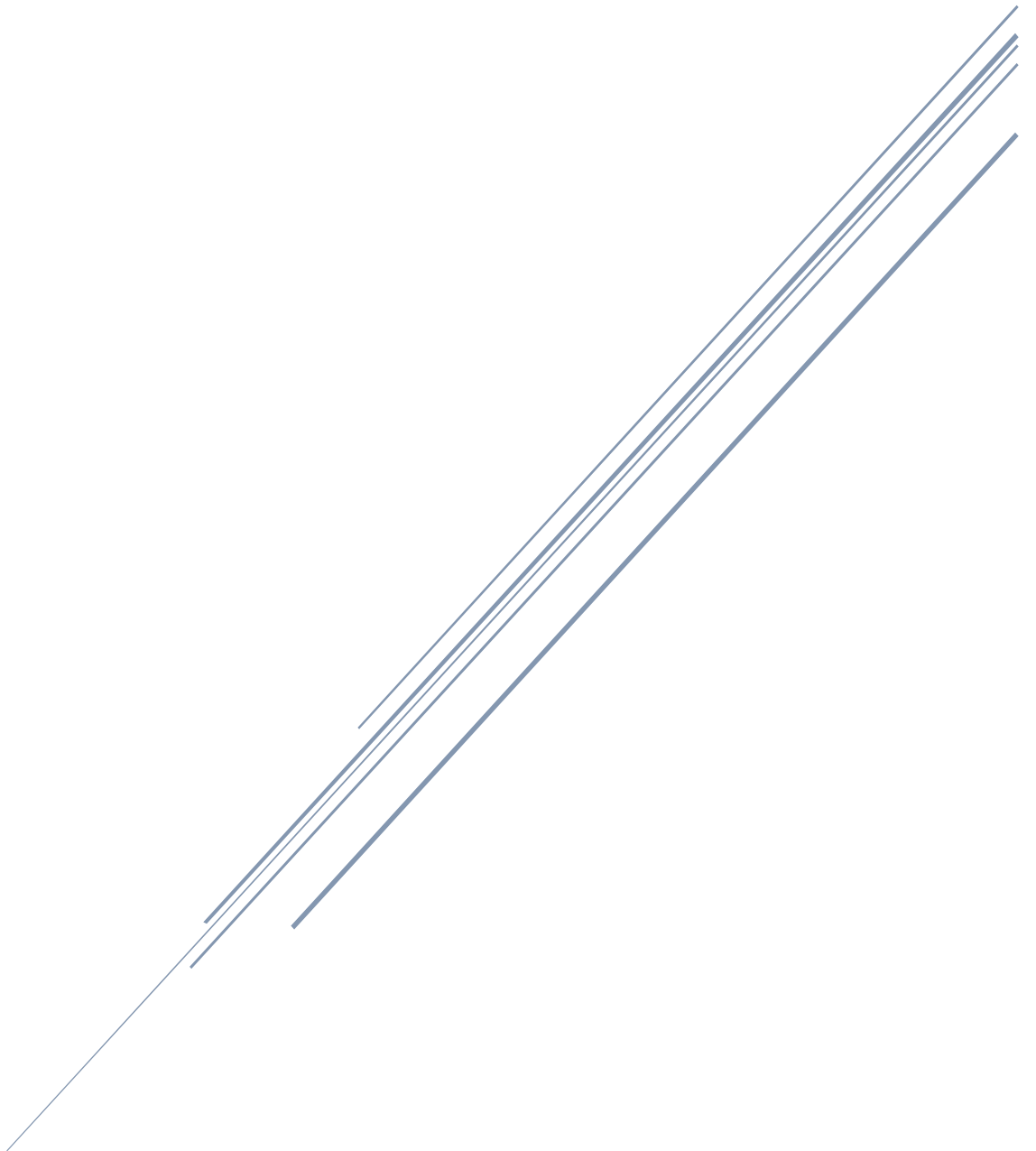Coursework submission

SALES DATA ANALYSIS

210131767 - ST2187 Business Analytics, Applied Modeling and Prediction

Agenda

Executive Summary

Dashboard: 1
- countries where the orders were shipped
- Correlation between sales and profit

Dashboard: 2
- Trend of total sales over time
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- Total Sales over time, with a filter for Category
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- Profit by Category, with color-coding by Segment

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- Sales and Profit over time, with a filter for region
- Profit by Sub-Category and Region, with a filter for Ship Mode

Dashboards Summery

Tableau Story

Executive Summary:

The goal of this project was to analyze sales and profit data for a company and provide actionable insights to improve performance. We explored various data attributes such as category, sub-category, region, ship mode, and time to gain insights.

Our analysis showed that technology had the highest sales and profit, while the central region with standard ship mode had the highest sales. Additionally, we observed that there was no correlation between sales and discounts, and profits varied over time with some periods experiencing losses.

To better understand the data, we created various visualizations including scatter plots, heat maps, line charts, and stacked bar charts. These visualizations helped us to better interpret the data and draw conclusions.

Overall, this project provides valuable insights and actionable recommendations for the company to improve sales and profitability.

Dashboard: 1 visuals

Most selling Countries

countries where the orders were shipped

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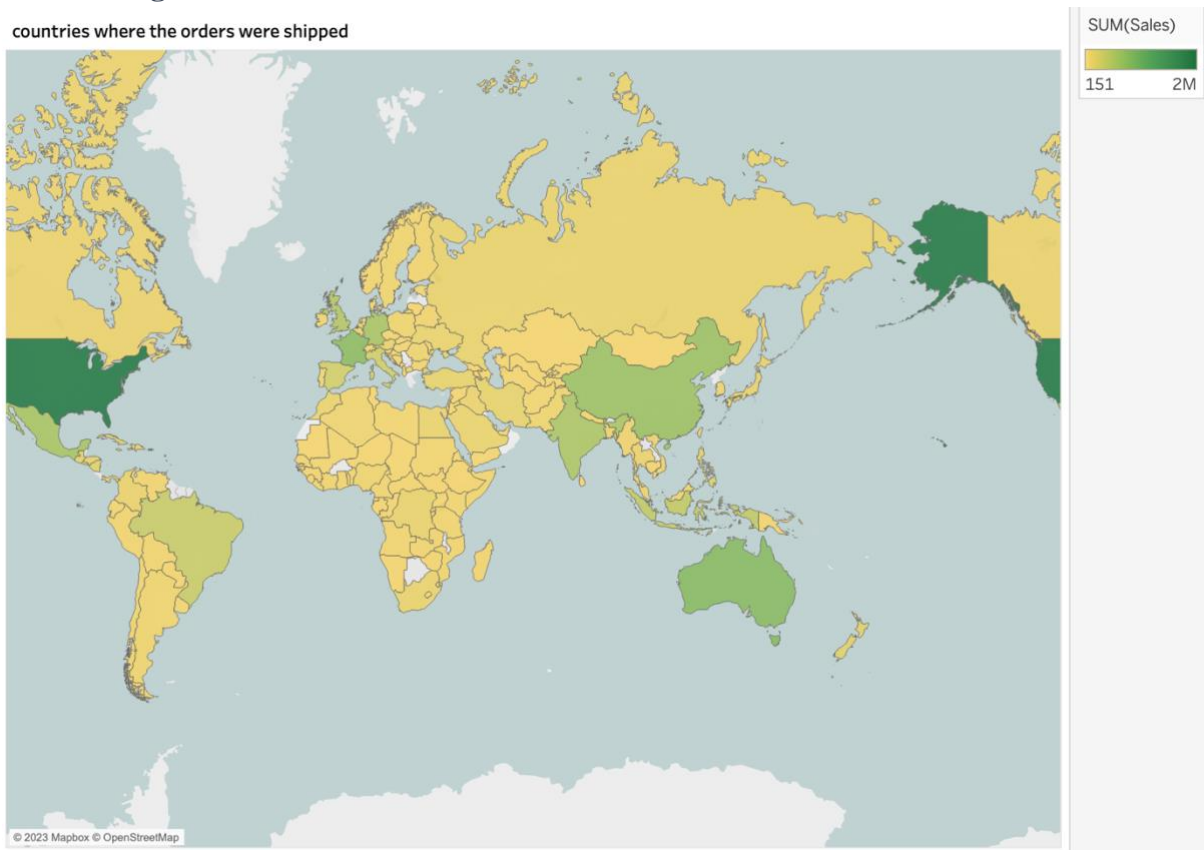
- Map showing the countries where the orders were shipped with color by the total sales for each country, it appears that the United States has the highest sales, followed by Australia and China. This could suggest that these three countries are the largest markets for your company's products or services.

- It would be helpful to further analyze the data to determine the reasons behind these sales patterns. Additionally, it may be useful to compare the sales data with other

metrics such as profit margins or customer demographics to gain a more comprehensive understanding of your company's global performance.

- Overall, the map visualization provides a clear and engaging way to identify patterns in your company's global sales data, but it is important to conduct further analysis to fully understand the underlying reasons behind these patterns.

Correlation between sales and profit
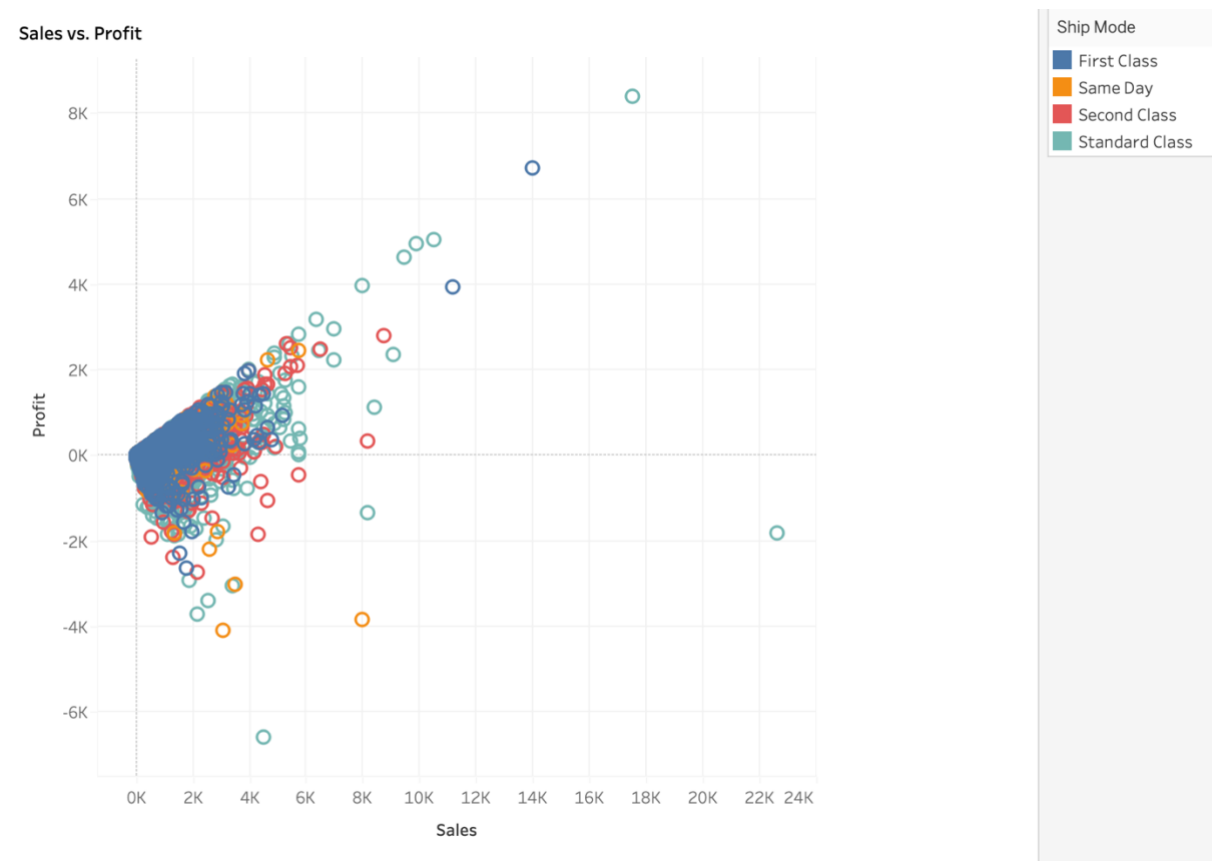
- A scatter plot of sales vs. profit with color-coding by ship mode is a great way to visualize the relationship between sales, profit, and ship mode. The scatter plot shows that there is a wide range of sales and profit values across all ship modes. However,

what stands out is the significant number of data points with negative profit values, particularly for the standard and second-class shipping modes.

- The presence of negative profit indicates that the cost of producing or acquiring the product was higher than the revenue generated from the sale. This could be due to various reasons, such as high production costs, high shipping and handling costs, or low product demand. Negative profit values are concerning because it indicates that the company is not generating sufficient revenue to cover its expenses and could lead to long-term financial difficulties.

- The scatter plot highlights the need for the company to address the negative profit values and find ways to increase revenue or decrease expenses in the affected areas. Additionally, the company should continue to monitor the relationship between ship mode and sales/profit to ensure that they are optimizing their shipping strategies for maximum profitability.

Dashboard: 2 visuals

Trend of total sales over time

Sales over time, with a filter for Category
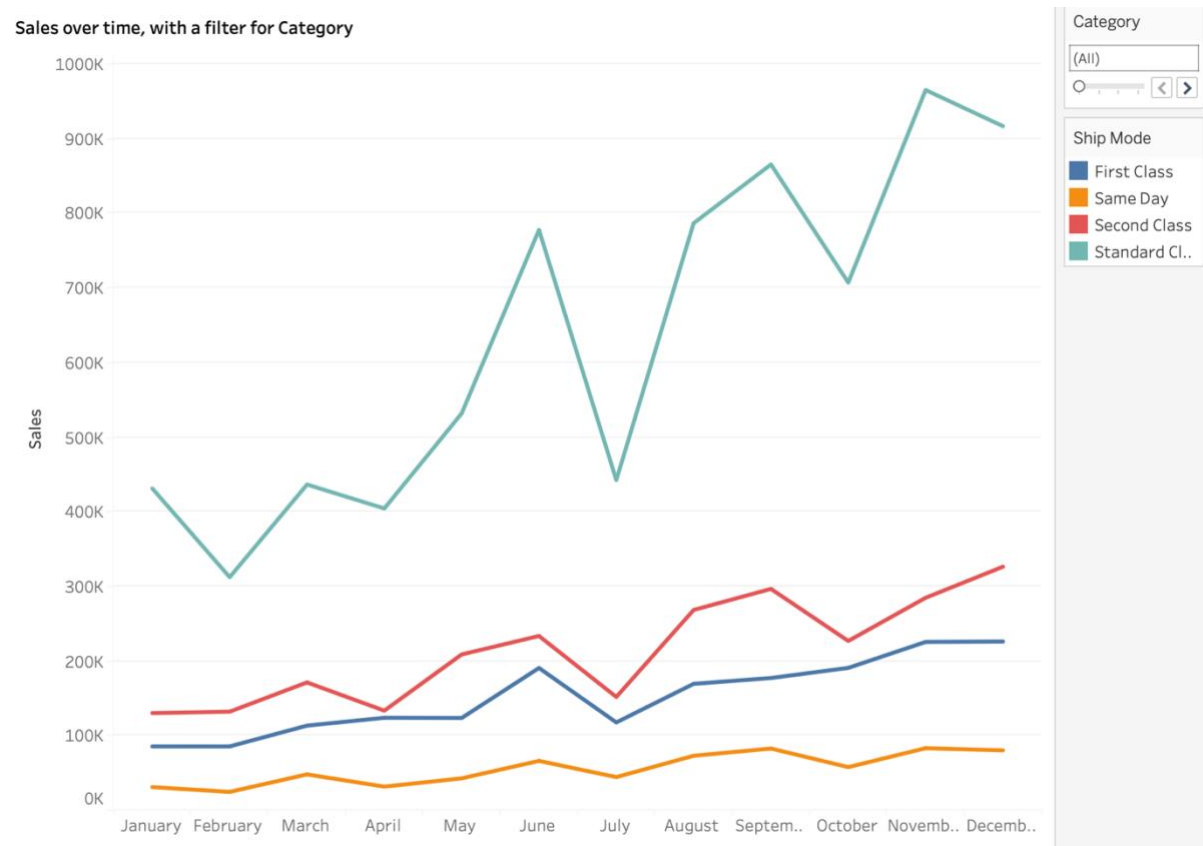
- The trend of total sales over time, we observed that the standard class consistently has the highest sales volume over the given time period. This indicates that customers prefer a balance between cost and delivery speed, as the standard class offers a reasonable shipping time at a competitive price.

- The second most popular shipping method is the second class, which is generally faster than standard class but at a higher cost. This suggests that customers are willing to pay a premium for faster delivery when it is necessary.

- Finally, the same-day class has the lowest sales volume, which may be due to its significantly higher cost compared to the other shipping methods. Customers may only choose this option when the need for immediate delivery outweighs the cost.

- This visualization indicates that customers value a balance between cost and speed when it comes to shipping, with standard class being the most popular choice.

Sales Of Region
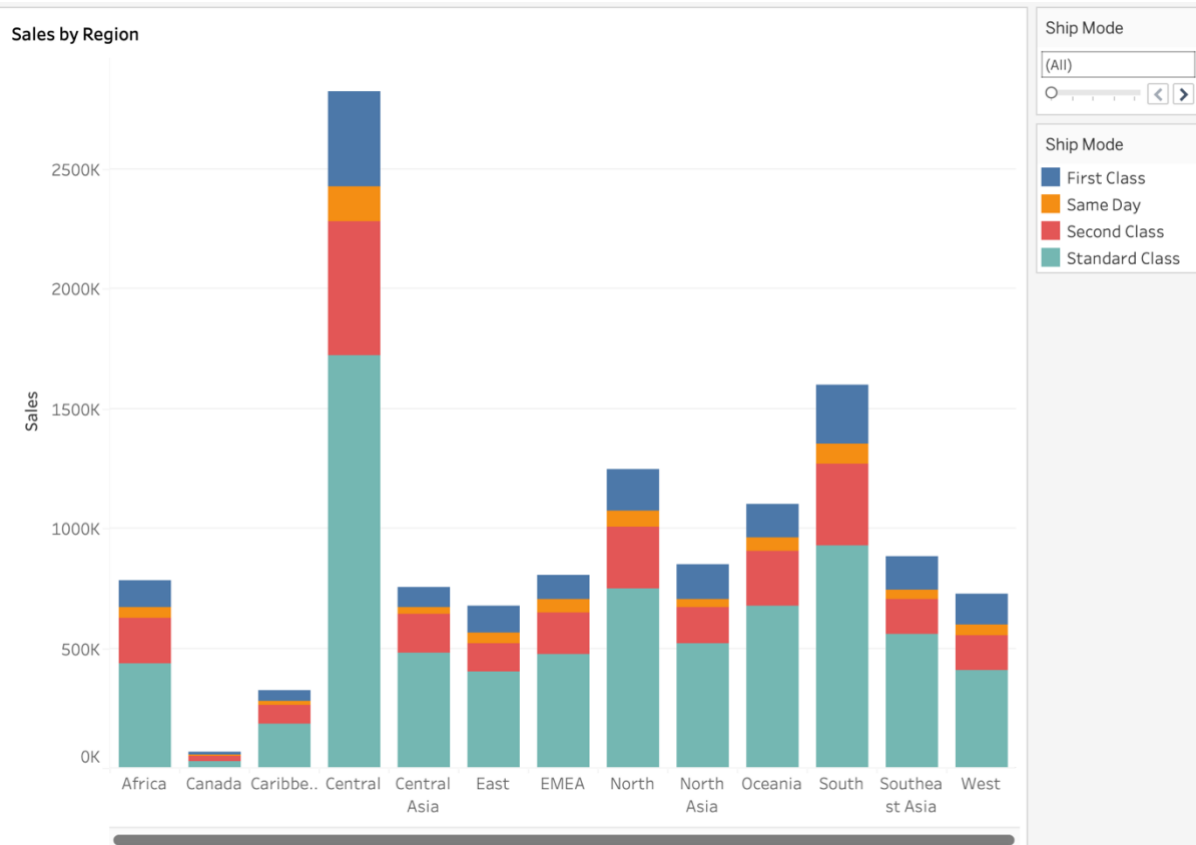
- The analysis of the stacked bar chart of sales by category and region, with a filter for ship mode, it can be inferred that the central region has the highest sales among all regions with the standard class shipping mode, followed by the south region. This suggests that there might be more demand for the products in the central and south regions compared to other regions.

- On the other hand, the Canada region has the lowest sales among all regions, which may indicate a lack of demand for the products in this region or insufficient marketing efforts to reach potential customers.

- Furthermore, this information can be useful for businesses to identify their popular product categories and tailor their marketing strategies accordingly to maximize their sales.

Dashboard: 3 visuals

Total Sales over time/Category
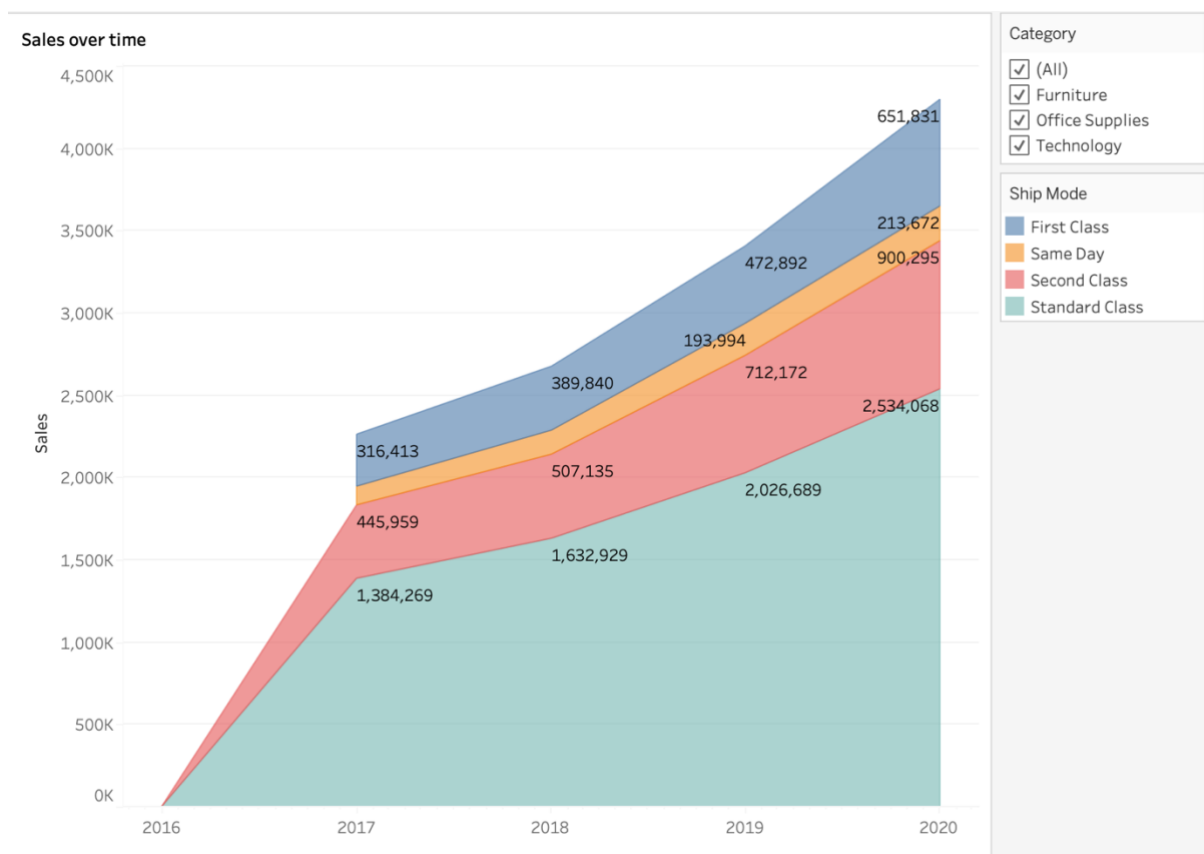
- Based on the analysis of the "Total Sales over time by category" visual, it can be observed that there are certain categories and shipping modes that are performing better than others. The fact that First class and Same-day shipping modes have the

highest sales could indicate that customers are willing to pay more for faster delivery options.

- Furthermore, the fact that Technology has the highest sales followed by Furniture and Office supplies suggests that these categories are more popular among customers. This information could be valuable for businesses to focus on these popular categories and offer competitive prices for these products.

- Finally, the lower sales for the Standard class mode could suggest that customers are not willing to pay the extra shipping costs associated with this mode. Businesses could consider offering discounted or free shipping options for standard class mode to incentivize more customers to purchase products in this mode.

Heatmap of Sales by Category and Sub-Category

Sales by Category and Sub-Category
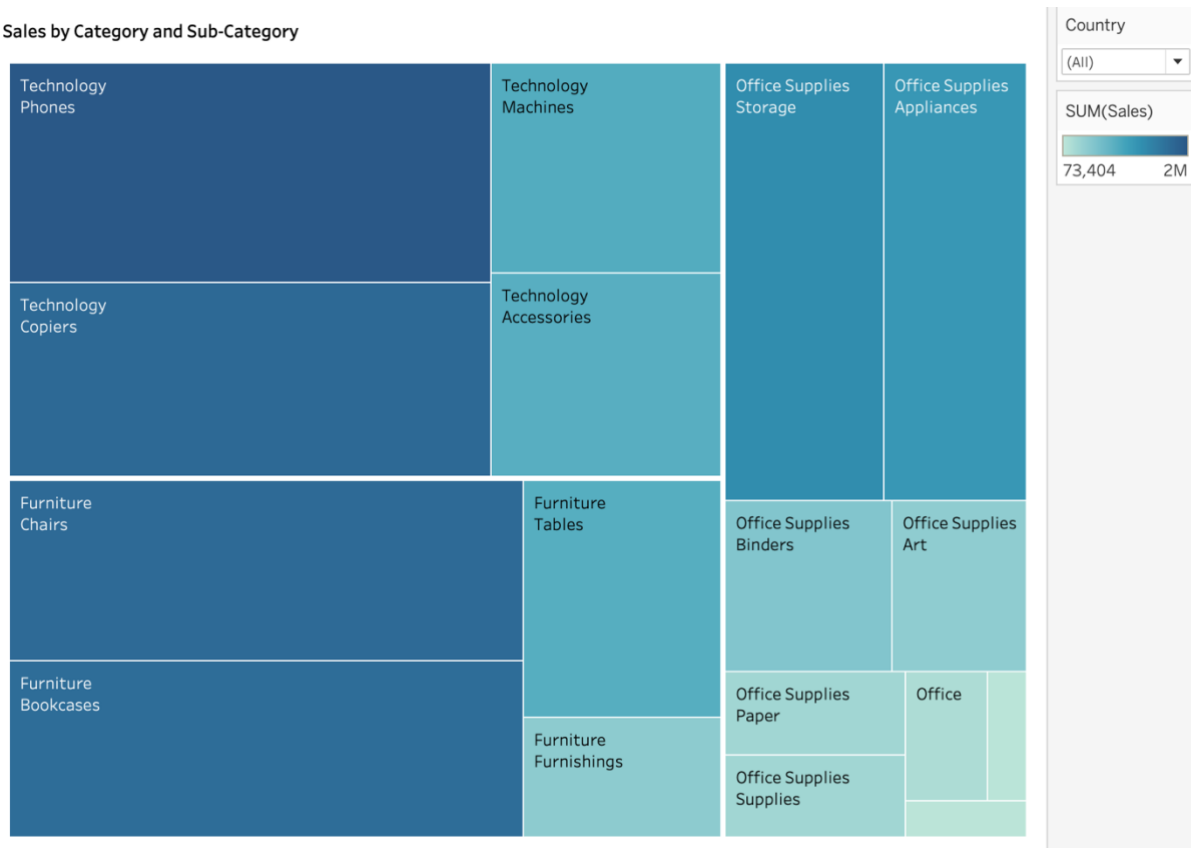
- Based on the analysis of the "Heatmap of Sales by Category and Sub-Category", we can observe that the category of technology is the highest-selling category overall. Among the sub-categories within the technology category, phones are the highest-selling sub-category followed by copiers and chairs.

- On the other hand, the category of furniture has the lowest overall sales, and the sub-category of labels has the lowest sales among all sub-categories.

- This heatmap also provides an interesting insight into the relative performance of different sub-categories within each category. For instance, within the office supplies category, labels and envelopes have relatively low sales compared to paper and storage.

- By visualizing the sales data in this way, we can identify the high-performing and low-performing categories and sub-categories, which can inform business decisions on where to focus resources and marketing efforts to maximize sales and profitability.

Dashboard: 4 visuals

Sales vs. Discount, with color-coding by Category
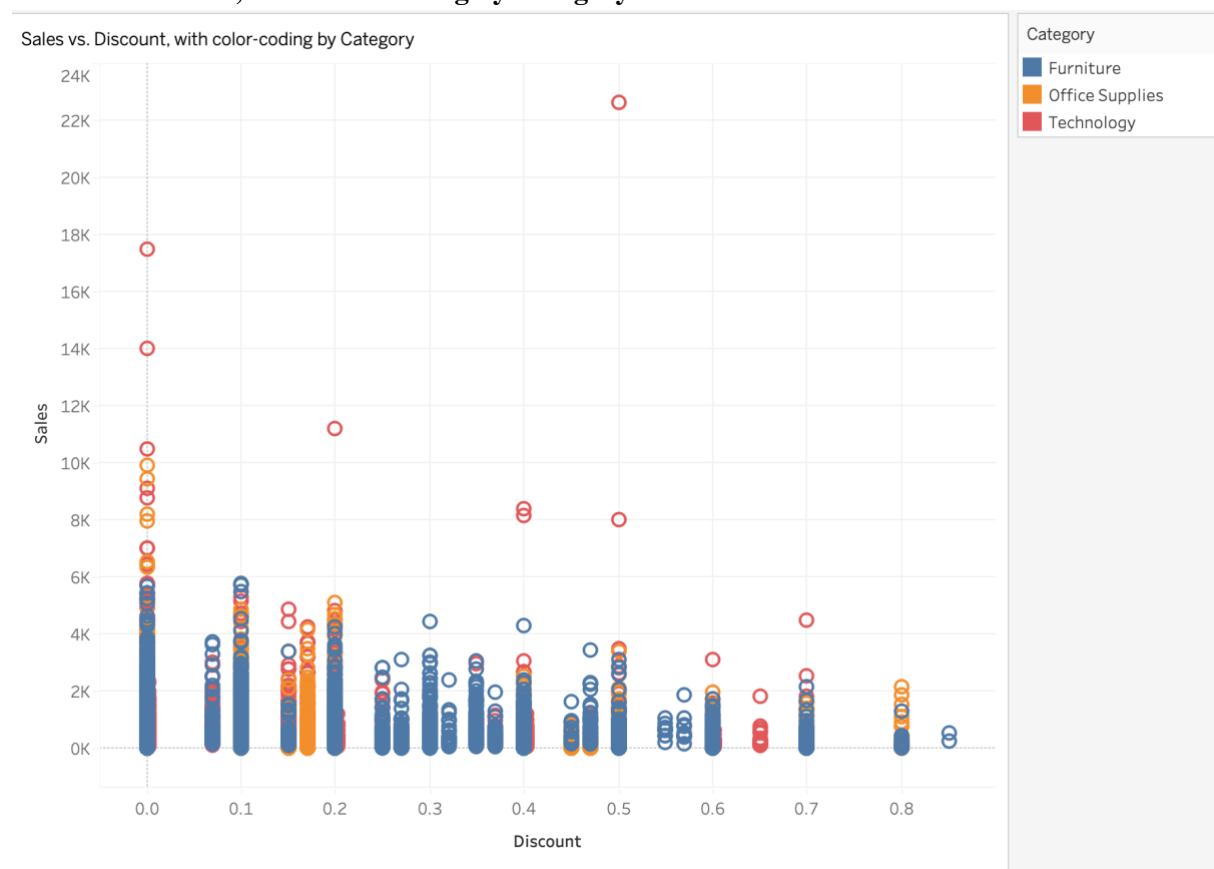
- In this case, if there's no correlation, we would expect to see a scatter plot where the points are evenly distributed without any clear pattern or trend. The color-coding would also show a random distribution of colors without any particular grouping or clustering.

- It's important to note that even if there's no correlation between Sales and Discount, it doesn't necessarily mean that discounts are not effective in driving sales. There

could be other factors that influence sales, such as product quality, marketing, and customer service.

- In summary, the scatter plot of Sales vs. Discount with color-coding by Category shows that there's no clear correlation between the two variables, and the points and colors are randomly distributed.

Profit by Category, with color-coding by Segment

Profit by Category, with color-coding by Segment
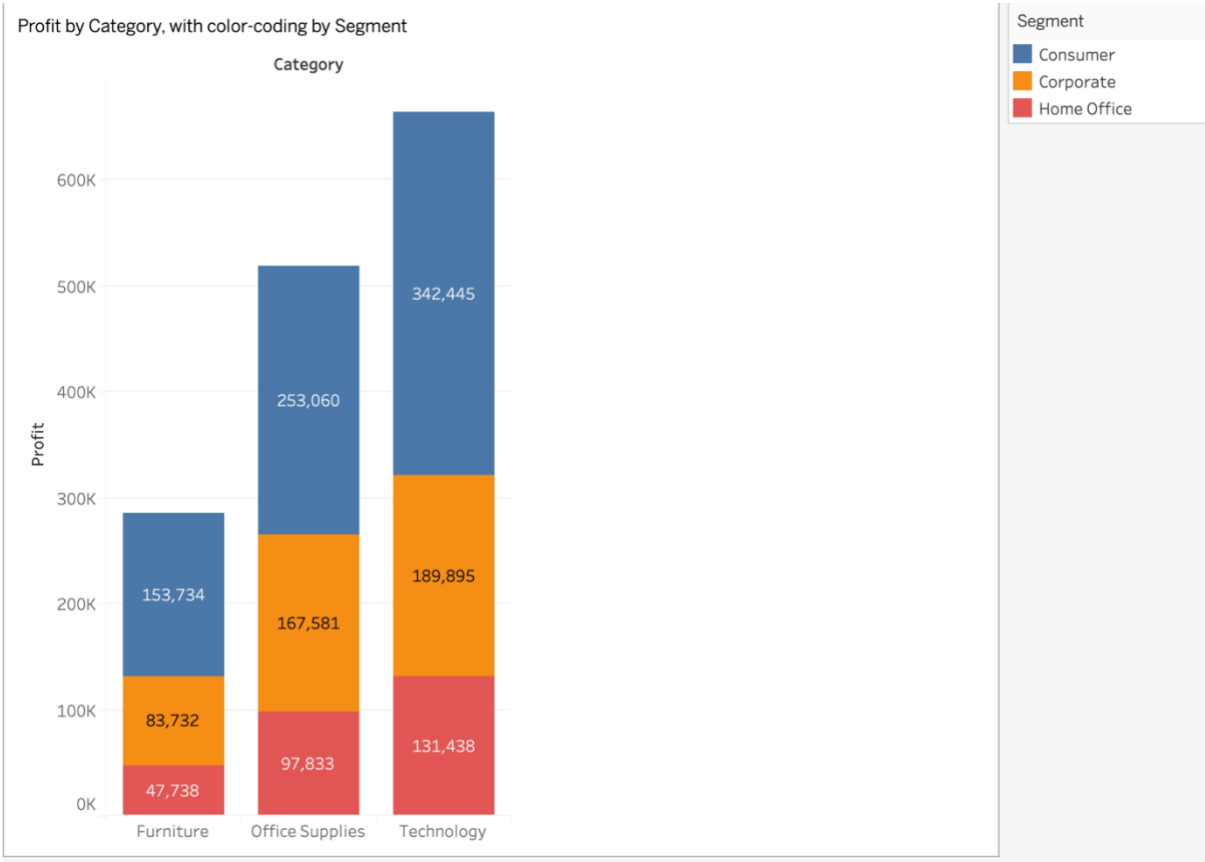
- The visualization shows the total profit generated by each product category, with the segments (Consumer, Corporate, and Home Office) color-coded. From the visualization, we can see that the Technology category has the highest total profit, followed by Office Supplies and Furniture.

- When we look at the color-coding by segment, we see that the Consumer segment has the highest profit for all three categories, followed by Corporate and Home Office. This suggests that the company should focus more on the Consumer segment to increase profits.

- Overall, the visualization highlights the importance of understanding which product categories and segments are driving the most profit for the company, and can help inform strategic decisions on where to allocate resources and focus efforts for future growth.

Dashboard: 5 visuals
Sales and Profit over time, with a filter for region

Sales and Profit over time, with a filter for Region and color-coded lines for each Category
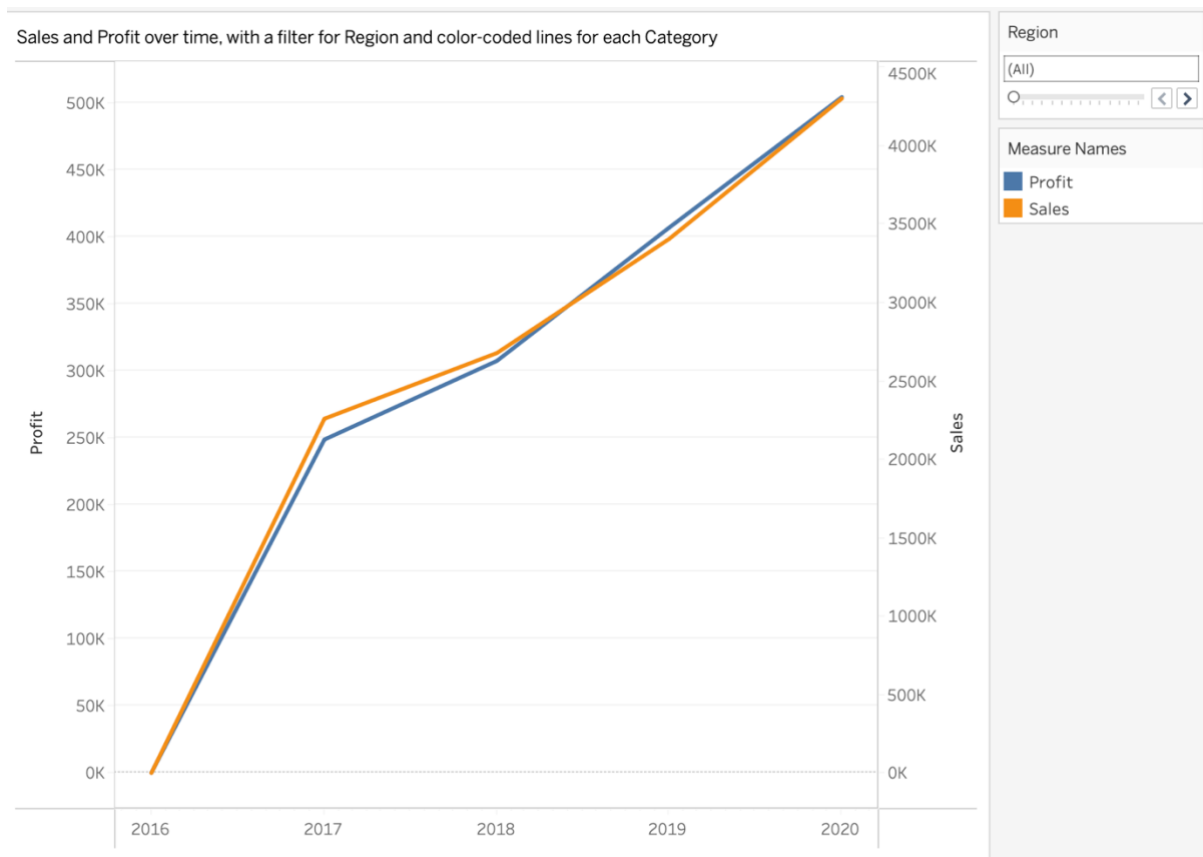
- Based on above analysis, it seems that the profit is not consistent over time and varies for different regions. The line chart shows that there are periods of profit and loss for each region.

- This indicates that there might be various factors affecting the profitability of the business, such as changes in market demand, competition, economic conditions, or even internal factors such as production costs or pricing strategies.

- To better understand these fluctuations, it may be useful to investigate these factors further and identify potential opportunities for improving profitability. For example, identifying the most profitable products, markets, or sales channels, or optimizing production or pricing strategies to reduce costs and increase revenue.

Profit by Sub-Category and Region, with a filter for Ship Mode
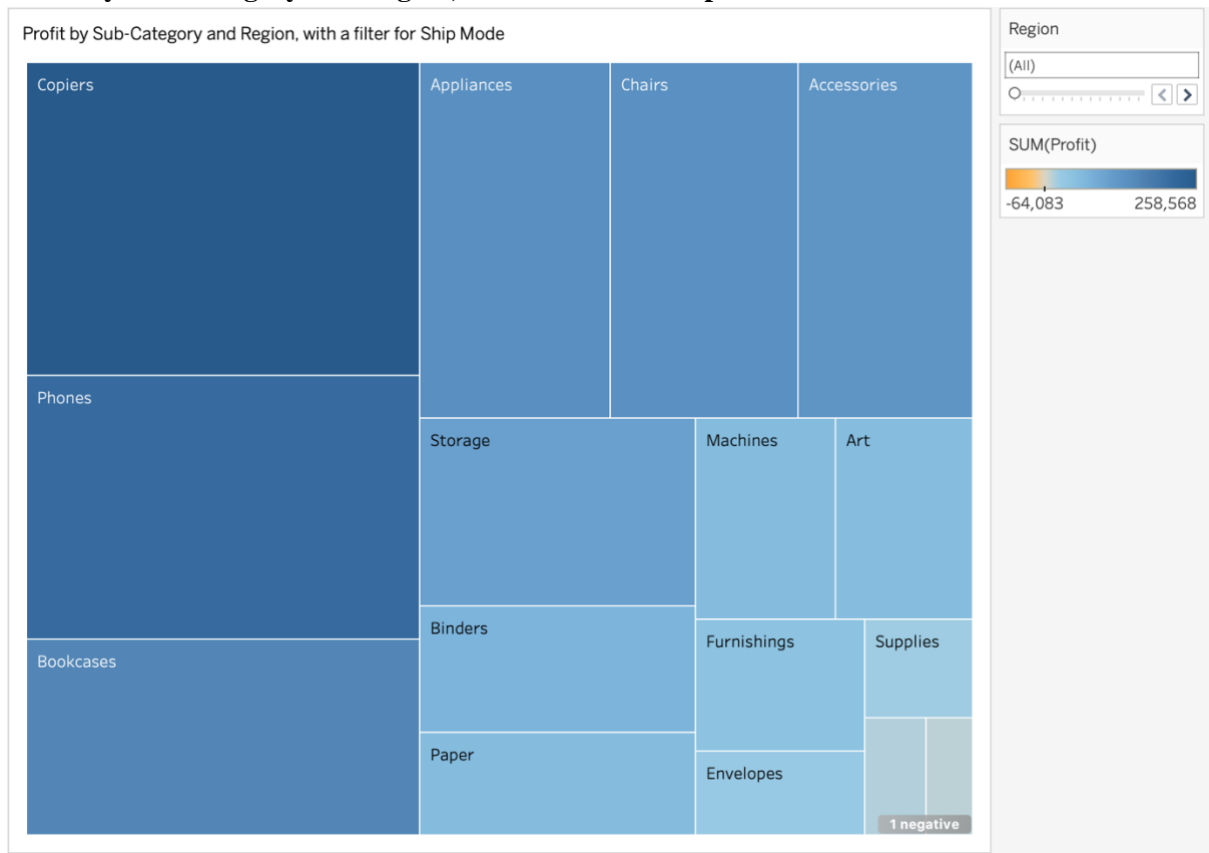
- After analyzing the heatmap, we can see that the sub-categories of Copiers, Phones, and Bookcases have the highest profit across all regions and ship modes. The West region has the highest profit overall, followed by the East, Central, and South regions. For ship modes, the Standard mode has the highest profit, followed by the Second Class, First Class, and Same Day modes.

- This analysis can be useful for the business to identify the most profitable sub-categories, regions, and ship modes. They can focus on increasing sales and improving profitability in these areas to maximize their profits.

<u>Summery</u>

The "A map showing the countries where the orders were shipped, with markers sized by the total sales for each country" visualization showed that the United States has the highest sales, followed by Australia and China.

The "Trend of total sales over time" visualization revealed that Standard Class shipping had the highest sales, followed by Second Class and then Same-day Class.

The "Stacked bar chart of Sales by Category and Region, with a filter for Ship Mode" visualization showed that the Central region had the highest sales overall, with the Standard Class shipping mode being the most popular. Canada had the lowest sales.

The "Total Sales over time by category" visualization revealed that the First Class shipping mode had the highest sales, followed by Same-day and Second Class. The Technology category had the highest sales overall, followed by Furniture and Office Supplies.

The "Heatmap of Sales by Category and Sub-Category" visualization showed that the Technology category had the highest sales overall, with the Phones subcategory being the most popular, followed by Copiers and Chairs.

The scatter plot of Sales vs. Discount, with color-coding by Category, showed no correlation between sales and discounts.
The Profit by Category, with color-coding by Segment, visual showed that the technology category had the highest sale overall.
The Profit by Sub-Category and Region, with a filter for Ship Mode heatmap, revealed that copiers, phones, and bookcases had high sales overall.

The Sales and Profit over time, with a filter for region created line chart, demonstrated that there were periods of profit and loss over time.

Overall, these visualizations provide valuable insights into the sales data, revealing patterns and trends that can inform business decisions and strategies.

Tableau Story

This visual can show the relationship between sales and discounts, and how different categories perform with different discount rates. we observed that there's no correl..

Category
- Furniture
- Office Supplies
- Technology

Sales and Profit over time, with a filter for Region and color-coded lines for each Category

Region
(All)

Measure Names
- Profit
- Sales

Technology Phones

This heatmap displays the total sales for each combination of product category and sub-category. The warmer colors indicate higher sales, while cooler colors indicate lower sales. The visualization reveals which categories and sub-categories are the most popular among customers. Here Technology Category with sub category of Phones has the highest selling product

Technology Machines

Technology Copiers

Technology Accessories

Office Supplies Storage

Office Supplies Appliances

Furniture Chairs

Furniture Tables

Office Supplies Binders

Office Supplies Art

Country

(All)

Sales

73,404 — 1,706,824

Copiers

This heatmap visualizes the profit generated by each product category and sub-category, highlighting which areas are most and least profi..

Phones

Bookcases

Appliances

Chairs

Accessories

Storage

Binders

Art

Paper

Machines

Envelopes

Labels

Supplies

1 negative

Region

(All)

Profit

-64,083 — 258,568

This scatter plot shows the relationship between sales and profit for each order, with each point colored according to the mode of shipping. The plot reveals that some shipping modes are associated with higher sales and profit, while others are not as profitable.

Ship Mode
- First Class
- Same Day
- Second Class
- Standard Class

This visual can show the trend of sales and profit over time and how it differs by region and category.we observed that overtime sale and profit gradualy increas..

Region
(All)

Measure Names
- Profit
- Sales

This line chart shows the sales trends over time for each product category, with each line color-coded according to the mode of shipping. The chart allows us to see which categories and shipping modes are driving sales growth over time.

This stacked bar chart displays the total sales for each product category, broken down by region. The bars are color-coded according to the mode of shipping. The visualization allows us to compare sales across different regions and shipping modes.

Category
(All)

Ship Mode
■ First Class
■ Same Day
■ Second Class
■ Standard Class

Ship Mode
(All)

Ship Mode
■ First Class
■ Same Day
■ Second Class
■ Standard Class

Category

This scatter plot compares the sales and profit for each customer segment, revealing which groups are the most and least valuable to the business.

Segment
- Consumer
- Corporate
- Home Office

Furniture
- 153,734 (Consumer)
- 83,732 (Corporate)
- 47,738 (Home Office)

Office Supplies
- 253,060 (Consumer)
- 167,581 (Corporate)
- 97,833 (Home Office)

Technology
- 342,445 (Consumer)
- 189,895 (Corporate)
- 131,438 (Home Office)

Profit axis: 0K, 100K, 200K, 300K, 400K, 500K, 600K