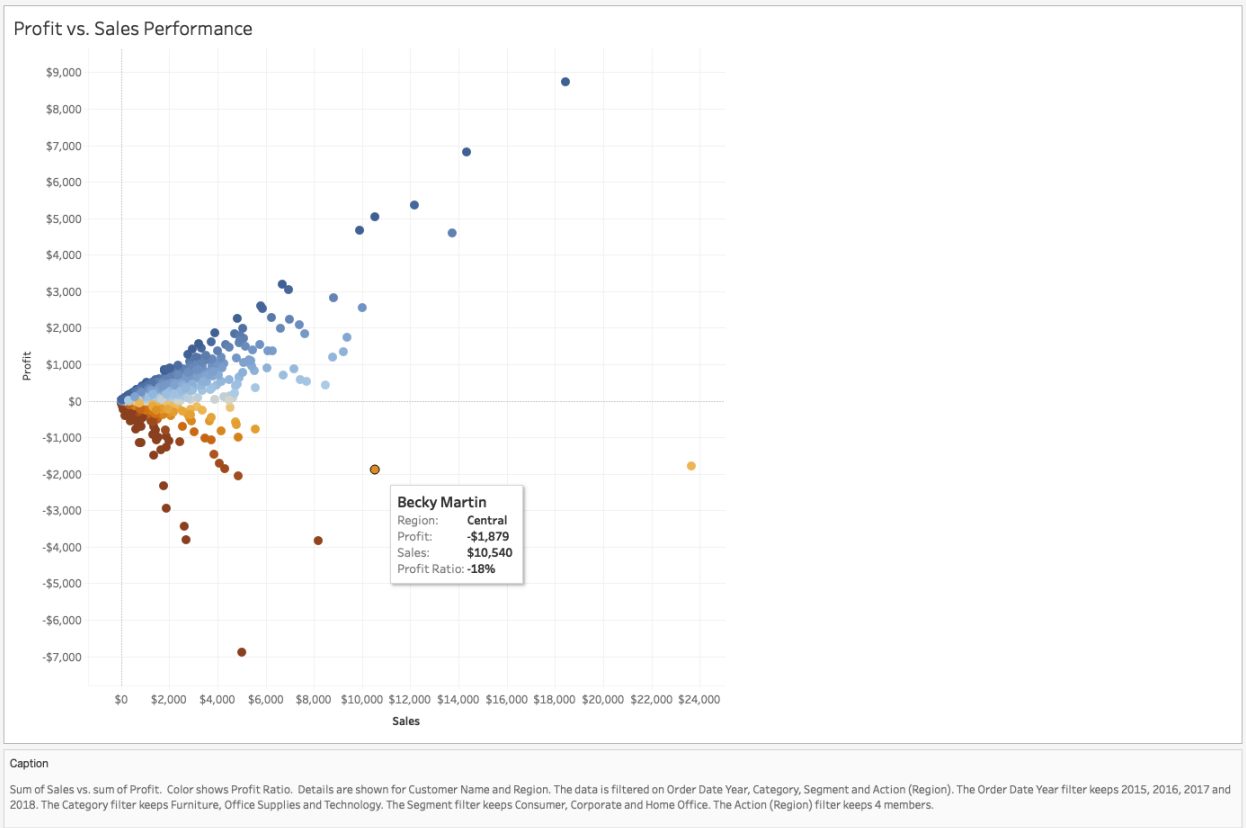
A scatter plot was selected so the user can see the correlation between the variables 'Profit' and 'Sales'. The color scheme of red to blue for the profit ratio, which is the calculation of profit divided by sales, can be visualized at a glance. By selecting a point in the scatterplot the user is able to explore not only the sales and profit of a particular customer, but also the region of the profit ratio and the name of the customer. The 'Profit Ratio' measure was applied to the color shelf again and given the same range of -0.5 to 0.5 for balance, which gets converted to percentage in the legend. Lastly, the 'tool tip' was edited to display the 'Customer Name' measure larger and provide detailed information at a glance.

Analytical Questions

The analytical questions and queries that can be answered using this visualization are:

- Which customers had the highest profit, profit ratio and or sales?
- Do the top and low performing customers come from any specific regions, belong to any specific segments or categories?
- How did the furniture category perform in each region?
- Additionally, these same questions can be asked in regards to a specific year between 2012 to 2018, instead of all four years together.

Figure 2. Profit vs. Sales Performance with Caption



Visualization 3: Customer Performance

The *Customer Performance* visualization provides insight into each customer's sales history with their profit ratio as indicated by color. In this visualization a bar chart allows a user to explore the customer base with the layout sorted from highest sales performance to lowest sales performance for the Superstore.

Explanation of Design Techniques

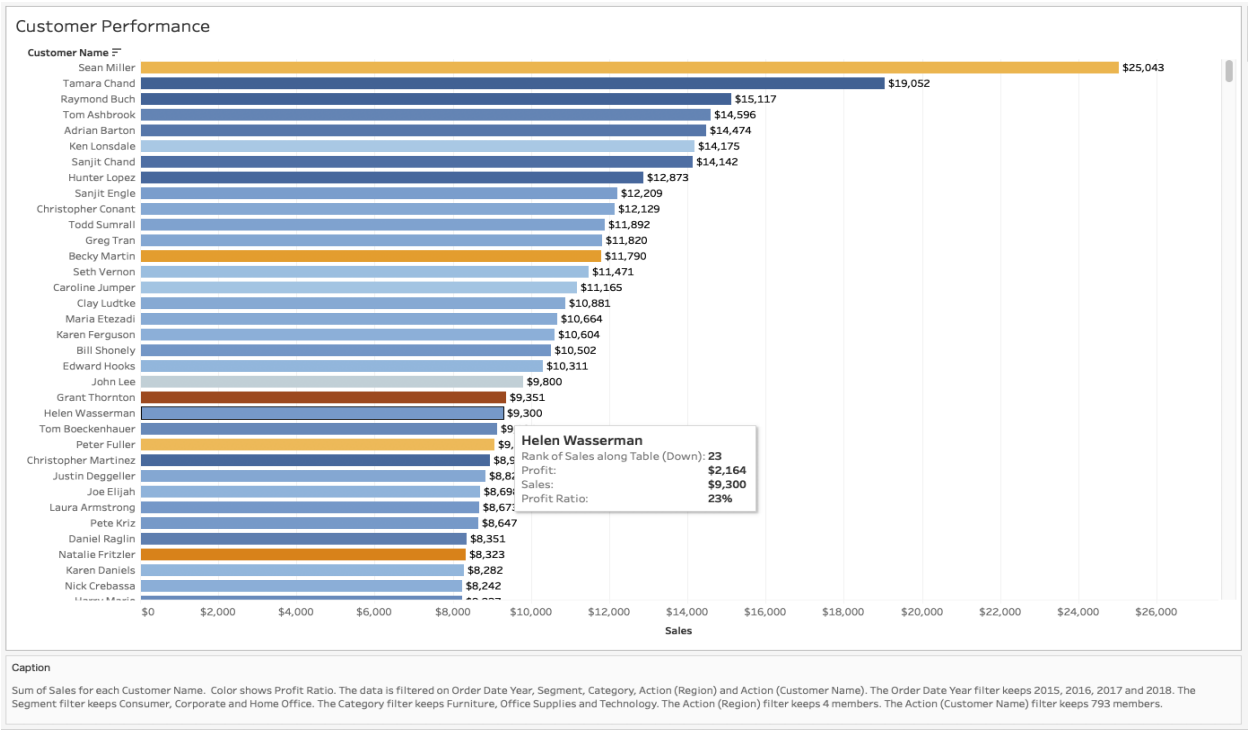
A bar chart was selected again, in order that the discrete categories of the data could be visualized by the lengths of the different bars in proportion to the size of the category they represent. This technique allows a user to quickly identify trends in the data by 'Customer Name' and 'Sales'. The color scheme of red to blue again allows the profit ratio to be visualized at a glance. By scrolling up and down in the barchart the user is able to explore not only the sales and profit of a particular customer, but also their ranking against all other customers provided. The 'Profit Ratio' measure was applied to the color shelf again and given the same range of -0.5 to 0.5 for balance, which gets converted to percentage in the legend. Lastly, the 'tool tip' was edited to display the 'Customer Name' measure larger and provide detailed information at a glance.

Analytical Questions

The analytical questions and queries that can be answered using this visualization are:

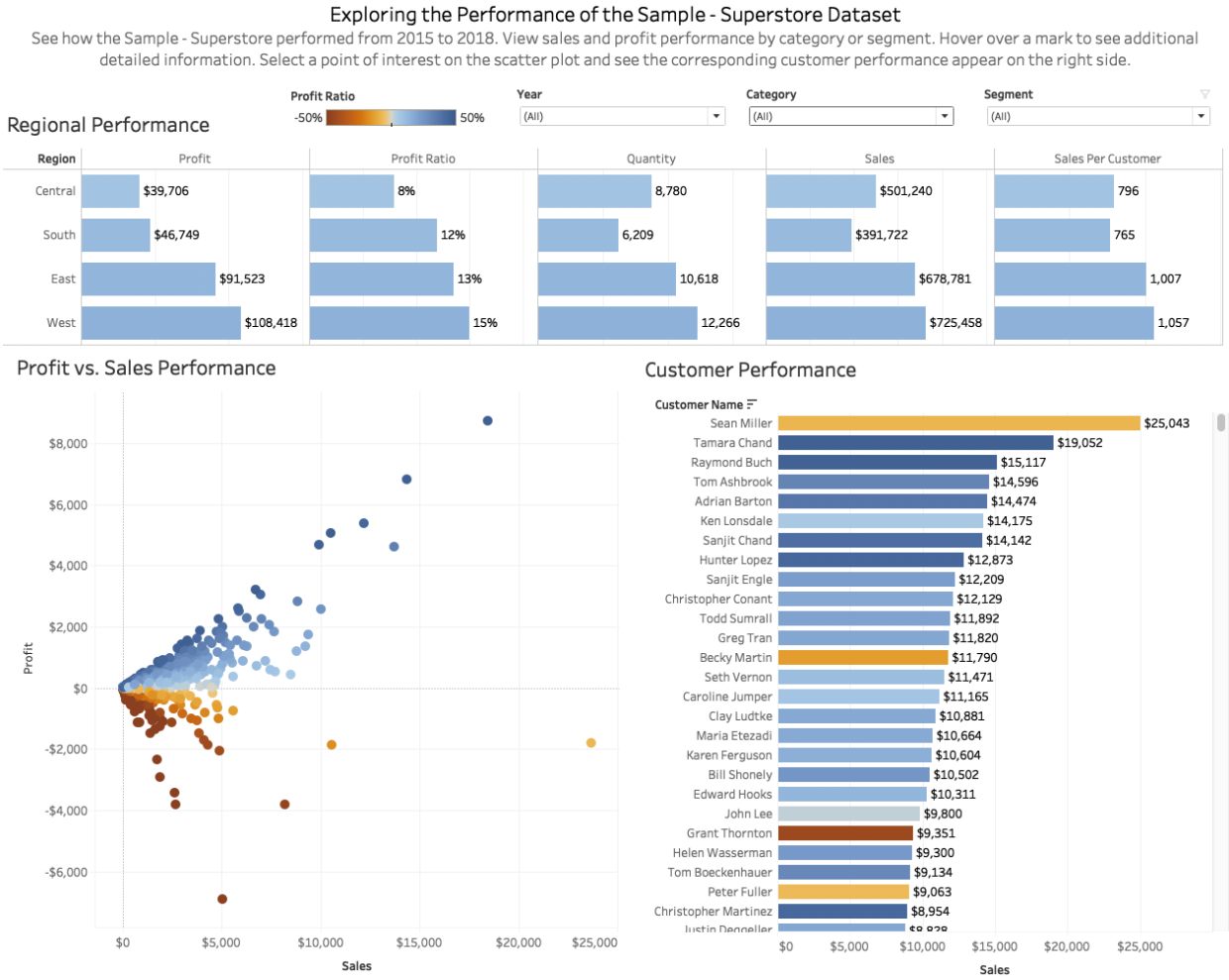
- Which customers had the highest sales?
- Which customers had the highest profit ratio by category or segment?

Figure 3. Customer Performance



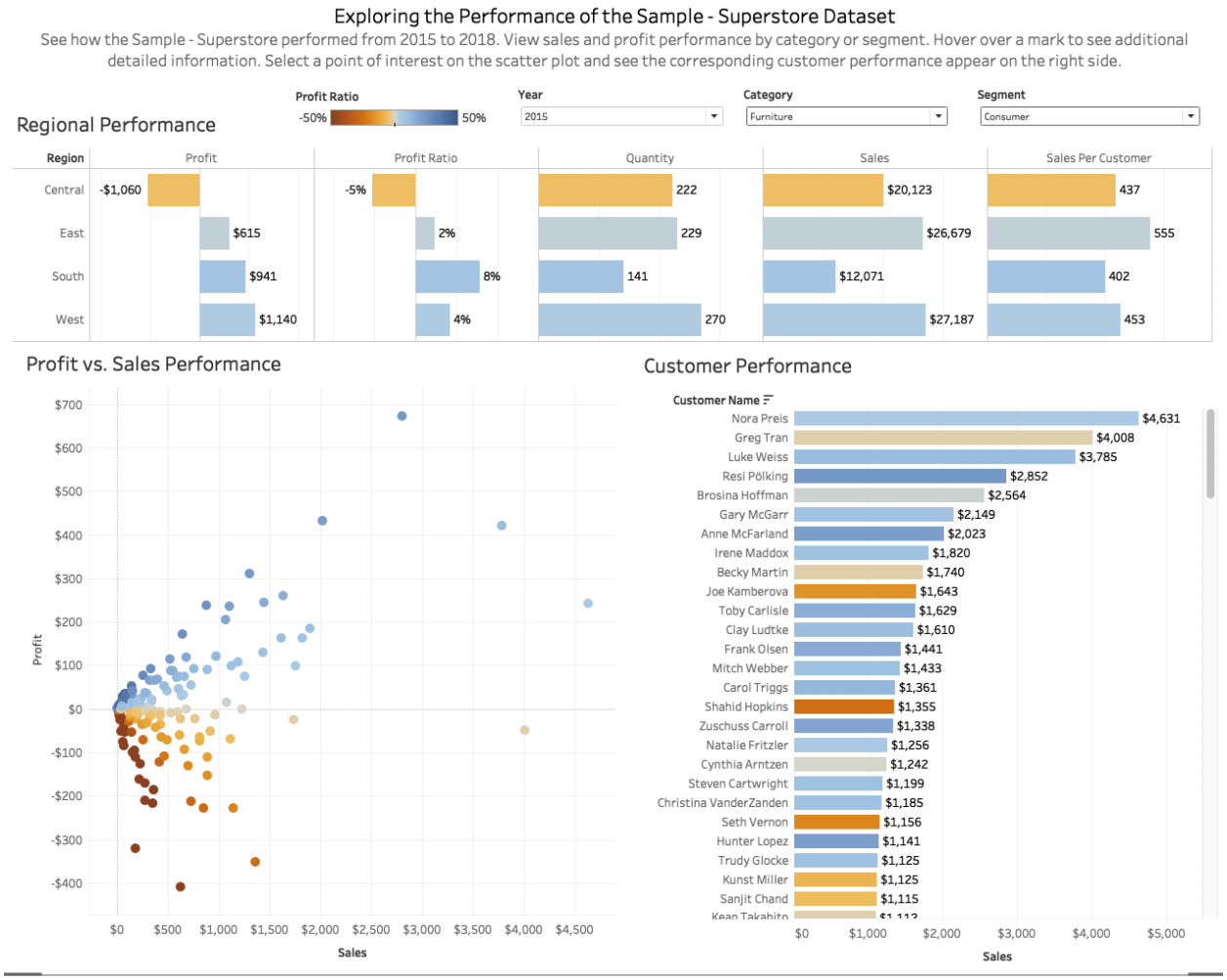
Project Demonstration

Figure 4. Sample-Superstore Dashboard



This is a visualization of the *Sample-Superstore Dashboard* before any filtering or actions have been chosen by the user. Now, I will display this dashboard with filtering and actions taken theoretically by a user to show its capabilities at answering analytical questions.

Figure 5. Regional Performance with Filtering



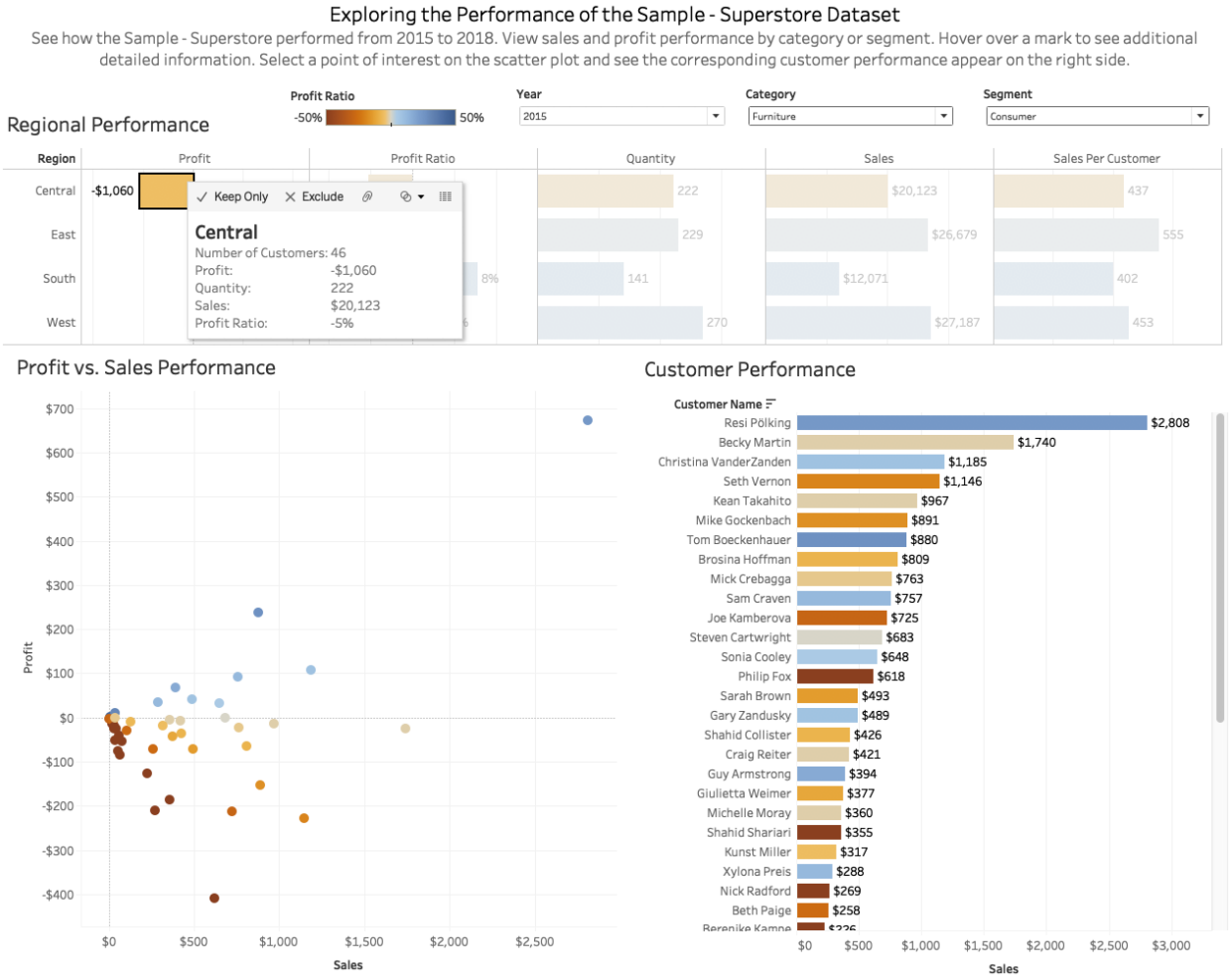
In this screenshot the year has been filtered to '2015', the category filtered to 'Office Supplies', and the segment to 'Consumer'.

Let's say the analytical question is:

Which customers are contributing to the low profit (-$1,060) in the Central region, in 2015, in the category of 'Office Supplies', within the 'Customer' segment?

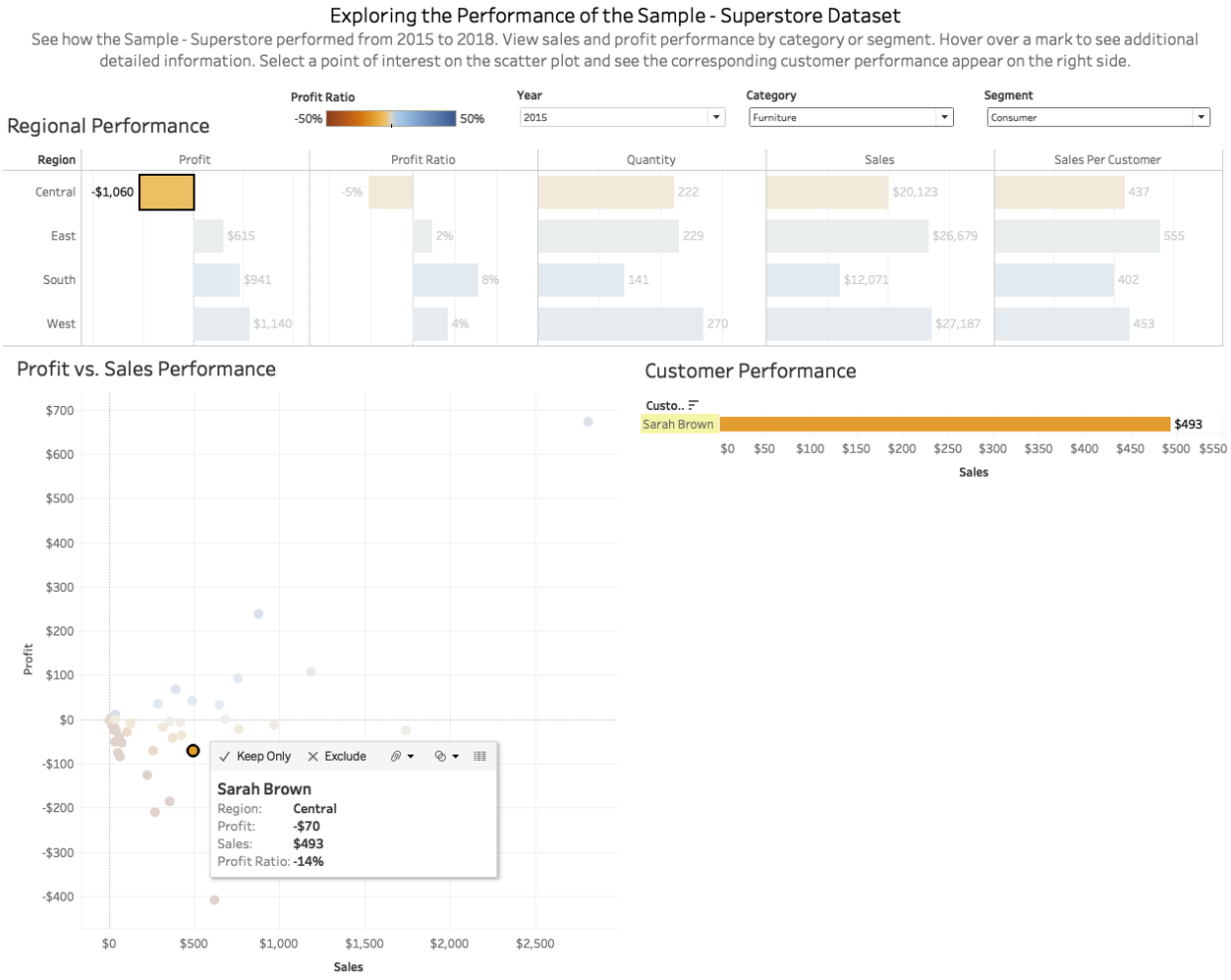
To answer this question using the *Regional Performance* visualization, the action of selecting the Central region bar under the 'Profit' measure is executed.

Figure 6. Regional Performance with Actions



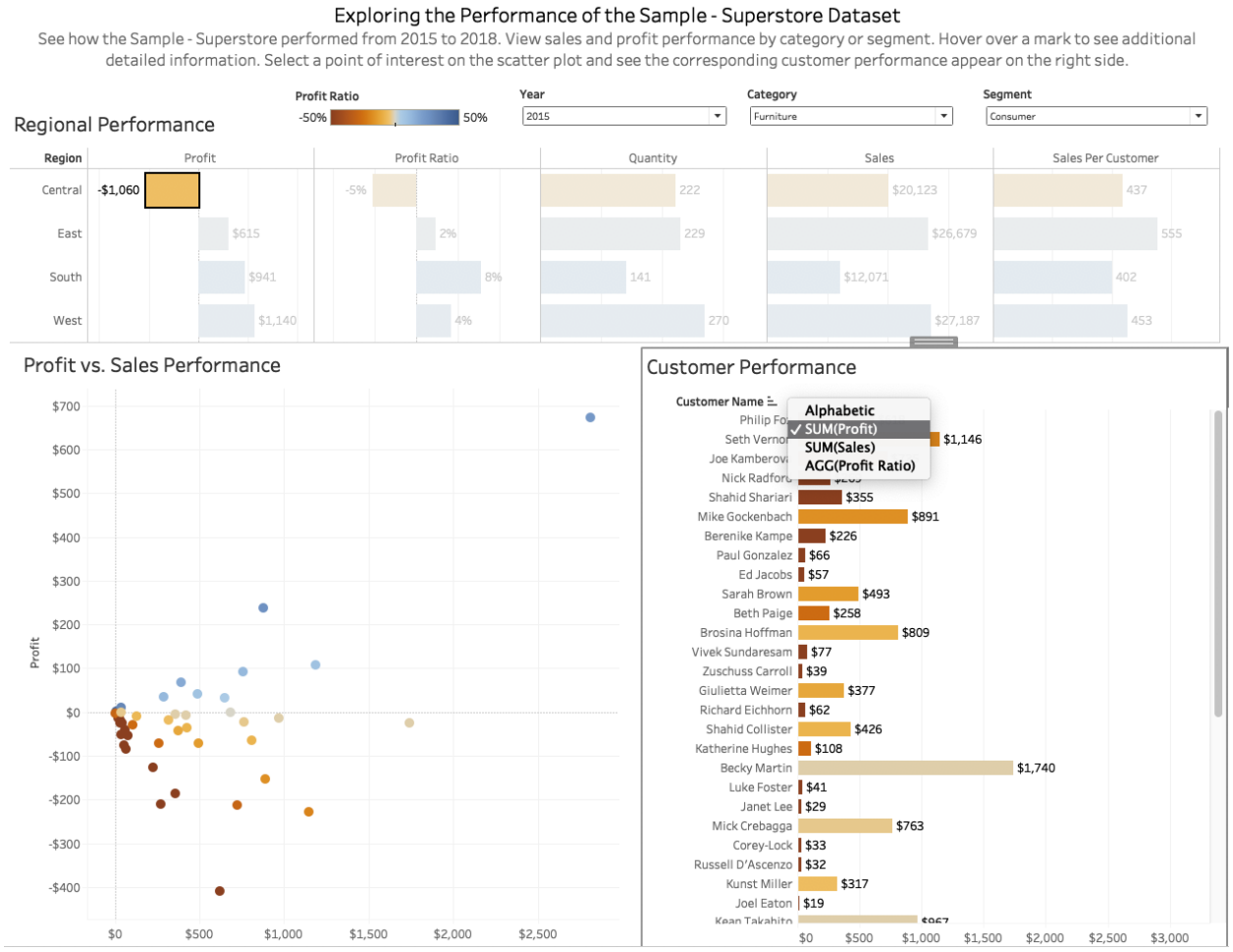
In the screenshot above we now see a different visualization again caused by the action of choosing the 'Central' region bar under the 'Profit' measure. We see from the tool tip that there are 46 customers contributing to the low profit performance in this region. Those 46 customers are available for review in the scatter plot on the bottom left and they are also ranked by highest to lowest sales on the bottom right. To dig even further, the action of choosing one of the 46 customers from the *Profit vs. Sales Performance* visualization would alter the visualizations again, specifically to the *Customer Performance* visualization.

Figure 7. Profit vs. Sales Performance with Actions



By choosing one of the low performing customers in the *Profit vs. Sales Performance* visualization, we see the customer name, Sarah Brown, and she is from the Central region, as well as some additional financial information about her. As a result, of the action to choose Sarah Brown in the *Profit vs. Sales Performance* visualization, a change to the *Customer Performance* visualization has occurred. As you can see on the far right now, only the customer Sarah Brown is visible with her mid-level (orange) profit ratio and total sales of $493.

Figure 8. Customer Performance with Actions



Now, by choosing the action of sorting the *Customer Performance* visualization by 'Sum(Profit)' in a descending order, we are able to see the visualization change providing insights into those customers affecting the negative profit of the 'Central' region directly. In the case of Sarah Brown, we are now able to see as well where she ranks in comparison to other customers. This gives the user insight into whether or not this customer can be seen as someone who should be further explored for a possible secondary analysis. An analysis exploring customers who can be marketed to with alternative campaigns or methods in order to see if this increases their overall contribution to profit in the 'Central' region.