

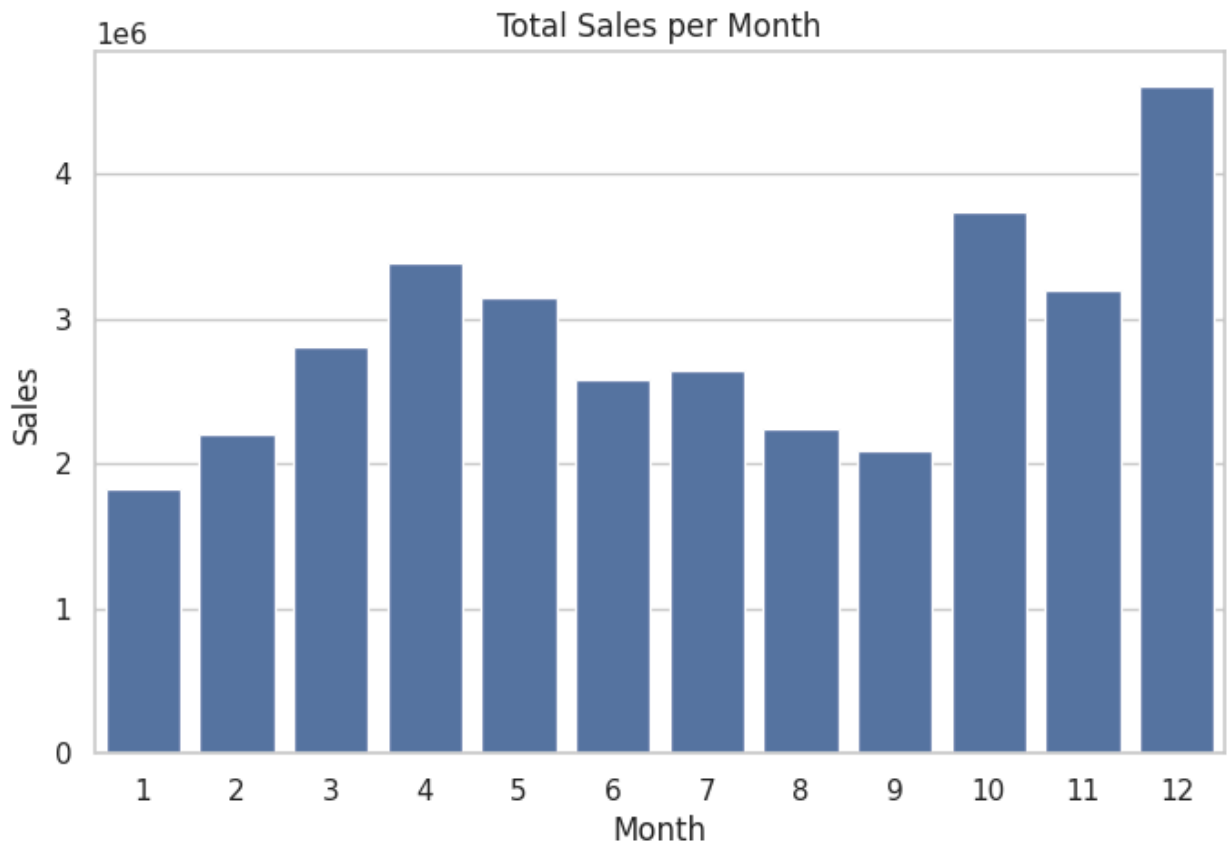
EDA through Data Visualization

A detailed report has been prepared based on the explanatory data analysis (EDA) performed on the data.

Tools used - Matplotlib , Seaborn.

The analyses are as follows:-

1. Highest-selling months



Highest Sales

- December records the highest sales (above 4.5 million), likely driven by holiday season demand, year-end purchases, or festive promotions.

Observations

- Sales show fluctuations throughout the year, with noticeable peaks in specific months.
- The trend suggests seasonal or campaign-based variations rather than steady growth.

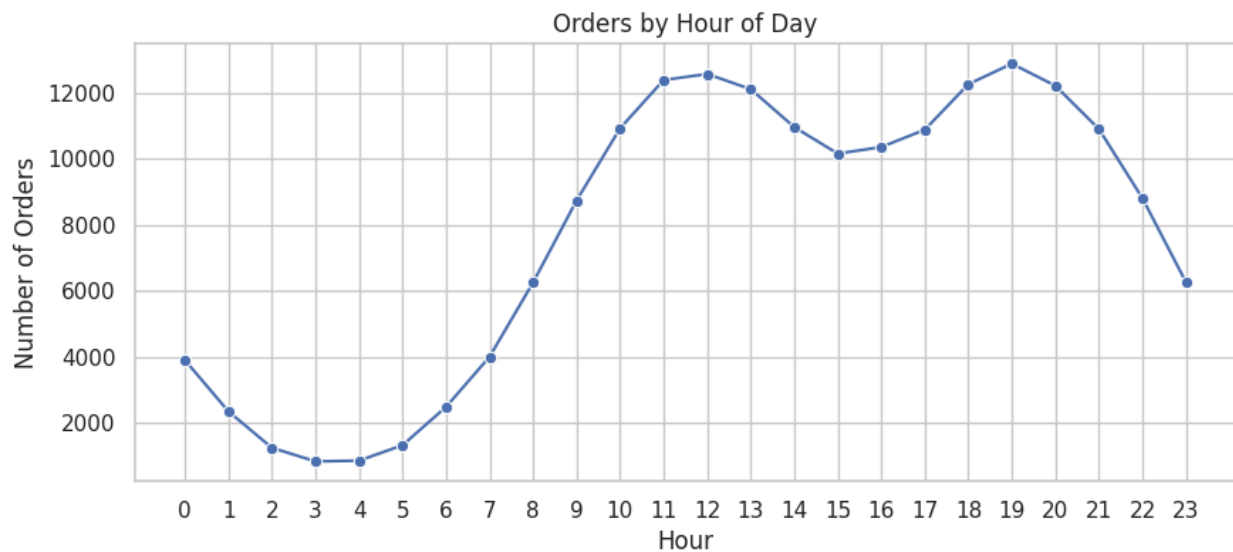
2. Best-Selling Products by Quantity



- Top Products by Quantity:
 - AAA Batteries (4-pack) (≈31,000 units)
 - AA Batteries (4-pack) (≈27,600 units)

- USB-C Charging Cable and Lightning Charging Cable also perform strongly (>23,000 units each).
- Observation: High demand for low-cost, essential accessories like batteries and charging cables. These drive volume but not necessarily revenue.

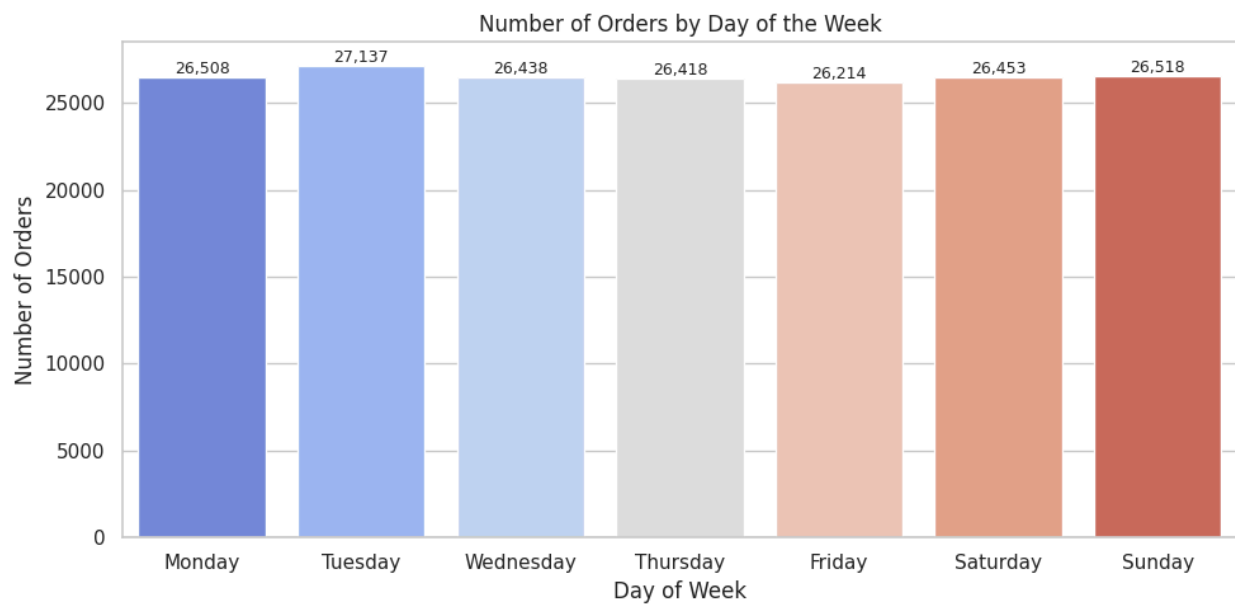
3. Orders by Hour of Day



- Peak Hours:
 - Late morning to early afternoon (10 AM – 1 PM).
 - Secondary peak around 7 PM – 9 PM.

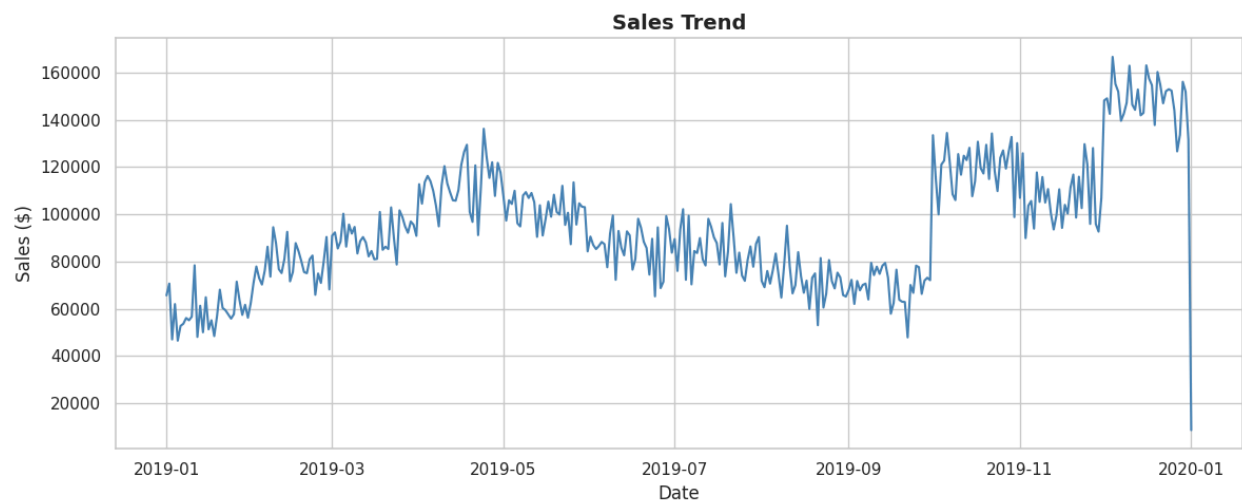
- Observation: Customer activity is high during work breaks and evenings.

4. Orders by Day of Week



- Orders are consistent across all days (~26K–27K per day).
- No significant weekday vs. weekend difference.

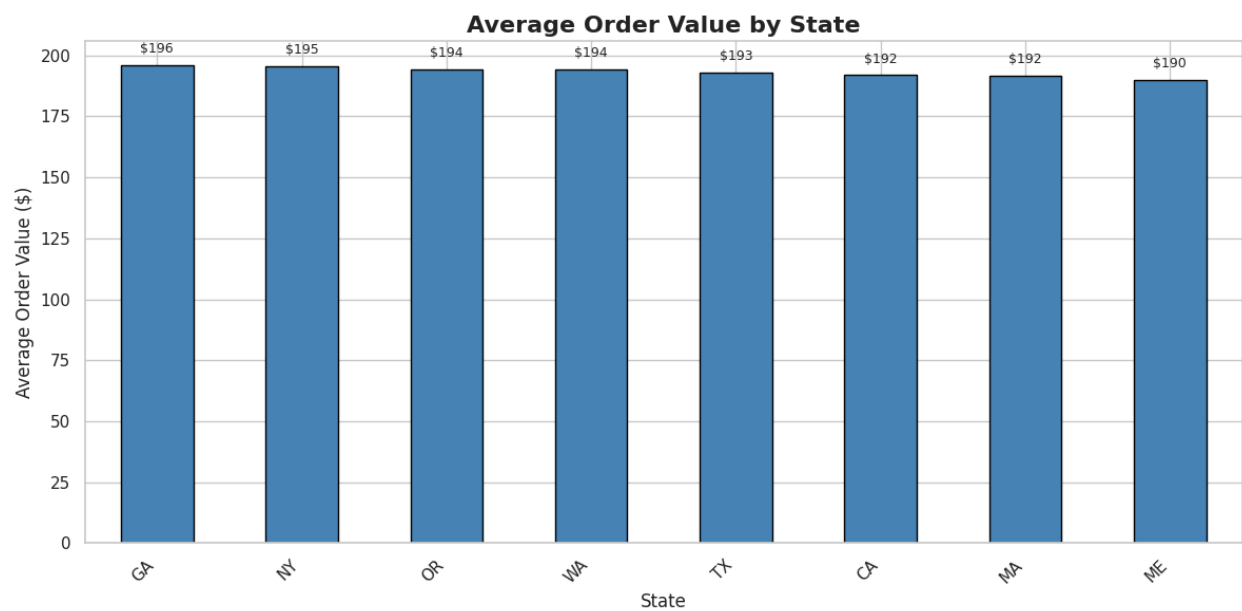
5. Sales Trend Over Time



- Overall Growth:
 - Sales increased significantly towards the end of the year, peaking around November–December.

- Possible Reason: Holiday season.

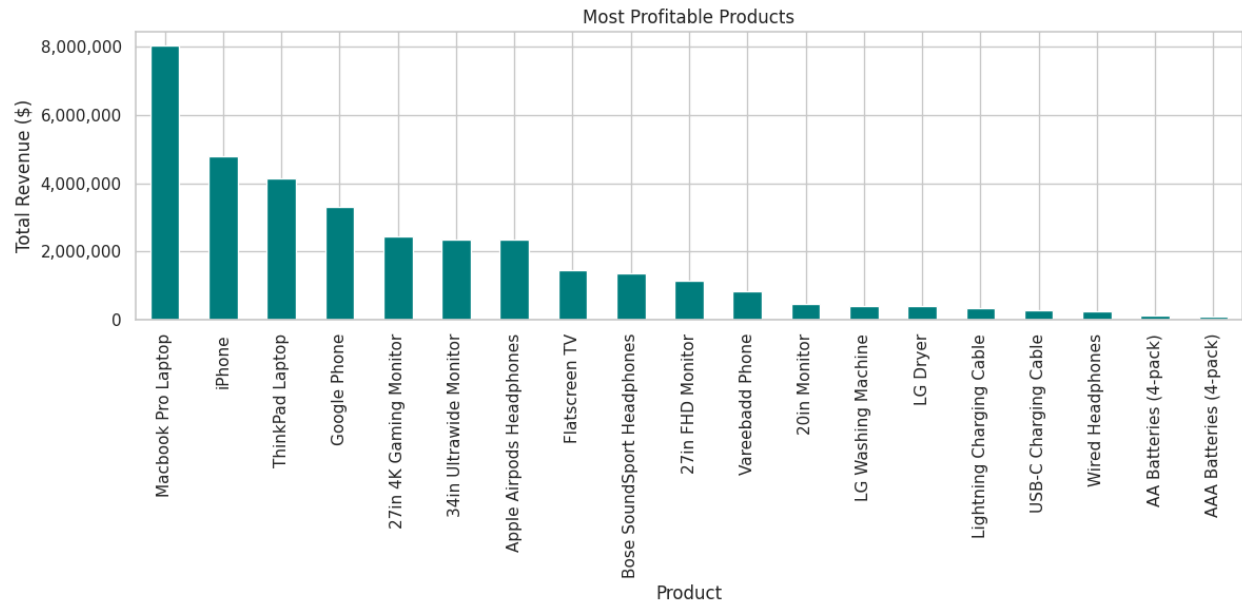
6. Average Order Value by State



- Top States by Average Order Value (AOV):

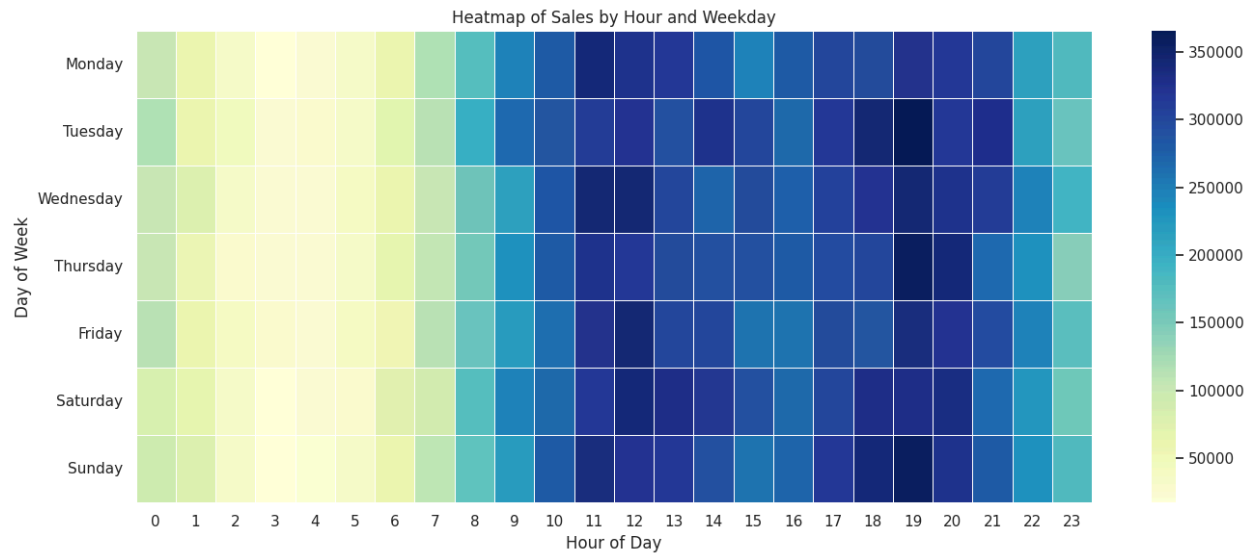
- Georgia (\$196), New York (\$195), Oregon & Washington (\$194).
- Observation: States have minimal difference in AOV (~\$190–\$196).

7. Most Profitable Products (by Revenue)



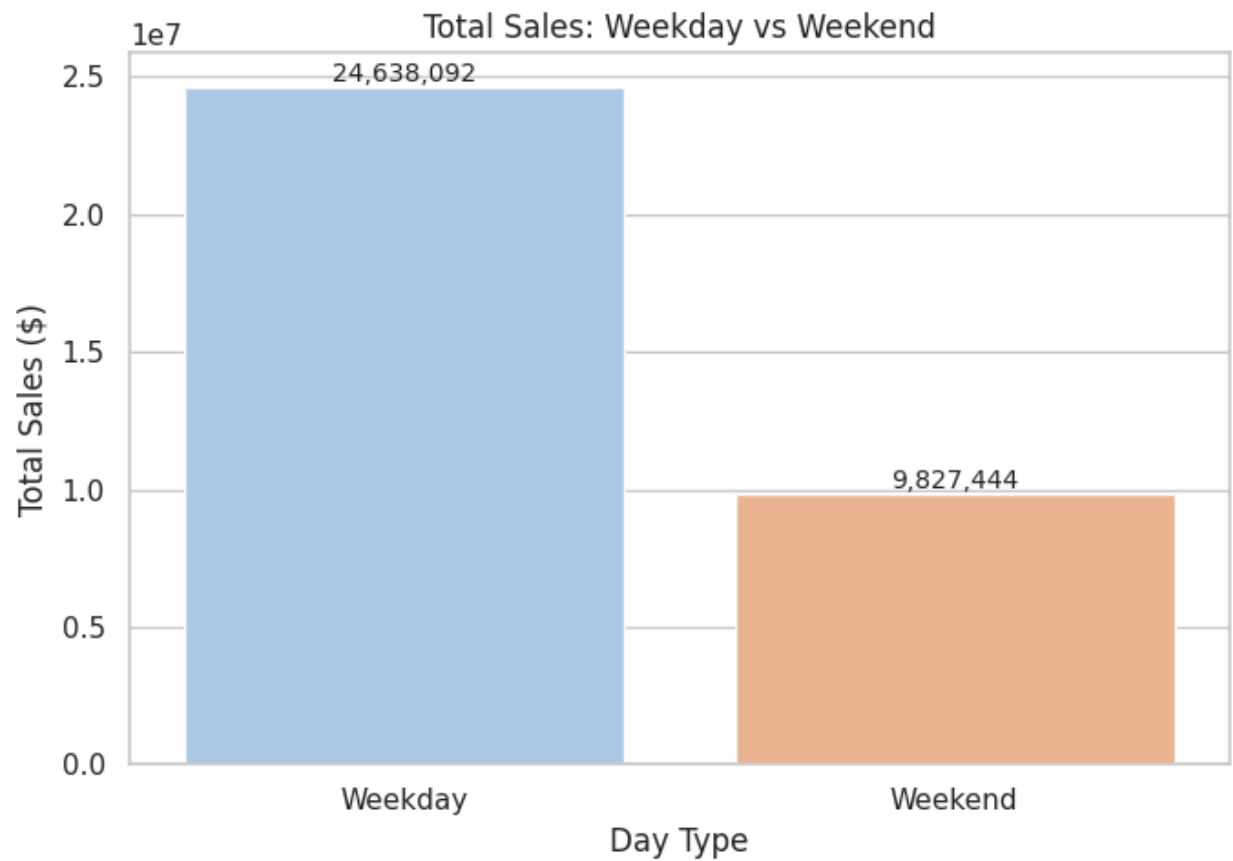
- Top Revenue Generators:
 - Macbook Pro Laptop (\$8M), iPhone (\$4.8M), ThinkPad Laptop (~\$4.1M).
- Observation:
 - High-ticket items dominate revenue despite lower quantity.
 - Monitors and premium headphones also contribute significantly.

8. Heatmap of Sales by Hour and Weekday



- High-Activity Periods:
 - Weekdays (Mon–Fri) show strong activity between 9 AM and 8 PM, peaking around 11 AM–1 PM and 6 PM–8 PM.
 - Weekends have slightly lower overall sales but follow a similar hourly pattern.
- Observation:
 - Office hours and early evenings remain dominant across all days.

9. Total Sales: Weekday vs. Weekend



- Weekday Sales: ~\$24.6M
- Weekend Sales: ~\$9.8M
- Insight:
 - Weekdays account for ~71% of total sales, weekends only 29%.

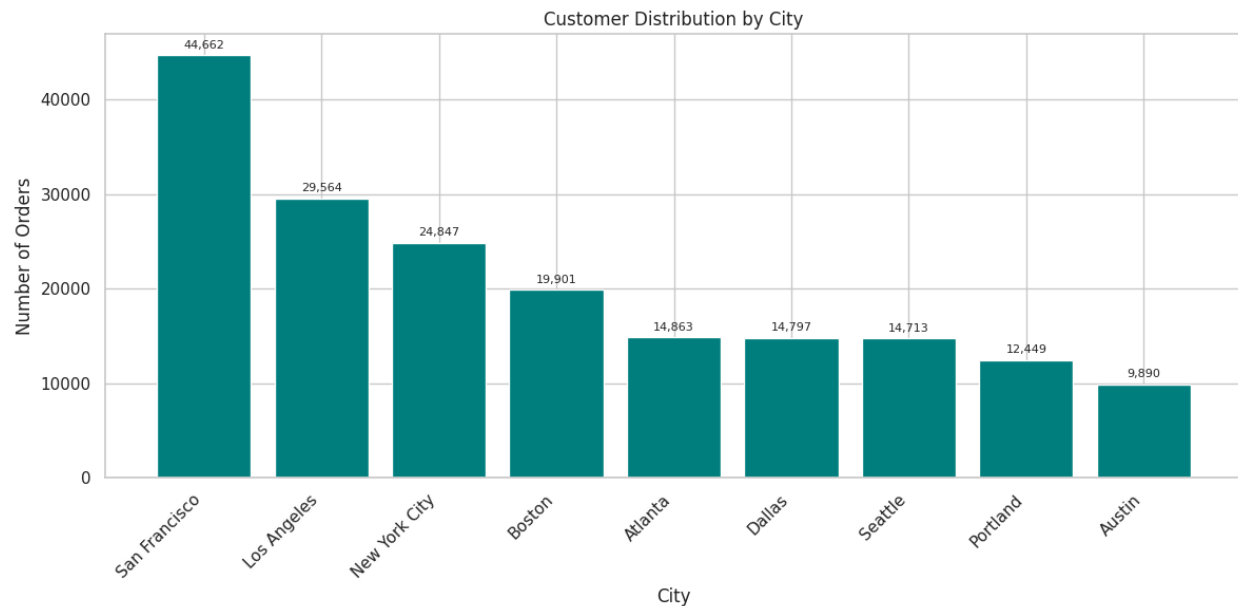
10. Monthly Sales Quantity for Each Product



- Seasonal Trends:

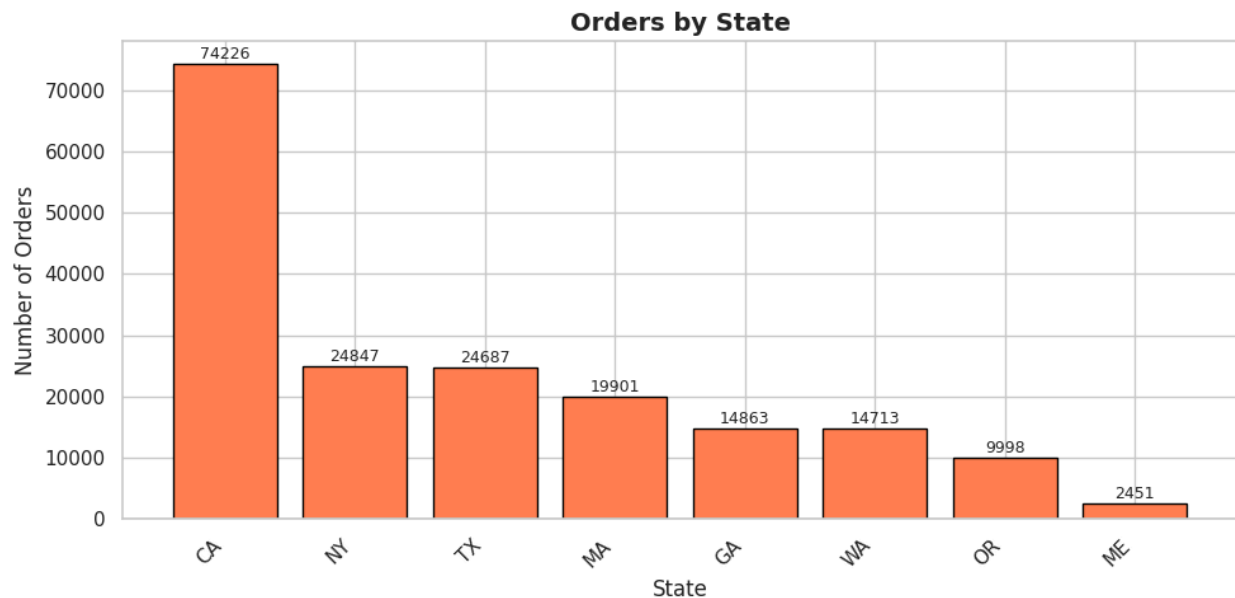
- December sees the highest sales across almost all products, especially batteries, cables, and accessories (holiday shopping surge).
- Steady demand throughout the year for essential items (batteries, cables).
- High-ticket items (Macbooks, iPhones) also peak in Q4, indicating holiday effect.

11. Customer Distribution by City – Key Insights



1. San Francisco is the clear leader, with 44,662 orders, far ahead of all other cities, making it the primary customer hub.
2. Los Angeles and New York City follow as strong secondary markets, with 29,564 and 24,847 orders, respectively, indicating strong demand in these metro areas.
3. The top three cities (San Francisco, Los Angeles, New York City) dominate the distribution, likely accounting for over 50% of total orders.
4. Opportunity for growth lies in mid-tier and lower-performing cities, where targeted marketing and localized strategies could improve balance and reduce over-dependence on a few urban hubs.

12. Top Performing State



- California (CA) leads by a very large margin with 74,226 orders.
- This is 3 times higher than the next highest states (NY and TX), showing that CA is the strongest market.

Observations

- California should remain the key focus with dedicated campaigns, loyalty programs, and inventory readiness.
- NY and TX are strong growth drivers and should be treated as priority markets.

