

Analysis of Return Rates in E-Commerce Products - Presentation

Introduction	Summary	Sales vs Returns - Overview	Return Rate By Location	Return Rate by Sub-Category	Return Rate and Consumers	Return Mode vs Ship Mode	Conclusion
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Analysis of Order Returns and Sales for Superstore

E-commerce store

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By calculating the return rate, I was able to compare product returns against sales values and total product orders to better identify key drivers behind high return rates. This analysis, combined with the evaluation of multiple dimensions such as region, order date, and product sub-category, provided deeper insights into the underlying causes.

After thoroughly examining the Superstore's purchase and return data, several potential factors contributing to high return rates were identified. These include possible product quality issues, an ineffective discounting strategy that may attract returns rather than retain satisfied customers, and a misalignment between consumer expectations and the products offered. Addressing these areas through targeted improvements could help reduce return rates and enhance customer satisfaction.

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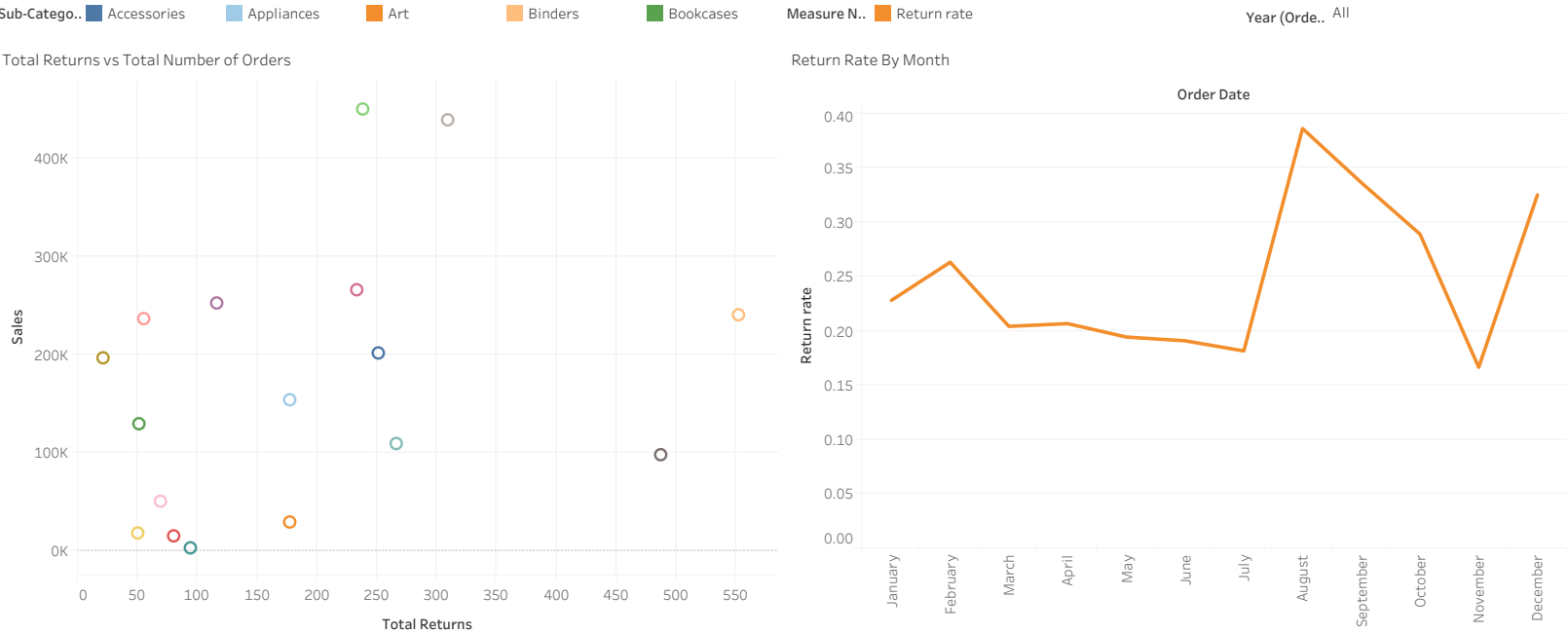
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## Return Rate Overview

**Total Returns vs Total Sales (Left):** while Chairs and Phones are the most ordered products with a significant amount of total returns, Binders is leading the way with +550 returns.

**Return Rate by Month (Right):** Returns are concentrated around Fall and Christmas time. Seasonality may be playing a role in high trends.

Use the Year (Order Date) to filter the data by a specific year or all years (current viz).



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## Return Rate Analysis By Location

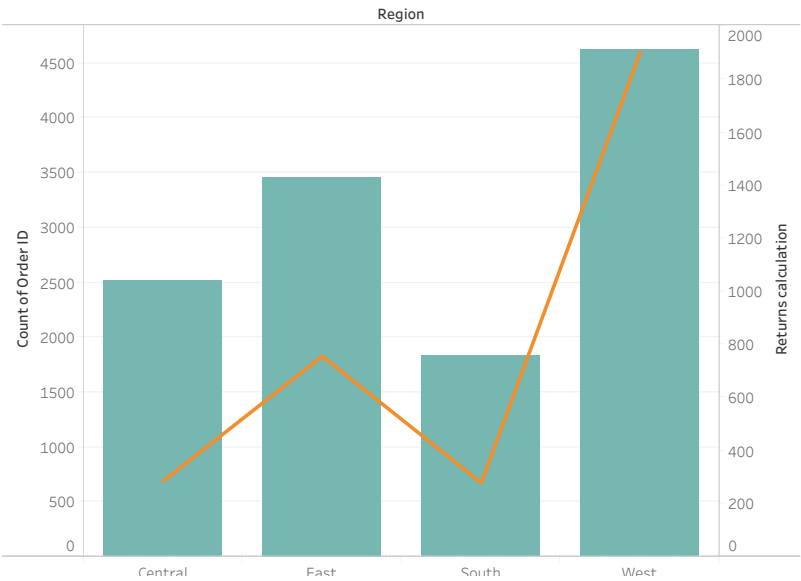
These charts present trends of return ratios among different states and regions, based on order date (year):

**Return Rate vs Number of Orders By Region (Left):** Higher total returns seem to be associated with higher total orders for all regions. However, follows a similar trend in all regions. However, the western region presents a much higher number of total returns. This could be related to impulse purchases.

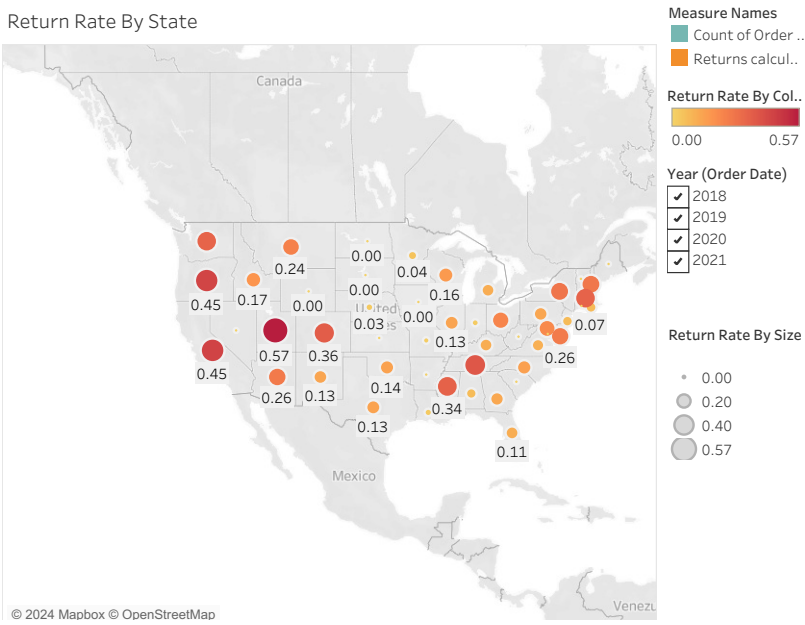
**Return Rate by State (Right):** Western states present the overall higher return rates, with Utah leading the list.

- Use the **Year of Order** to change the return rate based on the year or all years (Return ratio of total orders across all years).

Return Rate vs Number Of Orders By Region



Return Rate By State



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## Return Rate by Product Sub-Category

**Return Rate by Sub-Category (Left):** Machines and Fasteners are leading with the highest return rate among all product categories between 2018 and 2021. This data can be filtered by year to see its fluctuations.

**AVG Discount vs Return Rate By Product Sub-Category (Right):** we can see similar upward trends in return rates and discounts for Binders and Machines. But the return rate of other products doesn't seem to be affected by the AVG discount.

- Use the **Year of Order** to change the return rate based on the year or all years (Return ratio of total orders across all years).

Year (Order Date)

All

Sub-Category Legend

Accessories

Art

Bookcases

Chairs

Appliances

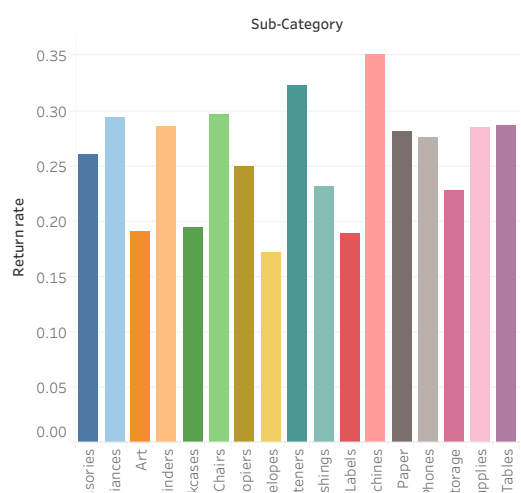
Binders

Measure Names

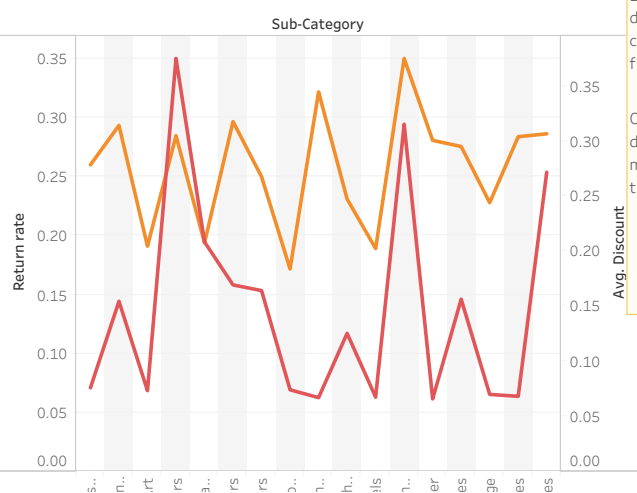
Avg. Discount

Return rate

Return Rate by Sub-Category



AVG Discount vs Return Rate by Product Sub-Category



As we observe a higher AVG discount in binders and machines, the return rate is also the highest for this product sub-categories. This could indicate that customers may be more likely to return items bought on sale, or customers perceiving discounted products as low-quality. Because we have high return rates despite no or minimal discounts, this could indicate issues with poor product fit or quality.

On the other hand, products with low discounts and low return rates could mean that customers are satisfied with these products.

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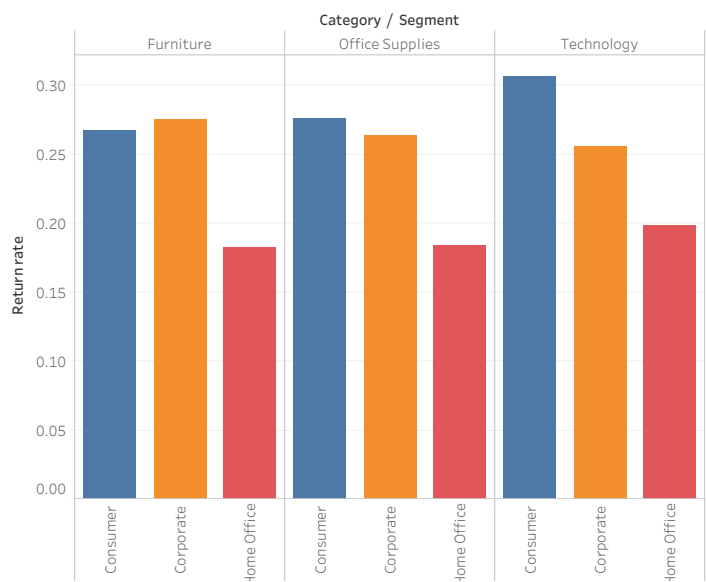
## Return Rate and Consumers

**Return Rate by Consumer Segment and Product Category (Left):** The Home Office segment presents a similar pattern in Return rate across all product categories. The Consumer segment shows the highest return rate for Office and Technology products.

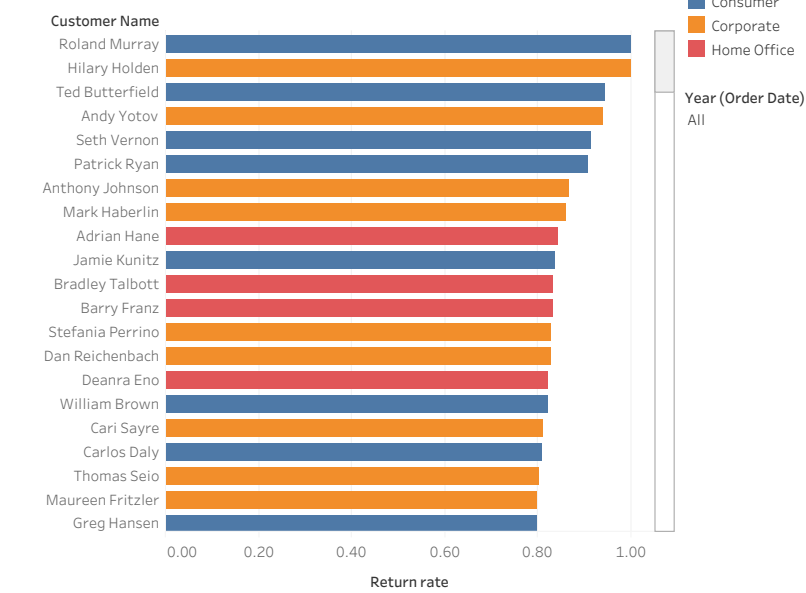
**Return Rate by Consumer with More Than 1 Order (Right):** Top clients with the highest return rate are among the Consumer and Corporate segments.

The **Year (Order Date)** can be used to isolate return rates by year.

Return Rate By User Type and Product Category

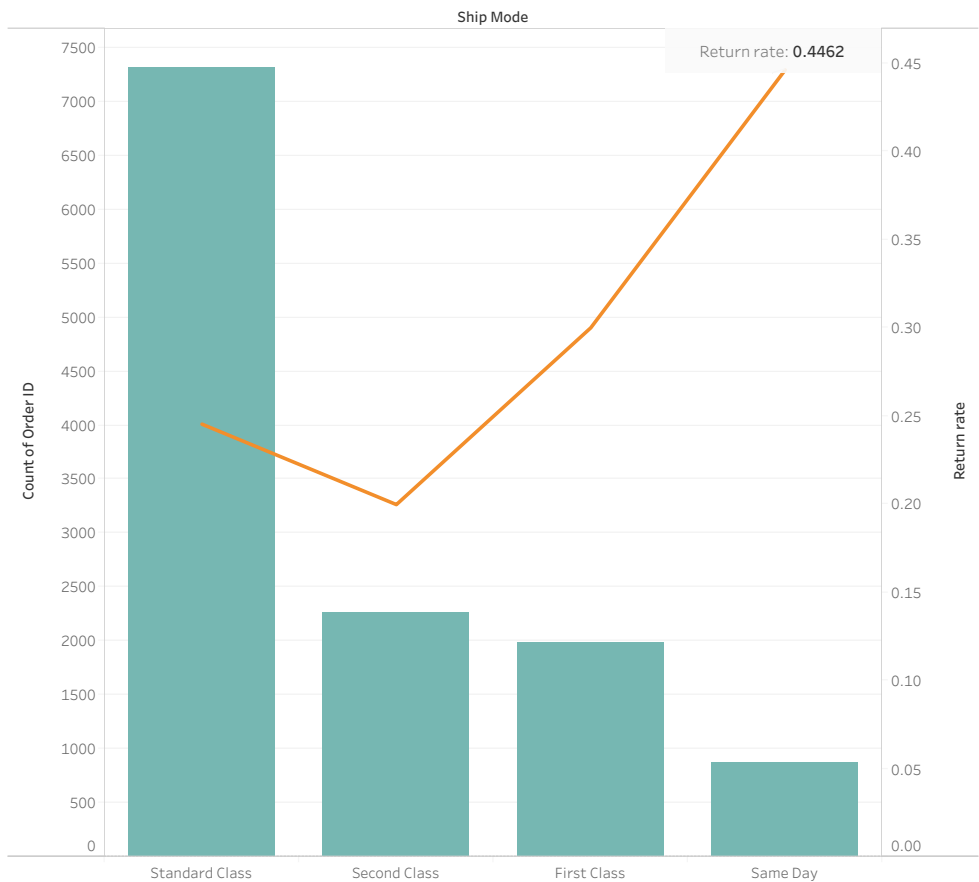


Return Rate by Customers With More Than 1 Order



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The standard class shipping option presents the highest total order count, indicating that consumers within this category might make more thoughtful purchases, resulting in lower return rates.

On the other hand, orders with same-day delivery might indicate a higher impulse purchase rate. An issue relateable to seasonality.

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**Goal:**

The objective of this analysis was to identify potential key root causes of product returns and ways to reduce them.

**Key Insights:**

- 1) Product returns seem to be associated with seasonality, where the months of August through October accumulate the highest return rates.
- 2) Regions with more orders also tend to have a higher number of returns, as expected. This is most evident in the Western region, with Utah at the top of the list. This higher rate of returns could indicate potential operational issues regarding product quality or a higher rate of impulse purchases.
- 3) Binders and Tables exhibit higher return rates with lower discounts, indicating that returns may not be driven by the discounts themselves. Other factors might be influencing returns, such as product quality issues or mismatch between product descriptions and customer expectations.
- 4) Customers within the consumer segment present a higher rate of product returns for Technology and Office supplies, probably reiterating the possibility of impulse purchases as the root cause.
- 5) While sales with same-day delivery dates aren't the highest portion of total sales, orders with this shipping method have the highest return rate

**Recommendations:**

- 1) Review the quality of products and audience needs in areas with higher return rates.
- 2) Re-evaluate discount frequency and strategy for product categories with high returns and high discounts.
- 3) Gather user feedback on products like Copiers where returns are high despite low discounts.