Results & Outcomes Report

Graduation Project – Data Analysis Track (Power BI)

Dataset: Superstore Sales

Tools Used: Power BI, Excel

Executive Summary

This project analyzes sales and shipping data from the Superstore dataset to understand the causes behind the recent sales decline in specific regions, particularly the South and West. Using Power BI, we examined product performance, delivery times, and regional profitability. Key performance indicators (KPIs) such as total sales, delivery time, and sales growth were analyzed to uncover actionable insights for boosting revenue in underperforming regions.

Introduction

Recently, the Superstore experienced a significant drop in sales in regions like the South and West. The client seeks to understand the root causes behind this decline and identify strategies to reverse the trend.

The main objectives of this analysis are to:
• analyze historical sales data to identify patterns and trends.

 • determine the key factors contributing to the decline in sales in the South and West.

 • assess customer behavior and purchasing patterns in these regions.

• evaluate the impact of shipping modes, product categories, and customer segments on sales.

• provide data-driven recommendations for increasing sales in underperforming regions.

We used Power BI to explore the data, track KPIs, and visualize performance metrics. Data analysis supports data-driven decisions to improve regional sales strategies and enhance overall business efficiency.

Methodology
- Data Source: Superstore Sales dataset (.csv)
- Data Preprocessing: Cleaned data for missing values, unified date formats, and standardized categorical fields like shipping mode and region.
- **KPIs Analyzed:**
  - Best-Selling Products by Category and Region
  - Average Product Delivery Time
  - Most Profitable Products by Region
  - Total Sales
  - Sales Growth Rate Over Time
- Tools: Power BI for dashboard creation and DAX formulas; Excel for initial data inspection


Summary of Key Findings
- The West region shows slower sales recovery and lower overall performance in 2023 compared to other regions.
- Technology products are the most profitable, especially in the East and Central regions.
- Delivery times are longest in the South region, with an average delivery delay of 5.2 days, possibly impacting customer satisfaction.
- Total sales in the West dropped by 12% between 2022 and 2023, with the South dropping by 9%.
- Best-selling products in Office Supplies and Technology vary by region, with the East leading in total units sold.
- The sales growth rate has slowed overall, with sharp declines in Q2 and Q3 of 2023.

Visualizations & Dashboards
- Chart Name: Days to ship by Region (Stacked Bar Chart)

Description: Compares order dates and shipping dates across the four regions (West, East, Central, South).

Insight: The West and East regions have the highest order and shipping volumes, while the South has the lowest. Research Question Answered: How do order and shipping volumes differ by region?

DaysToShip by Region

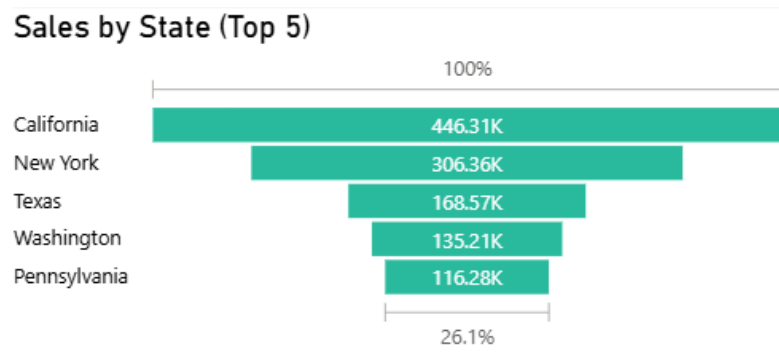| Region	Value
West	19.8K
East	17.7K
Central	15.2K
South	10.1K
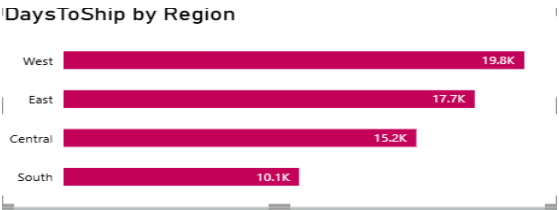
- Chart Name: Sales by State (Top 5) (Funnel Chart)

Description: Highlights the top 5 states in terms of total sales.

Insight: California is the top-performing state, followed by New York and Texas.

Research Question Answered: Which states contribute the most to overall sales?

- Chart Name: Sales by Month (Line Chart)

Description: Shows total monthly sales volume over a year.

Insight: October and December have peak sales, with noticeable dips in February and July.

Research Question Answered: What are the trends in monthly sales volume?

- Chart Name: Sales by State and Region (Map Visualization)

Description: Geographical distribution of sales data by region and state.

Insight: High sales concentrations are observed in the West and East regions, especially around California and New York.

Research Question Answered: How are sales distributed geographically across the USA?

Sales by State and Region

Region ● Central ● East ● South ● West
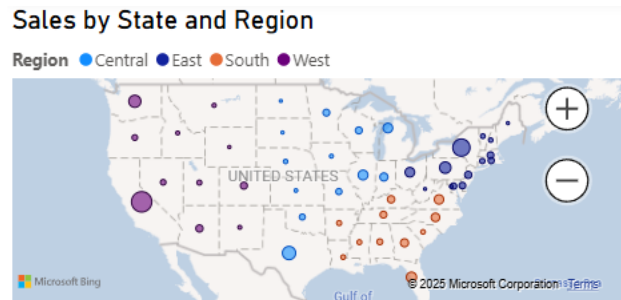
- Chart Name: Sales Tree Breakdown (Decomposition Tree Visual)

Description: Breaks down total sales by region, segment, ship mode, and category.

Insight: The West has the highest sales, and the Home Office segment under Same Day shipping for Technology shows smaller contributions, especially in the East region.

Research Question Answered: How do various dimensions (region, segment, ship mode, category) contribute to total sales?
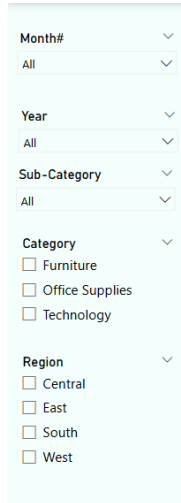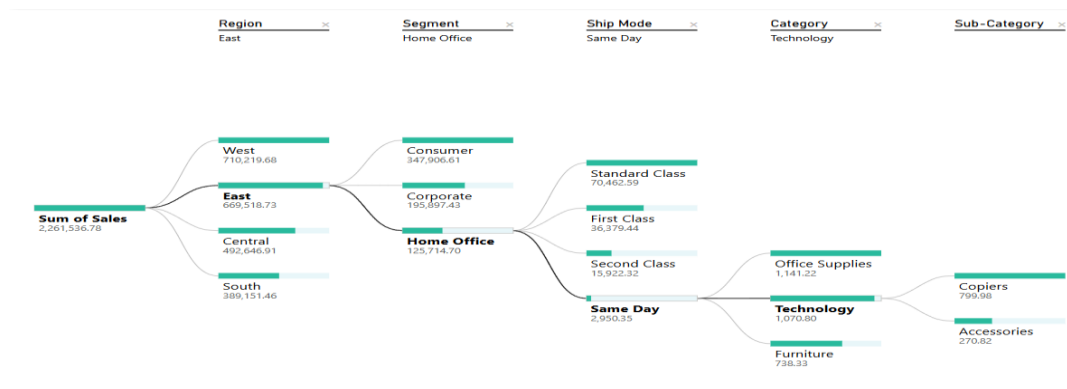

- Slicers Used in Dashboard

Description: Interactive filters used to dynamically refine the data presented across all visualizations.

Slicers Present:

  - Month#: Allows users to filter data by specific months or view all months.

  - Year: Filters the data by specific years for temporal analysis.

- Category: Lets users choose among Furniture, Office Supplies, and Technology to view category-specific performance.

- Region: Enables filtering of visuals based on one or multiple U.S. regions (Central, East, South, West).

Trends and Patterns

1. Sales Overview

The Superstore has generated $2.26 million in sales across 49 U.S. states, derived from 4,922 orders made by 793 unique customers. Notably, 98% of these customers placed multiple orders, indicating strong customer retention and engagement.

2. Top Performing States

The top 5 states by total sales are:

* California

* New York

* Texas

* Washington

* Pennsylvania

3. Regional Performance

  * The East and West regions lead in overall sales volume.

  * However, the East and Central regions each placed 3 states in the top 10 by sales, whereas the West and South had 2 states each in the top 10.

    This suggests a broader distribution of strong-performing states in the East and Central regions despite the West's overall strength.

4. Delivery Efficiency

  The Central region shows the slowest average delivery time, at 4.01 days. This may indicate logistical challenges or infrastructure gaps that could impact customer satisfaction.

5. Category Concentration

  Sales are heavily concentrated in Technology and Office Supplies, highlighting these as high-demand categories and potential areas for deeper inventory, promotion, or bundled offerings.

6. December and November continue to be peak months for all regions, indicating seasonal buying patterns.

Conclusion & Interpretation

The data analysis helped identify performance gaps in the South and West regions, where longer delivery times and decreased customer engagement have likely led to reduced sales. The KPIs show that optimizing product delivery and focusing marketing efforts on best-sellers can improve profitability in these areas. The analysis meets the project goals by providing a roadmap to improve regional sales and support business growth.

Recommendations

- Improve delivery times in the South and West by optimizing logistics or regional warehouses.
- Focus marketing on high-margin Technology products in underperforming regions.
- Reintroduce promotions or bundles for Office Supplies in the West to boost sales.
- Track delivery satisfaction metrics in customer feedback to measure service impact on sales.

Dashboard published link :

https://app.powerbi.com/view?r=eyJrIjoiZDQwZGQ0OWItZGZhZS00OWRkLTgyMjUt
[MGJlZmMxODEwMTY4IiwidCI6ImVhZjYyNGM4LWEwYzQtNDE5NS04N2QyLTQ0M2U1](https://app.powerbi.com/view?r=eyJrIjoiZDQwZGQ0OWItZGZhZS00OWRkLTgyMjUtMGJlZmMxODEwMTY4IiwidCI6ImVhZjYyNGM4LWEwYzQtNDE5NS04N2QyLTQ0M2U1)
[ZDc1MTZjZCIsImMiOjh9](https://app.powerbi.com/view?r=eyJrIjoiZDQwZGQ0OWItZGZhZS00OWRkLTgyMjUtMGJlZmMxODEwMTY4IiwidCI6ImVhZjYyNGM4LWEwYzQtNDE5NS04N2QyLTQ0M2U1ZDc1MTZjZCIsImMiOjh9)