INVESTIGATING EXTERNAL FACTORS' IMPACT ON REVENUE

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PROJECT OVERVIEW

Research Question

How do external factors such as:

- Holidays

- Temperature

- Fuel prices

- Consumer Price Index (CPI)

- Unemployment rates

influence the revenue of a major retail chain?

1. HOLIDAY IMPACT ANALYSIS

Key Findings:
- Holiday AVG Sales: $1,122,887.89
- Non-holiday AVG sales: $1,041,256.38
- Sales increase during holidays: ~$81,631 (7.8%)
- Statistically significant (p-value = 0.003)

Business Impact:
Holidays provide significant revenue opportunities, justifying special holiday strategies.

Weekly Sales Distribution: Holiday vs Non-Holiday
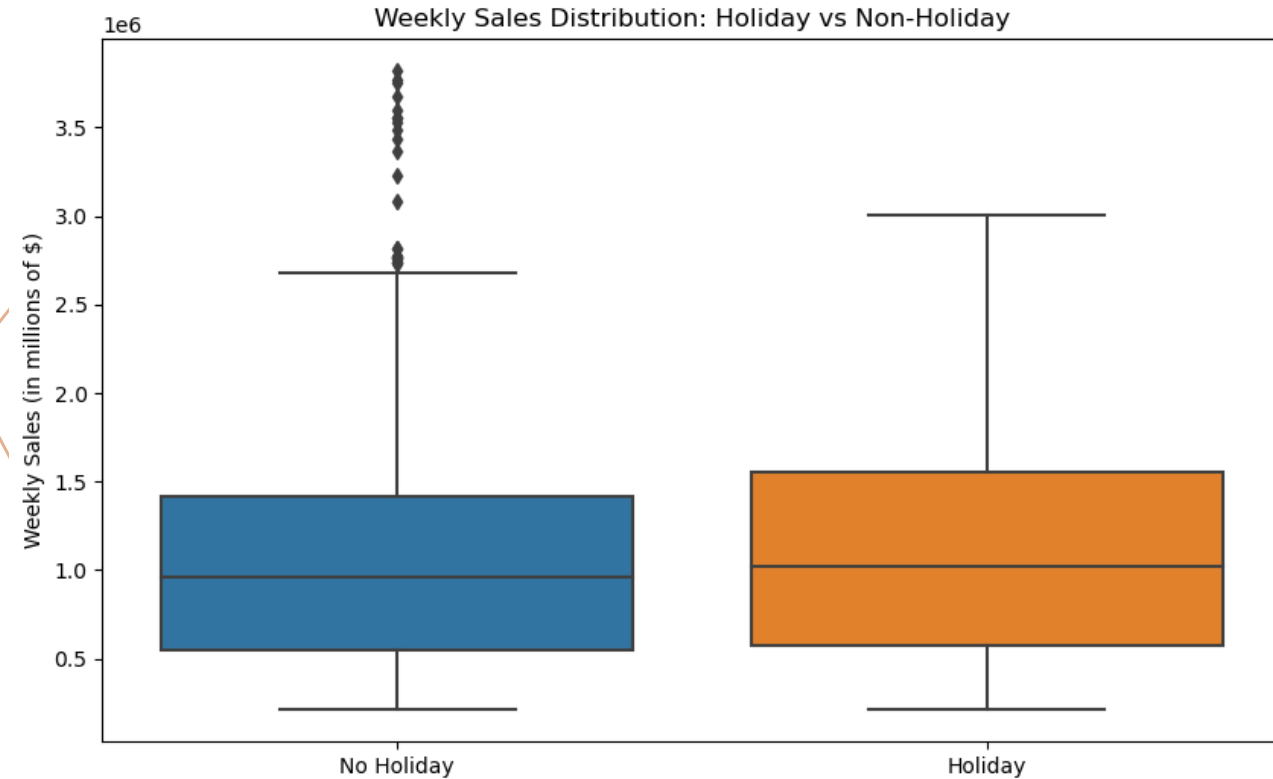
2. REGIONAL ECONOMIC CONDITIONS
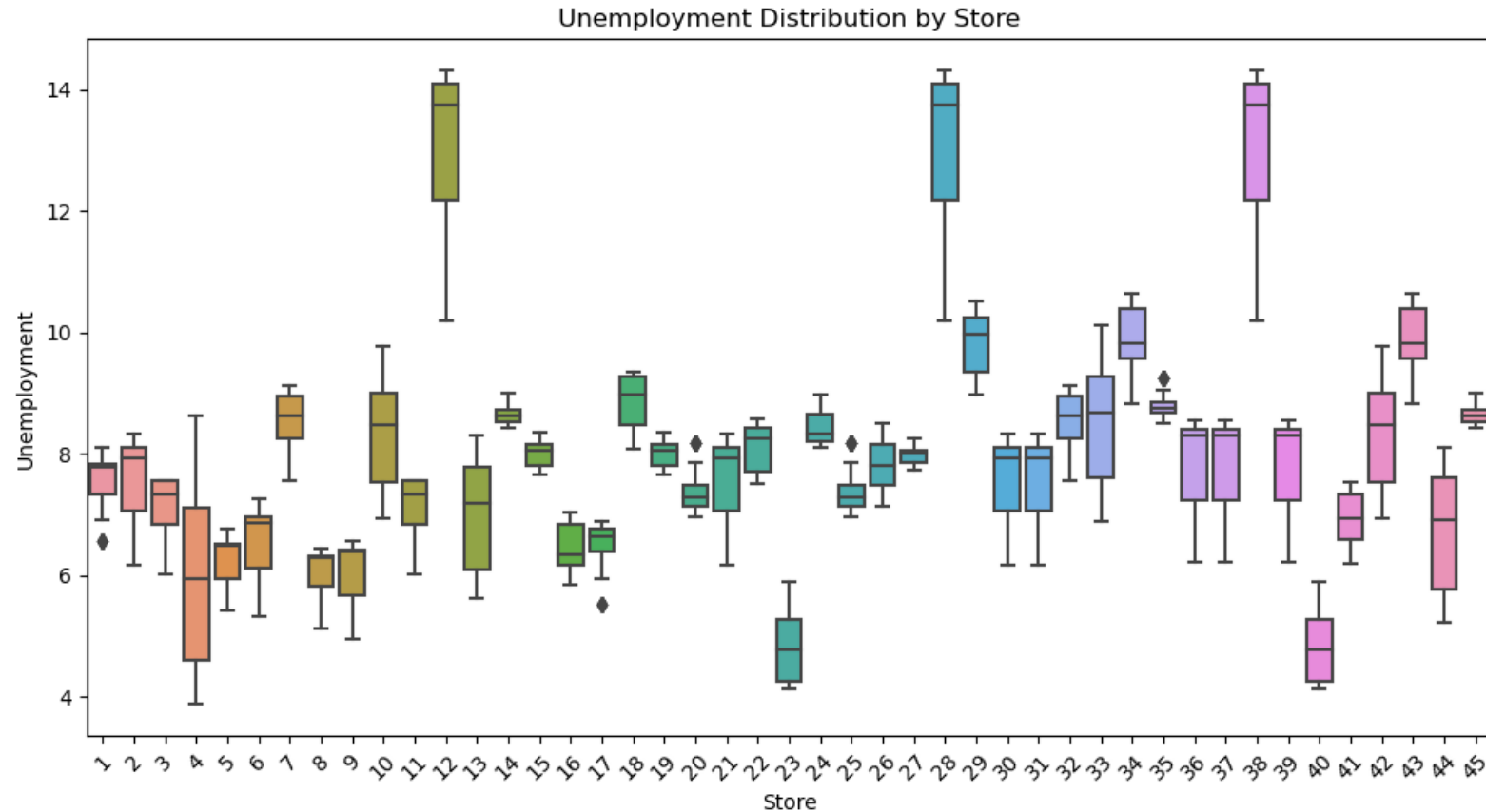
Store Unemployment Range:
- Lowest: 4.80% (Stores 23 & 40)
- Highest: 13.12% (Stores 12, 28, 38)

Key Correlations with Unemployment:
- CPI: -0.302 (moderate negative)
- Temperature: 0.101 (weak positive)
- Fuel Price: -0.035 (negligible)

Business Impact:
Store performance should be evaluated within local economic context.
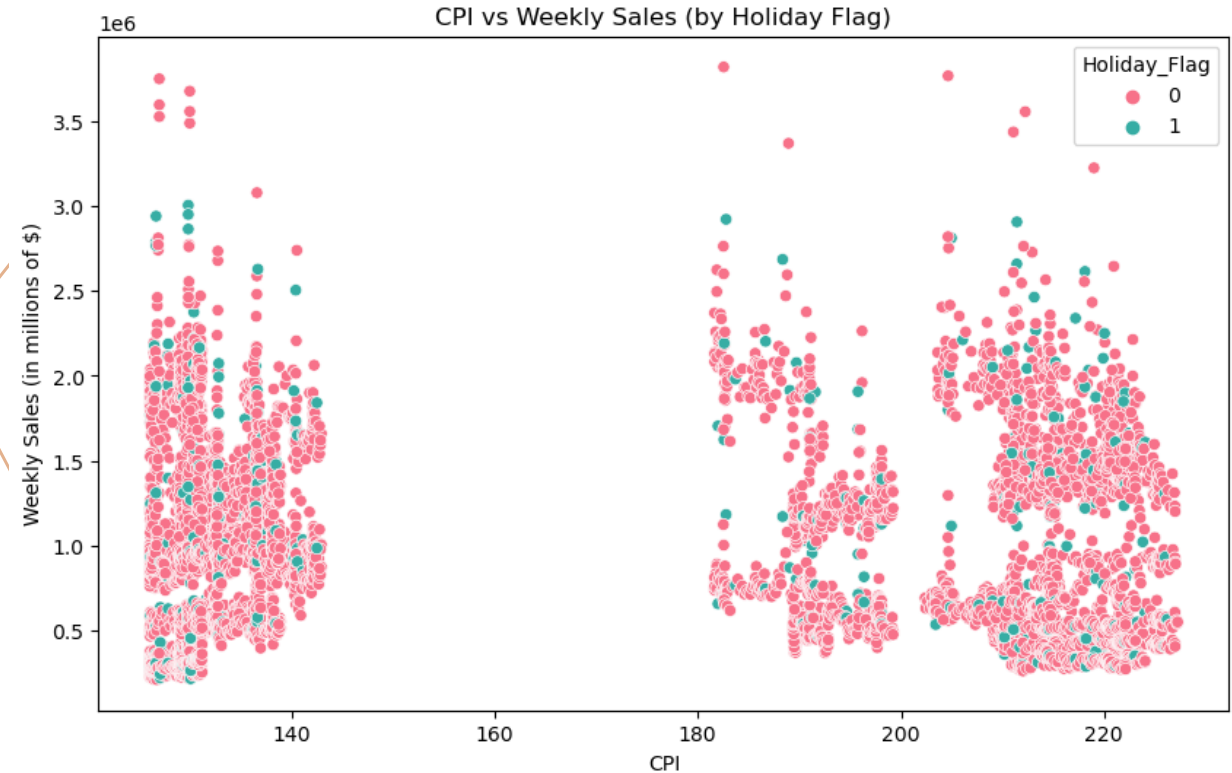

Unemployment Distribution by Store

3. CONSUMER PRICE INDEX IMPACT

Correlation Analysis:
- During holidays: -0.081
- During non-holidays: -0.072

Key Insights:
- Weak negative correlation regardless of holiday status
- Slightly stronger effect during holidays
- Complex relationship requiring further investigation

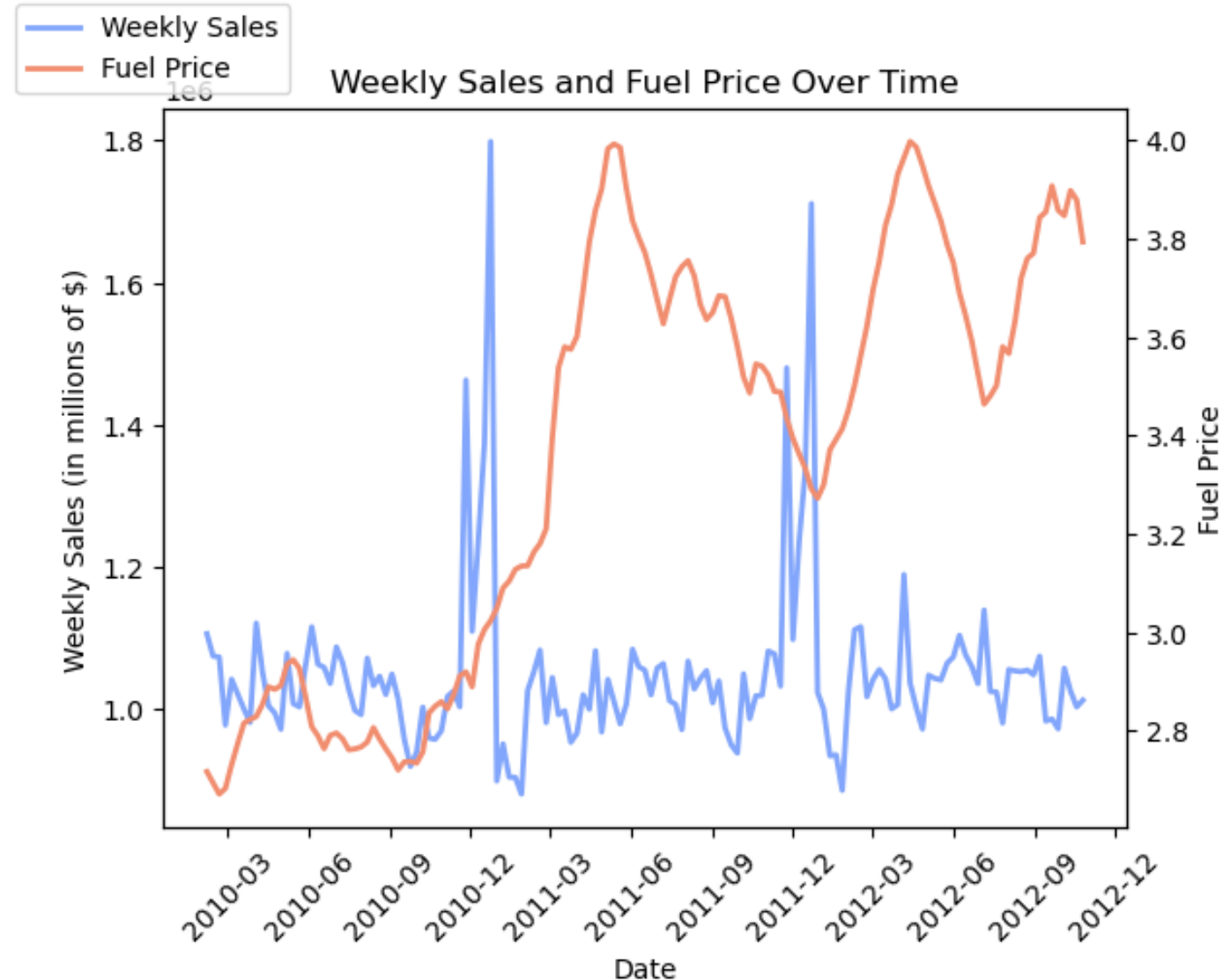CPI vs Weekly Sales (by Holiday Flag)

4. FUEL PRICE INFLUENCE

Correlations with Fuel Price:
- Weekly Sales: 0.010
- Temperature: 0.145
- CPI: -0.171
- Unemployment: -0.035

Key Insights:
- No direct correlation with sales
- May serve as broader economic indicator
- Potential indirect effects on shopping behavior

Weekly Sales and Fuel Price Over Time

CONCLUSIONS & BUSINESS IMPLICATIONS

Key Findings

- Holidays are significant revenue drivers

- Local economic conditions vary substantially

- CPI has minimal direct sales impact

- Fuel prices show complex indirect effects

Business Recommendations

- Optimize holiday season strategies

- Customize store operations to local conditions

- Monitor economic indicators for forecasting

- Consider regional factors in expansion planning

DATASET DETAILS

- Weekly sales data from multiple store locations

- External economic and environmental factors

- Holiday period indicators

- Regional economic indicators

Analysis conducted using Python with pandas, scipy, and matplotlib