What Is Causing Returns?

Sprint 5 Project | Return Trends and Root Cause Analysis

Summary of Return Analysis

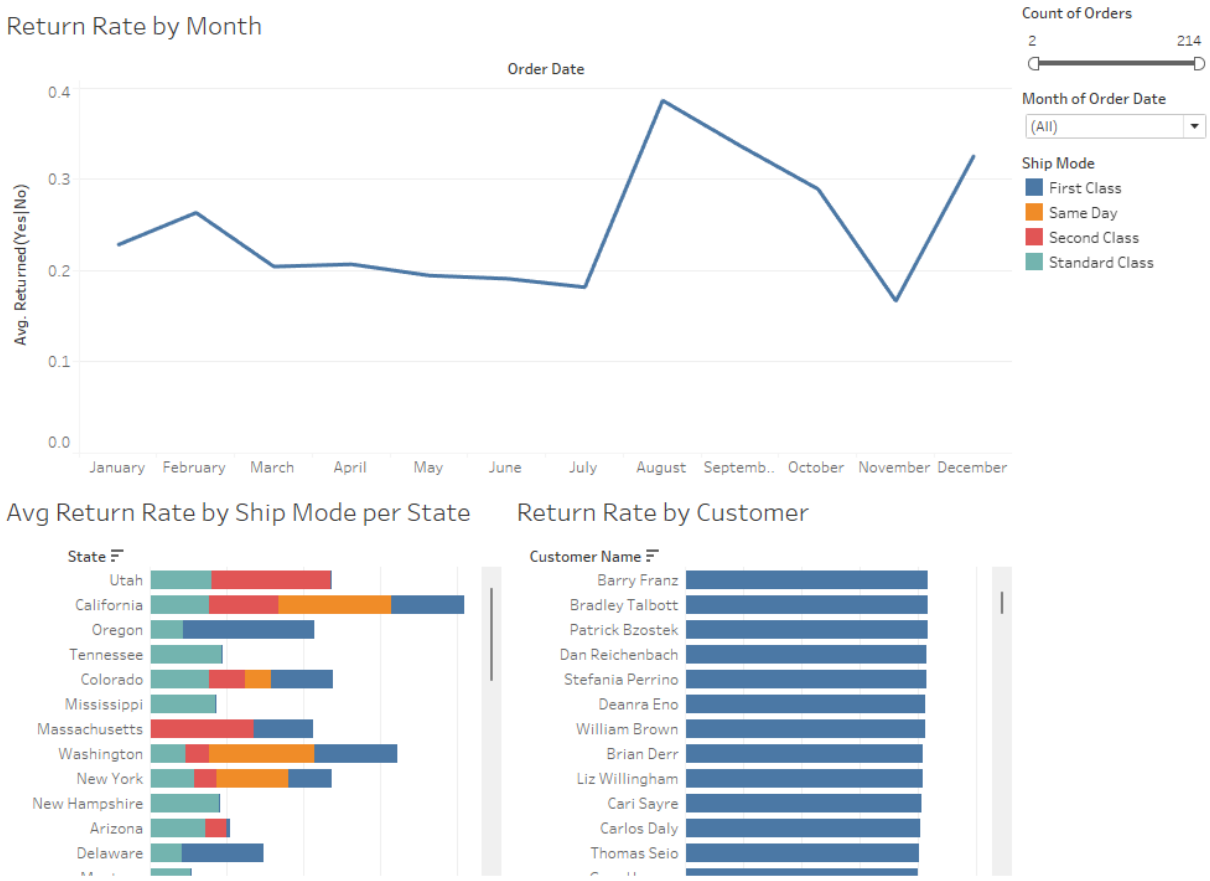
Returns are analyzed using both return rate (percentage of returned orders) and total returns. Return rate highlights relative impact from categories, while total returns show overall scale. Both can be useful depending on what the context of the analysis is.

Below are a summary of some KPIs referencing the dataset:

- **Total Sales:** $2,901,677
- **Total Returns:** 3,226
- **Total Orders:** 12,420
- **Overall Return Rate:** 25.97%

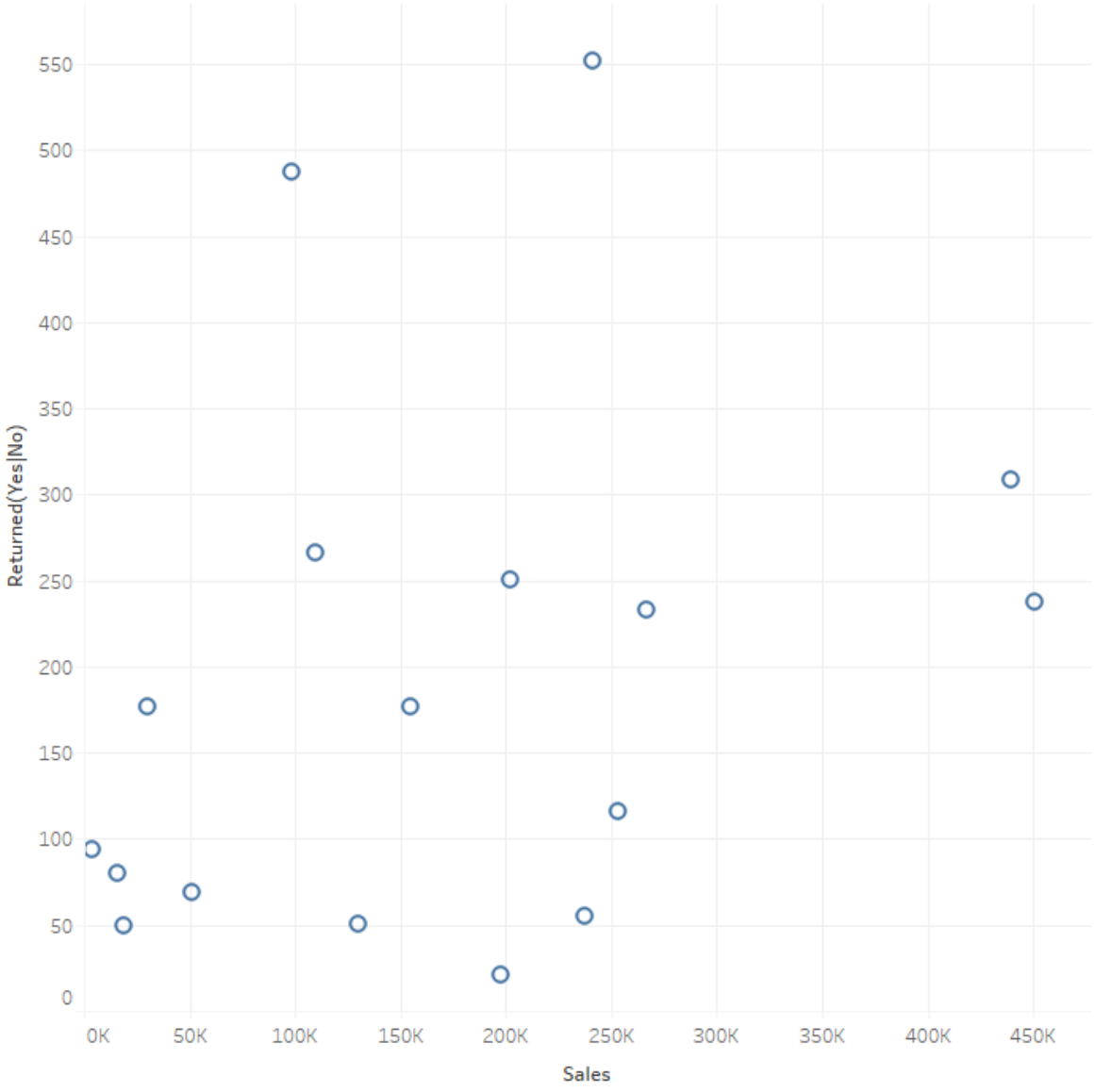
Root Causes Overview

Returns are most strongly associated with certain categories (e.g., Technology), geographic regions (e.g., West Coast), fast shipping methods, and seasonal order trends. A subset of customers also show unusually high return rates.



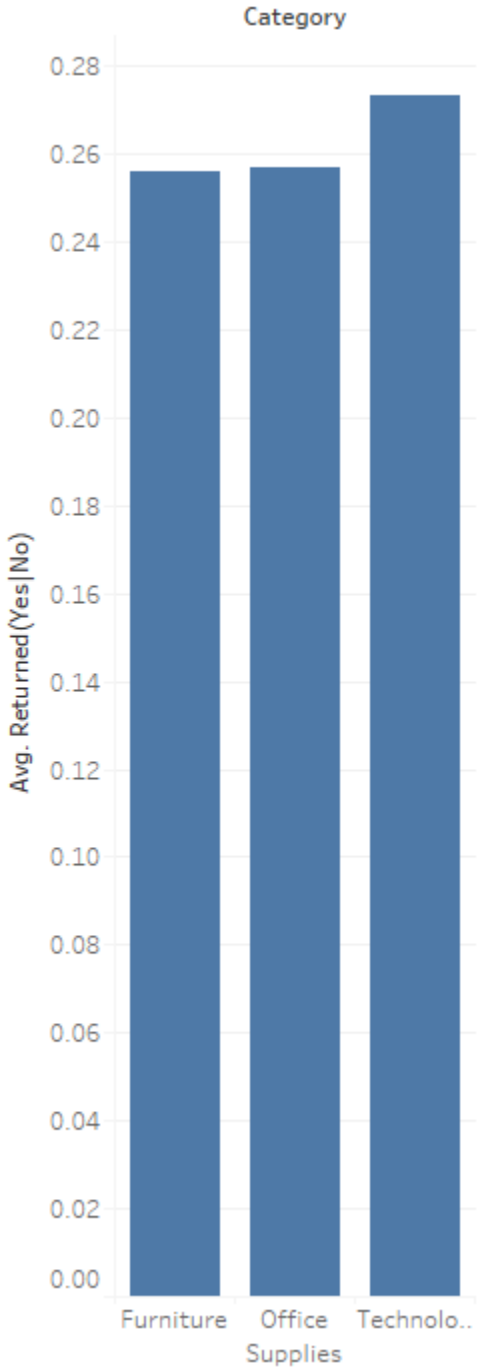
Sales vs Returns

This scatterplot compares sales to returns by sub-category. It shows that high sales don’t always result in high returns, and some low-selling categories have disproportionately high return counts.



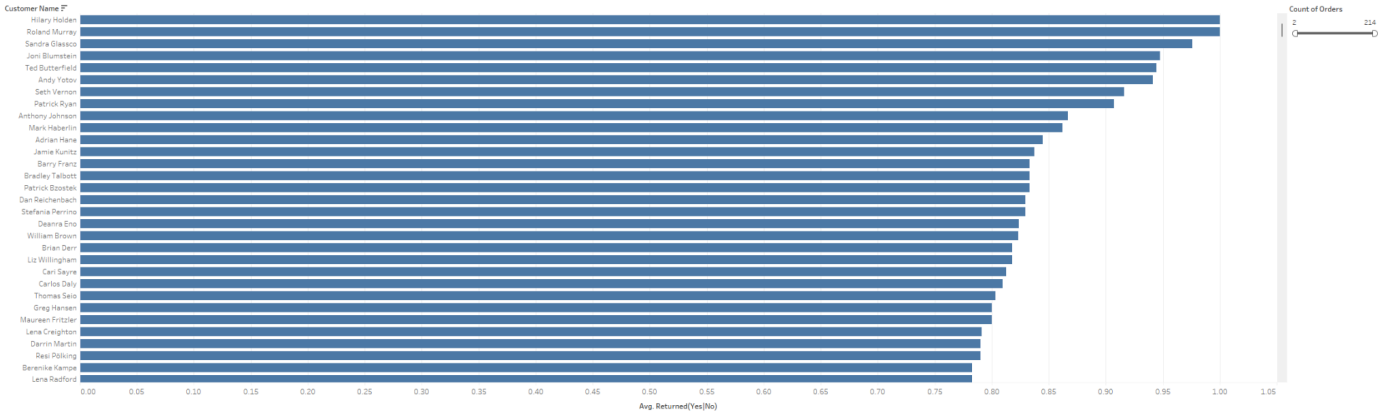
Return Rate by Category

Technology has the highest average return rate among all categories, albeit at a marginal scale. This may indicate issues with the complexity or quality of the technology being sent out as electronics are more prone to failure than other static products.



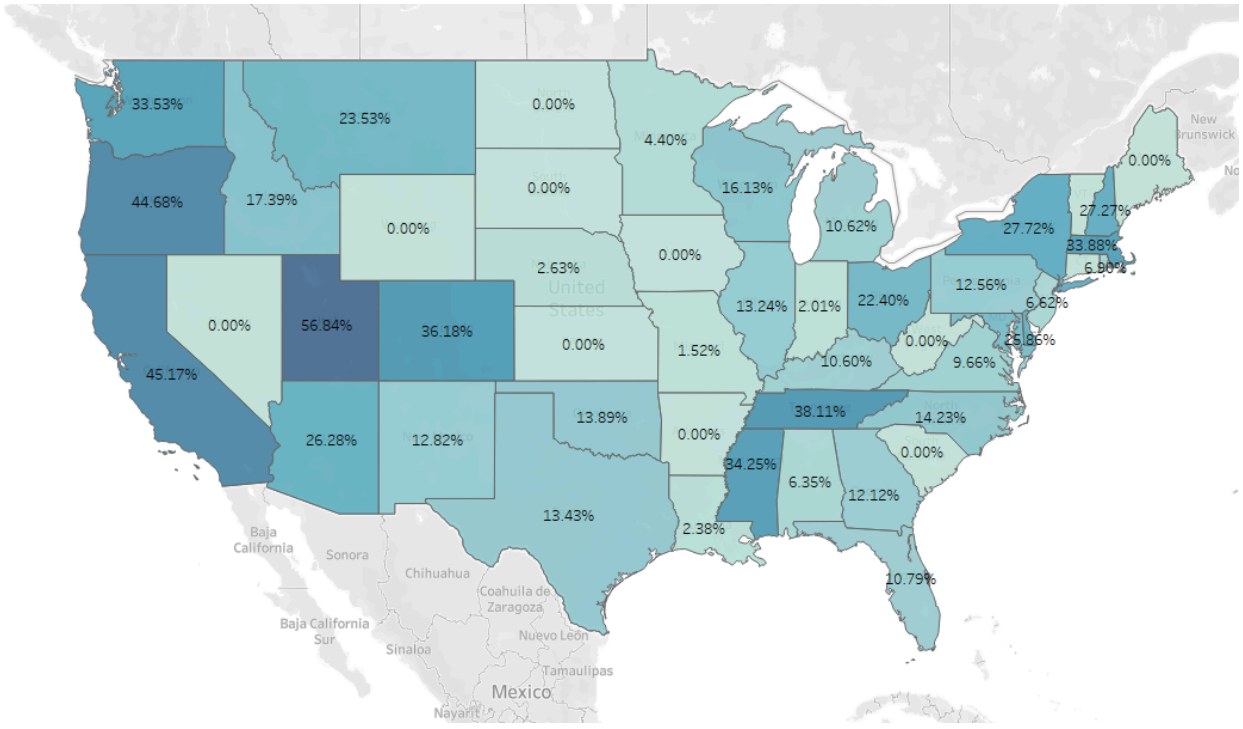
Return Rate by Customer

Some customers consistently return a large percentage of their orders. Filtering out customers with only one order helps weed out constant returners.



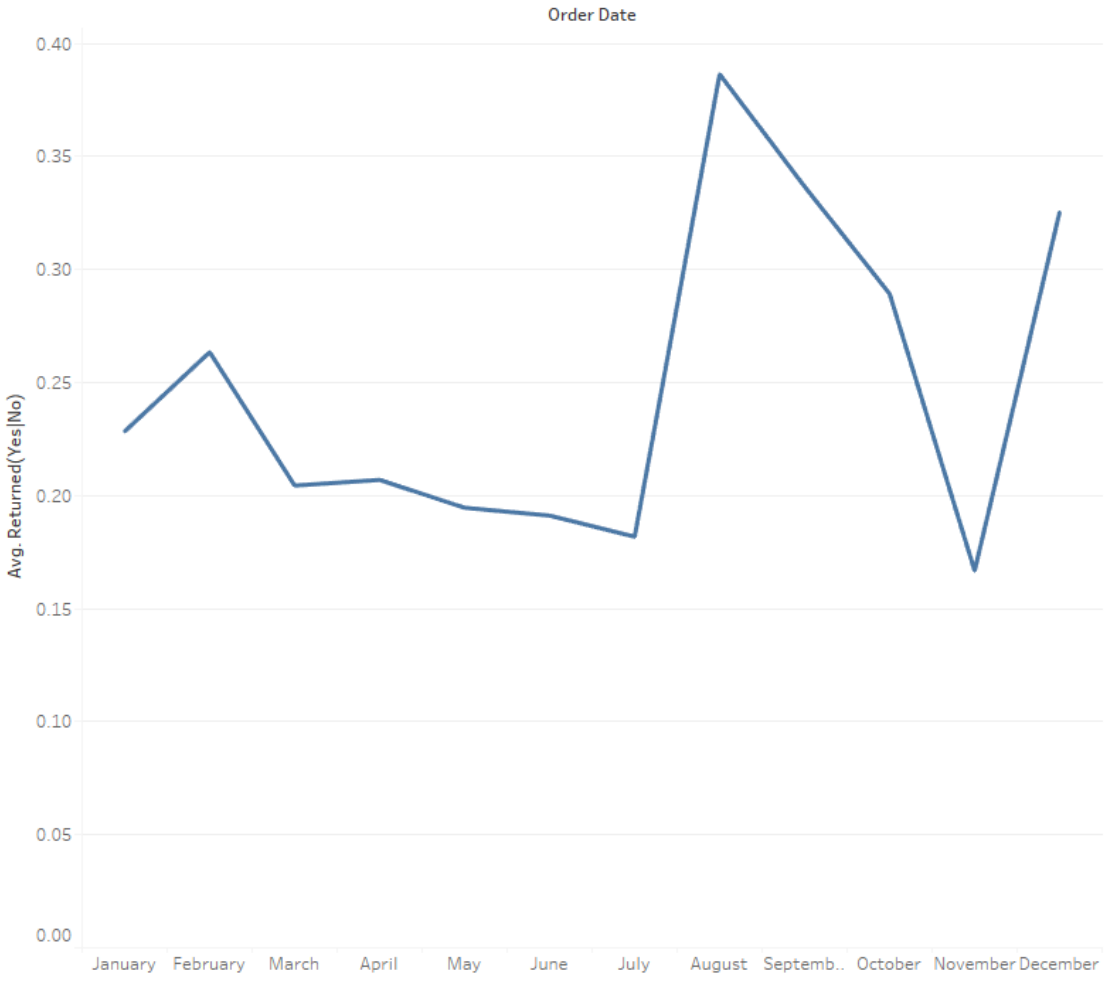
Return Rate by State

Geographic analysis shows higher return rates in Western states like Colorado and California. This could relate to warehouse logistics, shipping speed, or regional buying behavior.



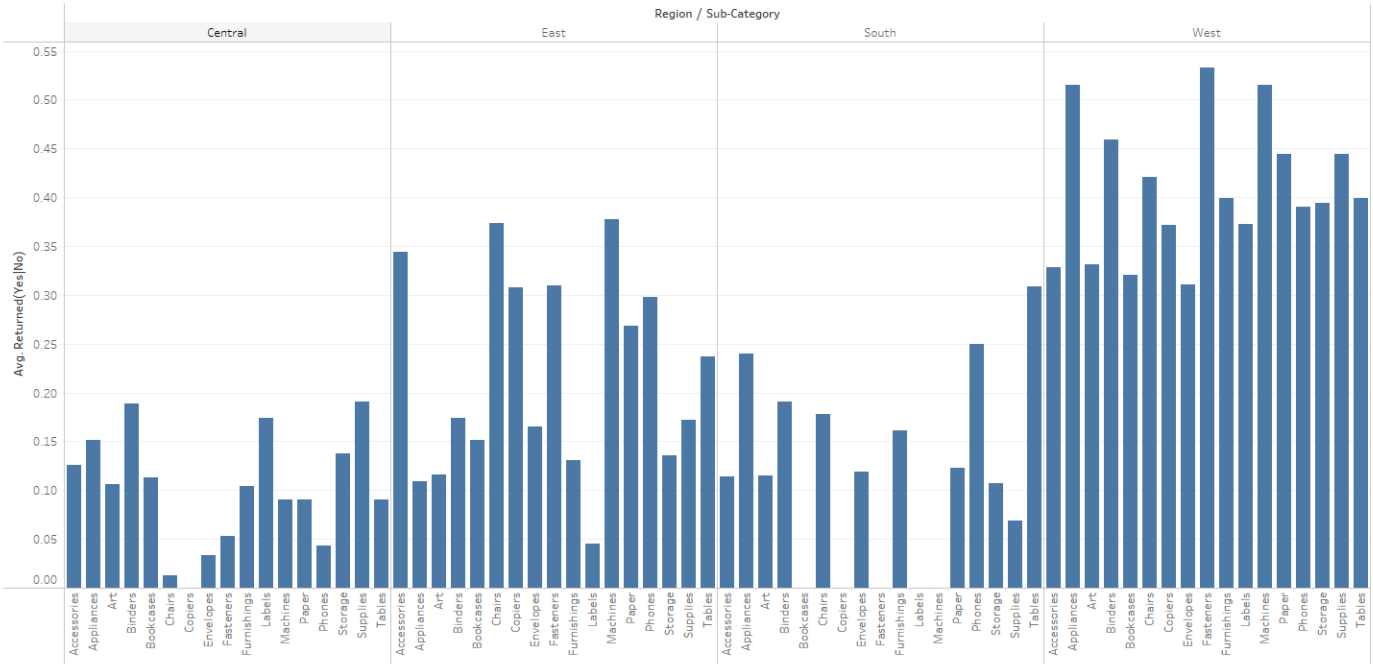
Return Rate by Month

Monthly return rates spike across 3 months; February, August, and December, likely related to holidays and seasonal promotions. This observation can guide promotional strategies.



Region × Sub-Category Composite Chart

This visualizaton shows that product return behavior varies across regions. Though, Western states have high return rates for phones, machines, and other tech-related products which further reinforces our previous point with Return Rate by States.



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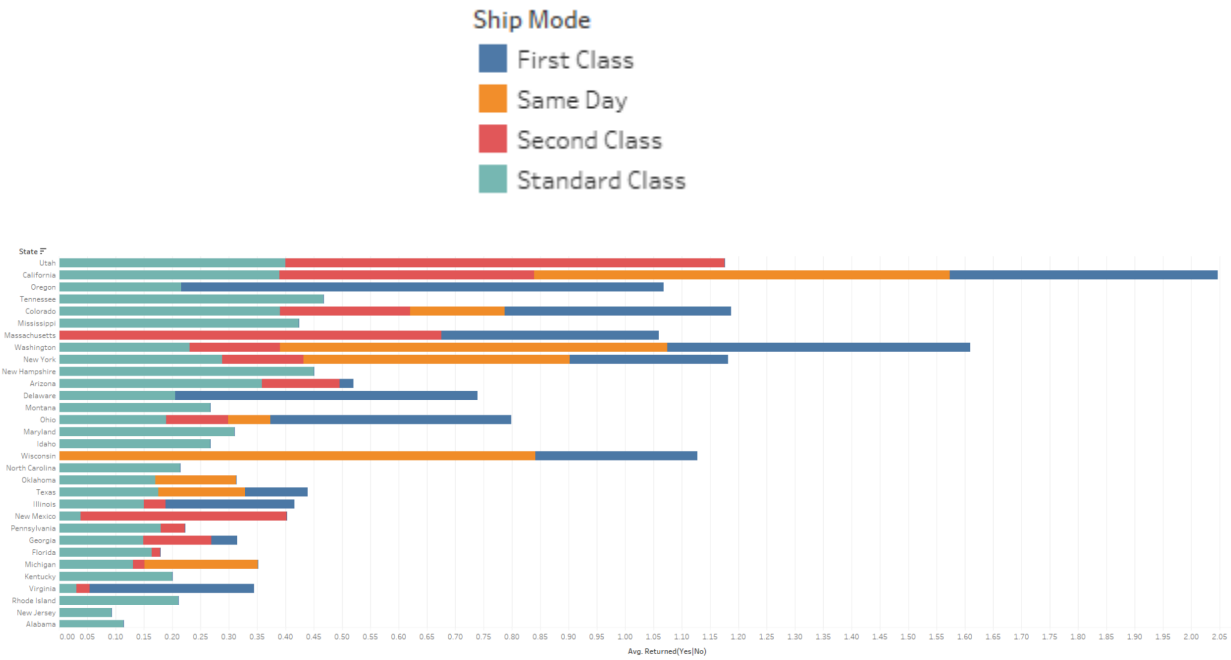
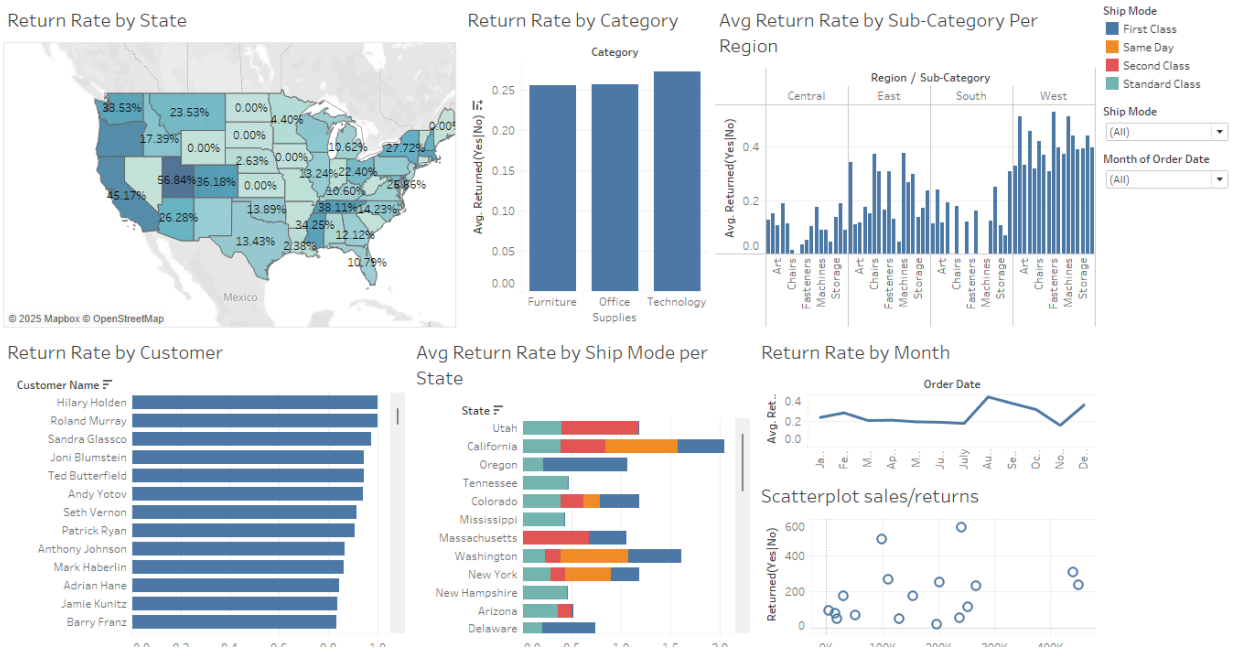
Return Rate by Ship Mode per State

Certain shipping modes (like Same Day and First Class) show higher return rates in some states. Fast shipping may lead to impulse purchases or higher damage rates.



Dashboard Usage

The dashboard is interactive — users can filter by State, Ship Mode, and Customer to drill into patterns using either the filters on the right or by clicking on the graphics themselves. This helps identify specific problem areas easily to action more effectively.



Actions and Next Steps

Next steps include reviewing top-returning products and regions, updating shipping practices, flagging high-risk customers, and implementing this dashboard for ongoing return monitoring. Below you may find points to begin investigating:

- Investigate warehouse and shipping practices in high-return states (Colorado, California, etc).
- Evaluate and adjust shipping policies, especially for Same Day and First Class modes in problem areas.
- Implement stricter return policies or monitoring for repeat returners.
- Time promotions more strategically based on seasonal spikes in return rate.