REPORT FOR TAKE HOME ASSIGNMENT.

The dataset appears to contain sales data for a company operating within the United States. It includes information such as:

Sales: This likely refers to the number of sales or the total number of sales.

Ship To State: The state where the product was shipped.

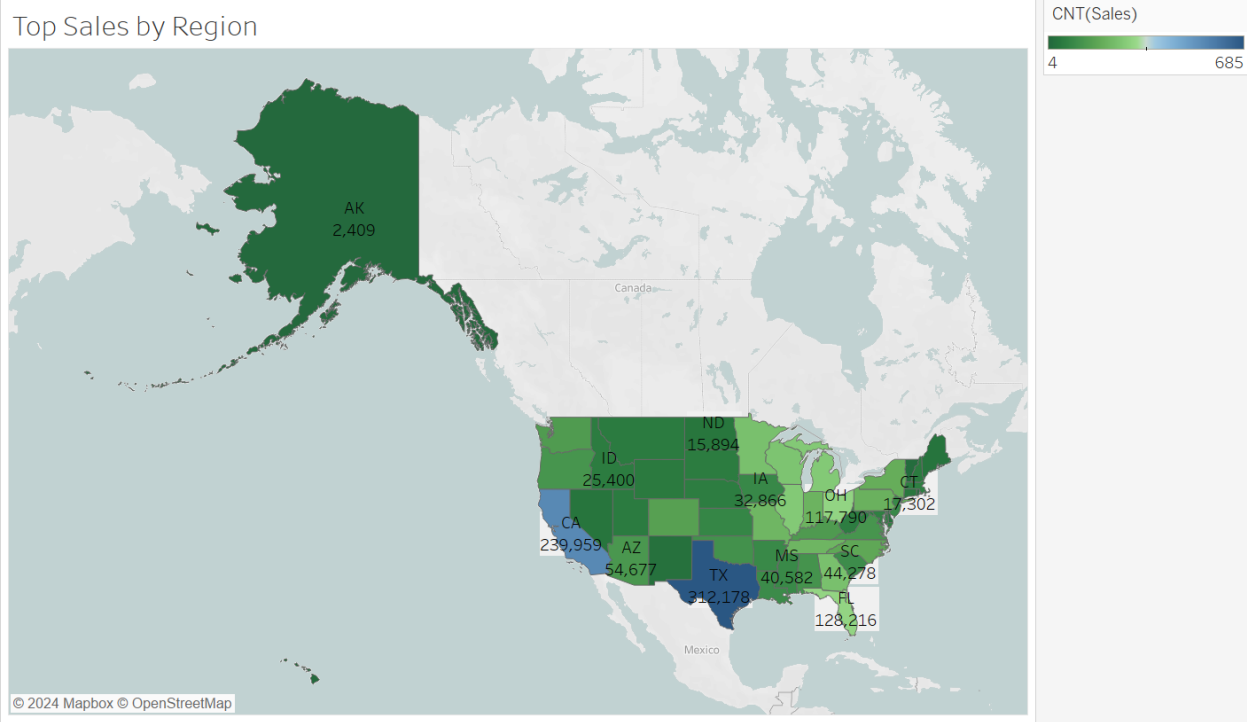
Latitude & Longitude: Geographical coordinates for each state, used to plot the data on a map.

Other Fields: The presence of fields like "Promotion," "Purchase Order No," "Sales Rep ID," etc., suggests that the data may be granular enough to analyze sales performance by various factors.

This report provides a comprehensive analysis of sales performance based on various visualizations. Key insights include the identification of top-performing promotions, seasonal trends, pricing strategies, and regional sales patterns.

ANALYSIS AND VISUALS:

1.TOP SALES BY REGION:



The visualization is a map that displays the "Top Sales by Region" across the United States. The color intensity of each state indicates the level of sales, with darker shades representing higher sales volumes.

Rationale behind Visualization:

Maps naturally highlight the geographic relationships between different regions. This can be useful for understanding how sales performance varies across different areas. Maps are visually appealing and can make data more engaging.

Easy Interpretation: Color-coded maps are intuitive to understand. The darker the color, the higher the sales, making it easy to identify top-performing regions.

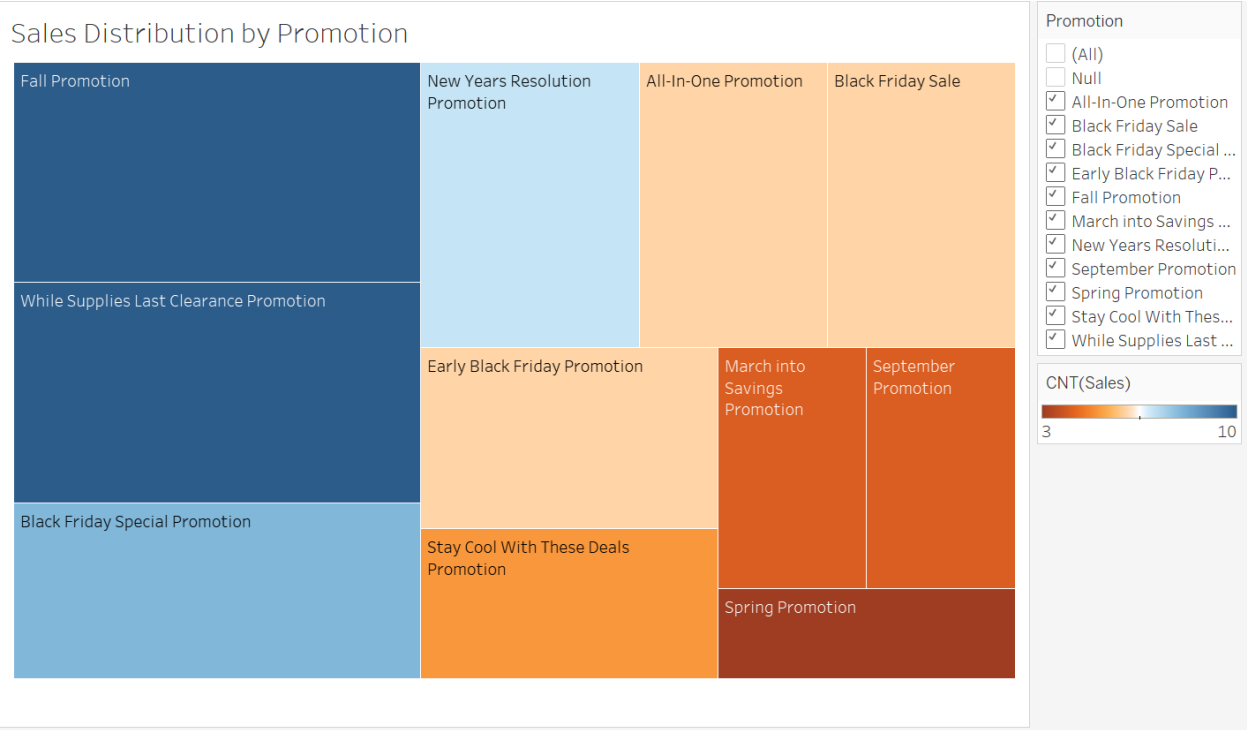
Based on the visualization, we can draw the following insights:

Sales Concentration: The map shows that sales are concentrated in certain regions, particularly the eastern and midwestern states. States like California, Texas, Florida, and New York appear to have significantly higher sales compared to other regions.

Regional Variation: There's a clear regional variation in sales performance. The eastern and midwestern regions generally have higher sales, while the western and southern regions tend to have lower sales.

Recommendation: States with lighter shades represent areas with lower sales. These regions could be potential targets for increased marketing efforts, sales promotions, or product expansion to boost sales.

2. Sales Distribution by Promotion:



The tree map visualizes the distribution of sales across different promotions. The size of each rectangular block represents the proportion of total sales generated by that specific promotion. Different colors represent different categories or time periods associated with the promotions.

Rationale behind Visualization: Hierarchical Structure: The data has a clear hierarchical structure, with promotions as the main categories and individual promotional events as subcategories. Tree maps excel at visualizing such hierarchical data.

Relative Size: The size of each rectangle in the tree map corresponds to the sales volume for that promotion. This makes it easy to compare the relative performance of different promotions.

Color Coding: The color coding helps to distinguish different categories (e.g., Black Friday promotions, seasonal promotions) and can be used to highlight specific trends or insights.

Space Efficiency: Tree maps are very space-efficient, allowing for visualization of a large amount of data in a compact way.

Key Insights:

Promotion Effectiveness:

Top Performers:

Black Friday Sale: This promotion appears to be the most effective, driving a significant portion of the total sales.

Early Bird Friday Promotion: This promotion also seems to be quite successful, contributing a substantial amount to overall sales.

Underperforming Promotions:

Spring Promotion: This promotion seems to have the least impact on sales, as indicated by its small size.

March Into Savings Promotion: This promotion also appears to be relatively less effective.

Sales Concentration:

Dominant Promotions:

Black Friday Sale and Early Bird Friday Promotion dominate the sales, indicating their high effectiveness.

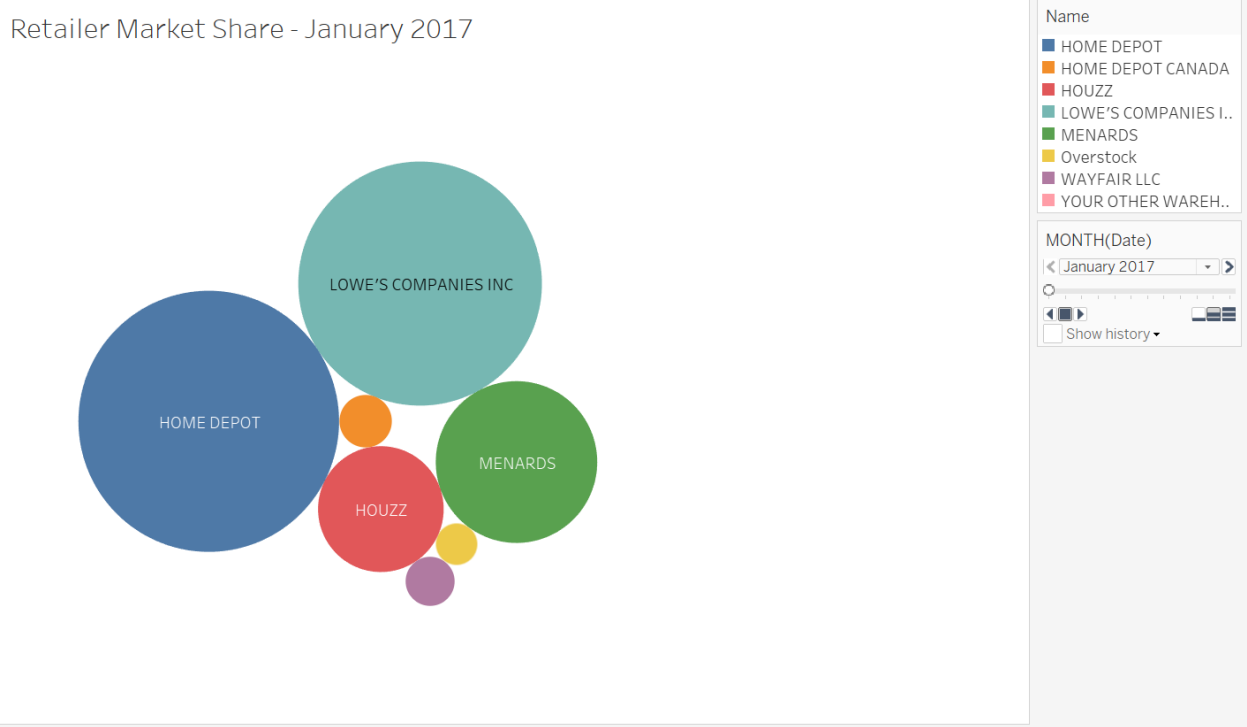
Recommendation: To reduce reliance on a few key promotions, it might be beneficial to explore other promotional strategies, such as loyalty programs or limited time offers.

Seasonal Trends:

Seasonal Promotions:

The color-coding of the blocks might indicate seasonal promotions. For example, the larger, darker blocks represent holiday season promotions, while lighter-colored blocks represent off-peak season promotions.

3. Retailer Market Share: (January 2017 – December 2017)



This Bubble Chart visualizes the market share of various retailers in the home improvement industry. The size of each bubble represents the relative market share of a particular retailer.

Rationale behind Visualization: The data has a clear hierarchical structure, with retailers as the main categories. Circle packing charts excel at visualizing such hierarchical data. The size of each circle in the chart corresponds to the market share of that retailer. This makes it easy to compare the relative market share of different retailers. Circle packing charts are visually appealing and can be easily understood. Also date(month) was added to pages for more dynamic visual.

Key Insights:

Market Dominance:

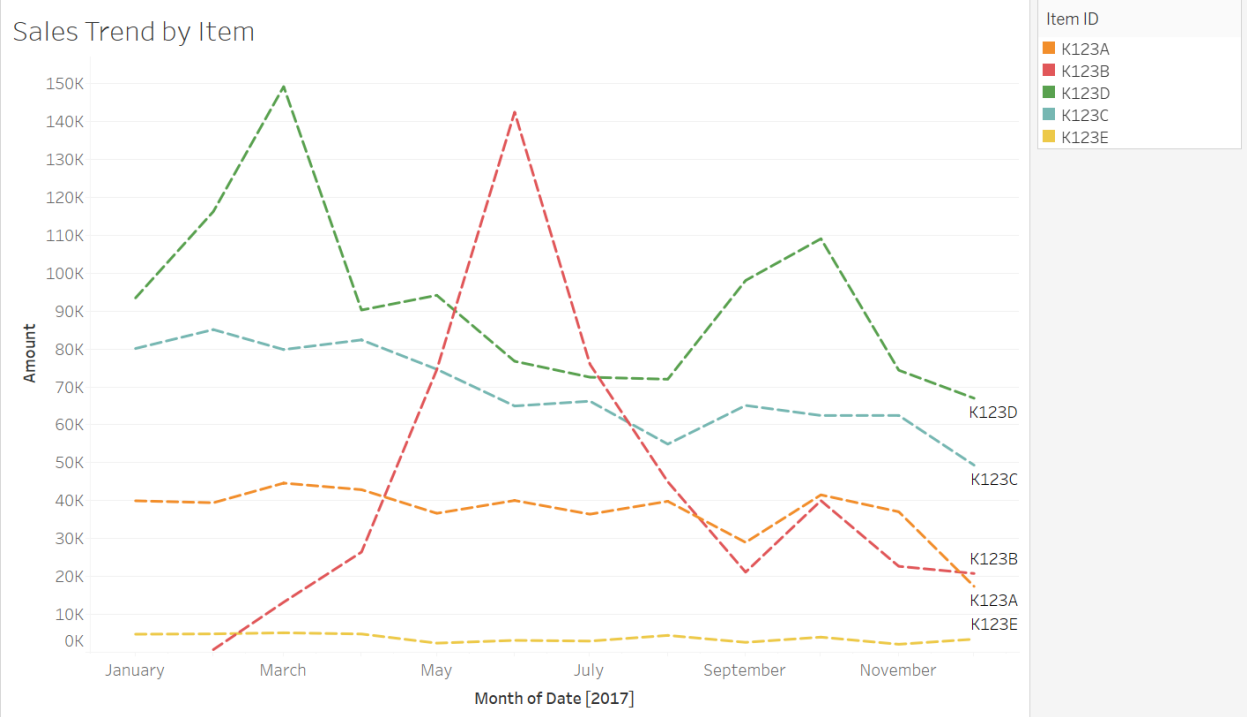
Lowe's Companies Inc. and Home Depot are the clear market leaders, with significantly larger market shares compared to other retailers. This indicates their strong brand presence, extensive product offerings, and effective marketing strategies.

Competitive Landscape:

Menards and Houzz appear to be the next largest players in the market, although their market shares are considerably smaller than those of Lowe's and Home Depot.

Other Retailers: The remaining retailers, such as Overstock, Wayfair, and Your Other Warehouses, have relatively smaller market shares, suggesting that they operate in more niche segments or have a smaller customer base.

4. Sales Trend by Item:



This line chart visualizes the sales trend for different items over a specific period, (2017). Each line represents a different item, and the y-axis indicates the sales amount. The x-axis represents the months of the year.

Rationale behind Visualization: The data shows the sales trend for different items over a period of time. Line charts are excellent at visualizing trends over time. The line

chart allows for easy comparison of sales trends between different items. Line charts are visually clear and easy to interpret. Line charts can be used to show detailed trends, such as seasonal variations or the impact of specific events.

In this visual, the line chart effectively conveys the following:

The sales trend for each item over time: The lines show how the sales of each item have fluctuated over the year.

The relative performance of different items: The position of the lines relative to each other shows which items have performed better or worse.

The presence of any seasonal trends: The shape of the lines can reveal any seasonal patterns in sales.

Key Insights:

Seasonal Trends:

K123B: This item exhibits a clear seasonal pattern, with peak sales occurring in March and a significant decline in subsequent months.

K123D: This item also shows a seasonal pattern, with sales peaking in July and then declining.

Product Performance:

K123A and K123E: These items consistently generate lower sales compared to other items throughout the year.

K123C: This item shows a relatively stable sales trend, with moderate fluctuations.

Sales Fluctuations:

K123B and K123D: These items experience significant sales fluctuations, suggesting that their demand may be influenced by external factors such as promotions, holidays, or weather conditions.

K123A, K123C, and K123E: These items exhibit more stable sales trends, indicating a consistent demand.

Recommendation:

Seasonal Promotions:

For items like K123B and K123D, consider implementing targeted promotions during peak sales periods to further boost sales.

For items with stable demand, focus on maintaining consistent availability and quality to ensure steady sales.

Product Lifecycle Management:

Analyze the sales trends of items like K123A and K123E to determine if they are reaching the end of their product lifecycle.

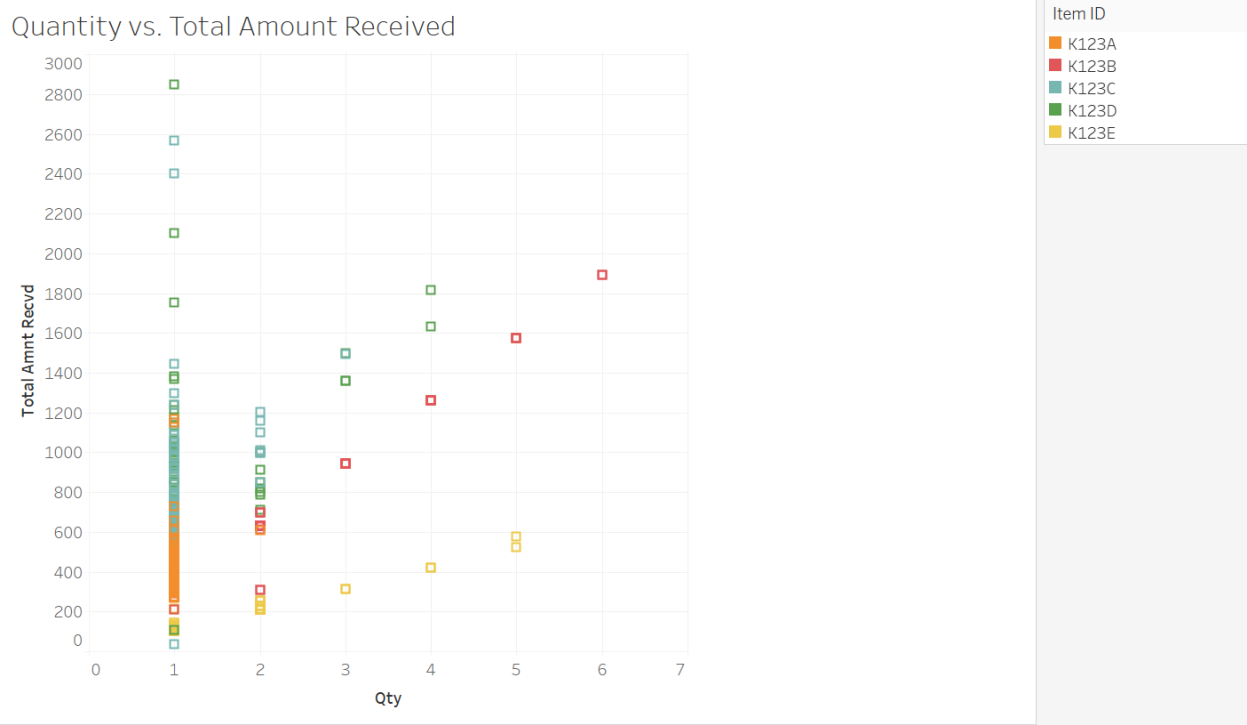
Consider product discontinuation or rebranding to revitalize sales.

Inventory Management:

Optimize inventory levels for items with fluctuating demand to avoid stockouts or excess inventory.

Implement demand forecasting techniques to accurately predict future demand and adjust inventory accordingly.

5. Quantity vs. Total Amount Received



This scatter plot visualizes the relationship between the quantity of items sold and the total amount received for each item. Each dot on the plot represents a specific item, with its position determined by its quantity and total amount received. The color of each dot likely represents a categorical variable, such as the item category or brand.

Rationale behind Visualization: The data shows the relationship between the quantity of items sold and the total amount received. Scatter plots are excellent at visualizing relationships between two numerical variables. Scatter plots can reveal clusters of data points and identify outliers. Scatter plots are visually clear and easy to interpret. Scatter plots can be enhanced with color coding or size variations to represent additional information, such as item ID in this case.

In this case, the scatter plot effectively conveys the following:

The relationship between quantity and total amount received: The overall trend in the data can be observed.

The variation in total amount received for a given quantity: The spread of data points for a specific quantity shows the variability in prices.

The impact of item ID on the relationship: The color coding helps to identify patterns or differences in the relationship for different items.

Key Insights:

Price Variation:

The scatter of points suggests that different items have different prices. Some items with low quantities generate high total amounts, indicating higher prices. Others with higher quantities may have lower prices.

Outliers:

There are a few points that deviate significantly from the main cluster. These could be outliers due to special promotions, bulk orders, or unique items with higher prices.

Item Categories:

The color coding of the points might represent different item categories. By analyzing the distribution of colors, we can identify categories with higher or lower average prices.

Recommendation:

Pricing Strategy:

Analyze the pricing strategy for different item categories to optimize revenue.

Consider adjusting prices for items with low profit margins or high demand.

Inventory Management:

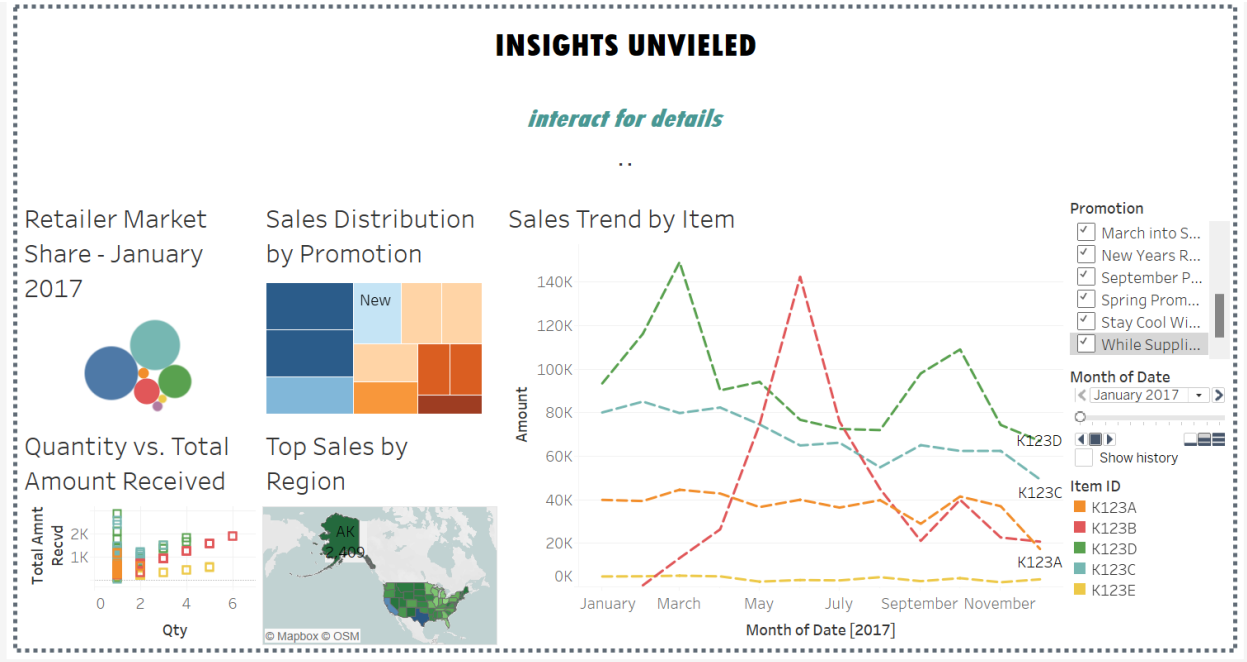
Identify items with high sales volumes and low prices. These items may require careful inventory management to avoid stockouts.

Product Mix:

Evaluate the product mix to ensure a balance of high-margin and high-volume items.

Consider introducing new products or discontinuing underperforming items.

(DASHBOARD) Insights unveiled:



This dashboard provides a comprehensive overview of sales performance across various dimensions, including market share, sales distribution by promotion, sales trends by item, and the relationship between quantity and total amount received.

Identify Top-Performing Promotions: Use the **"Sales Distribution by Promotion"** visualization to identify the most effective promotions and allocate resources accordingly.

Optimize Product Mix: Analyze the **"Sales Trend by Item"** visualization to identify underperforming and high-performing items. Consider discontinuing low-performing items or investing in marketing and promotions for high-performing ones.

Refine Pricing Strategy: Use the **"Quantity vs. Total Amount Received"** visualization to identify pricing discrepancies and optimize pricing strategies for different products.

Target High-Potential Regions: Leverage the **"Top Sales by Region"** visualization to identify regions with high growth potential and focus marketing efforts on these areas.

Monitor Market Share: Use the **"Retailer Market Share - January 2017 -December 2017"** visualization to track market share trends and identify competitive threats.

By effectively analyzing these visualizations, businesses can make data-driven decisions to optimize sales performance, improve profitability, and gain a competitive edge.

CONCLUSION: This report has utilized data visualization to gain valuable insights into sales performance. By analyzing factors like promotional effectiveness, seasonal trends, pricing strategies, and regional disparities, we can optimize sales strategies to drive growth. Key recommendations include focusing on top-performing promotions, effective inventory management, and data-driven decision-making. Implementing these strategies will enable businesses to enhance their market position and achieve long-term success.