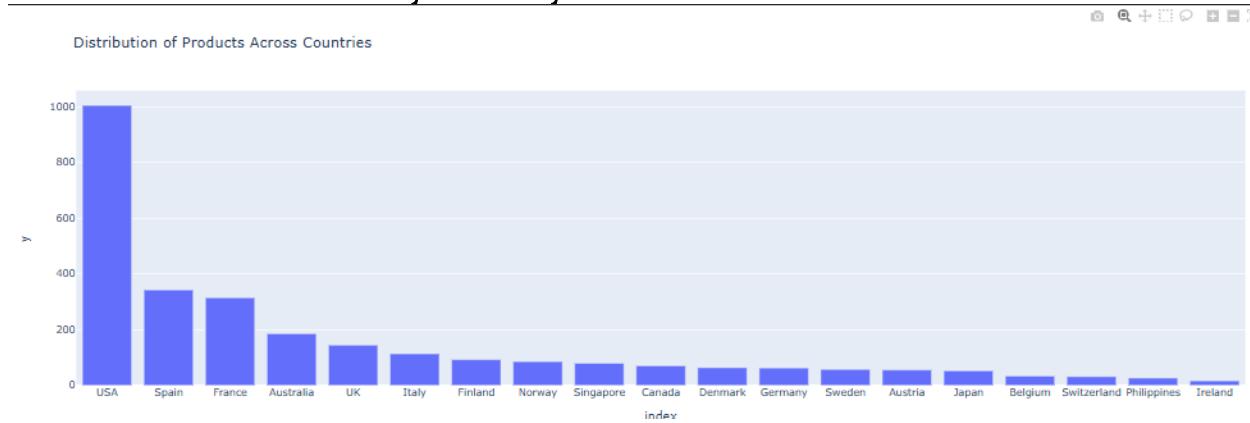


Sales Data Analysis

Link code:

<https://colab.research.google.com/drive/1zShPzSc2noaQyJJrdbrM-T18-DkDbNwk?usp=sharing>

I - Product Distribution by Country



- **Description:**

The bar chart displays the distribution of products sold across several countries. The United States leads by a significant margin, followed by Spain, France, and Australia.

- **Insight:**

The chart reflects a considerable disparity in product distribution among countries, highlighting the strongest and most active markets.

- **Key Objectives:**

- Identify the primary markets for the products.
- Optimize the targeting of marketing campaigns.
- Support decisions regarding geographic expansion.

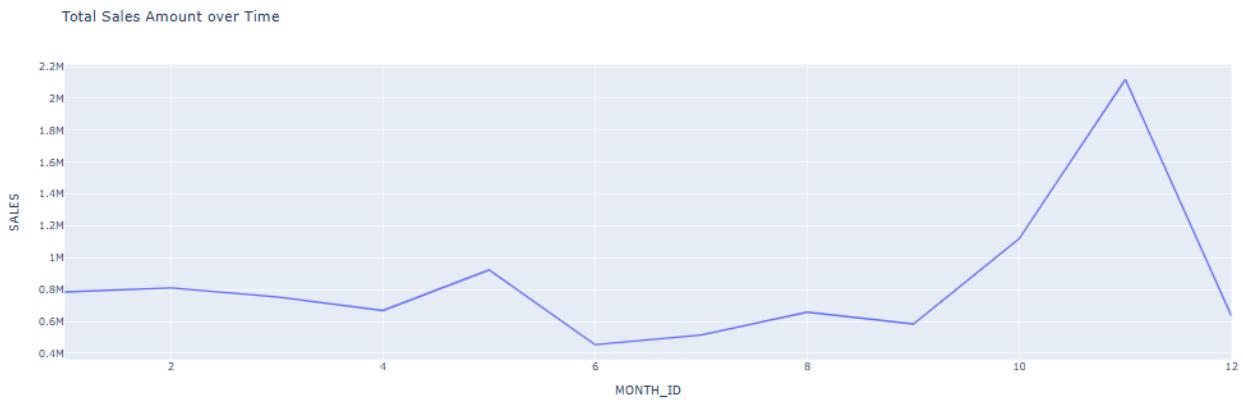
- **Conclusion:**

The U.S. market is the most active and deserves special focus in terms of marketing and sales.

- **Benefit:**

The chart aids in making strategic decisions about resource allocation and prioritizing the most effective markets.

2- Total Sales Over Time



- **Description:**

The line chart illustrates the progression of monthly sales throughout the year, with a significant spike observed in November.

- **Insight:**

The chart highlights the seasonal sales pattern, helping to identify peak periods.

- **Key Objectives:**

- Plan inventory and production.
- Enhance promotional campaigns during active months.
- Effectively manage resources.

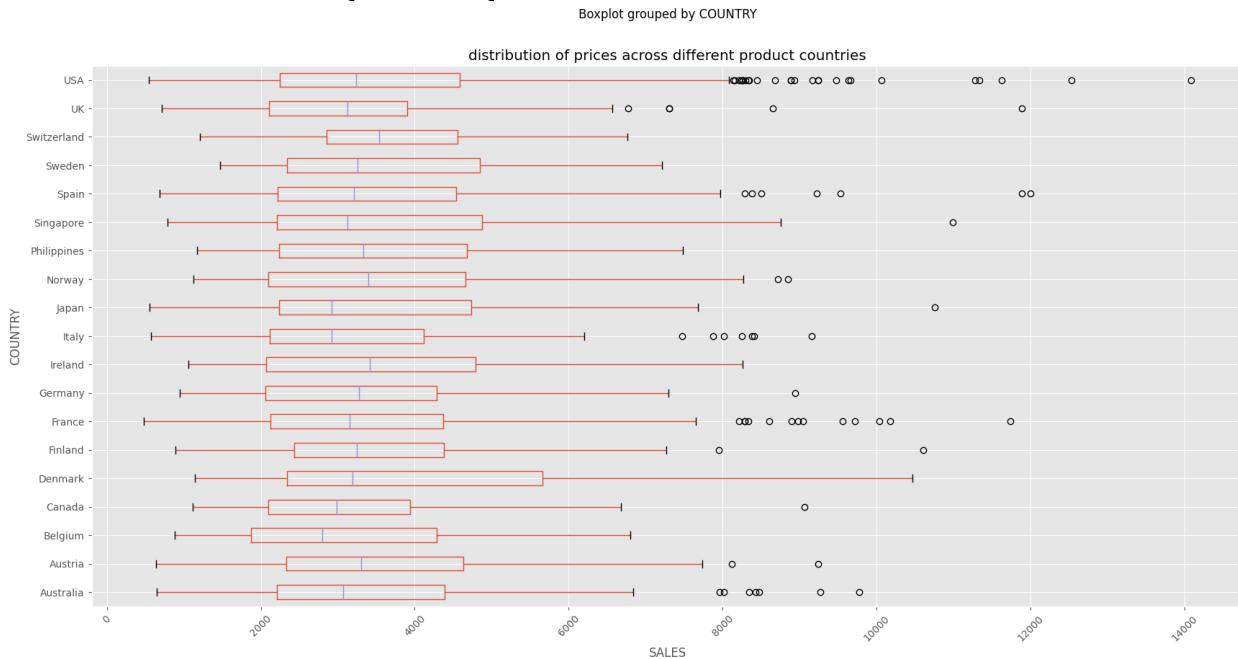
- **Conclusion:**

November experiences the highest sales, potentially linked to holiday seasons or major promotional events.

- **Benefit:**

The chart supports the optimization of marketing timing strategies to improve profitability.

3-Price Distribution by Country



- **Description:**

The box plot illustrates the price distribution of products in each country, showing outliers and significant price variations.

- **Insight:**

The chart reveals differences in pricing strategies across various markets.

- **Key Objectives:**

- Compare global price levels.
- Assess price competitiveness.
- Analyze the market environment's impact on pricing.

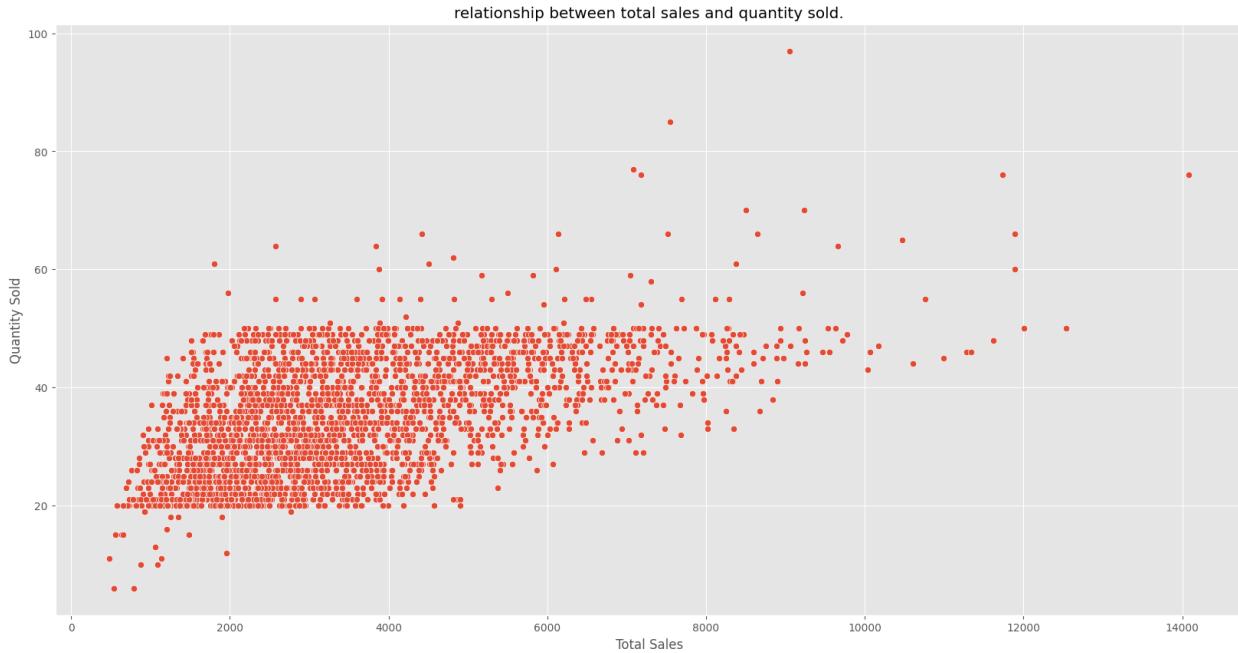
- **Conclusion:**

Certain countries, such as France and Germany, exhibit notable price variations, potentially reflecting differences in target demographics or consumer behavior.

- **Benefit:**

The chart supports pricing decisions tailored to specific markets.

4- Relationship Between Total Sales and Quantity Sold



- **Description:**

The scatter plot shows the correlation between the number of units sold and total sales, with a clear positive relationship observed.

- **Insight:**

The chart illustrates how the quantity sold influences sales volume.

- **Key Objectives:**

- Understand sales behavior.
- Support revenue forecasting based on quantity.
- Optimize pricing and promotional strategies.

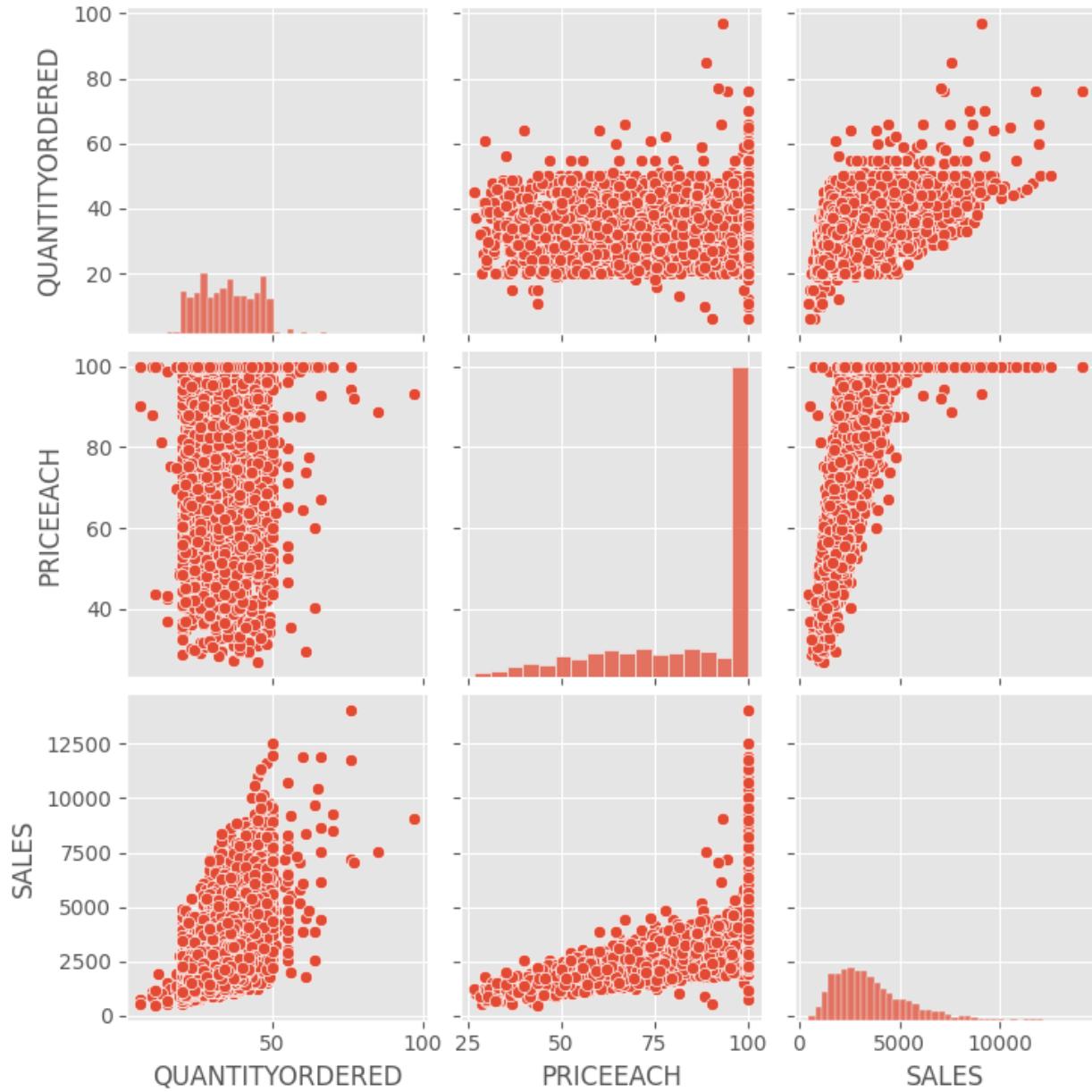
- **Conclusion:**

Higher sales volumes correspond to increased revenue, though some points show variability.

- **Benefit:**

The chart assists in planning based on quantity to improve financial performance.

5- Matrix of Quantity, Price, and Sales Relationships



- **Description:**

A scatterplot matrix displays the relationships between three variables: quantity, price, and sales.

- **Insight:**

The chart provides a comprehensive view of the interactions between key variables.

- **Key Objectives:**

- Analyze inter-variable relationships.
- Identify hidden patterns.
- Support predictive modeling.

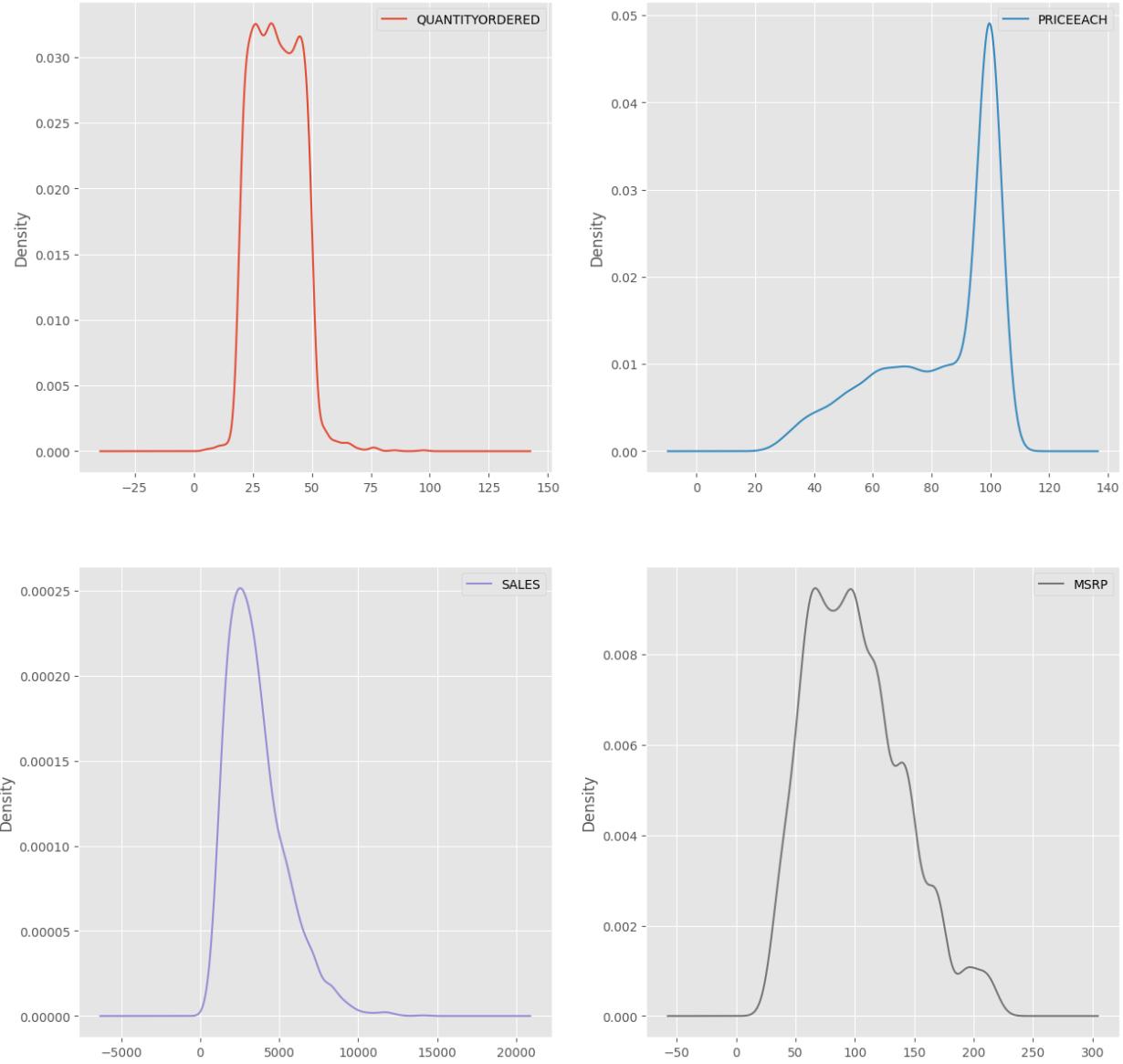
- **Conclusion:**

There is a clear relationship between price and quantity, with sales varying based on pricing.

- **Benefit:**

Useful for developing statistical models and understanding influential variables.

6- Probability Density of Key Variables



- **Description:**

The chart illustrates the density distributions of four variables: quantity, price, sales, and suggested price.

- **Insight:**

The chart depicts the statistical distribution of each variable.

- **Key Objectives:**

- Understand data characteristics.
- Verify normal distribution.
- Prepare for statistical modeling.

- **Conclusion:**

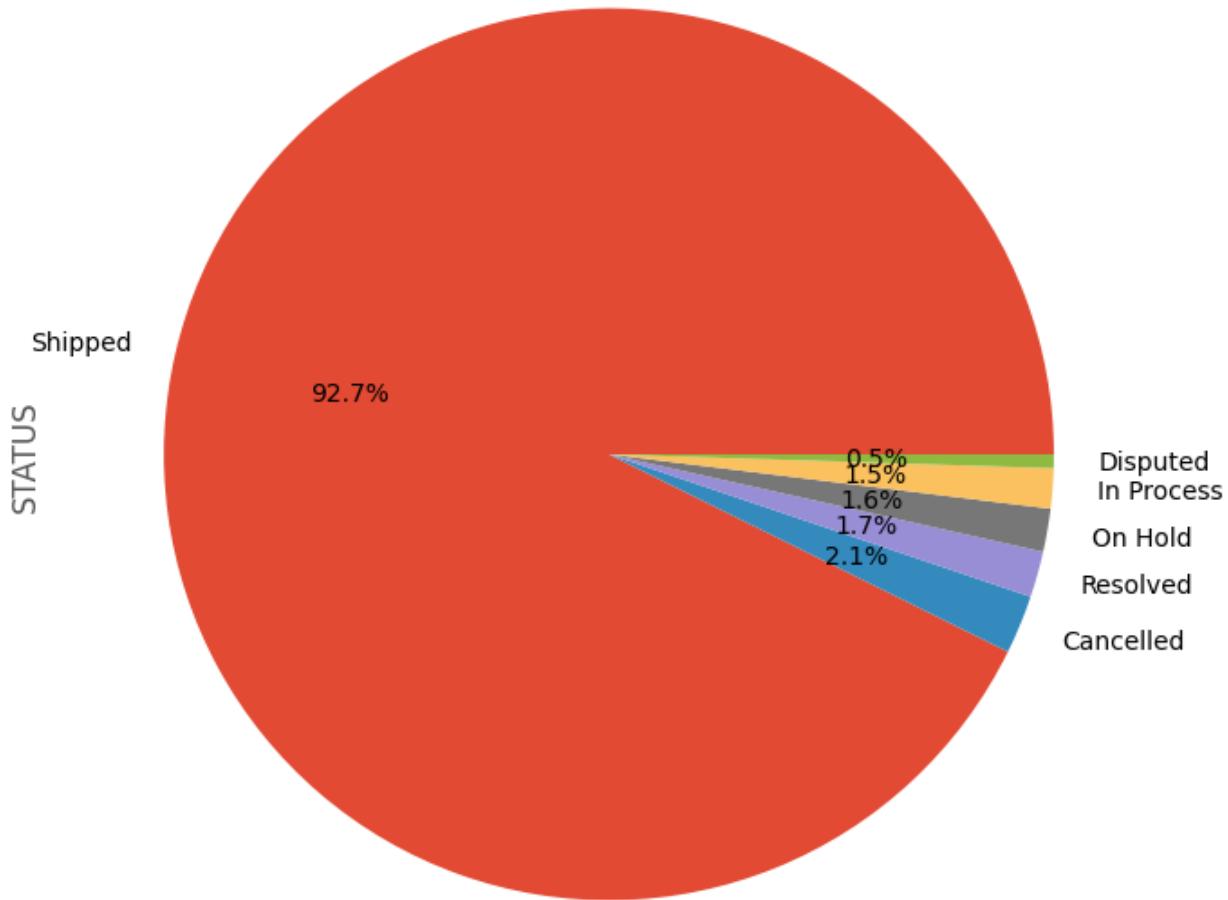
Most variables exhibit skewed distributions, indicating the presence of outliers.

- **Benefit:**

Essential for advanced statistical analyses.

7- Order Status

Pie Chart for Status of Orders



- **Description:**

A pie chart shows that 92.7% of orders were shipped successfully, with the remainder distributed among other statuses such as cancellations or disputes.

- **Insight:**

The chart highlights the efficiency of logistical operations.

- **Key Objectives:**

- Assess service quality.
- Improve order management.
- Minimize operational issues.

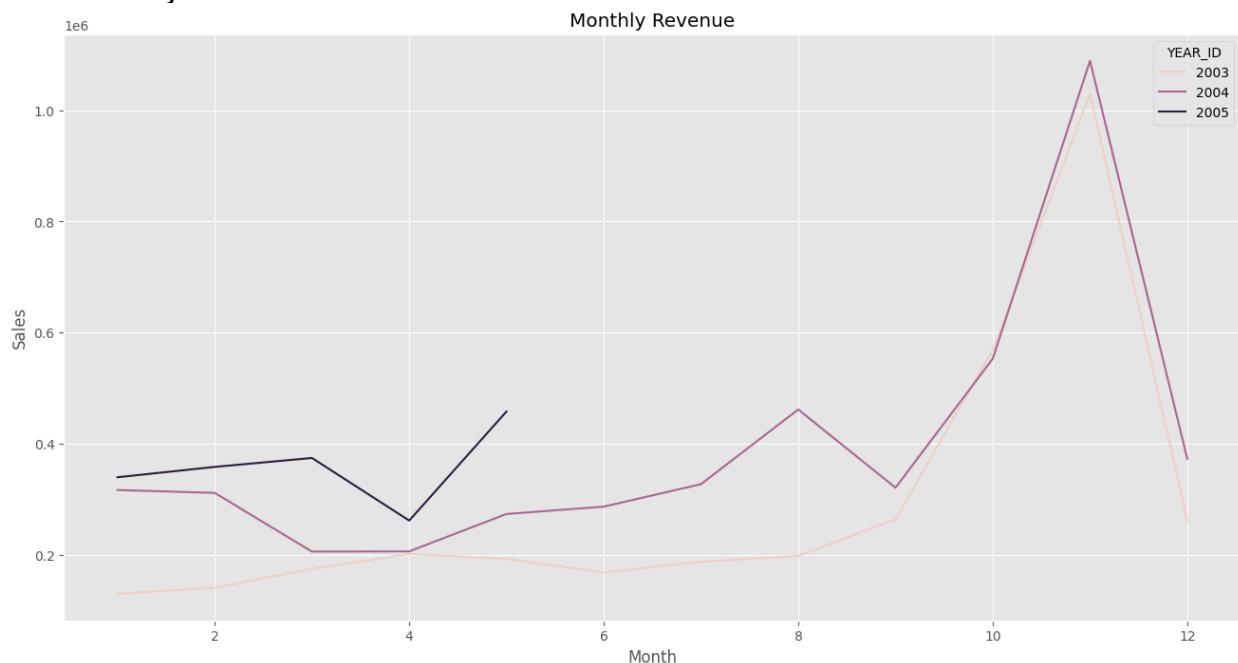
- **Conclusion:**

The majority of orders are successfully delivered, reflecting an efficient operating system.

- **Benefit:**

An essential tool for evaluating customer satisfaction and operational efficiency.

8- Monthly Revenue



- **Description:**

The chart displays monthly revenues over three years (2003, 2004, and 2005).

- **Insight:**

The chart reflects revenue fluctuations across different months for each year.

- **Key Objectives:**

- Analyze financial performance over the year.
- Identify months with peak and low sales.
- Compare year-over-year performance.

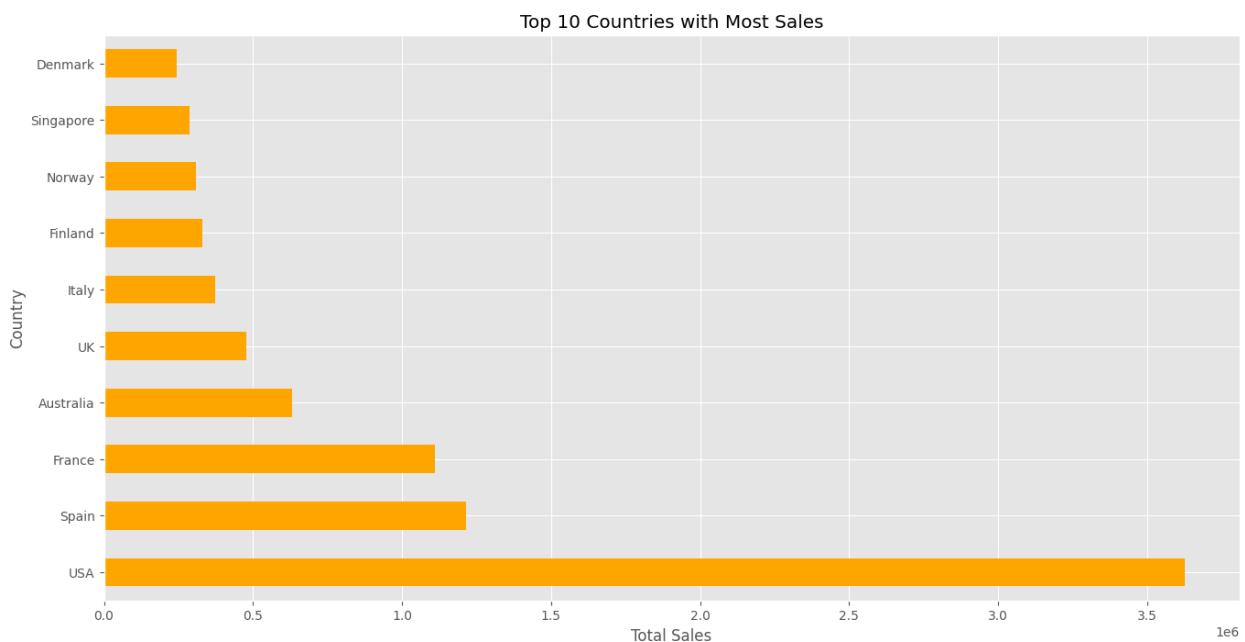
- **Conclusion:**

Significant revenue increases in certain months suggest seasonal factors or successful marketing campaigns.

- **Benefit:**

Supports financial planning and the development of future sales strategies.

9- Top 10 Countries by Sales



- **Description:**

The chart highlights the top ten countries in terms of sales volume.

- **Insight:**

The chart shows the distribution of sales across different countries.

- **Key Objectives:**

- Understand the primary revenue-contributing markets.
- Identify countries requiring more marketing focus.

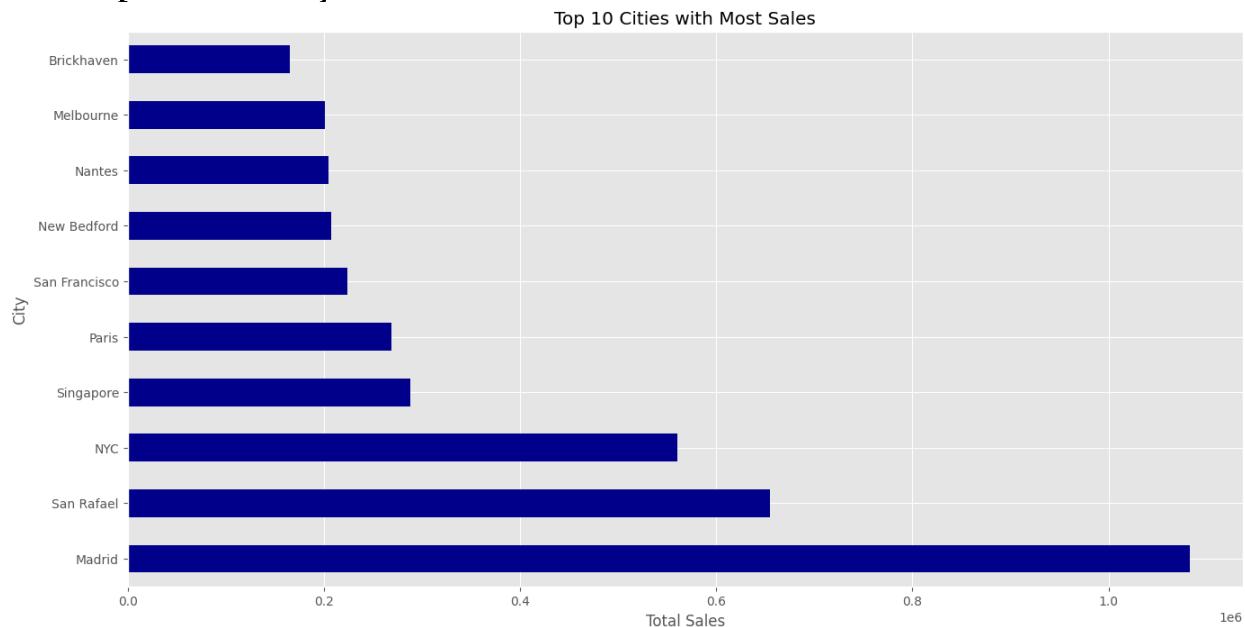
- **Conclusion:**

The United States leads in sales, while other countries have relatively lower volumes.

- **Benefit:**

Useful for identifying target markets and guiding marketing strategies.

10- Top 10 Cities by Sales



- **Description:**

The chart displays the top ten cities in terms of sales volume.

- **Insight:**

The chart highlights sales performance at the city level.

- **Key Objectives:**

- Identify cities with high demand.
- Understand sales distribution at the city level.

- **Conclusion:**

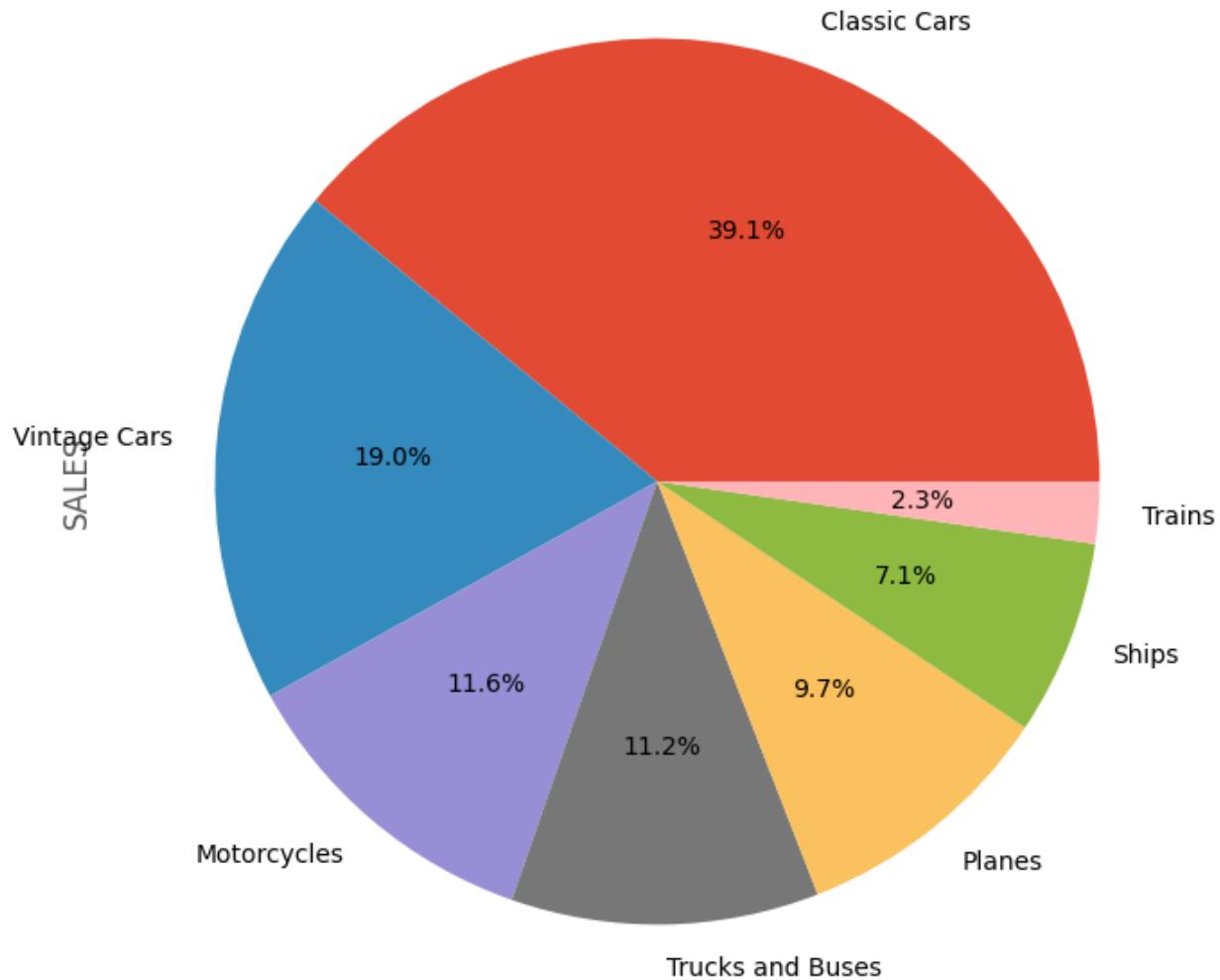
There is significant variation in sales among cities, indicating differences in demand.

- **Benefit:**

Helps guide distribution and marketing decisions

II- Pie Chart of Product Line Sales

Pie Chart for Productline Sales



- **Description:**

The chart shows the sales distribution of different product lines.

- **Insight:**

The chart illustrates the percentage contribution of each product line to total sales.

- **Key Objectives:**

- Understand the performance of each product line.
- Identify the most profitable products.

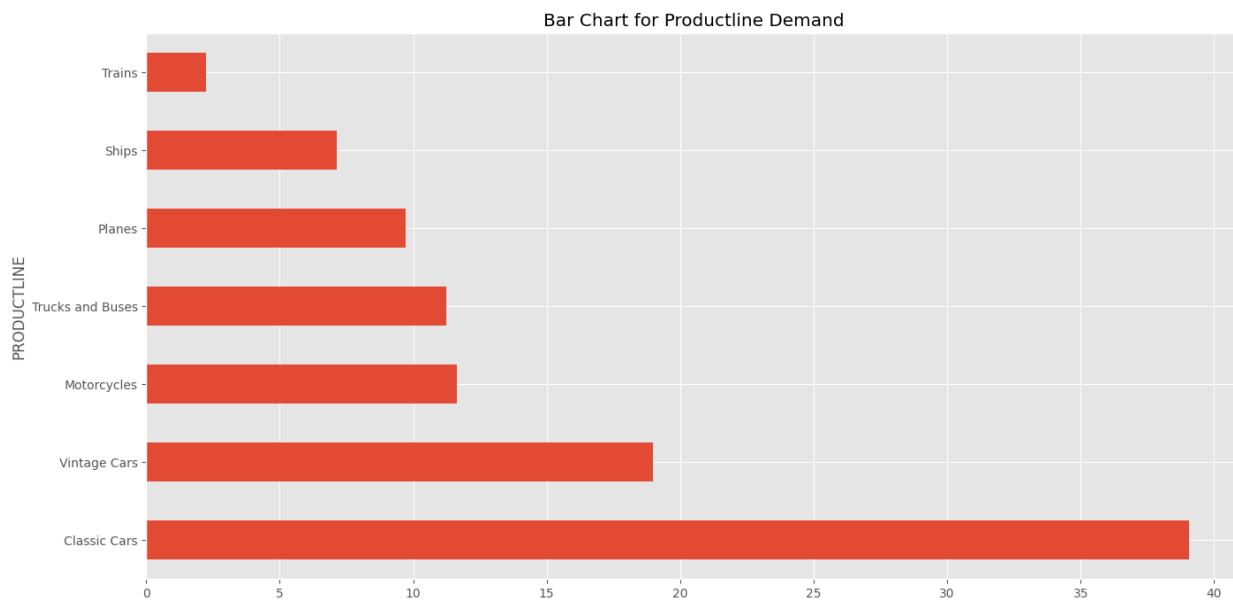
- **Conclusion:**

Classic cars account for the largest share of sales.

- **Benefit:**

Supports strategies for product development and resource allocation

I2- Product Demand



- **Description:**

The chart illustrates the demand for various products.

- **Insight:**

The chart reflects the levels of demand for each product type.

- **Key Objectives:**

- Identify high-demand products.
- Understand customer preferences.

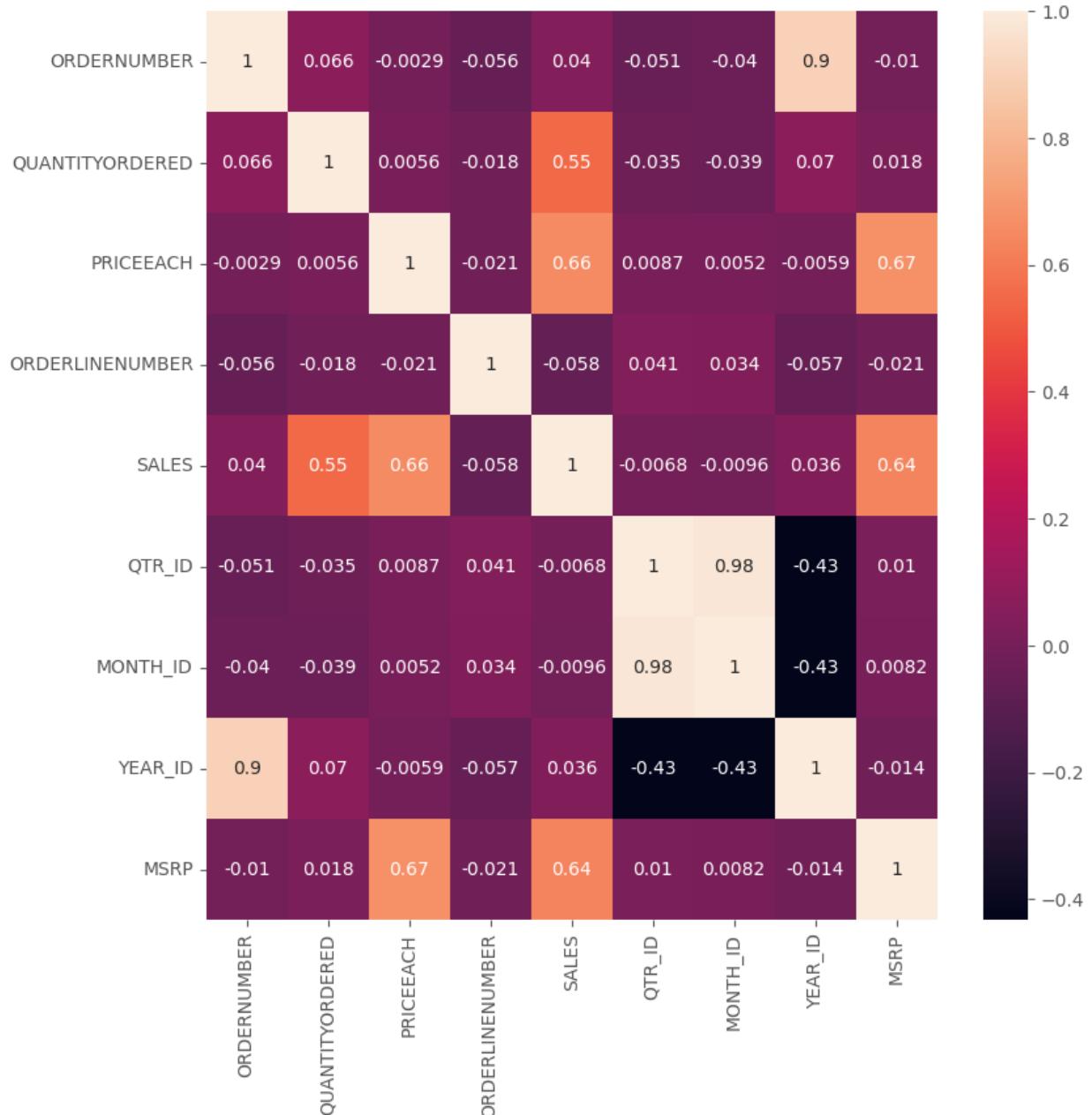
- **Conclusion:**

Data shows that classic cars have the highest demand.

- **Benefit:**

Critical for production planning and distribution strategies.

I3- Correlation Matrix



- Description:**

The chart displays a correlation matrix between different variables.

- Insight:**

The chart highlights relationships among various variables.

- **Key Objectives:**

- Understand variable interactions.
- Identify influential factors.

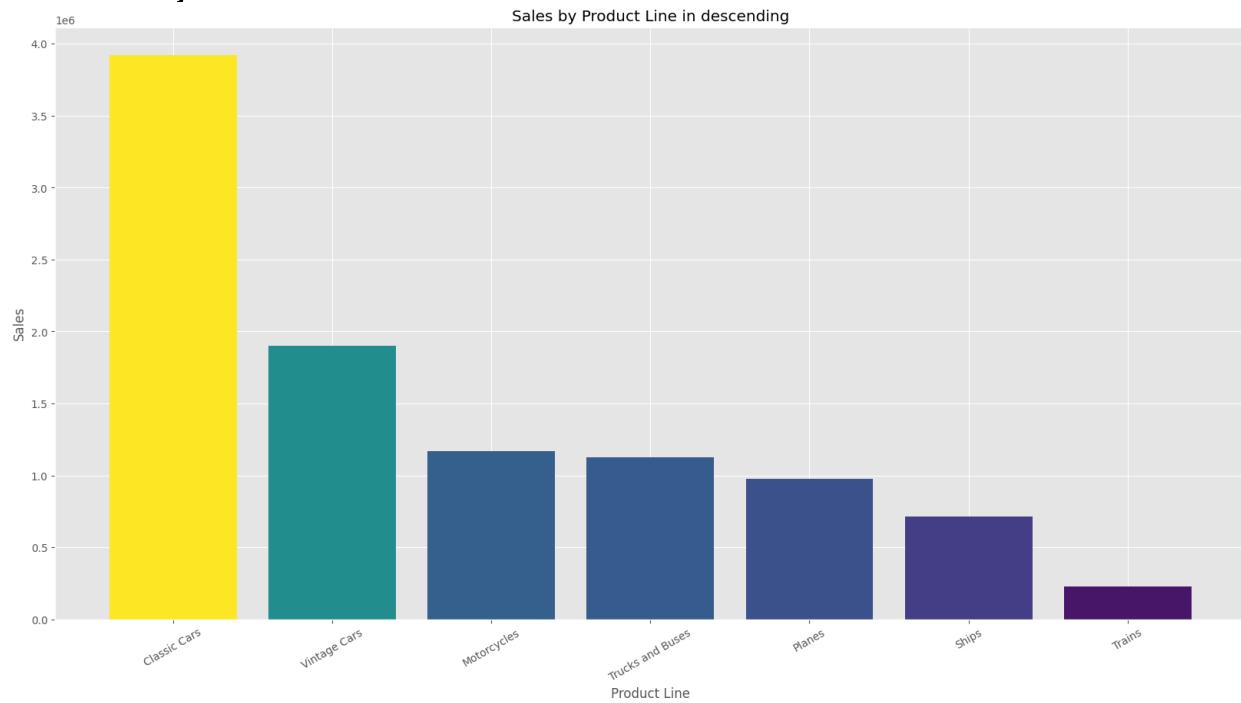
- **Conclusion:**

There is a strong correlation between sales and demand, indicating the impact of demand on sales.

- **Benefit:**

Useful for statistical modeling and forecasting.

I4- Sales by Product Line



- **Description:**

The chart depicts sales volumes for each product line in descending order.

- **Insight:**

The chart illustrates the sales performance of each product line.

- **Key Objectives:**

- Understand sales distribution.
- Identify the most profitable product lines.

- **Conclusion:**

Sales are heavily concentrated on classic cars.

- **Benefit:**

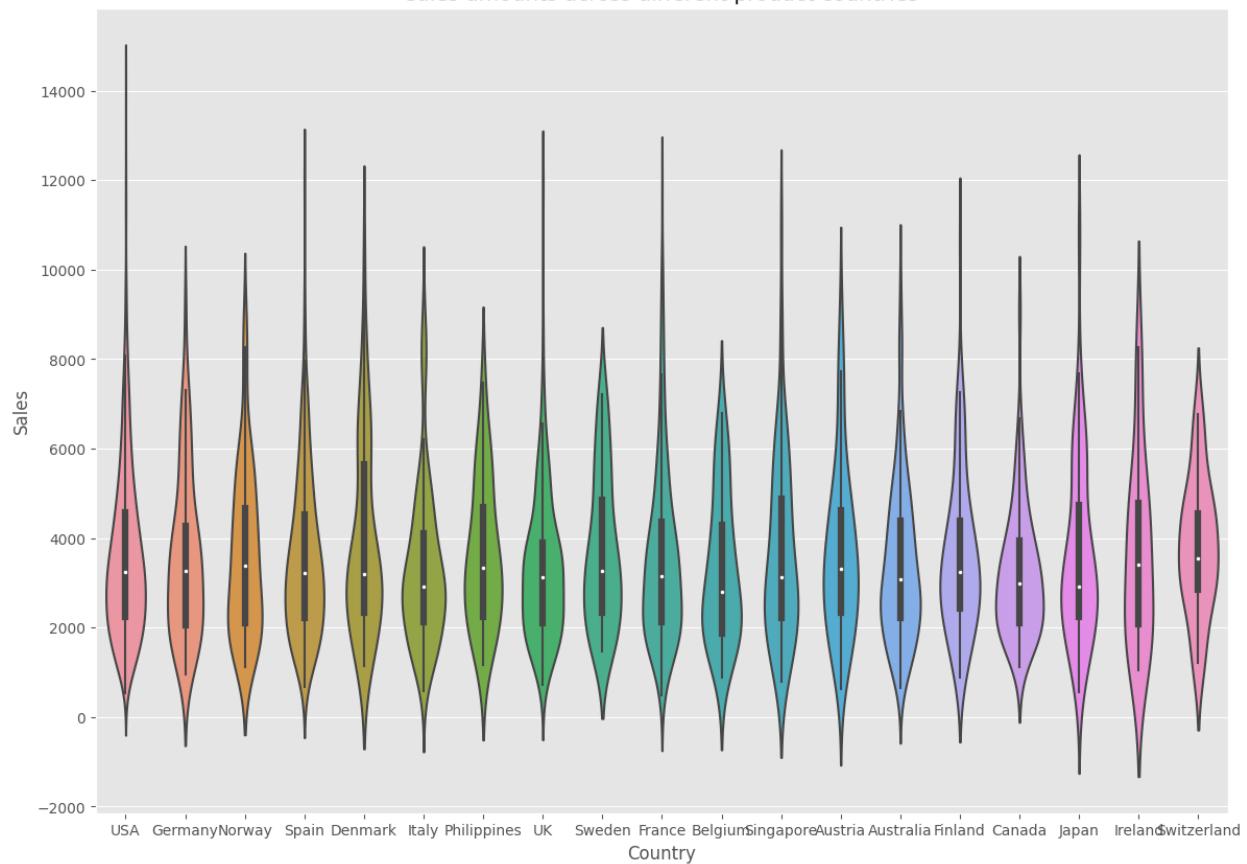
Supports prioritization in product development and marketing efforts

الفائدة:

يساعد في تحديد الأولويات في تطوير المنتجات.

I5- Sales by Country

sales amounts across different product countries



- **Description:**

The chart shows product sales across different countries.

- **Insight:**

The chart highlights sales distribution at the country level.

- **Key Objectives:**

- Understand international sales performance.
- Identify strong and weak markets.

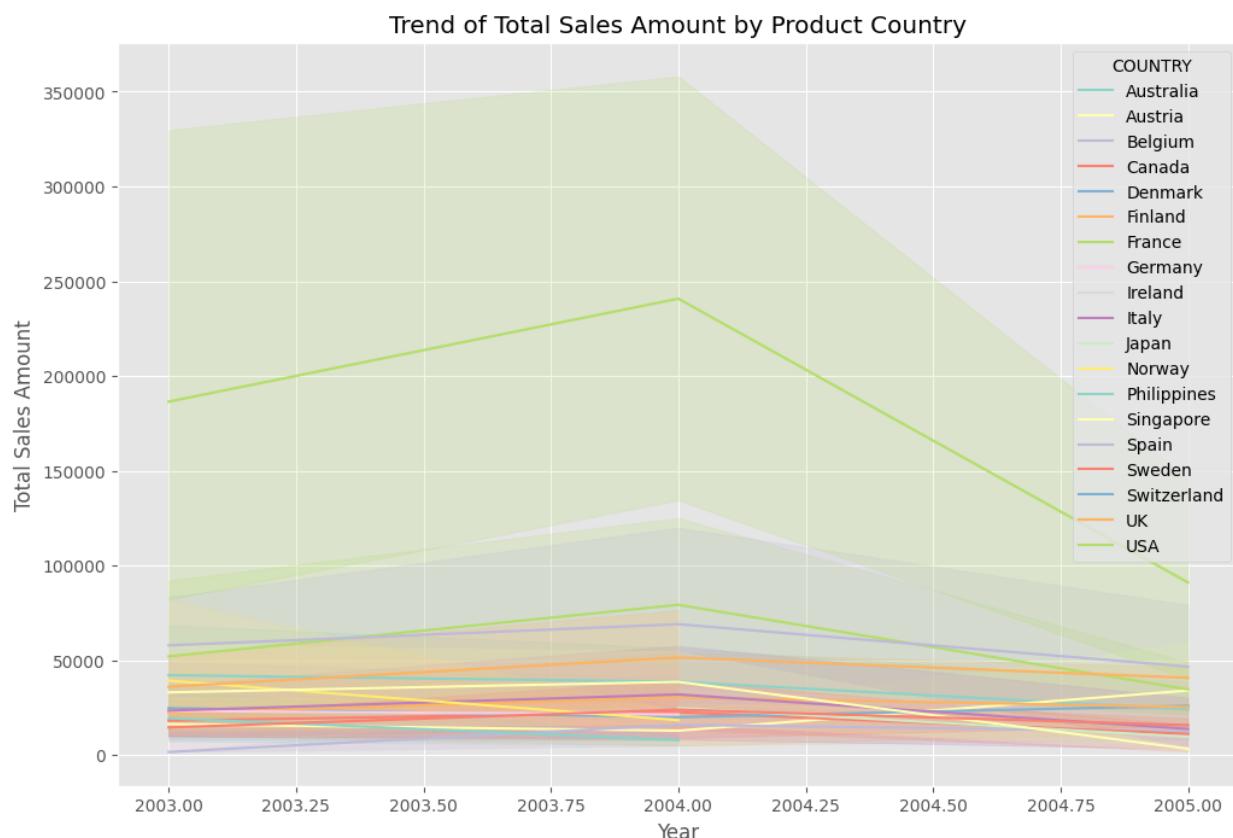
- **Conclusion:**

Data reveals large disparities in sales between countries.

- **Benefit:**

Guides strategies for international expansion.

I6- Total Sales Trends by Country



- **Description:**

The chart depicts trends in total sales across countries over the years.

- **Insight:**

The chart reflects temporal changes in sales performance by country.

- **Key Objectives:**

- Analyze sales trends.
- Understand economic impacts on sales.

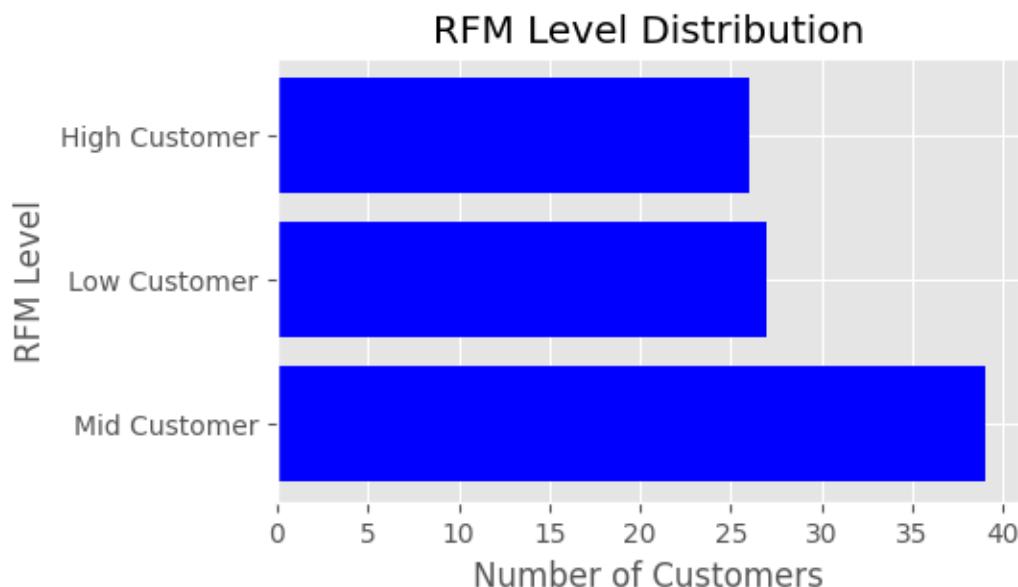
- **Conclusion:**

Some countries show sustained growth in sales, while others experience declines.

- **Benefit:**

Supports long-term strategic planning.

I7- RFM Level Distribution



- **Description:**

The chart shows the distribution of customer levels based on RFM (Recency, Frequency, Monetary).

- **Insight:**

The chart highlights the number of customers in each RFM level.

- **Key Objectives:**

- Understand customer distribution.
- Develop retention strategies for different customer segments.

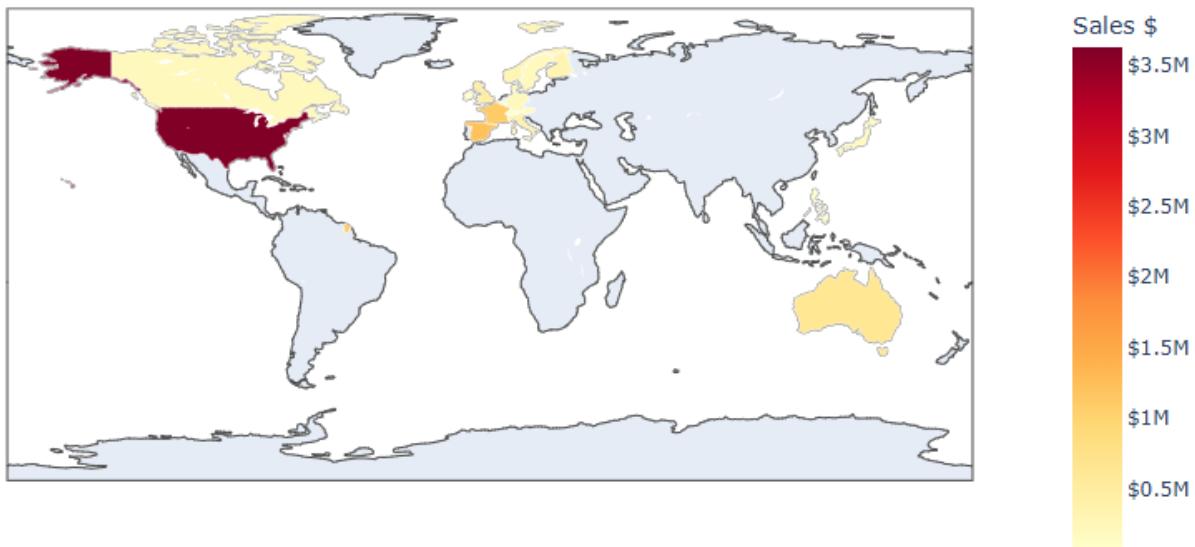
- **Conclusion:**

A large portion of customers fall into the medium-tier category.

- **Benefit:**

Guides marketing and targeting strategies.

I8- Sales Map by Country



- **Description:**

The map displays sales distribution across countries, with color gradients representing different sales values.

- **Insight:**

The map highlights variations in sales across geographic regions.

- **Key Objectives:**

- Identify high- and low-performing markets.
- Understand geographic sales distribution.

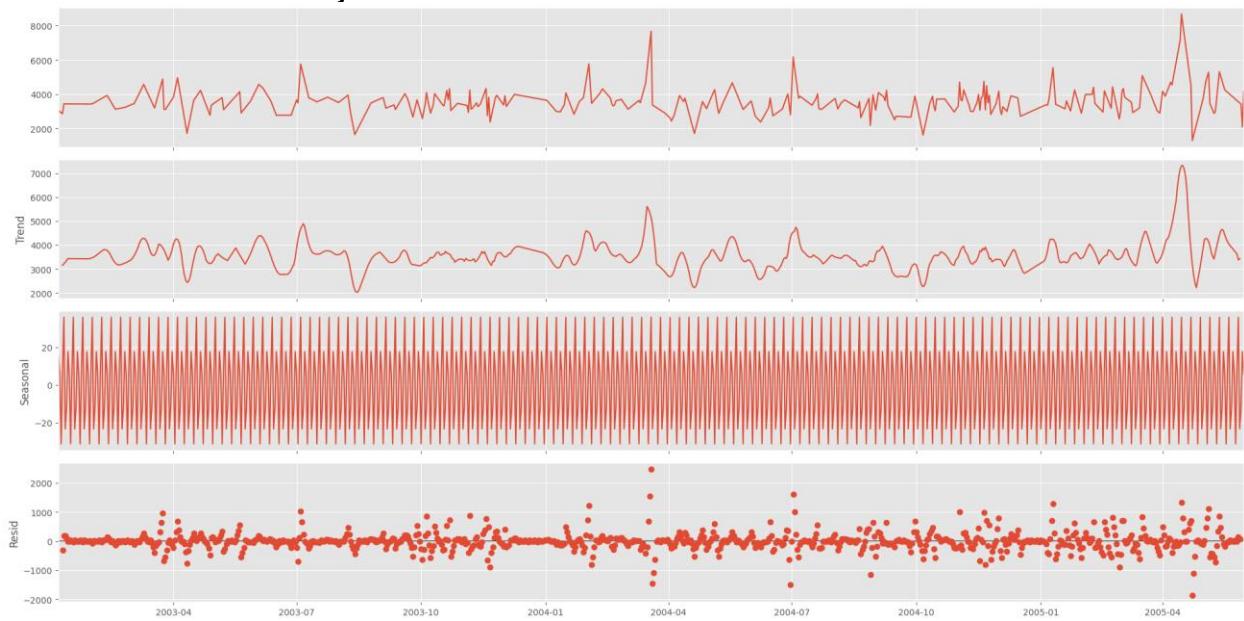
- **Conclusion:**

Data shows that the U.S. achieves the highest sales, while other regions exhibit lower sales volumes.

- **Benefit:**

Essential for directing marketing strategies and planning international expansion.

I9- Time-Series Analysis



- **Description:**

The chart displays the time-series analysis of data over a specified period.

- **Insight:**

The chart highlights seasonal trends and changes in data.

- **Key Objectives:**

- Understand temporal patterns.
- Identify high- and low-performing periods.

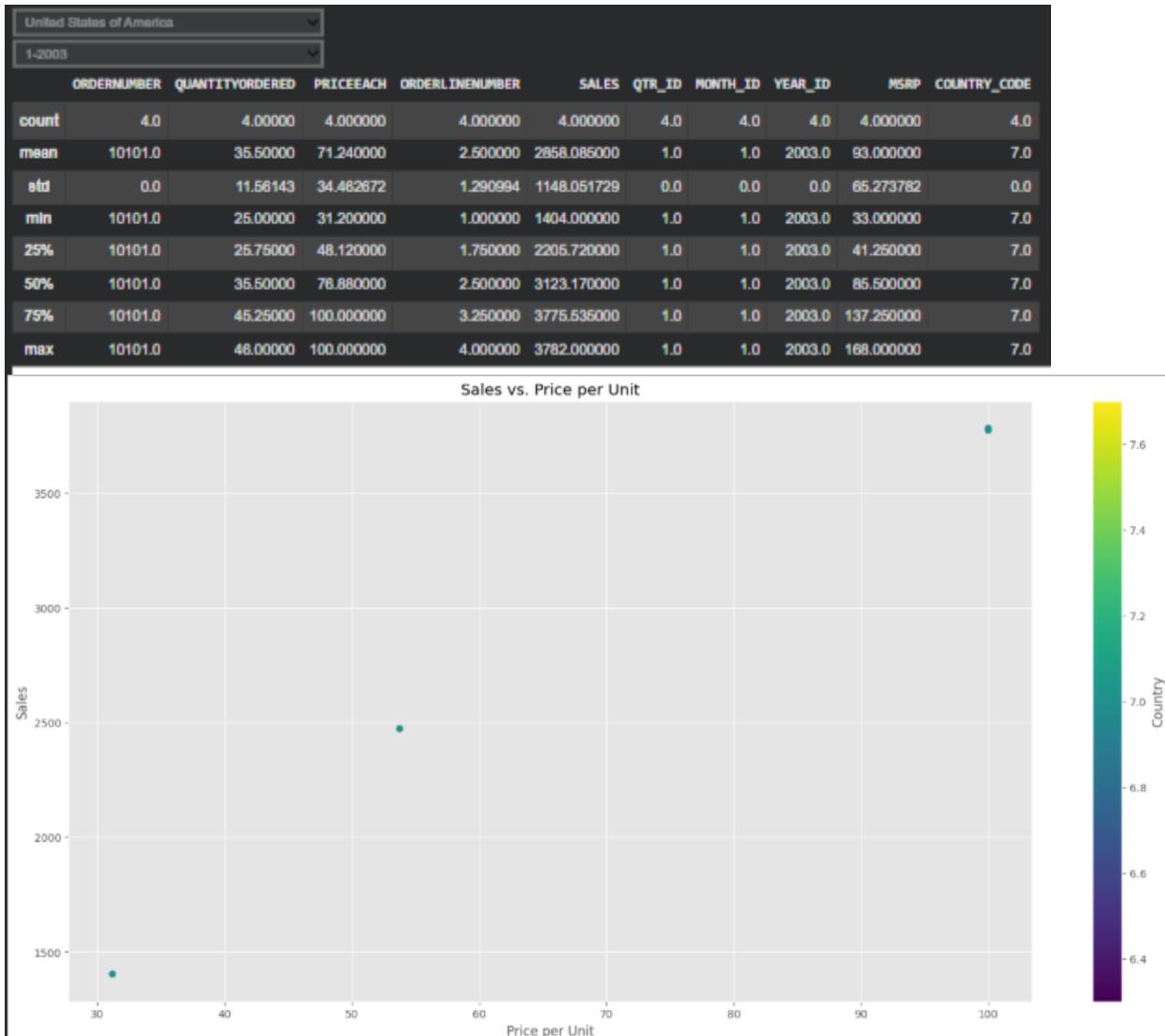
- **Conclusion:**

Data reveals clear seasonal fluctuations.

- **Benefit:**

Supports future planning and performance improvement.

20- Analysis of Sales vs. Price Per Unit



- Description:**

The chart illustrates the relationship between sales and unit price, with color gradients to indicate variations.

- Insight:**

The chart highlights the distribution of sales in relation to product prices.

- Key Objectives:**

- Understand how price influences sales.
- Identify price points with the greatest impact on sales performance.

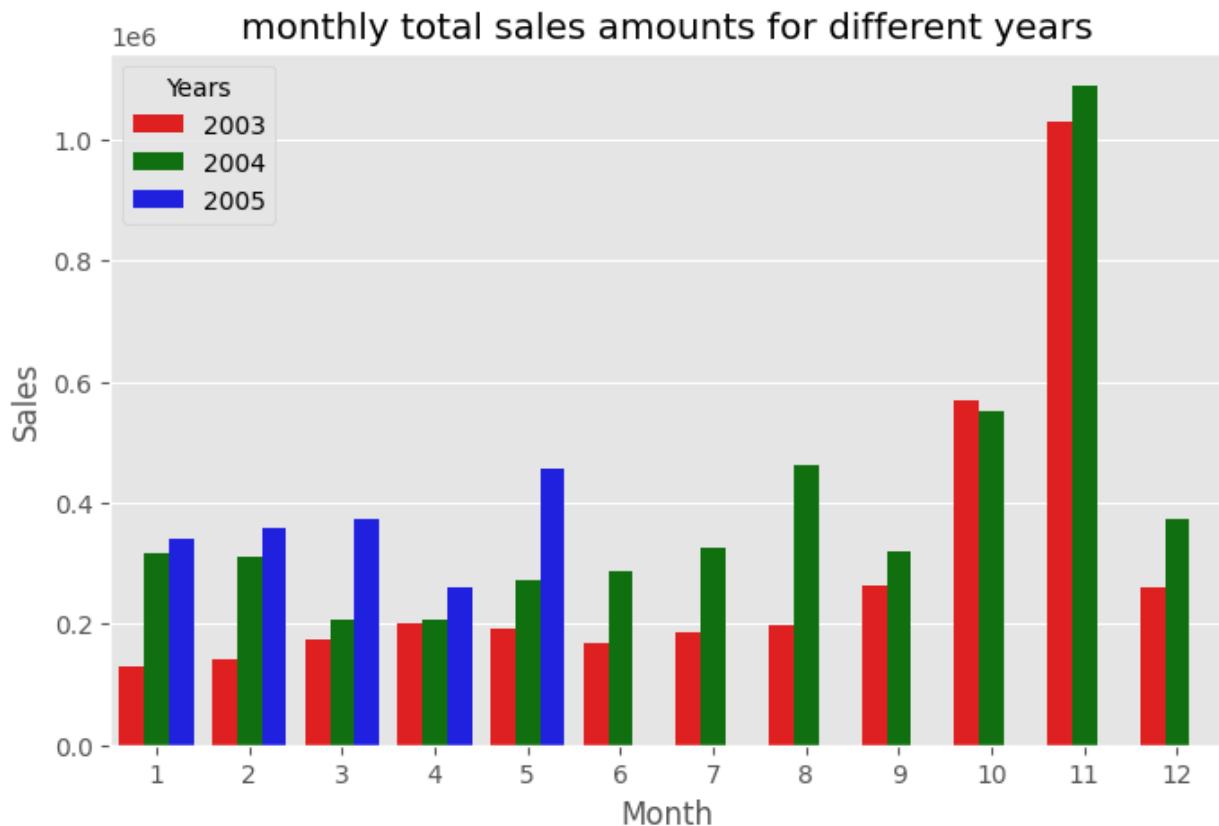
- **Conclusion:**

Data shows significant variation in sales, with certain price points driving higher volumes.

- **Benefit:**

Supports pricing strategies and sales optimization.

2I- Total Monthly Sales Over the Years



- **Description:**

The chart displays total monthly sales for three years.

- **Insight:**

The chart reflects changes in monthly sales patterns over time.

- **Key Objectives:**

- Analyze monthly performance.
- Understand the impact of seasonal factors.

- **Conclusion:**

Data indicates a recurring pattern in monthly sales. • **Benefit:**

Helps forecast future sales and plan marketing strategies.

Recommendations Based on Analysis:

From the analyzed charts, the following recommendations can help improve sales performance and minimize losses:

1. Geographic Market Analysis:

- Focus on high-performing markets like the U.S., and develop customized marketing strategies to enhance market share.

2. Product Pricing Optimization:

- Analyze the relationship between price and sales to determine optimal pricing. Conduct pricing experiments to identify the most profitable price points.

3. Product Line Expansion:

- Based on sales data, develop new products tailored to high-demand markets to attract new customers and increase revenue.

4. Digital Marketing Enhancement:

- Strengthen digital marketing campaigns to reach a broader audience, especially in regions with growth potential.

5. Customer Experience Improvement:

- Emphasize excellent customer support and a seamless purchasing experience to boost customer loyalty and long-term sales.

Example Recommendations for Specific Regions:

1. United States:

- **Market:** Highest sales volume among all regions.
- **Strategy:** Increase digital marketing campaigns targeting specific demographics, such as youth and families.
- **Suggested Price Range:** \$2,000–\$2,500 based on competitive analysis.

2. Germany:

- **Market:** Strong market in Europe with high demand for premium products.
- **Strategy:** Focus advertisements on quality and advanced technology.
- **Suggested Price Range:** \$2,200–\$2,700.

3. United Kingdom:

- **Market:** Diverse market with growing interest in sustainable products.
- **Strategy:** Market eco-friendly products to tap into sustainability trends.
- **Suggested Price Range:** \$2,100–\$2,600.

4. Australia:

- **Market:** Emerging market with significant growth potential.
- **Strategy:** Strengthen digital presence and raise brand awareness.
- **Suggested Price Range:** \$1,900–\$2,400.

5. Canada:

- **Market:** Stable market with consistent demand.
- **Strategy:** Focus on seasonal promotions and improving customer experience.
- **Suggested Price Range:** \$1,800–\$2,300.