Project Description:

"In this project, we harness the power of data visualization using Power BI to unlock the insights hidden within the Sample Superstore dataset. The Sample Superstore dataset, a rich repository of sales and customer information, serves as the foundation for our exploration. Our main objective is to address 30 unique scenarios by creating visually impactful graphs and dashboards that not only answer specific questions but also reveal patterns and trends, ultimately aiding in strategic decision-making for the superstore."

Problem Statement:

"While the Sample Superstore dataset contains a trove of information, the challenge lies in extracting actionable insights from the data. The current lack of a systematic analysis hinders the ability to make informed decisions. This project aims to fill this gap by employing Power BI to answer 30 scenario-based questions. Through interactive visualizations, we intend to not only provide answers but also offer a nuanced understanding of the underlying dynamics, enabling stakeholders to navigate the complexities of the Sample Superstore data and make data-driven decisions with confidence."

Dataset Link: Sample - Superstore Sales (Excel).xls

Questions:

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

Sum of Sales by Category
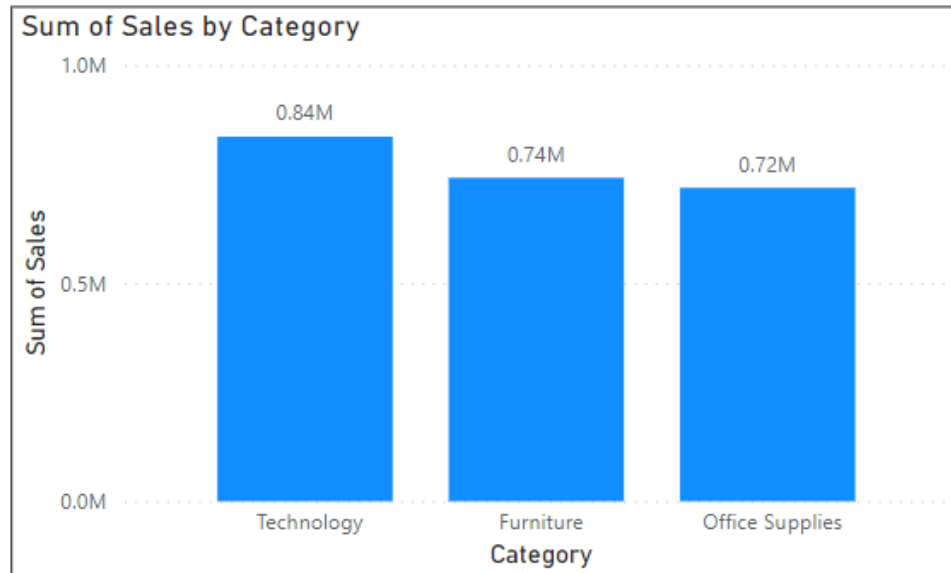
Insights:

- The "Technology" product category records the highest total sales, i.e 0.84 Million followed by "Furniture" and "Office Supplies" categories having 0.74 Million and 0.72 Million respecitively.
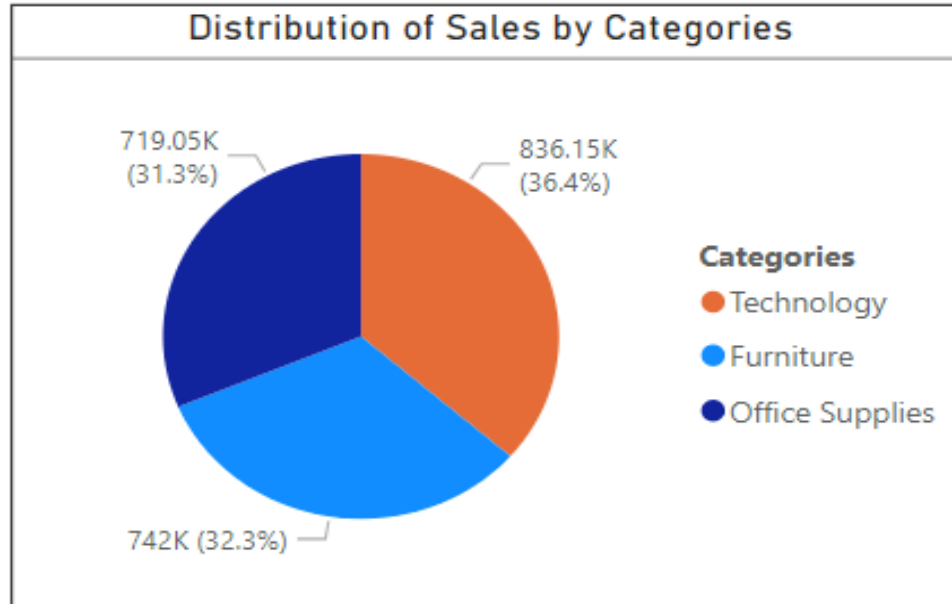
2. How do the monthly sales amounts change over the course of a year?

Sales vs Month for 2014
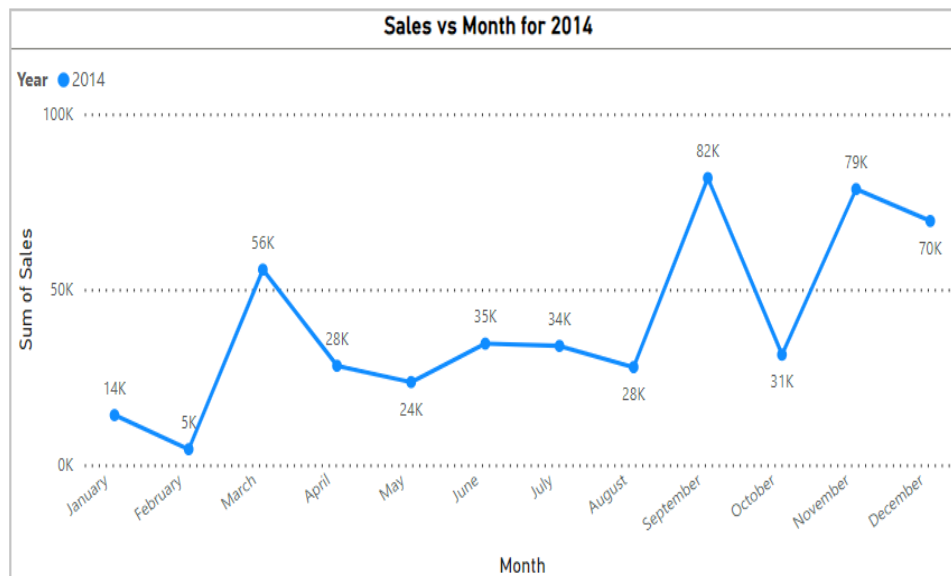
Insights:

- The monthly sales show an upward trend from their previous month in months like March, June, September and November recording the highest sales in the month of September, i.e 82000 and lowest sales in the month of February, i.e 5000.

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

Distribution of Sales by Categories

719.05K (31.3%) — Office Supplies
836.15K (36.4%) — Technology
742K (32.3%) — Furniture

Categories
● Technology
● Furniture
● Office Supplies

Insights:
- Maximum distribution of sales amount lies in the "Technology" which captures 36.4% among the total sales from all categories.
- The "Furniture" sector acquires the second position in the sales distribution, i.e 32.3% followed by "Office Supplies" category, i.e 31.3%.

4. Can we analyze the sales performance of individual customers over time?
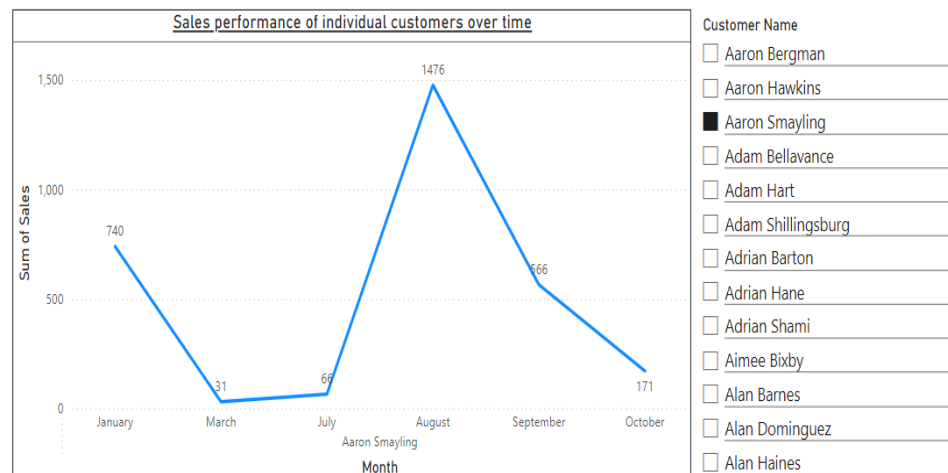
Insights:
- The above line chart precisely describes the sales performance of various customers over time.
- For example, here we can visualize the sales performance of customer name "Aaron Smayling", where we can see his highest sales performance in the month of August, i.e 1476 and lowest in March, i.e 31.
- Similarly by selecting various customer names we can see their individual sales performance over time.

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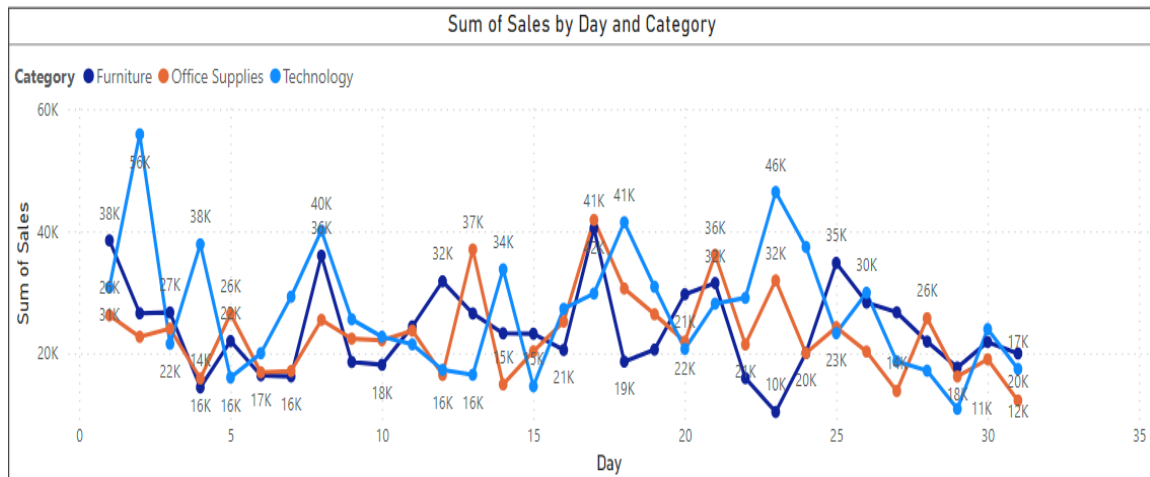
Insights:

- For the Furniture category the sales had the highest trend between 2nd and 4th day of 3rd week, i.e 41000 and lowest trend in between 2nd and 4th day of 4th week, i.e 10000.
- For the Office Supplies category the sales had the highest trend between 2nd and 4th day of 3rd week, i.e 42000 and lowest trend on the last day of 4th week, i.e 12000.
- For the Technology category the sales had the highest trend between 2nd and 4th day of 1st week, i.e approx. 56000 and lowest trend in between 1st and 2nd day of 5th week(28th to 29th of the month), i.e 11000.
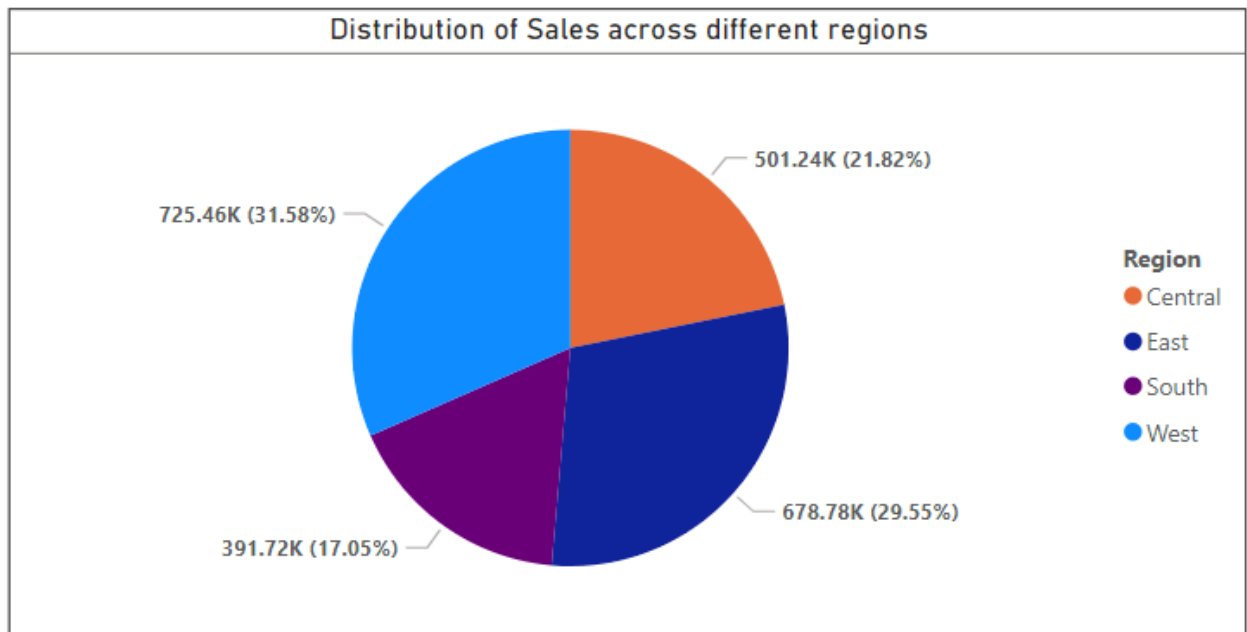
6. Can we visualize the sales growth of different product categories over time?
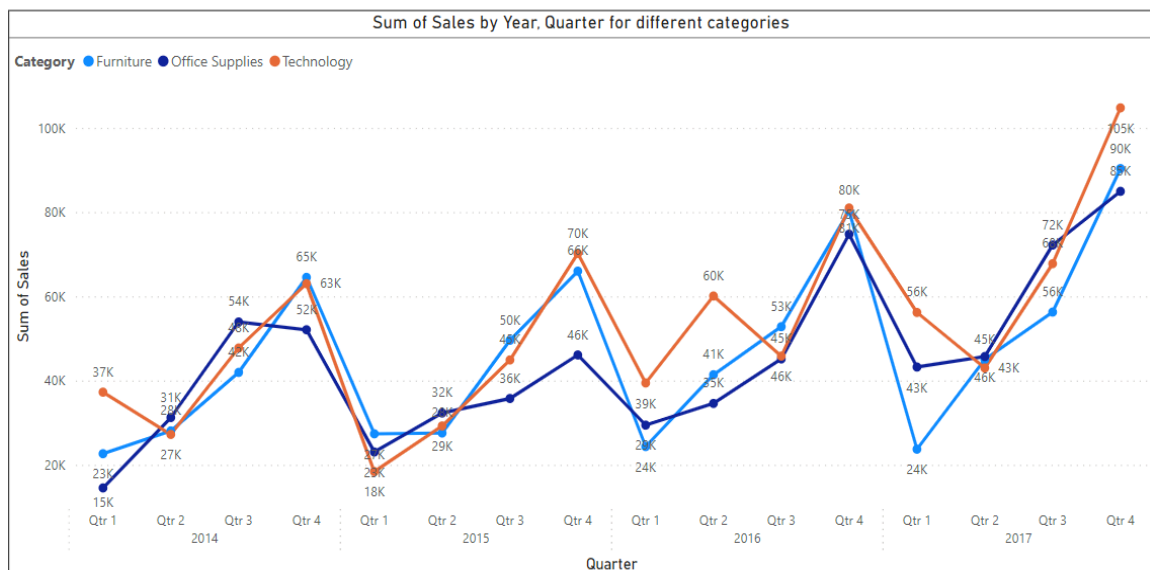
Insights:

- For the Furniture category, 4th Qtr of 2017 has marked the highest sales growth, i.e 90,000 while 1st Qtr of 2014 has marked the lowest sales, i.e 23000.
- Similarly, For the Office Supplies category, 4th Qtr of 2017 has marked the highest sales growth, i.e 85,000 while 1st Qtr of 2014 has marked the lowest sales, i.e 15000.
- For the Technology category, 4th Qtr of 2017 has marked the highest sales growth, i.e 105,000 while 1st Qtr of 2015 has marked the lowest sales, i.e 18000.

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

Distribution of Sales across different regions

501.24K (21.82%)
725.46K (31.58%)
678.78K (29.55%)
391.72K (17.05%)

Region
● Central
● East
● South
● West

Insights:
- The sales distribution has the maximum coverage western region, i.e 31.58% amounting to 725460 followed by the Eastern region having 29.55% coverage amounting to 678780.
- The Southern region has the lowest coverage of sales distribution, i.e 17.05% amounting to 391720.

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

Composition of profits across various subcategories within different customer segments
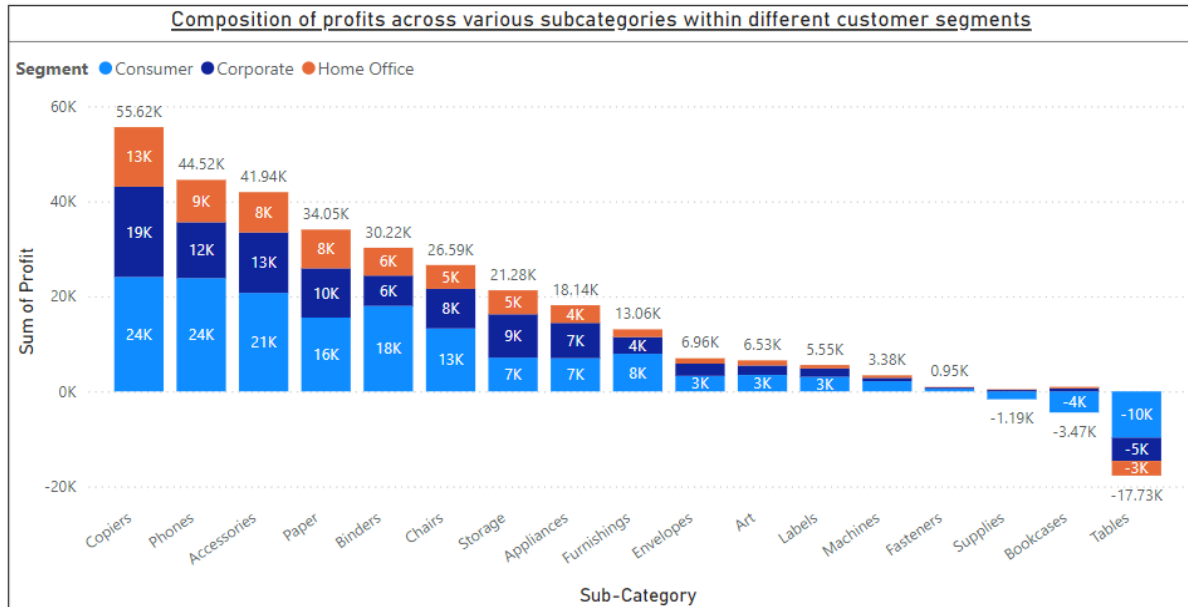
Insights:

- The above chart clearly displays the composition of profits across various subcategories within different customer segments.
- For example, in the Phones subcategory, maximum profit is coming from Consumer segment, i.e approx 24000 while Home office category has the minimum profit in that subcategory.
- Similarly, for the Tables subcategory, the profits are in negative, i.e loss. The consumer segment contributes to the major loss(approx 10000) while the Home office category also contributes to a minor loss of 3000.

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

Contribution of each region to overall sales
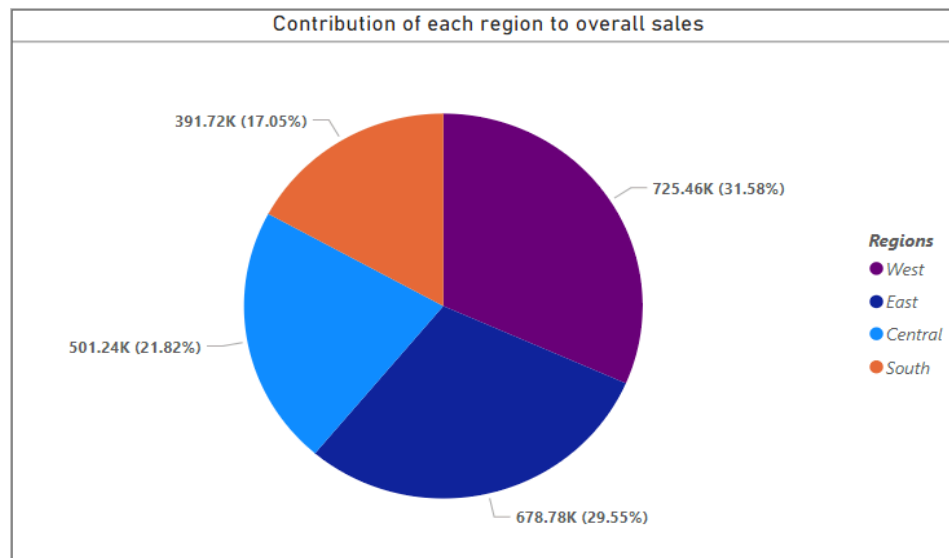
Insights:

- The maximum sales contribution is from western region, i.e 31.58% amounting to 725460 followed by the Eastern region having 29.55% coverage amounting to 678780.
- The Southern region has the lowest contribution in overall sales, i.e 17.05% amounting to 391720.

10. Can we visualize the profit margins associated with different shipping modes and customer segments?

Profit Margins for Shipping modes and Customer Segments
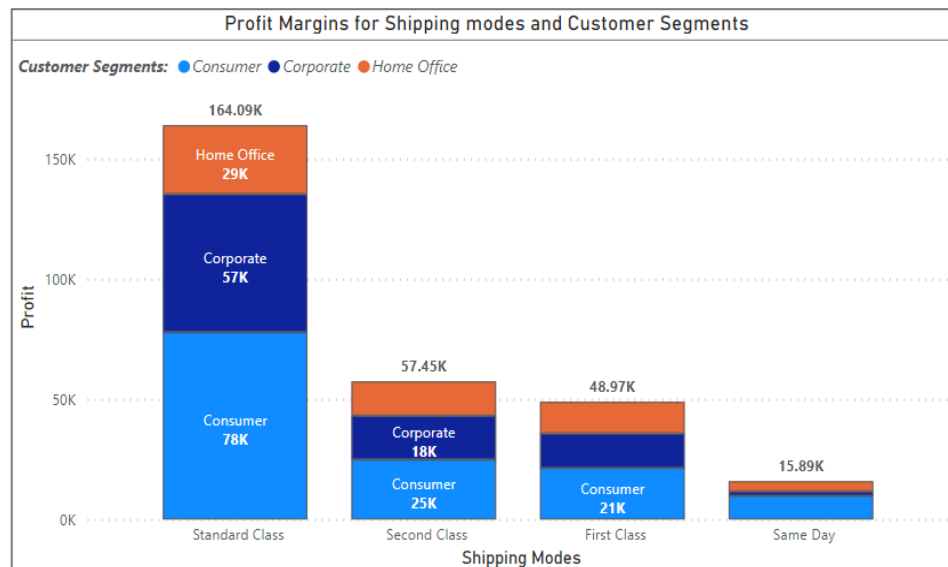
Insights:
- For Standard Class shipping mode, the total profit margin is approximately 164090, which comprises maximum profit coming from the consumer segment, i.e 78000 approx followed by corporate and Home office segments having profits 57000 and 29000 approximately.

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

Avg. Processing Time by Category and Sub-Category
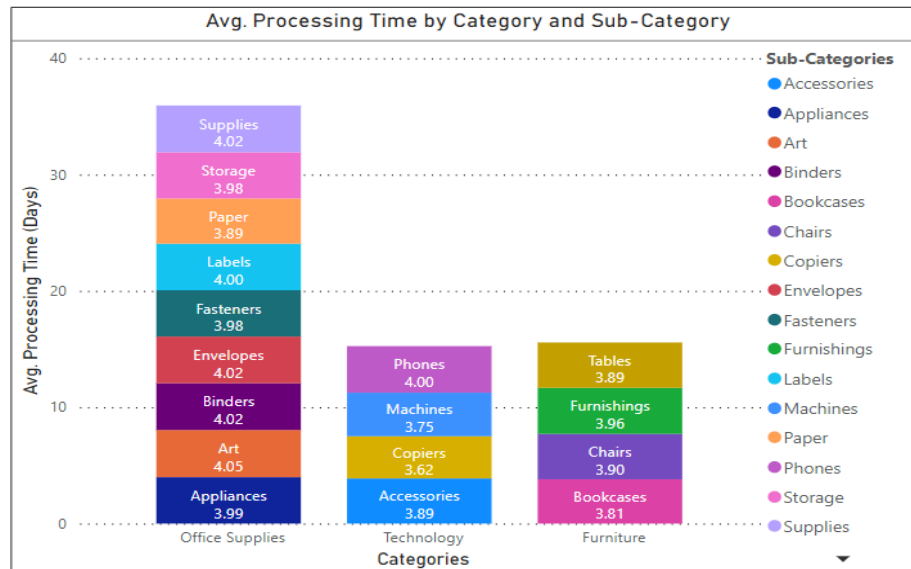
Insights:
- The above chart precisely displays the average processing time for each category at sub-category level.
- For example, for the Technology category the average processing time for Accessories category is 4 days approx.

12. How do discounts affect overall profit?

Profit Vs Discount for each quarter
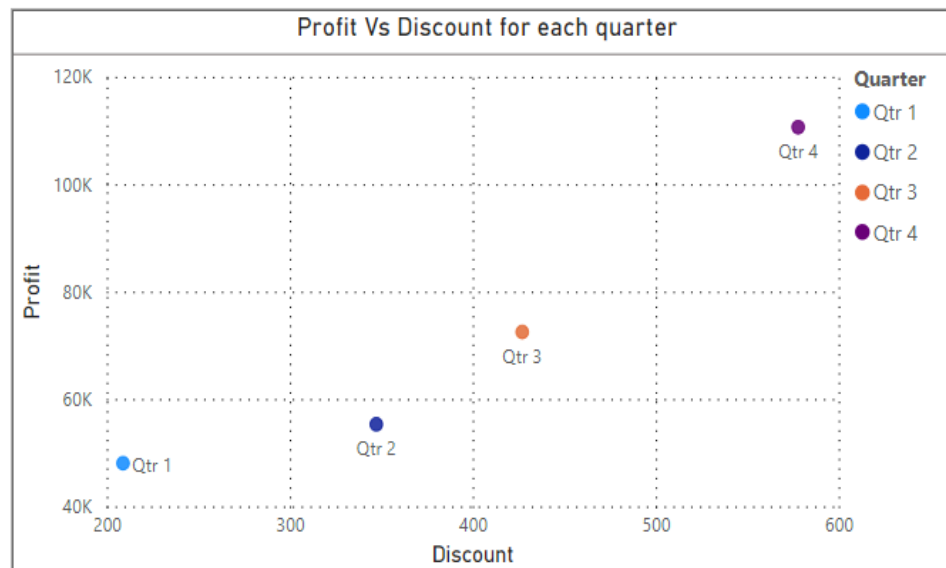
Insights:
- The above graph effortlessly depicts a positive correlation between Profits and discounts, i.e as the discount increases there is a net increase in the Profits for each quarter.

13. Can we visualize the relationship between product sales and profitability for different product categories?
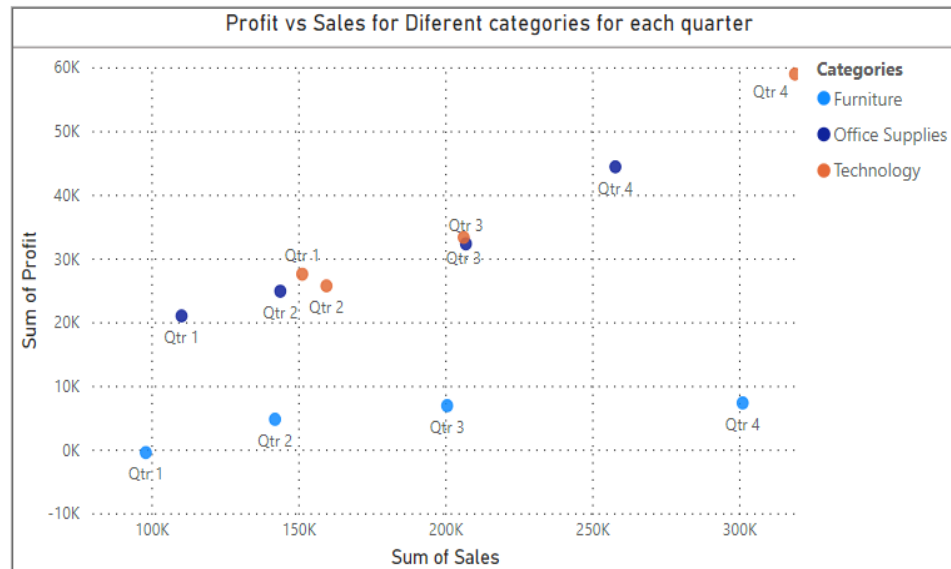
Insights:
- As clear from the above graph, there is a positive correlation between Profit and sales.
- For each category there is a net increase in the profit as the sales increase.
- Also, there is an exception in the Technology sector where the Profit decreases in the 2nd quarter even if the sales have increased.
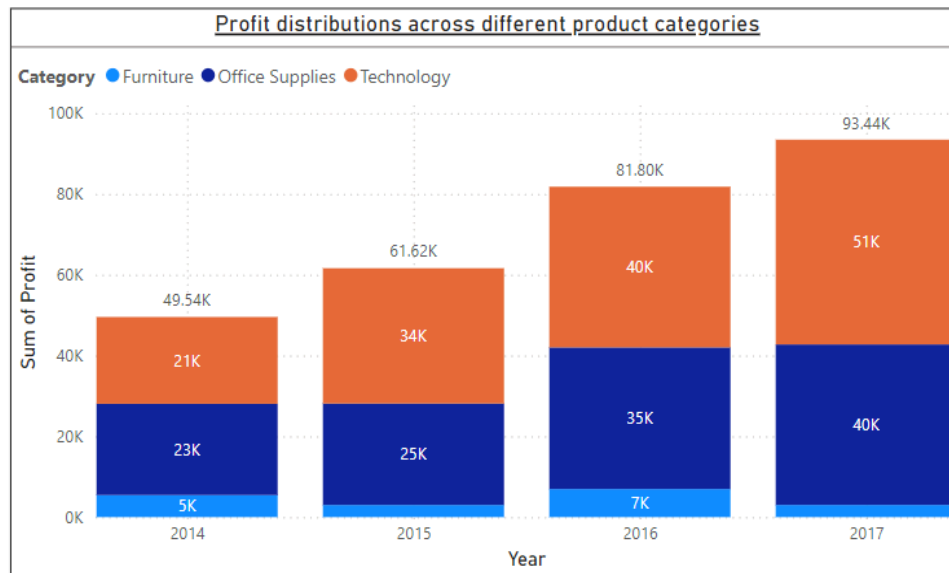
14. What is the distribution of order quantities for products in the dataset?
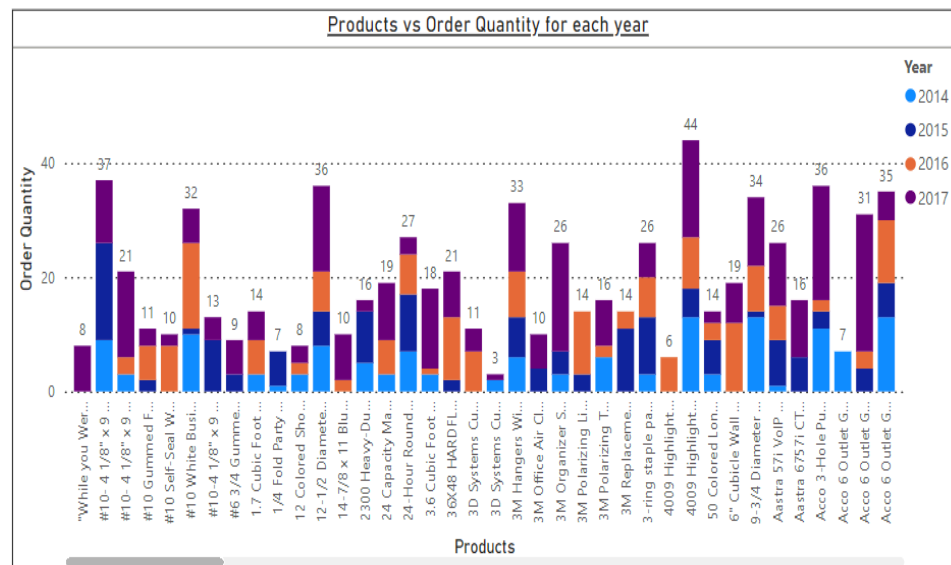
Insights:
- The above graph briefly describes the distribution of order quantities of all the products over the years 2014, 2015, 2016 and 2017.

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

Insights:
- The above graph briefly describes the profit distributions of various product categories for different years.
- For example, in the year 2016, the Technology sector comprised a profit of approx 40000 among the total profit made by all categories in that year. It was followed by the Office Supplies sector and the Furniture sector with profits 35000 and 7000 respectively.
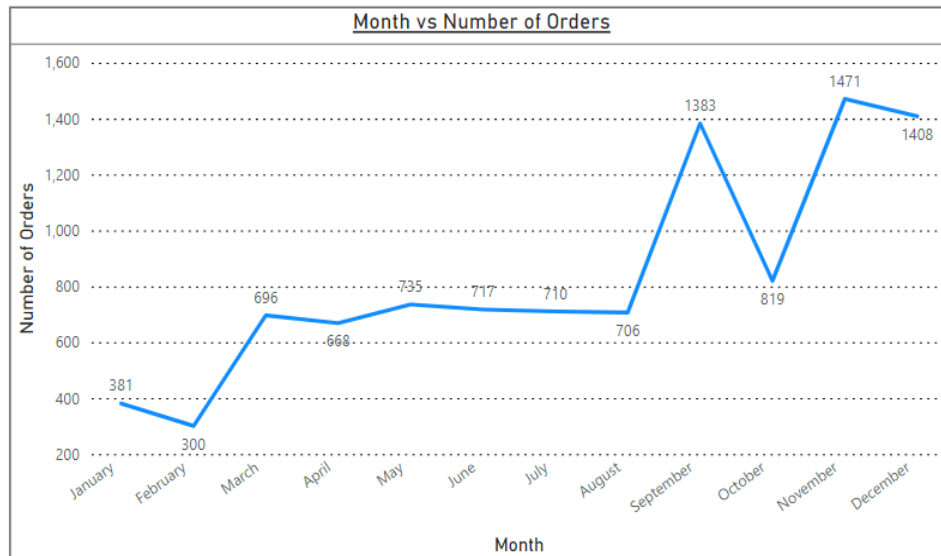
16. Can we compare the shipping time distributions for different shipping modes?
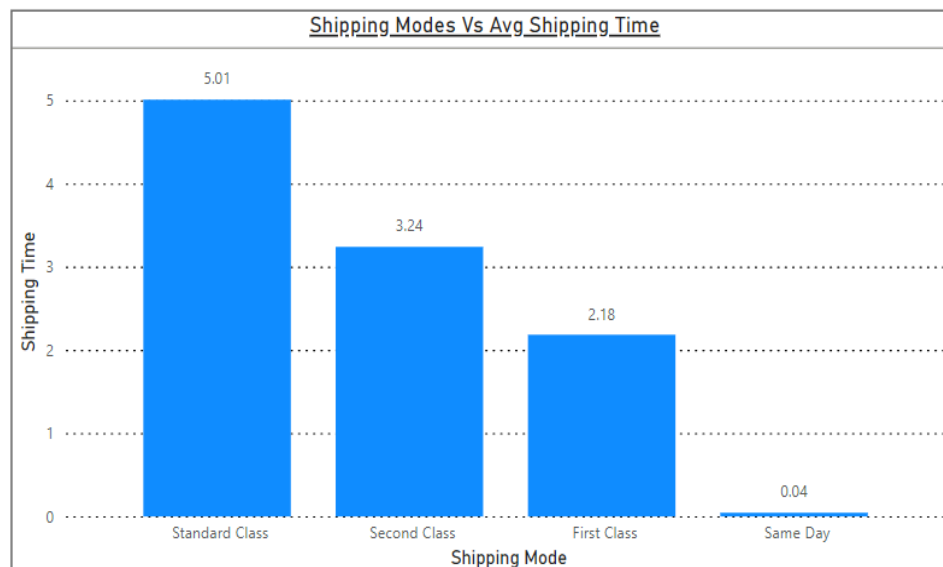
Insights:
- For the Standard class, the average shipping time is approx 5 days followed by Second class, First Class and Same day shipping modes having delivery time as 3, 2 and 0.04 days respectively.

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

Month vs Number of Orders

Insights:
- The highest trend in the number of orders shipped is seen in the month of November, i.e 1471 followed by December and September having 1408 and 1383 orders shipped.
- The lowest number of shipped orders are in the month of February, i.e 300.

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

Total Sales vs Discount for each Segement
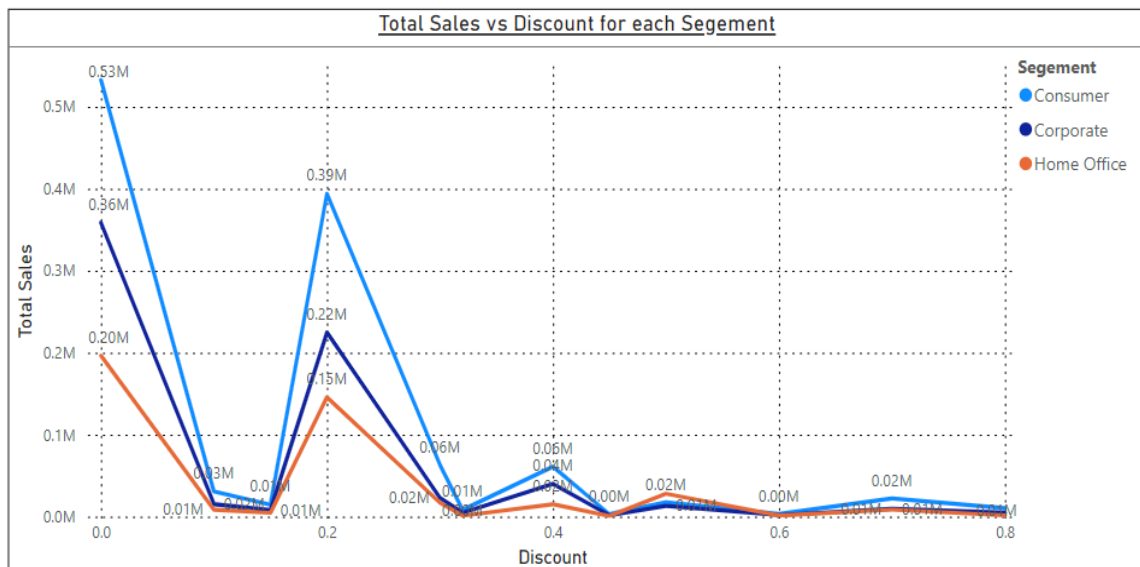
Insights:
- As shown from the graph, different customer segments have similar trends in terms of sales and discounts.
- All the segments have the highest sales at 0 discounts, followed by the 2nd highest sales at 20% discount,

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


Sales trend across different product sub-categories and regions

Profit trend across different product sub-categories and regions
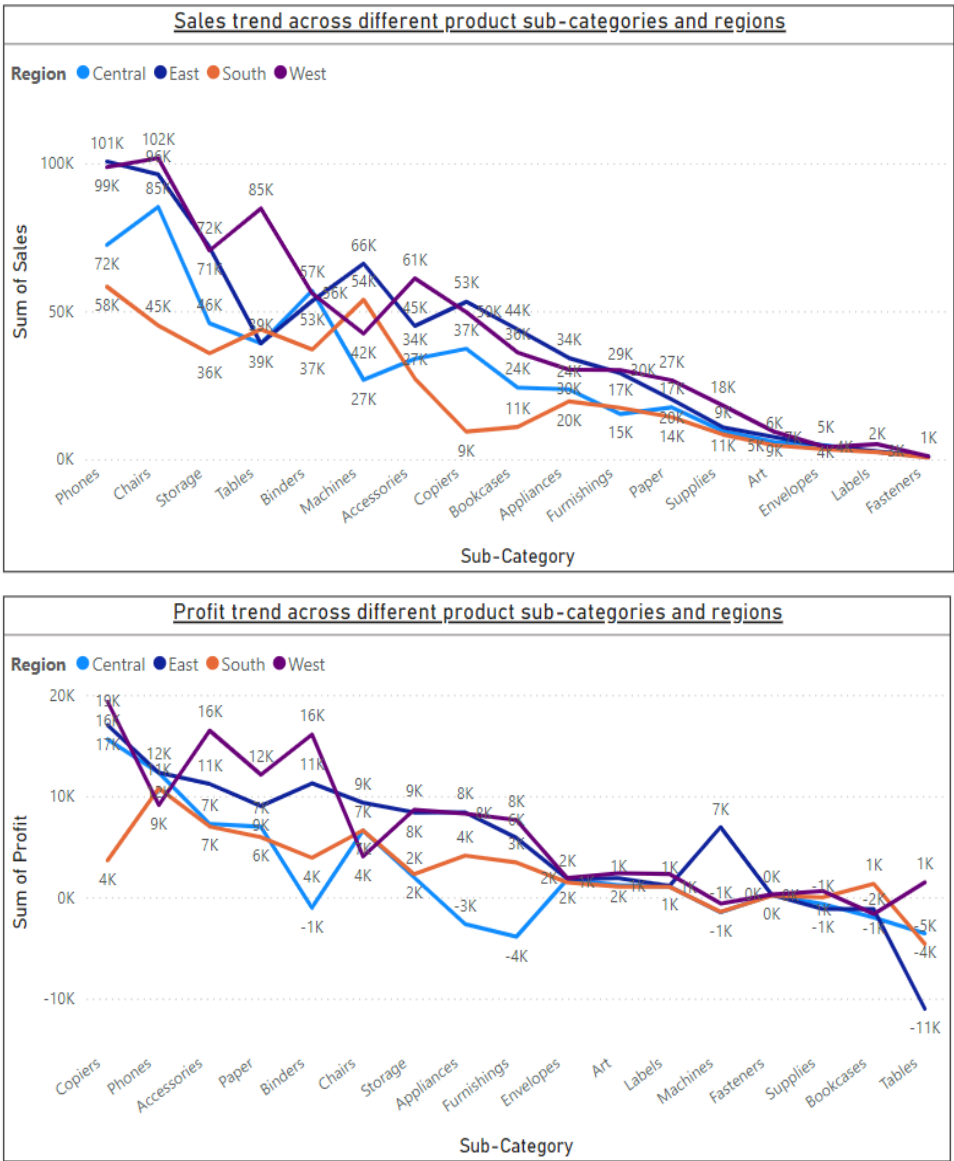
20. What is the average delivery duration for different regions and ship modes?

Shipping Modes vs Avg. Delivery Time for each Region
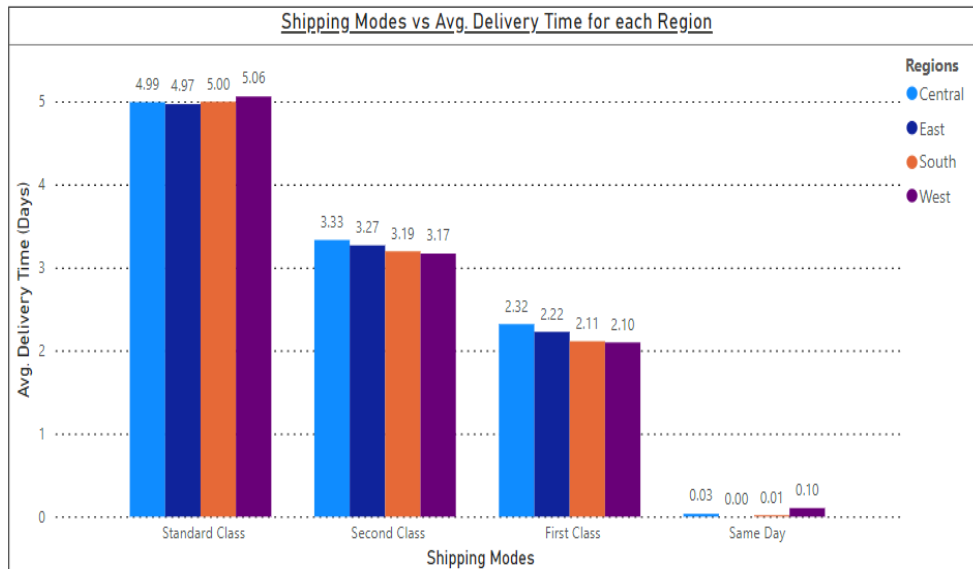
Insights:
- The above chart precisely describes the average delivery duration for different regions and ship modes.
- For example, for the Second class delivery mode, the average delivery duration for Central,East, South and Western regions are 3.33, 3.37,3.19 and 3.17 days respectively.

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

Product Categories vs Avg. Order Qty for Years
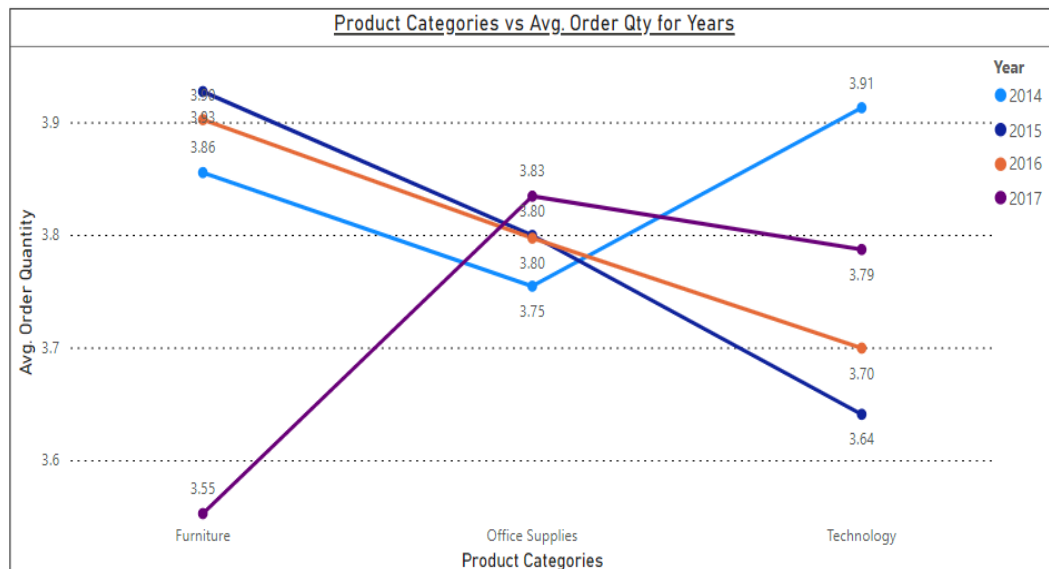
Insights:
- The above graph precisely visualizes change in the average order quantity over the years for various product categories.
- The average order quantity for the Furniture category over the years 2014, 2015, 2016 and 2017 are 3.86, 3.98, 3.93 and 3.55 respectively.

22. Can we visualize the correlation between discount rates and order quantities for different customer segments?
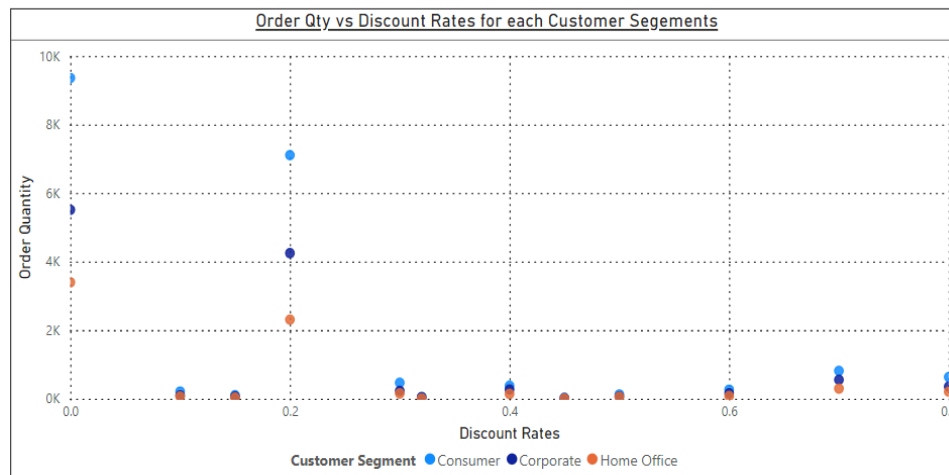
Insights:
- For all the three customer segments, i.e Consumer, Corporate and Home office, the maximum order quantities are at 0% discount rates followed by 20% discount.

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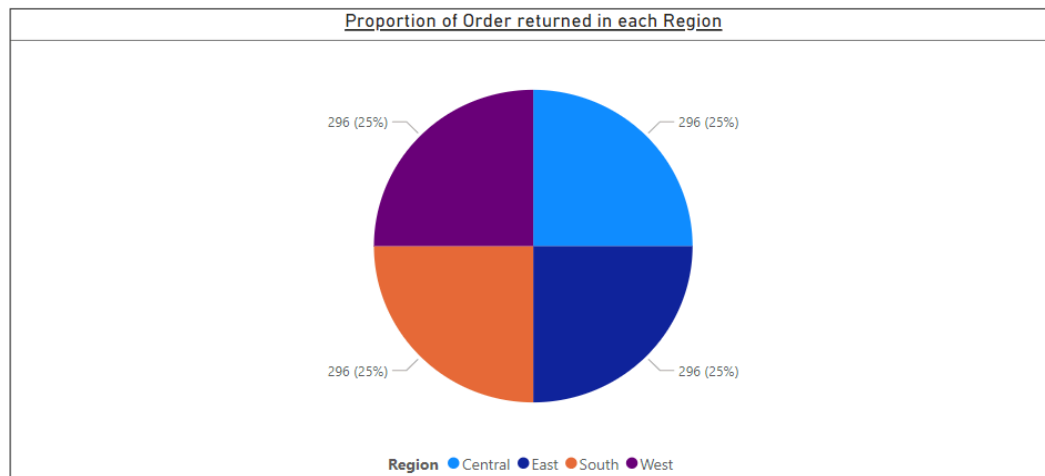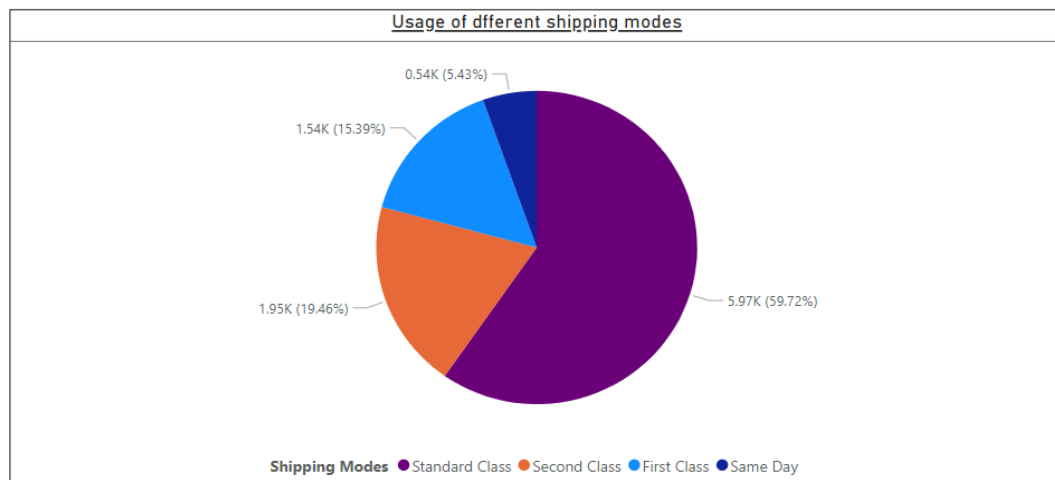

Insights:
- The above graph precisely visualizes the proportion of orders returned in each region.
- There is an equal proportion of orders returned from each region, i.e 25%.

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

Profit of different products for different subcategories
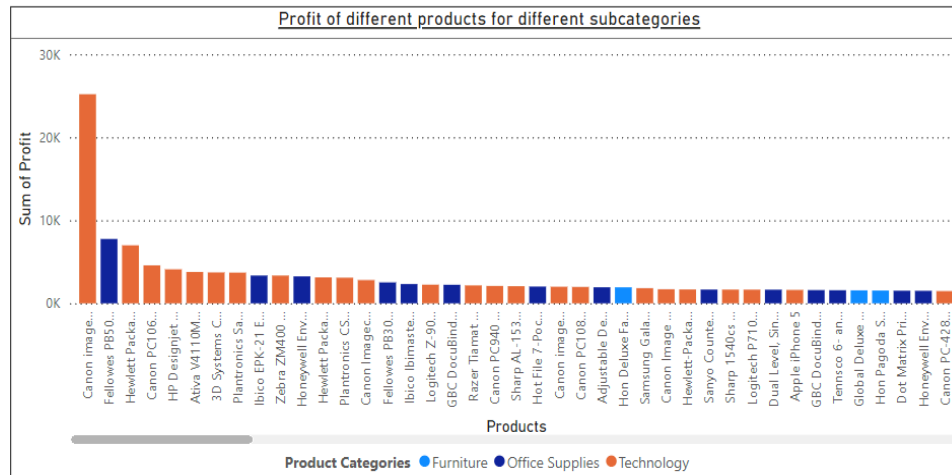
25. Which shipping mode is the most commonly used in the Sample Superstore dataset?

Usage of dfferent shipping modes

0.54K (5.43%)
1.54K (15.39%)
1.95K (19.46%)
5.97K (59.72%)

Shipping Modes ● Standard Class ● Second Class ● First Class ● Same Day

Insights:
- From the above chart it is obvious that the standard class shipping mode is most commonly used contributing to 60% out of the whole.
- Also, the same day shipping mode is the least used shipping mode, i.e 5.43%.

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

Evolvement of sales performance of different regions throughout the quarters of a year
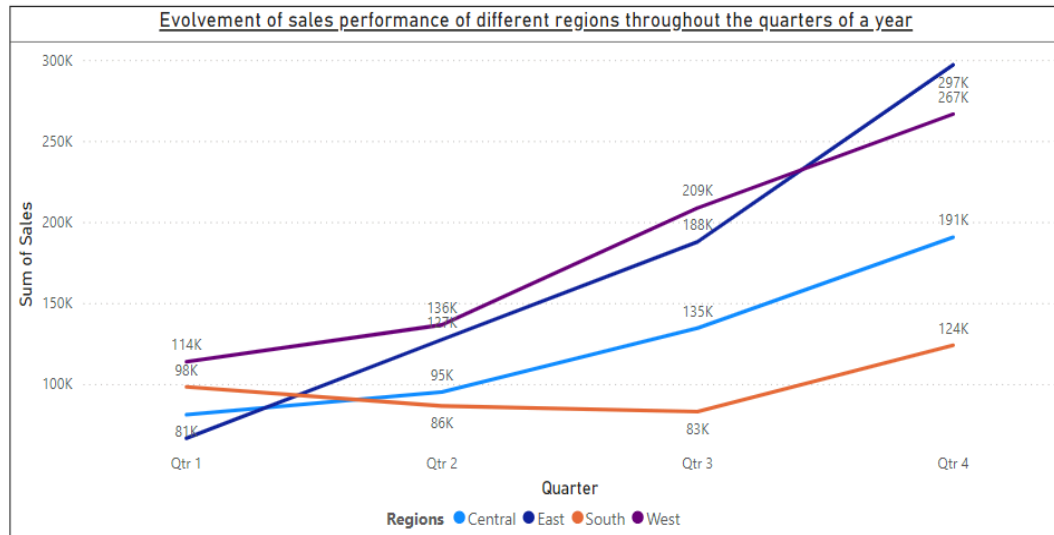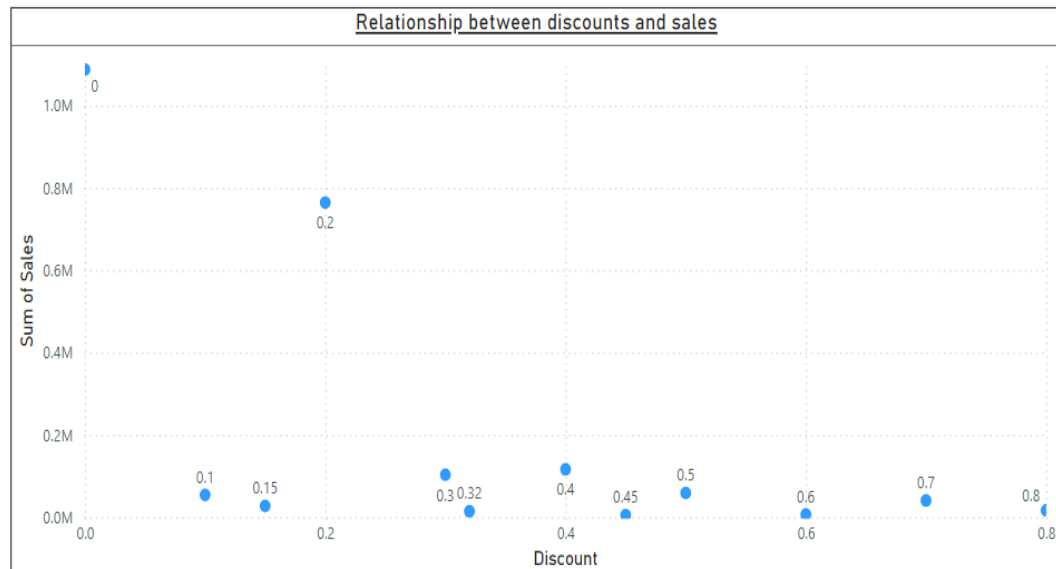
Insights:
- The above graph precisely visualizes the evolution of sales performance of different regions throughout the quarters of a year.
- For example, for the South region we can see a deficit in the sales amount in 2nd and 3rd quarters but the same increases in the 4th quarter up to 124000.

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

Distribution of order priorities across different product categories
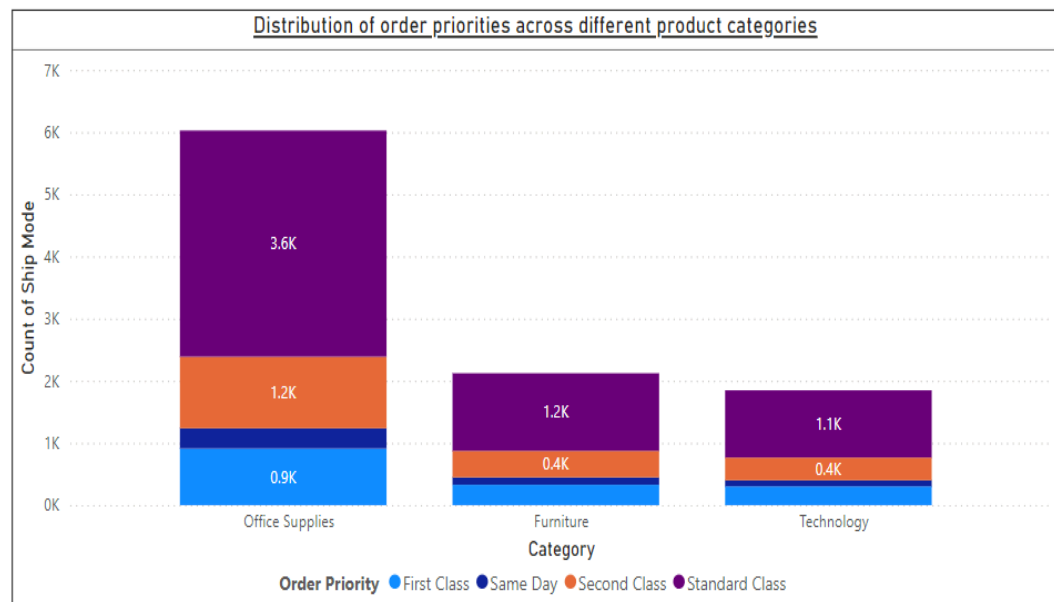
28. What is the relationship between discounts and sales?

Relationship between discounts and sales

Insights:
- The sales value is maximum when the discount is 0%.

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

Average order value Vs Customers
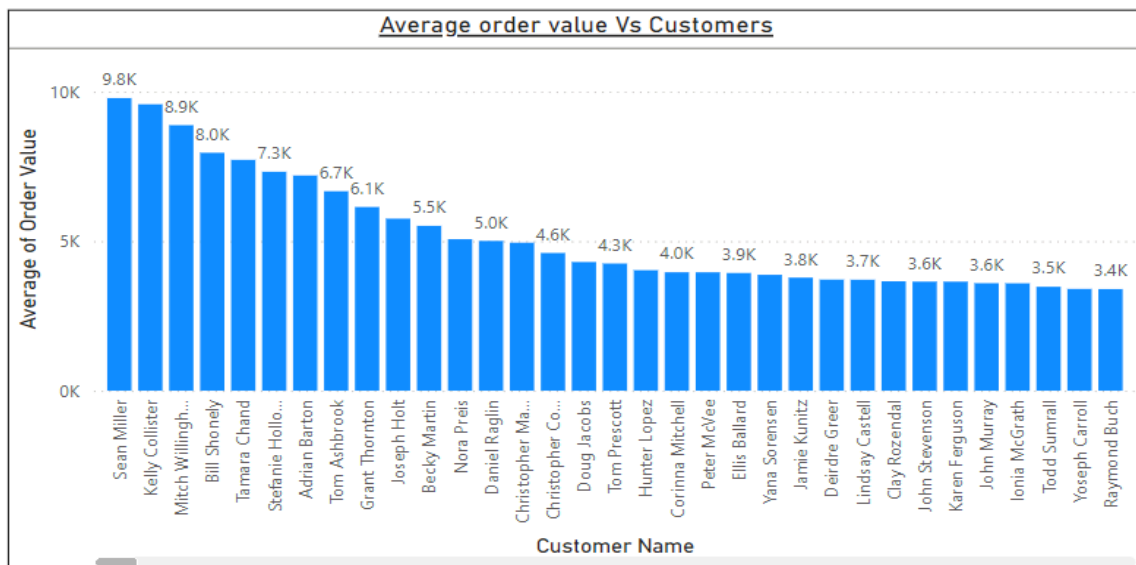
30. What is the geographical distribution of returns and its impact on overall profitability?

Geographical distribution of Returns

Impact of Returns on Profitability