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Superstore Data Visualization & Analysis Project

Project Overview

In this project, we analyze the "Superstore" dataset to address 30 scenario-based questions through targeted data visualizations and analysis. Each question is designed to provide insights into key business metrics, such as sales, profitability, customer behavior, and regional performance.

Objective

To select the most suitable chart for each question, explain the choice, and effectively communicate findings. This will demonstrate not only data visualization skills but also critical thinking and problem-solving abilities.

Tools & Skills Used

- **Tool:** Tableau
- **Skills:** Data visualization techniques, analytical reasoning, and effective communication of complex information.

Total sales
₹ 2,297,201

Total Profit
₹ 286,397

Quantity
37,873

Sales Analysis Overview

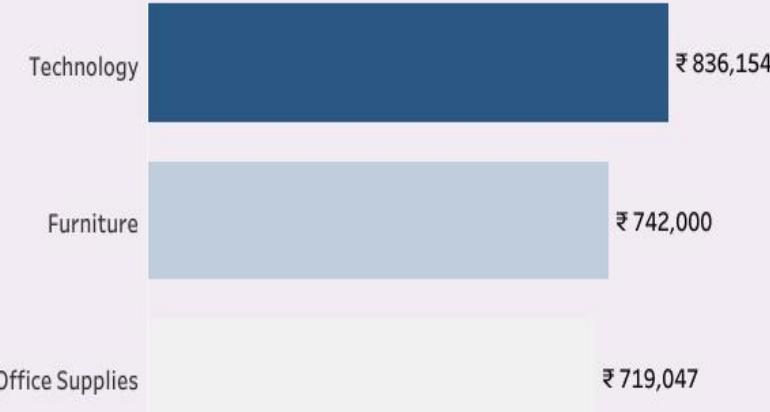
Year
All

Profit

Monthly Sales Trend by Category.



Sales by Category



Sales by Segment



Sales by Sub-Category



Sales by Weekend



Sales by Region



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Total sales
₹ 2,297,201

Total Profit
₹ 286,397

Quantity
37,873

Profit Analysis Overview

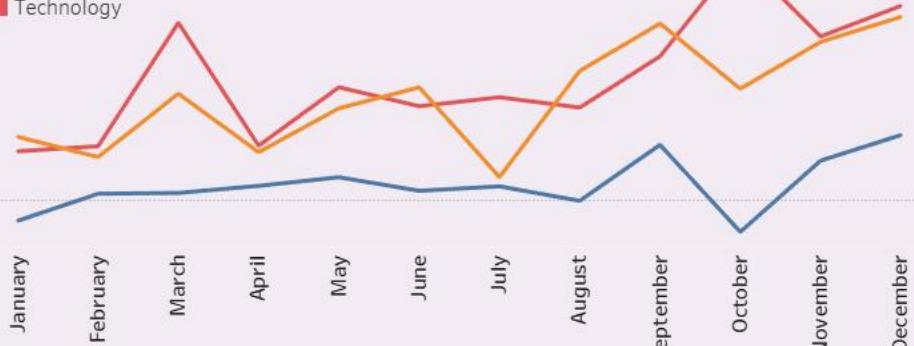
Year of Order Date
(All)

Sales

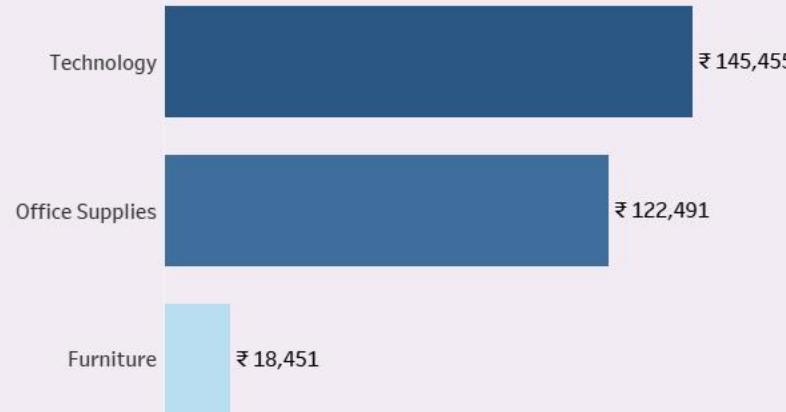
Category

Furniture
Office Supplies
Technology

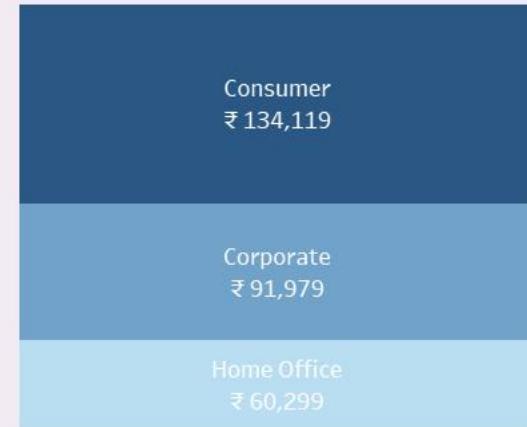
Monthly Profit Trend by Category.



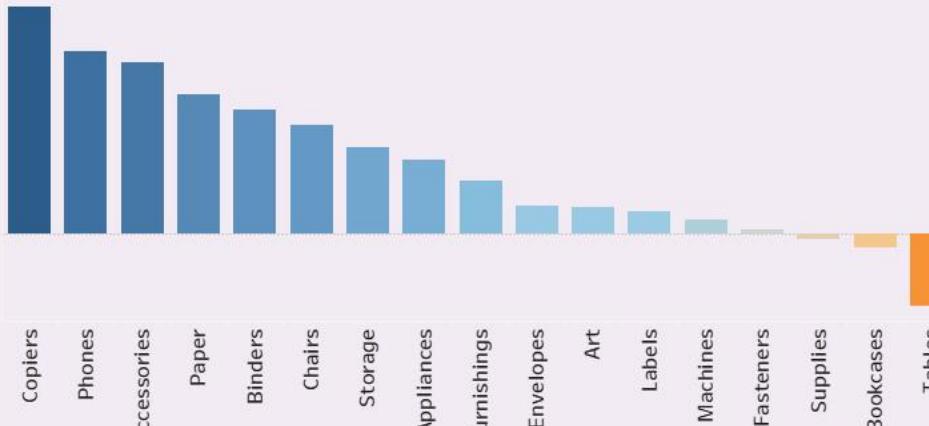
Profit by Category



Profit by Segment



Profit by Sub-Category



Profit by Weekdays



Profit by Region



Conclusions

- ◊ **Regional Insights:** The **West and East regions** contribute the largest share of sales and profit across the market. Targeted marketing in these areas could help maximize revenue and enhance profitability.
- ◊ **Customer Segment:** The **Consumer segment** makes up nearly **50%** of total sales and profit. Focusing on this segment with tailored promotions and campaigns could further strengthen this customer base.
- ◊ **Sales Pattern Across Quarters:** Sales exhibit some fluctuations in the **first quarter**, but stabilize during the **second and third quarters**. The **fourth quarter** shows increased demand, especially in the East region, suggesting a need for **inventory planning** to meet this surge.
- ◊ **Category Analysis:**
Furniture has the second-highest sales but generates lower profits compared to **Office Supplies** despite higher sales. This may indicate a need for **pricing adjustments** or cost management.

- ❖ **Office Supplies** performs well in terms of profit, even with moderate sales, indicating efficiency in this category.
 - ❖ **Copiers** recorded significant sales of **1,49,258**, but they are a loss-making item, which warrants a **review of pricing and cost structures** for this product.
-
- ❖ **Profitability by Product:**
 - **Phones and Chairs** are the top profit-generating items. Increasing focus on these products could yield better margins.
 - **Tables, Bookcases, and Supplies** consistently underperform and lead to losses. Bulk sales or pricing adjustments may be necessary to offset these losses.
 - ❖ **Sales Trends by Day:** **Supplies** show high sales on **Fridays** but still incur losses. This could be a sign that **pricing or discount strategies need review** for these items on Fridays.

- ❖ **Shipping Preferences:** The majority of orders are shipped via **Standard Class**, followed by **Second Class** and **First Class**, with **Same Day delivery** being the least preferred. This suggests that most customers prioritize cost savings over delivery speed.
- ❖ **Discounting Strategy:** In categories like **Office Supplies** and **Furniture**, increased discounts appear to correlate with higher profits, indicating that a well-planned discount strategy can boost sales while maintaining profitability.

Recommendations

- ❖ **Enhanced Marketing in West and East Regions:** Given their high sales and profit potential, focus marketing efforts and advertising budget on the West and East regions to drive growth.
- ❖ **Consumer Segment Targeting:** With nearly half of the business coming from consumers, create **promotions tailored specifically for this segment** to increase engagement and loyalty.
- ❖ **Quarterly Inventory Planning:** To meet the demand spike in Q4, especially in the East, align inventory planning and stock levels with these seasonal demands.
- ❖ **Product-Specific Strategies:**
 - **Reevaluate the pricing** of furniture items to improve profitability, as these have lower profit margins despite high sales.
 - Consider **discounts or bundling strategies for Copiers** to make them profitable or find alternative suppliers to reduce costs.

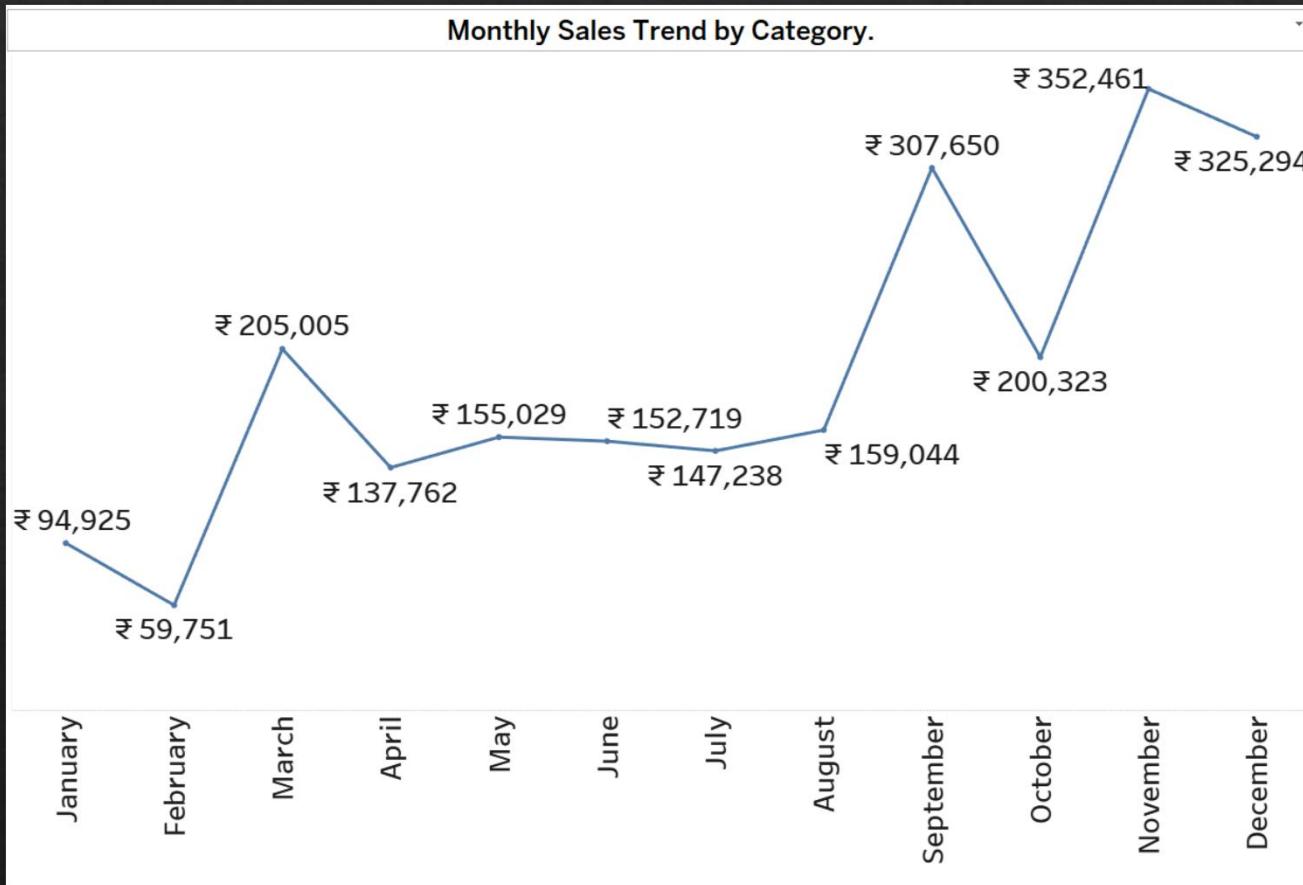
- ❖ **Loss-Making Products:** For products like **Tables, Bookcases, and Supplies**, either adjust pricing or encourage bulk purchases at lower margins to offset losses.
- ❖ **Day-Specific Promotions:** On Fridays, review **discount and pricing strategies** for Supplies to reduce losses, as sales remain high but profitability is an issue.
- ❖ **Flexible Shipping Options:** Since most customers prefer Standard Class shipping, ensure this option is efficient and cost-effective. Promote faster shipping options (like First Class) to a premium customer segment for additional revenue.
- ❖ **Discount Adjustments:** For categories showing increased profit with higher discounts, such as Office Supplies, consider **targeted discount campaigns** to boost sales in slow months or in underperforming regions.

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



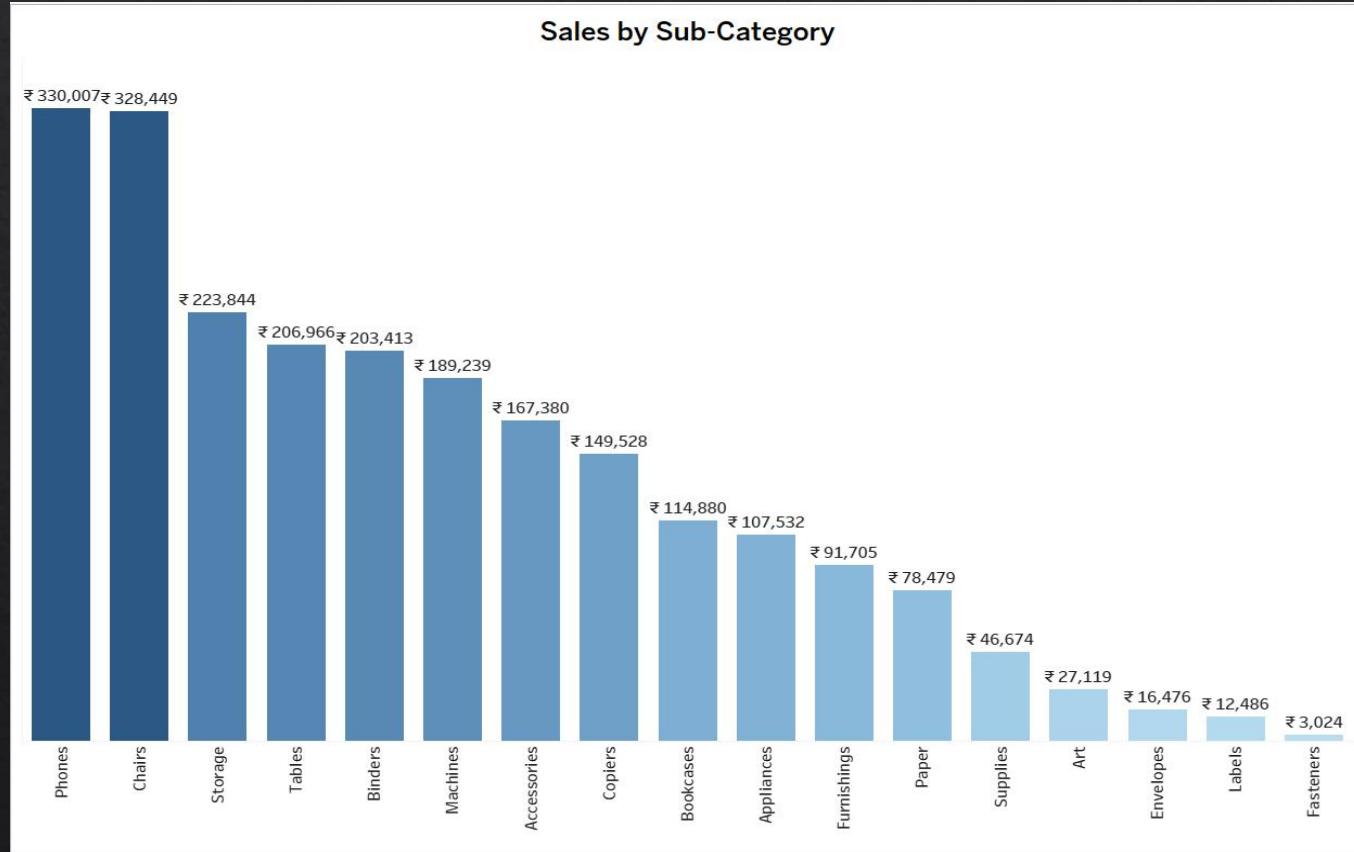
The visualization clearly shows that the Technology category has the highest sales, followed by Furniture and Office Supplies. Although Technology leads with 836,154, there isn't a significant gap between the three categories, as Furniture has 742,000 and Office Supplies have 719,047.

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



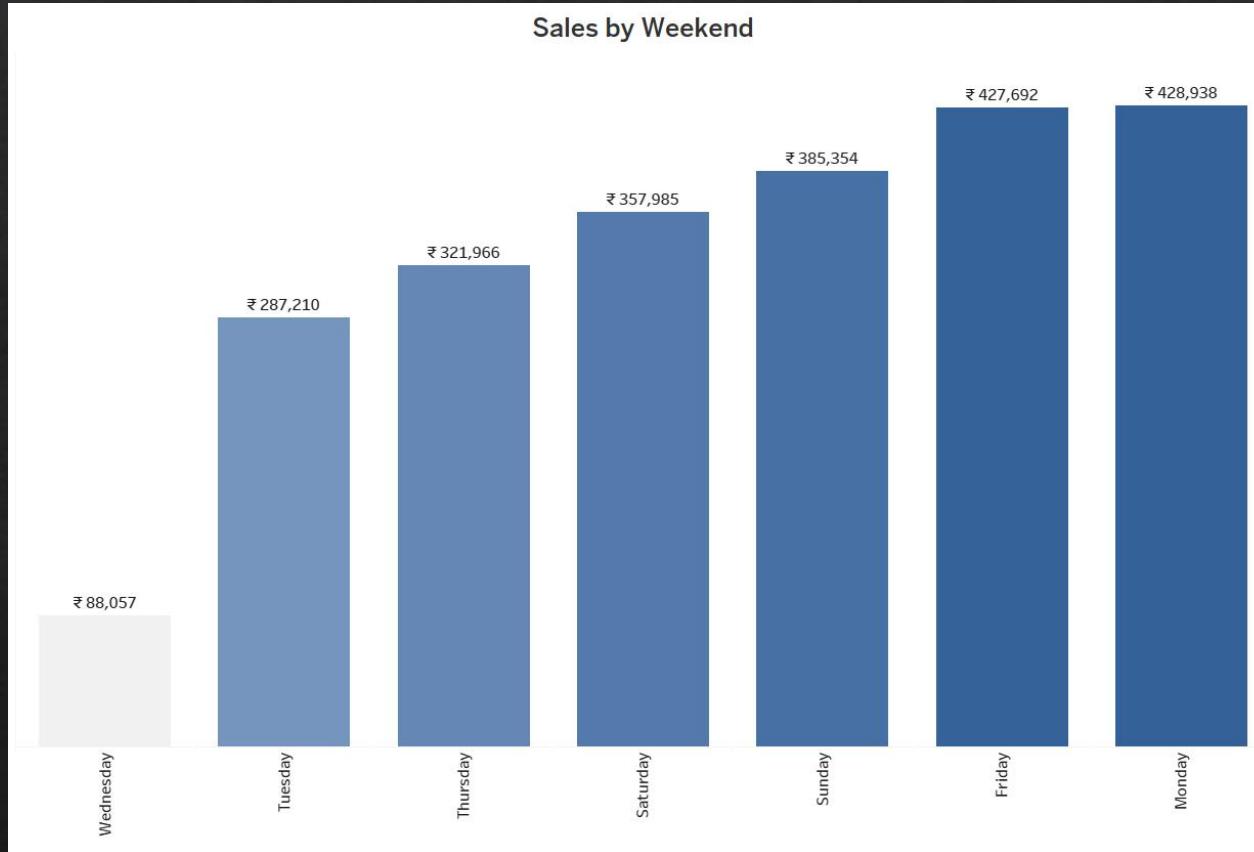
The "Monthly Sales Trend by Category" chart reveals that sales start low in January, drop further in February, then spike in March. Sales remain steady from April to August, with no major peaks. A sharp increase occurs in the last quarter, with October, November, and December showing the highest sales, likely due to holiday demand. This trend suggests seasonal sales patterns, with early-year dips, stable mid-year performance, and strong year-end demand, providing insights for forecasting, inventory, and targeted marketing efforts.

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



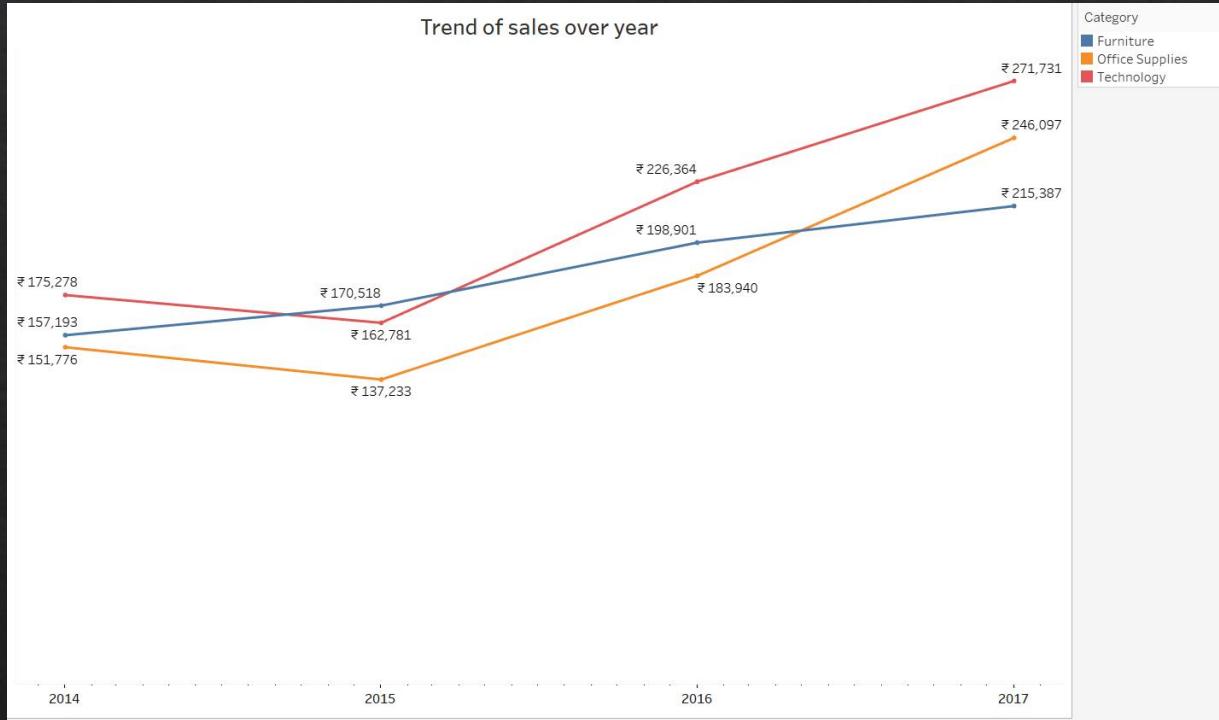
This chart shows that sales are heavily concentrated in a few sub-categories like Phones, Chairs, and Storage, indicating high customer demand and profitability. Mid-tier items, such as Binders and Machines, have moderate sales, while categories like Fasteners and Labels have minimal demand. This breakdown suggests that the business could optimize inventory by prioritizing top-selling items and managing stock for low-demand products more strategically.

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



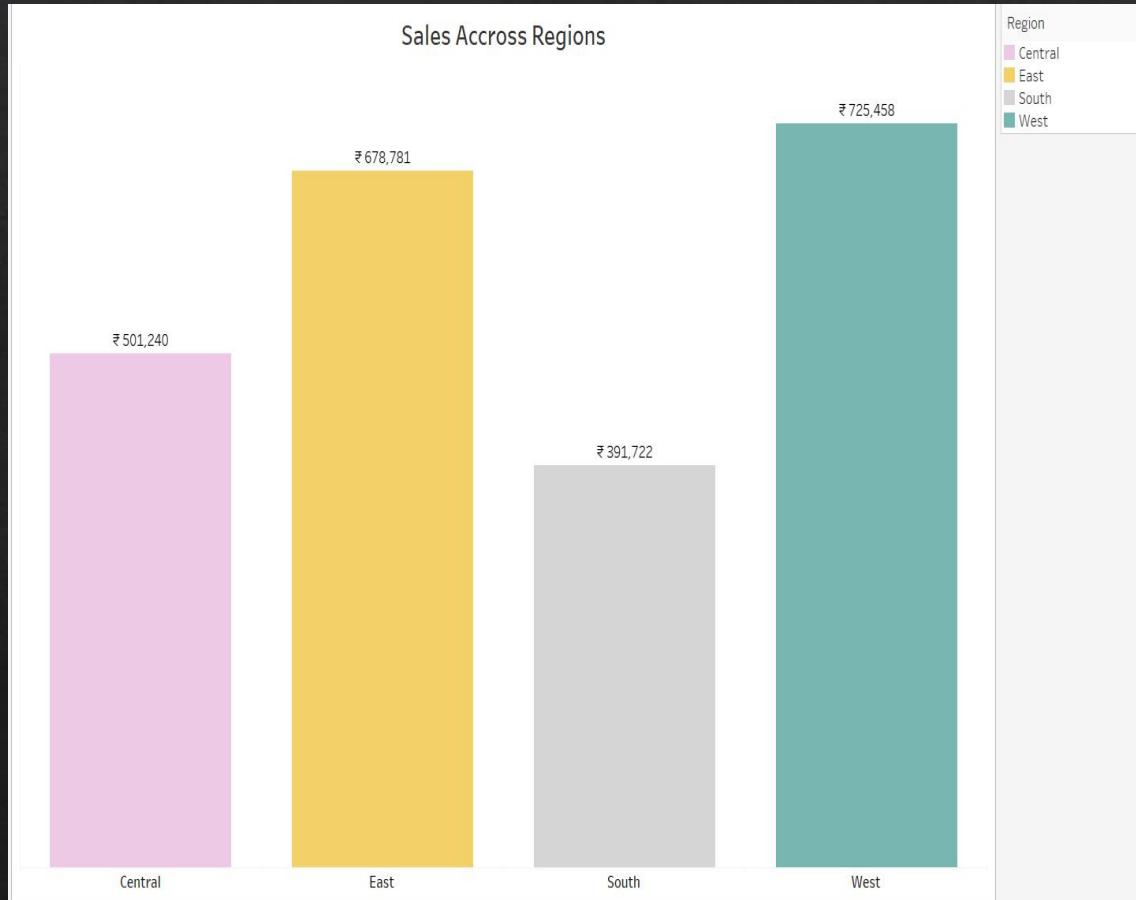
- ◊ The bar chart shows that sales are highest on Saturdays and lowest on Tuesdays. There's a clear upward trend towards the weekend. Retailers could maximize weekend sales with promotions and explore weekday strategies like happy hours to boost off-peak business. Analyzing sales by product category and customer segmentation can further refine marketing efforts.

Can we visualize the sales growth of different product categories over time?



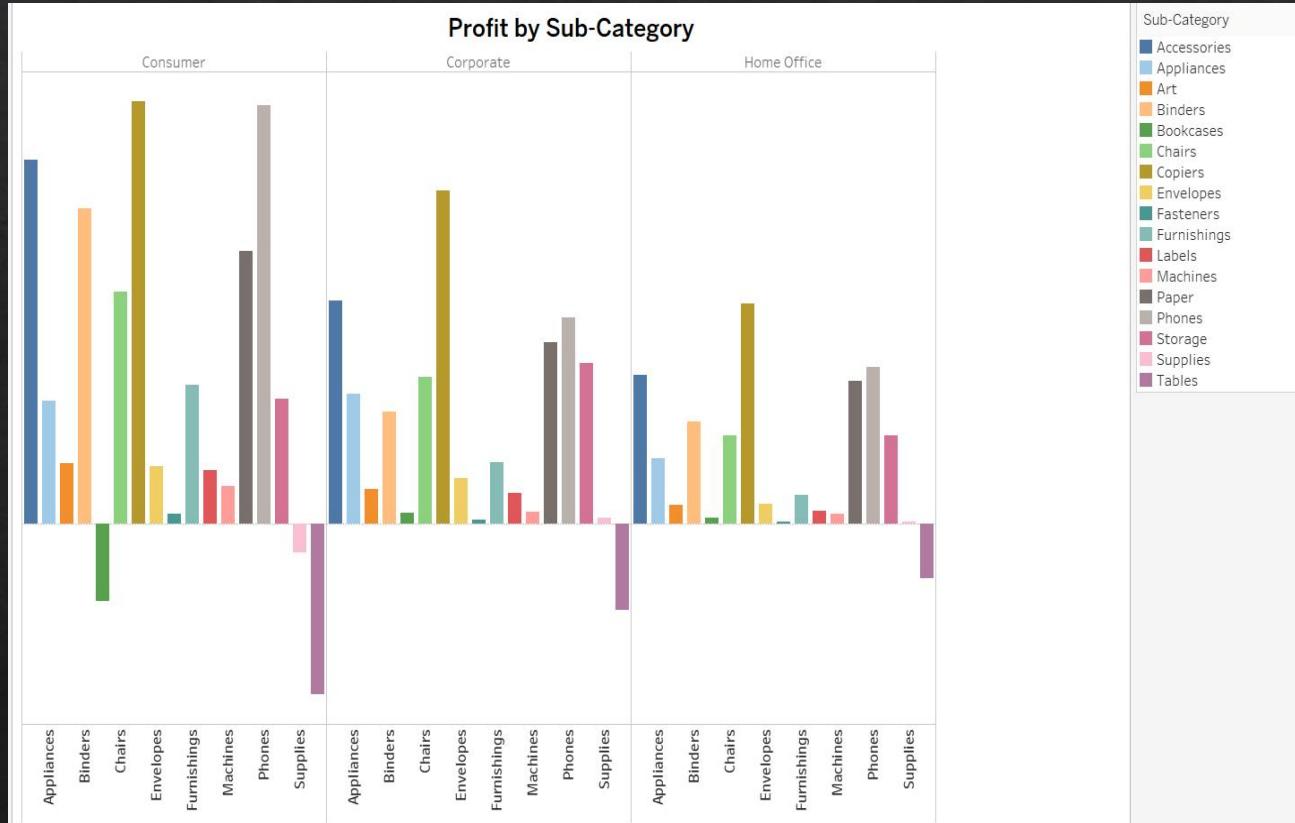
- ❖ The line chart reveals a mixed trend in sales from 2014 to 2017. While there was a dip in both office supplies and technology sales between 2014 and 2015, furniture sales showed growth during this period.
- ❖ From 2015 to 2017, we observe an overall upward trend in sales across all three categories. However, the growth in technology and office supplies was more pronounced compared to furniture.

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



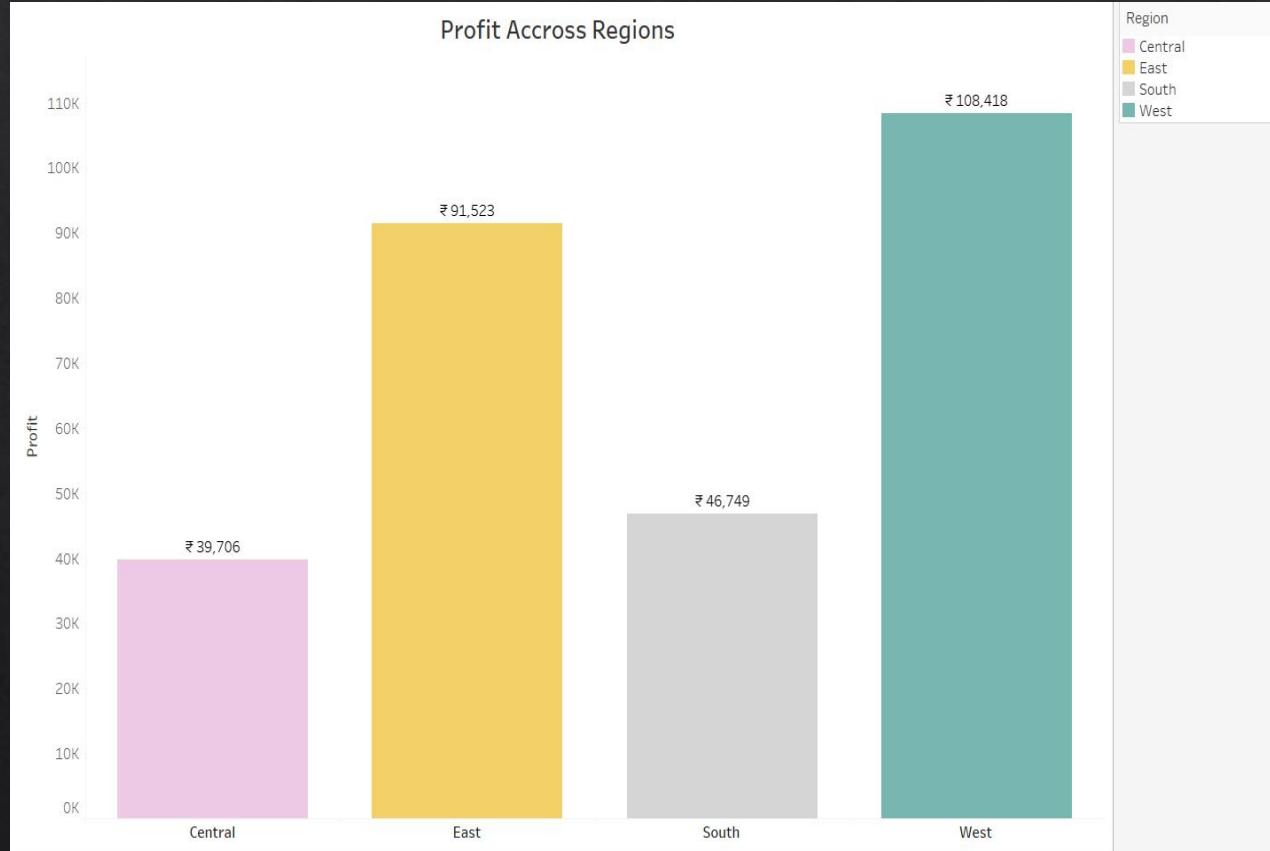
- ❖ The bar chart shows sales across four regions. The West region leads with the highest sales, followed by the East. The South region has the lowest sales, while the Central region has moderate sales. To maximize sales, the company should focus on improving performance in the South region, maintain momentum in the East, and replicate the West's success strategies.

Can we visualize the composition of profits across various subcategories within different customer segments?



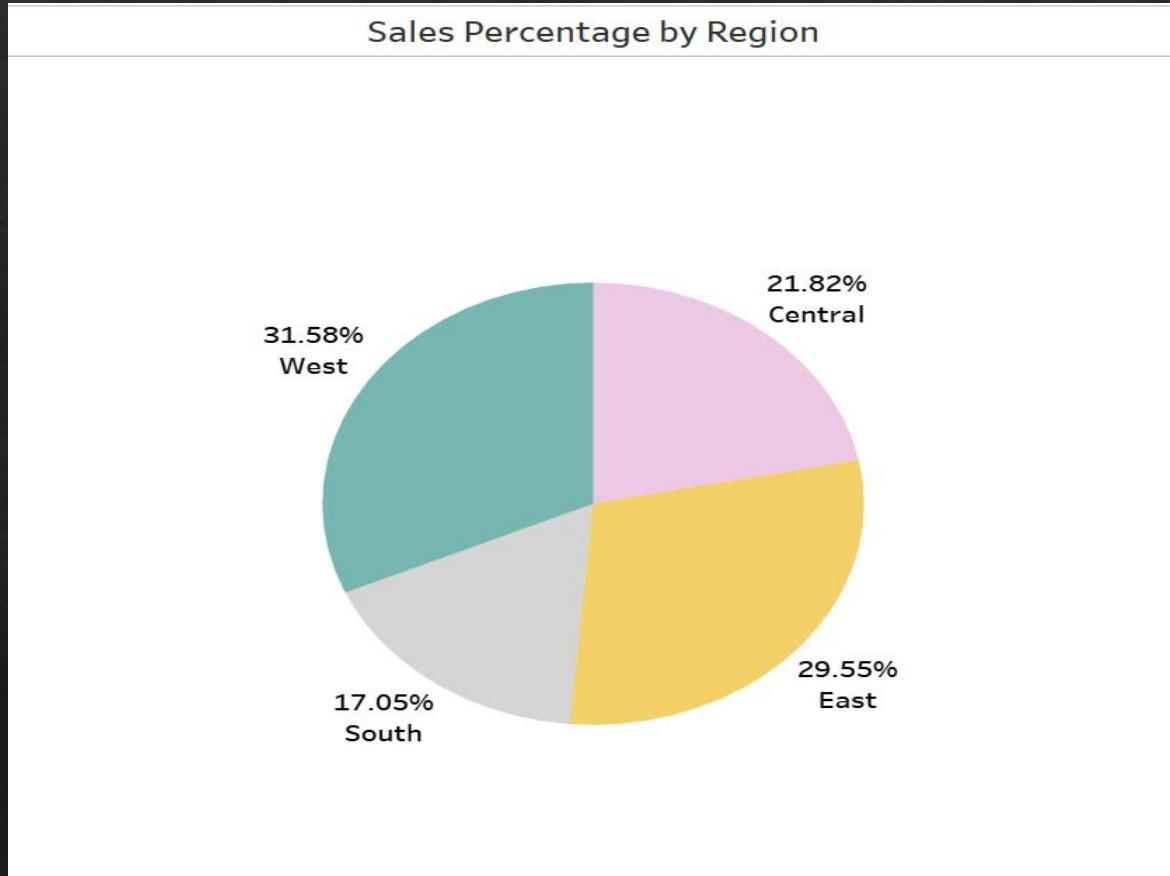
- ❖ The chart shows that, across all customer segments, tables are resulting in a loss. In contrast, copiers consistently remain the most profitable product across all segments.
- ❖ To address the losses from tables, consider optimizing production and delivery costs, as well as redesigning tables based on customer preferences to enhance appeal.

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



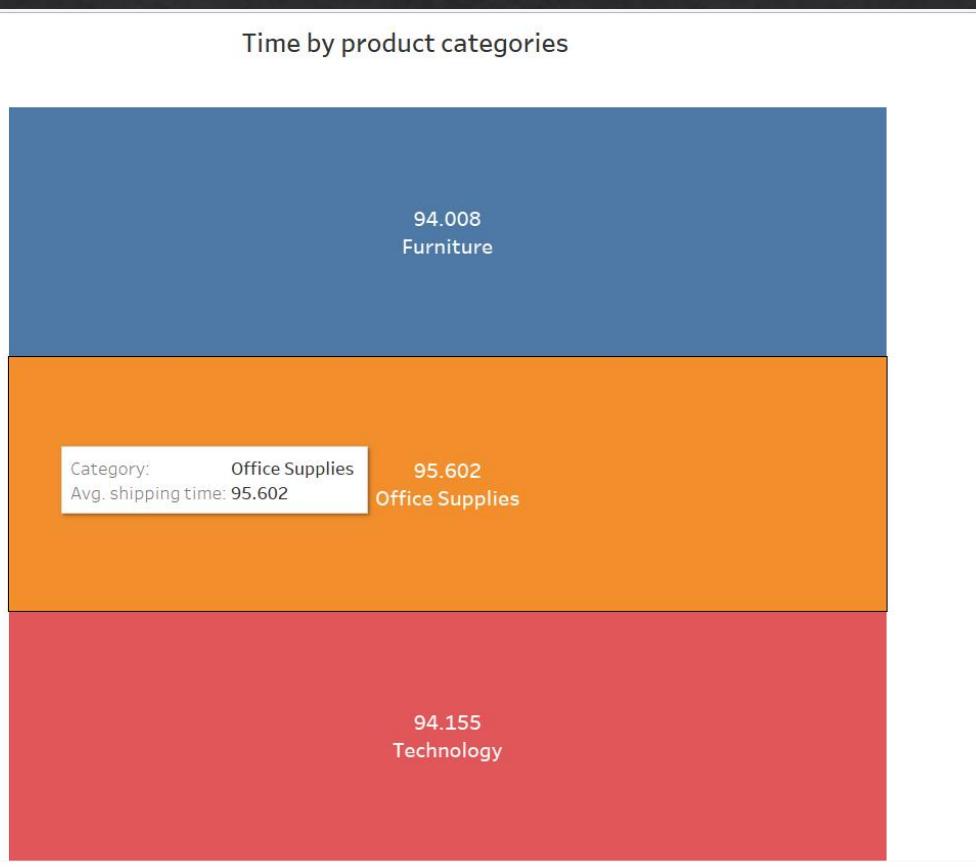
- ❖ The bar chart shows profit across four regions: West, East, South, and Central. West has the highest profit , while Central has the lowest at . To improve overall profitability, the company should analyze the factors contributing to West's success and address the challenges in the Central region.

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



- ◆ The pie chart shows the sales percentage by region. West has the highest sales percentage at 31.58%, followed by East at 29.55%. Central and South have 21.82% and 17.05% sales percentage, respectively.

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



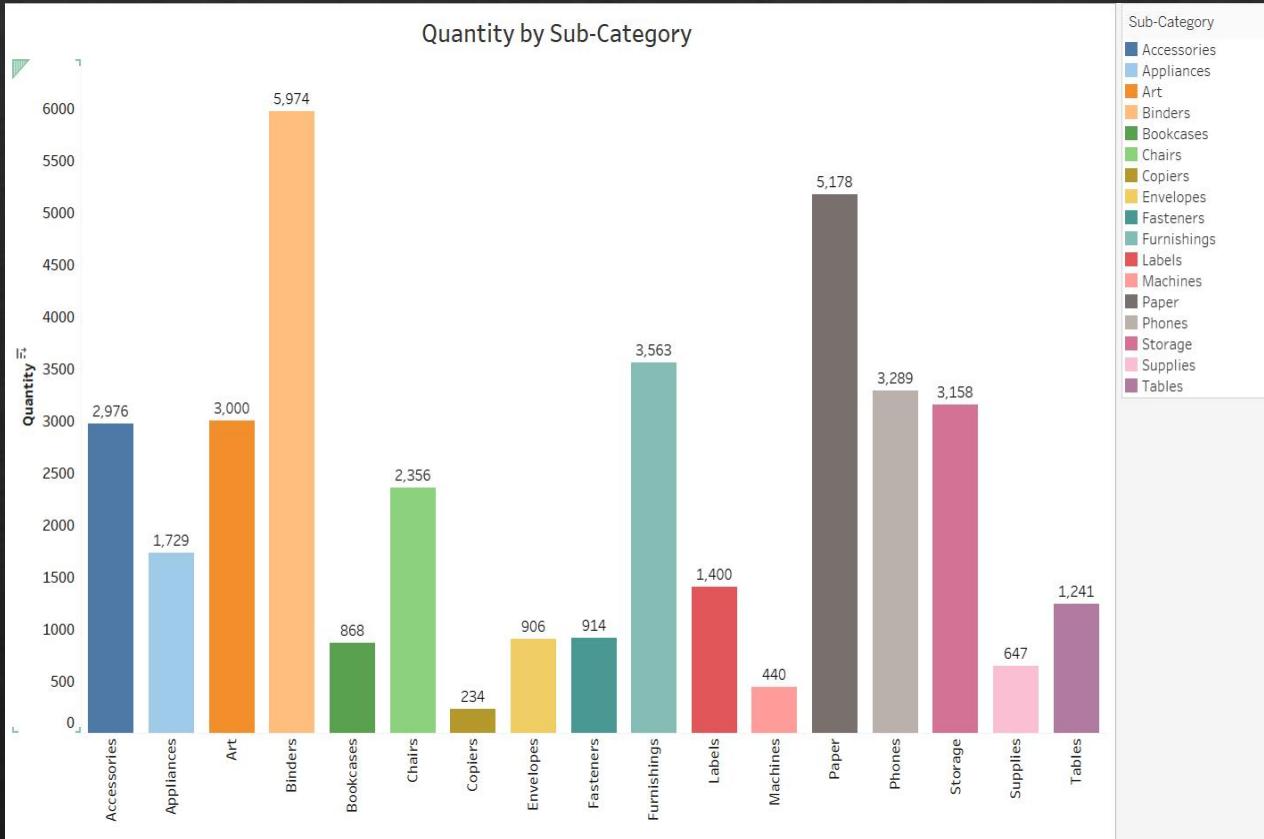
- ❖ The bar chart shows the average shipping time by product category. Office Supplies has the highest average shipping time at 95 hours, followed by Technology at 94, and Furniture at 94 hours.

Can we visualize the relationship between product sales and profitability for different product categories?



- ◊ The scatter plot shows the relationship between sales and profit for different product categories. There seems to be a positive correlation between sales and profit, meaning that as sales increase, profit also tends to increase. However, the relationship is not perfectly linear, and there is some variation in the data.

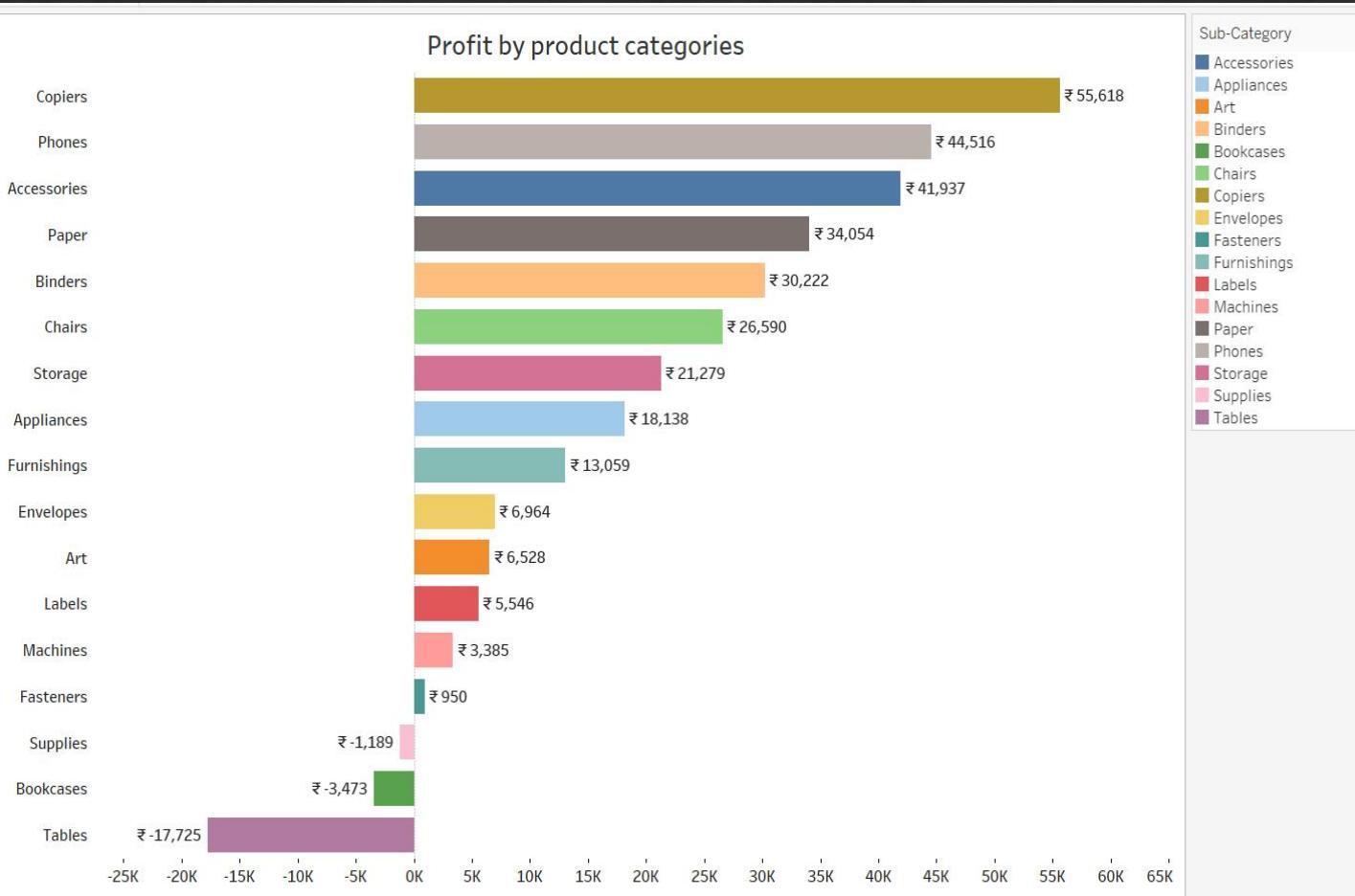
What is the distribution of order quantities for products in the dataset?



The bar chart lays the quantity of various sub-categories. Binders lead with the highest quantity at 5,974, followed by Paper at 5,278. On the other hand, Copiers have the lowest quantity at 234.

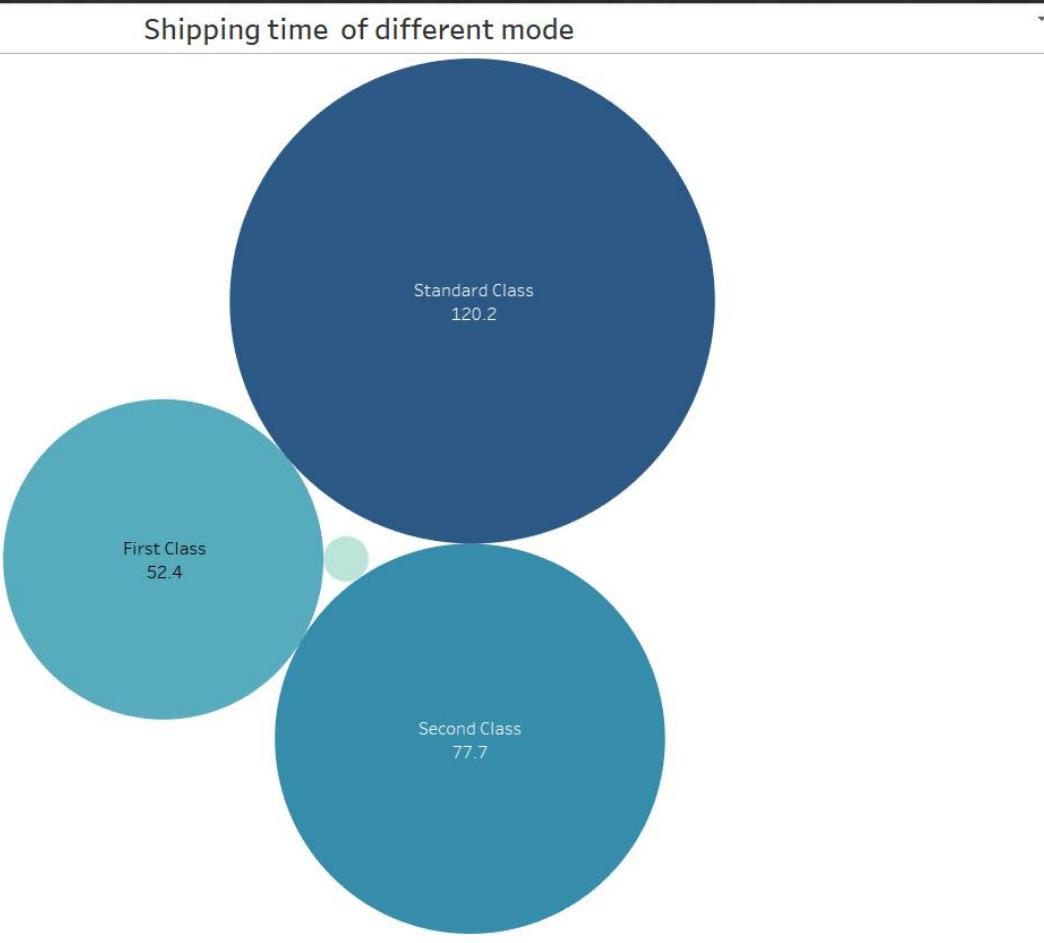
While Copiers may have the lowest quantity sold, they could potentially have the highest profit margin due to factors like higher price points, lower production costs, or catering to a niche market with higher demand and premium prices.

How do the profit distributions vary across different product categories?



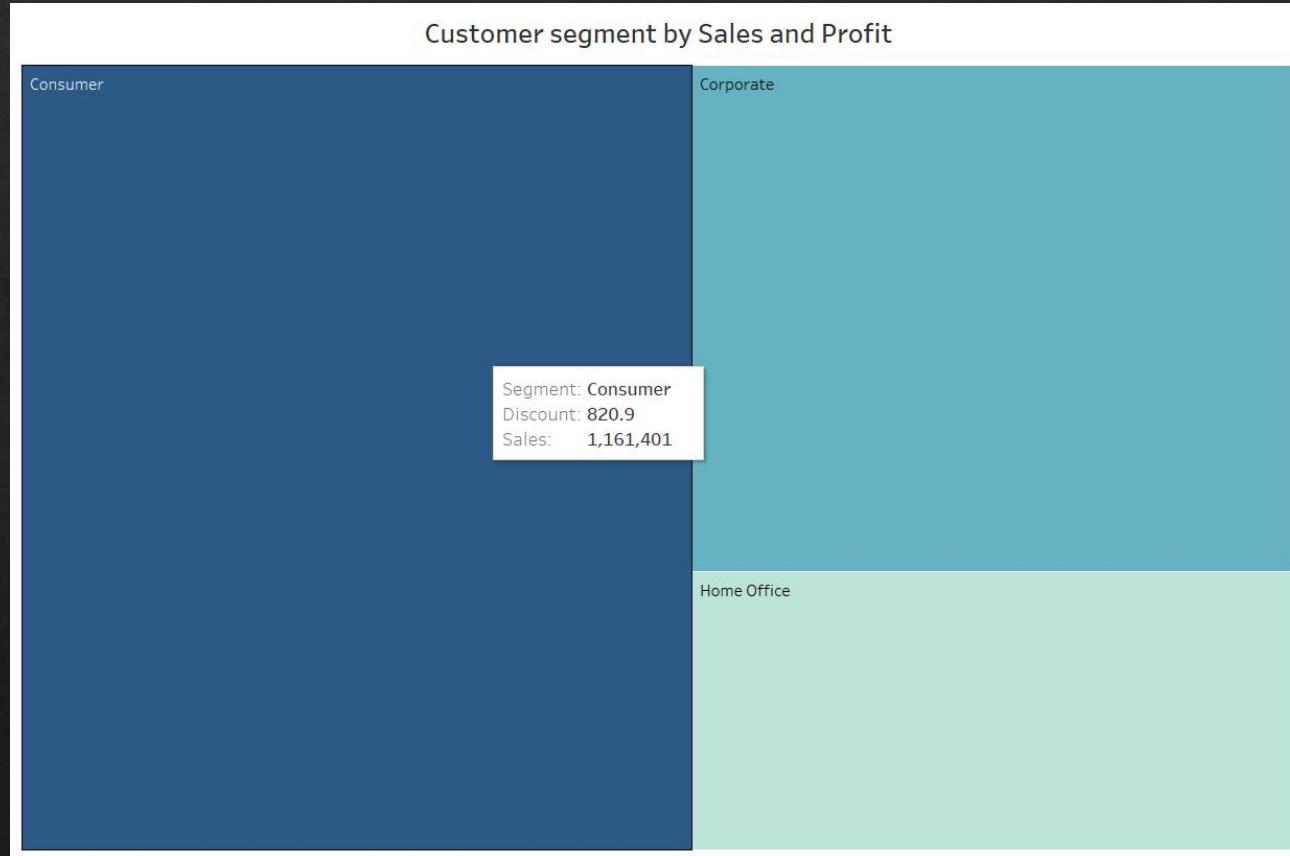
- ◆ The bar chart shows the profit by product sub-category. Copiers have the highest profit at ₹55,618, followed by Phones at ₹44,516. On the other hand, Tables ,bookcase are the loss making products

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



- ❖ The bubble chart shows the **average shipping times in hours** for different shipping modes. **Standard Class** has the highest average shipping time at 120.2 hours, making it the slowest option on average. **Second Class** averages 77.7 hours, while **First Class** is the quickest, with an average shipping time of 52.4 hours.

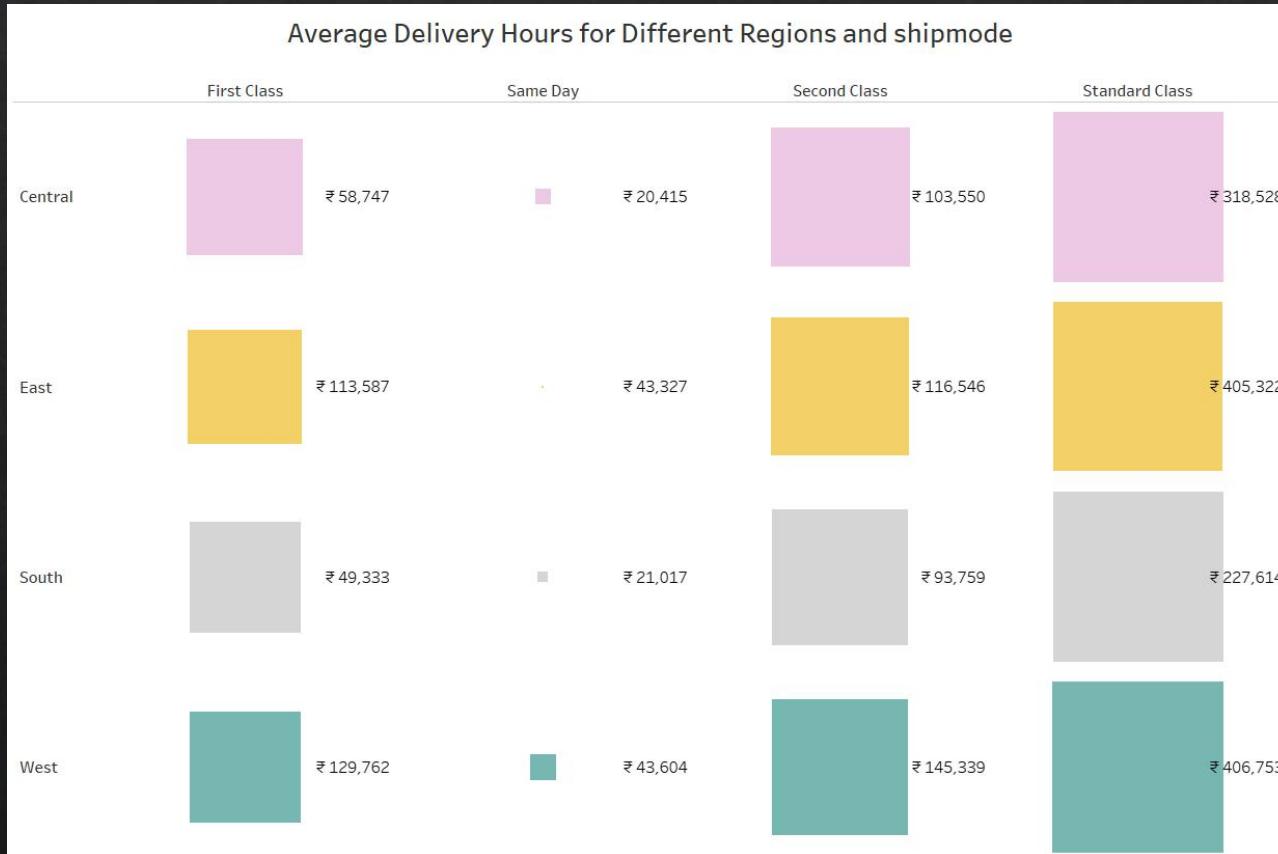
How do the profit distributions vary across different product categories?



The data shows that the Consumer segment has the highest sales and received the most discounts, suggesting a strong correlation between discounts and increased sales.

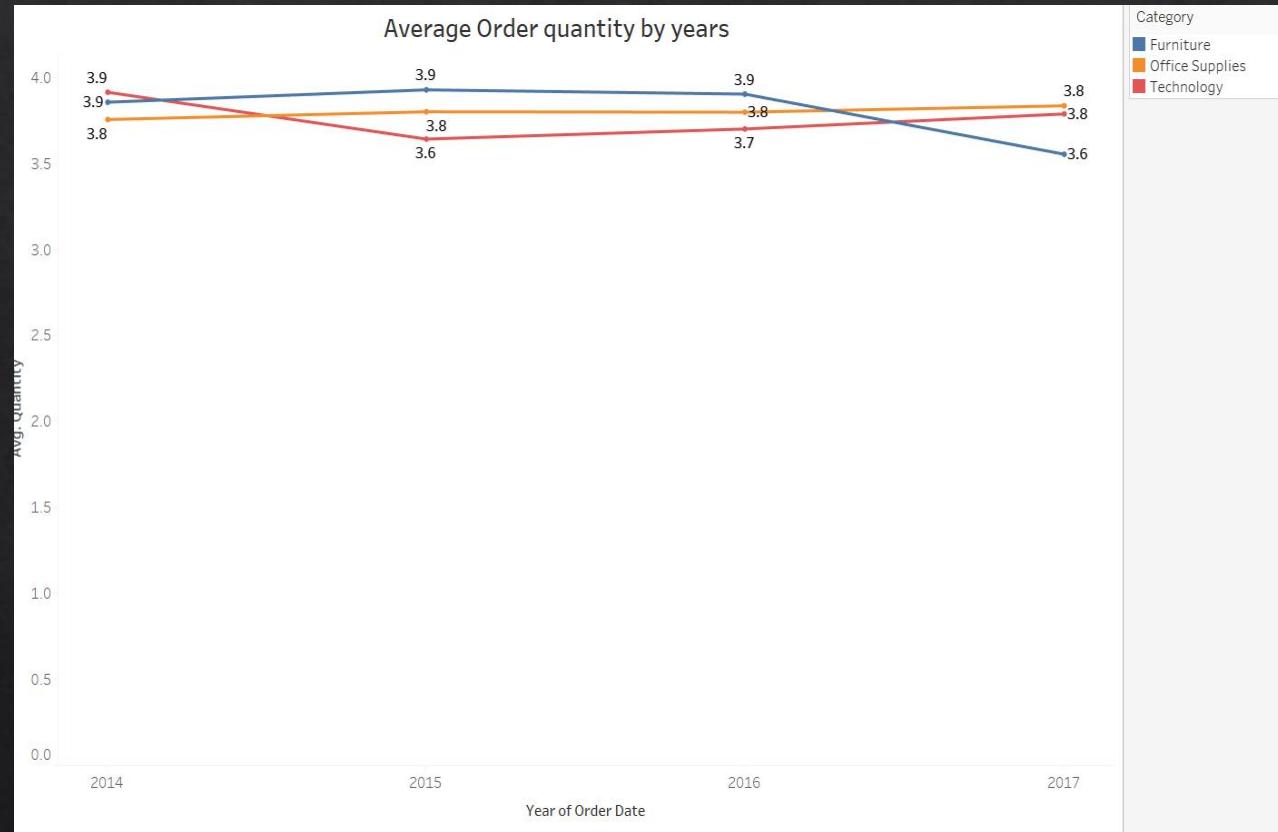
The Corporate and Home Office segments have lower sales and received fewer discounts. This indicates an opportunity to explore whether offering more discounts in these segments could drive sales or if the focus should remain on the high-performing Consumer segment.

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



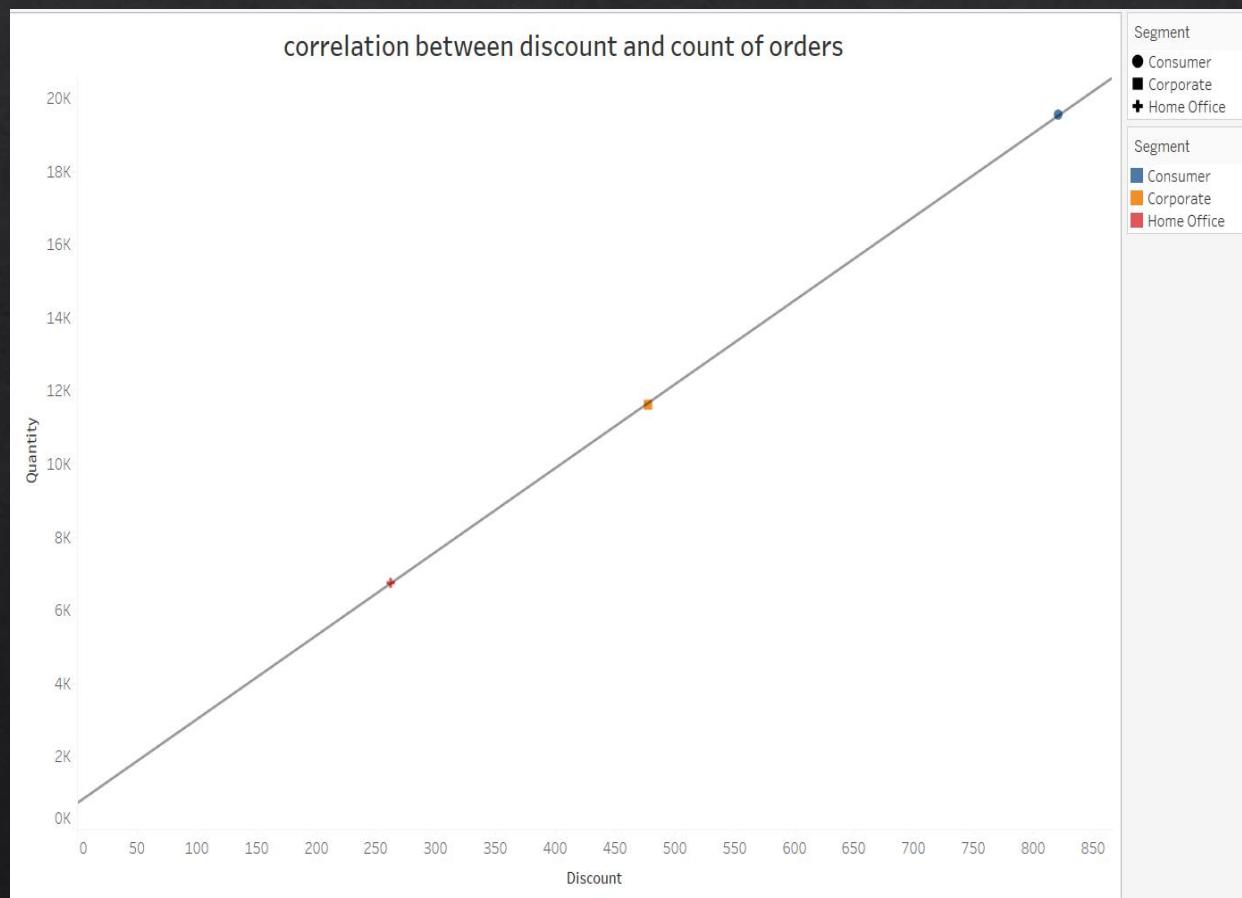
- ◆ The chart shows that **Standard Class** generates the highest revenue across all regions, especially in the East and West, suggesting it's the preferred shipping mode due to a balance of cost and delivery time. **Second Class** follows with moderate revenue, while **First Class** and **Same Day Delivery** have lower sales, indicating less demand for faster but costlier options.

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



- ❖ **Furniture** starts high at 3.9 but declines to 3.6, indicating a decrease in average order size. **Office Supplies** remains stable around 3.8, showing consistent demand. **Technology** shows a slight decline over time but remains close to 3.8, indicating moderate stability in order quantity. Overall, **Furniture** shows the most noticeable drop, while **Office Supplies** is the most stable.

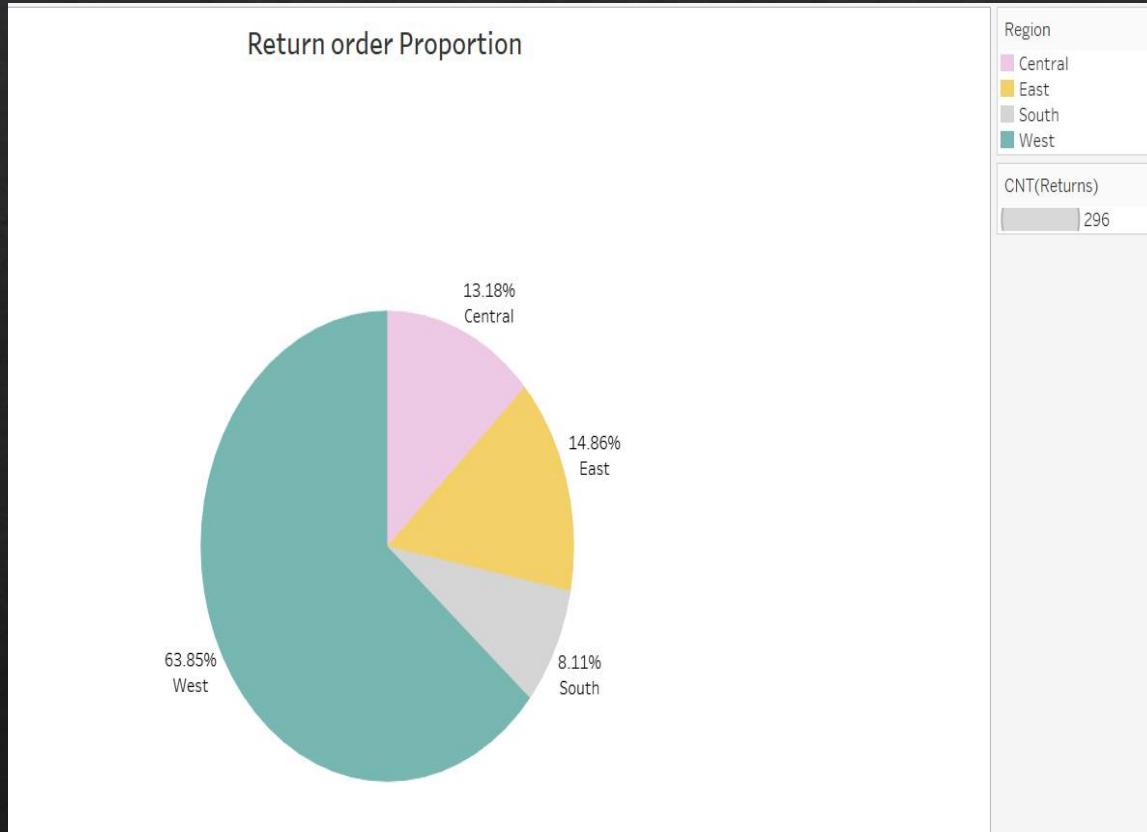
Can we visualise the correlation between discount rates and order quantities for different customer segments?



◆ Positive Correlation:

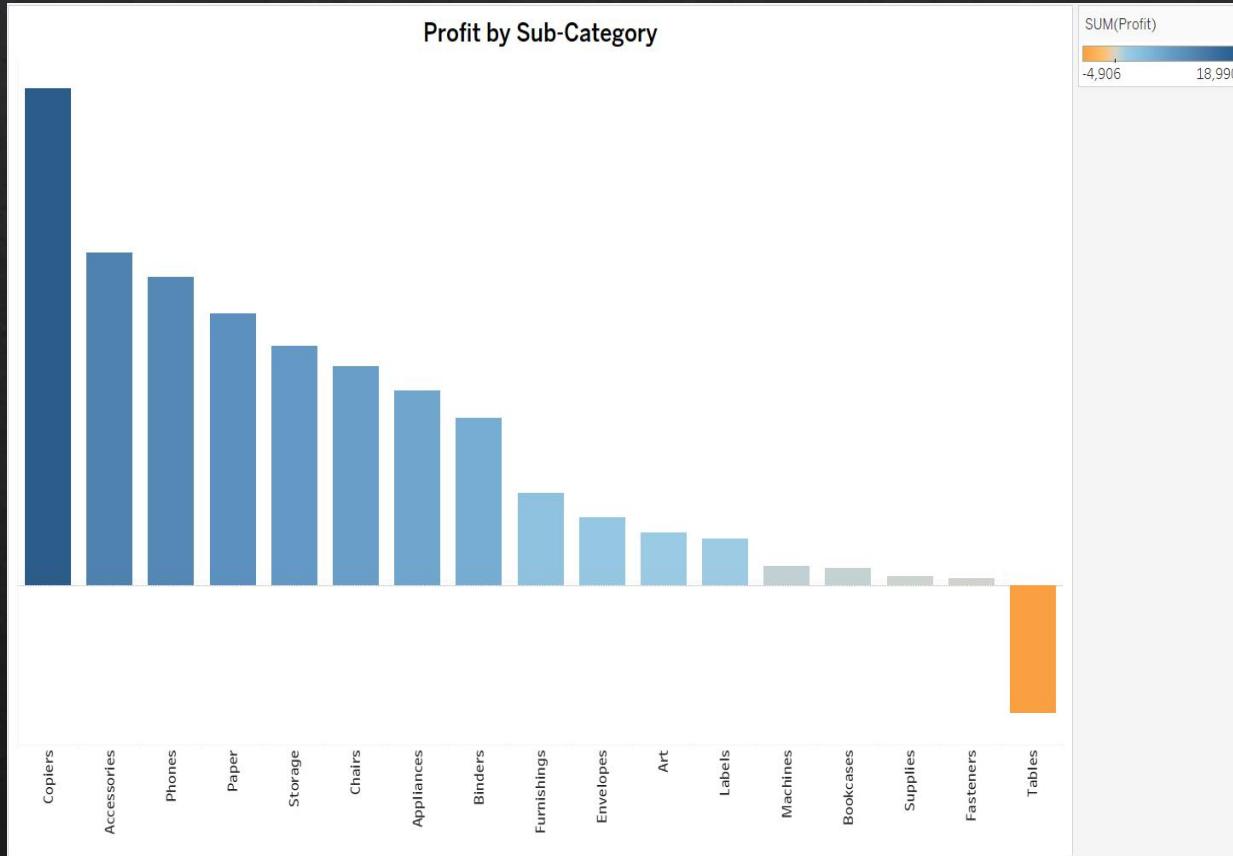
- The plot suggests a strong positive correlation between the discount offered and the quantity ordered, as the points are nearly collinear. This implies that as discounts increase, the total quantity ordered also rises, which is typical for price-sensitive purchasing behavior.

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



The chart shows that the West region has the highest number of returns, while the South region has the fewest. There may be specific reasons for the high return rate in the West, which we need to investigate. Additionally, we can look at practices in the South region to find strategies that could help reduce returns in the West.

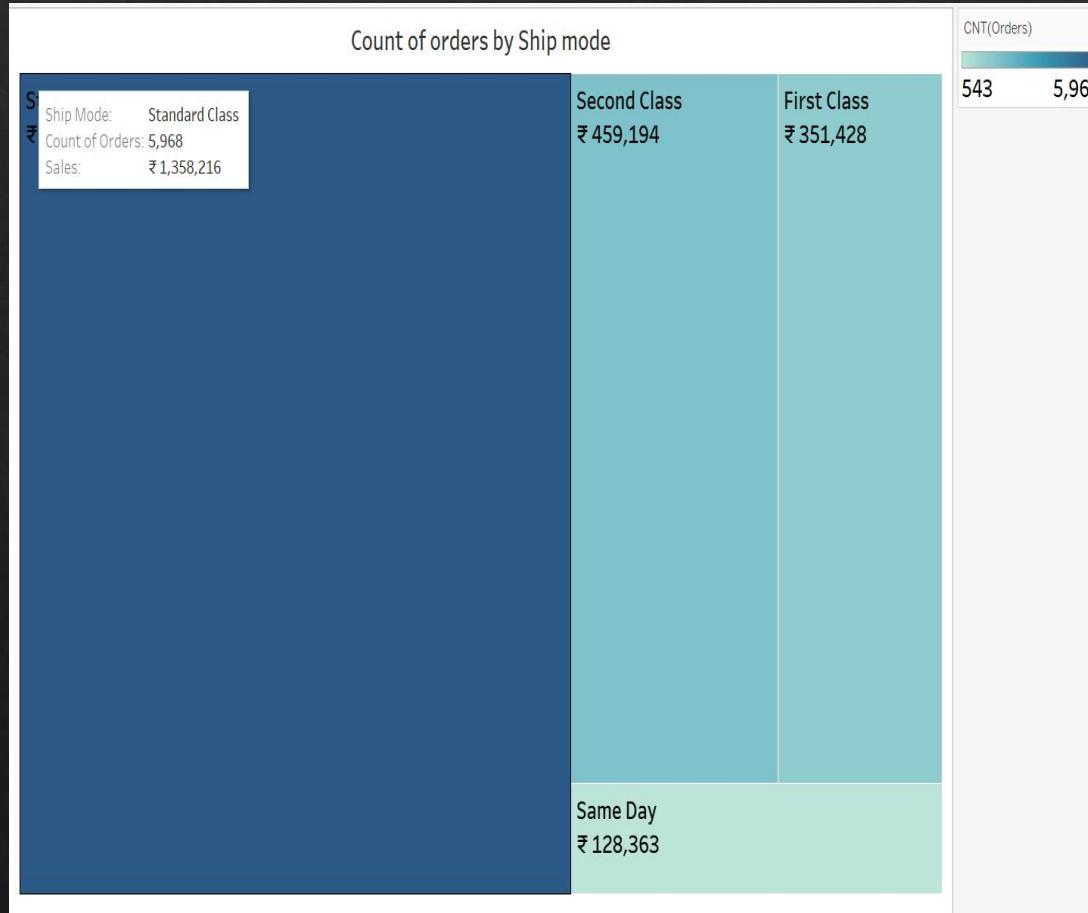
Can you compare the profit of different products for different subcategories?



The chart indicates that the "Tables" category is loss-making , suggesting a need to reduce production and better manage storage and inventory to cut costs.

Meanwhile, "Copiers" stand out as the most profitable subcategory.

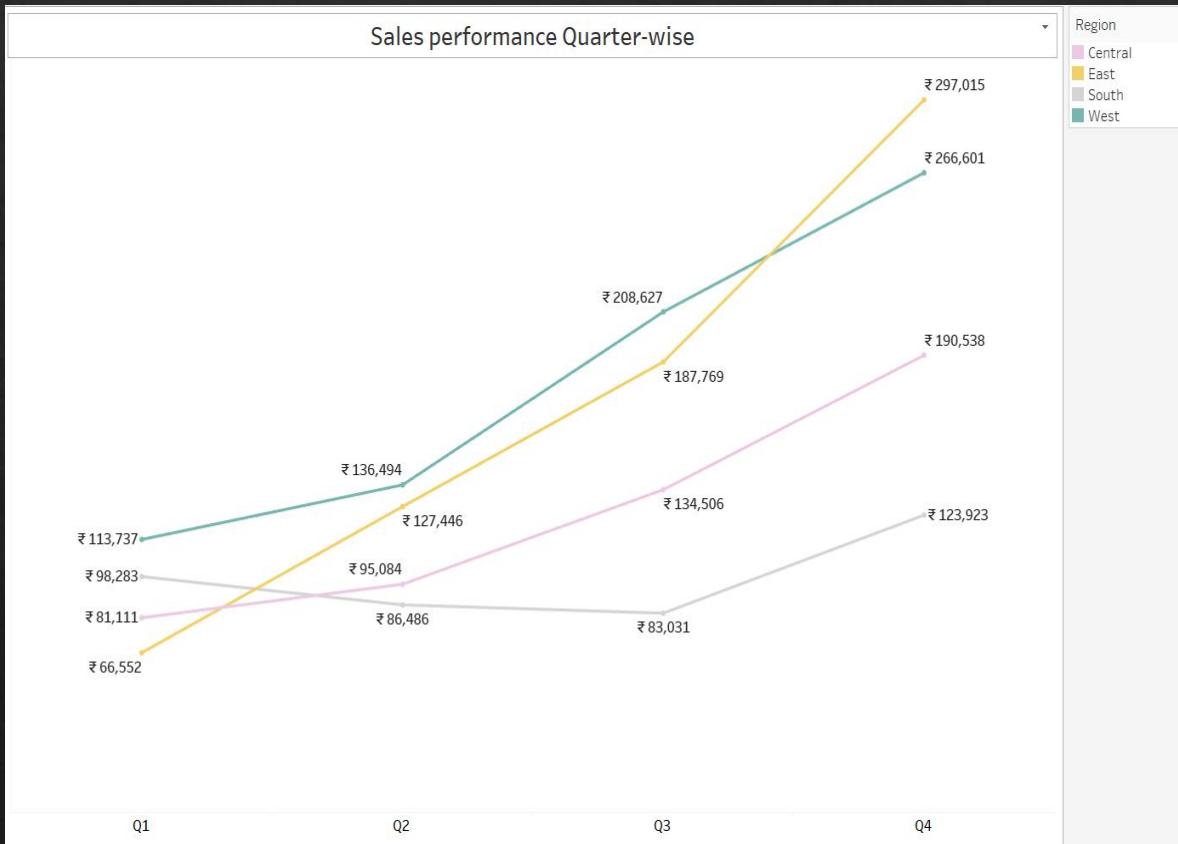
Which shipping mode is the most commonly used in the Sample Superstore dataset?



The chart shows that the majority of customers prefer standard-class shipping, while only a small number opt for same-day delivery.

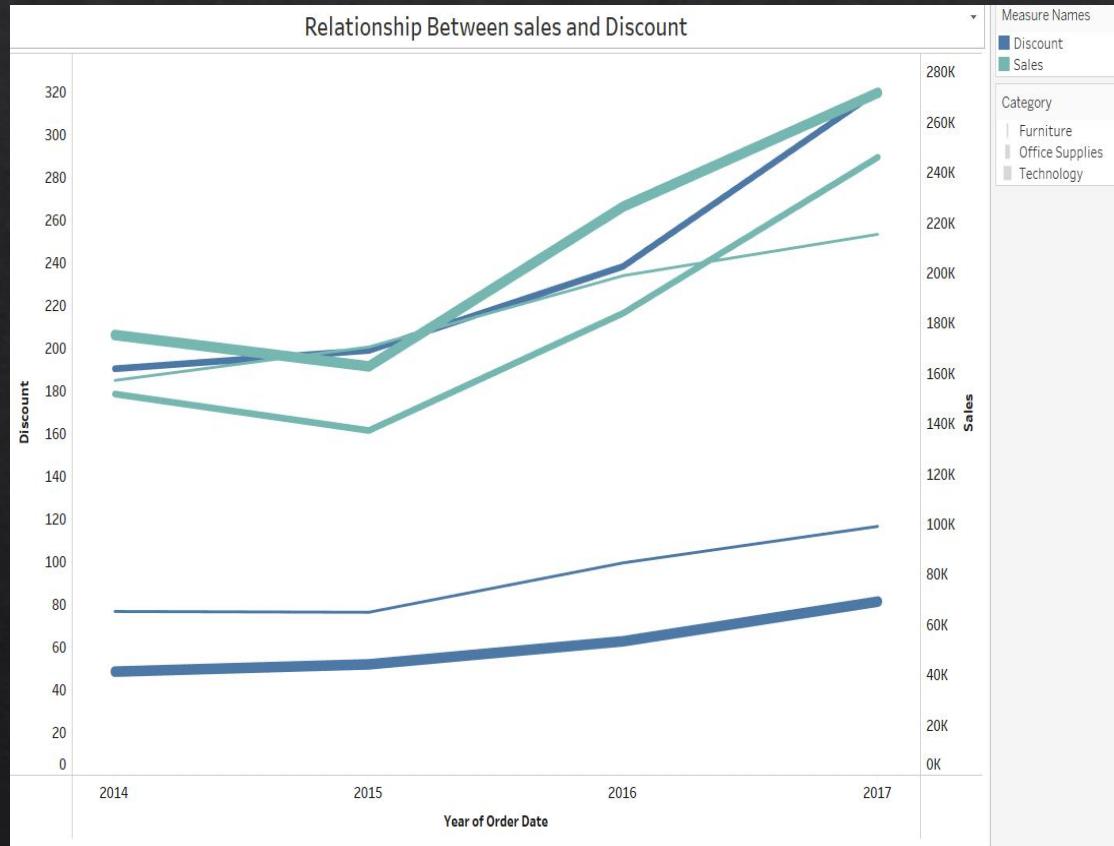
This suggests that customers are generally willing to choose lower-cost shipping options, such as standard class, over faster, more expensive options.

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



The chart illustrates a clear upward trend in sales across all four regions (Central, East, South, and West) from Q1 to Q4. However, the East region stands out with the most significant growth. Starting from a relatively low point in Q1, the East region experienced a substantial increase, culminating in the highest sales figures in Q4. In contrast, the South region consistently recorded the lowest sales throughout the year.

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



The chart clearly shows a linear relationship between sales and discount over the years, with 2017 having the highest sales and discounts compared to previous years.