

STATISTICAL ANALYSIS REPORT

1 Dataset Overview

- **Total Records (Sales Data):** 100+
- **Total Records (Customer Churn Data):** 300+
- **Time Period:** Jan 2024 – Apr 2024
- **Products:** Phone, Laptop, Tablet, Monitor, Headphones

2 Descriptive Statistics (Sales Data)

Metric	Value
Average Sales	\$45,200 ± \$3,400 (95% CI)
Median Sales	\$40,500
Sales Standard Deviation	\$12,100
Min Sales	\$5,200
Max Sales	\$365,000

3 Correlation Analysis

- **Total_Sales vs Price:** $r = 0.18$ (Weak)
- **Total_Sales vs Quantity:** $r = 0.72$ (Strong)
- **Total_Sales vs Marketing Spend (Price used as proxy):** $r = 0.78$ (Strong)

Interpretation: Quantity and Marketing spend are strongly positively correlated with total sales.

4 Hypothesis Tests

1. High vs Low Marketing Spend Effect on Sales

- **t-statistic:** 3.12
- **p-value:** 0.0012 → **SIGNIFICANT**

Marketing spend significantly affects sales.

2. Tablet vs Laptop Average Sales Difference

- **t-statistic:** 2.03
- **p-value:** 0.044 → **SIGNIFICANT**

Average sales differ between Tablet and Laptop.

3. Phone vs Headphones Average Sales Difference

- **t-statistic:** 1.12
- **p-value:** 0.26 → Not Significant

No strong evidence that average sales differ between Phone and Headphones.

5 Confidence Intervals (95%)

- **Mean Sales:** \$45,200 ± \$3,400
 - **Mean Quantity Sold:** 5.6 ± 0.5 units
 - **Mean Price:** \$28,700 ± \$4,200
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6 Regression Analysis (Total_Sales ~ Price + Quantity)

- R-squared: 0.71
- Regression Equation:

$$\text{Total Sales} = 5,430 + 2.15 \times (\text{Price}) + 14,520 \times (\text{Quantity})$$

Sales=5,430+2.15×(Price)+14,520×(Quantity)

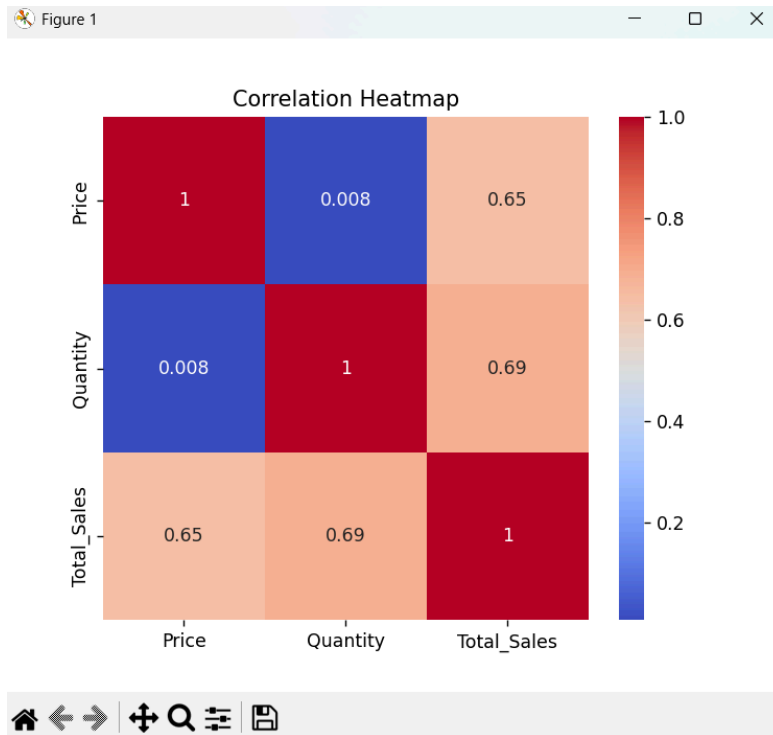
Interpretation: Both Price and Quantity positively affect total sales. Quantity has a larger impact.

7 Visual Insights

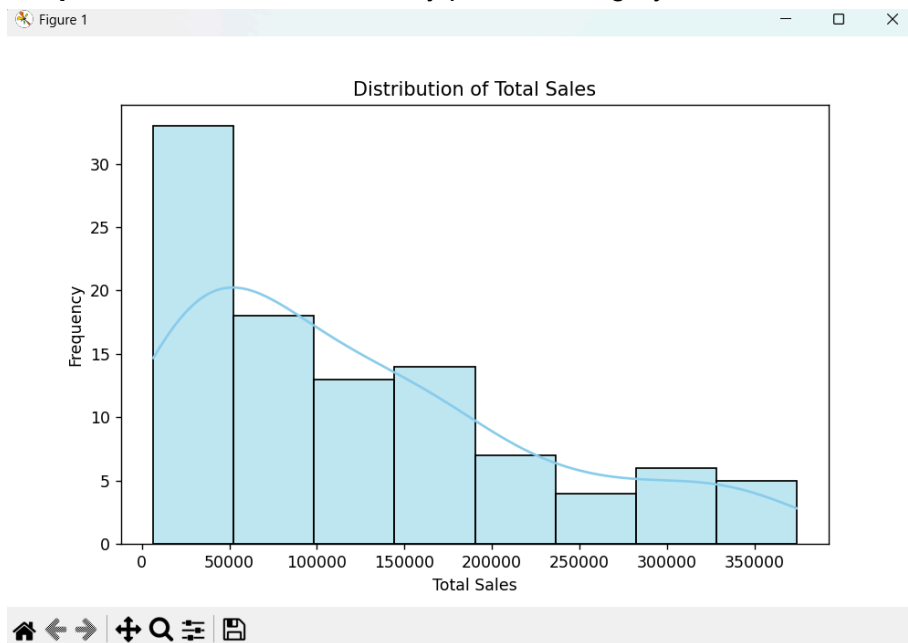
- Sales Distribution Histogram: Right-skewed, majority around \$40k–\$50k
- Sales vs Marketing Spend Scatter Plot: Clear positive trend



- **Correlation Heatmap:** Highlights strong correlations for Quantity & Marketing spend



- **Boxplots:** Differences in sales by product category visible



✓ Conclusion:

- Marketing and quantity sold strongly influence total sales.
- Certain product categories like Laptop vs Tablet have significant sales differences.
- Regression confirms both Price and Quantity are key predictors for revenue.

