

# E-COMMERCE SALES ANALYSIS

## EXPLORATORY DATA ANALYSIS

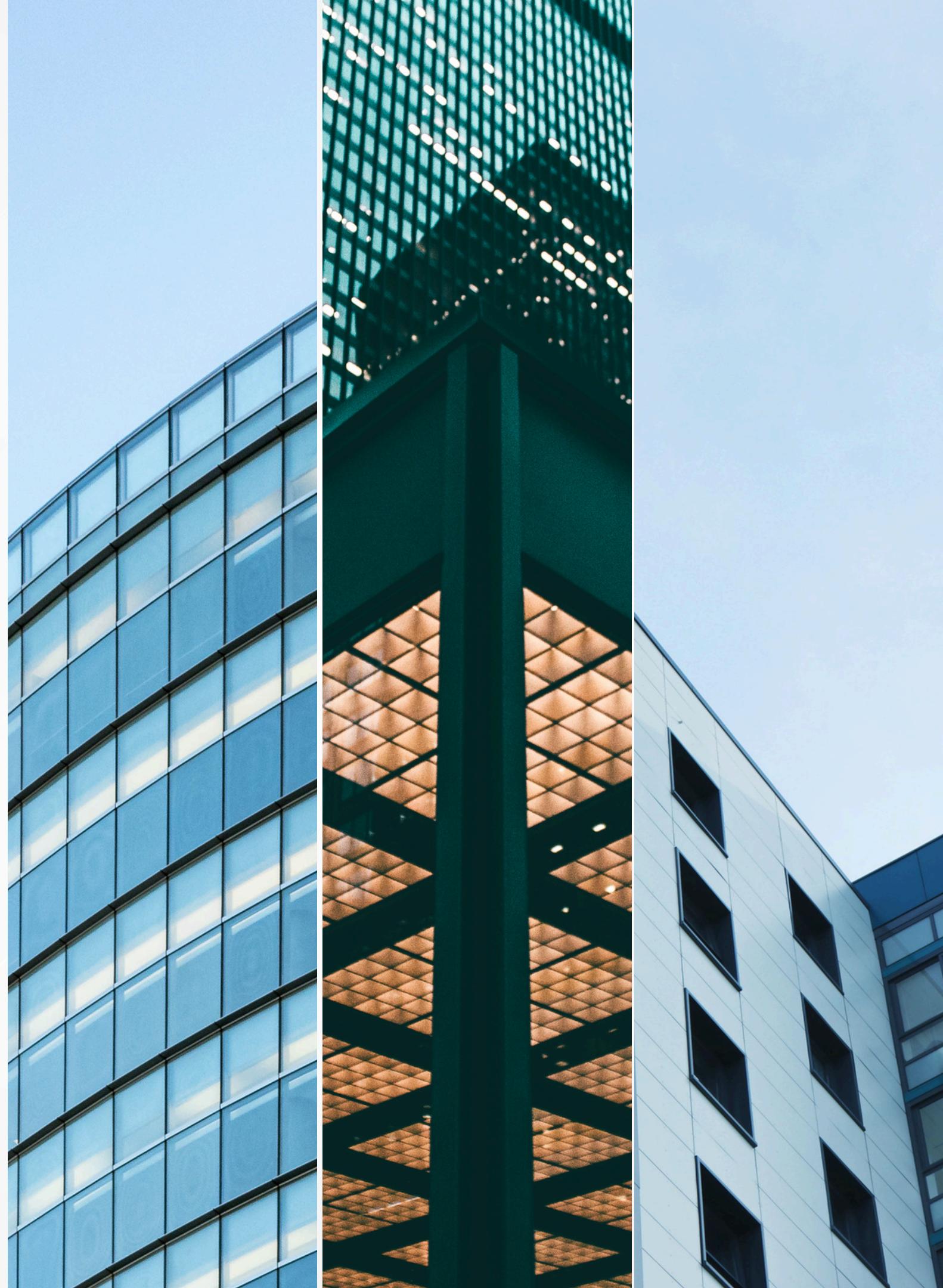
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An Overview of Sales and Profit  
Performance

# PURPOSE OF THE REPORT

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- To analyze the sales and profit data
- To identify key trends and patterns
- To provide actionable insights for decision-making

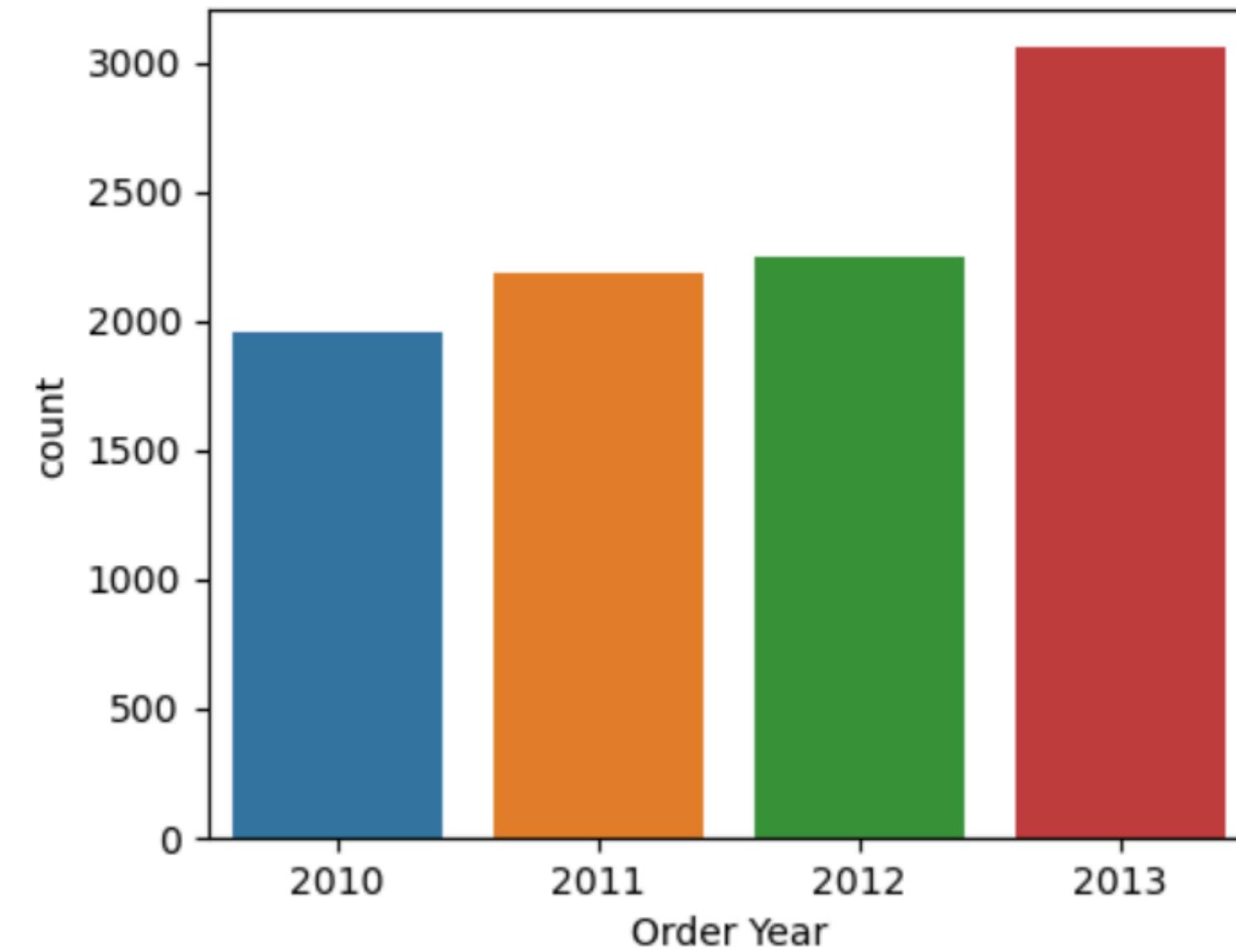
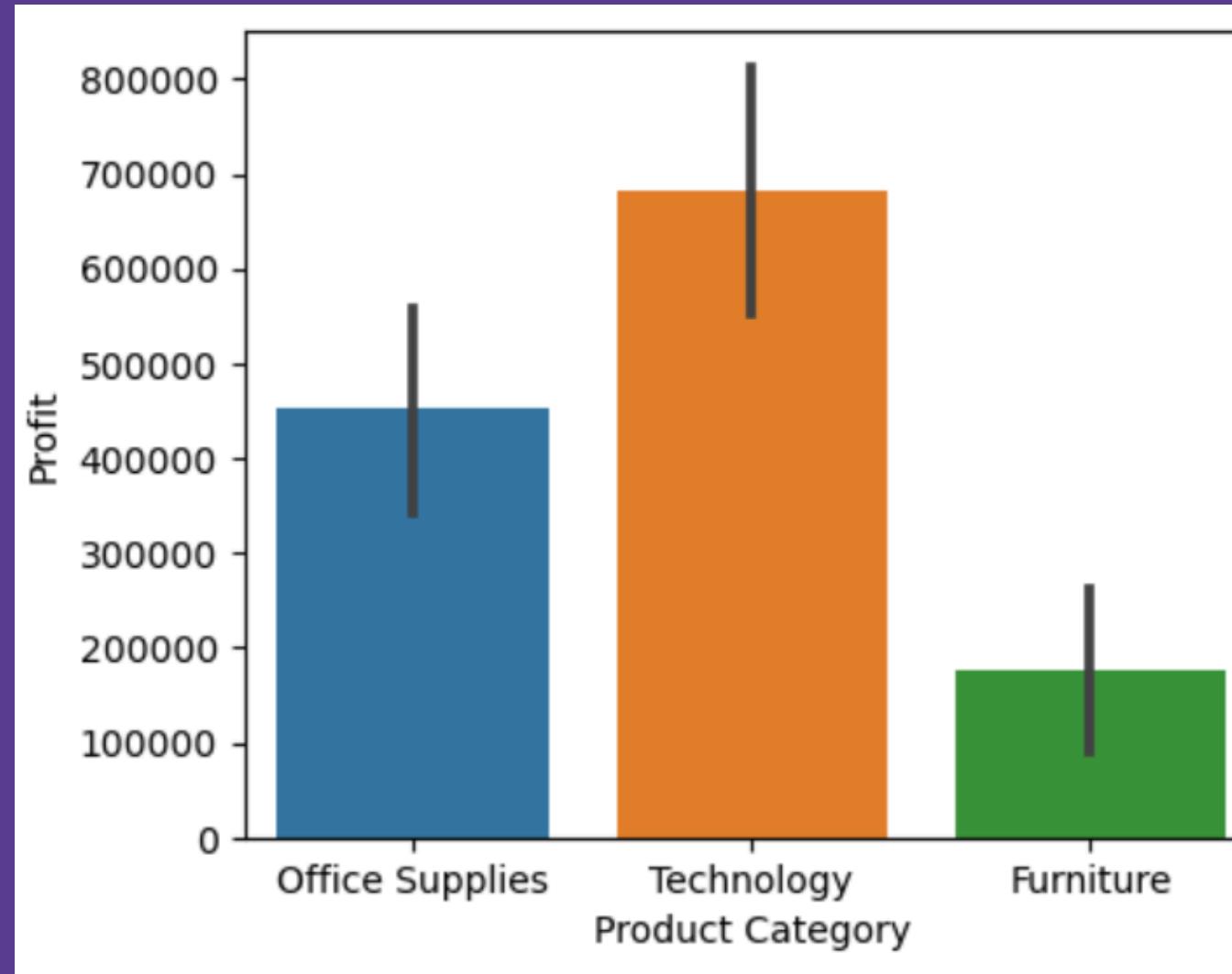


# 1. DATA CLEANING AND PREPROCESSING

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- IDENTIFIED MISSING VALUES IN THE DATASET AND FILL IT BY MEAN VALUE.
- REMOVING DUPLICATES AND REPLACE SPACED ELEMENT TO ENSURE DATA INTEGRITY
- ENSURING CORRECT DATA TYPES FOR EACH COLUMN
- CREATING NEW FEATURES ORDER YEAR TO ENHANCE THE ANALYSIS

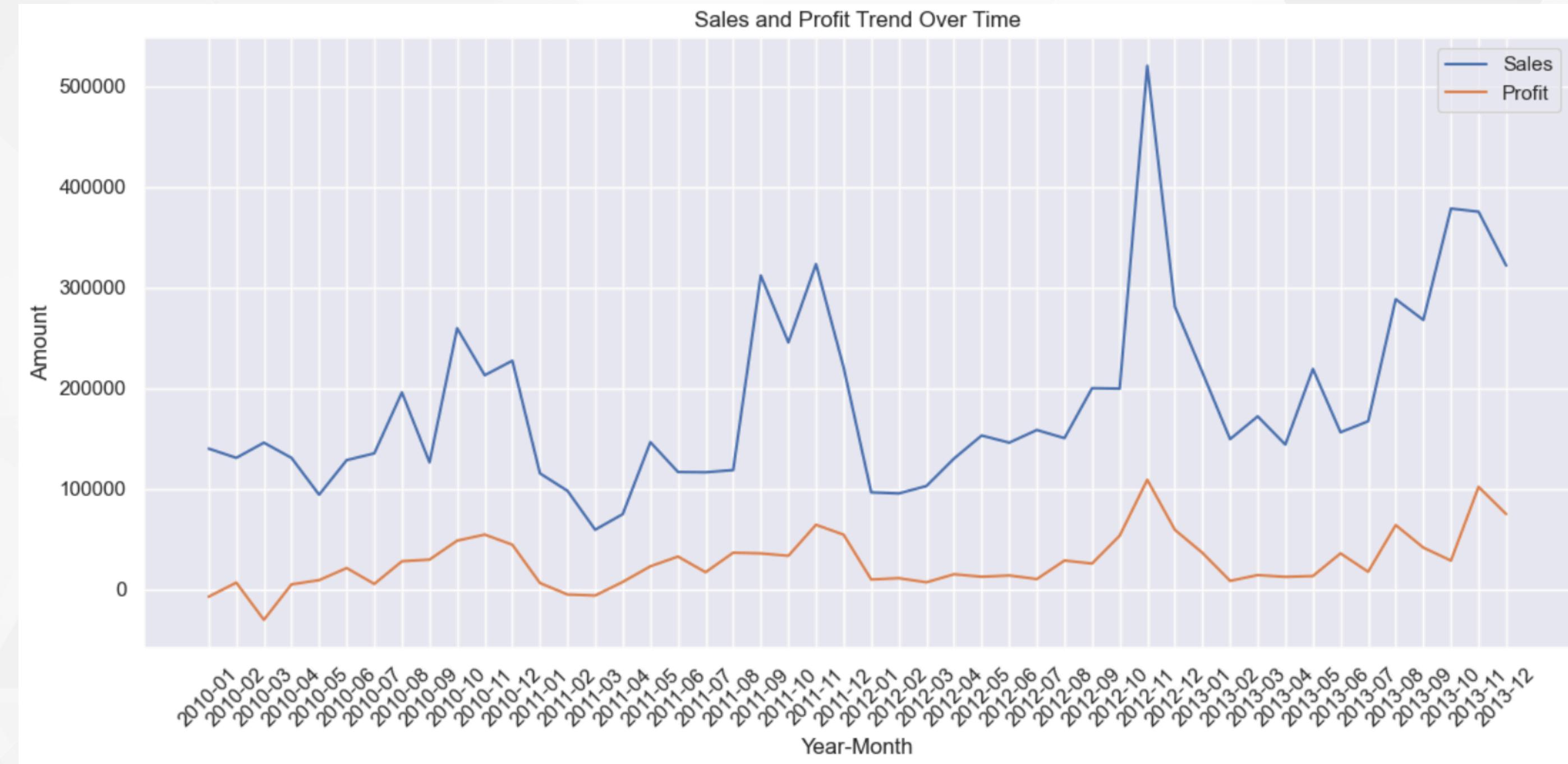
## 2. SALES AND PROFIT ANALYSIS

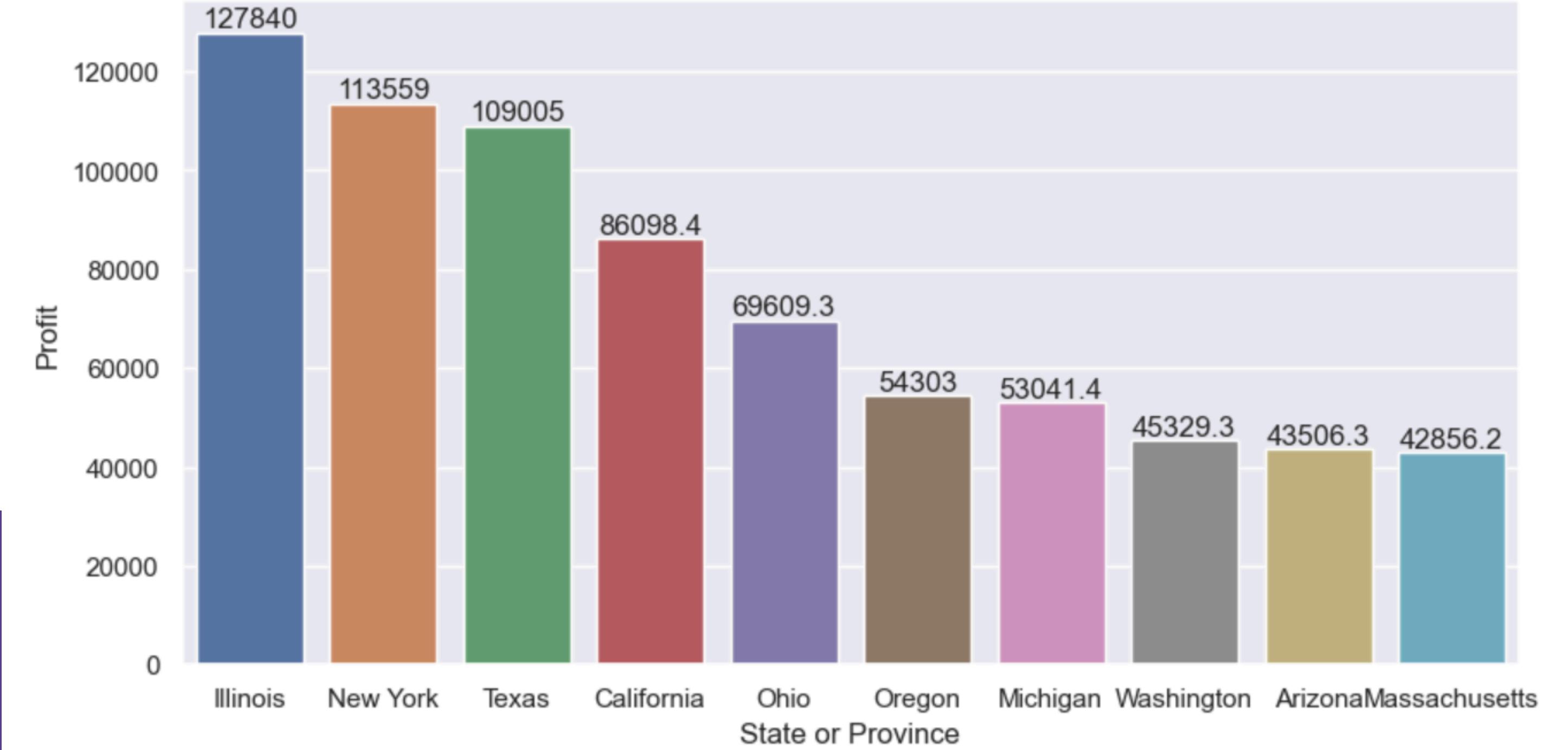


- Technology products have the highest profit, followed by Office Supplies and Furniture.
- There is a significant gap between the profit from Technology and the other two categories.

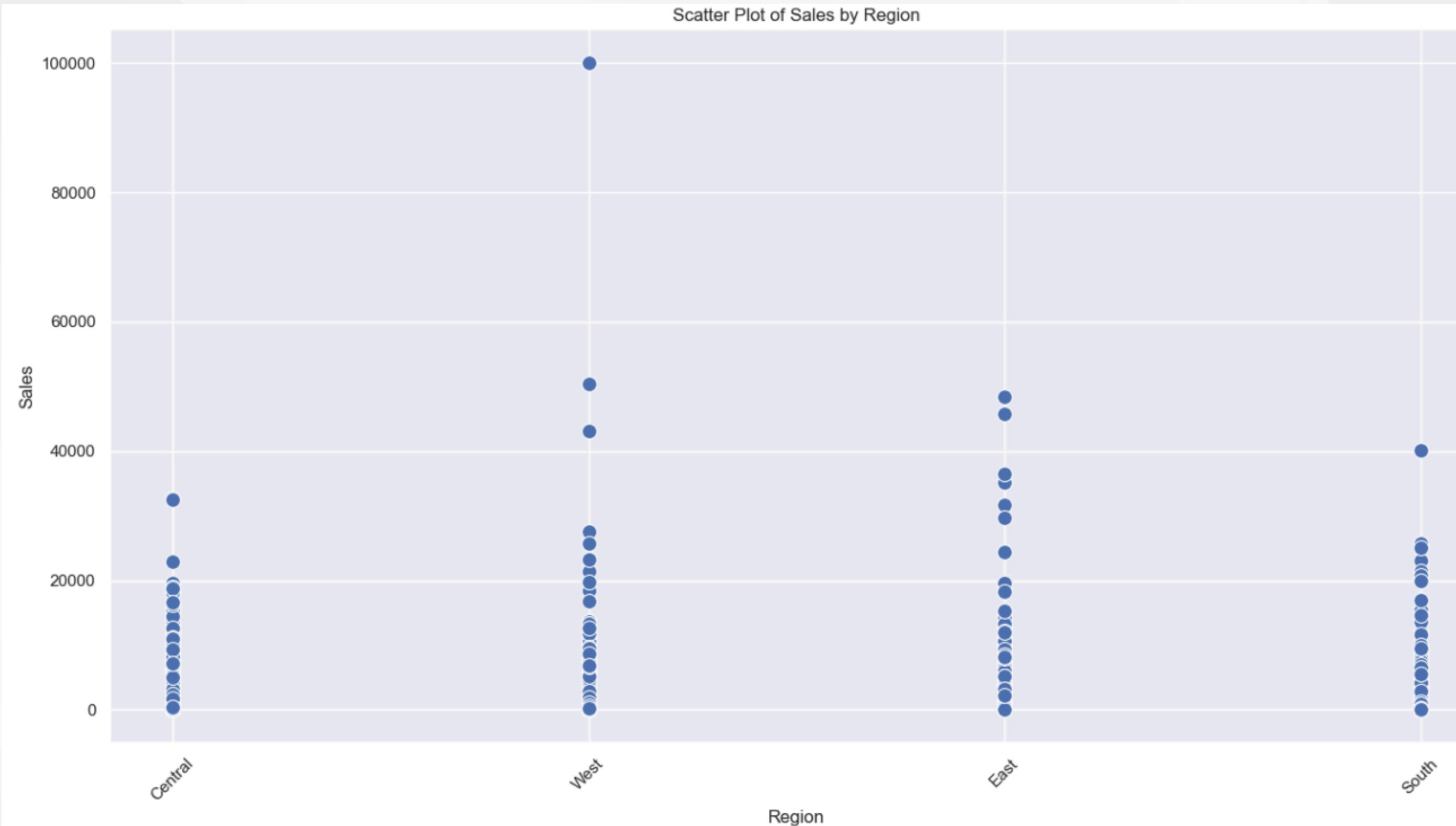
- There is a noticeable increase in the number of orders from 2010 to 2013.
- The year 2013 has the highest order count.

- There is an upward trend in both sales and profit over the years.
- There are some spikes in sales, which could indicate seasonal trends or successful promotions.



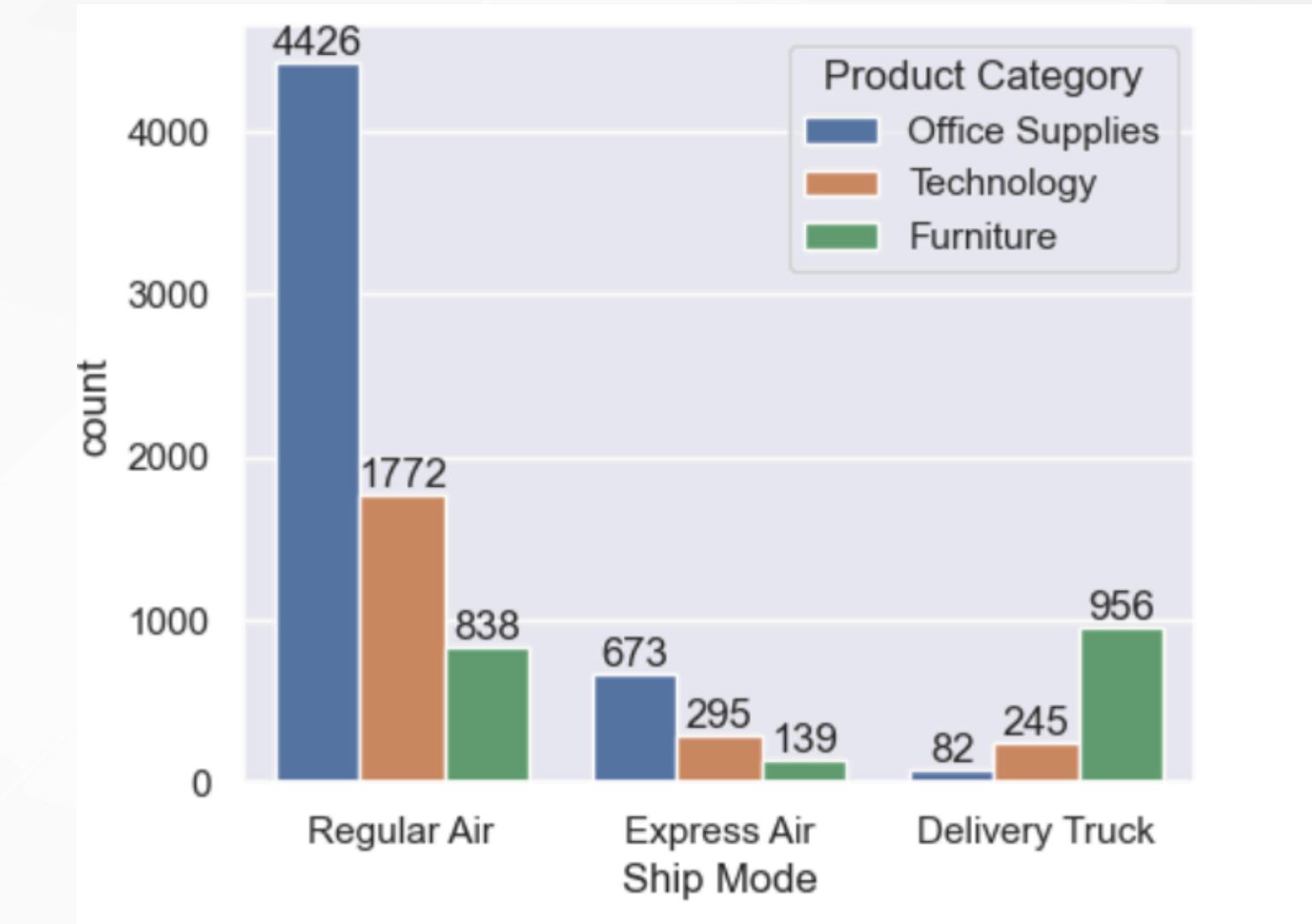
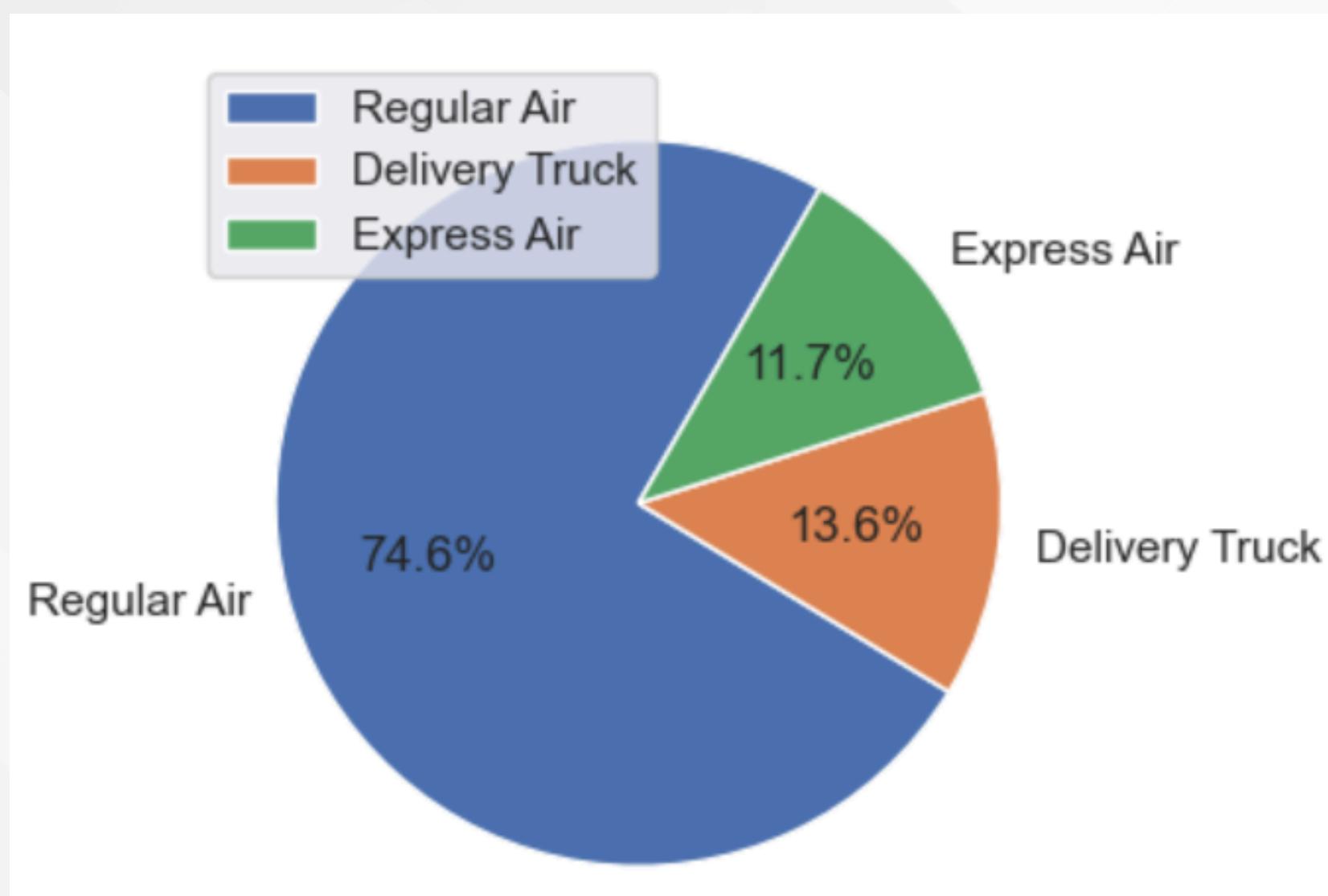


- Illinois, New York, and Texas are the top three states in terms of profit.
- Other states like California, Ohio, Oregon, and Michigan also contribute significantly but to a lesser extent.



- The scatter plot of sales by region shows a wide spread of sales across all regions (Central, West, East).
- No region is significantly outperforming the others in terms of sales quantity.

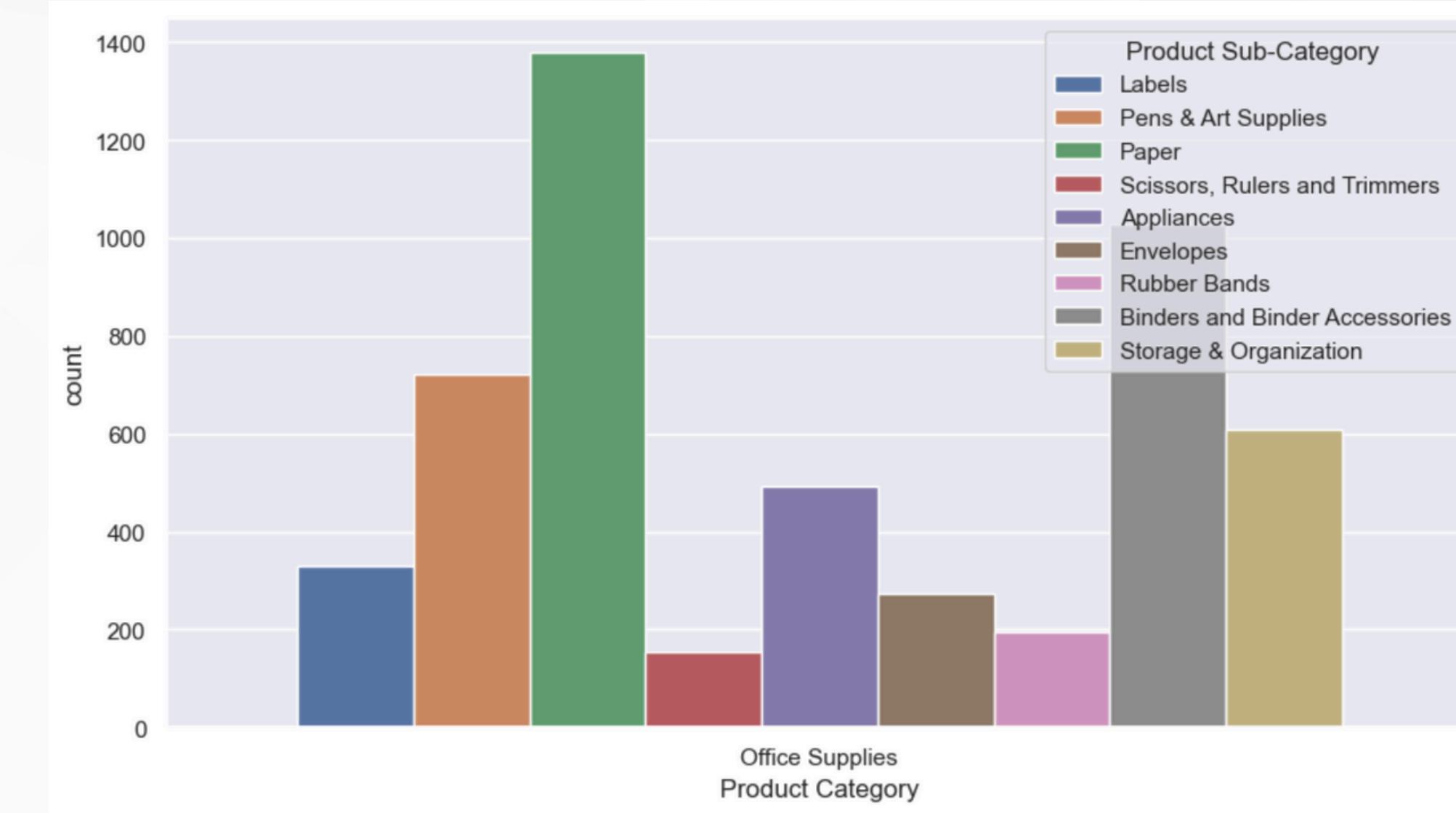
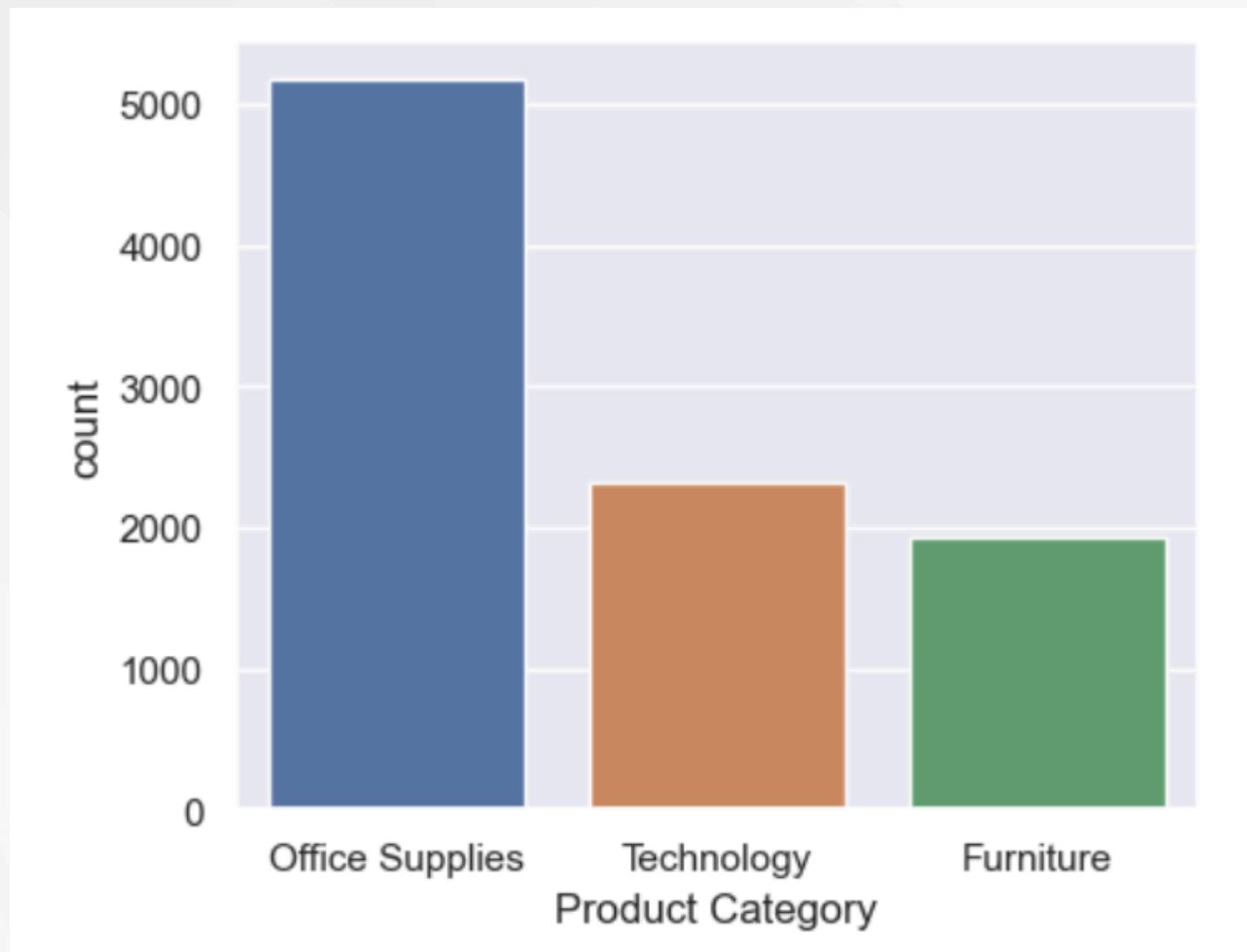
# 3. SHIPPING ANALYSIS



- Regular Air is the most used shipping mode, accounting for 74.6% of shipments.
- Delivery Truck and Express Air are used much less frequently, at 13.6% and 11.7%, respectively.

- For Regular Air, the majority of shipments are Office Supplies (4426), followed by Technology (1772) and Furniture (838).
- For Express Air, the shipments are primarily Office Supplies (673), with fewer Technology (295) and Furniture (139).
- For Delivery Truck, the highest shipments are Furniture (956), followed by Office Supplies (82) and Technology (245).

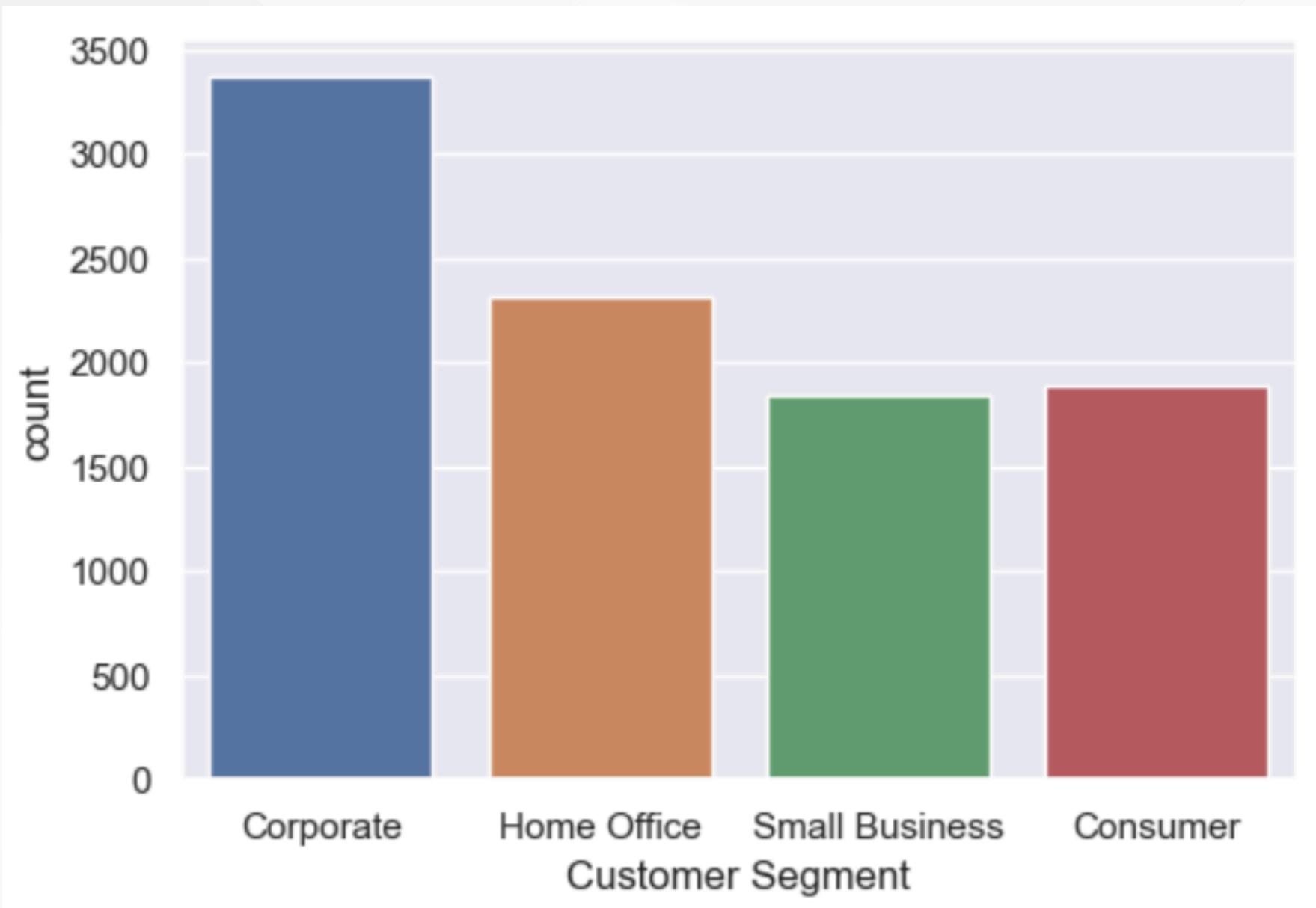
# 4. PRODUCT ANALYSIS



- **Office Supplies:** This category has the highest count, indicating it's the most frequently purchased or stocked product category, with a count of around 5000.
- **Technology:** This category is in the middle, with a count of approximately 2500.
- **Furniture:** This category has the lowest count, with around 2000.

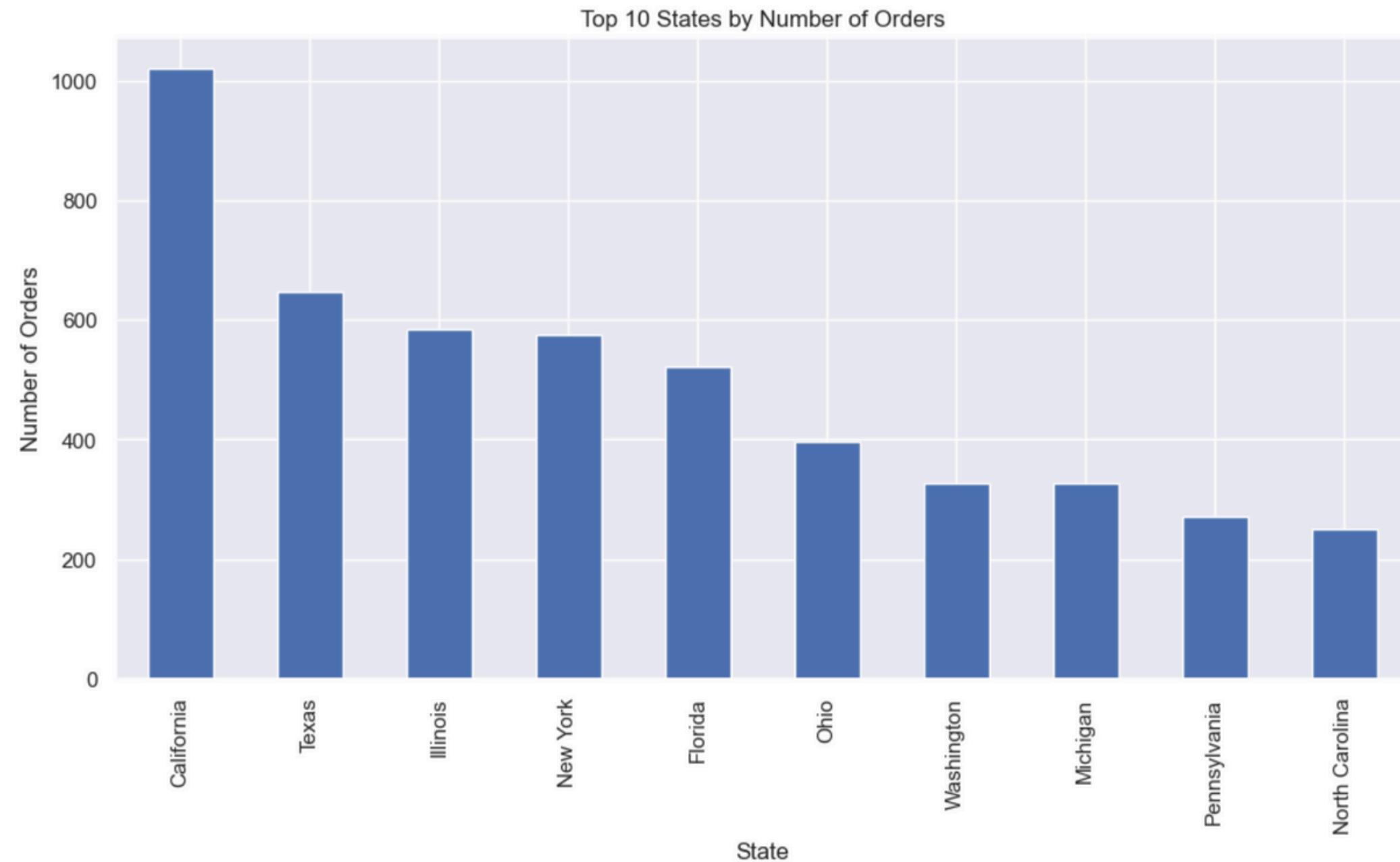
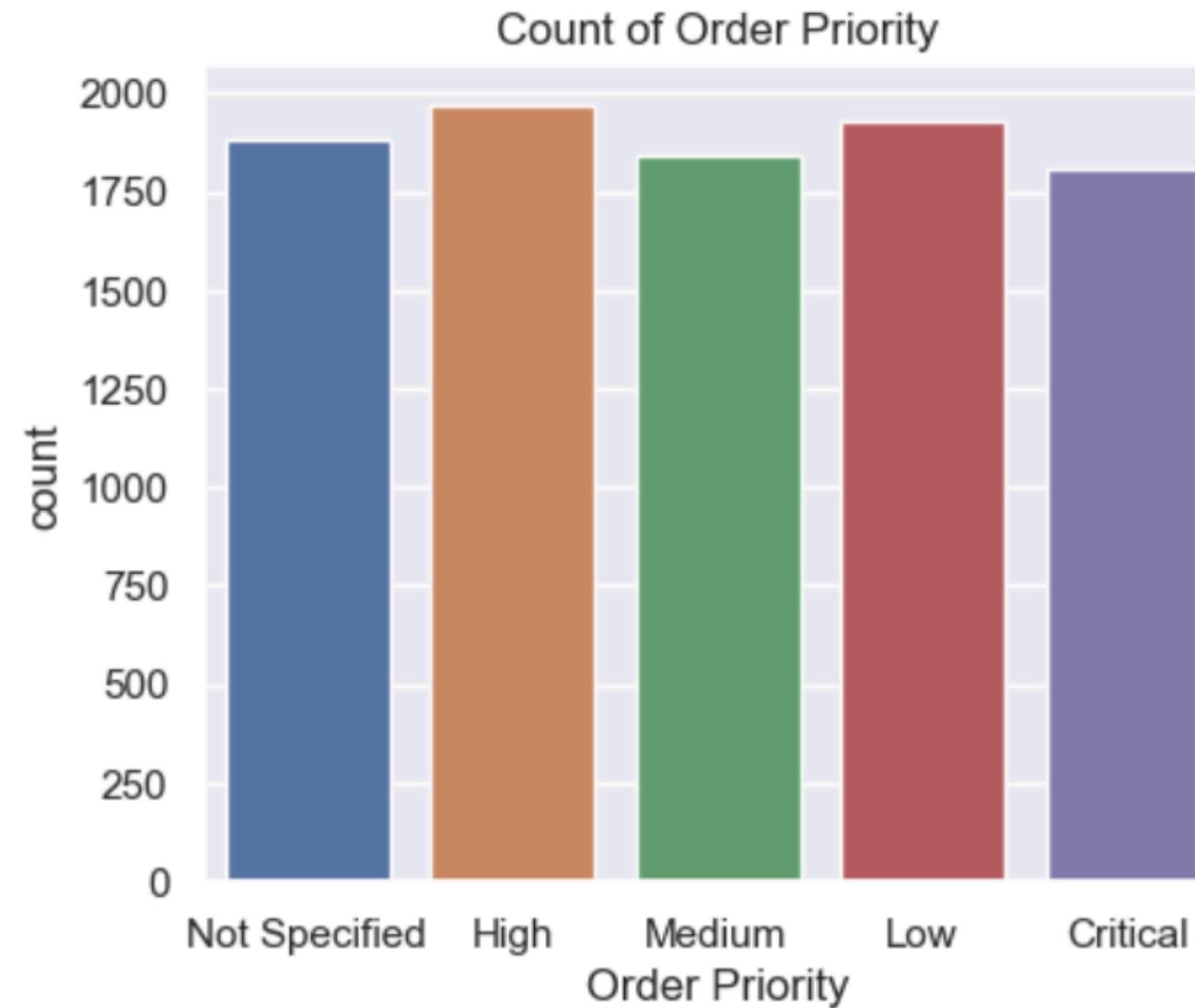
- **Storage & Organization:** This sub-category within Office Supplies is the highest, with a count close to 1300.
- **Binders and Binder Accessories:** The next highest, with around 1100.
- **Pens & Art Supplies:** Also significant, with approximately 1000.
- **Paper and other sub-categories:** Have lower counts, with items like Rubber Bands and Envelopes having significantly lower counts.

# 5. CUSTOMER ANALYSIS



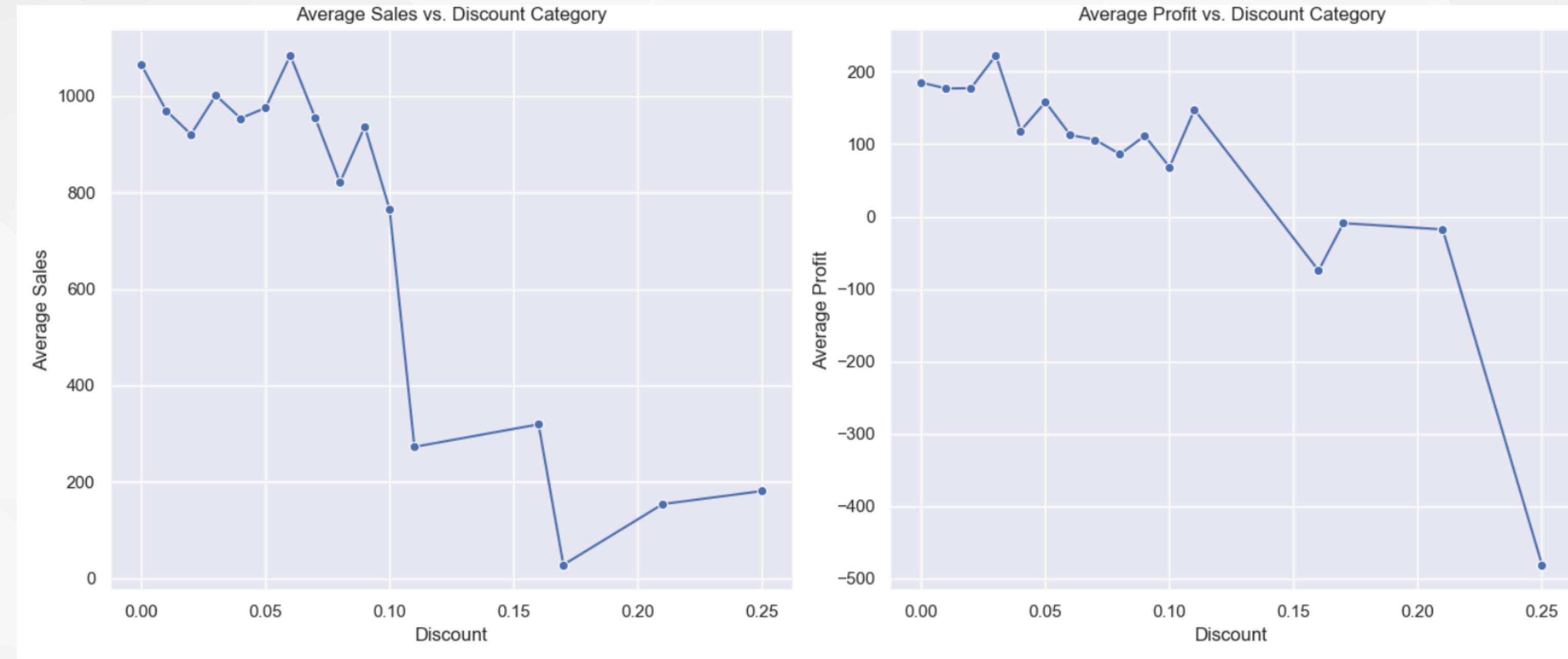
- The majority of the customers are from the **Corporate** segment.
- The **Home Office** segment is the second largest.
- Small Business and Consumer segments have nearly equal representation but are smaller compared to Corporate and Home Office.

# 6. ORDER PRIORITY



- The "Not Specified" category has a slightly lower count compared to other priority levels.
- There is no significant variation between the priorities, suggesting that priority does not drastically impact the volume of orders.
- California: This state has the highest number of orders, approaching 1000.
- Texas and New York: These states follow, with each having around 600-650 orders.
- Other States: Illinois, Florida, and Ohio have moderate numbers of orders, while states like Washington, Michigan, Pennsylvania, and North Carolina have lower counts.

# 7. DISCOUNT IMPACT ON SALES AND PROFIT



- The average sales tend to be higher when the discount is between 0% and 10%.
- After the 10% discount mark, there is a significant drop in average sales.
- Sales slightly recover but remain lower beyond the 10% discount.

- The average profit is relatively stable and positive up to a 10% discount.
- There is a sharp decline in profit when the discount exceeds 10%.
- Beyond the 10% discount, the average profit becomes negative, indicating losses.

# SUGGESTIONS :

- Focus on High-Profit Product Categories
- Conduct targeted marketing campaigns in regions with lower sales to boost overall performance.
- Study the strategies used in Illinois, New York, and Texas that led to higher profits and replicate these in other states
- Since Regular Air is the most commonly used mode, assess its cost-effectiveness compared to Delivery Truck and Express Air. Explore potential savings by negotiating better rates with shipping providers for high-volume shipments via Regular Air.
- Encourage customers to opt for Delivery Truck for larger, bulkier items like Furniture to reduce costs.
- Office Supplies are in high demand, particularly items related to Storage & Organization and Binders and Binder Accessories. The company should ensure these items are well-stocked and consider expanding the range within these sub-categories.
- Since Furniture has the lowest count, the company might consider either diversifying the types of furniture offered or improving marketing efforts in this area to increase sales.
- California, Texas, and New York are high-order states. The company should consider focusing marketing efforts, promotions, and targeted campaigns in these areas to capitalize on existing demand and potentially increase order volume further.
- Continuously monitor the impact of discounts on both sales and profits. Use data-driven approaches to fine-tune pricing and discount strategies in real-time. By implementing these strategies, the company can potentially improve its profitability while maintaining healthy sales volumes.

# THANK YOU

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