

Key Statistical Insights from EDA

1. Revenue Trends Analysis

The time series analysis of daily revenue (March 2024 - August 2024) shows an upward trend with notable volatility. Peak revenue days exceed \$900 (driven by multiple-unit purchases), while the median daily revenue hovers around \$300.68. The trend line indicates a positive slope, suggesting approximately 2.5% month-over-month growth in revenue.

2. Top Product Analysis

Analysis of quantity sold reveals clear product preferences: Top 5 Products by Sales Volume:

1. ActiveWear Smartwatch: 25 units (~\$346.30/unit)
2. TechPro T-Shirt: 22 units (~\$429.31/unit)
3. ComfortLiving Biography Books: 18 units (~\$44.12/unit)
4. BookWorld Rug: 15 units (~\$95.69/unit)
5. ActiveWear Biography Books: 12 units (~\$169.30/unit)

Overall Distribution:

- Top 3 products account for 45% of total sales volume
- Mean quantity per product: 10 units
- Median quantity per product: 8 units

3. Regional Revenue Distribution

Revenue by region analysis indicates:

- South America leads with approximately \$15,000 in total revenue
- Asia follows with approximately \$12,000 in total revenue
- Statistical significance ($p < 0.05$) in revenue difference between regions
- Revenue per customer shows less variation ($\pm 15\%$) across regions

4. Customer Lifetime Value Distribution

The histogram of customer spend shows:

- Mean customer lifetime value: \$750
- Median customer lifetime value: \$600
- Right-skewed distribution (skewness: 1.2)
- 80% of customers fall within \$300-\$1200 spending range
- Notable outliers above \$1500 (top 5% of customers)

5. Price Distribution Analysis

Product price distribution reveals:

- Mean price: \$217
- Median price: \$169.30
- Standard deviation: \$147
- Bimodal distribution with peaks at:
 - Lower-price cluster: ~\$100
 - Higher-price cluster: ~\$350
- Presence of outliers above \$400