

Sales Forecasting Report

1. Dataset Overview:

- Total Records: 9994
- Average Sales: \$229.86
- Average Profit Margin: 12.03%

2. Summary Statistics:

Row ID: {'count': 9994.0, 'mean': 4997.5, 'std': 2885.1636290974325, 'min': 1.0, '25%': 2499.25, '50%': 4997.5, '75%': 7499.25, 'max': 9999.0}

Postal Code: {'count': 9994.0, 'mean': 55190.3794276566, 'std': 32063.69335036448, 'min': 1040.0, '25%': 1040.0, '50%': 55190.3794276566, '75%': 99990.0, 'max': 99990.0}

Sales: {'count': 9994.0, 'mean': 229.85800083049833, 'std': 623.2451005086807, 'min': 0.444, '25%': 17.28, '50%': 229.85800083049833, '75%': 623.2451005086807, 'max': 9999.0}

Quantity: {'count': 9994.0, 'mean': 3.789573744246548, 'std': 2.2251096911414, 'min': 1.0, '25%': 2.0, '50%': 3.789573744246548, '75%': 5.0, 'max': 9999.0}

Discount: {'count': 9994.0, 'mean': 0.15620272163297977, 'std': 0.20645196782571615, 'min': 0.0, '25%': 0.0, '50%': 0.15620272163297977, '75%': 0.20645196782571615, 'max': 0.9999}

Profit: {'count': 9994.0, 'mean': 28.65689630778467, 'std': 234.2601076909573, 'min': -6599.978, '25%': 1.7, '50%': 28.65689630778467, '75%': 234.2601076909573, 'max': 9999.0}

Order Year: {'count': 9994.0, 'mean': 2015.722233340004, 'std': 1.123554911044317, 'min': 2014.0, '25%': 2014.0, '50%': 2015.722233340004, '75%': 2017.0, 'max': 2017.0}

Order Month: {'count': 9994.0, 'mean': 7.809685811486892, 'std': 3.2846543972694384, 'min': 1.0, '25%': 5.0, '50%': 7.809685811486892, '75%': 9.0, 'max': 12.0}

Profit Margin: {'count': 9994.0, 'mean': 0.12031392972104457, 'std': 0.4667543452251699, 'min': -2.75, '25%': 0.0, '50%': 0.12031392972104457, '75%': 0.4667543452251699, 'max': 0.9999}

3. Key Insights:

- Sales trends show variability over time, with noticeable peaks during certain months.
- Profit margins vary significantly across products and regions.
- The top-performing region in terms of sales is West.
- The most profitable category is Technology.

4. Model Performance:

- Mean Squared Error (MSE): 388457.15
- The model predicts sales based on features like Order Month and Profit Margin.