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Sales Analysis

Enhancing Product Sales Strategy

20 November, 2024



Introduction



This project focuses on analyzing the sales data of a commercial store, sourced from Kaggle, to uncover key patterns and insights. The analysis aims to identify factors affecting sales performance, such as product categories, regional variations, and seasonal trends. By applying data cleaning, exploratory data analysis (EDA), and visualization techniques, the project uncovers important metrics like top-selling products, peak sales periods, and regional preferences. The goal is to provide actionable insights that can help improve business strategies, optimize inventory management, and boost overall sales. The findings are summarized in a detailed executive report, a Power BI dashboard, and an interactive Jupyter notebook.

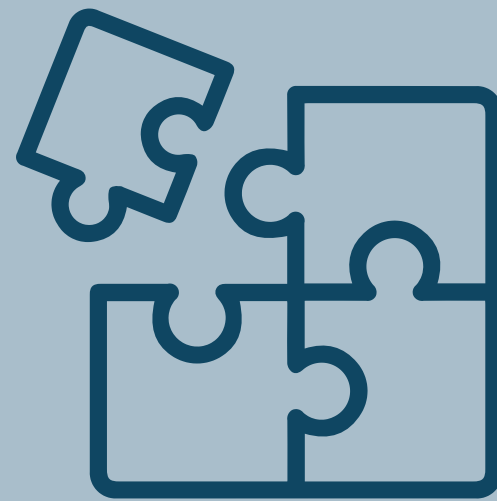


Project Objectives



Analyze Sales Trends

- To identify key sales trends, seasonal fluctuations, and product performance
- performing exploratory data analysis (EDA) on the dataset



Visualize Key Insights

- To create visual representations of data, Power BI dashboard.
- highlight top-selling products, regional sales variations, and trends over time



Business Recommendations

- Generate actionable recommendations .
- targeting high-performing regions to maximize sales growth.

Expected Outcomes



Comprehensive Insights on Sales Trends

- The analysis will provide a clear understanding of sales performance, identifying top-performing products, regions, and time periods, which will be crucial for formulating data-driven strategies to boost sales.

Effective Data Visualizations

- A Power BI dashboard and various visualizations will be created to present the findings in a user-friendly format, enabling easy interpretation and empowering stakeholders to make informed decisions based on real-time data.

Actionable Business Recommendations

- Based on the analysis, practical recommendations will be developed to improve sales, optimize inventory, and target profitable segments, with the aim of enhancing overall business performance and maximizing revenue.

Methodology

Data Collection:

- Data Acquisition: The sales dataset was obtained from Kaggle, including sales, product, and customer information.
- Data Cleaning: Missing values, duplicates, and irrelevant columns were handled to ensure accurate analysis.

Exploratory Data Analysis (EDA)

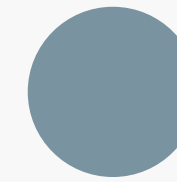
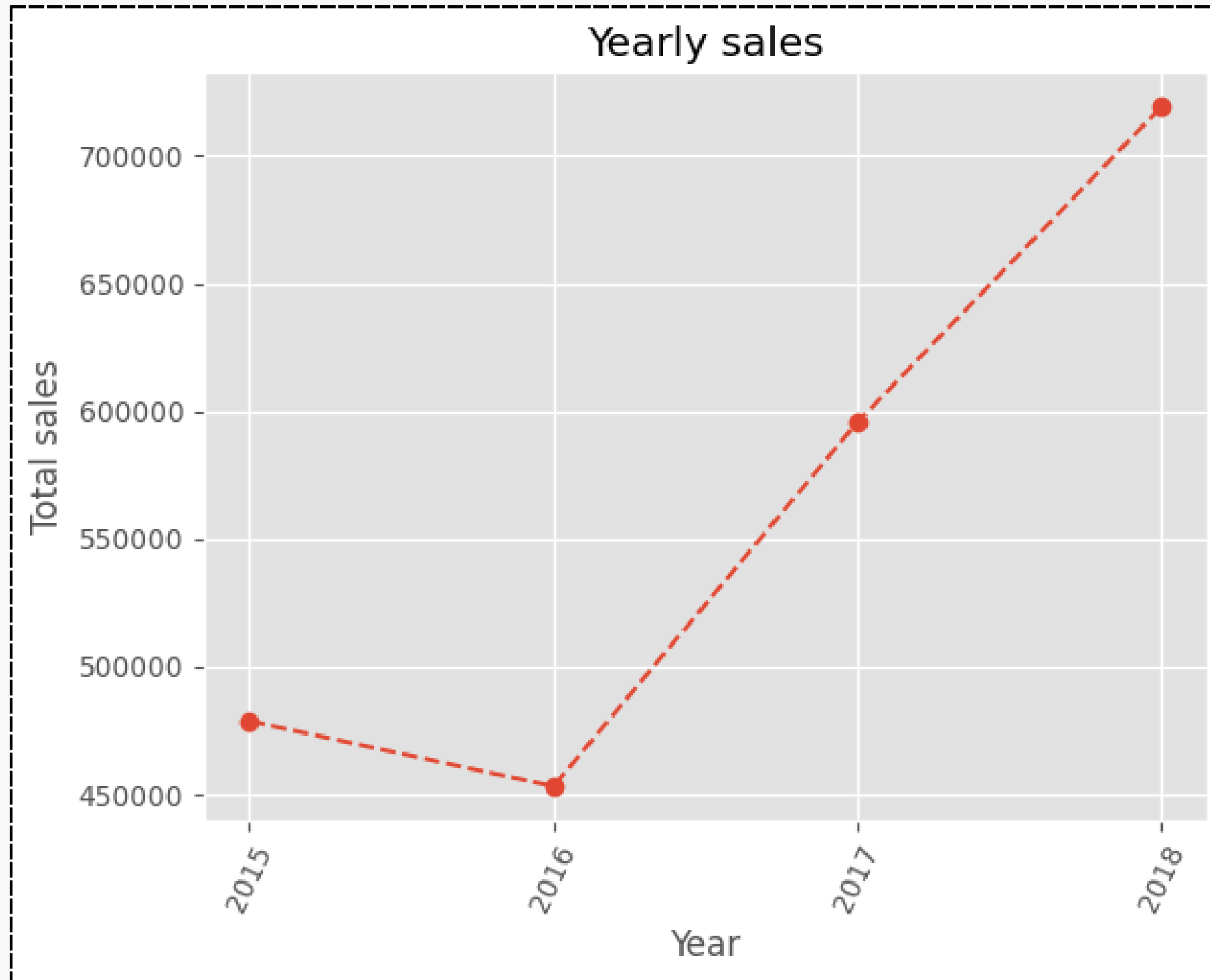
- Statistical Analysis: Descriptive statistics and distributions were analyzed to uncover sales patterns.
- Visualization: Visualizations were created to identify correlations between product types, regions, and sales performance.

Analysis and Reporting

- Comparative Analysis: Sales data across years (2015-2018) was compared to identify growth trends and fluctuations.
- Reporting & Dashboard: Key findings were summarized in a report, and a Power BI dashboard was created to visualize important sales metrics.

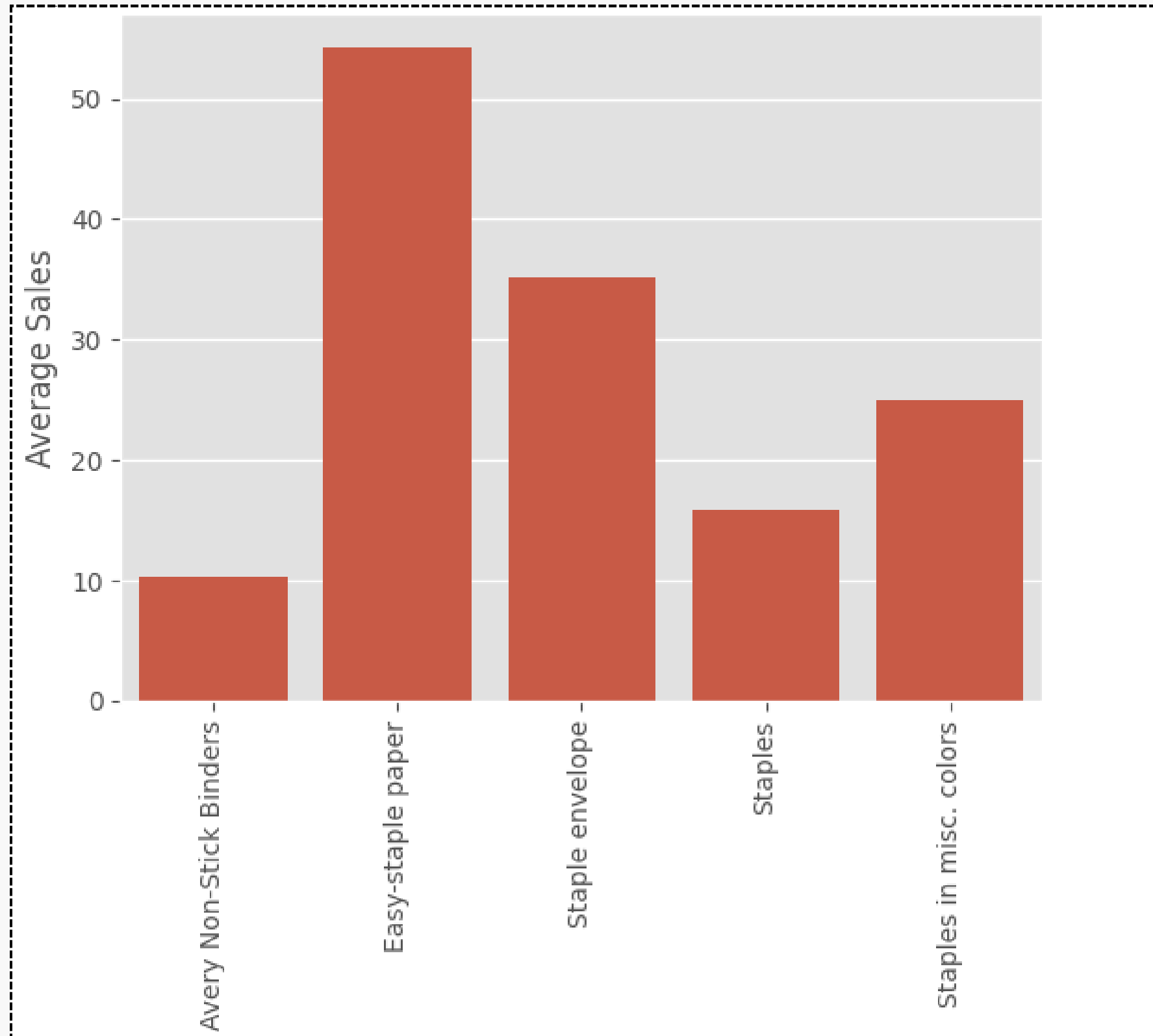


Sales Trend Over Time



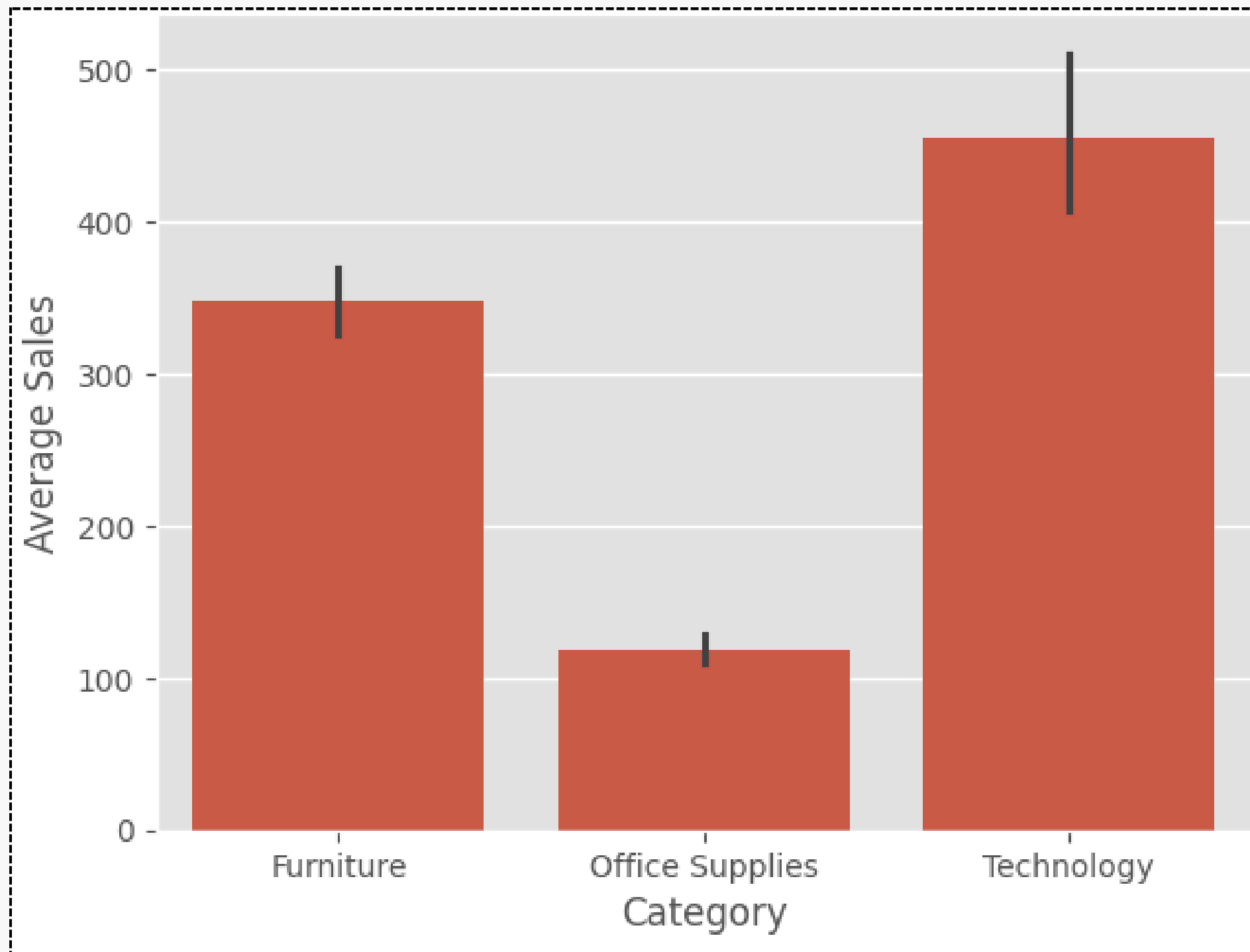
Despite the initial Dip in Sales from 2015 to 2016 ,The chart displays a steady upward trend in sales from 2016 to 2018. Each year saw a significant increase in total sales, with the highest figure recorded in 2018. This positive trajectory suggests a growing market presence and customer demand for the product or service.

Top Selling Products



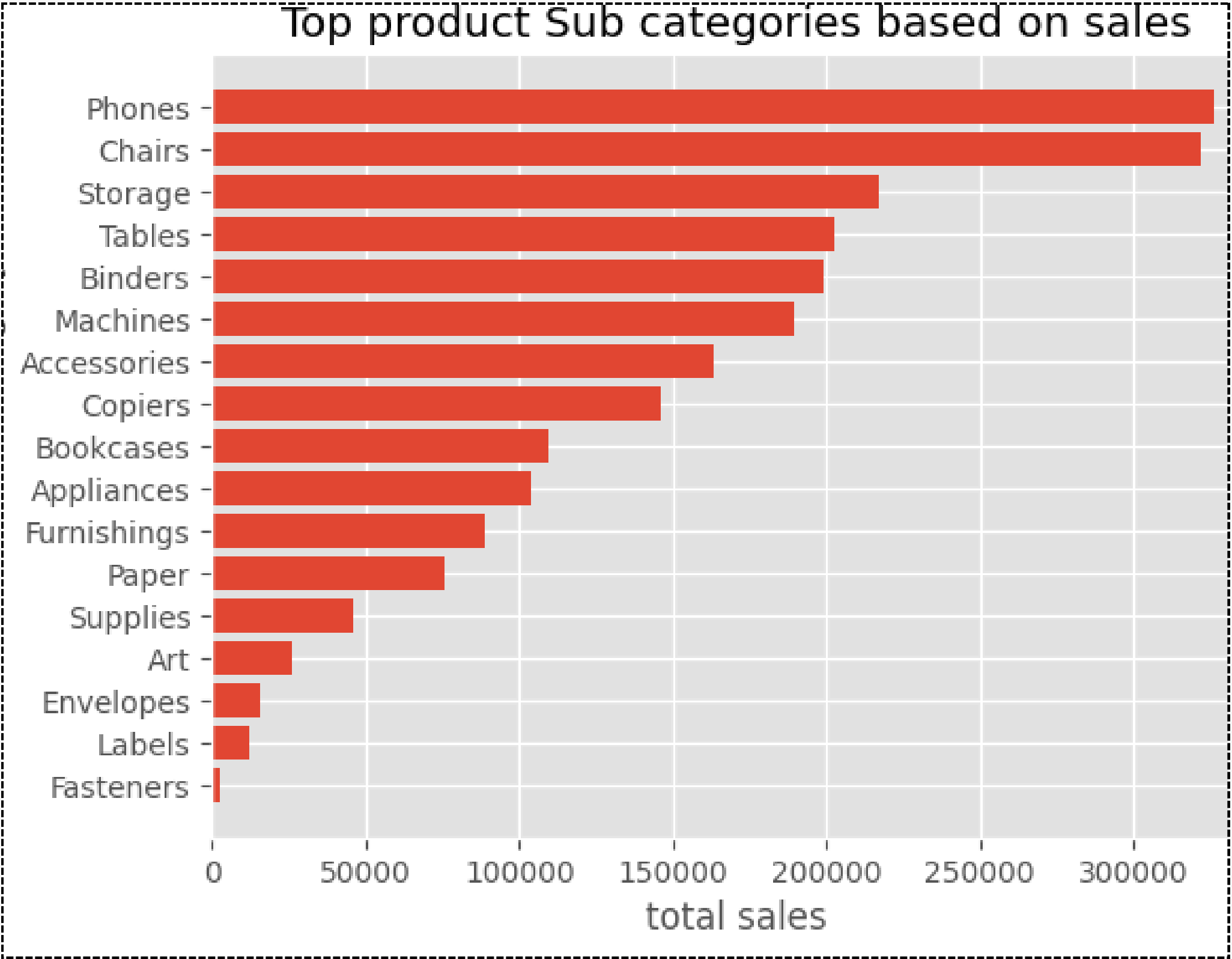
- The chart shows the top 5 products by the number of orders and their average sales. The product with the highest
- number of orders and average sales is "Easy-staple paper." The product with the
- lowest number of orders and average sales among the top 5 is "Avery Non-Stick Binders."

Product Category and sales



- The bar chart compares the average sales across three categories: Furniture, Office Supplies, and Technology.
- Technology has the highest average sales, followed by Furniture. Office Supplies has the lowest average sales.
- The error bars indicate the variability within each category.

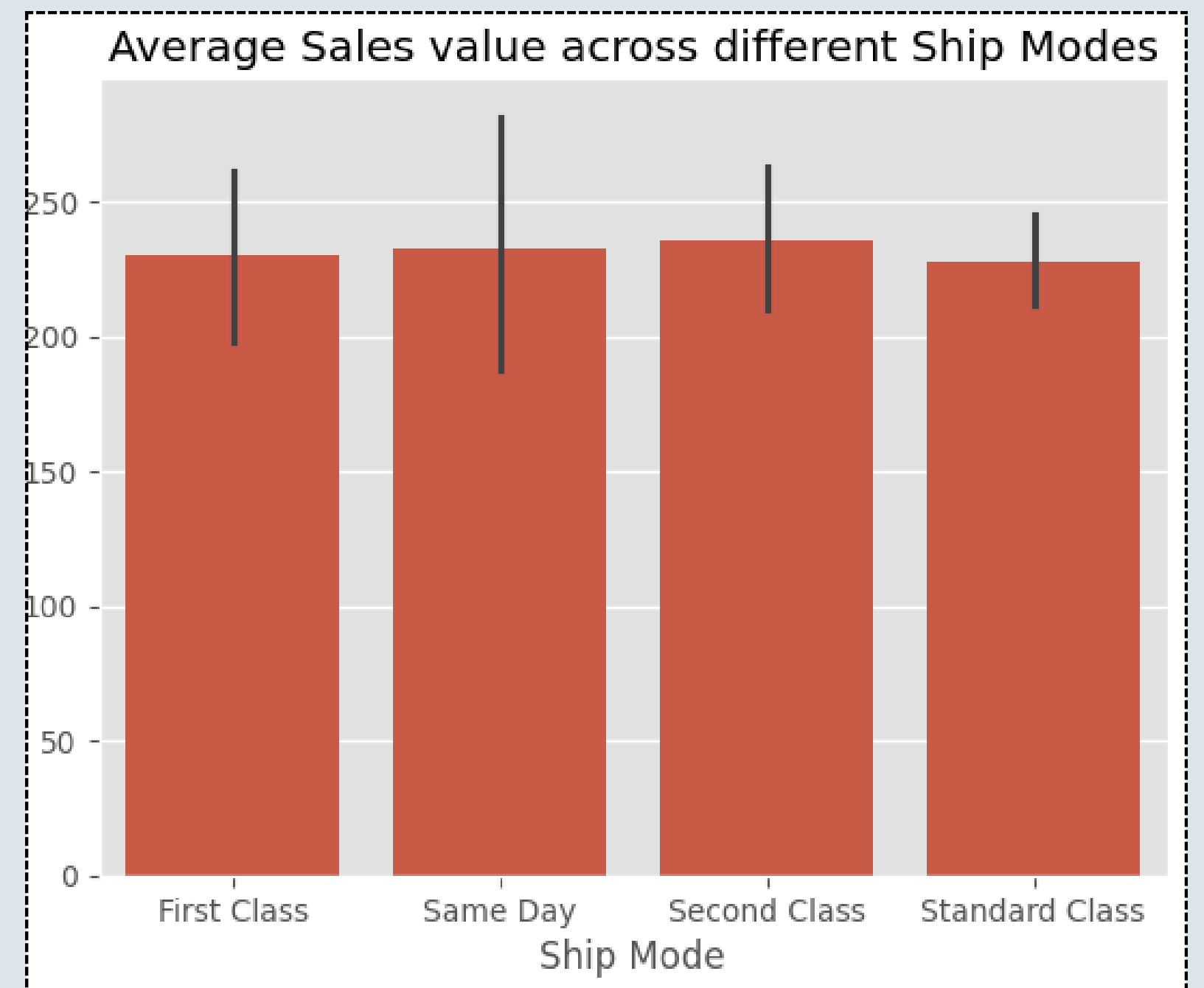
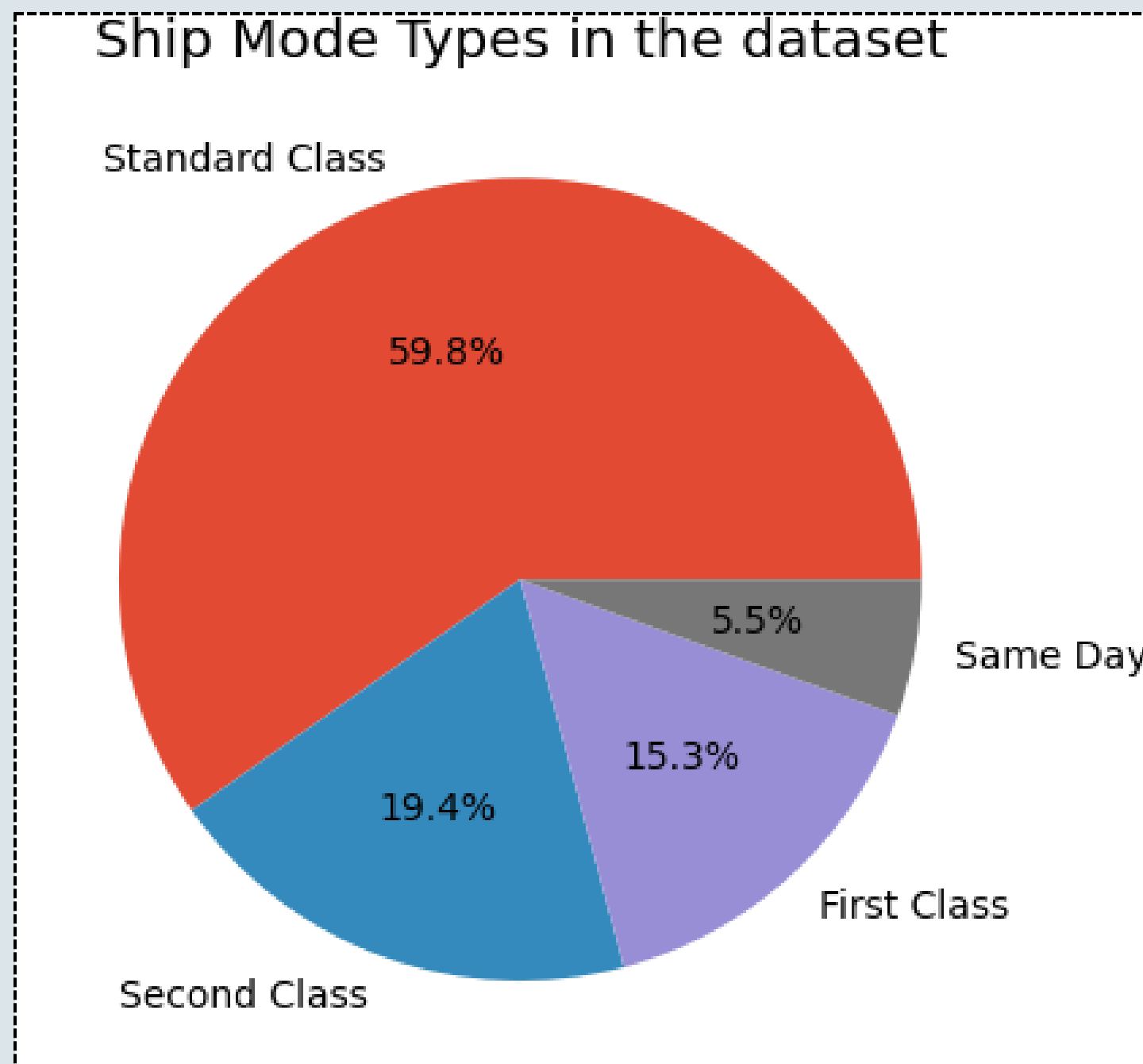
Product Sub Categories and sales



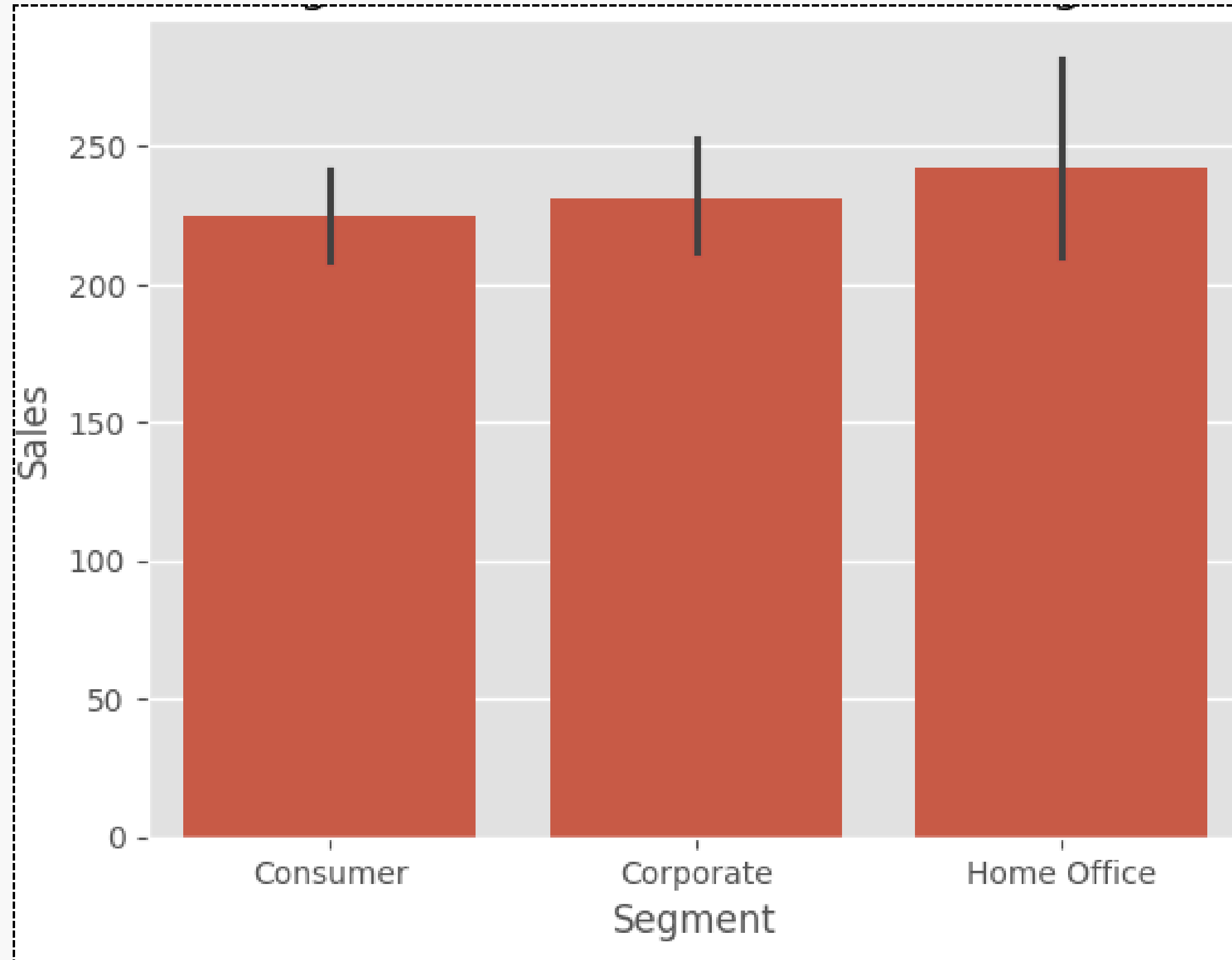
The bar chart illustrates the top-performing product subcategories by total sales. "Phones" leads the pack with the highest sales, followed by "Chairs" and "Storage." The subcategories are ranked in descending order, providing a clear visual comparison of their relative performance.

Ship Mode Types

The first chart shows that "Standard Class" is the most common shipping mode, while the second chart reveals that "First Class" and "Same Day" have the highest average sales. This suggests a trade-off between shipping speed and cost, as faster shipping modes tend to be more expensive.



Different Segment's and sales

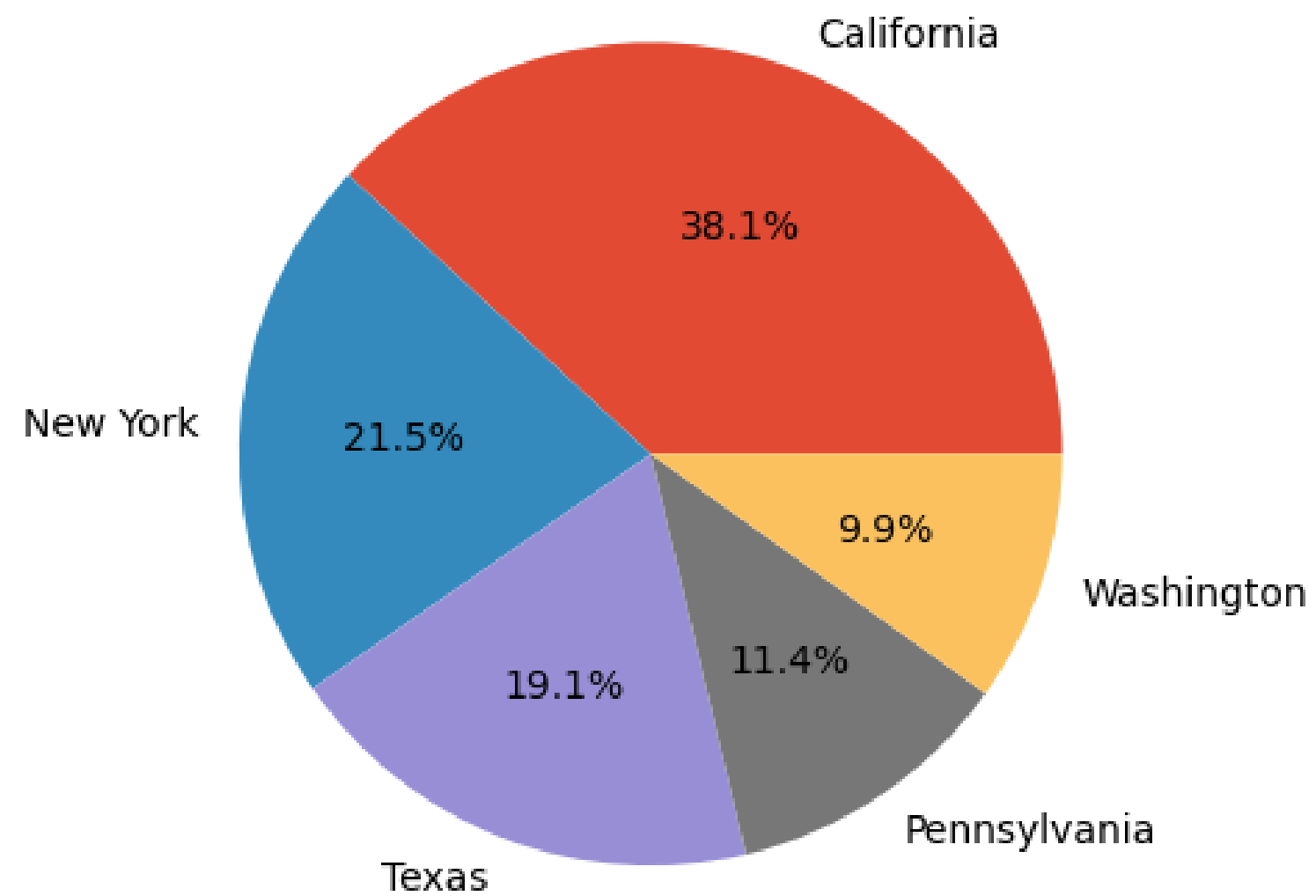


- The bar chart compares the average sales across three customer segments: Consumer, Corporate, and Home Office.
- Home Office has the highest average sales, followed by Corporate and Consumer.
- The error bars indicate the variability within each segment.

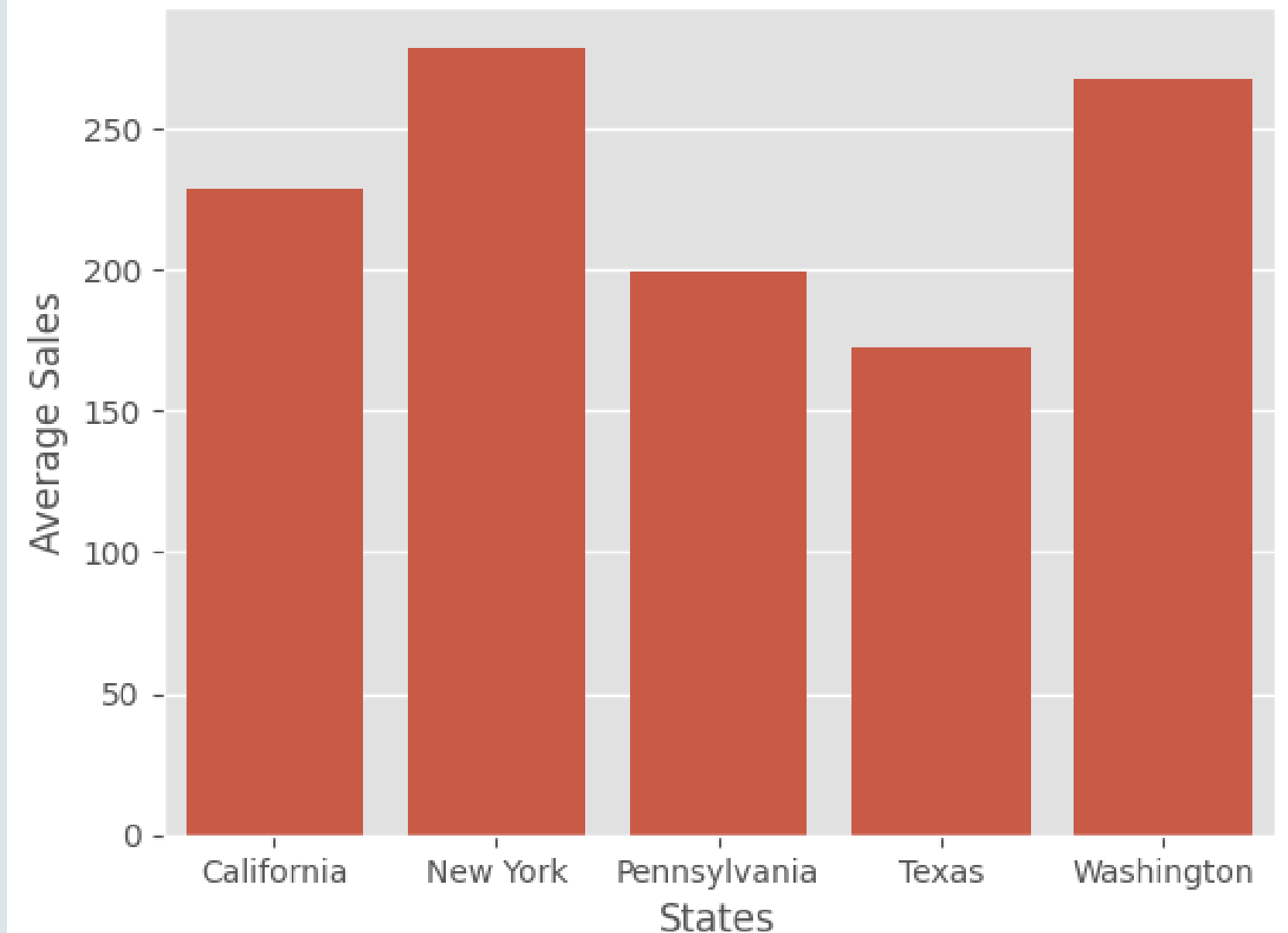
States Analysis

The first chart shows that California has the highest number of orders, followed by New York and Texas. The second chart reveals that California also has the highest average sales, followed by Washington and New York. This suggests that California not only has a large customer base but also generates higher revenue per order compared to other states.

Top 5 States by number of orders

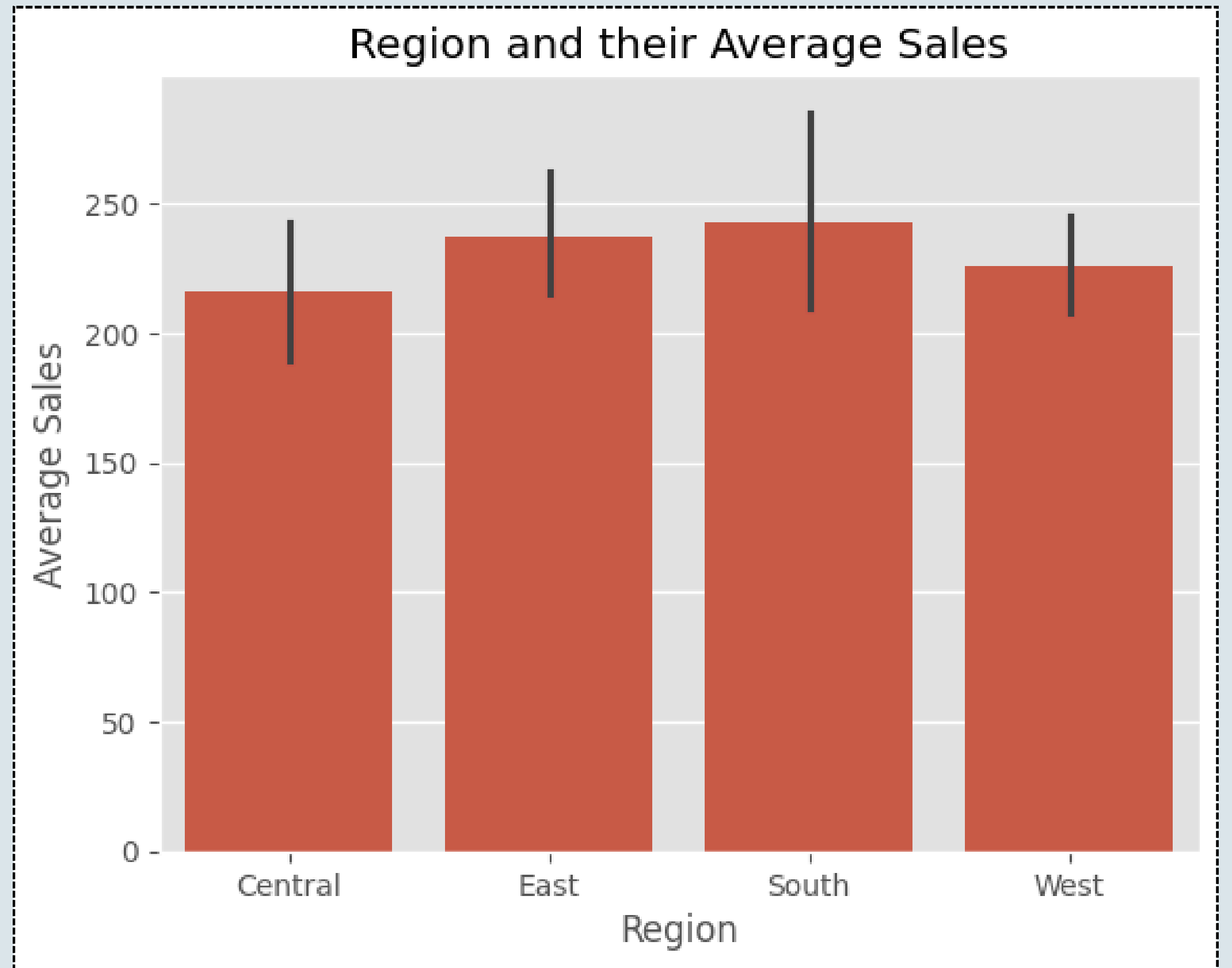


Top 5 States by Number of Orders and Their Average Sales



Different Regions

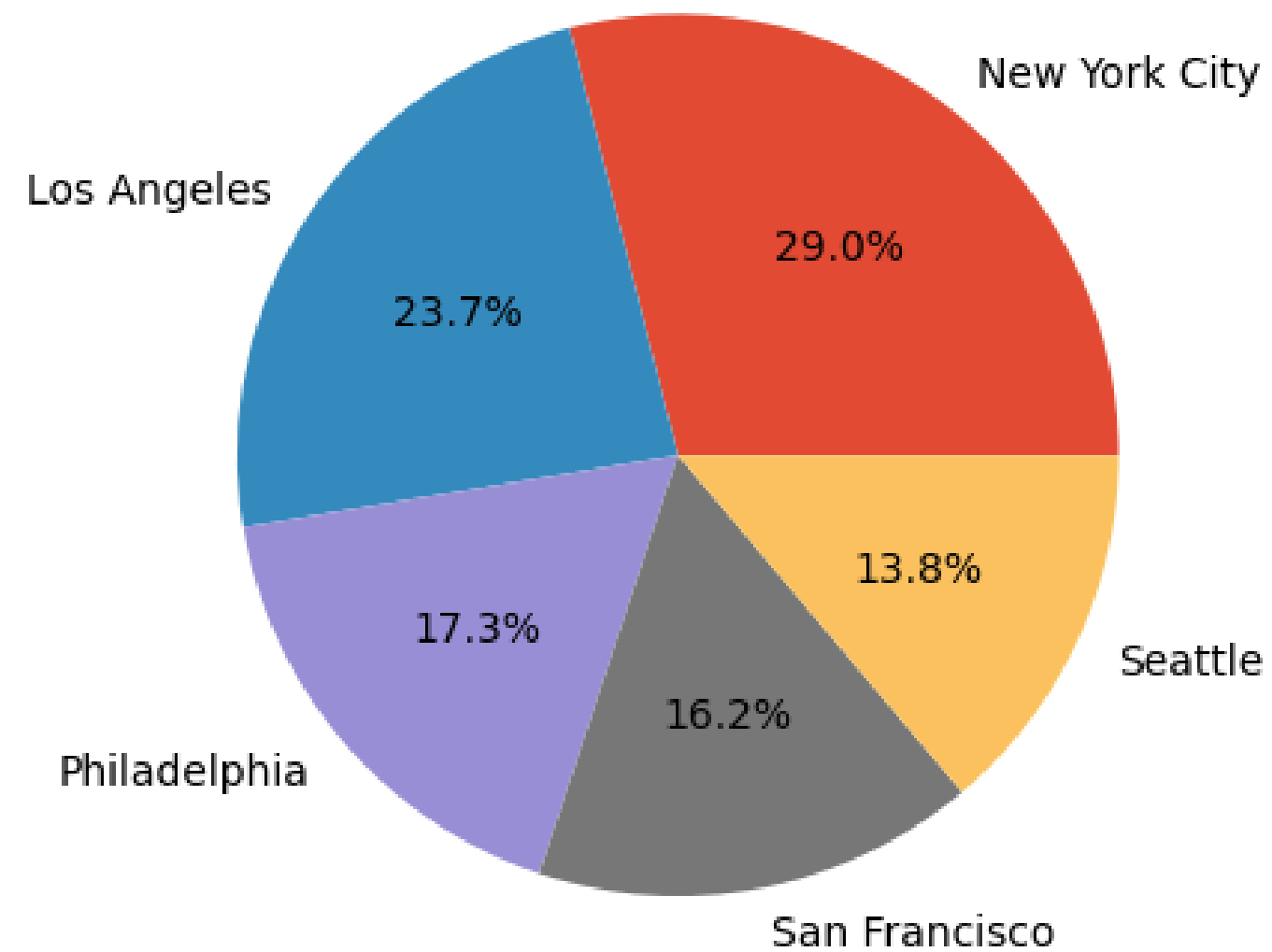
The bar chart shows the average sales across four regions: Central, East, South, and West. The South region has the highest average sales, while the Central region has the lowest. The error bars indicate the variability within each region



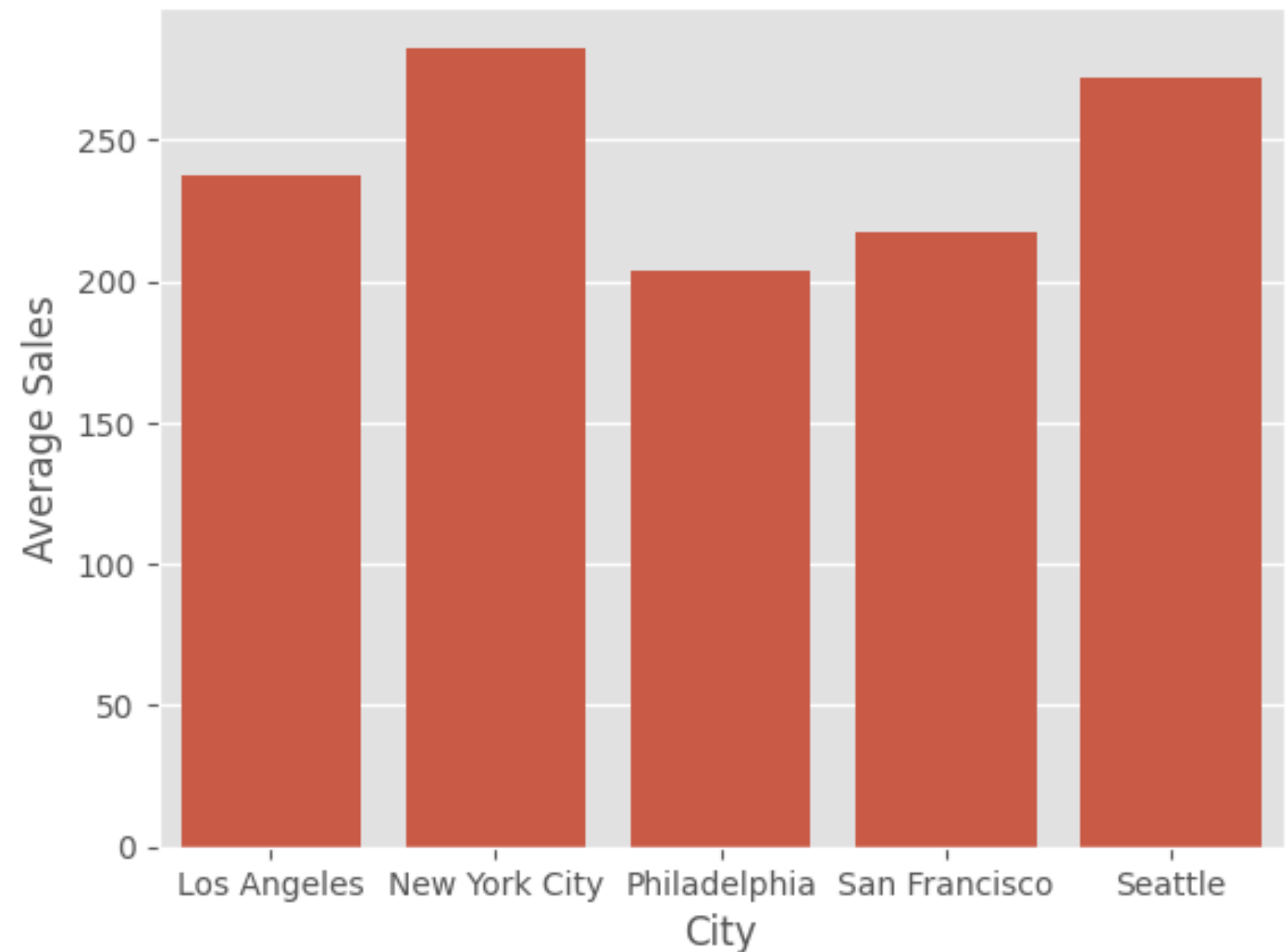
City Analysis

The first chart shows that New York City has the highest number of orders, followed by Los Angeles and Philadelphia. The second chart reveals that New York City and Seattle have the highest average sales, while Philadelphia has the lowest. This suggests that while New York City has a large customer base, it may not be the most profitable city for the business.

Top 5 Cities by number of orders



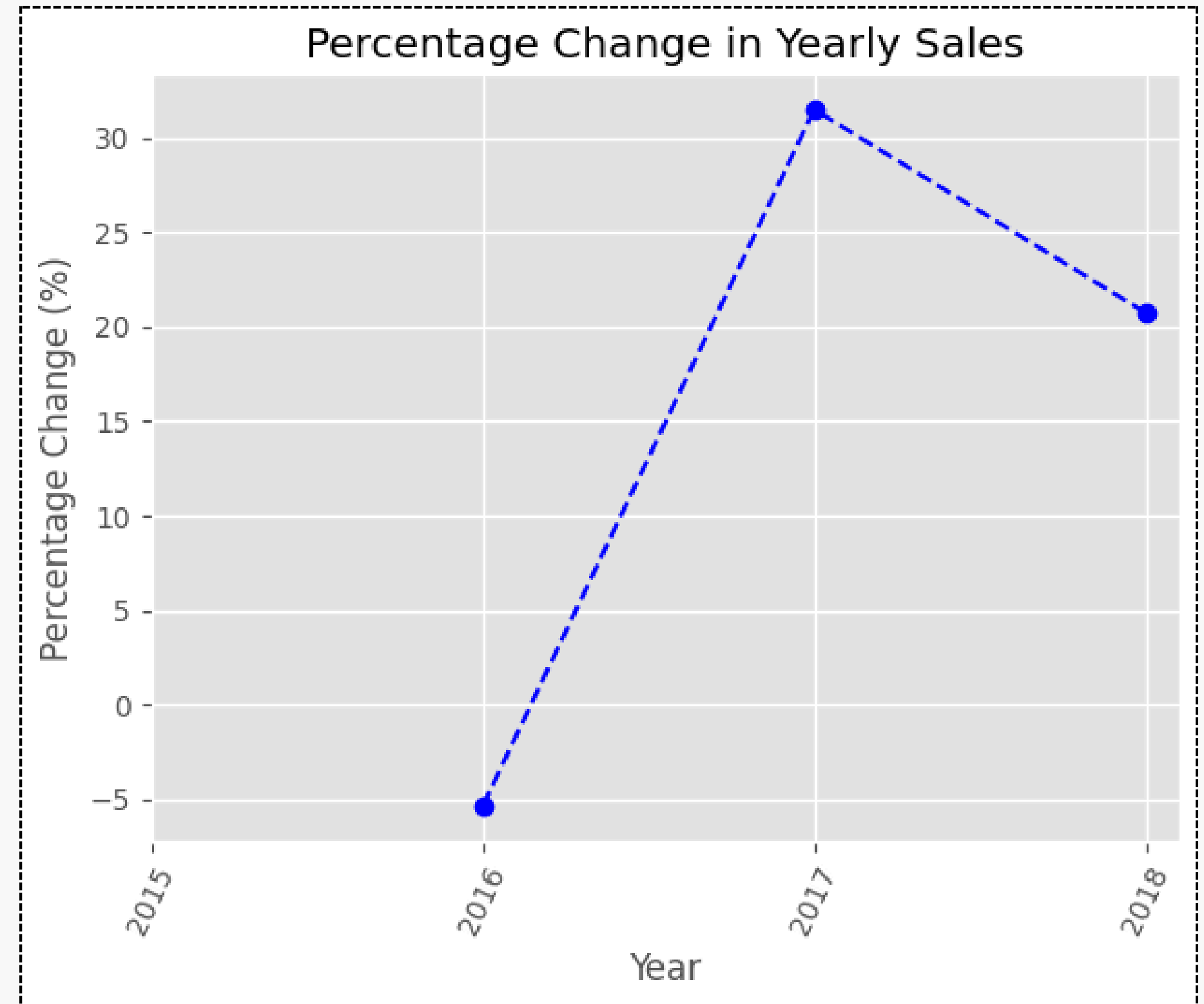
Top 5 Cities by Number of Orders and Their Average Sales



Year-over-Year Growth

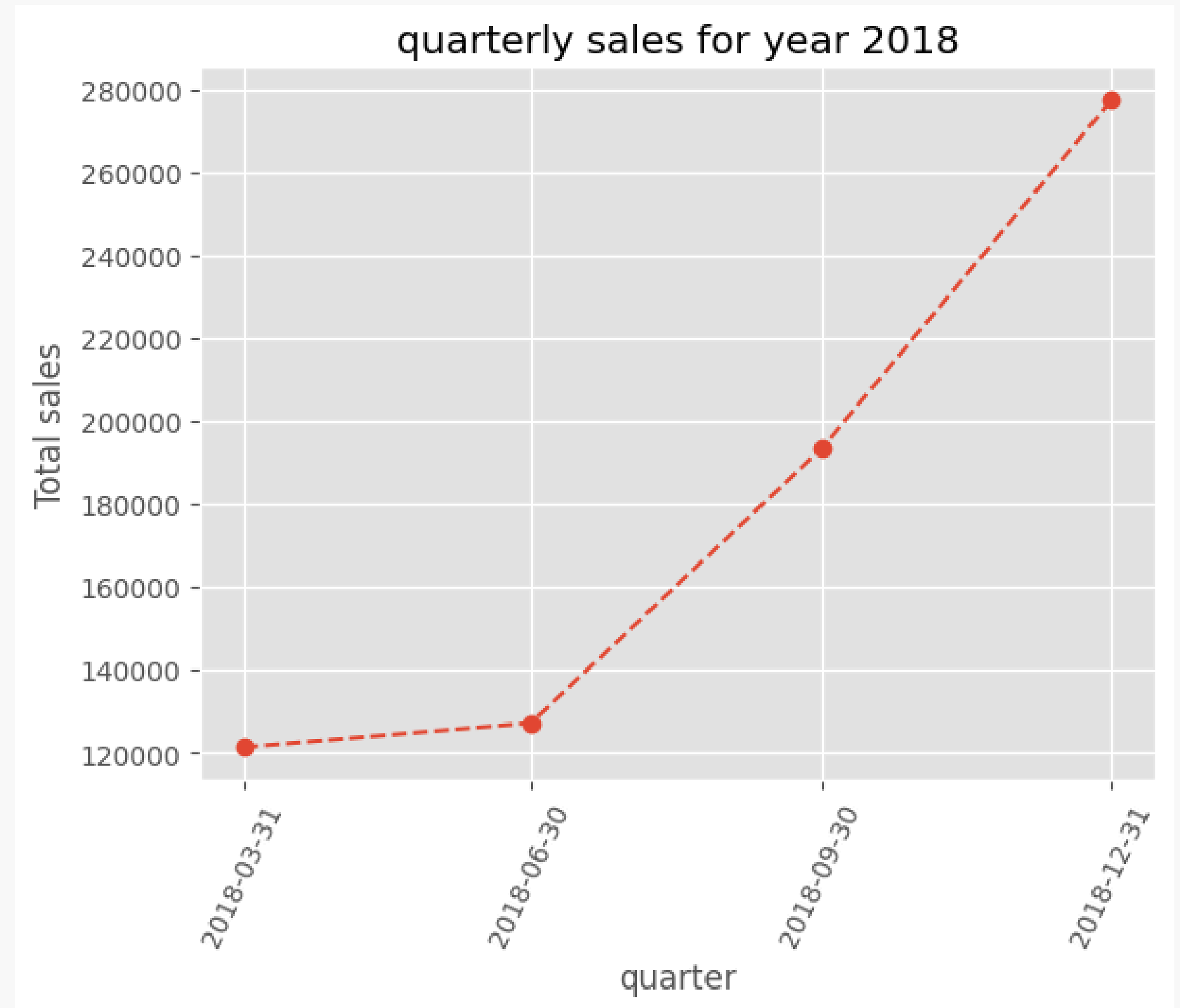


The line chart shows the percentage change in yearly sales from 2015 to 2018. There was a significant increase in sales in 2017, followed by a smaller decrease in 2018.



Quarterly Sale Analysis - 2018

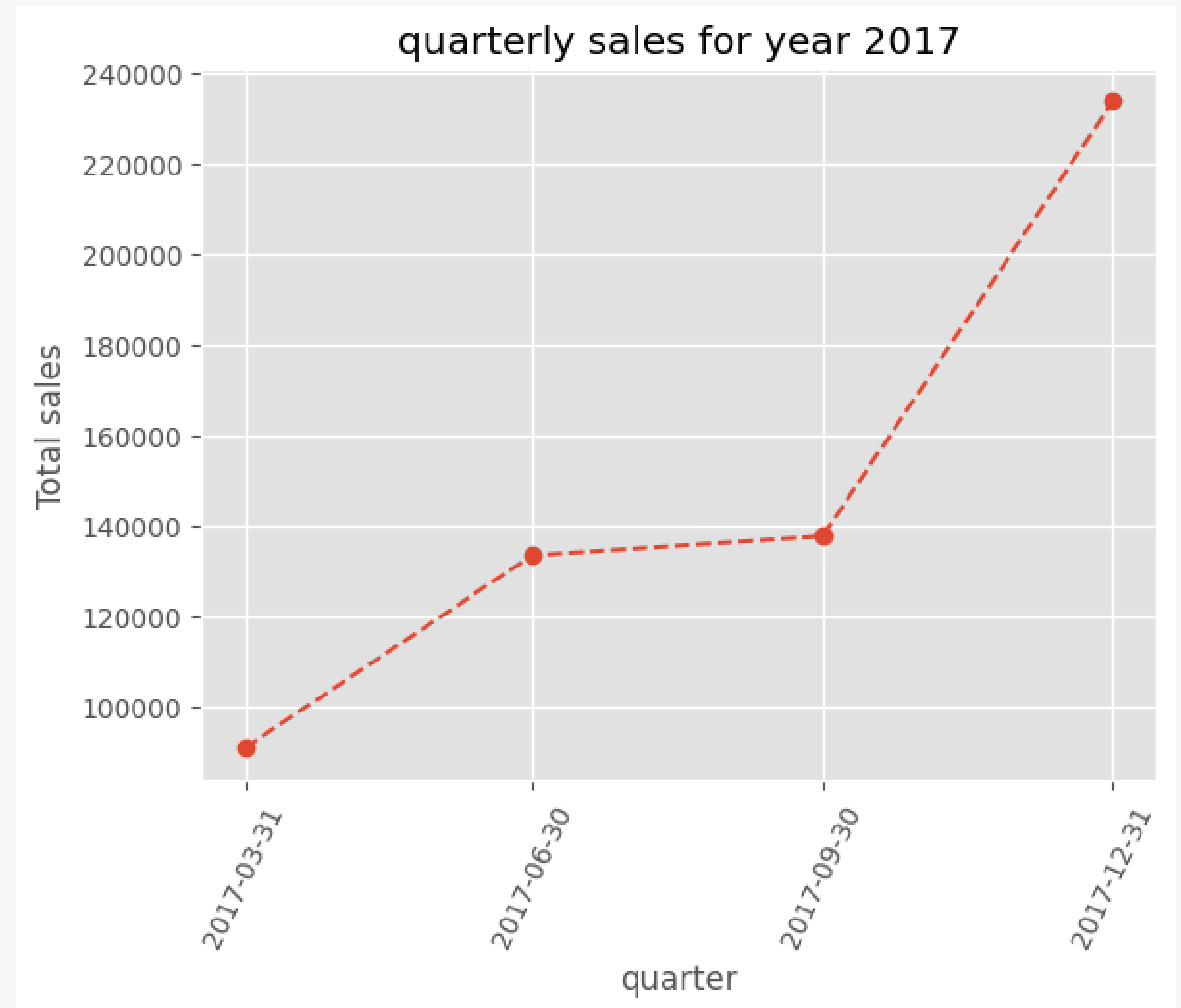
The line chart shows the total sales for each quarter of 2018. Sales increased steadily throughout the year, with the highest sales recorded in the fourth quarter.



Quarterly Sale Analysis - 2017



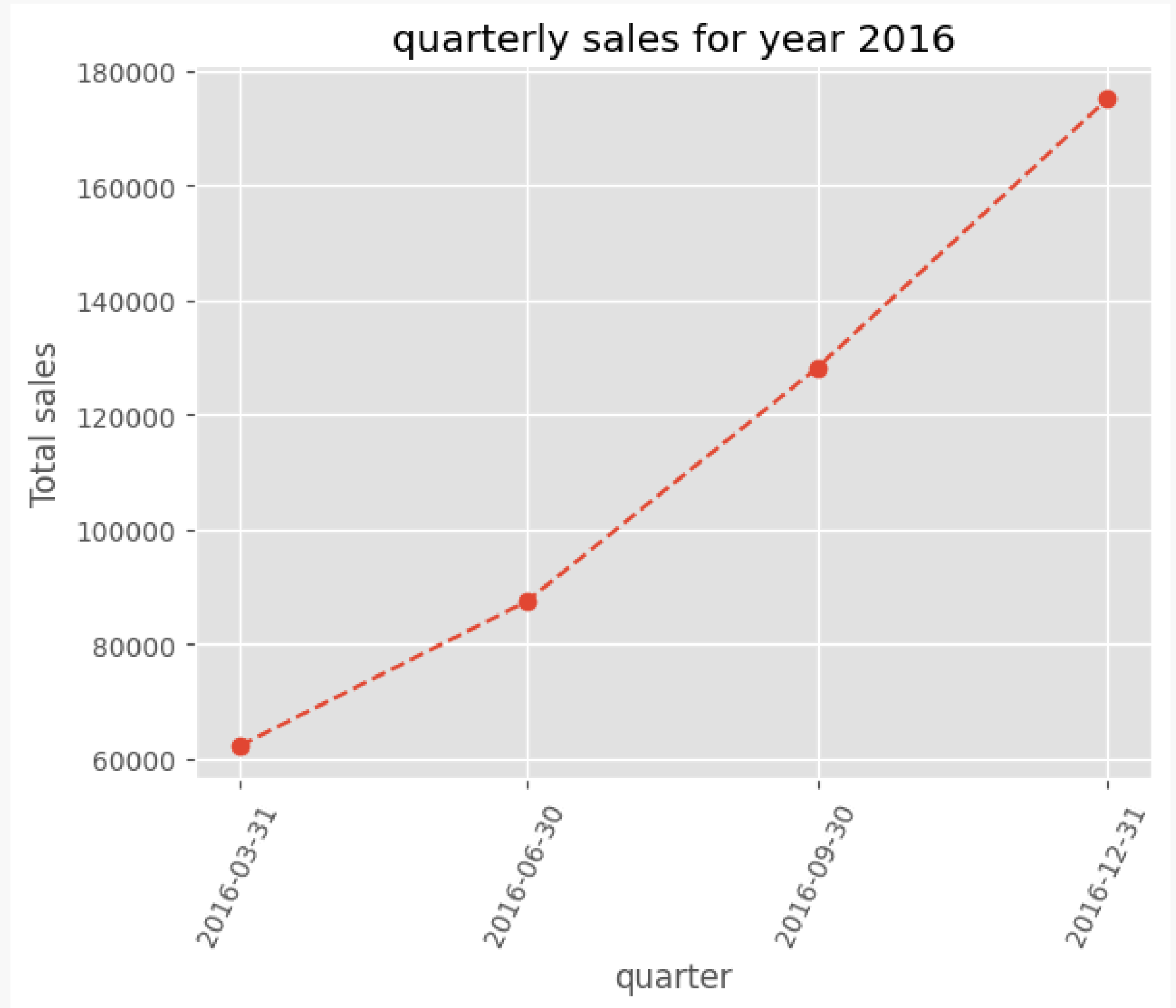
The line chart shows the total sales for each quarter of 2017. Sales increased steadily throughout the year, with the highest sales recorded in the fourth quarter



Quarterly Sale Analysis - 2016



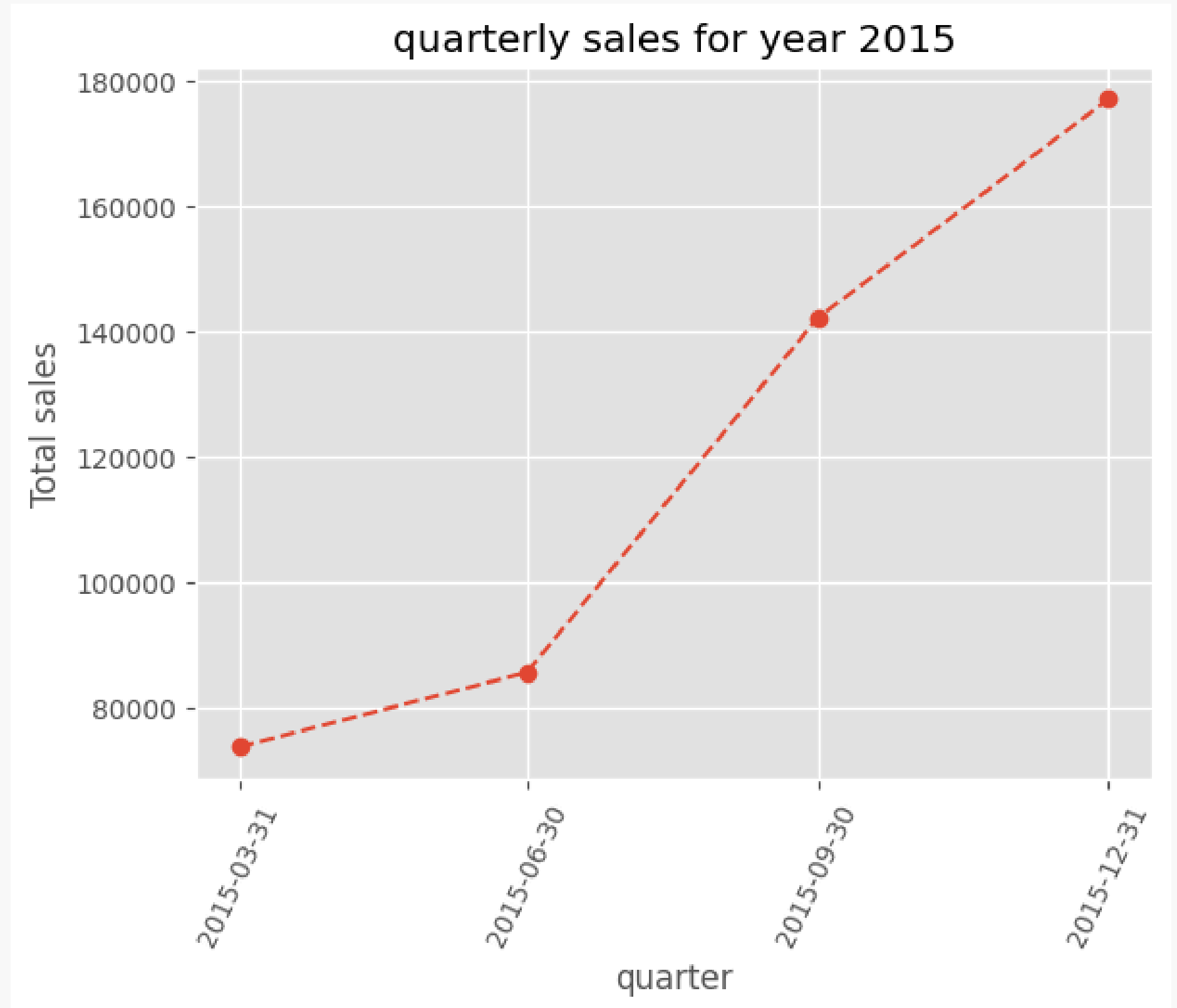
The line chart shows the total sales for each quarter of 2016. Sales increased steadily throughout the year, with the highest sales recorded in the fourth quarter.



Quarterly Sale Analysis - 2015



The line chart shows the total sales for each quarter of 2015. Sales increased steadily throughout the year, with the highest sales recorded in the fourth quarter.



Recommendations



1. Focus Marketing Efforts on Home Office Segment

The Home Office segment has the highest average sales. Targeted marketing and promotional campaigns for this segment can further increase sales and strengthen customer loyalty.

2. Target High-Volume Cities for Special Promotions

Since New York, Los Angeles, and San Francisco have the highest number of orders, running city-specific promotions or discounts in these regions can boost sales and attract more customers.

3. Leverage Technology Category for Expansion

With Technology showing the highest average sales, expanding the product range and offering exclusive deals or promotions in this category can drive continued growth and maximize sales potential.



Recommendations



4. **Improve Sales Performance in the West Region**

Since the South region has the highest average sales, efforts should be made to improve sales in other regions, particularly the West, by analyzing regional preferences and tailoring strategies accordingly.

5. **Enhance Focus on Same-Day Shipping**

As the average sales value is slightly higher for same-day shipping mode, investing in logistics to enhance this offering can create a competitive edge and increase customer satisfaction.

6. **Optimize Quarterly Sales Strategies**

Based on fluctuating sales trends across years, focusing on Q4, which shows the highest sales growth, can help businesses capitalize on seasonal demand, while addressing the sales decline in Q3 through targeted strategies.



Conclusion



In conclusion, this sales data analysis of a commercial store has provided valuable insights into sales performance across different regions, product categories, and time periods. By leveraging data cleaning techniques, exploratory data analysis (EDA), and statistical analysis, we were able to identify key trends, such as the highest sales in specific regions, the most popular products, and the fluctuations in sales over the years. The findings offer actionable insights for improving sales strategies, optimizing inventory, and targeting the right customer segments. The accompanying Power BI dashboard and report provide an interactive way to visualize and track these insights, aiding in data-driven decision-making for business growth.





Thank you

Your feedback is highly appreciated and will help improve the quality of future work!

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