

Data Driven Decisions

Business Intelligence Report

Presented by:

Vriddhi Misra; April, 2024

About Me



Vriddhi Misra

- Master of Science in Business Analytics, Columbia University
- Bachelor of Technology in Computer Science
- 3+ Years of Work Experience: Verizon, Kraft Heinz, Alteia, and more
- Certified in AWS Data Analytics, Google Data Analytics, and proficient in tools like Power BI, Tableau, Python, and MySQL.
- Proven track record in program management, data analytics, marketing analytics, and business intelligence.
- Dedicated to driving innovation and creating value through technology, analytics, and continuous learning.

Agenda

- ▶ Introduction
- ▶ Executive Summary
- ▶ Key Insights
- ▶ Market Basket Analysis
- ▶ Next Steps
- ▶ Conclusion

Introduction

► The dataset comprises several interconnected tables capturing various aspects of sales transactions, product details, customer information, and order specifics.

It was loaded into the MySQL and visualized using PowerBI

Dataset Overview:

The dataset includes tables:

- **Categories**
- **Customers**
- **Products**
- **ProductCategoryMappings**
- **SalesOrders**
- **SalesOrderDetails**

Key columns in the dataset include OrderID, OrderedDate, ProductID, Quantity, UnitPrice, CustomerID, ProductName, CategoryName, etc.

It provides comprehensive information about customer transactions, product sales, categories, and customer demographics.



Executive Summary

Customers: Out of 100 customers, top spenders: George Brown, Hannah Moore, and Evan Wilson drive significant sales.
High customer concentration in TX, CA, and IL.

Sales Performance: Total sales of \$2.26M, with notable peaks in Jan 2024. WA, GA, and TX lead in total sales. Significant (40%) increase observed from Dec '23 to Jan '24.

Products: Diverse range of 104 products across 20 categories. Smartphones and Computers lead in sales, while drones have the lowest volume.

Market Basket Analysis: Strong associations between products suggest bundled offerings and cross-selling opportunities. Key associations include keyboards and monitors, chargers, and mice.

Prediction: Machine Learning model forecasts \$2.19M in total sales for the next year.

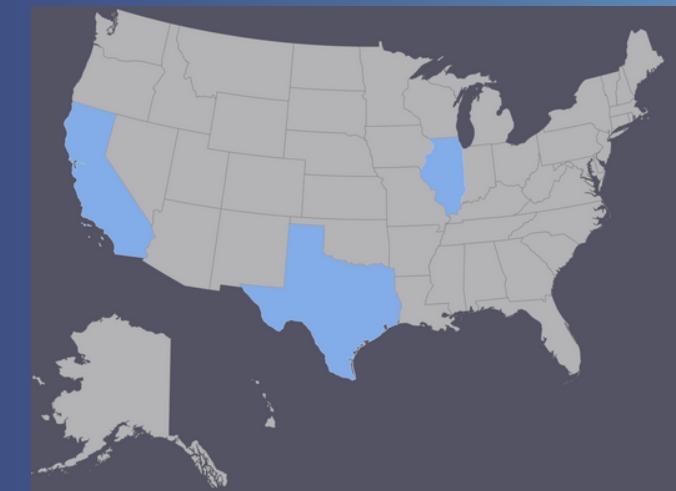
Recommendations: Target promotions in high-performing states like TX and WA. Implement bundled product deals based on market basket analysis insights. Utilize predictive analytics for personalized marketing.



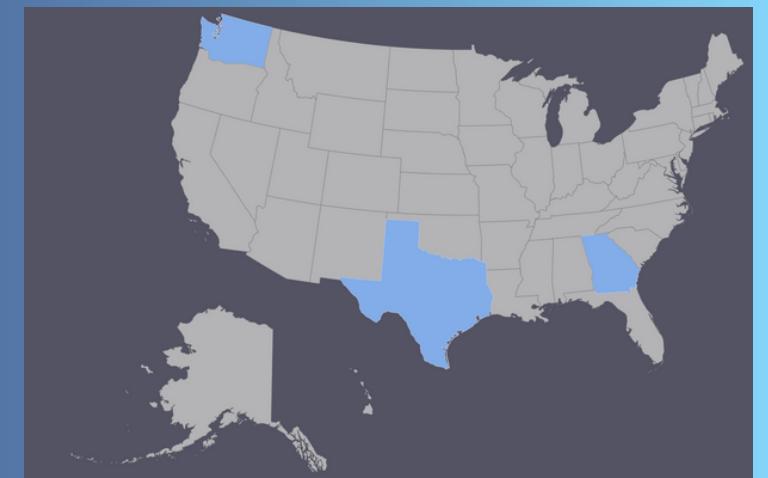
Key Insights

Customer and Market Overview:

- Total **Customers**: 100
- Identified top 3 customers by total spend:
George Brown, WA: \$65K or ~2.88%
- Hannah Moore, WA**: \$52K or ~2.30%
- Evan Wilson, GA**: \$49K or ~2.17%



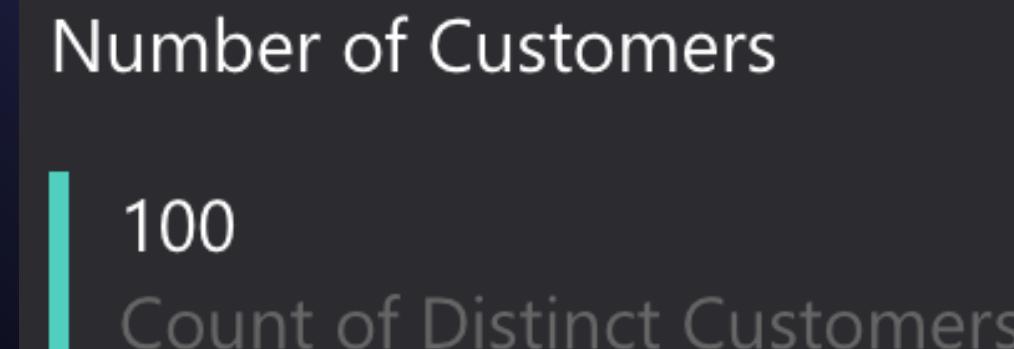
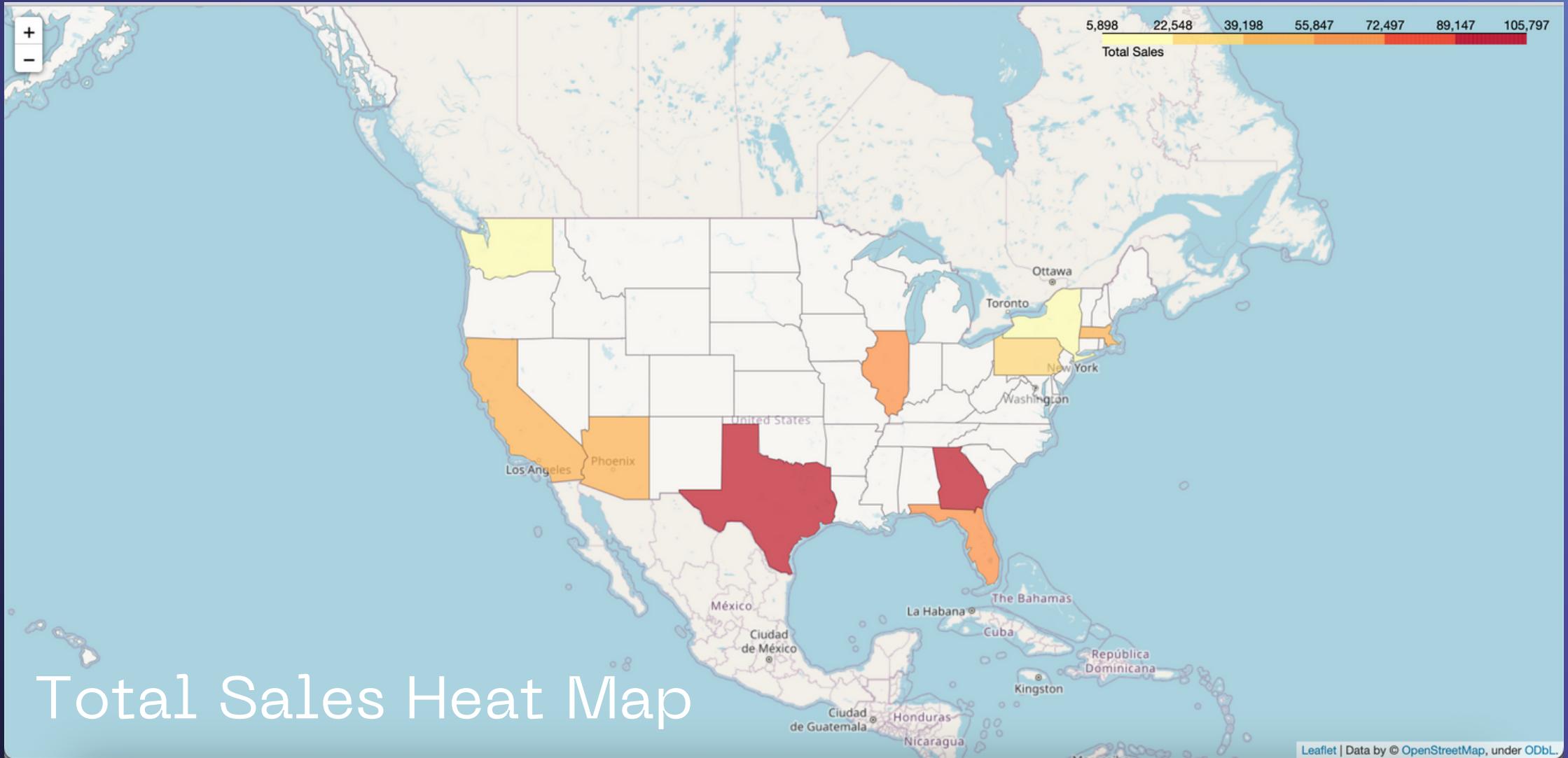
Top 3 Performing States based on Number of Customers



Top 3 Performing States based on Total Sales

- Total **States**: 10
- Customer Demographics: Most Customers are from: **TX, CA, and IL**
- **Top 3** Performing States based on **Total Sales**: **WA, GA, and TX**
- Total **Products**: 104 from **20 Categories**
- Total **Orders**: 500 unique Order IDs

Customer and Market Overview



Number of Products

104
Number of Unique Products

Number of Orders

500
Distinct Order IDs

Total Products Sold

3020
Total Products Sold

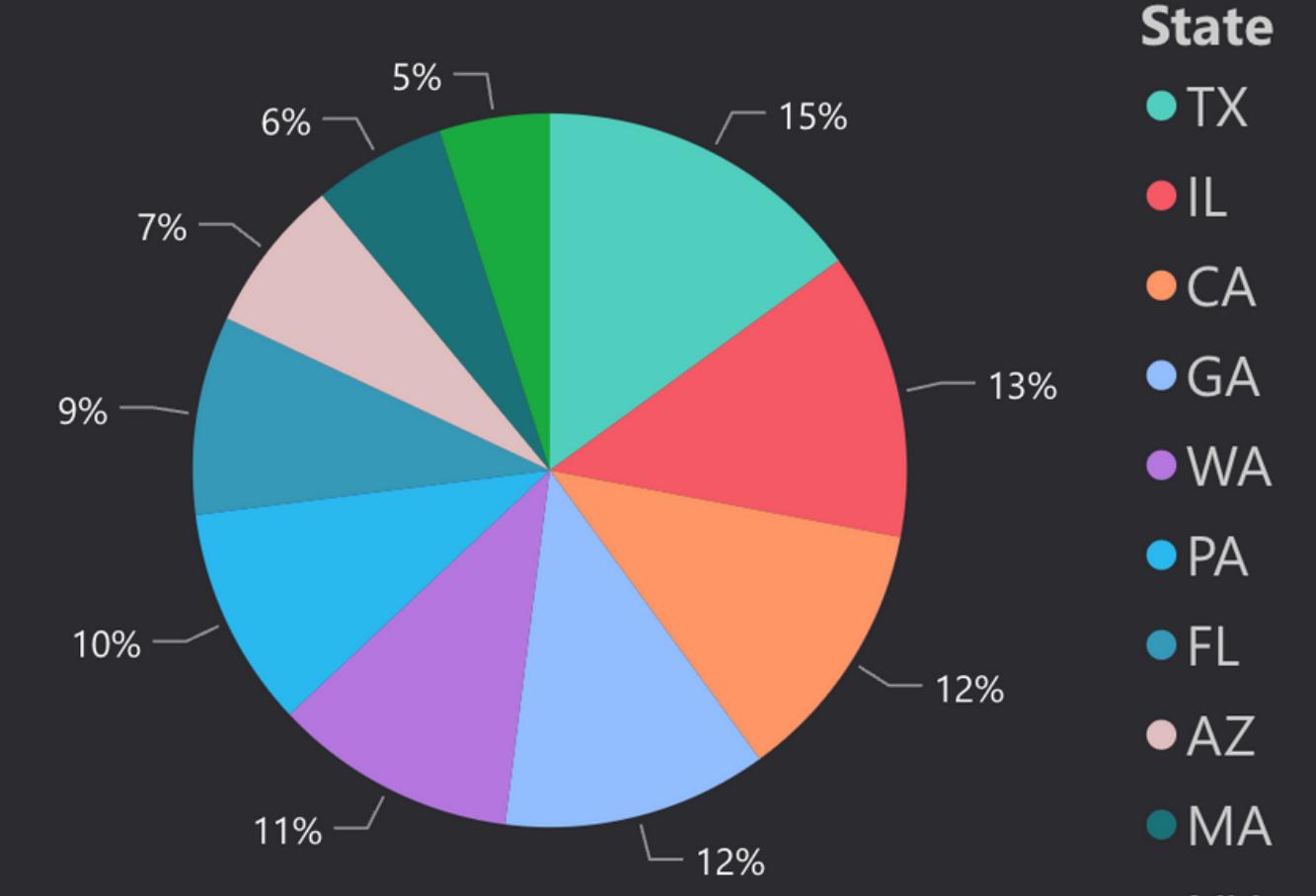
Product Categories

20
Number of Categories

Number of States

10
Number of States

Number of Customers by State



Key Insights

Product Analysis reveals consumer preferences:

Average Price by Product Category :

Highest: *Drone*: \$1094

Followed by *Laptop*: \$908 and

Smartphone: \$663

Lowest: *USB*: 19\$

Total Sales vs Category:

Highest revenue categories:

Smartphone : \$301K or 13.32%

Laptop: \$296K or 13.11%

VR Headset: \$267K or 11.83%

Lowest: *USB*: \$14k or 0.70%

Total Number of Products Sold: 3020

Computers being the highest at **180** Units sold.

Drones had the lowest sales, with only **8** Units sold.

Key Insights

Revenue Trends:

Total Sales: \$2.26 million

Significant increase in total revenue observed:

Peak in Jan 2024 (\$254K), lowest in Feb 2024 (\$122K)

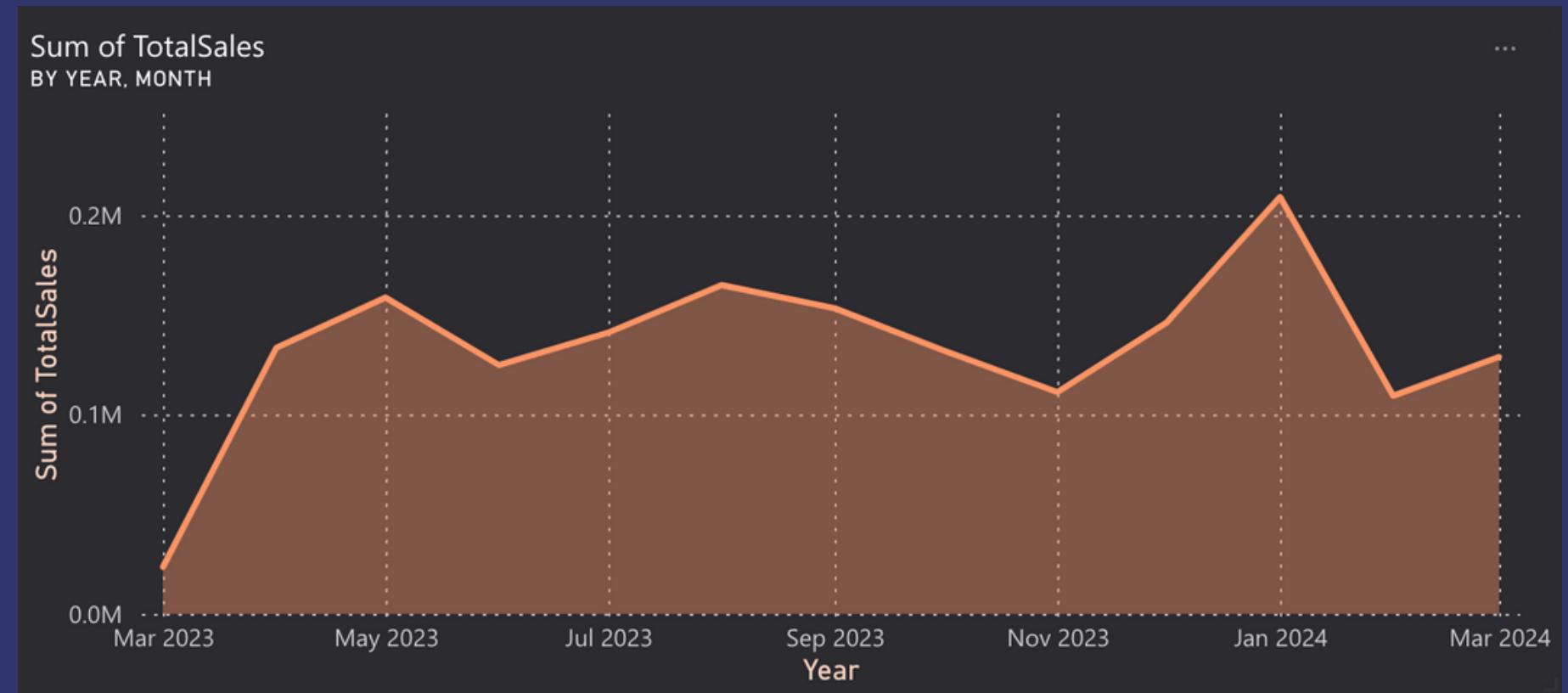
Steepest incline in consecutive months: **December 2023 to January 2024**

2024: With a significant increase of **\$73K** or **40.33%**.

Total Sales jumped from 6,992.82 to 7,892.39 during its steepest incline between **Thursday, December 7, 2023**, and **Wednesday, December 13, 2023**.

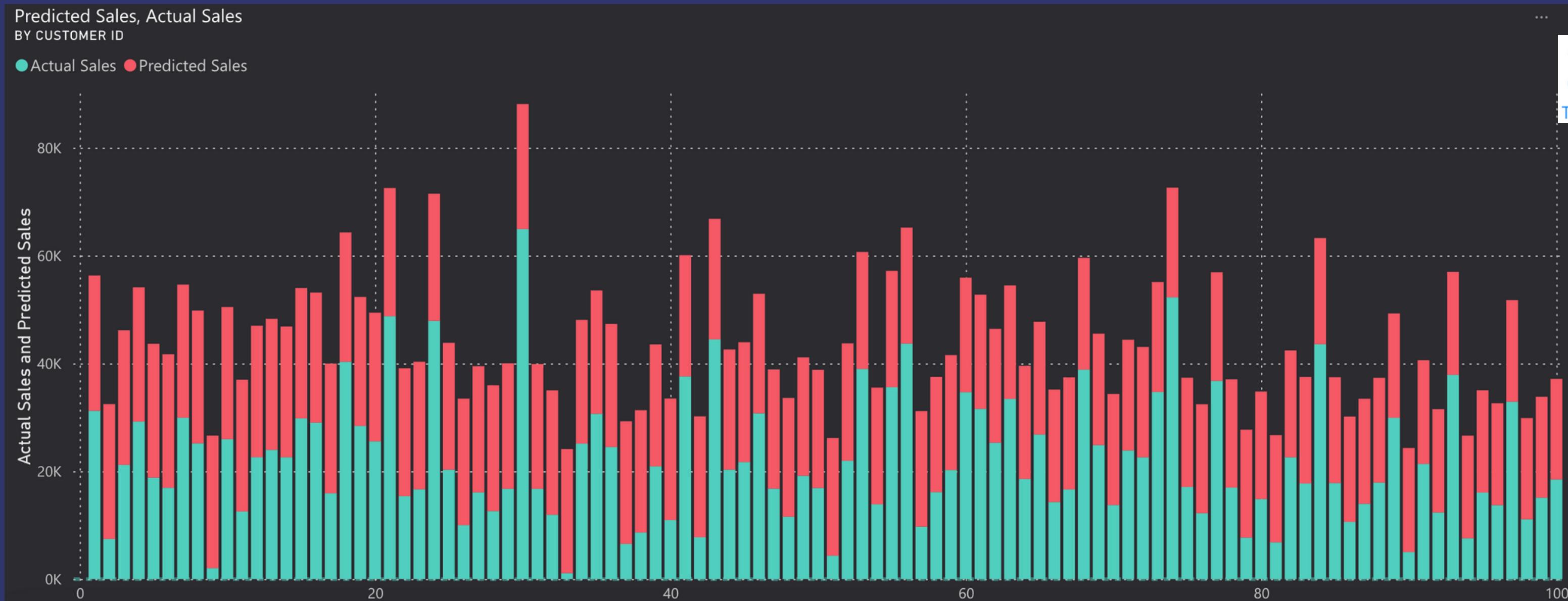
Using **Machine Learning** and Regression, predicted sales for each Customer ID forecast an aggregated total sales of **\$2.19M** for the next year.





Total Sales
2.26M

Sales Performance Analysis and Forecast



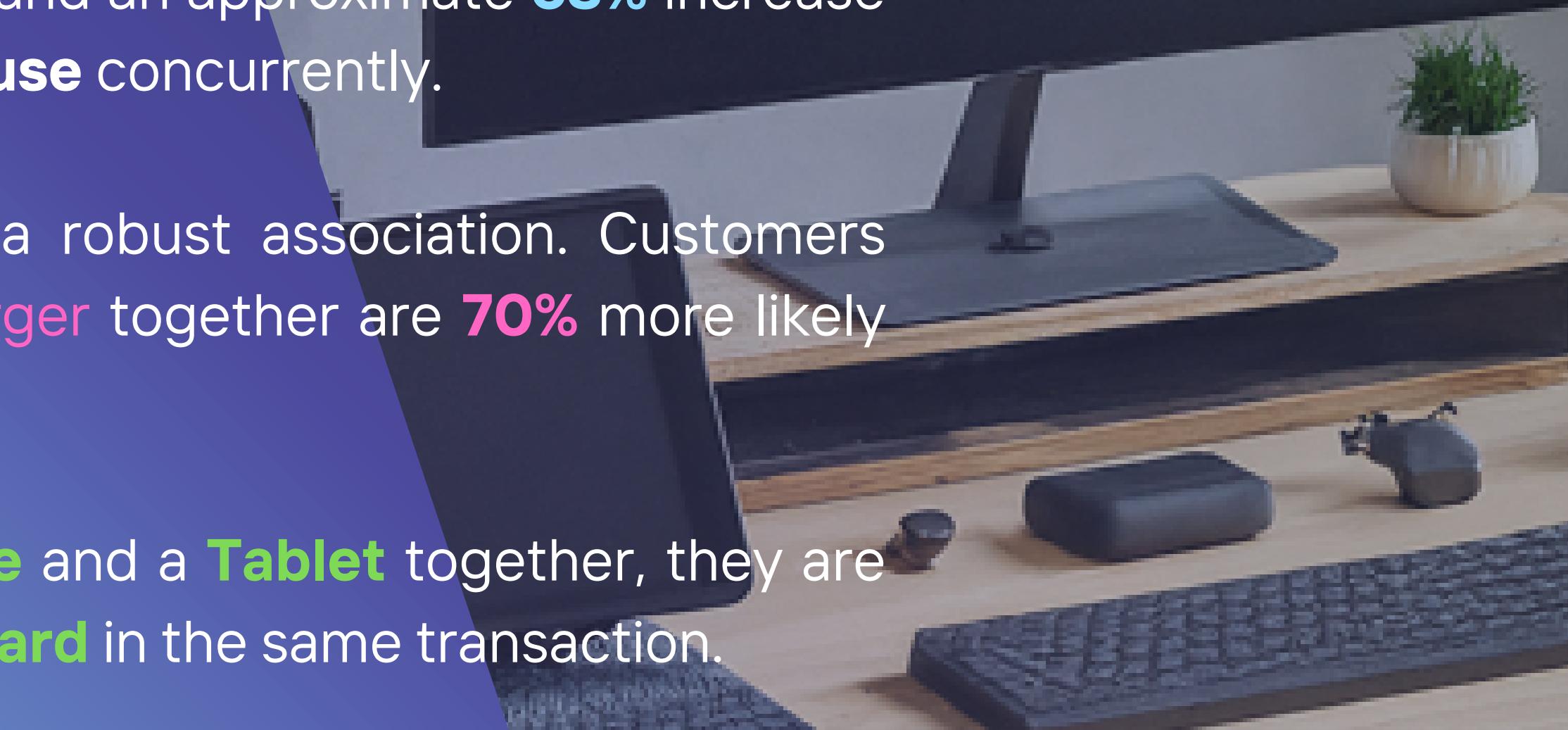
2.19M

Total Predicted Sales

Market Basket Analysis

Insights can be used for **Bundling**, **Cross Selling** and **Personalization**, to optimize sales strategies, enhance customer satisfaction, and drive revenue growth

- Products such as **Keyboards** and **Monitors** are often purchased together, with a strong association, and an approximate **63%** increase in the likelihood of also buying a **Mouse** concurrently.
- **Chargers** and **Keyboards** exhibit a robust association. Customers who purchase a **monitor** and a **charger** together are **70%** more likely to buy a **Keyboard** as well.
- When customers purchase a **Mouse** and a **Tablet** together, they are **56%** more likely to also buy a **Keyboard** in the same transaction.



Next Steps

Recommendation:

- Target **Texas** with strategic promotions based on market basket analysis insights.
- Offer **bundled deals** on commonly associated products like Keyboards, Monitors, Chargers, and Mice to incentivize additional purchases.
- **Personalize offers** for high-spending customers in Texas [Top 3: Geoge Thomas, Hannah Wilson, Ian Miller] to drive repeat purchases and enhance loyalty.



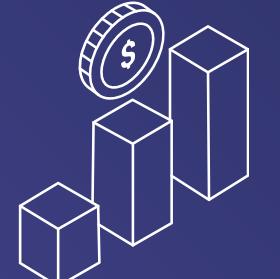
Key Benefit:

Maximize sales and profitability by leveraging customer insights and tailored marketing efforts.



Actionable Strategy:

Implement targeted promotions during **Peak Seasons** such as **between December and January**, bundled deals, and cross-selling strategies to capitalize on customer preferences and increase revenue per transaction.



Impact:

- Drive significant **growth in sales and customer engagement** within the Texas market.
- **Increase Predicted Sales** further.

Conclusion

Through comprehensive data analysis and visualization using Power BI, MySQL, and Python, we have gained valuable insights:

Customer Overview:

- We have 100 unique customers, with top spenders: George Brown, Hannah Moore, and Evan Wilson, contributing significantly to total sales.
- Most of our customers are located in states such as TX, CA, and IL, with top-performing states in terms of total sales being WA, GA, and TX.

Product Analysis:

- Our dataset comprises 104 products spread across 20 categories, with computers and smartphones being the highest-selling product categories and drones having the lowest sales. The average price by product category varies, with drones being the highest-priced and USBs being the lowest.

Revenue Trends:

- Total sales amounted to \$2.26 million, showing a significant increase over time. We observed peaks and lows in revenue throughout the analyzed period, with a notable increase from December '23 to January '24.
- Linear regression models predict a substantial total sales forecast of \$2.19 million for the upcoming year.

Market Basket Analysis:

- Market basket analysis revealed significant associations between various product combinations, indicating opportunities for bundling, cross-selling, and personalization strategies. For example, keyboards and monitors are frequently purchased together, with customers being 6.19 times more likely to buy a mouse alongside these products.

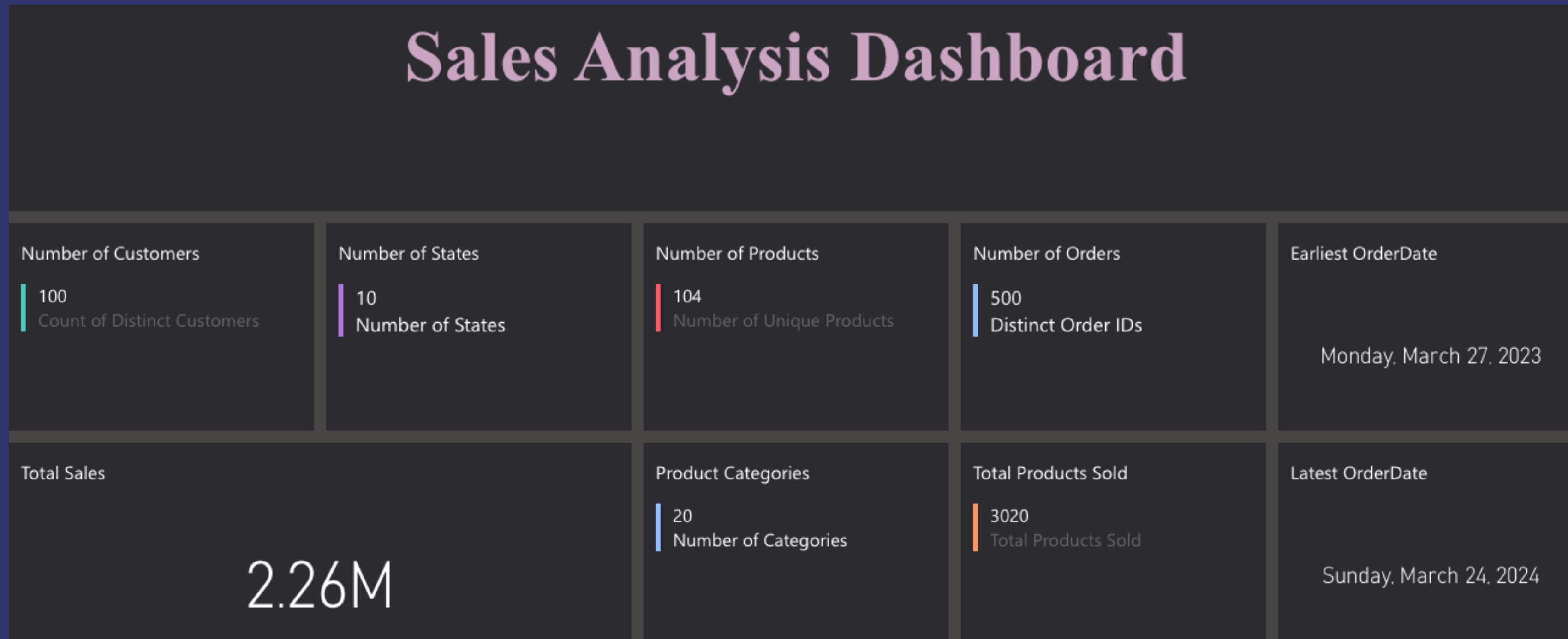
Recommendations:

- Targeting top spenders and high-performing states can further drive revenue growth.
- Utilizing machine learning models for sales predictions can aid in inventory management and business planning.

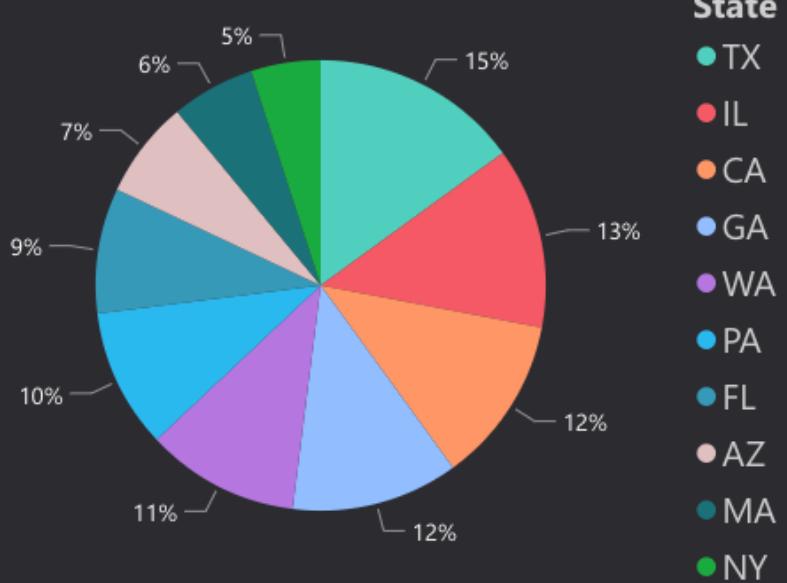
**THANK
YOU**

Appendix

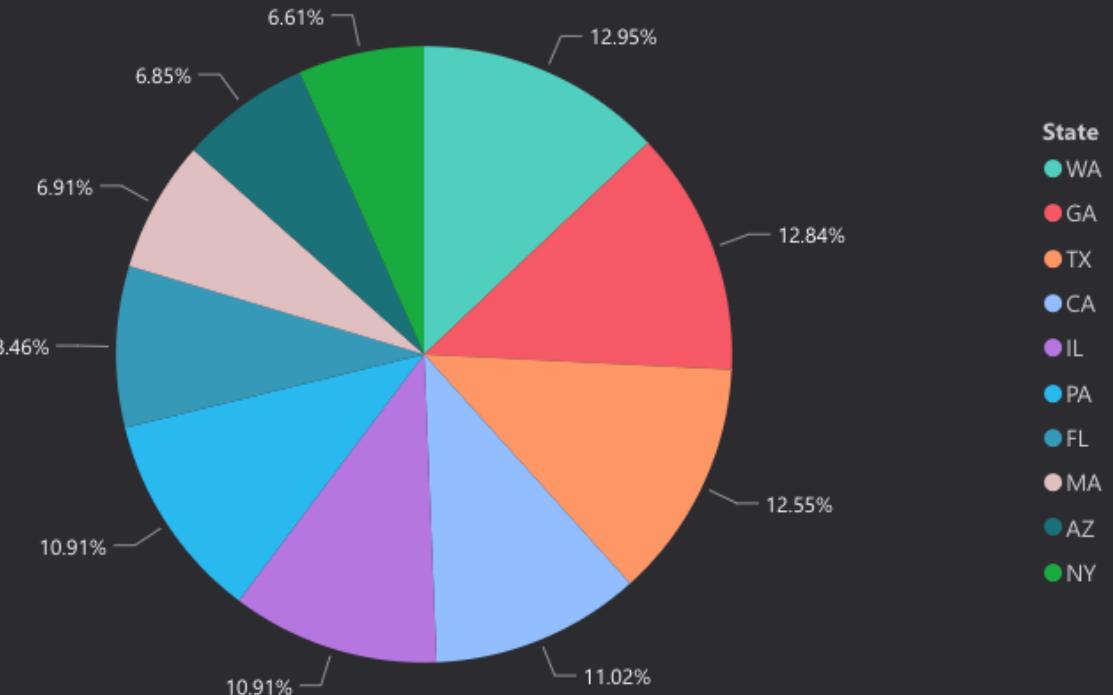
Screenshots from Power BI:



Number of Customers by State



Total Sales by State



Customer Demographics

Number of Orders and Total Amount
BY STATE AND ZIPCODE

Understanding the Customers

Market Segmentation

We can see that:

- Customer Demographics: Most Customers are from TX, CA, and IL
- Top 3 Performing States based on Total Sales: WA, GA, and TX
- We can also see the number of orders and total sales in each State and Zip code.

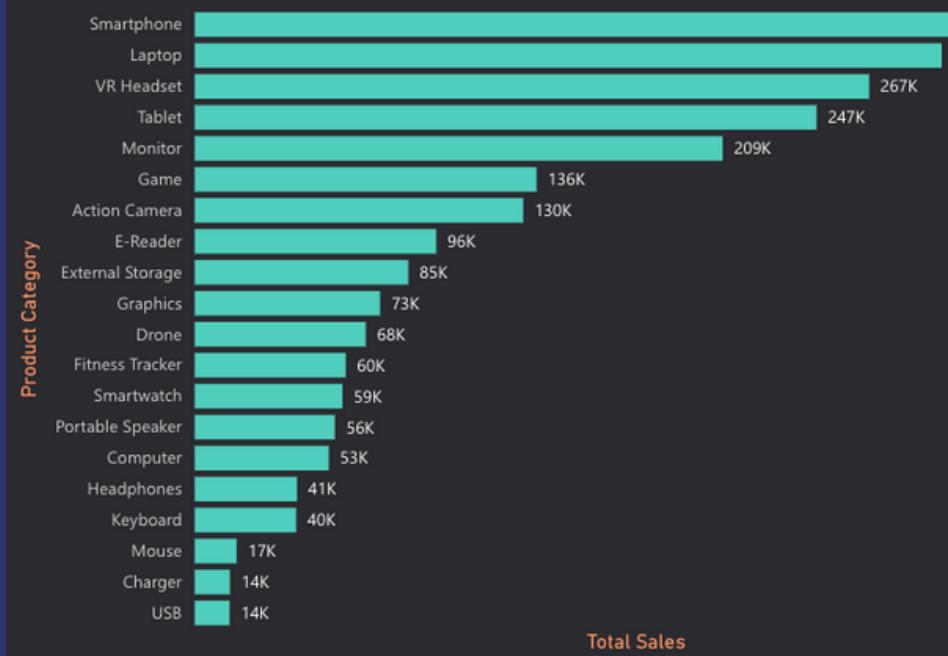
This helps us understand more about how the orders are being made and where our highest sales are coming from, allowing us to tailor our targeting strategies accordingly.

Best Performing Product Categories

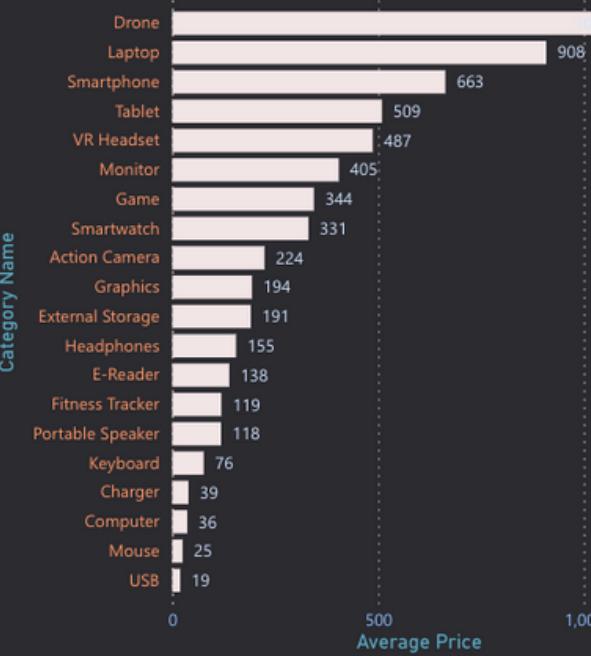
Here we can see the best performing categories based on their total sales.

Each Category has different products with a distinct ProductID and Product Name.

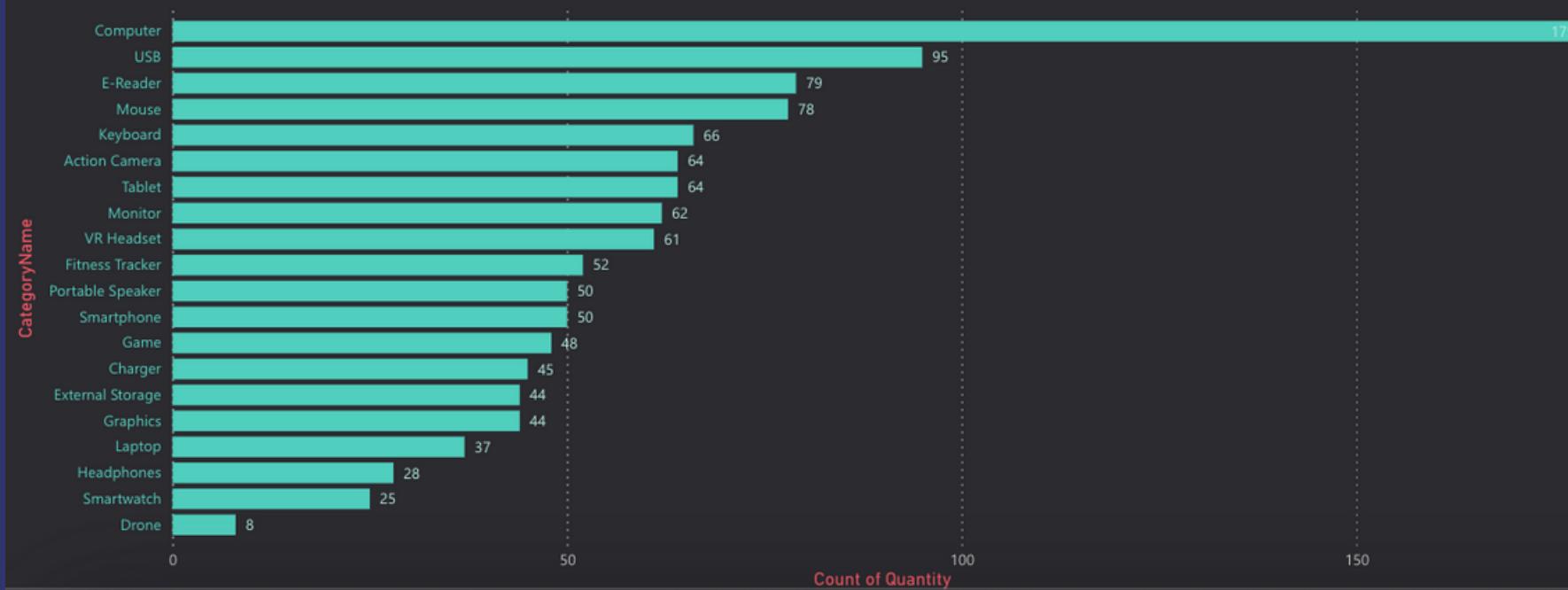
Products: Sales vs Category



Average Price by Category and Product



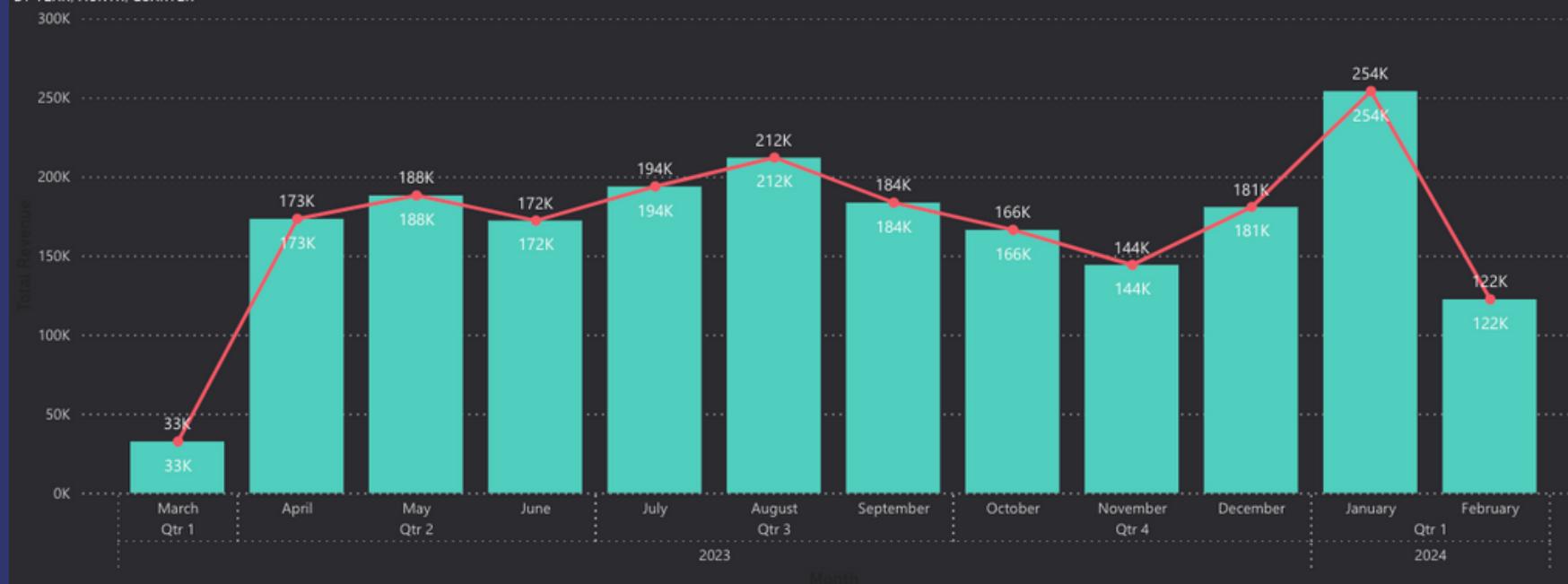
Number of Products Sold by Category Name



Product Performance: Time Series Analysis

We can see the trend of product performance and how it performs over the different quarters of the year. Filter by Product Name to drill down to product level or by months, quarters or year!

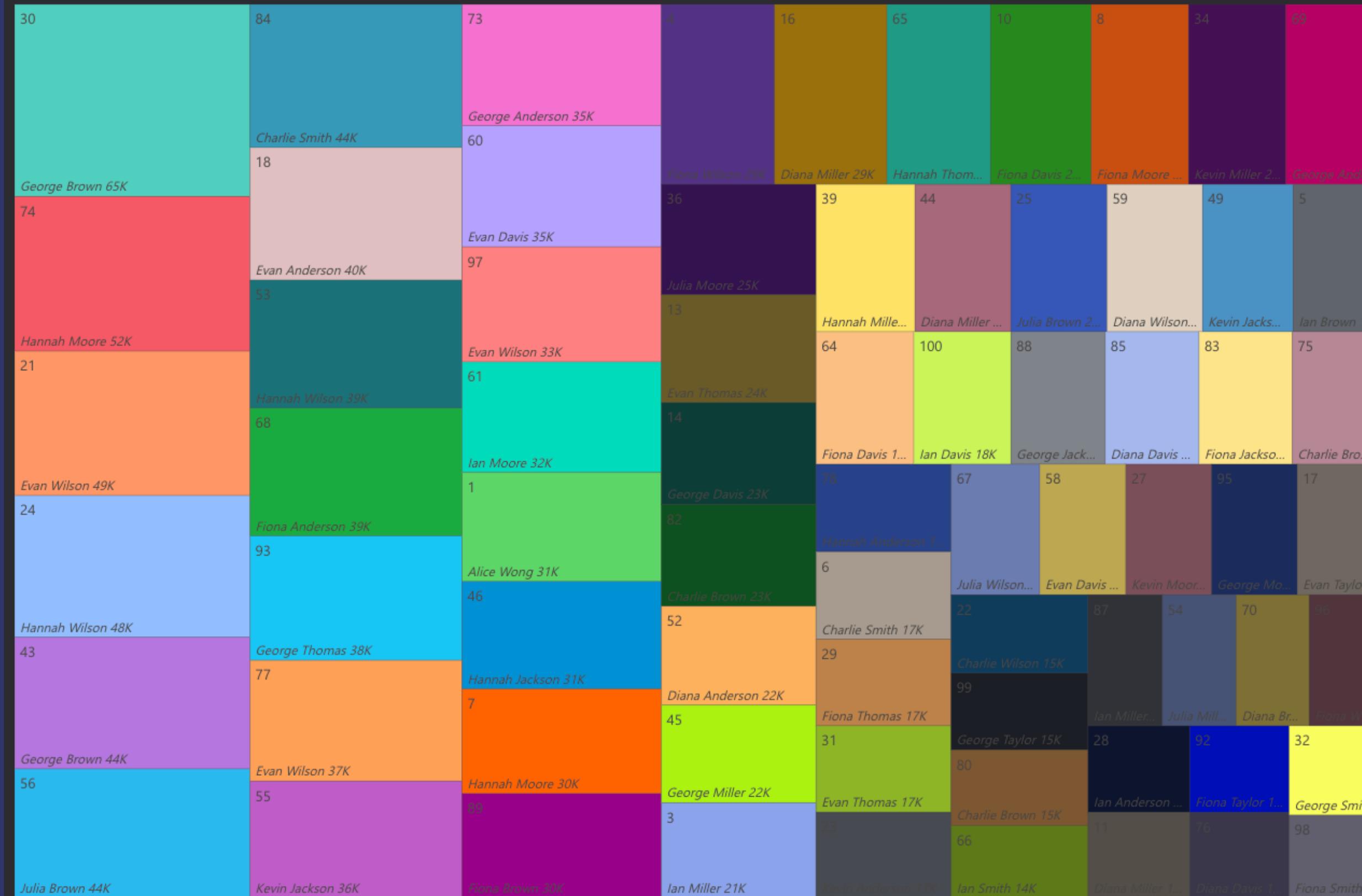
Product Performance and Total Revenue
BY YEAR, MONTH, QUARTER



Here we can see the Top 3 Customers based on their Total Expenditure.

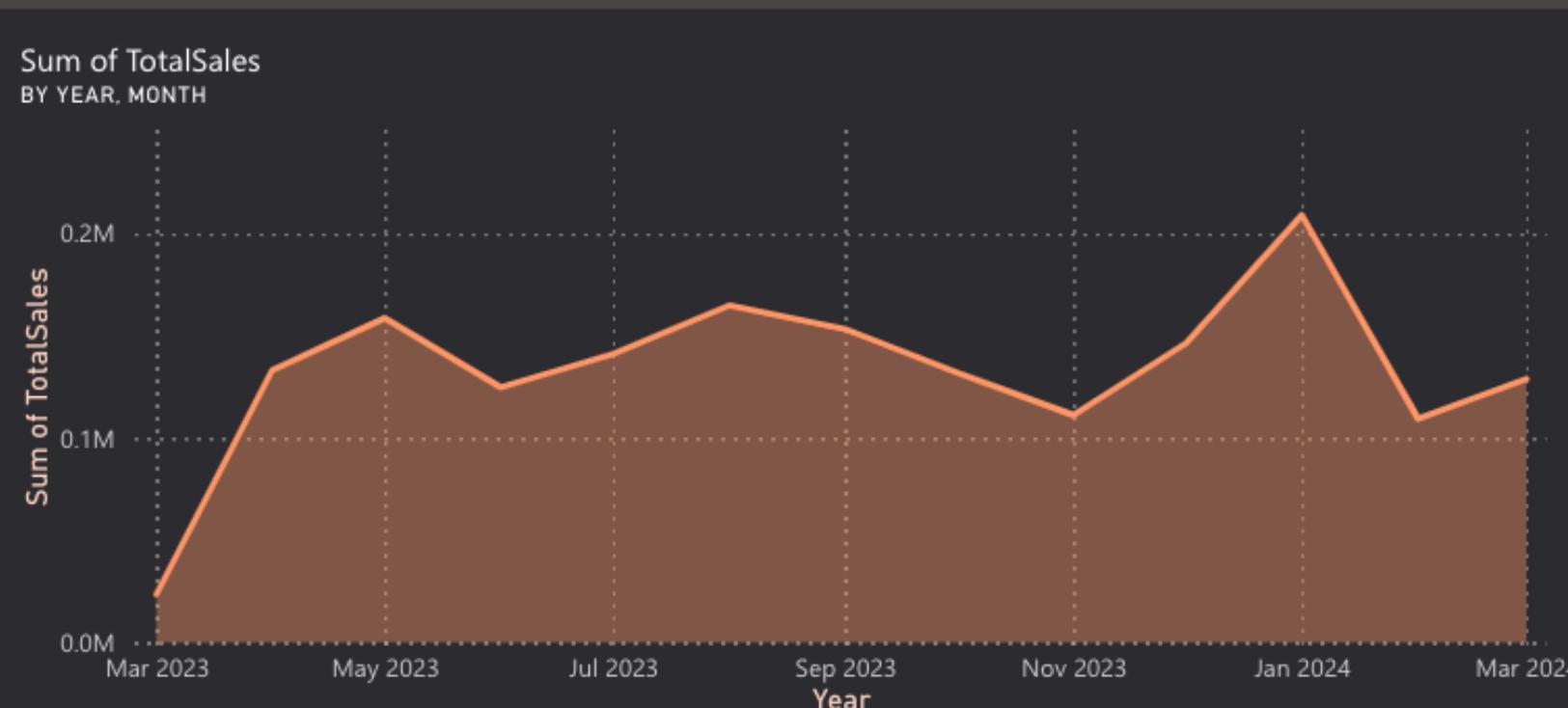
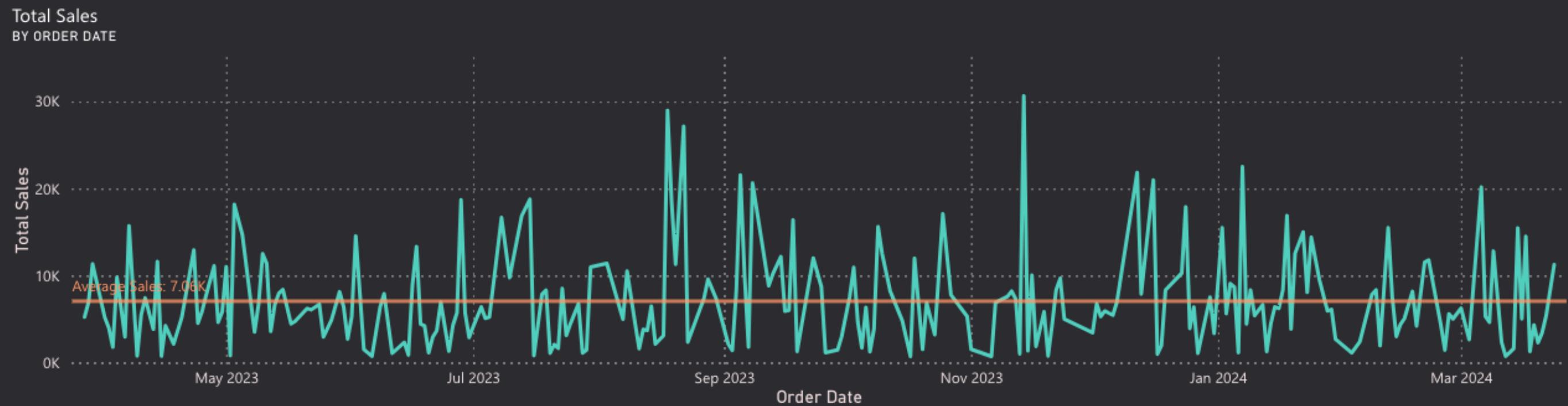
We can use this to create personalized promotions and have a more refined customer segmentation and targeting.

Top Performing Customers (Customer vs Total Sales)



Revenue Trend: Time Series Analysis of Total Sales

We can go to the report to further drill down and learn more about each category and product sales over the given time period



Revenue Trends:

Total Sales: \$2.26 million

Significant increase in total revenue observed:

- The sum of the total amount by year and month reveals a significant 4.01% YOY increase between March 2023(\$33K) and March 2024(\$168K).
- Peak in Jan 2024 (\$254K), lowest in Feb 2024 (\$122K)

Steepest incline in consecutive months: December 2023 to January 2024 2024: With a significant increase of **\$73K or 40.33%**.

Total Sales jumped from 6,992.82 to 7,892.39 during its steepest incline between Thursday, December 7, 2023, and Wednesday, December 13, 2023.