E-Commerce Trends Analysis

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Project Description

Objective: To analyze e-commerce data for insights into product performance, customer preferences, and sales patterns, aiding in inventory, pricing, and marketing optimization.

Key Problems Addressed:
- Identified factors driving sales and customer satisfaction.
- Optimized stock management.
- Improved pricing strategies.

Approach:
- Analysed data on product categories, sales, discounts, ratings, and reviews.
- Used pivot tables and visualizations to highlight key trends.

Outcome: Provided actionable insights for strategic business decisions, enhancing growth and profitability in the e-commerce sector.
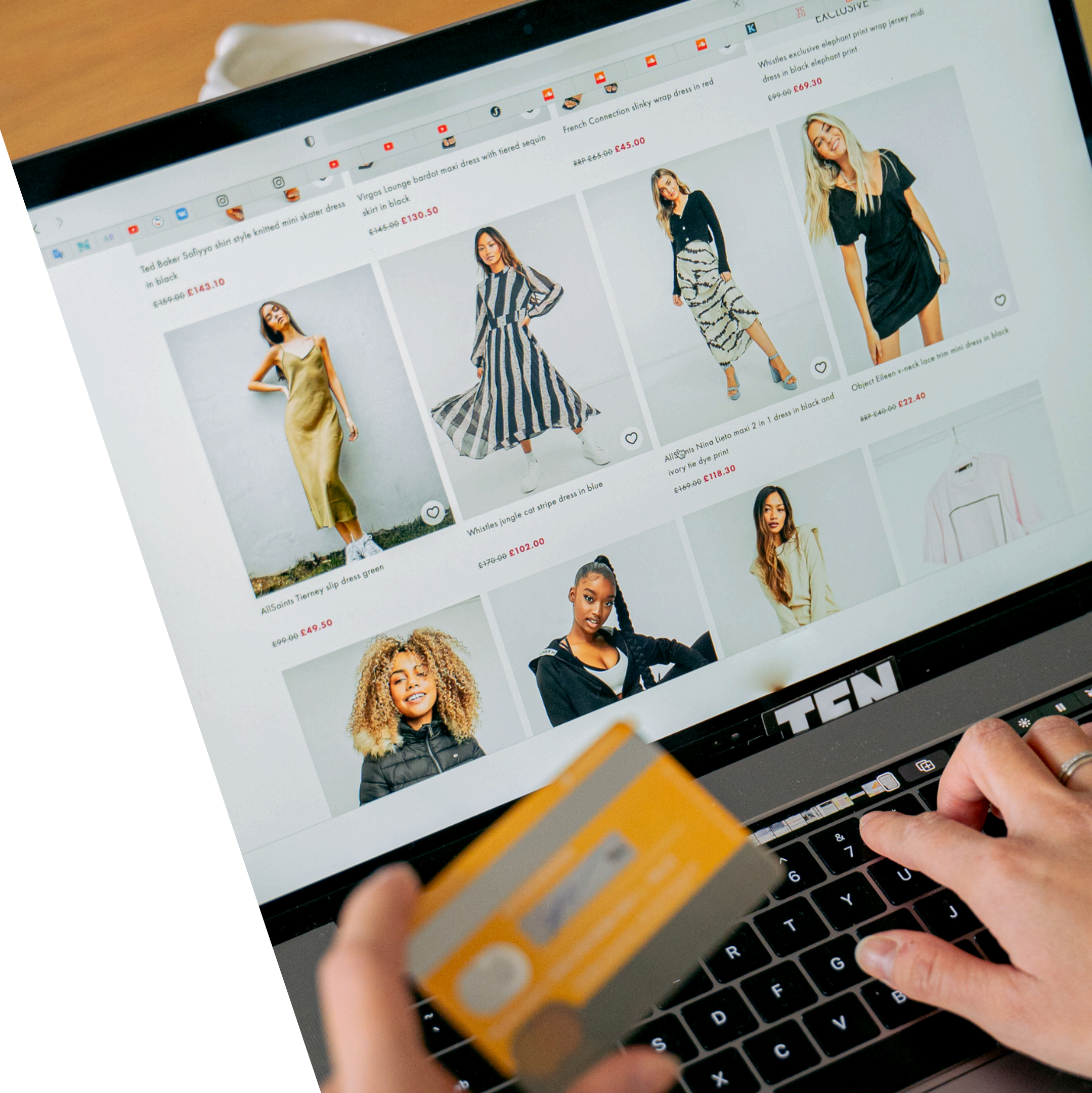
Key Questions

1. Which categories are generating the most sales?

2. How do price, rating, and number of reviews influence sales?

3. What is the impact of discounts on sales volume?

4. How does stock quantity affect sales ?

5. Are there seasonal trends or patterns in sales?

1 **Which categories are generating the most sales?**

Top-Selling Categories:

Personal Care: The leading niche in the e-commerce market, including various personal hygiene and beauty items.

Clothing:
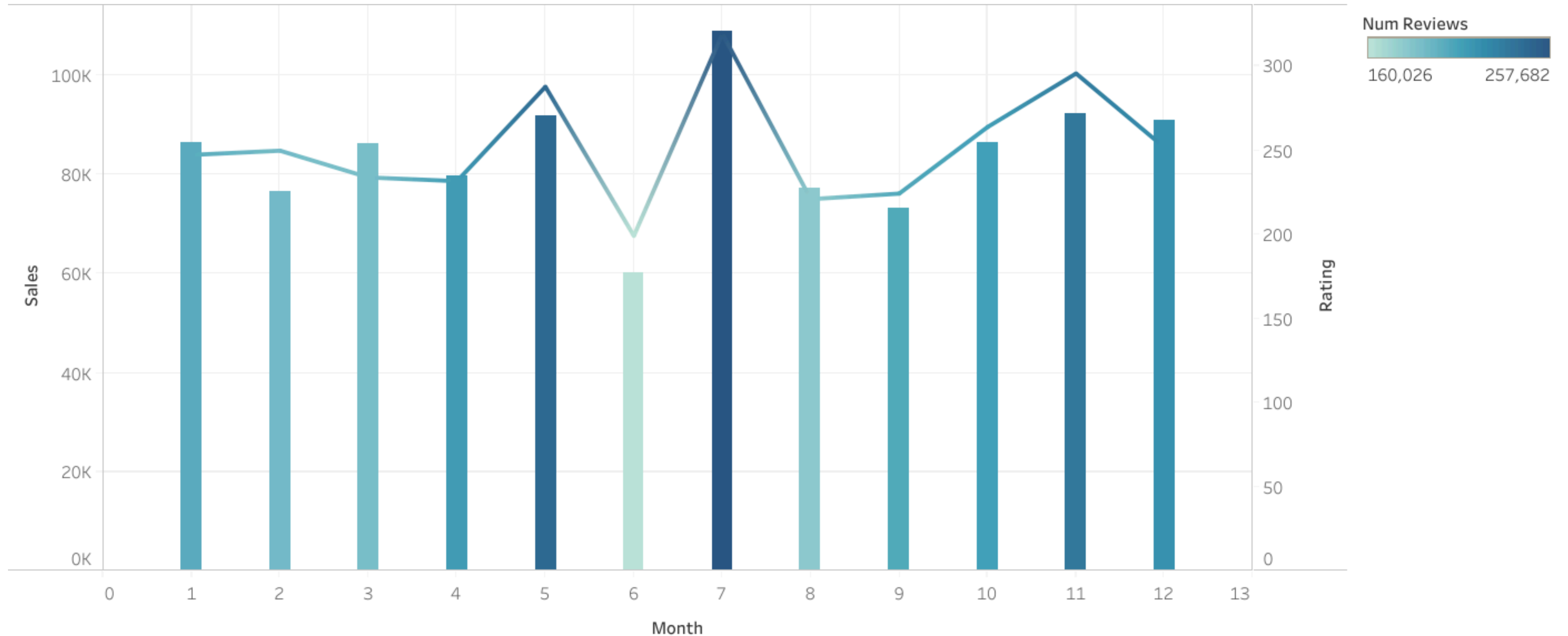Close behind personal care, this category includes garments and jackets, showing high demand for apparel.

Competitive Categories:

Art and Living vs. Kitchenware: These categories compete closely with each other.

Outdoor and Sports, Bedding, Health and Wellness, and Electronics and Accessories: These categories also show significant competition.


The visualizations highlight the competitive nature of these categories and their market dynamics.
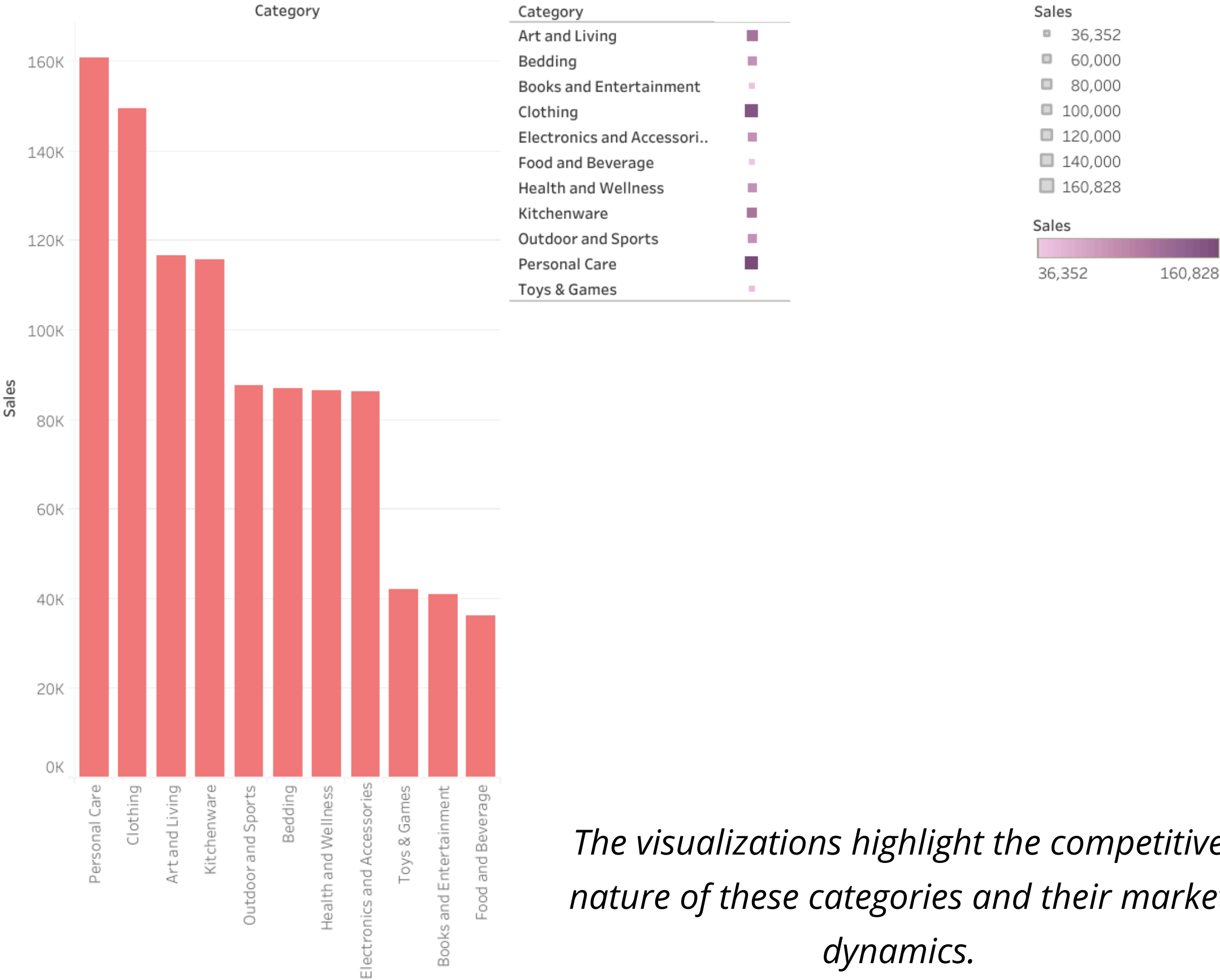
# How do price, rating, and number of reviews influence sales?

The Chart suggests that reviews and ratings significantly influence online product sales. Customers, unable to physically inspect products, tend to rely heavily on the experiences and opinions of others. High ratings and positive reviews appear to build trust and credibility, making them crucial factors in the decision-making process and ultimately driving sales.

2.2 How do price, rating, and number of reviews influence sales?
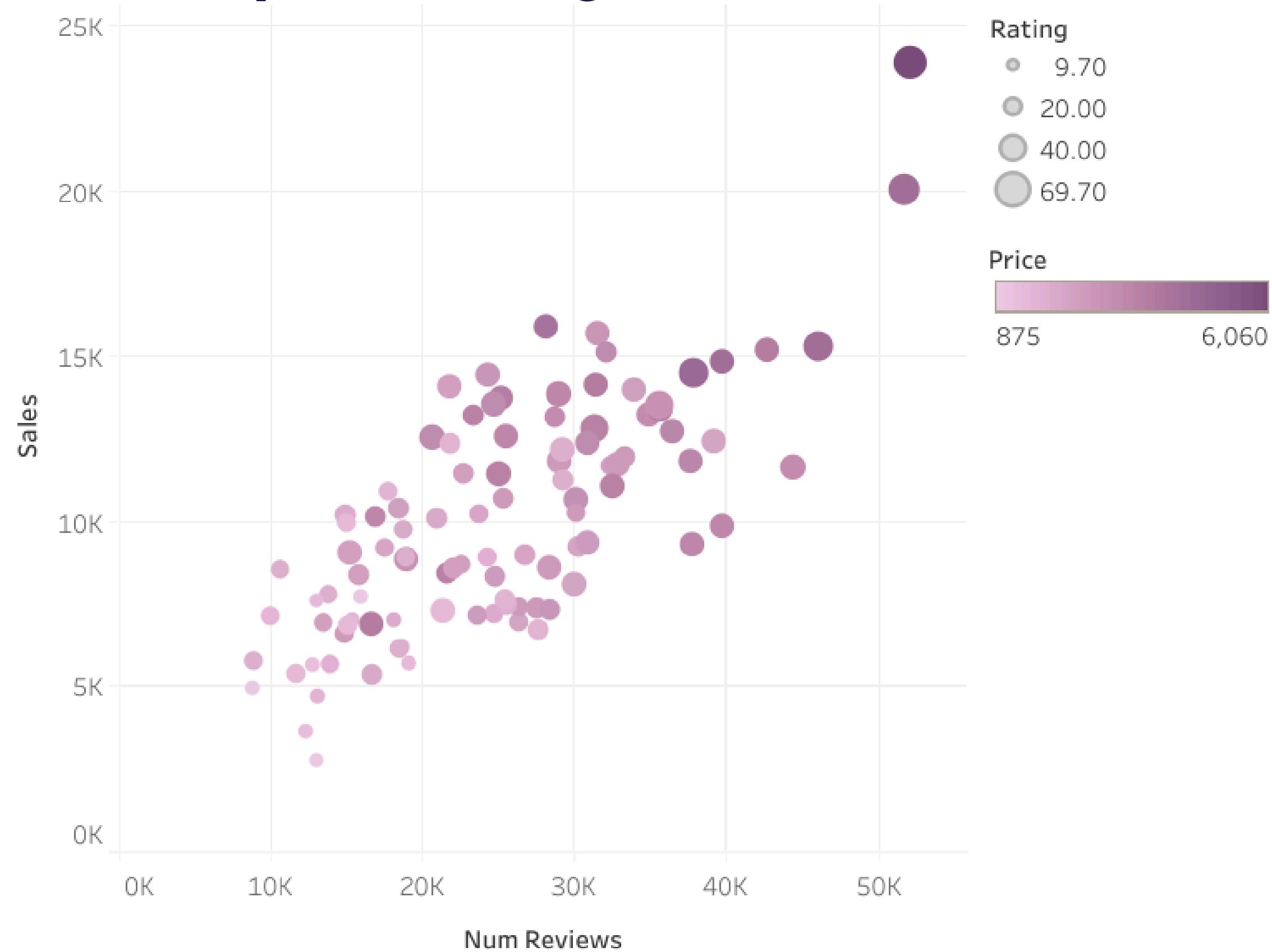
It is observed that rating has a direct impact on both pricing and the number of reviews. The bubble chart suggests that higher-priced products tend to have better ratings and a larger proportion of reviews. For instance, the dataset shows that the lowest-priced product, priced at $10.11, has a rating of 1 and only 3 reviews. In contrast, the highest-priced product, priced at $499, boasts a rating of 5 and nearly 5000 reviews. This trend highlights the strong correlation between product rating, price, and the number of reviews.

③ What is the impact of discounts on sales volume?
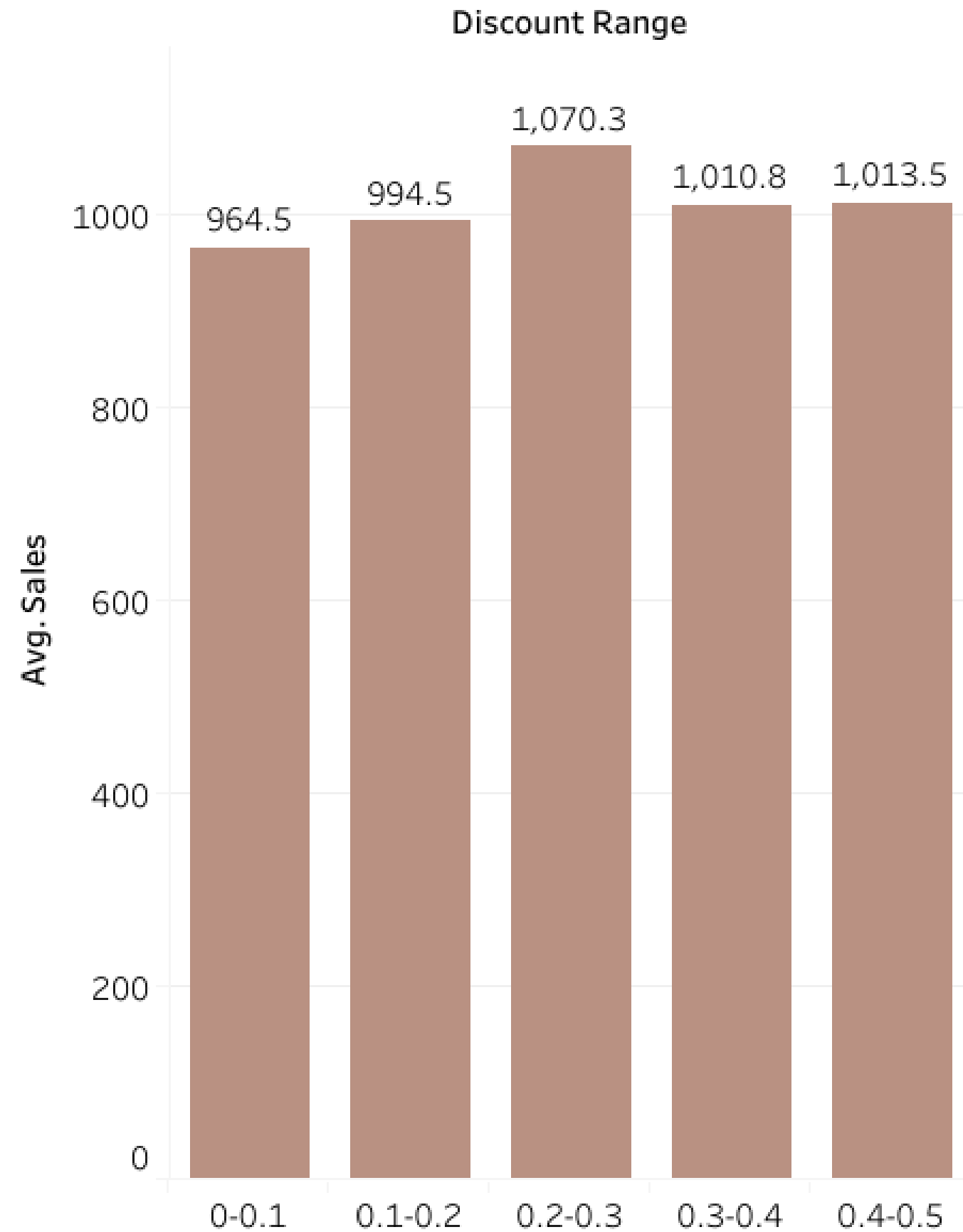
**The bar chart shows how different discount ranges affect average sales:**

- 0.2-0.3 Discount Range: Peaks at 1070.3 units, indicating the best sales performance without hurting profits.

- 0.3-0.4 and 0.4-0.5 Discount Ranges: Follow with 1010.8 and 1013.5 units respectively. These ranges also generate good sales, though slightly less than the peak range.

- 0-0.1 and 0.1-0.2 Discount Ranges: Achieve 964.5 and 994.5 units respectively. Despite lower volumes compared to higher discounts, they still boost sales.

Key Findings:

- Best Range: 0.2-0.3 offers the highest average sales volume.
- Moderate Discounts: Ranges of 0.3-0.5 also perform well, though slightly less.

- Lower Discounts: Even minimal discounts (0-0.2) increase sales compared to no discounts.

4 How does stock quantity affect sales ?
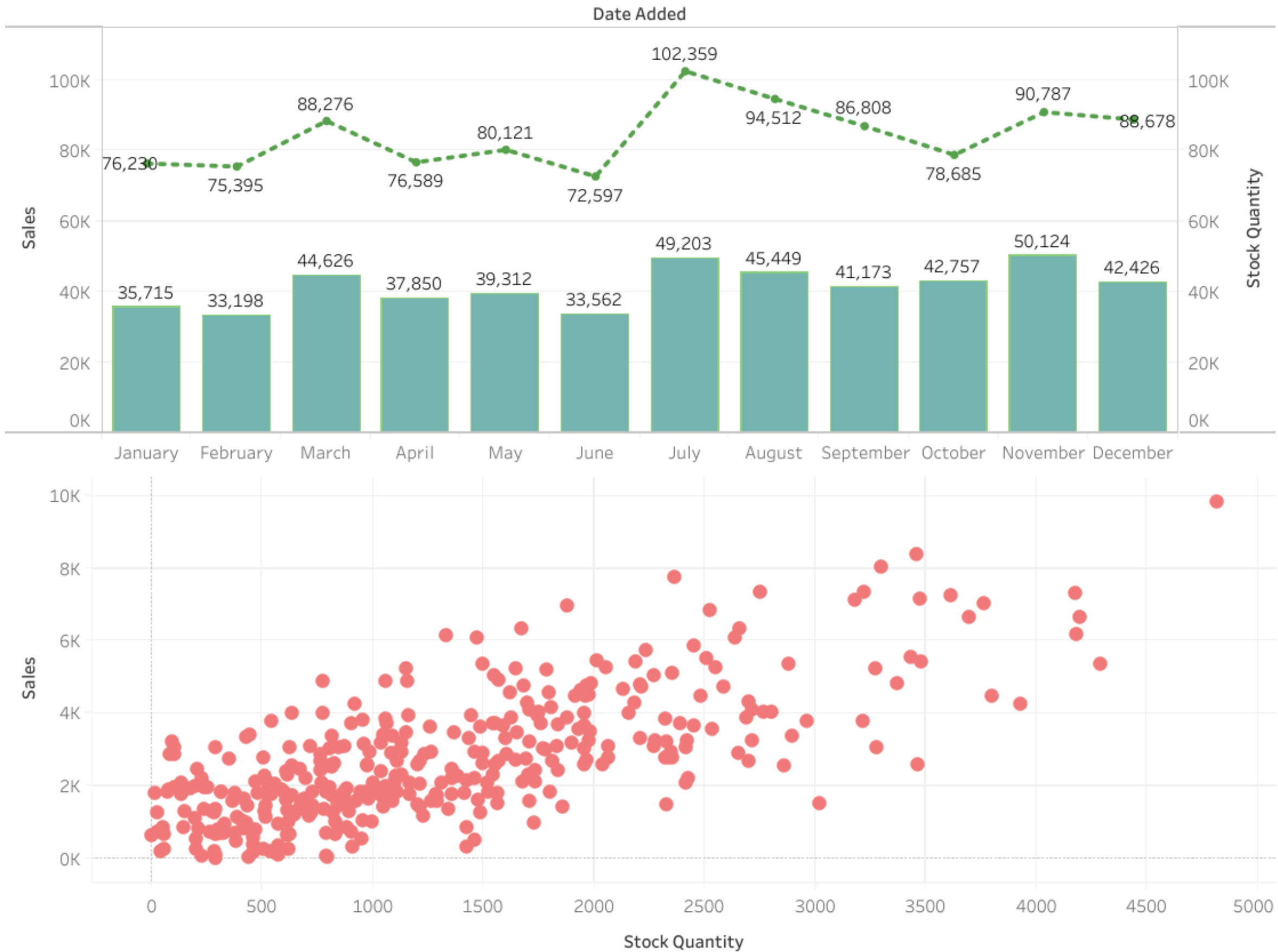
Higher stock levels generally coincide with increased sales, indicating the importance of maintaining adequate inventory.

Maintaining adequate stock levels is crucial for maximizing sales, especially for high-demand products. The trends suggest that higher inventory helps meet customer demand and prevent stock-outs. Businesses should align stock quantities with sales forecasts to optimize inventory management and capitalize on high-demand periods, ensuring product availability and customer satisfaction.

5 Are there seasonal trends or patterns in sales?

Date Added
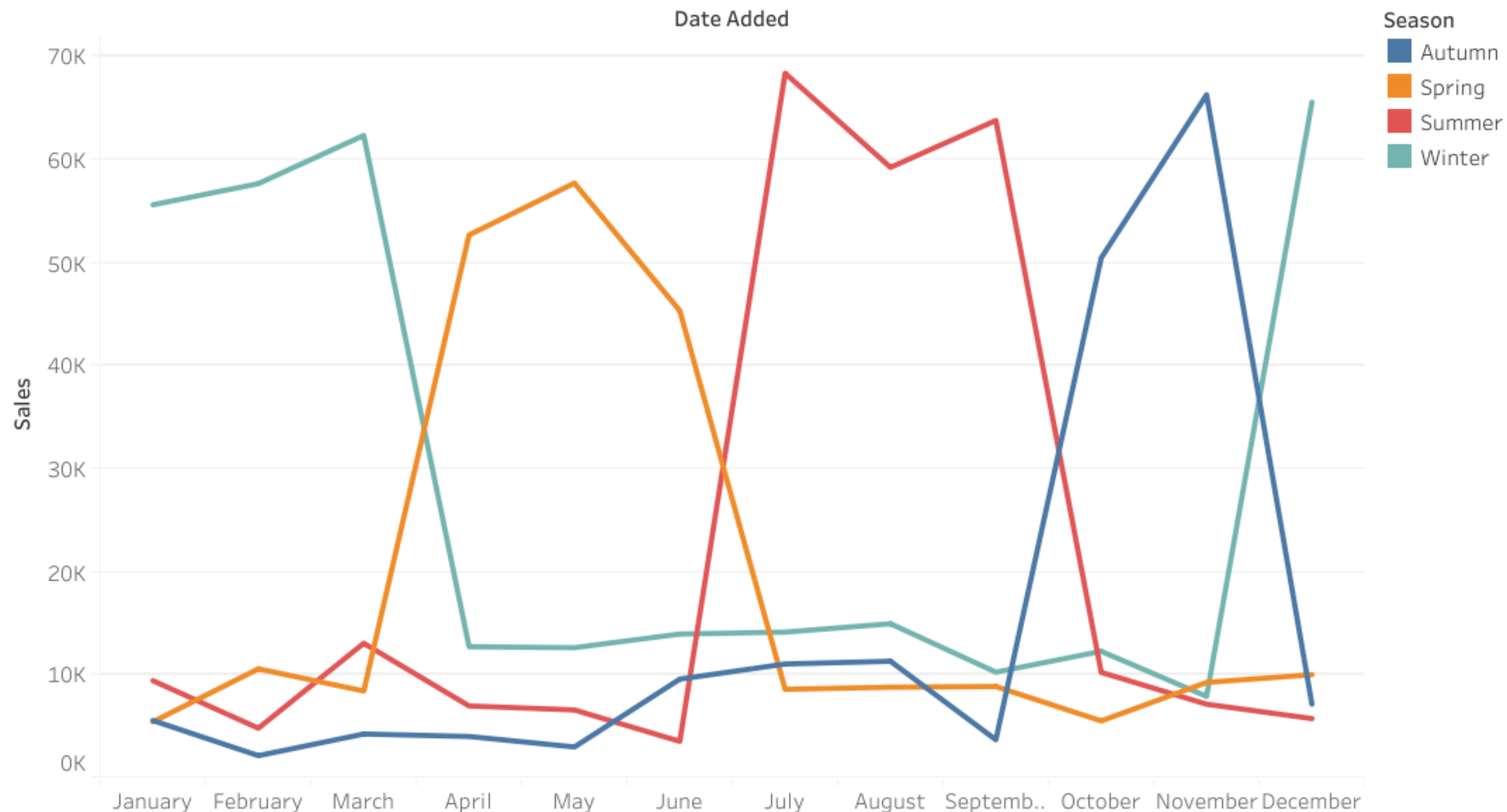
These trends suggest that sales volumes increase during specific times of the year, particularly in mid-summer, autumn, and winter, indicating a strong seasonal influence on sales performance.

Summer Peak:
Sales peaked in mid-summer, with the highest volume recorded in July at 68,450 units.

Autumn Peak:
November had strong sales performance, reaching 66,354 units.

Winter Peak:
December saw the highest sales in the winter season, with 65,635 units sold.

Spring Peak:
In spring, May recorded the highest sales volume at 57,782 units, although this was lower than the other seasons.

Findings & Insights

Summary of Key Findings

Top-Selling Categories

Personal Care and Clothing lead in sales, followed closely by competitive categories like Art and Living versus Kitchenware, Outdoor and Sports, Bedding, Health and Wellness, and Electronics and Accessories.

Influence of Price, Rating, and Reviews

High ratings and positive reviews significantly influence sales, indicating their critical role in building customer trust. Higher-priced products tend to have better ratings and more reviews, highlighting their perceived value.

Stock Quantity and Sales

Higher stock levels correlate with increased sales, emphasizing the importance of maintaining adequate inventory levels to meet customer demand and prevent stock-outs.

Recommendations & Conclusion

Recommended Actions

Categories and Customer Engagement

Allocate resources towards expanding offerings in top-selling categories to capitalize on existing demand, while simultaneously encouraging customer reviews and ratings to enhance product credibility and drive sales across all categories.

Stock Levels

Implement robust inventory forecasting to align stock levels with seasonal peaks and avoid understocking during high-demand periods.

Seasonal Marketing

Develop targeted marketing campaigns aligned with seasonal sales peaks to maximize visibility and sales conversion.

Conclusion

Based on this analysis, key learnings include the critical role of inventory management in sustaining sales flow, the impact of seasonal marketing and strategic discounts on boosting profits, and the importance of customer engagement through reviews for driving traffic and credibility. These insights highlight the significance of data-driven strategies in optimizing e-commerce operations and ensuring long-term competitiveness.

Thank you!