Regression Analysis Report

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Attributes	Coefficient	Std.Error	Std.Coefficient	Tolerance	t-stat	P-value
Holiday_Flag	75760.149	27605.279	0.03423	0.999	2.744	0.006
Temperature	-773.1473	393.179	-0.0252	0.933	-1.966	0.049
CPI	-1570.005	189.917	-0.109	0.967	-8.266	1.110
Unemployment	-41235.655	3942.040	-0.137	0.974	-10.460	0.0
(Intercept)	1687798.232	52515.743	?	?	32.138	0.0

Regression Equation:

Weekly Sales = 75760.149×Holiday_Flag -773.147×Temperature−1570.005×CPI−41235.656×Unemployment+1687798.232

Economics Intution :

- **Holiday_Flag**: A positive coefficient of 75760.149 suggests that if the store is open during a holiday, weekly sales increase significantly. This aligns with expectations as holidays typically bring in more customers.
- **Temperature**: The negative coefficient (-773.147) indicates that as the temperature increases, weekly sales slightly decrease. This could be because higher temperatures might discourage people from shopping.
- **CPI (Consumer Price Index)**: A negative coefficient (-1570.005) suggests that higher CPI, which indicates inflation, leads to a slight decrease in sales. This might be due to consumers having less disposable income during times of high inflation.
- **Unemployment**: The negative coefficient (-41235.656) indicates a strong negative relationship, implying that higher unemployment rates significantly reduce weekly sales. As unemployment rises, fewer people have disposable income to spend, which affects sales.
- **Constant (Intercept)**: The intercept value (1687798.232) represents the base level of weekly sales when all independent variables are zero. While this scenario is hypothetical, it provides a baseline sales figure.

Model Assessment Results :

- **RMSE (Root Mean Squared Error)**:
  $548,589 error shows large differences between predictions and actual sales.
- **MAE (Mean Absolute Error)**:
  $458,414 average error suggests predictions vary significantly from actual sales.
- **Relative Error**:
  62.7% error indicates predictions are often inaccurate, needing improvement.
- **RRSE (Root Relative Squared Error)**:
  0.989 shows model performs similarly to just using average sales.
- **Squared Error**:
  300,950,638,793 error indicates very high variability in prediction accuracy.
- **Correlation**:
  0.157 correlation suggests a very weak link to weekly sales.

- **R^2 (Squared Correlation)**:
  0.025 R^2 means model explains only 2.5% sales variance.