
IMT 562

Tableau Superstore
Exploratory Data Analysis

About the Data

Data source: Tableau Superstore

Dataset background: The Tableau Superstore dataset provides comprehensive information on product orders, customers, and returns spanning the years 2020 to 2023. Key variables include order ID, order date, ship date, ship mode, returns count, profit, quantity, sales, discount, country/region, product category, and more. This dataset presents opportunities to uncover valuable insights regarding product purchase patterns across various regions and their corresponding profitability. Analyzing this data can shed light on consumer behavior, market trends, and the effectiveness of business strategies, ultimately informing decision-making processes for optimizing sales and maximizing profitability.

Total records: 10194

Initial Questions for Exploratory Data Analysis

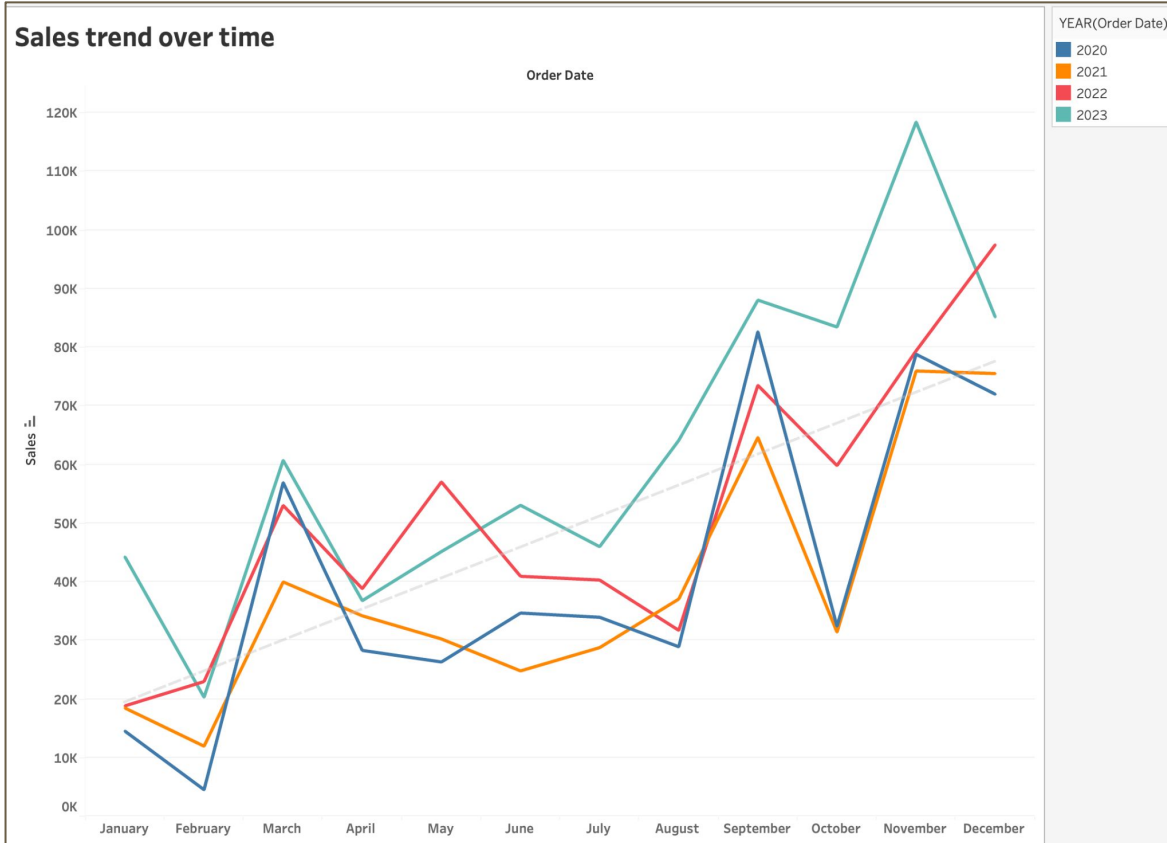
Below are some of the questions that intrigued me to explore using Tableau visualization and analysis:

- What is the overall product sales trend over time?
- Which product categories are sold the most and make the most profit?
- Does mode of shipping impact customer satisfaction?
- Does shipment time affect the number of order returns among customers?

Data Quality Assessment and Data Transformations

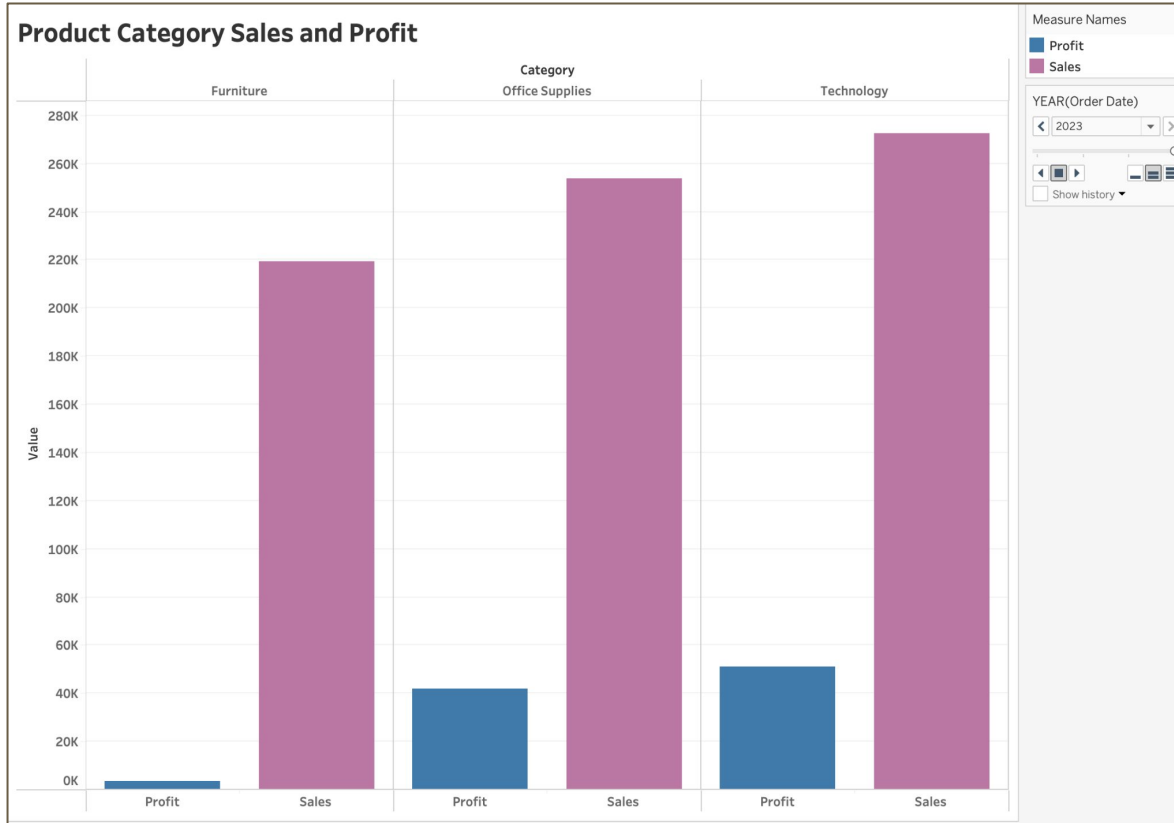
The thorough review of the dataset indicates that it is of high quality, with no outliers, missing values, or mismatched data types observed. This suggests that the dataset is reliable and suitable for analysis and interpretation based on visualizations. Utilizing the dataset directly from Tableau further streamlines the analysis process, allowing for efficient exploration of insights and informed decision-making. With confidence in the dataset's integrity, subsequent analyses and interpretations can proceed effectively, enabling valuable insights to be derived from the visualizations generated.

Sales trend with time



The visualization reveals a consistent upward trend in product sales from 2020 to 2023, particularly noticeable in the months of March, May, June, August, September, and November. This suggests an overall increase in sales each year, potentially influenced by both external factors such as economic conditions and internal initiatives like marketing campaigns or promotions. By analyzing year-over-year growth, product performance, and segment-specific trends, businesses can gain insights into the driving forces behind sales increases, enabling them to optimize strategies and capitalize on growth opportunities effectively.

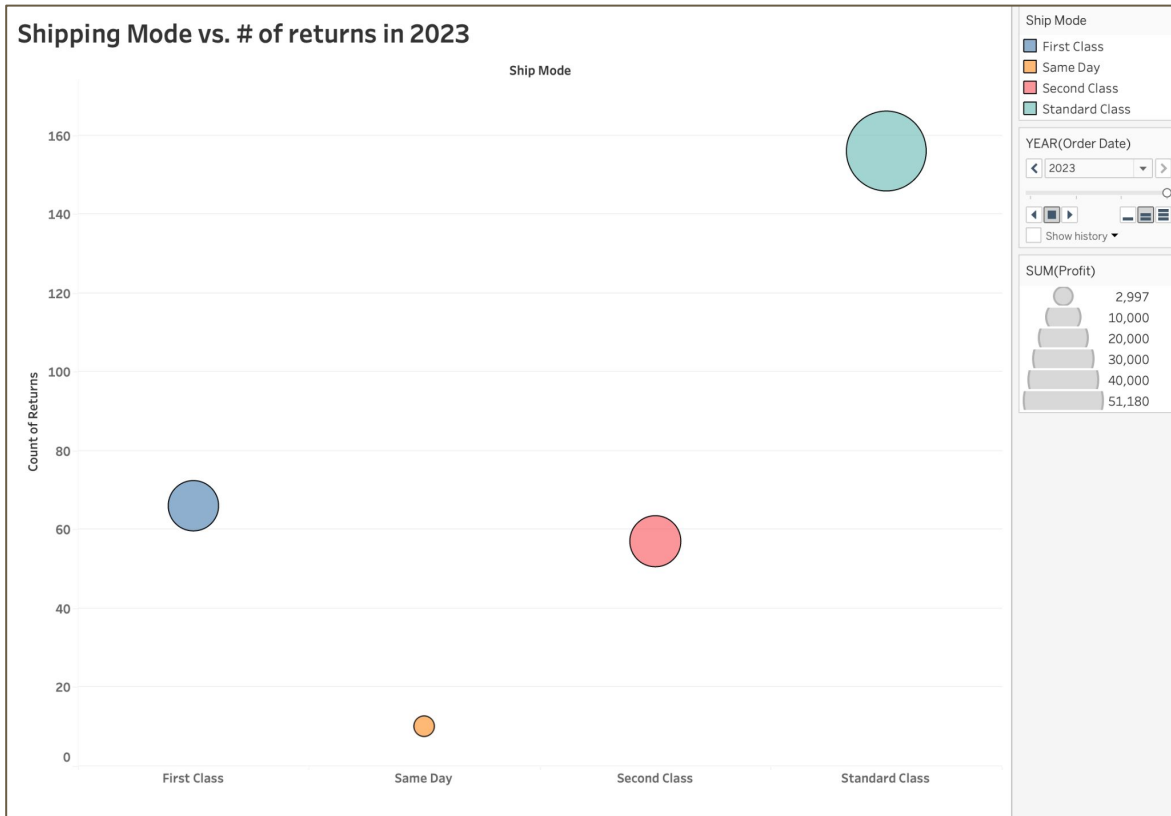
Product category sales and profit



The visualization displays sales and profit data for three product categories: Furniture, Office Supplies, and Technology. In 2023, Technology products exhibited the highest sales and profit, followed by Office Supplies, with Furniture lagging behind in both metrics. This could indicate shifting consumer preferences towards technology-related items, potentially driven by advancements in technology, changes in consumer behavior, or market competition. Further analysis could explore specific factors influencing these trends, such as product innovation, pricing strategies, or market demand dynamics, to inform strategic decision-making and optimize performance across product categories.

Shipping mode relation with number of returns

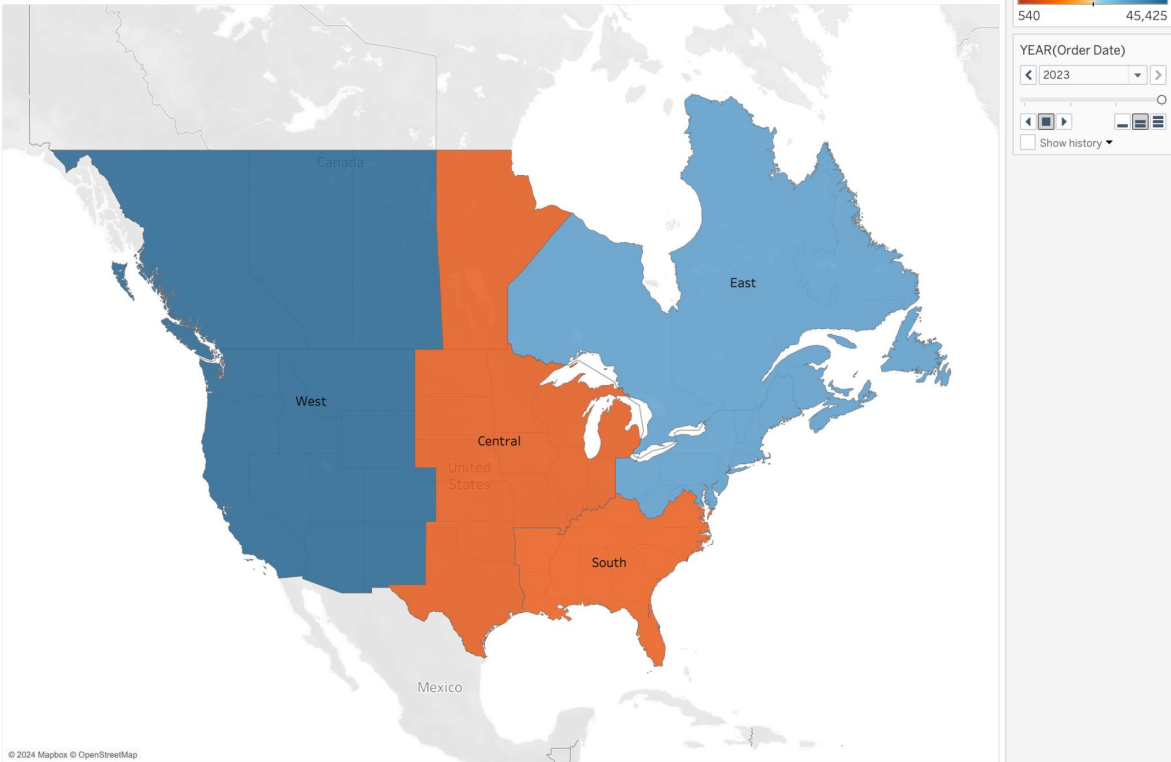
The visualization illustrates the relationship between shipping modes and return rates in 2023. Standard Class shipping yields the highest profit but also the highest return rate. Same Day shipping, despite lower profits, sees minimal returns, suggesting a preference for speed over potential returns. First Class and Second Class show similar profitability, but First Class has a higher return rate, indicating a trade-off between speed and return likelihood. Overall, the visualization emphasizes the importance of optimizing shipping strategies to balance profitability and customer satisfaction.



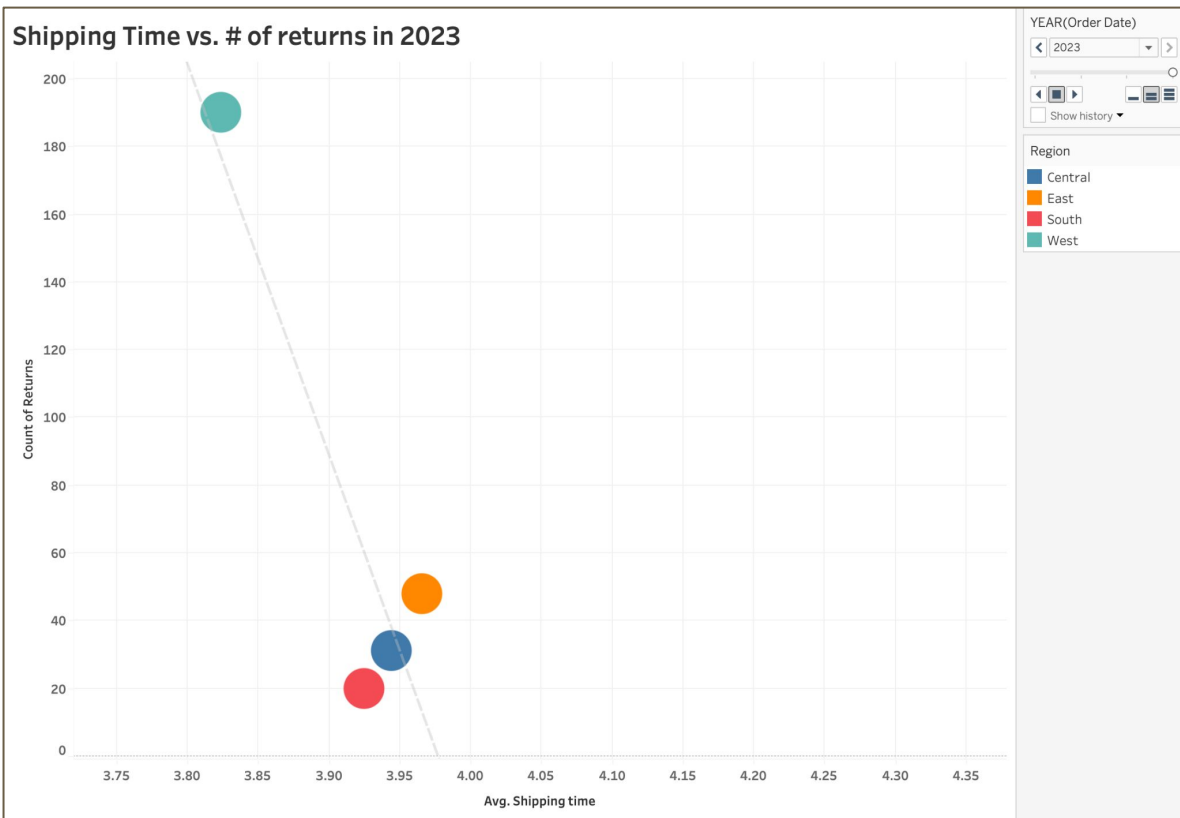
Profitability by Region in 2023

The visualization indicates that the West region of the United States has the highest profitability, followed by the East, South, and Central regions, depicted by varying shades of blue and red/orange on a world map. The darker blue regions represent higher profitability, while darker red/orange regions signify lower profitability. This disparity in profitability across regions could be attributed to factors such as differences in economic activity, population density, market demand, or competitive landscape.

Profitability by Region in 2023



Time taken to ship vs number of order returns



The visualization illustrates the relationship between shipping time (calculated as order date minus ship date) and order returns in different regions in 2023. Despite the West region having the shortest average shipping time, it experiences a higher number of returns compared to the East, which has longer shipping times but fewer returns. This discrepancy may be due to factors such as differing customer expectations, shipping infrastructure, or product quality.

Key insights and future scope

The iterative visualization process was crucial in uncovering hidden trends and gaining deeper insights into key investigations. Some notable insights were:

- Technology products drive the highest sales and profit, indicating strong consumer demand in this category.
- Despite the West region having the shortest average shipping time, it experiences a higher number of returns compared to the East. This highlights the complex relationship between shipping time, customer expectations, and order returns, indicating potential opportunities for improving shipping processes or customer service.
- Standard Class shipping yields the highest profit but also the highest return rate, while Same Day shipping sees minimal returns despite lower profits.
- Regional profitability varies, suggesting the need for targeted marketing strategies and operational improvements in certain regions.
- Understanding the factors influencing order returns, such as shipping time and product quality, can help mitigate returns and enhance customer satisfaction.

Further analysis could focus on refining marketing strategies, exploring product innovation opportunities, optimizing shipping processes, addressing regional disparities, and continuously improving operational efficiency.