Superstore Sales Analysis Dashboard

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data source: https://www.kaggle.com/datasets/vivek468/superstore-dataset-final

Overview

What is the project about ?

- The project analyzes sales, profit, and customer data from a retail store to uncover business insights, trends, and patterns to support data-driven decision-making.

Who is the audience and/or users?

- The audience includes retail business managers, analysts, and decision-makers seeking to optimize sales strategies, improve customer relationships, and enhance profitability.

How can they use the info/insights provided? (data exploration, business insights, decision support, fun,…)

- They can use the insights for data exploration, business insights, and decision support, enabling better inventory management, targeted marketing, and improved overall business performance.

Chart 1 Analysis - Yearly Sales and Profit Trends by Product Category

Role of User	Question Addressed
Retail Business Manager	How have yearly sales and profits changed across different product categories?

User Task <action, target>	Idiom Used	Reasoning for selection
Compare yearly sales and profits by product category	Combination Chart (Line for Sales, Bar for Profit)	Combination charts effectively show trends and comparisons between different metrics over time.

Datatype	Encoded item	Reasoning for selection
Sales and profit data	Product categories	These metrics are essential for evaluating business performance across different product categories.

Mark	Encoded item	Number of Items	Reasoning for selection
Line for sales Bar for Profit	Yearly sales and profits	3 categories, 4 years	Combination charts clearly differentiate and compare the trends of sales and profit over time.

Channel	Channel Type	Encoded attribute	Number of Values	Reasoning for selection
Color	Categorical	Product categories	3	Colors help distinguish between different categories.
Position	Quantitative	Sales, Profit	Continuous values	Positions of lines and bars represent the magnitude of sales and profits.

Chart 1 - Yearly Sales and Profit Trends by Product Category

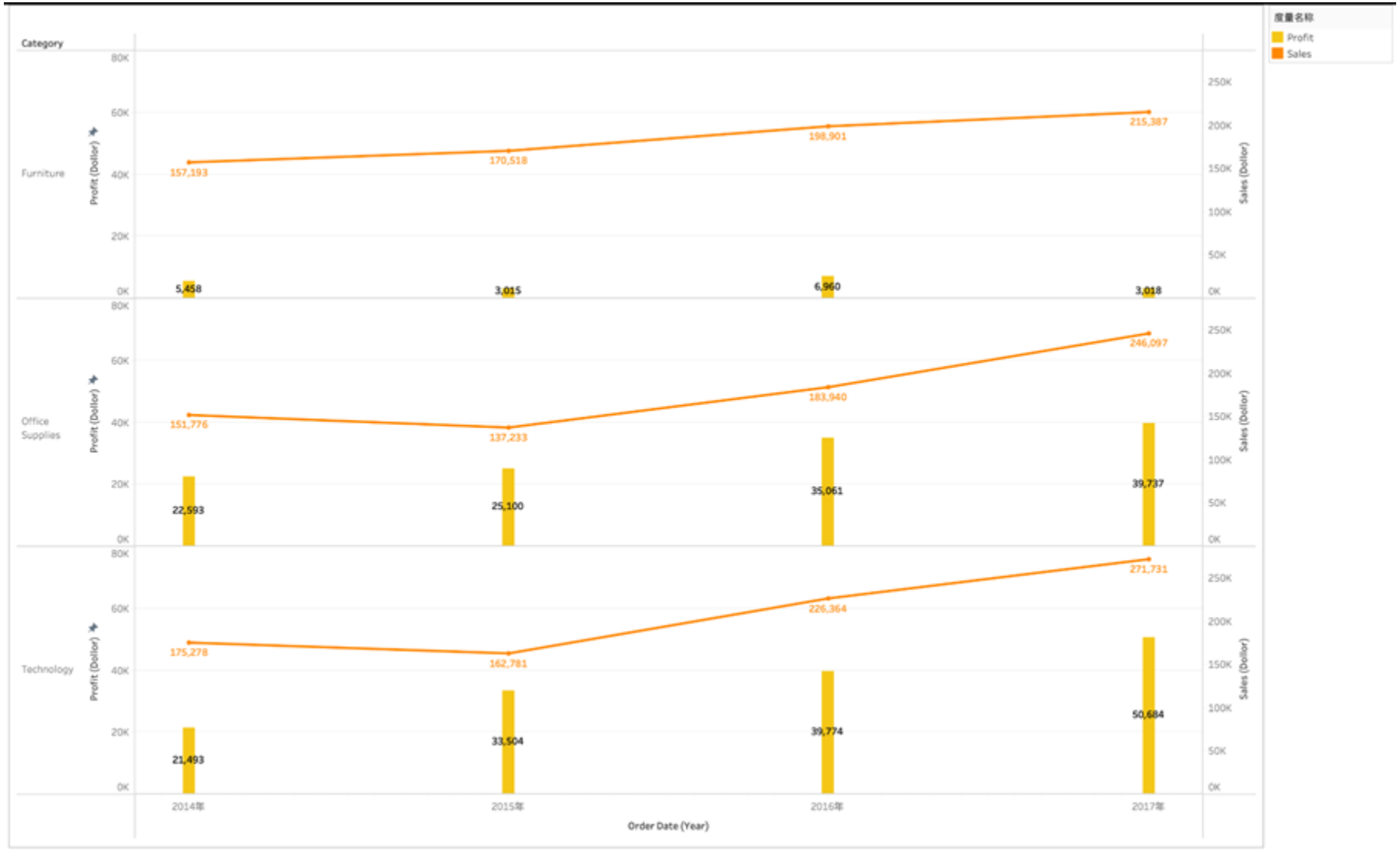


Chart 2 Analysis - Geographical Distribution of Profits Across the United States in 2017

Role of User	Question Addressed
Retail Business Manager	How is the profit distributed geographically across the United States in 2017?

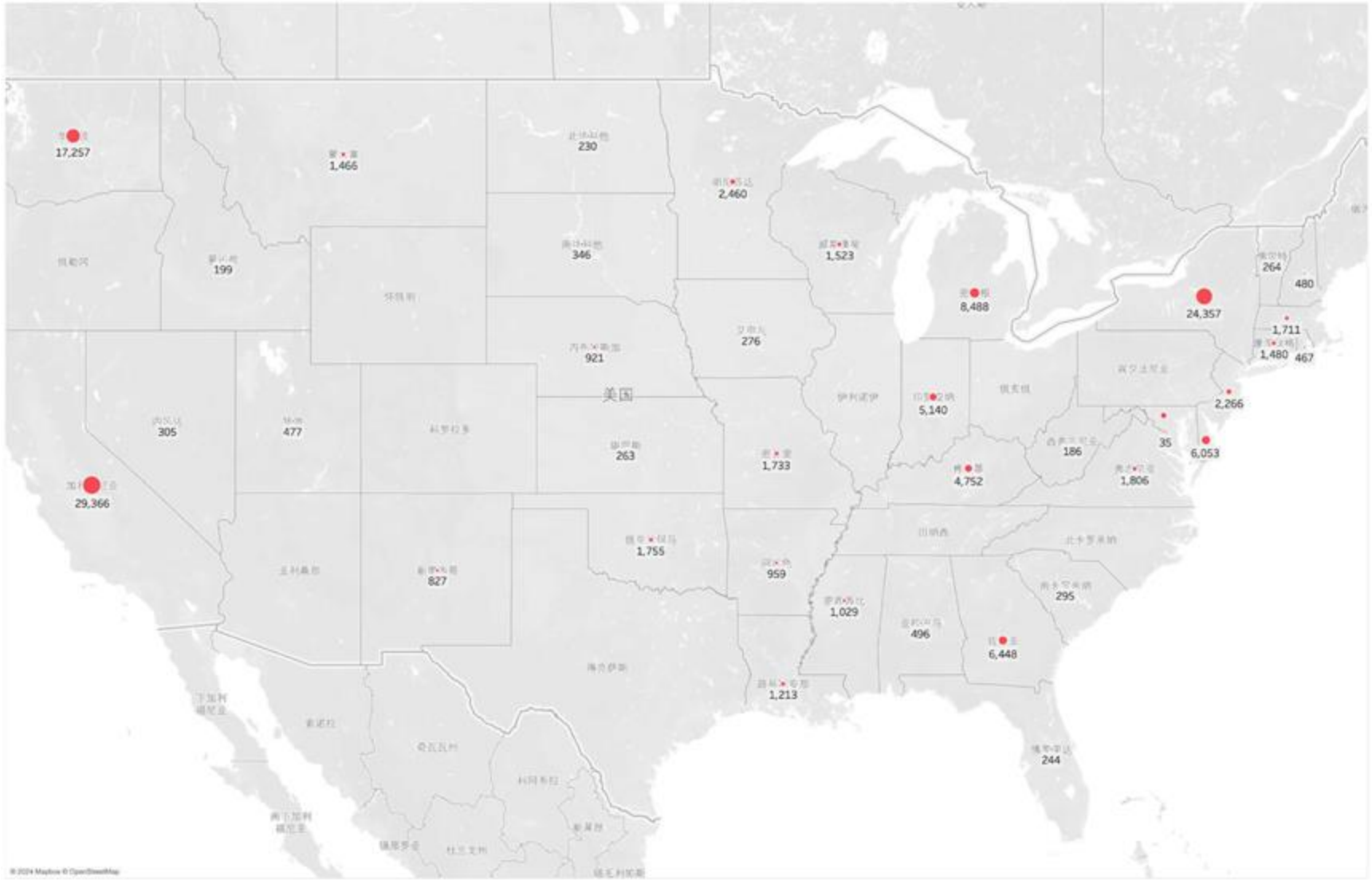
User Task <action, target>	Idiom Used	Reasoning for selection
Analyze geographical profit distribution in 2017	Symbol Map with circle sizes representing profit	Symbol maps are effective for visualizing geographical data, and circle sizes provide a clear indication of profit magnitude

Datatype	Encoded item	Reasoning for selection
Geographical data and profit data	Region and Profit	These metrics are essential for evaluating geographical performance and identifying high-profit areas.

Mark	Encoded item	Number of Items	Reasoning for selection
Circle (Size of circle represents profit)	Regions, Profits	Multiple regions	Circle size effectively represents the magnitude of profit, making it easy to compare different regions.

Channel	Channel Type	Encoded attribute	Number of Values	Reasoning for selection
Size	Quantitative	Profit	Continuous	Size variations clearly indicate profit differences across regions.
Position	Spatial	Region	Multiple regions	Positioning on the map shows the geographical location of each region.

Chart 2 - Geographical Distribution of Profits Across the United States in 2017




Category
Furniture
Office Supplies
Technology
Profit (Dollor)
60K
40K
20K
157,193
170,518
198,901
215,387
5,458
3,015
6,960
3,018
151,776
137,233
183,940
246,097
22,593
25,100
35,061
39,737
175,278
162,781
226,364
271,731
21,493
33,504
39,774
50,684
Sales (Dollor)
200K
100K
0K
2014年
2015年
2016年
2017年
Order Date (Year)
度量名称
Profit
Sales
Profit
35
10,000
20,000
29,366

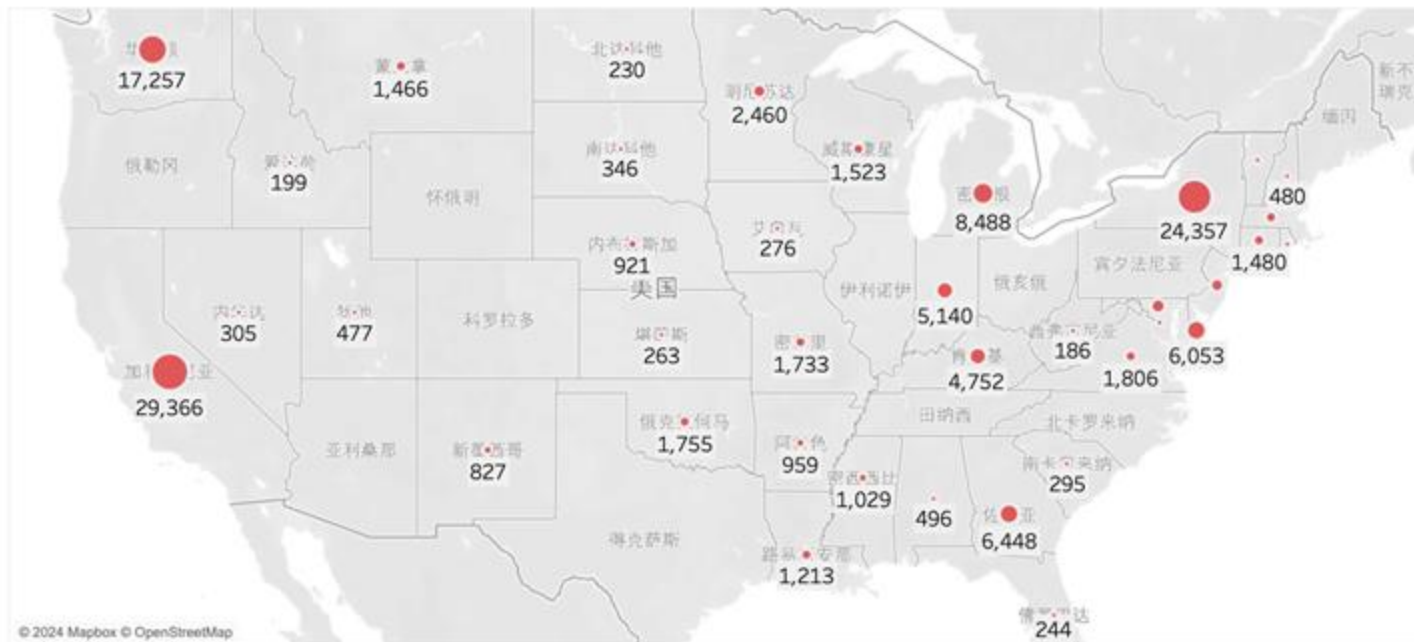

17,257
1,466
230
2,460
1,523
199
346
8,488
24,357
480
1,480
276
921
美国
5,140
305
477
263
1,733
186
6,053
4,752
1,806
29,366
1,755
959
827
1,029
496
295
6,448
1,213
244
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Chart 3 Analysis - Quarterly Sales Trend Over Time

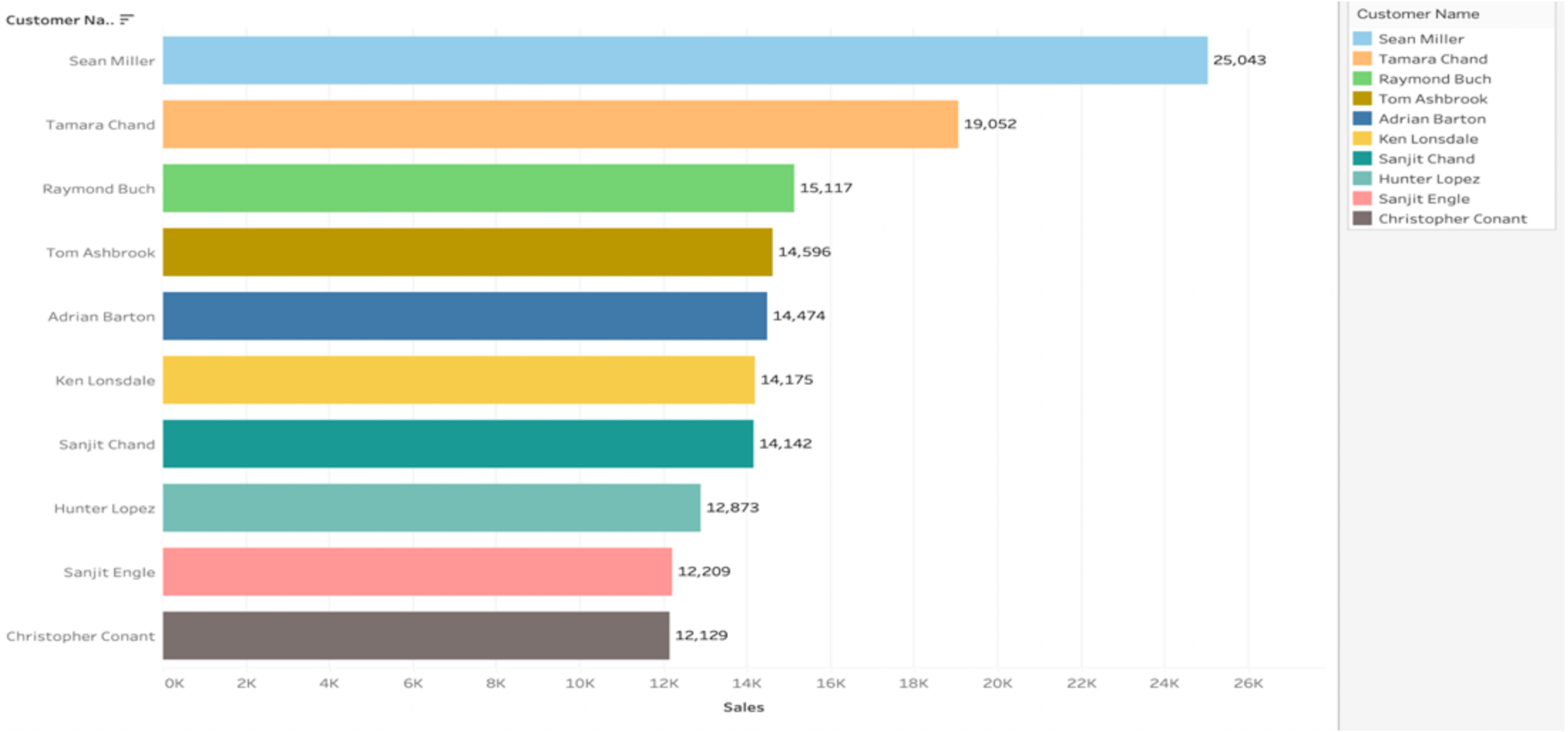
Role of User				Question Addressed
Sales Manager				What are the sales trends over time?
User Task <action, target>		**Idiom Used**		**Reasoning for selection**
Analyze sales trends over time		Line Chart		Line charts are effective for showing trends over continuous periods.
Datatype		**Encoded item**		**Reasoning for selection**
Time series data		Sales		Time series data needs a format that shows change over time.
Mark	**Encoded item**	**Number of Items**		**Reasoning for selection**
Line	Sales	Quarterly		Lines are suitable for representing time trends.
Channel	**Channel Type**	**Encoded attribute**	**Number of Values**	**Reasoning for selection**
horizontal Position (X-axis)	Quantitative	Time (Quarter)	16 (4 quarters x 4 years)	Shows the progression of time clearly
vertical Position (Y-axis)	Quantitative	Sales	Continuous	Clearly shows the fluctuation of sales

Chart 3 - Quarterly Sales Trend Over Time

Chart 4 Analysis - Top 10 Customers by Sales

Role of User			Question Addressed	
sales manager			Who are the top 10 customers by total sales?	
User Task <action, target>		**Idiom Used**	**Reasoning for selection**	
Identify top customers by sales		Vertical Bar Chart	Bar charts effectively show comparative data among categories.	
Datatype		**Encoded item**	**Reasoning for selection**	
Categorical Data		Customer Name	Identifying specific customers by sales amount.	
Mark	**Encoded item**	**Number of Items**	**Reasoning for selection**	
Bar	Sales	10	Bars are suitable for comparing discrete categories.	
Channel	**Channel Type**	**Encoded attribute**	**Number of Values**	**Reasoning for selection**
Color hue	Categorical	Customer Name	10	Different colors distinguish each customer.
horizontal Position (X-axis)	Quantitative	Sales	Continuous	Clearly shows the amount of sales for each customer.
vertical Position (Y-axis)	Categorical	Customer Name	10	Identifies top customers by name.

Chart 4 - Top 10 Customers by Sales




Year-Quarter
SUM(qurter order data)
260
4,876
Sales
250K
200K
150K
100K
50K
0K
74,448
86,539
143,633
179,628
68,852
89,124
130,260
182,297
93,237
136,082
143,787
236,099
123,145
133,764
196,252
280,054
2014-Q1
2014-Q2
2014-Q3
2014-Q4
2015-Q1
2015-Q2
2015-Q3
2015-Q4
2016-Q1
2016-Q2
2016-Q3
2016-Q4
2017-Q1
2017-Q2
2017-Q3
2017-Q4

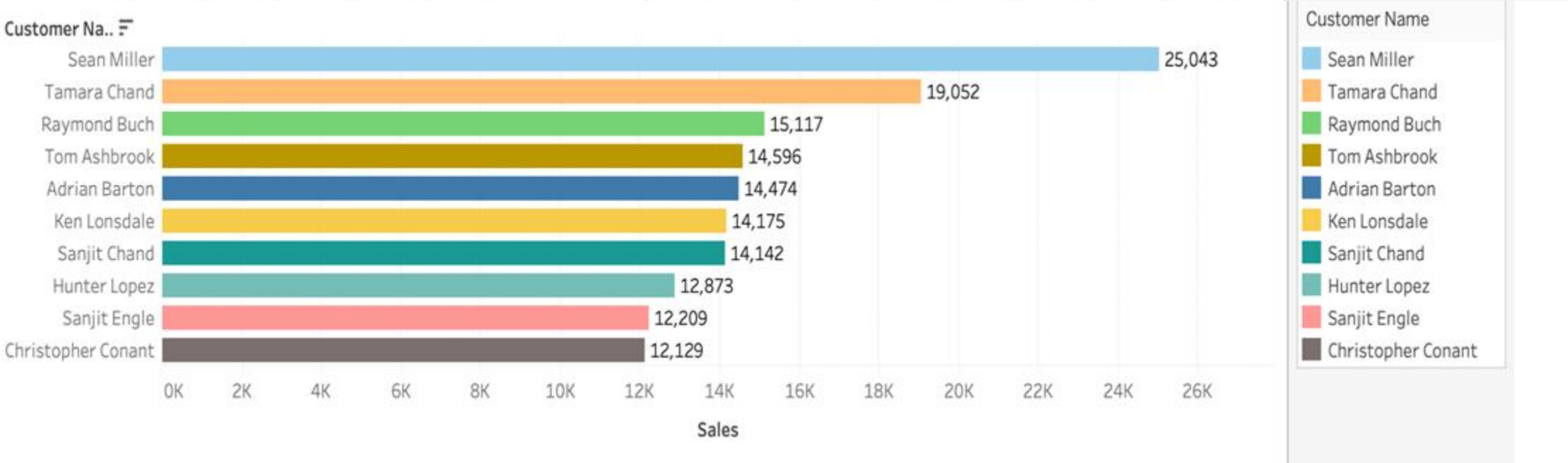

Customer Na..
Sean Miller 25,043
Tamara Chand 19,052
Raymond Buch 15,117
Tom Ashbrook 14,596
Adrian Barton 14,474
Ken Lonsdale 14,175
Sanjit Chand 14,142
Hunter Lopez 12,873
Sanjit Engle 12,209
Christopher Conant 12,129
0K 2K 4K 6K 8K 10K 12K 14K 16K 18K 20K 22K 24K 26K
Sales
Customer Name
Sean Miller
Tamara Chand
Raymond Buch
Tom Ashbrook
Adrian Barton
Ken Lonsdale
Sanjit Chand
Hunter Lopez
Sanjit Engle
Christopher Conant

Chart 5 Analysis -Discount Impact on Profit

Role of User	Question Addressed
Retail business managers and analysts	How does the discount level affect the profit margins on sales?

User Task <action, target>	Idiom Used	Reasoning for selection
Analyze the relationship between discounts given and the profit earned from sales.	Scatter plot	A scatter plot effectively illustrates the relationship between two quantitative variables, making it ideal for observing trends or patterns in discounts versus profits.

Datatype	Encoded item	Reasoning for selection
Sales data	Discount and profit values	The discount rate directly impacts profitability, and plotting these values will reveal whether higher discounts correlate with lower profits.

Mark	Encoded item	Number of Items	Reasoning for selection
Point	Each point represents one order	Each point on the scatter plot	Good for represent individual data entries in a scatter plot, allowing each order's discount and profit to be visualized distinctly.

Channel	Channel Type	Encoded attribute	Number of Values	Reasoning for selection
Position	Quantitative	Discount rate on x-axis and profit on the y-axis	Continuous	The position channel effectively encodes quantitative changes, ideal for showing how changes in the discount might affect profit levels
Color hue	Categorical	Product Category	3 (Furniture, Office Supplies, Technology)	Coloring points by product category can identify if certain categories are more sensitive to discount changes in terms of profitability.

Chart 5 - Discount Impact on Profit

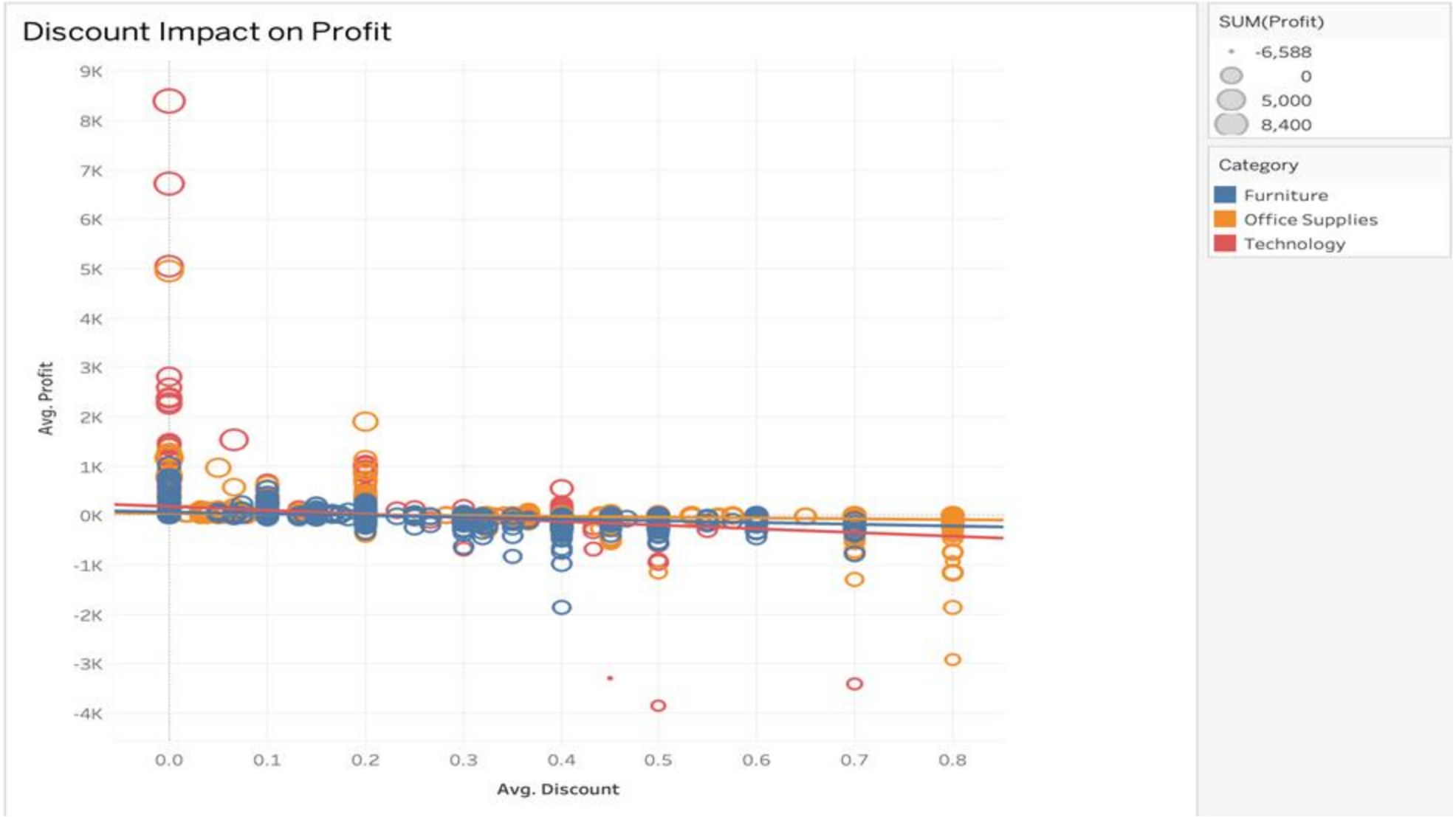


Chart 6 Analysis -Sales by Ship Mode

Role of User	Question Addressed
Retail business managers and decision-makers	What is the proportion of sales volume contributed by each shipping mode?

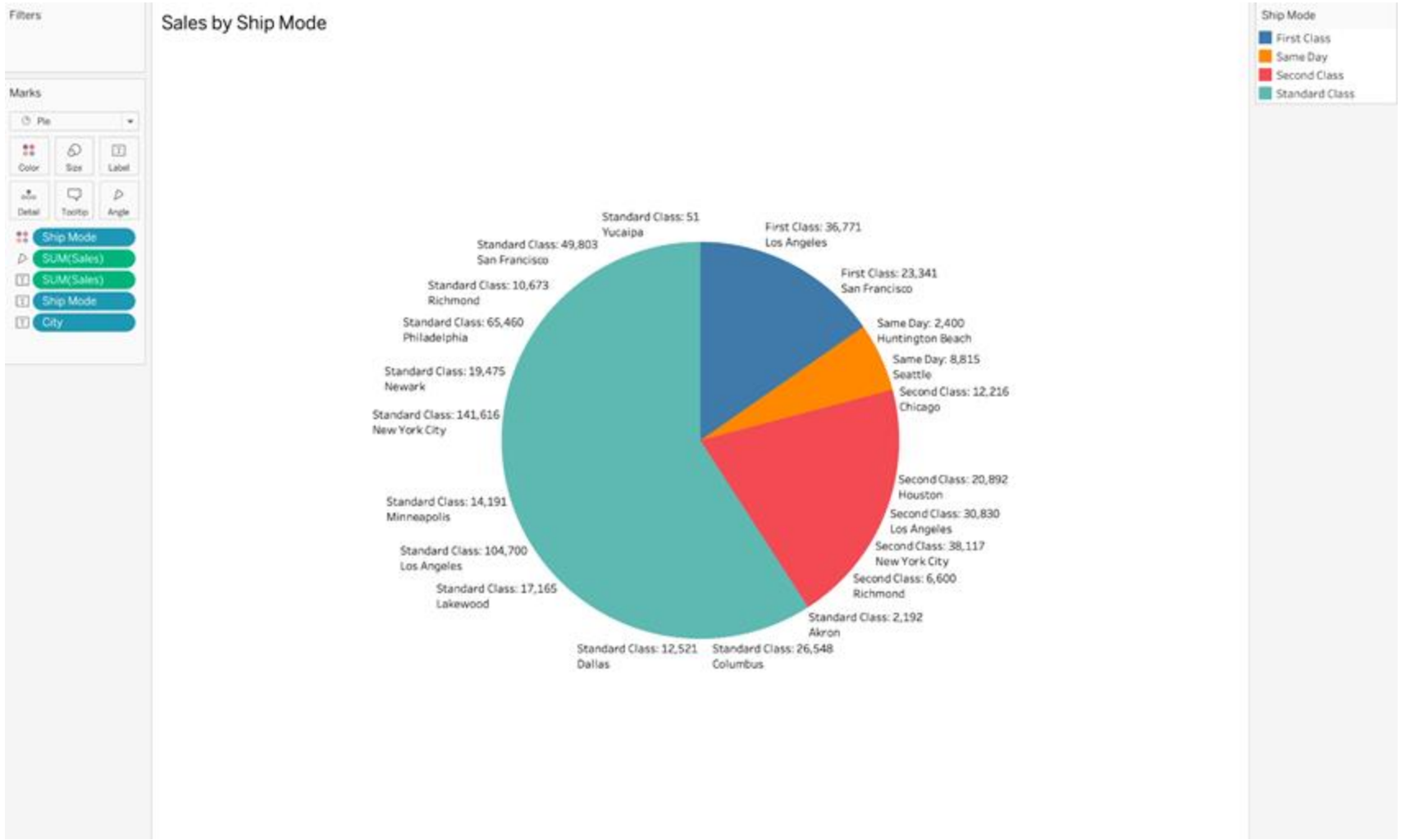
User Task <action, target>	Idiom Used	Reasoning for selection
Compare sales distribution across different shipping modes	Pie Chart	It display the proportionate contributions of categories within a whole, making it easy to see which shipping modes dominate sales.

Datatype	Encoded item	Reasoning for selection
Sales data	Sales amount by shipping mode	Showing sales by shipping mode in a pie chart lets users quickly grasp the relative significance of each mode to overall sales

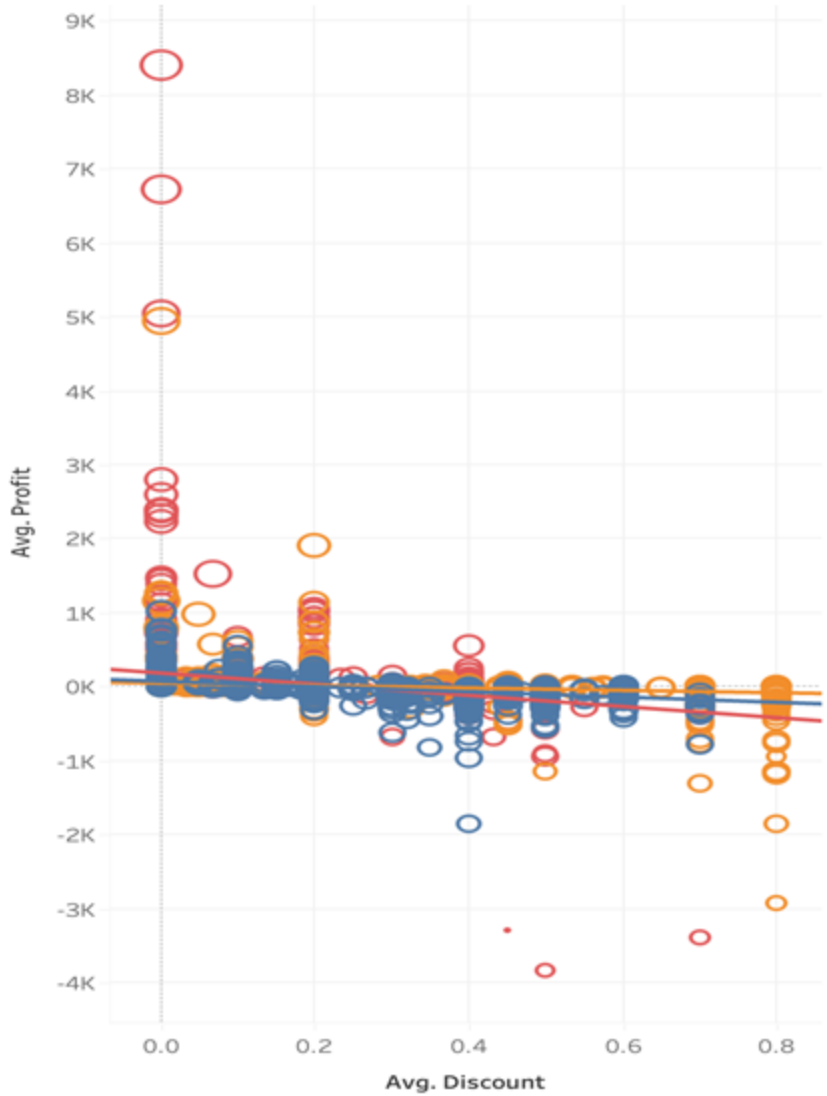
Mark	Encoded item	Number of Items	Reasoning for selection
Sector (slice of the pie)	represents the total sales for a particular shipping mode	One slice per shipping mode	Slices in a pie chart directly represent parts of a whole, suitable for comparison of categories like shipping modes

Channel	Channel Type	Encoded attribute	Number of Values	Reasoning for selection
Angle and Area	Quantitative	Sales amount	Proportional to the sales volume	The size of each slice visually encodes the proportion of total sales, offering an intuitive grasp of each category's contribution
Color hue	Categorical	Ship Mode	4 (Standard Class, Second Class, First Class, Same Day)	Using different colors for each ship mode clearly differentiates the slices, allowing for immediate visual segmentation of the data.

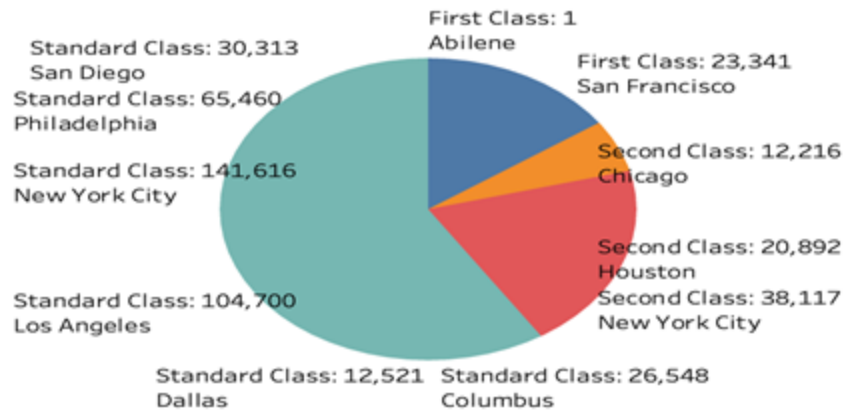
Chart 6 - Sales by Ship Mode

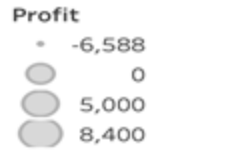


Discount Impact on Profit



Sales by Ship Mode





Summary/Conclusions

- Slide 5: The demand for technology, office supplies and furniture is increasing, but only the profits of office supplies and furniture are growing.
- Slide 7: The most profitable regions are concentrated in the western and eastern United States, especially New York and California.
- Slide 10: Major peaks occur in 2014 Q4, 2015 Q3, 2016 Q4, and the highest in 2017 Q4. Despite the variability, there is an overall upward trend in sales over the period.
- Slide 12: Among top 10 customers based on their total sales, Sean Miller leads with 25,043 in sales, followed by Tamara Chand with 19,052. The other top customers range from 15,117 to 12,129 in sales.
- Slide 15: Overall discounts have a minimal impact on profit, but high discounts in specific transactions can lead to significant profit changes.
- Slide 17: Standard shipping has the largest share, followed by second class, while first class and same-day shipping have smaller proportions, indicating customers' preference for more economical shipping option.