Guidelines for Data Visualization and Analysis Project

About the Project:

In this project, you will be working with a dataset from the Superstore, aiming to answer 30 scenario-based questions through data visualisation and analysis. Your objective is to select the best chart for each question, explain your choice. This project will showcase your proficiency in data visualisation, critical thinking, and effective communication.

Skills Required:

- Proficiency in data visualisation concepts and techniques.
- Familiarity with Tableau or a similar data visualisation tool.
- Strong analytical and problem-solving skills.
- Ability to choose appropriate charts based on data characteristics and question requirements.
- Clear and concise communication skills.

Deliverables:

- A Google document containing solutions to the scenario based questions including the screenshot of relevant chart picked for each scenario, presented in a concise and well-structured format. Make sure to provide explanations that highlight your problem-solving skills.

Rubrics for Assessment:

Question Responses:
- Accuracy and completeness of answers for all 30 questions.
- Clear and concise explanations that address the question's context.

Chart Selection and Explanation:
- Thoughtful rationale for choosing specific chart types.
- Justification based on data characteristics, context, and communication goals.

Creative Enhancements:
- Effective use of creative elements to enhance visualisation quality.
- Enhancements that contribute to better understanding or engagement.

Note:
- Duplicate this document and proceed to write your solutions.
- For each scenario and question, provide a justification for the choice of chart type. Explain why it is the best option to visualise the data effectively.
- Attach screenshots of the charts you have created in Tableau for each scenario and question using the Superstore dataset. Label them clearly to match the corresponding questions in the Google Document.
- Submit the duplicated google doc file after completion.

Use these guidelines to structure your data visualisation and analysis project. Remember to maintain consistency in your responses, explanations, and visualisation styles. This project will not only demonstrate your skills but also your ability to effectively communicate complex information through visualisations. Good luck!

Problem Statement: Choose the Best chart for any 30 scenario based questions from Superstore Dataset.

Imagine you are a data enthusiast aiming to excel in data visualisation and analysis. In this task, you have been given any 30 scenario-based questions derived from the Superstore dataset, and your objective is to provide insightful answers using appropriate charts. For each question, you need to select a chart that best represents the data, explain why you chose that specific chart, and then proceed to build the chosen chart using Tableau.

Your responses should be succinct, organised, and illustrative of your problem-solving capabilities.

Dataset Link:

https://community.tableau.com/s/question/0D54T00000CWeX8SAL/sample-superstore-sales-excelxls

Please keep in mind:

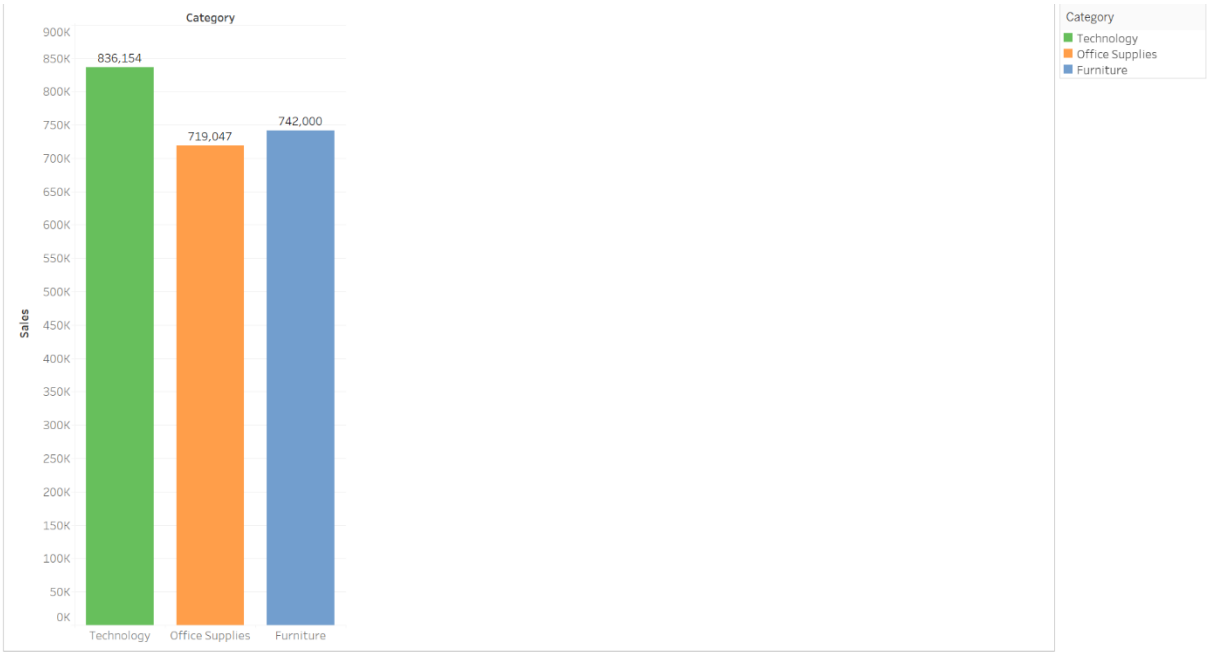
1. **Answer Completion**: Ensure that you furnish answers for all any 30 questions and build charts for them.
2. **Encouraged Creativity**: Don't hesitate to employ visuals, creative elements, or any other innovative approaches to enhance the quality of your responses.

By completing this task effectively, you'll not only demonstrate your proficiency in data visualisation and analysis but also showcase your ability to effectively communicate complex concepts through both text and charts.

Good luck!

Questions :– Chart Answer Insight.

1) Which product categories have the highest total sales in the "Superstore" dataset?



I am pick to bar chart, this chart in comparing total sales across product categories.

The chart insights a **Technology** tends to have the hights total sales **836,154**. **Furniture (729,047)** and **Office Supplies (742,000)** follow in decreasing order

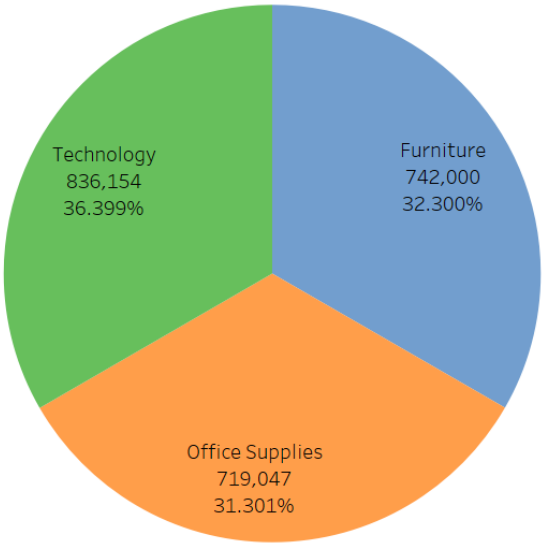
2) How do the monthly sales amounts change over the course of a year?

I am picking line chart this is visualised monthly sales trends over time.
This is chart to adding a year wise comparison line makes it easy to observer seasonality and yearly variations trends.

The Superstore dataset in a 4-year (2014,2015,2016,2017) sales data. The chart observer year wise sales improve and months-wise peaks or drops in sales.

The chart observer every year peaks in trends from august month to the end of year sales.

3) How is the total sales amount distributed among different product categories?

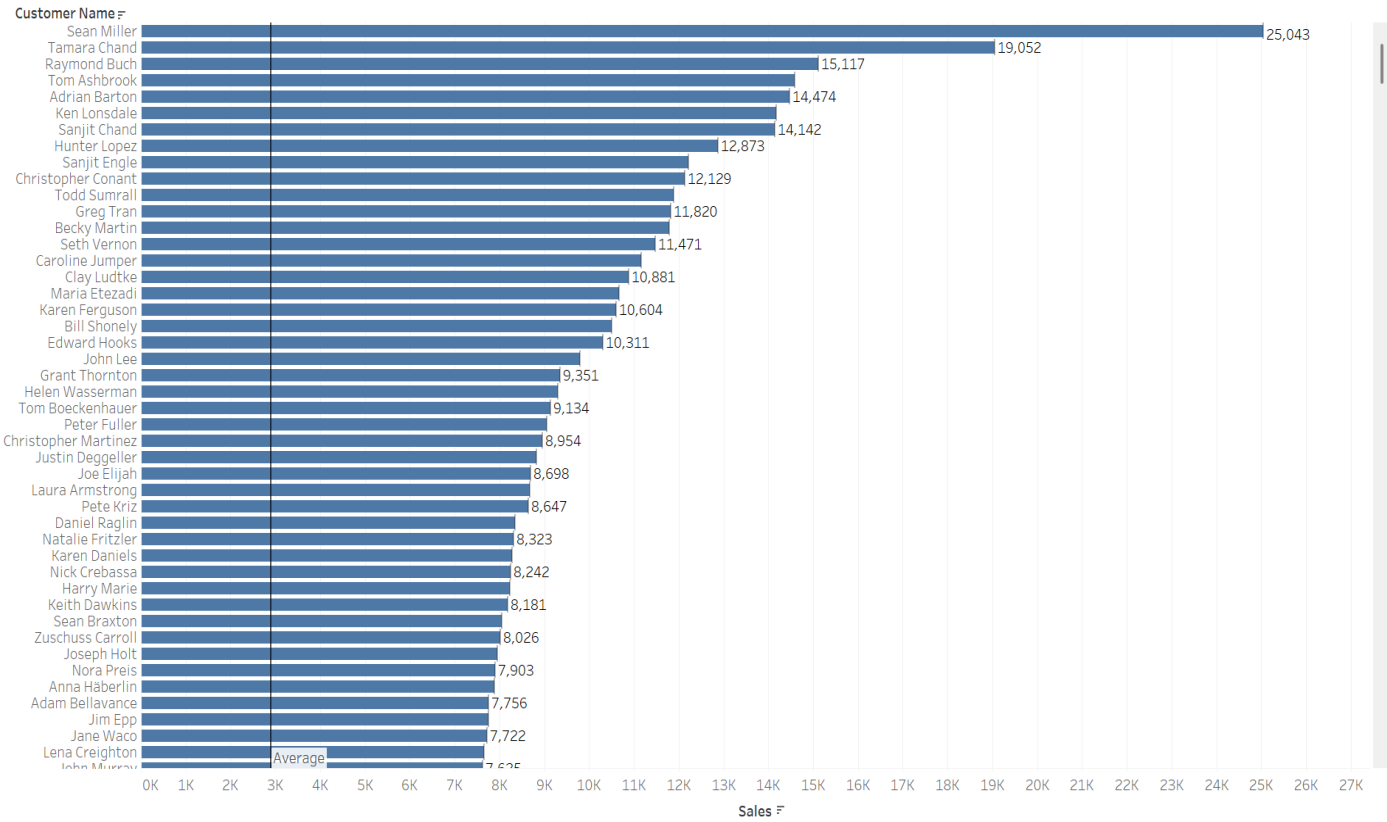


I am picking Pie chart. This chart in distributed among different categories percentage values show.

Pie chart visually represents of a making it easy to see how much each category contributes to the total sales.

Technology contributes of **36.399%** most high sales then Office Supplies and Furniture usually have smaller contributed.

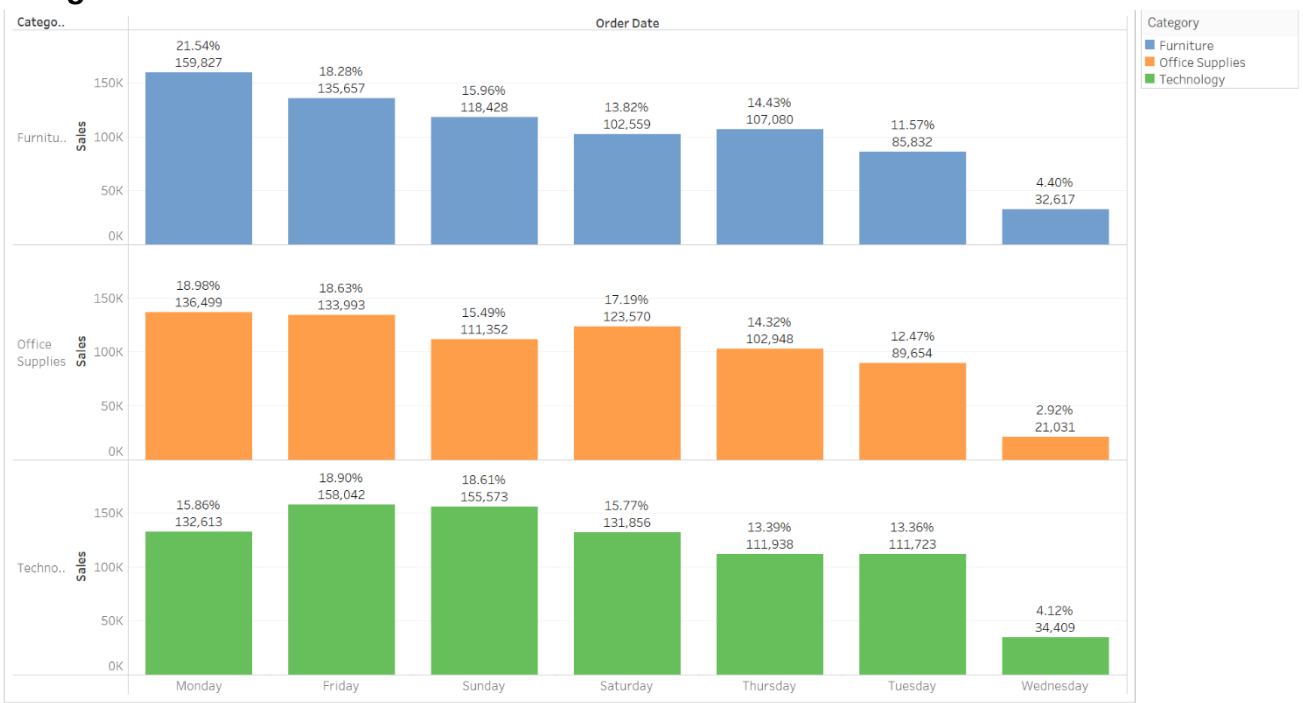
4) Can we analyze the sales performance of individual customers over time?



I am picking Horizontal bar chart. We can analyze the sales performances of individual customer over time.

This is insights we can top customers which contribute the most to product order.

5)How do sales vary based on different days of the week and product categories?

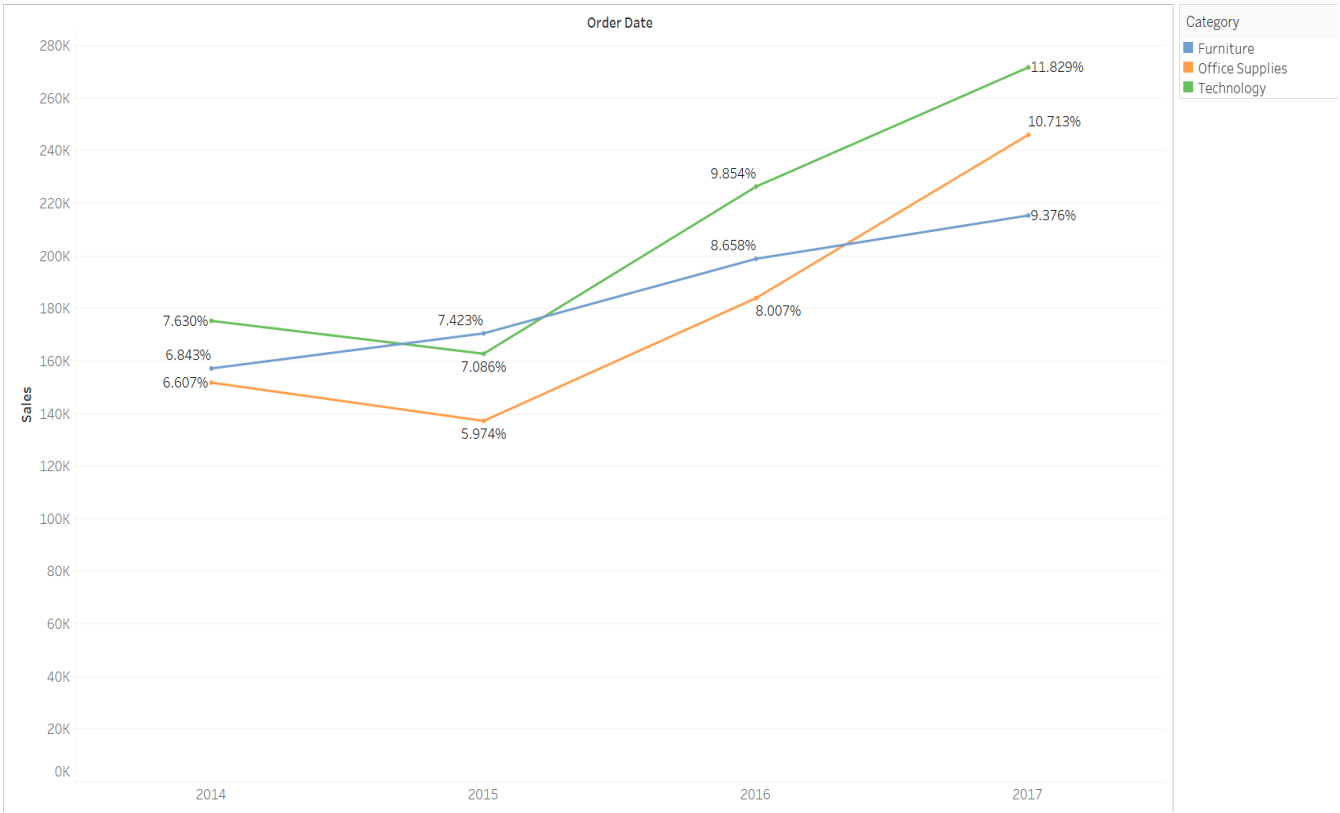


I am picking Horizontal bar chart to visualize how sales vary based on days of the week across different product categories

The chart visualises which days of the week generate the highest sales for each category.

The chart observers compare sales trends weekends (Saturday – Sunday) in higher sales due to increased sales and weekdays (Monday to Friday) normal sales.

6) Can we visualise the sales growth of different product categories over time?



I am picked Line chart, the chart in different lines for each category allows a clear comparison of sales growth trends over the same time period.

We can visualise a year wise sales and which year sales growth. The visualise in year-over-time sales growth improve. The compere to technology higher sales growth to furniture and office supplies.

7) How does the sales distribution vary across different regions in the "Superstore" dataset?

I am picked horizontal bar chart. This chart visual representation of total sales in each region, making it easy to identify differences and patterns.

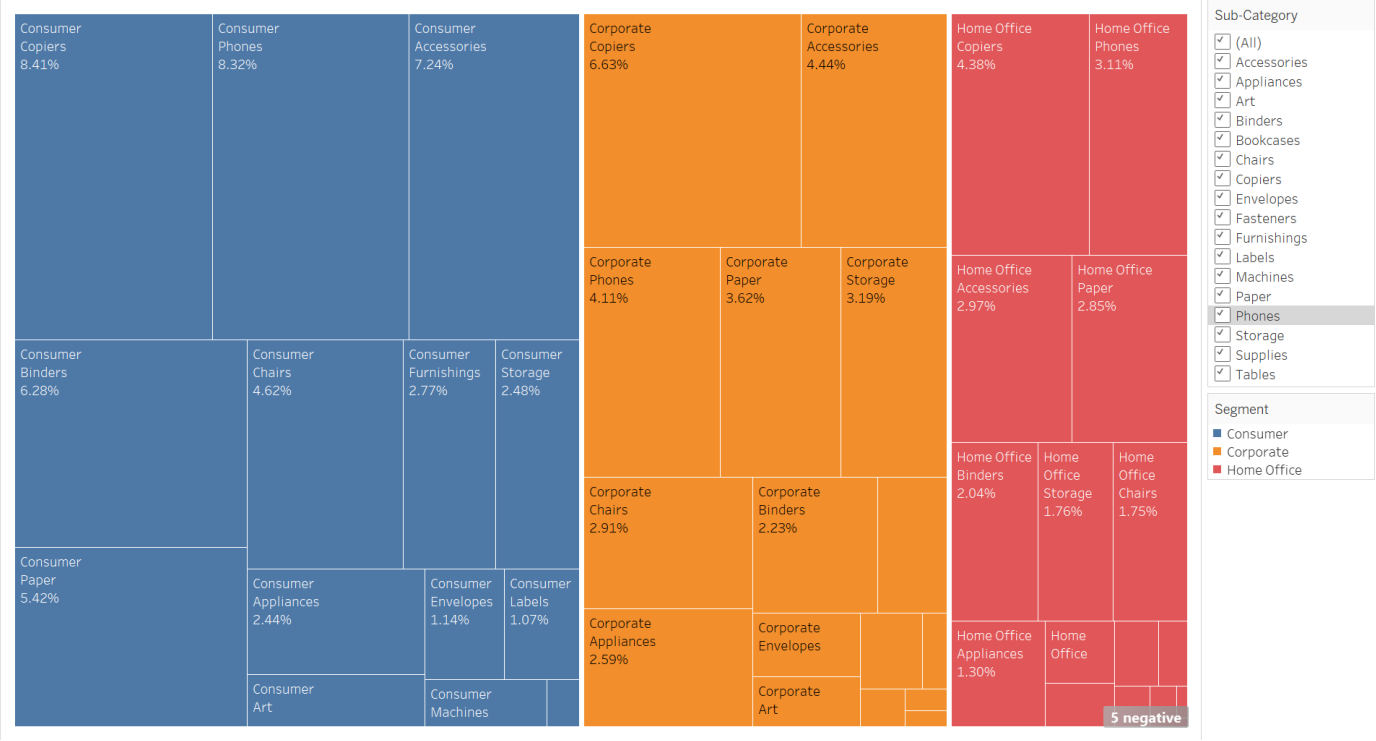
This chart visual representation which regions generate the highest and lowest sales

The **West** region often shows the highest total sales, possibly due to higher demand for technology products.

The **East** and **Central** region might display relatively balanced sales across all product categories.

The **South** region generally shows the lowest sales.

8) Can we visualise the composition of profits across various subcategories within different customer segments?

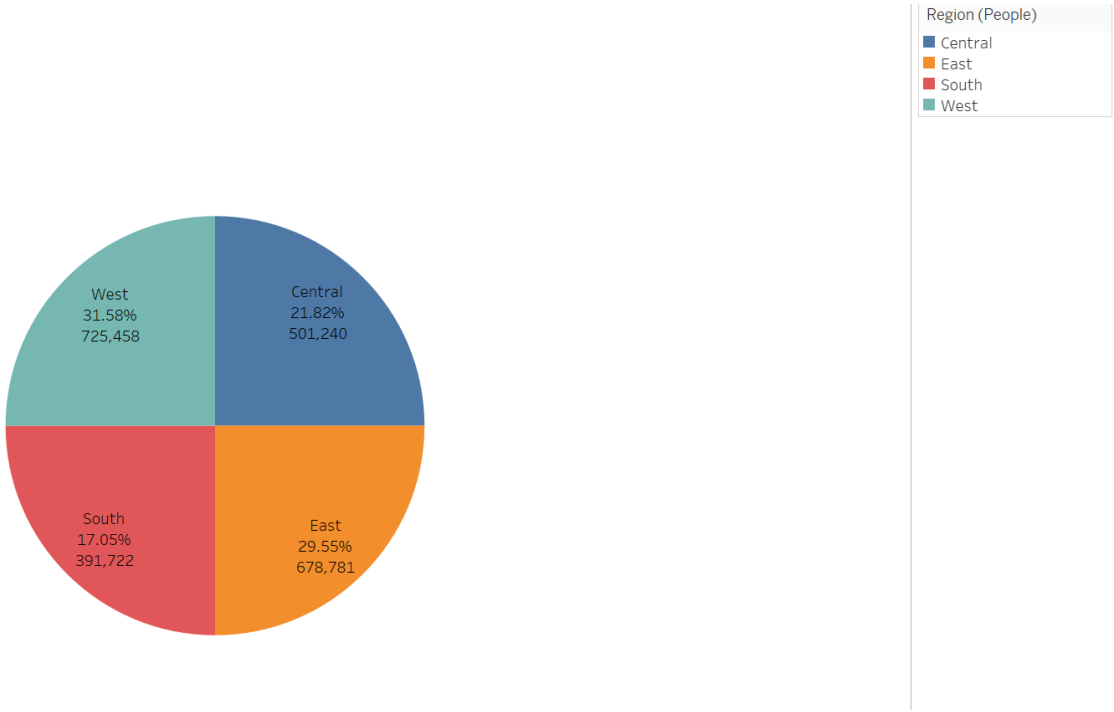


I am picked treemap chart. The chart representation hierarchical relationships between segment to sub-categories.

The chart can visually highlight differences in profit through size and color, making it easy to spot subcategories with high or low profitability segment.

Subcategories like copiers and phones dominate profits across all customer segments and home office segment might generate smaller overall profits compared to consumer or corporate

9) What is the percentage contribution of each region to the overall sales?

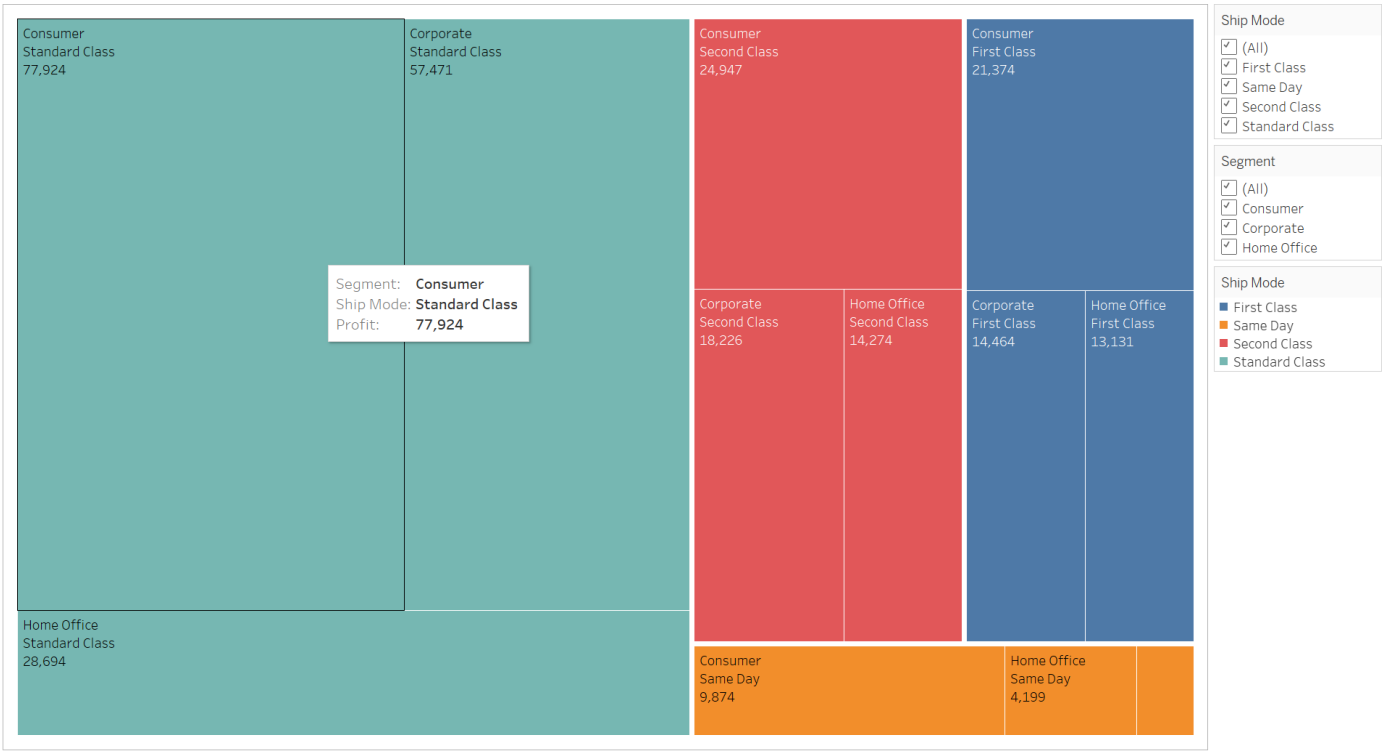


I am picking pie chart are ideal for showing percentage contributions of different sales distribution across regions categories.

The chart visual comparison of how each region contributes to the overall sales.

The chart insights a contribution of west region the highest percentage **31.58%** to overall sales, central and east middle sales and south region smallest sales.

10) Can we visualise the profit margins associated with different shipping modes and customer segments?

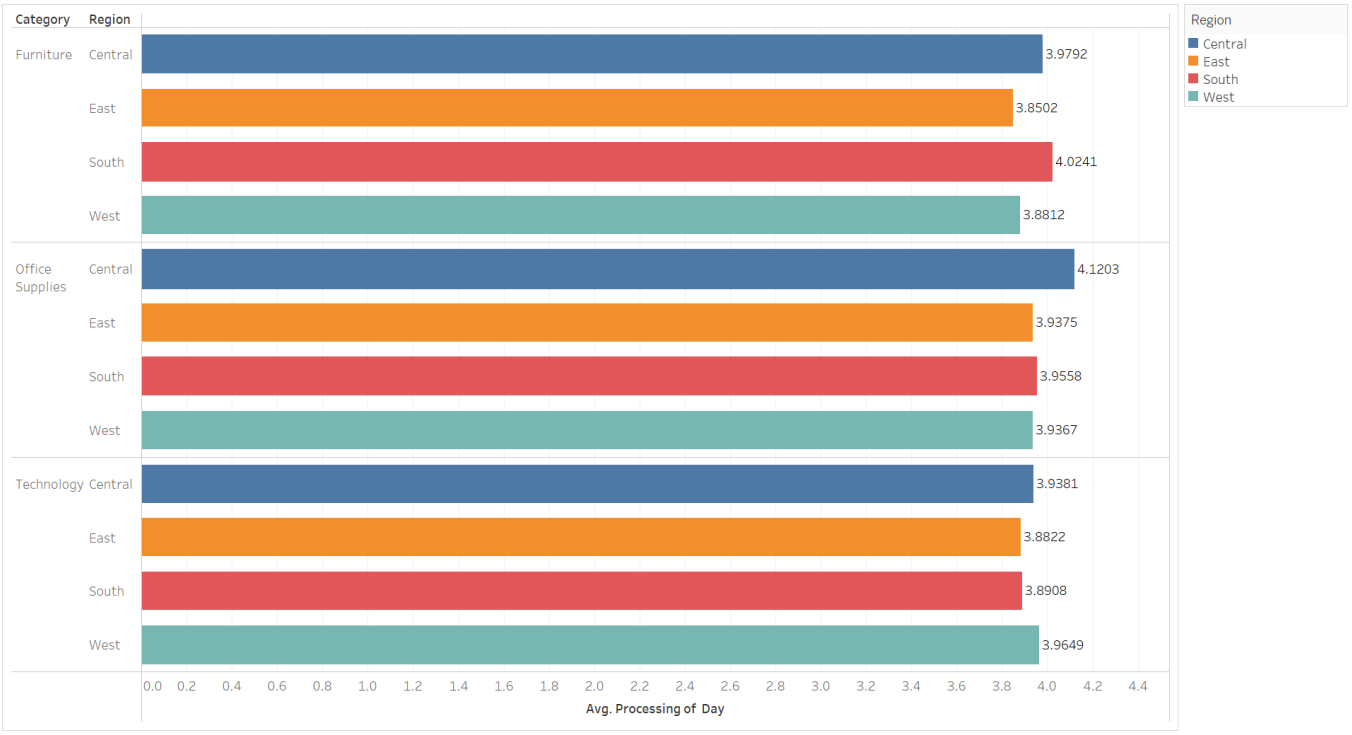


I am picked treemap chart. The chart representation hierarchical of data the relationship between shipping modes and customer segments.

The chart representation size of the block can indicate profit margins, while colors can show positive or negative profit trends show.

The **Standard Class** shipping mode most profitable. the **Home Office** segment for costly shipping modes like **Same Day** due to high operational expenses. The **Corporate Segment** could contribute the highest profits.

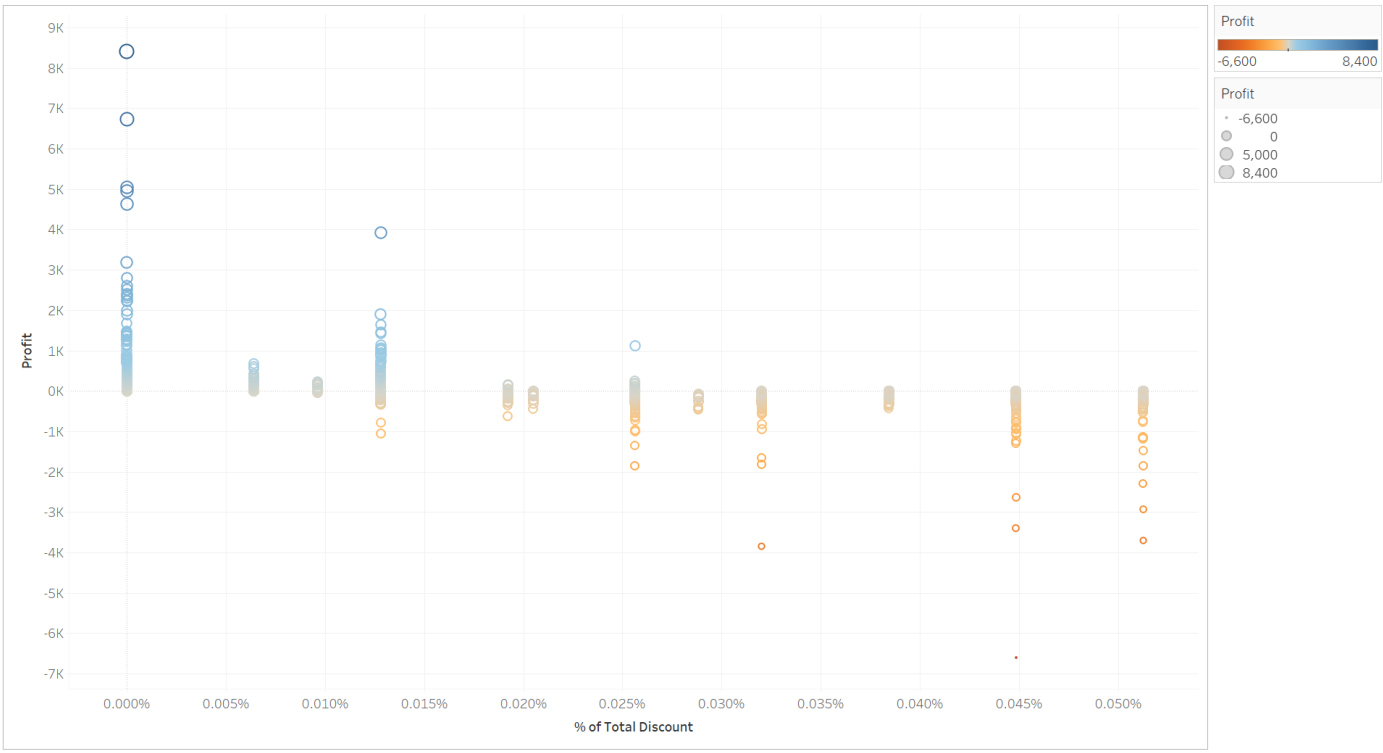
11) How long does it take to process orders for different product categories?



I am picking horizontal bar chart, The chart easy comparison of average processing time across categories to region.

The chart a reveal that the average time it takes to ship products is approximately 4 days in all the regions.

12) How do discounts affect overall profit?

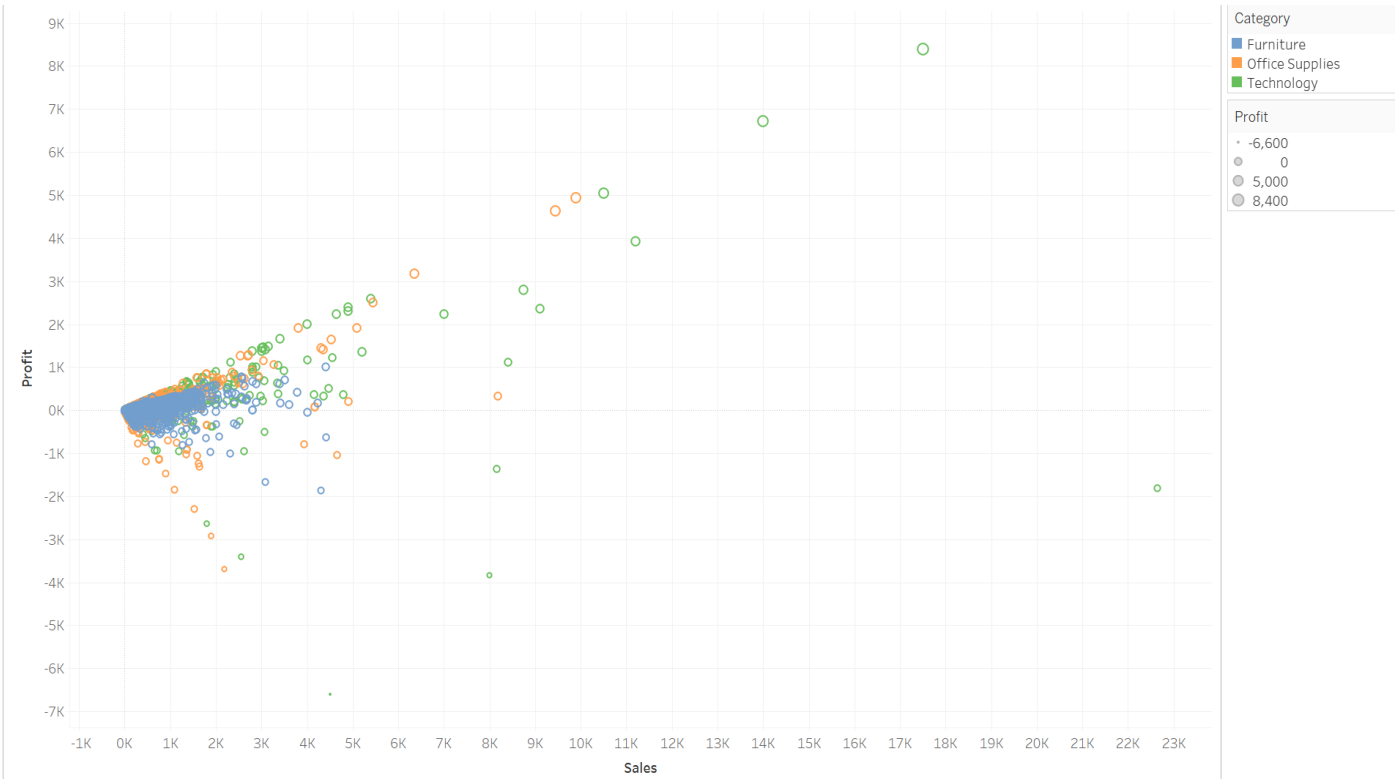


I am picked Scatter plot chart, the chart in relationship between discounts and overall profit.

Points near zero discount and high profit indicate products or orders that sell well without needing discounts.

Large discounts can significantly reduce profits, making it crucial to carefully manage discount strategies.

13) Can we visualise the relationship between product sales and profitability for different product categories?



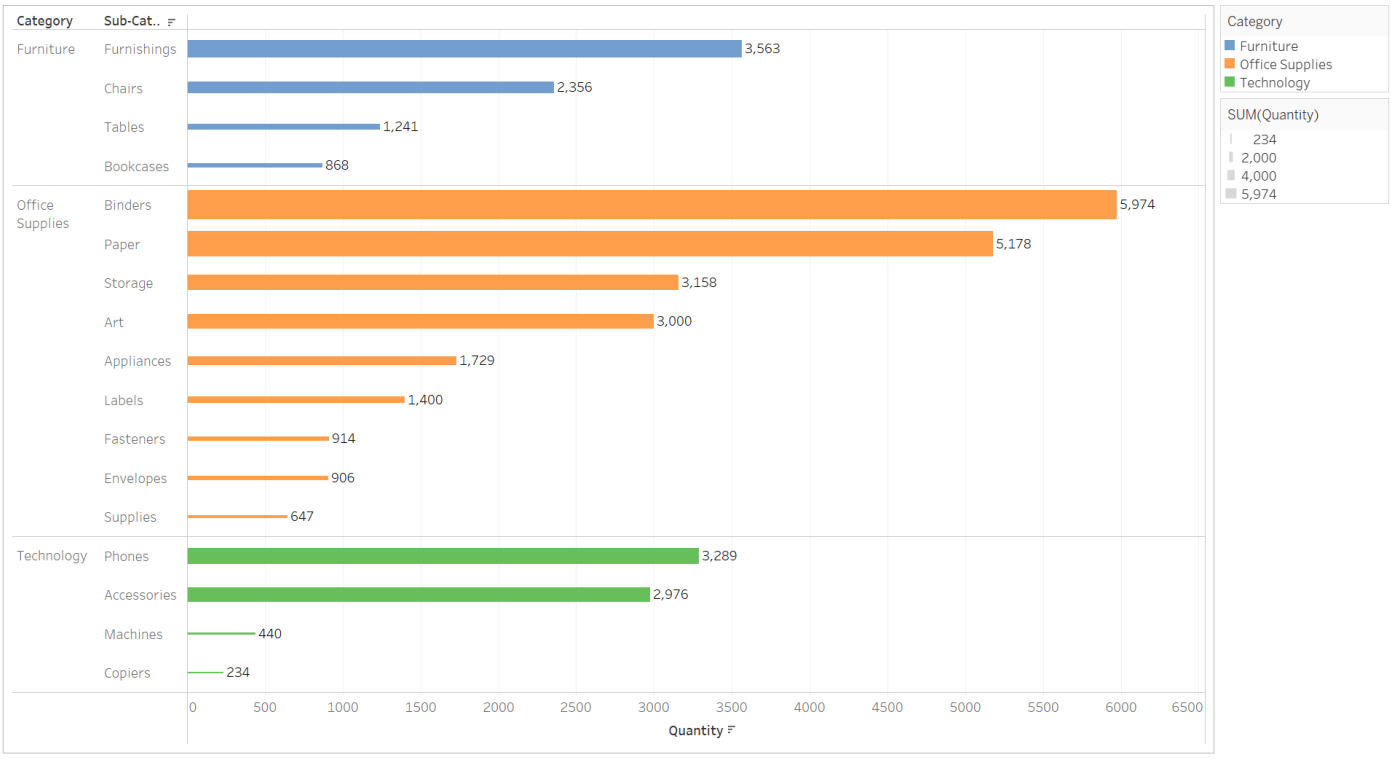
I am picked Scatter plot chart, the chart in which category relationship between profit and overall sales.

The chart insights form the upper-right indicate high sales and high profit and bottom -right indicate high sales but low or negative profits

This is a positive correlation to higher sales correlate with higher profitability.

Technology stronger positive correlation, indicating high sales are often linked to higher profits. Furniture has medium sales profit and office supplies a lower sales and steady profits.

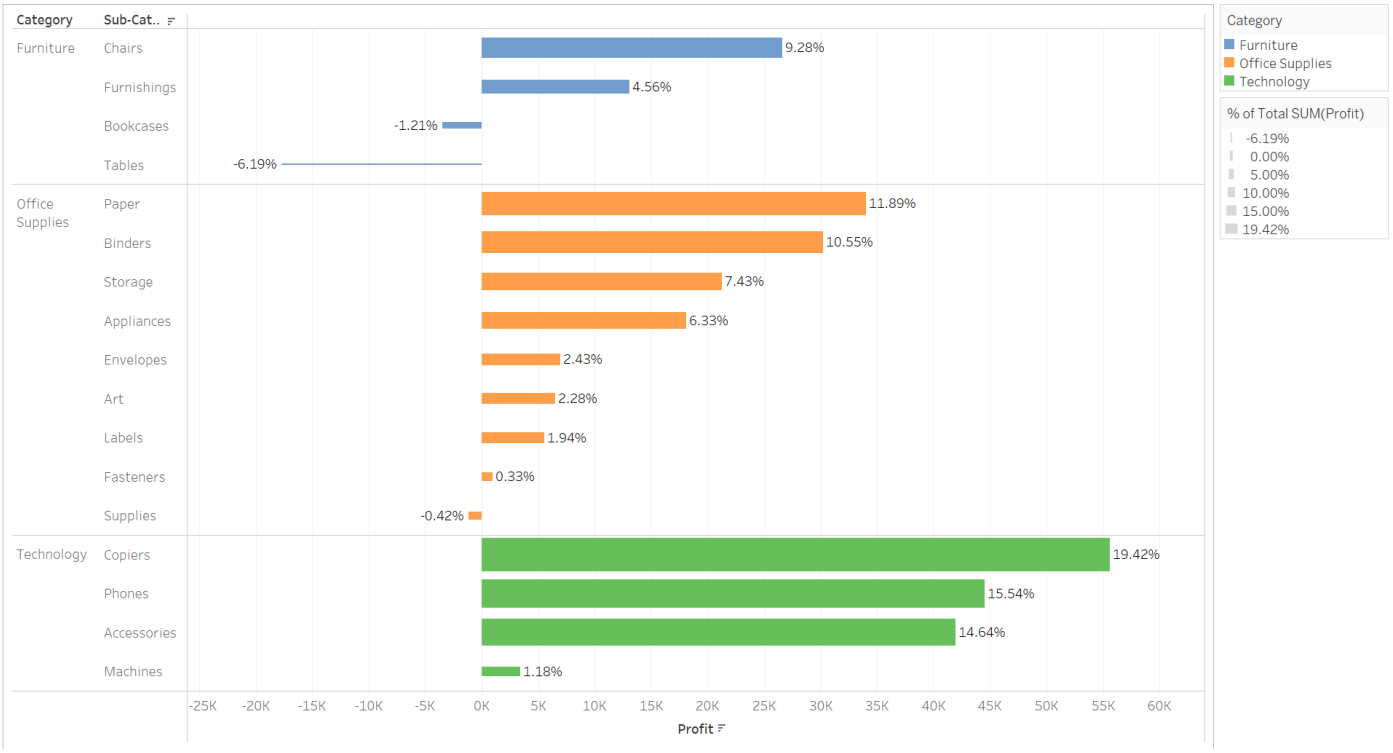
14) What is the distribution of order quantities for products in the dataset?



I am picked Horizontal bar chart where each bar represents a category, and the length of the bar corresponds to the total order quantity generated by that across sub categories.

This is distribution of office supplies show higher subcategory order and compared to technology and furniture medium order quantity.

15) How do the profit distributions vary across different product categories?



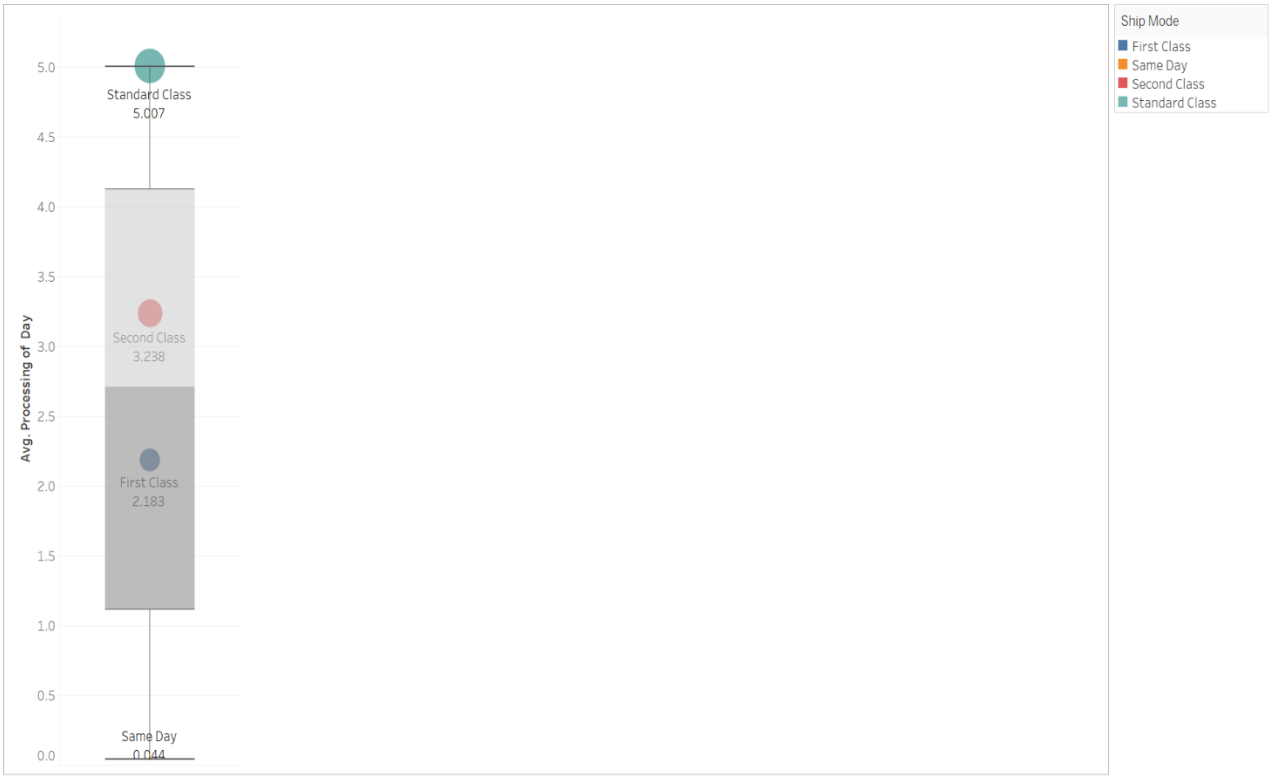
I am picked Horizontal bar chart, where each bar represents a category, and the length of the bar corresponds to the total profit generated by that across sub - categories.

This is visual insights from the chart technology to generate highest profits and office supplies to medium profits generate and furniture low profits generates.

Technology, sub-categories like copiers, accessories and phones often dominate profits due to their high demand and premium pricing.

Furniture, sub-categories like chairs and bookcases negative profit margin and Office Supplies, sub-categories in many products medium average profit margin

16) Can we compare the shipping time distributions for different shipping modes?

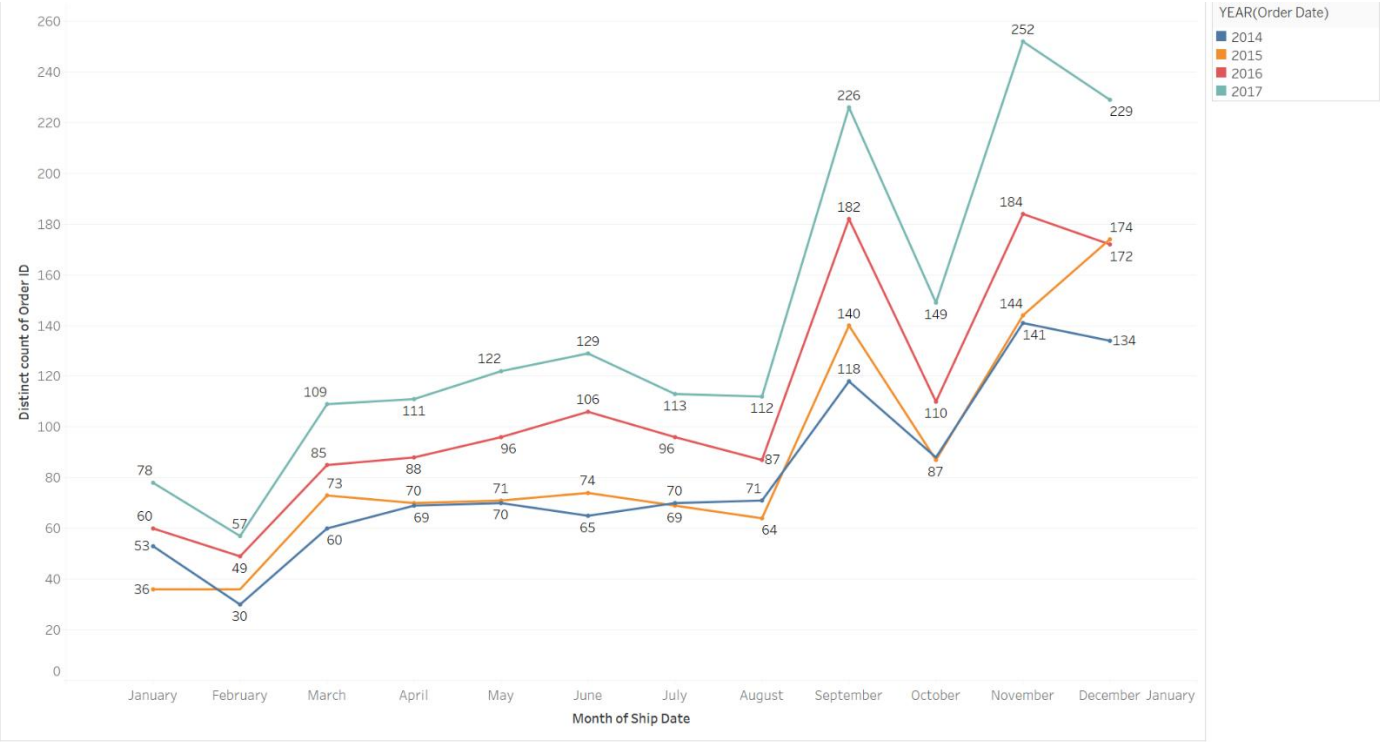


I am picked box-plot chart, compare the shipping time distributions for different shipping modes

A box plot provides a clear visual representation of the spread of shipping times for each mode, showing key metrics such as the median, interquartile range (IQR), and outliers.

Same day has slightly shortest delivery time like 1 day or less, First class slightly longer delivery times around 2 days. Second class median shipping times around 3-4 days. Standard Class longest delivery times 5–7 days shipping

17) What is the monthly trend in the number of orders shipped?



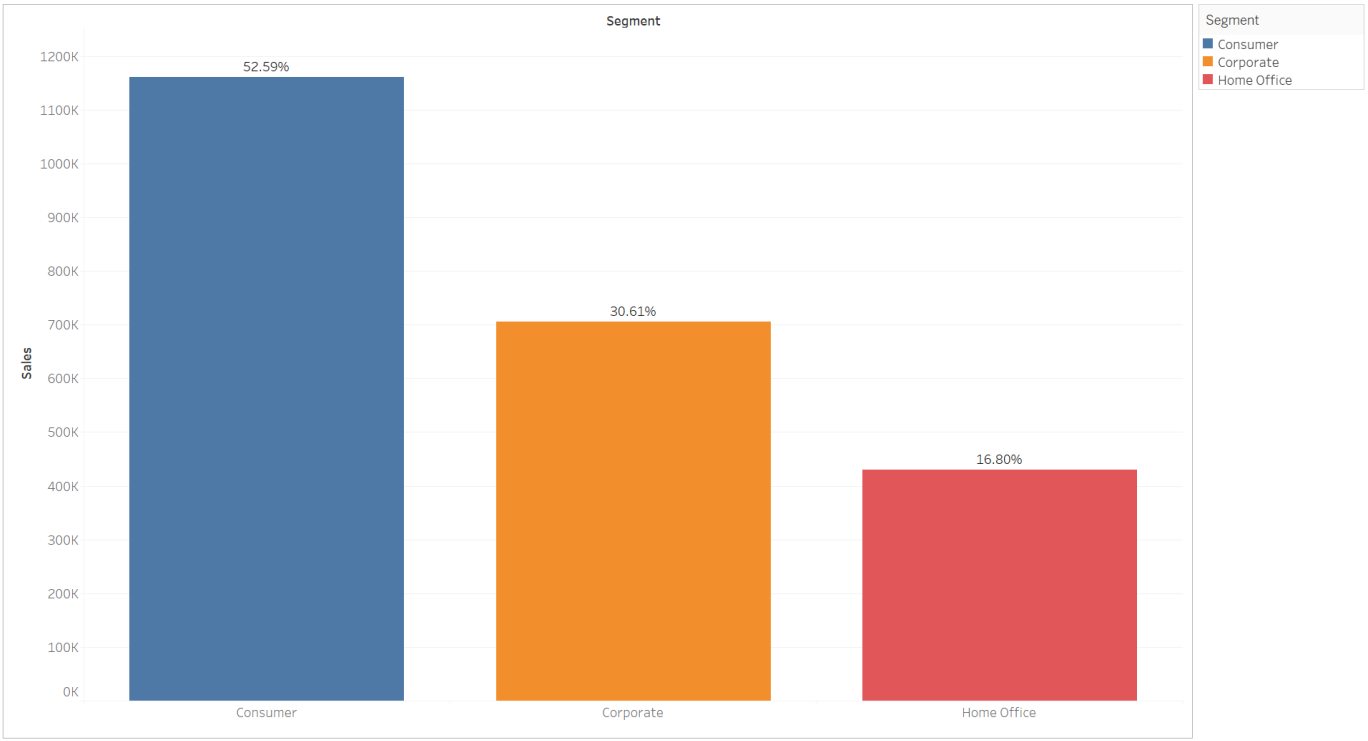
I am picked Line chart, the representation of how the number of orders changes over time.

The chart representation of line year-wise most order shipping, all most months of November and December like highest order shipping like seasonal trend. the first quarter (January-March) orders decreases and mid quarter increase order shipping.

The overall trend may show a steady increase in orders over the months, indicating growing sales.

This chart helps businesses monitor performance over time, identify growth patterns, and make data-driven decisions to improve sales and shipping operations throughout the year.

18) How do different customer segments perform in terms of sales and discount rates?

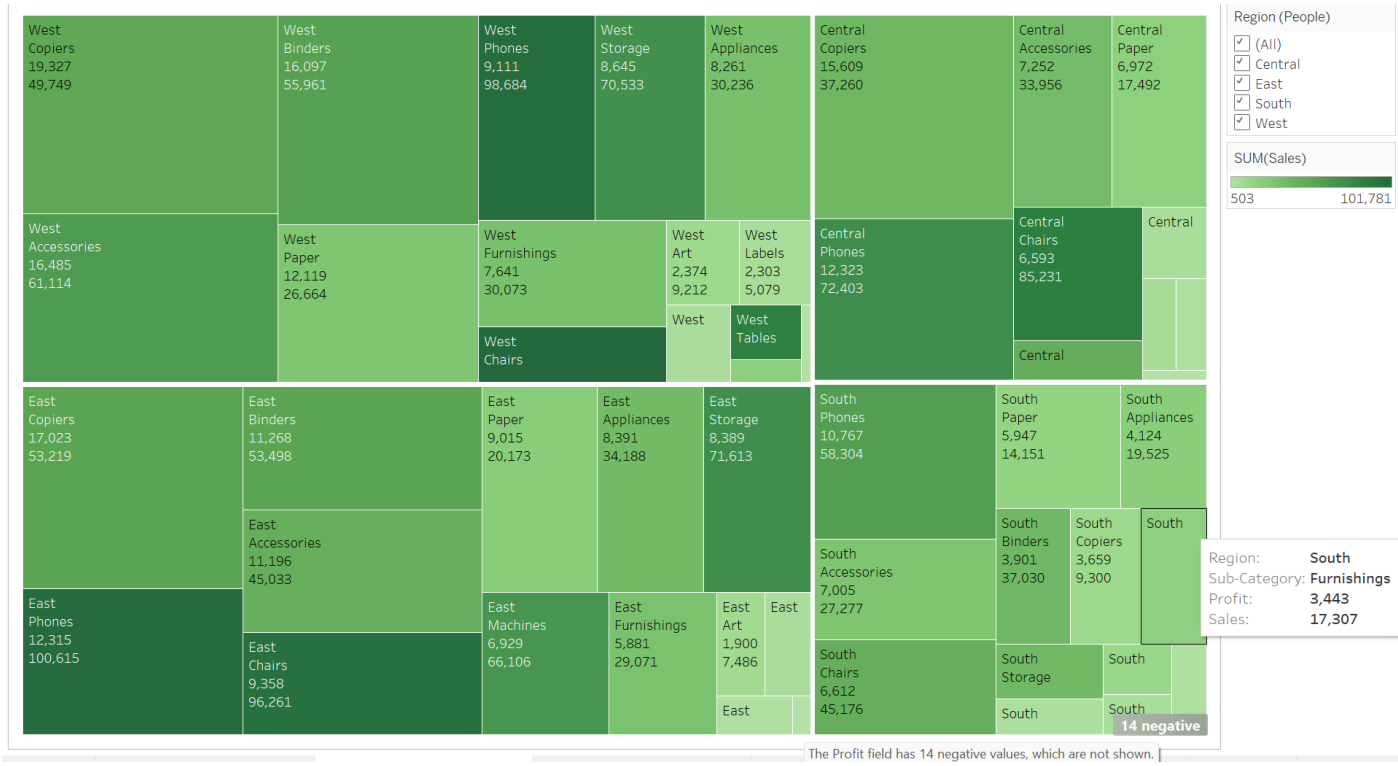


I am picked bar chart, to compare sales and discount rates across different customer segments.

Consumer customers might exhibit higher level sales **52.59%** and corporate customer medium level sales contributes **30.61%** and home office customer lower-level sales **16.80%.**

The chart insights into how each customer segment contributes to total sales and the impact of discount strategies on profitability, helping the business optimize marketing efforts and pricing policies across different customer groups.

19) What are the sales and profit trends across different product subcategories and regions in the Superstore dataset?



I am picked Treemap chart, sales and profit trends across different product subcategories and regions

The tree map will allow us to visualize hierarchical relationships between subcategories, and regions, with color coding to represent sales and profit values. Each block represents a subcategory within a region, and the size of each block corresponds to sales, while the color can indicate profit.

The area chart will display trends over the years for both sales and profit across different regions. Rising areas in the chart represent growing sales and profit trends, while declining areas denote decreasing trends.

20) What is the average delivery duration for different regions and ship modes?

I am picked circle chart is an effective way to represent the proportion of average delivery durations for each region and ship mode. Each slice of the pie represents a different region and ship mode combination, with the size of the slice showing the proportion of total deliveries within that category.

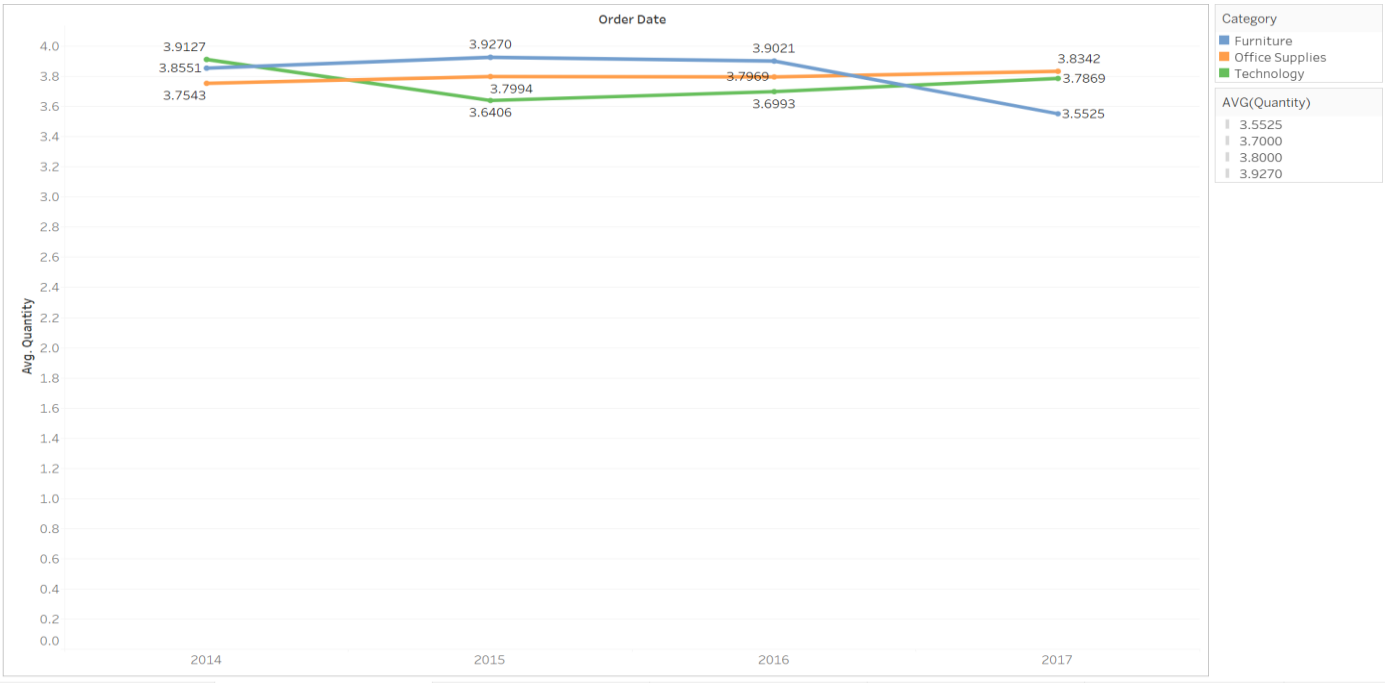
The larger slices of the chart represent regions and ship modes with the highest average delivery durations, allowing for quick identification of areas with longer shipping times.

West region with same day around 1 day, first class and second class around 2-3 days and standard class around 5–6-day deliveries taking an average shipping processing time.

East, Central and South region with same day around 1 day or less, first class and second class around 2-3 days and standard class around 5-6-day deliveries taking an average shipping processing time.

This is comparing the size and distribution of slices across regions and ship modes, businesses can identify areas to optimize for faster delivery, such as offering incentives for faster shipping modes or improving infrastructure in regions with longer delivery times.

21) How has the average order quantity changed over the years for various product categories?

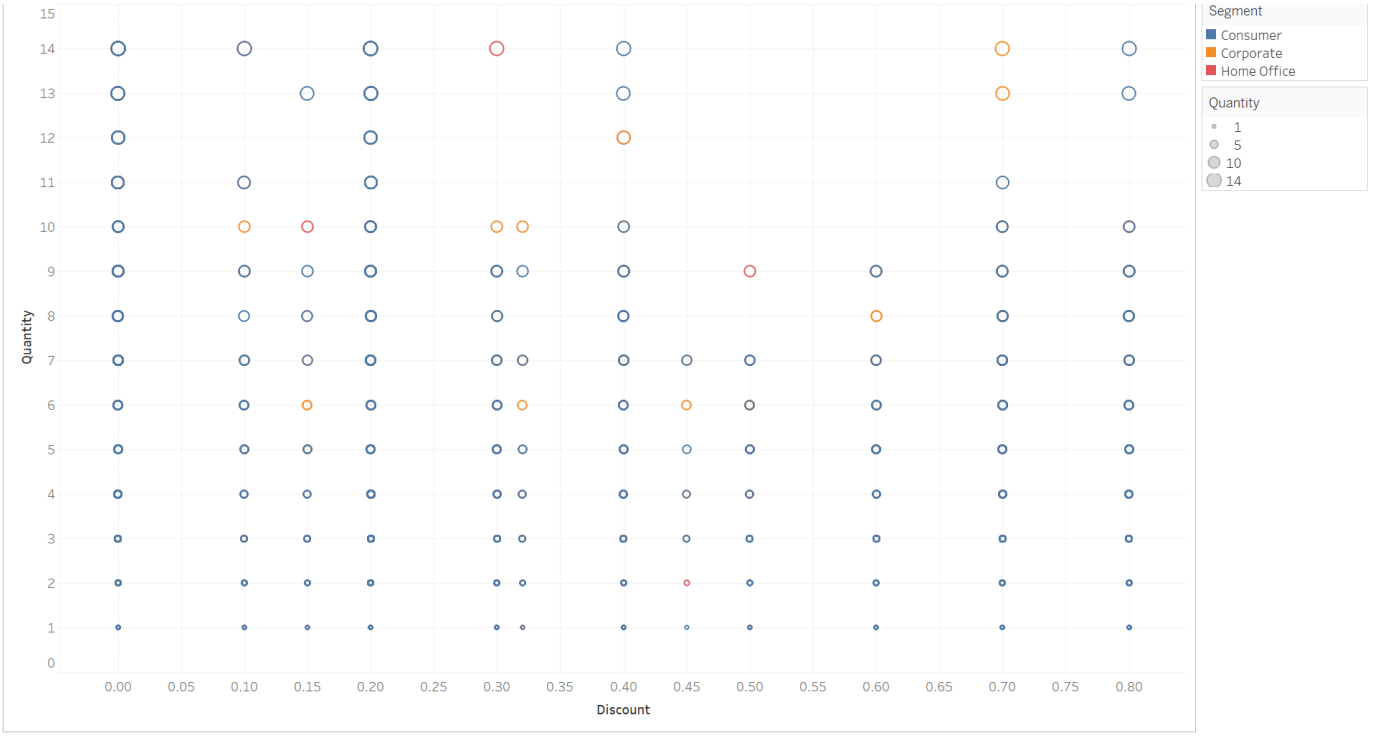


I am picked line chart, the visual each product category is represented as a separate line on the chart, showing the trend in average order quantity over time.

The chart insights a stable or slightly declining trend in average order 3-4 quantity over the all-years category.

We can businesses use this analysis to optimize marketing efforts, such as targeting categories with declining order trends or reinforcing inventory for categories with increasing average order quantities.

22) Can we visualise the correlation between discount rates and order quantities for different customer segments?

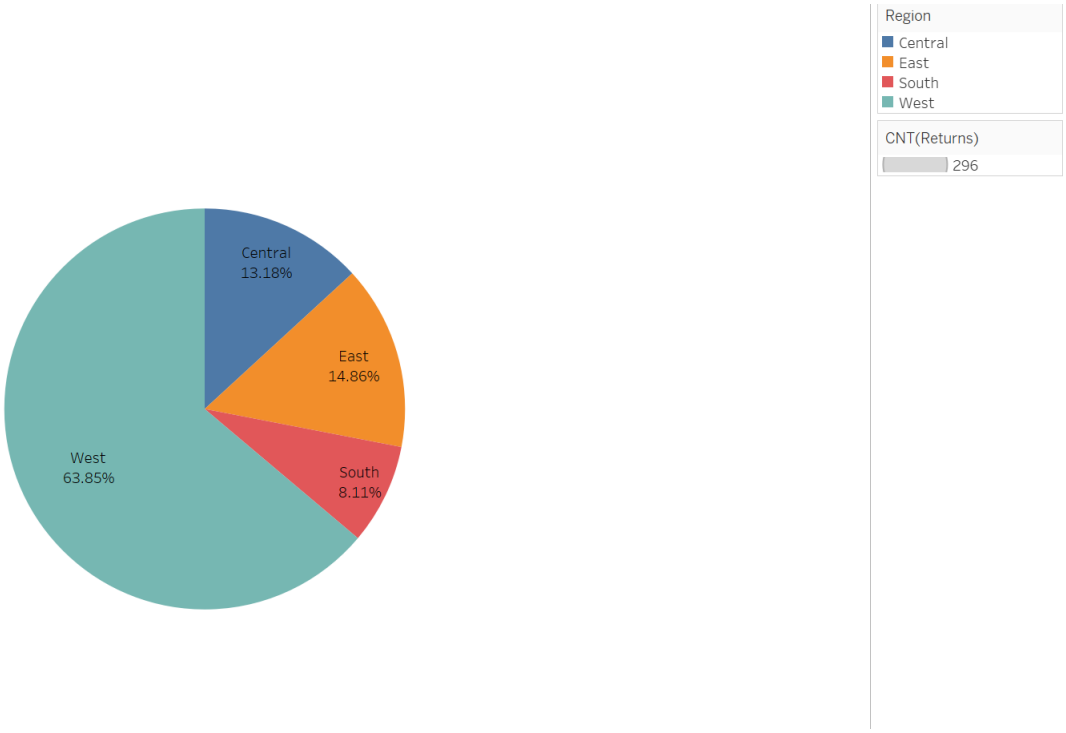


I am picked scatter plot chart the correlation between discount rates and order quantities for different customer segments. each point on the scatter plot represents an individual order, with the row showing the discount rate and the column representing the order quantity. different colors or shapes can be used to distinguish between customer segments

Corporate customers could exhibit a medium - level correlation, Home Office segment, the might reveal a weaker correlation.

The chart insights how discounts affect customer purchasing behaviour, enabling businesses to create targeted discount strategies that cater to the unique preferences of each customer segment.

23) What is the proportion of orders returned in each region within the Superstore dataset?

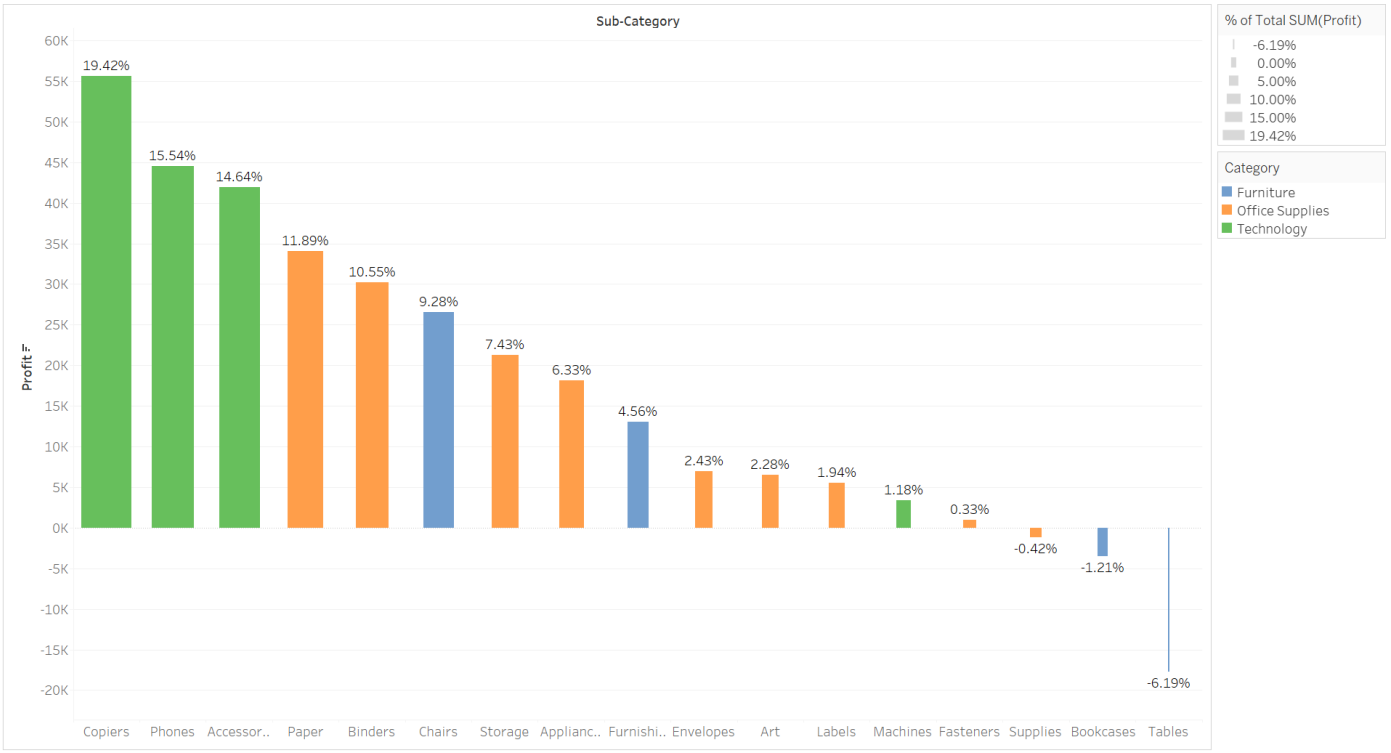


I am picked pie chart the slice indicating the percentage of total returns attributed to that region.

West region might have a higher returned order. east and central might have a medium level returned orders and south lower returned order.

This insight can be crucial for identifying regions that need specific attention or improvement in terms of product quality, delivery, or customer service to reduce returns and enhance customer satisfaction.

24) Can you compare the profit of different products for different subcategories?

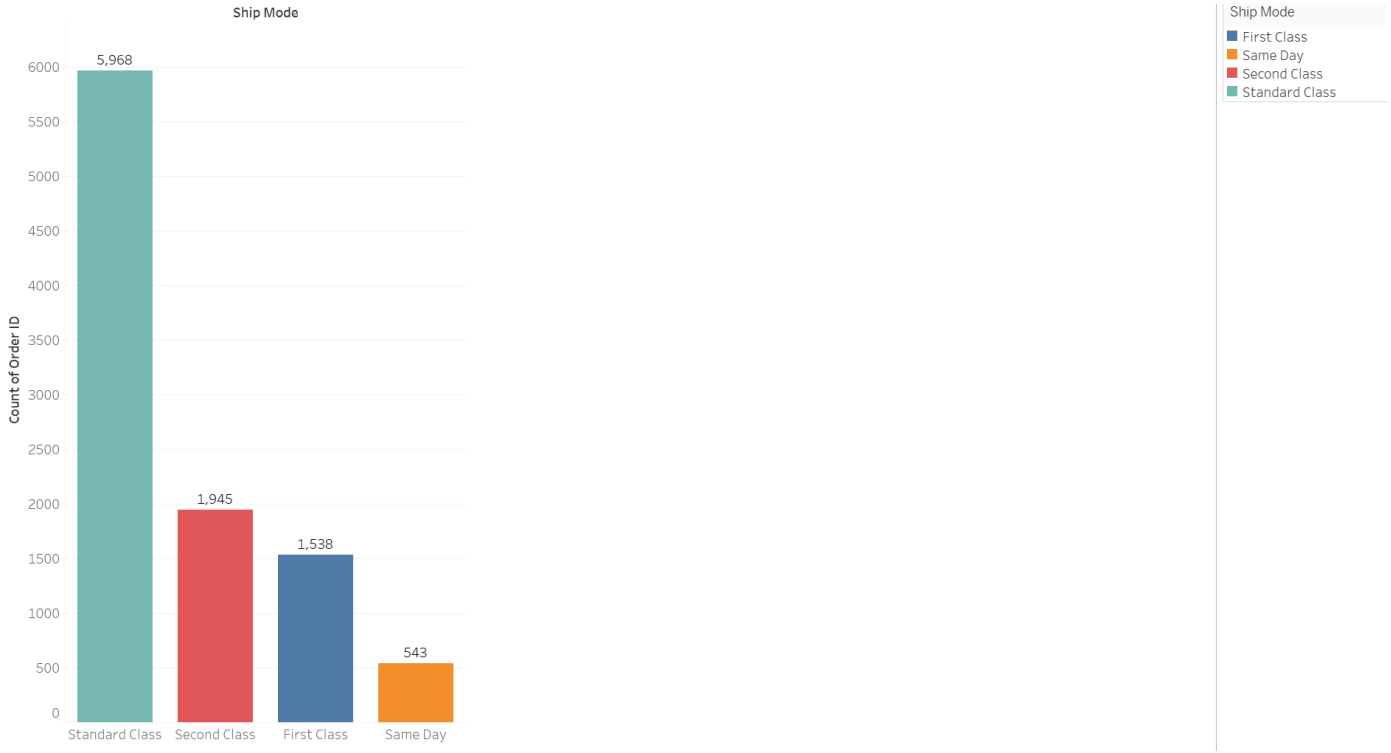


I am picked bar chart, each subcategory showing the profit contributions of individual products measures the profit values.

Technology subcategories often show the highest profits, Office Supplies medium profit and Furniture lower-level profit.

The chart insights a breakdown of profit trends across subcategories and products, empowering businesses to optimize inventory, pricing, and marketing strategies for maximum profitability.

25) Which shipping mode is the most commonly used in the Sample Superstore dataset?

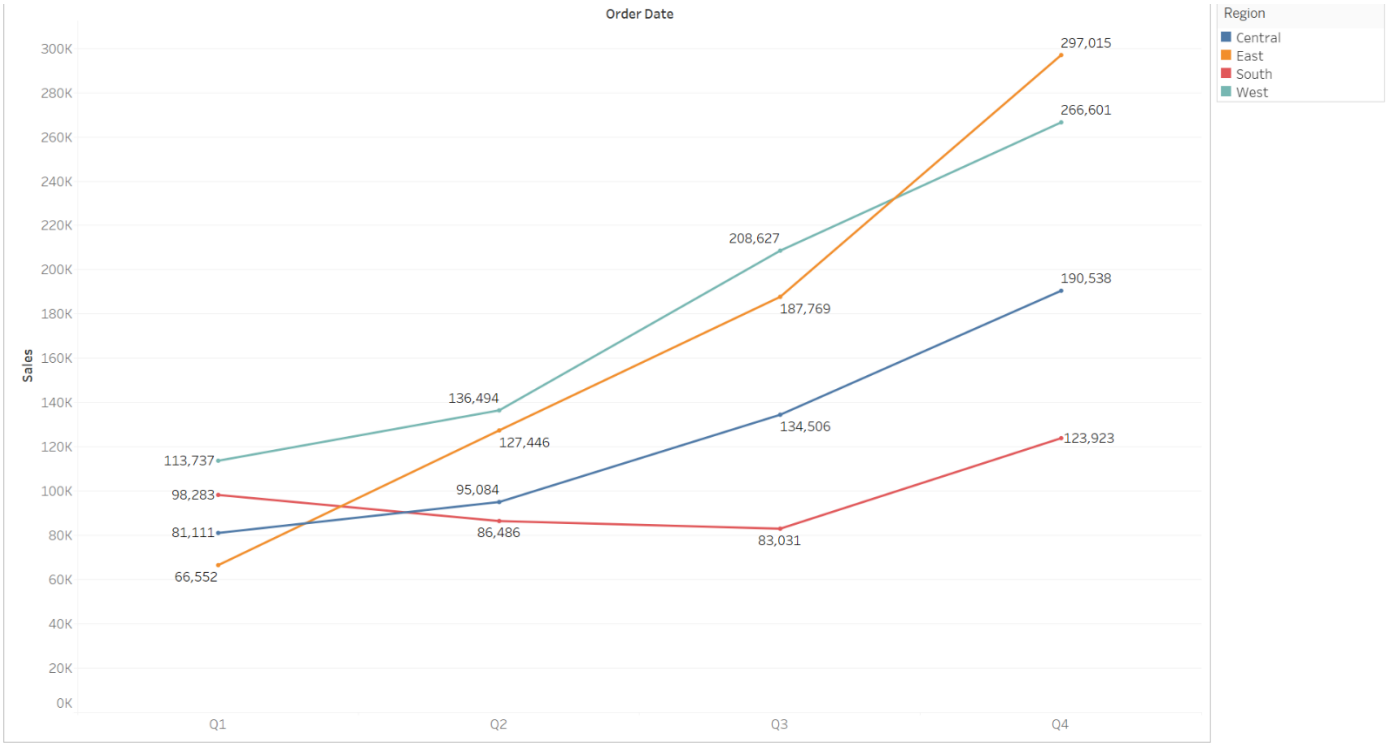


I am picked Bar chart, displays the count of orders for each shipping mode.

Standard class is a most frequently used shipping mode serving customers who may require medium delivery at a low cost. Second Class and First Class often have medium level used shipping mode, serving customers who may require faster delivery at a higher cost and same day shipping mode lower used, service typically more expensive and reserved for urgent orders.

The chart clearly visualizes that shipping mode preferences are primarily driven by cost considerations, making Standard Class the most viable option for most customers.

26) How does the sales performance of different regions evolve throughout the quarters of a year?

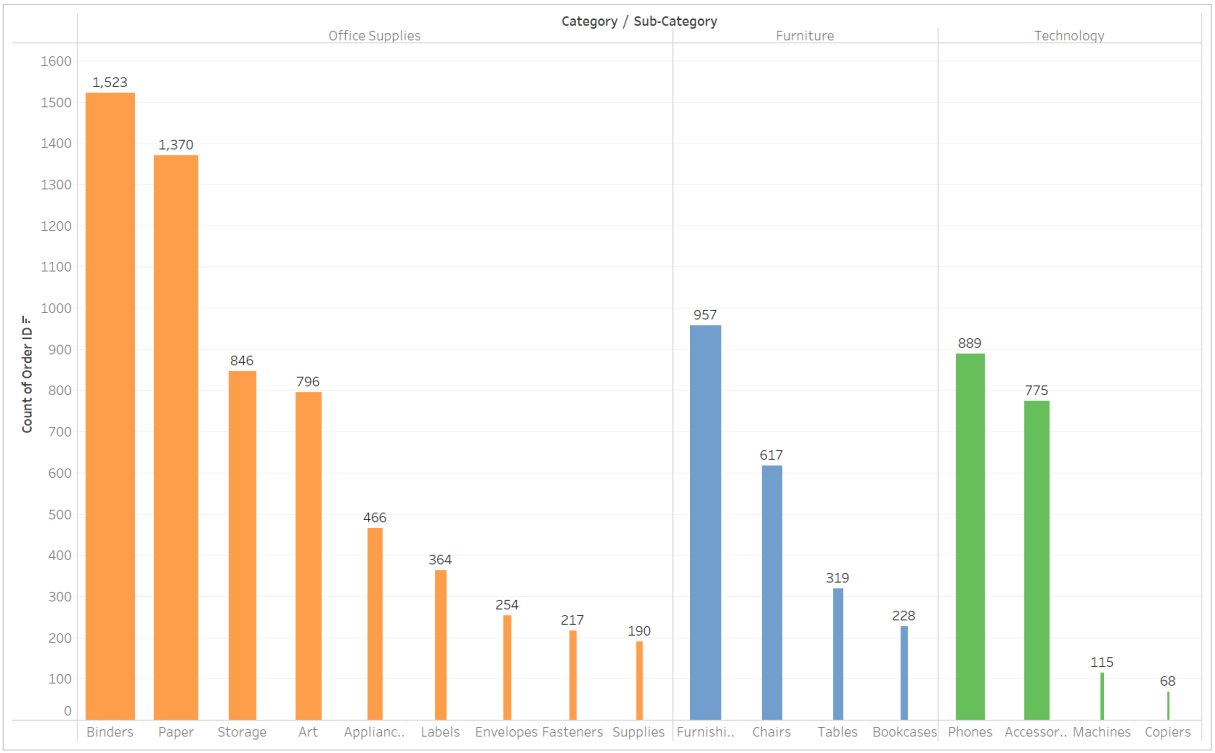


I am picked Line chart, represented by a distinct line, with quarters (Q1, Q2, Q3, Q4) and sales.

The East Region might show a steady increase in sales from Q3 to Q4, indicating strong year-end performance due to holiday shopping or seasonal demand.

Holiday-driven spikes in Q4 highlight the importance of inventory planning and promotional campaigns for maximizing sales during peak seasons.

27) What is the distribution of order priorities across different product categories?



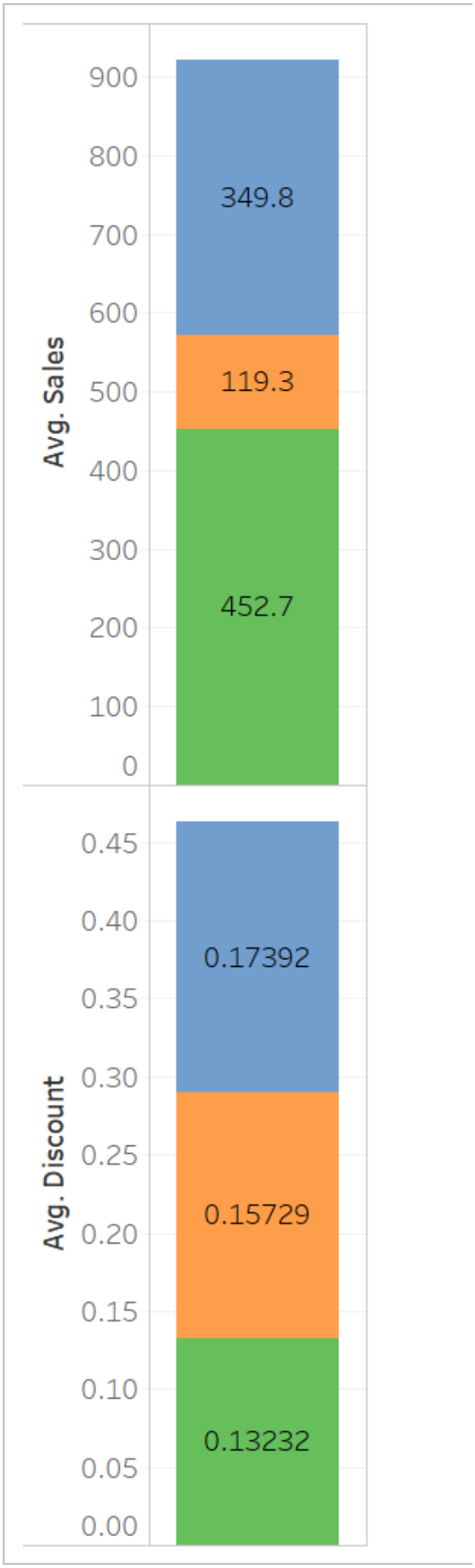
I am picked bar chart, distribution of order priorities across different product categories to sub categories.

Office Supplies typically has the highest number of orders across all priority levels , Furniture and technology medium level number of order across all priority

This insight can guide inventory management or stocking strategies for high-priority items within the office supply category.

The chart allows businesses to understand how order priorities vary across product categories, helping them focus on improving delivery efficiency for time-sensitive products while maintaining cost-effective operations for low-priority items.

28) What is the relationship between discounts and sales?

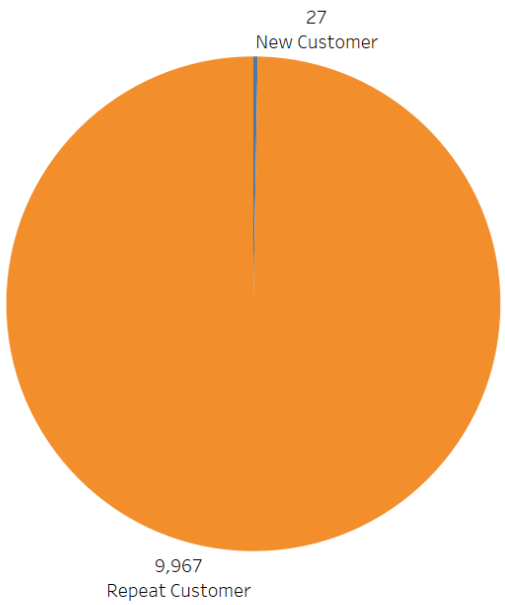

Avg. Sales
900
800
700
600
500
400
300
200
100
0
349.8
119.3
452.7
Avg. Discount
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.17392
0.15729
0.13232

I am picked bar chart, to relationship between discounts and sales

Low discounts typically result in high sales, especially for Technology products and high discount in low sales, especially for Furniture.

The balance between discounts and sales helps optimize profit margins, ensuring that discounts effectively drive revenue without eroding profits unnecessarily.
The relationship between discounts and sales varies across product categories, emphasizing the importance of category-specific pricing strategies.

29) How does the average order value differ between repeat customers and new customers?



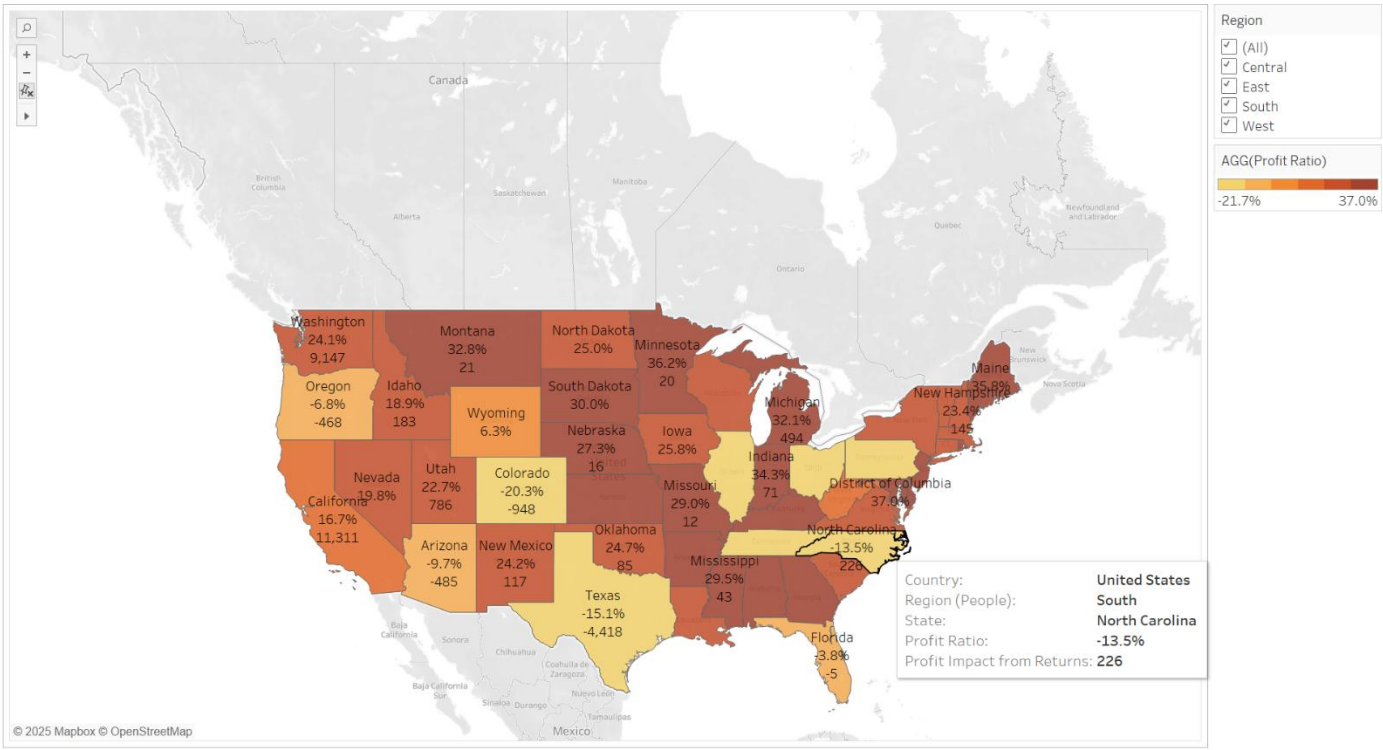
I am picked Pie chart, that shows the difference between repeat customers and new customers.

The

High Repeat Customer **99.73%** may suggest strong customer satisfaction and loyalty and New Customer **0.27%** new buyers but may need strategies to retain them.

The charts insights a strategy could focus on increasing the share of repeat customers further through rewards programs.

30) What is the geographical distribution of returns and its impact on overall profitability?



I am picked Map chart represent geographical variations in return rates and profitability across different regions state.

Compare regions based on their return rates and profitability. Identify high-risk areas where returns may be negatively impacting profits.

The chart insights, businesses can target specific regions for improvements, whether that's through better product management, customer support, or region-specific marketing strategies.