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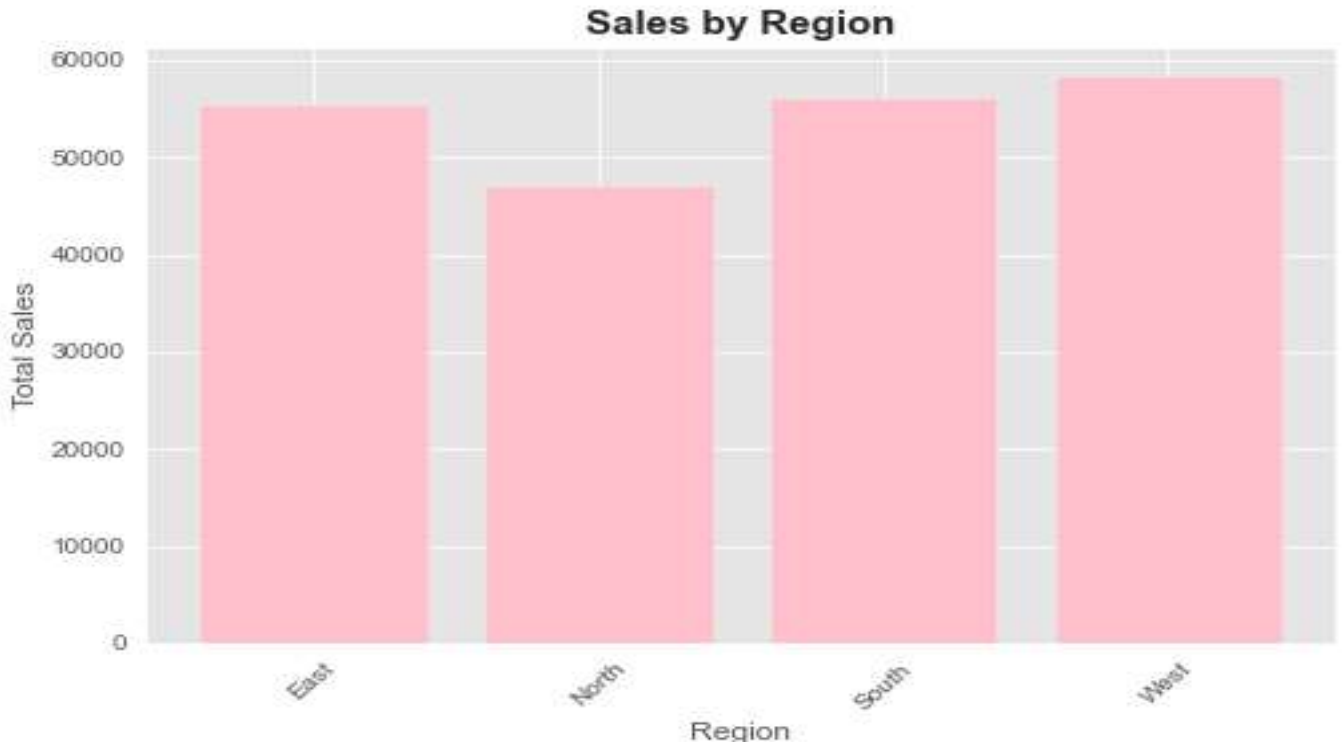
Sales Data Analysis Using Python

Sales by Region

```
import matplotlib.pyplot as plt

# Group data
region_sales = df.groupby('Region')['Final_Sales'].sum()

# Plot
plt.figure(figsize=(8,5))
region_sales.plot(kind='bar', color='pink')

plt.title("Total Sales by Region")
plt.xlabel("Region")
plt.ylabel("Total Sales")
plt.xticks(rotation=45)
plt.tight_layout()
plt.savefig("region_sales.png")
plt.show()
```

Bar chart → Sales by Region



What is the monthly sales trend?

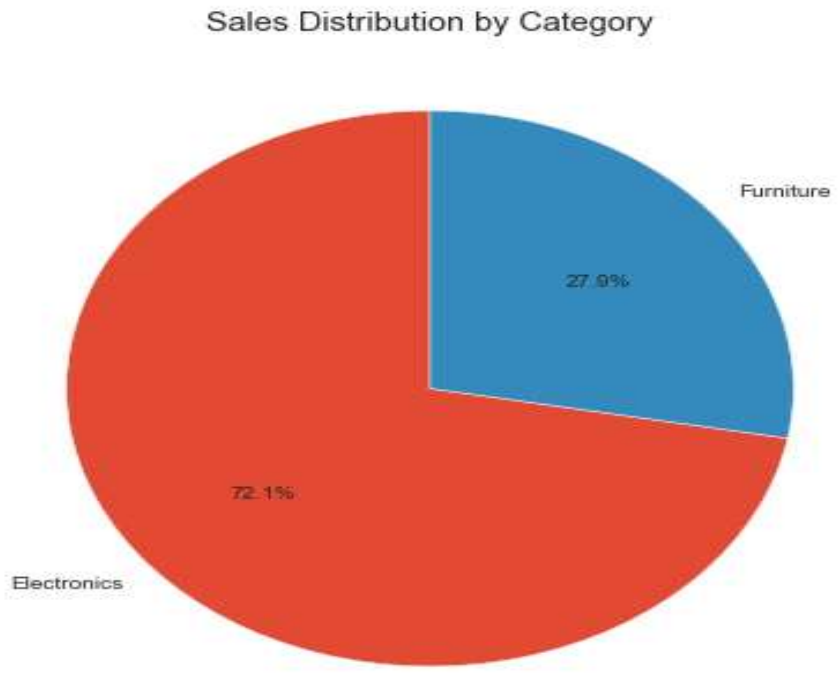
```
plt.figure(figsize=(10,5))
plt.plot(monthly_sales.index, monthly_sales.values, marker='o', color='blue')

plt.title("Monthly Sales Trend")
plt.xlabel("Month")
plt.ylabel("Total Sales")
plt.xticks(rotation=45)
plt.grid(True)
plt.tight_layout()
plt.savefig("monthly_sales.png")
plt.show()
```

Monthly Sales Trend
Sales
65000
60000
55000
50000
45000
40000
2025-01
2025-02
2025-03
2025-04

Category distribution

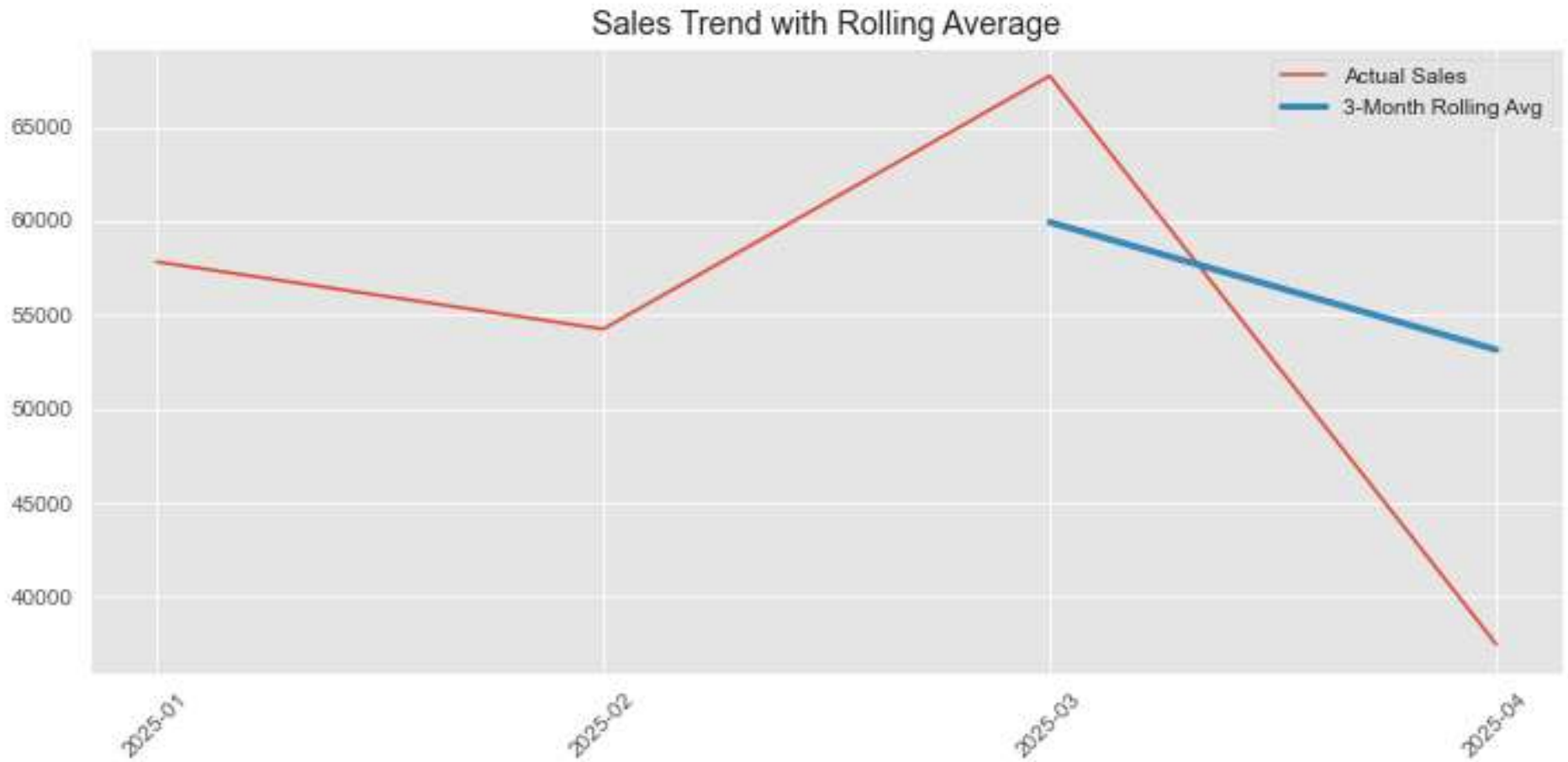
```
category_sales = df.groupby('Category')['Final_Sales'].sum()

plt.figure(figsize=(6,6))
plt.pie(category_sales,
        labels=category_sales.index,
        autopct='%1.1f%%',
        startangle=90)

plt.title("Sales Distribution by Category")
plt.tight_layout()
plt.savefig("category_sales.png")
plt.show()
```

Pie chart → Category distribution



Add rolling average to trend chart

```
monthly_sales['Rolling_Avg'] = monthly_sales['Final_Sales'].rolling(window=3).mean()

plt.figure(figsize=(10,5))
plt.plot(monthly_sales['Final_Sales'], label='Actual Sales')
plt.plot(monthly_sales['Rolling_Avg'], label='3-Month Rolling Avg', linewidth=3)

plt.legend()
plt.title("Sales Trend with Rolling Average")
plt.savefig("monthly_sales.png")
plt.show()
```

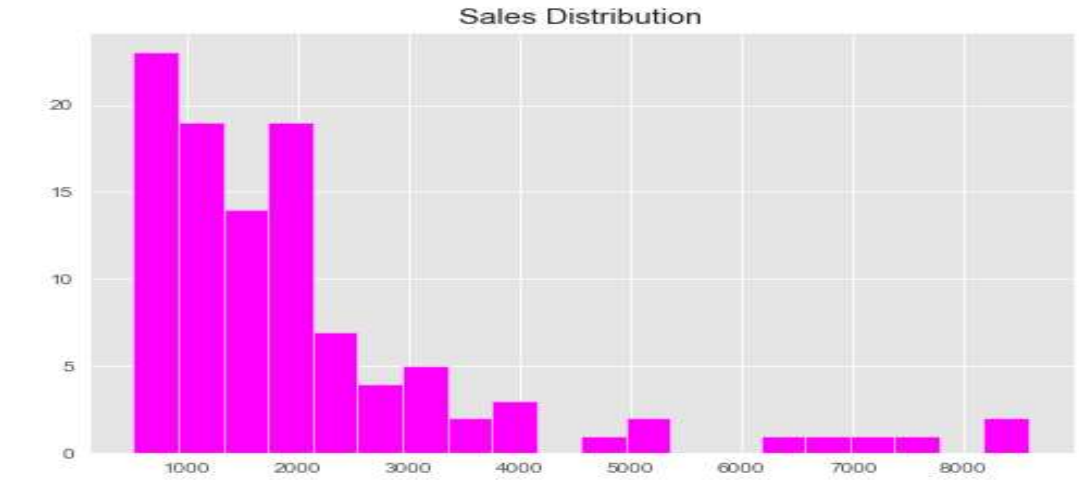

Sales Trend with Rolling Average
Actual Sales
3-Month Rolling Avg
65000
60000
55000
50000
45000
40000
2025-01
2025-02
2025-03
2025-04

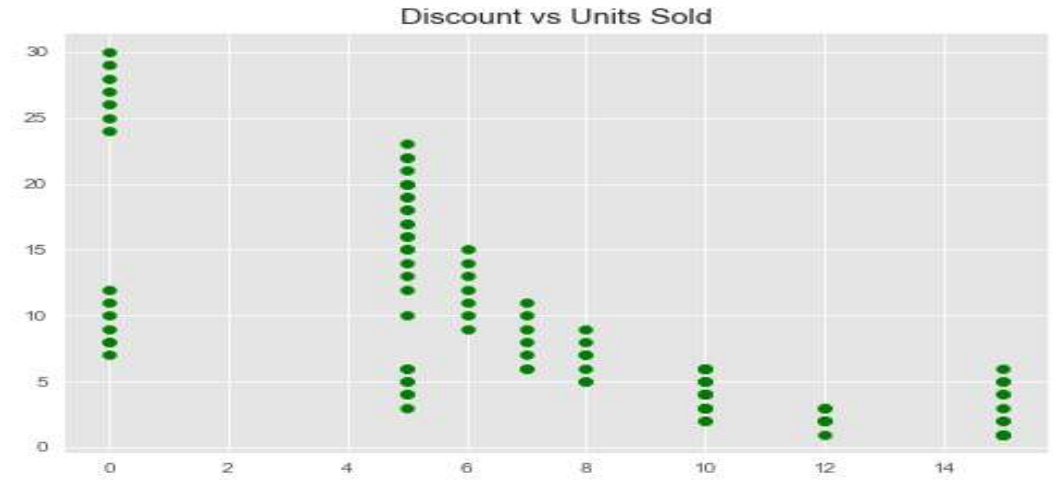
Create sales dashboard style visualization

```
fig, axs = plt.subplots(2, 2, figsize=(12,8))

# Region Sales
region_sales = df.groupby('Region')['Final_Sales'].sum()
axs[0,0].bar(region_sales.index, region_sales.values)
axs[0,0].set_title("Sales by Region")

# Monthly Trend
axs[0,1].plot(monthly_sales['Final_Sales'])
axs[0,1].set_title("Monthly Sales Trend")

# Category Distribution
category_sales = df.groupby('Category')['Final_Sales'].sum()
axs[1,0].pie(category_sales, labels=category_sales.index, autopct='%1.1f%%')
axs[1,0].set_title("Category Distribution")

# Discount vs Units
axs[1,1].scatter(df['Discount (%)'], df['Units_Sold'])
axs[1,1].set_title("Discount vs Units Sold")

plt.tight_layout()
plt.show()
```

Region Sales
60000
50000
40000
30000
20000
10000
0
East
North
South
West

Monthly Trend
65000
60000
55000
50000
45000
40000
2025-01
2025-02
2025-03
2025-04


Sales Distribution
20
15
10
5
0
1000
2000
3000
4000
5000
6000
7000
8000


Discount vs Units Sold
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14

THANK YOU