

Walmart Sales Report Analysis

Introduction

This report examines Walmart's weekly sales performance across multiple stores from 2010 to 2012, providing insights into both overall trends and store-specific results. The dataset includes a range of variables that affect weekly sales from holiday flags and temperature to local economic indicators such as fuel prices, unemployment rates, and the Consumer Price Index (CPI). By analysing these factors side by side, we can better understand how seasonal patterns, macroeconomic conditions, and major holidays drive fluctuations in store revenue.

During the 2010–2012 period, Walmart's sales environment was shaped by several key influences:

- **Holiday Weeks:** Certain holiday periods typically yield higher sales due to increased consumer spending.
- **Temperature Variations:** Changes in weather can shift buying patterns, especially for seasonal goods.
- **Fuel Price Fluctuations:** Rising or falling gas prices can impact both consumer disposable income and willingness to travel for shopping.
- **Unemployment Trends:** A higher local unemployment rate may dampen consumer spending power, while lower unemployment can lead to stronger sales.
- **Inflation (CPI):** As the cost of goods and services increases, nominal sales may rise without reflecting a true increase in purchase volume.

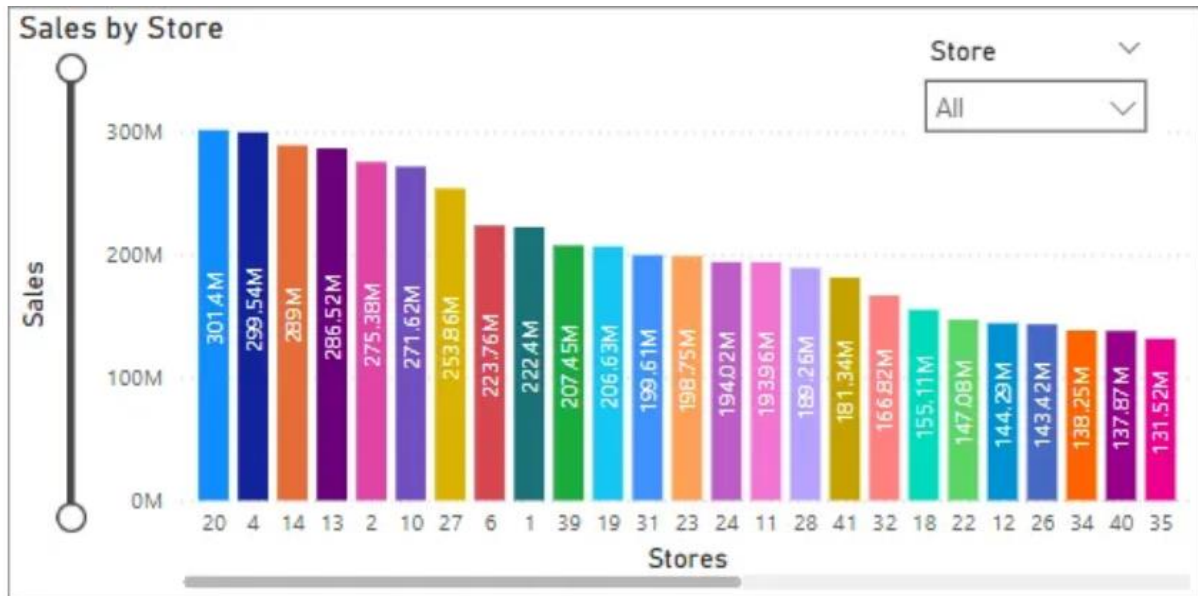
By exploring this data in an interactive dashboard, decision-makers can quickly spot high-performing stores, identify periods of strong or weak sales, and correlate fluctuations with outside forces. The following sections detail the dataset structure, present visualizations of key performance metrics, and highlight noteworthy findings ultimately enabling a data-driven approach to improving store operations and sales strategies.

Overview of the Dataset

- **Store:** An identifier (numeric) for each retail store.
- **Date:** The specific week-ending date (in *dd-mm-yyyy* format).
- **Weekly_Sales:** The total sales for that store in the given week (numeric).
- **Holiday_Flag:** Indicates whether the week included a holiday (1 = holiday week, 0 = non-holiday).
- **Temperature:** The average temperature (presumably in °F) for that store's region for the week.
- **Fuel_Price:** The price of fuel in that region during the week.
- **CPI:** Consumer Price Index measure for that area/week.
- **Unemployment:** Unemployment rate for that area/week.
- **Year:** Extracted year from the Date.
- **Month:** Extracted month (1–12) from the Date.
- **Weekday:** Day of the week the data point represents (e.g. "Friday").
- **Moving_Avg_Sales:** Calculates a simple moving average of 4 weeks using Weekly_Sales
- **Week No of Month:** Shows the week number of a Month (e.g. "1,2,3,4,5")

Sales Performance and Trends

1. Sales by Store



1. What This Graph Represent?

- **Metric:** The height of each bar reflects **total aggregated sales** for each store over the given time range (2010–2012).
- **Stores:** Each bar is labelled with a store number (e.g., Store 20, Store 4, Store 14, etc.) on the x-axis.
- **Sales Values:** The y-axis shows sales in millions, so “301.4M” indicates \$301.4 million total sales for that store over the 2010–2012 period.

Essentially, these visuals rank the stores from highest to lowest performers based on their cumulative three-year sales.

2. Observations from the First Chart (Top-Performing Stores)

1. Highest Sales:

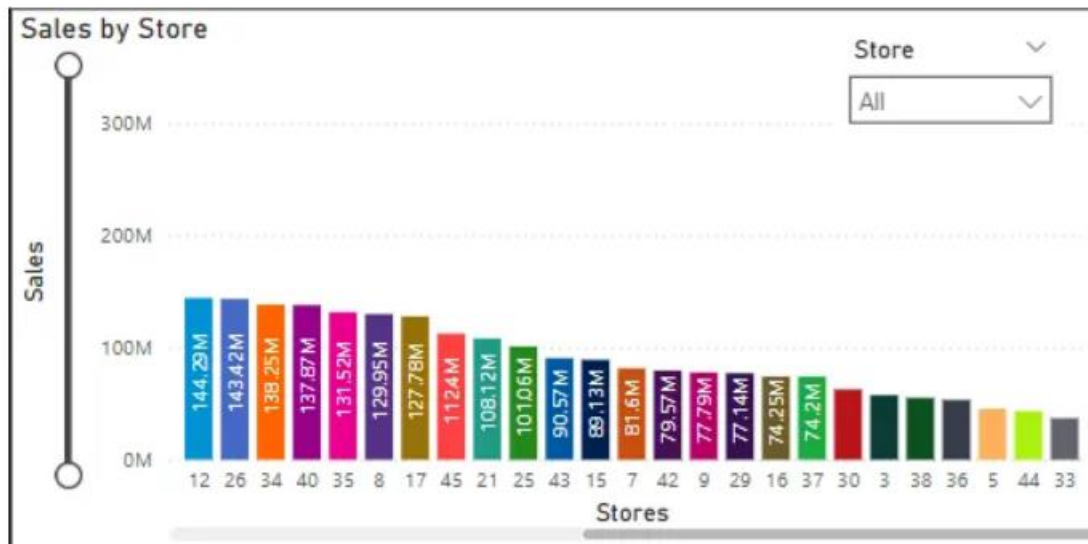
- Store **20** leads with around **\$301.4M** total, just edging out Store **4** at **\$299.5M**.
- Stores **14**, **13**, and **2** also appear at the top (all above \$250M).

2. Gradual Decline:

- As you move to the right, the bars get progressively lower (e.g., Store **6**, Store **1**, etc. in the \$200M range).

3. Top Tier:

- The first chart mostly features stores with total sales over \$130M, placing them in the upper tier of overall performance during the 2010–2012 window.



3. Observations from the Second Chart (Mid- to Lower-Tier Stores)

1. Midrange Performers:

- The second chart starts around **\$144.2M** (Store 12) and then descends through stores like 36, 34, 26, and so on.
- These stores still have significant sales—over \$100M in some cases—but less than those in the first chart.

2. Lower Range:

- Toward the right side of this chart, total sales dip further (into the tens of millions).
- Stores with the lowest aggregated sales (e.g., Store **33**, Store **44**) fall under \$50M, indicating either smaller markets or other limiting factors.

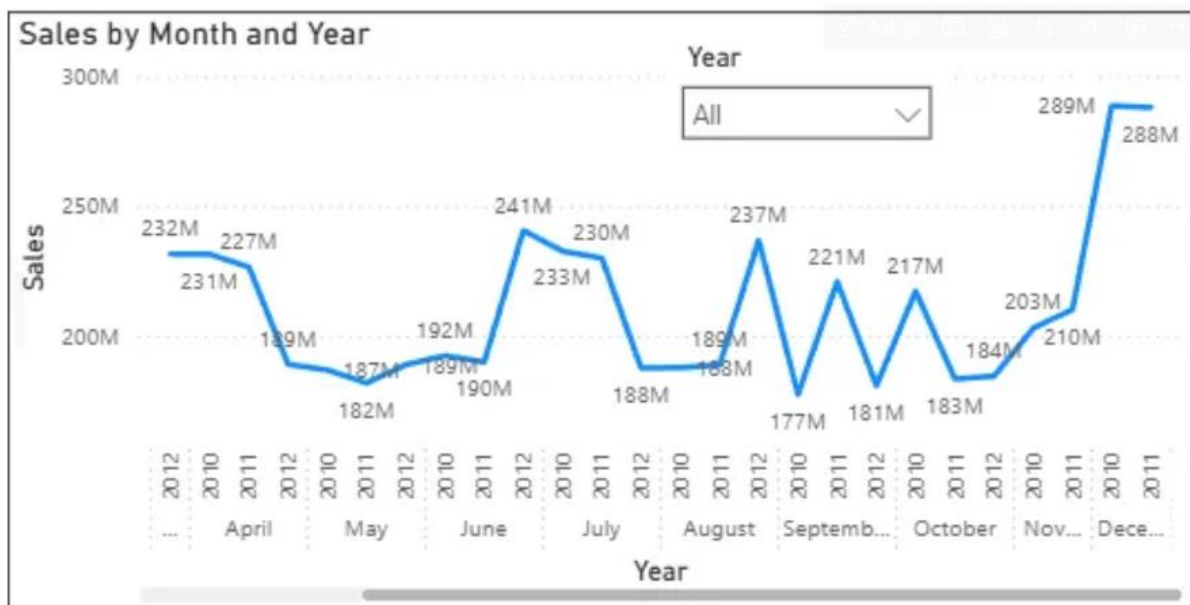
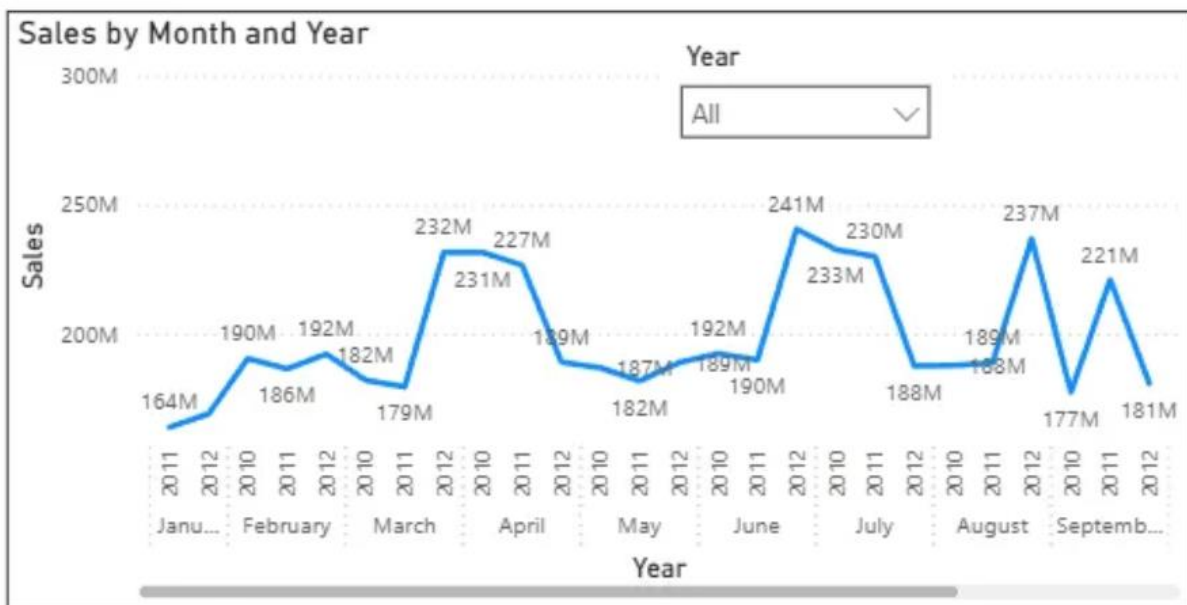
4. Key Takeaways

1. **Clear Ranking:** The store-by-store breakdown makes it immediately obvious which locations generate the largest share of total sales.
2. **Potential Influences:** High-performing stores may be in prime locations, larger markets, or areas with stronger local economies.
3. **Opportunities for Growth:** Lower-performing stores may need different strategies—targeted marketing, local promotions, or operational changes—to boost sales.

4. Next Steps in Analysis:

- **Compare** average sales per store-week to gauge consistency.
- **Drill Down** into seasonal or holiday effects for both top and bottom performers.
- **Investigate** local factors (temperature, unemployment) that might explain performance gaps.

2. Sales by Month and Year



1. What the Charts Represent

- **X-Axis (Time):** Each point on the x-axis corresponds to a specific **month** and **year** (e.g., January 2011, February 2012).
- **Y-Axis (Sales):** The vertical axis displays **total sales** for all stores combined in that particular month, typically in the range of \$164M–\$300M.
- **“Year” Filter:** The dropdown (currently set to “All”) allows you to slice the data by specific years (2010, 2011, or 2012). If you select a single year, the chart will only display monthly sales for that one year.

2. Key Observations and Patterns

1. Monthly Fluctuations

- The line moves **up and down** from month to month, reflecting **typical retail seasonality**. For instance:
 - An increase in sales during certain months (e.g., late spring or mid-summer).
 - Dips possibly in April or early summer.
- These peaks and valleys often coincide with **holiday events** or **back-to-school** periods, although the exact drivers can vary.

2. Yearly Peaks

- Each year tends to have **one or more standout months** where sales climb notably above \$250M.
- Common peak months in retail often include **November and December** (holiday shopping), as well as **July or August** (back-to-school).
- You may notice a recurring pattern around certain months each year, indicating consistent **seasonal surges**.

3. Variations by Year

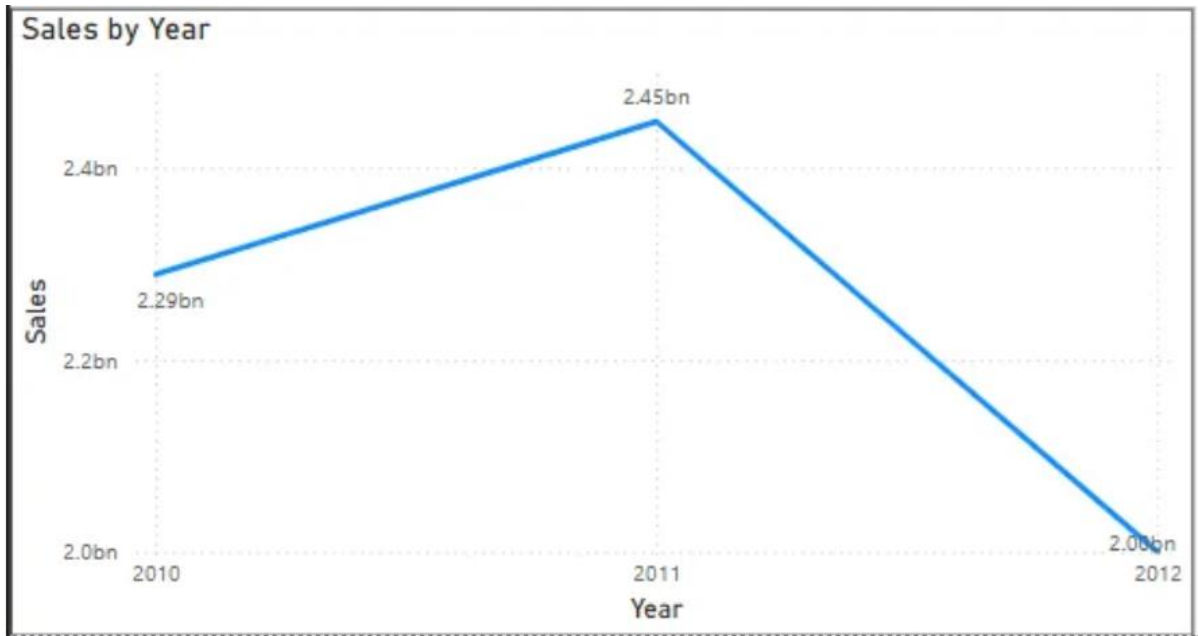
- Comparing the lines across 2010, 2011, and 2012 shows if overall sales are **trending up or down** from year to year.
- For example, a higher spike in one summer vs. another might suggest unique promotions or broader economic conditions at play that year.

3. Potential Factors Behind Monthly Swings

- **Holiday Seasons:** Thanksgiving, Christmas, and other major holidays often see sales boosts.
- **Weather/Temperature:** Warmer months may drive more spending on seasonal goods, while colder months might affect certain store categories differently.
- **Economic Indicators:** Rising unemployment or fuel prices can dampen consumer spending, visible as lower sales dips in certain periods.

- **Promotional Campaigns:** A major sale or marketing push in a specific month could lead to sudden spikes.

3. Sales by Year (Overall)



1. Trend Across 2010, 2011, and 2012

- The line starts at around **2.29 billion** in 2010, **peaks** in 2011 at approximately **2.45 billion**, and then **declines** in 2012 down to nearly **2.0 billion**.
- **Interpretation:**
 - **2011** appears to be the highest-performing year overall.
 - There's a noticeable **drop in sales** from 2011 to 2012, which might indicate broader economic factors, reduced consumer spending, or changed business strategy.

2. Potential Causes of Yearly Shifts

- **Holiday Timing:** Some years see more robust holiday sales.
- **Economic Conditions:** Changes in unemployment, fuel prices, or inflation.
- **Company Initiatives:** Store expansions, closures, or marketing campaigns can directly impact annual totals.

4. Sales by Week of Month



1. Weekly Breakdown Within Each Month

- Each bar represents the **sum of sales** that occurred during a given **week number** of the month (1 through 5).
- The first four weeks each hover around **1.54 – 1.59 billion**, indicating fairly **consistent** sales during Weeks 1, 2, 3, and 4.
- The **5th week** bar is significantly lower (about **0.49 billion**), likely because **not all months have a full 5th week**.

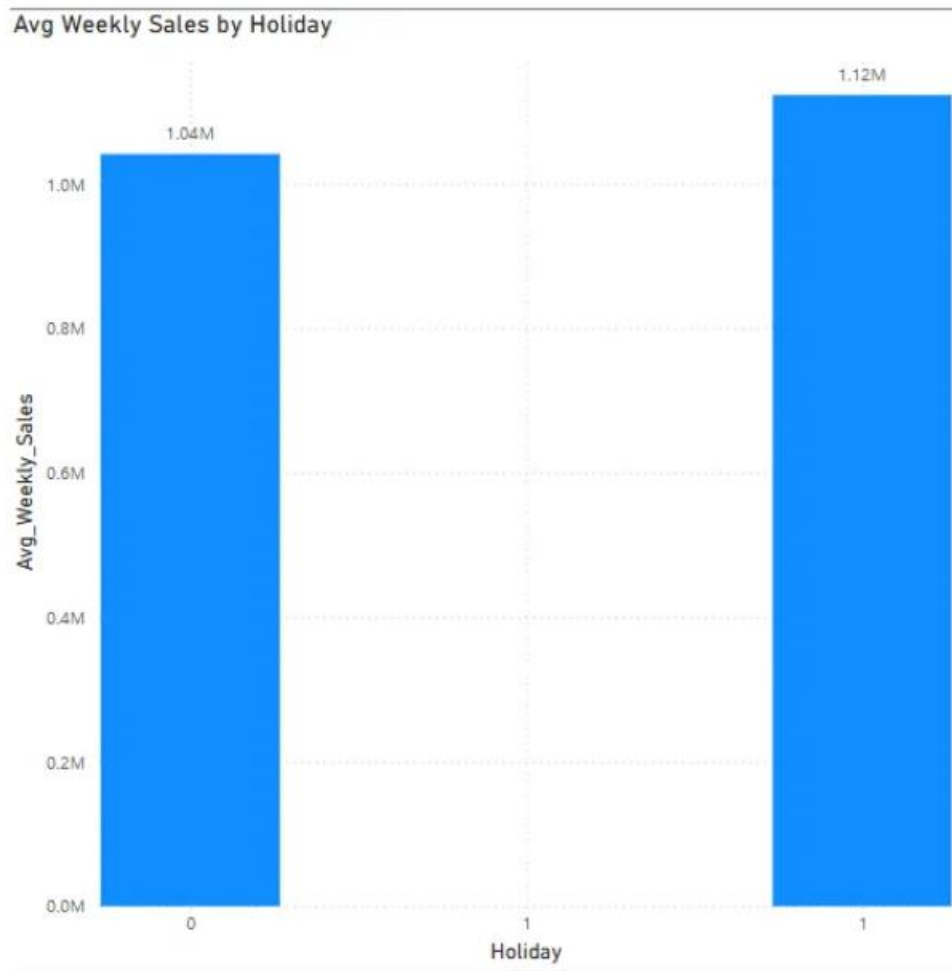
2. Why Is the 5th Week So Much Lower?

- Some months may only have a few days in that 5th “week,” so fewer shopping days lead to **smaller total sales**.
- In retail calendars, that extra portion of a month might not always occur or might span into the next month’s data.

3. Insights & Considerations

- **Planning & Staffing:** Retailers often staff more heavily in weeks with consistently higher foot traffic (Weeks 1–4) but may adjust in partial weeks.
- **Promotions & Campaigns:** Knowing that Week’s 1–4 typically carry the bulk of monthly sales might prompt more marketing spend in those periods.

Holiday Impact on Sales



1. Average Weekly Sales by Holiday

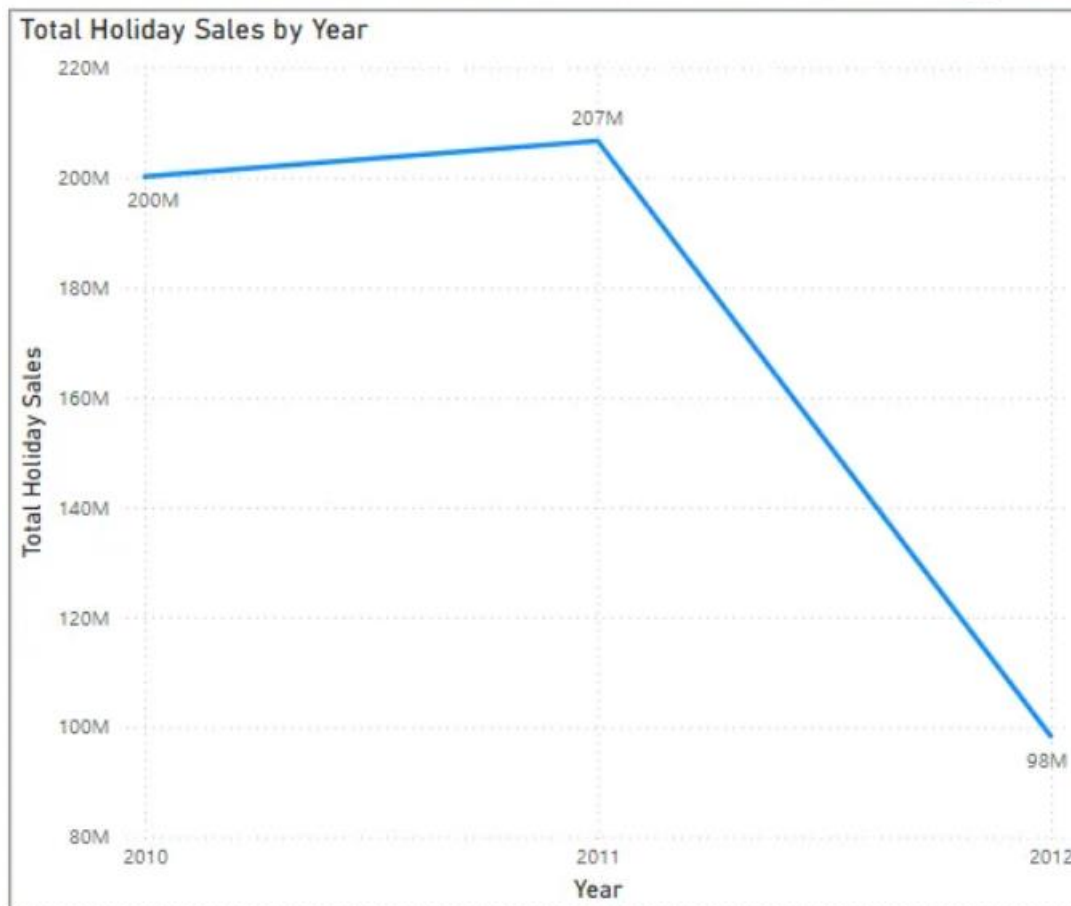
- **Metric:** Compares *average weekly sales* during **non-holiday weeks (0)** vs. **holiday weeks (1)**.
- **Observation:**
 - **Non-Holiday Weeks:** Around \$1.04M in average weekly sales.
 - **Holiday Weeks:** Around \$1.12M in average weekly sales.
- **Interpretation:** On average, **holiday weeks generate slightly higher weekly sales** than non-holiday weeks (roughly \$80K more per week), suggesting that holiday promotions and increased foot traffic boost revenue.

3.15

Holiday_Sales_YoY_Change_2010_2011

-52.43

Holiday_Sales_YoY_Change_2011_2012



Total Holiday Sales by Year

- **Trend:**
 - **2010:** ~\$200M
 - **2011:** ~\$207M (up from 2010)
 - **2012:** ~\$98M (sharp drop from 2011)
- **Interpretation:**
 - The line chart corroborates the KPIs: there's a small uptick from 2010 to 2011, then a *steep* decline to about \$98M in 2012.
 - This visually confirms the year-over-year percentage changes (green and red boxes).

Year-Over-Year (YoY) Holiday Sales Change (Green and Red KPIs at the Top)

- **Green KPI (3.15):** This indicates a **+3.15% increase** in total holiday sales from **2010 to 2011**.
- **Red KPI (-52.43):** This indicates a **52.43% decrease** in total holiday sales from **2011 to 2012**.
- **Interpretation:**
 - **2010 → 2011** saw a modest but growth in holiday-period sales.
 - **2011 → 2012** experienced a substantial drop—more than half—suggesting a significant downturn in holiday sales that year (possibly due to fewer reported holiday weeks, macroeconomic factors, or changes in store strategies).

Key Takeaways

1. Holiday Lift

- Weekly sales during holiday weeks are consistently higher than non-holiday weeks, though the difference is not enormous—it's around 7–8% more.

2. Strong 2011 Holiday Season

- From 2010 to 2011, holiday sales climbed modestly, reflecting growth.

3. Significant Drop in 2012

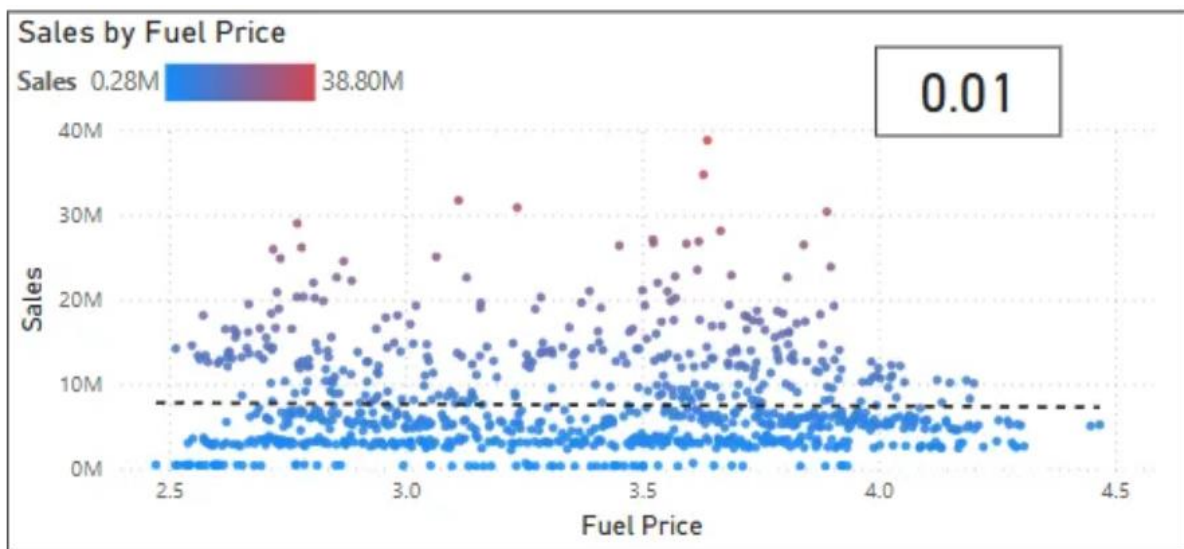
- A large drop (-52.43%) in holiday sales from 2011 to 2012 indicates a major shift. This might be due to:
 - **Fewer designated holiday weeks** or differences in how data was captured.
 - **Economic or competitive pressures** leading to lower holiday traffic.
 - **Reduced promotional activity** or strategic store changes in 2012.

4. Areas for Investigation

- Dig into *which holidays* or *which months* in 2012 underperformed, and whether macroeconomic factors (e.g., unemployment or fuel prices) contributed.
- Compare **store-by-store** to see if the drop was uniform or if certain locations drove the overall decrease.

Economic and External Factors on Sales

1. Sales by Fuel Price (Scatter Plot)



What It Shows

- This scatter plot displays weekly sales (y-axis) against the average fuel price (x-axis) for each week in the dataset.
- Each dot represents a specific time point, indicating how that week's sales level may or may not correlate with the prevailing fuel price.

R-Squared = 0.01

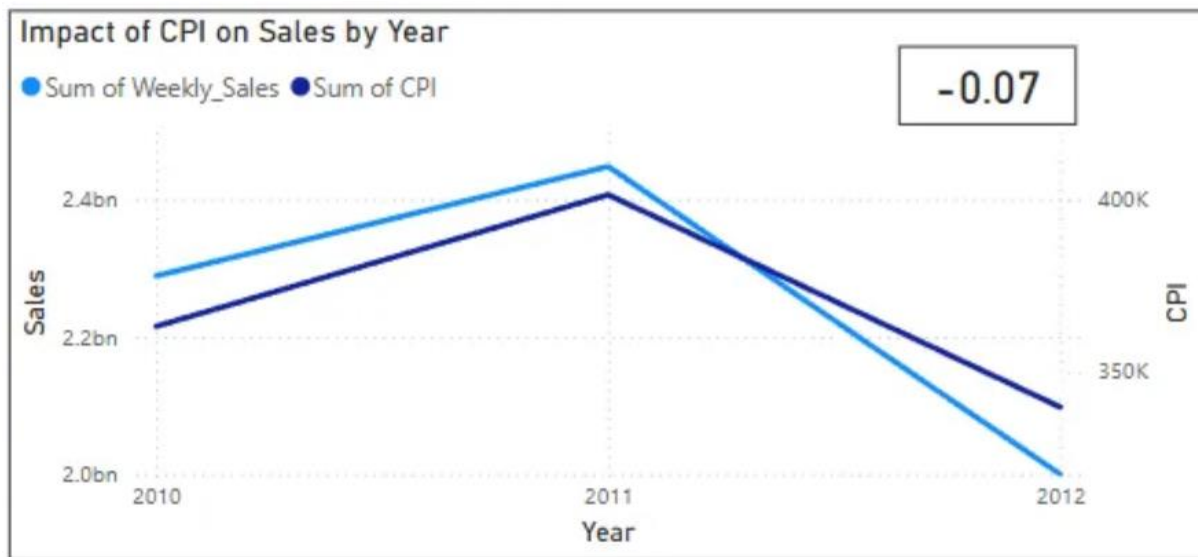
- An R^2 of **0.01** indicates that only about **1%** of the variation in weekly sales can be explained by changes in fuel price.
- In practical terms, **fuel price does not appear to be a strong predictor** of sales in this dataset.

Interpretation

- **Low Correlation:** The near-zero R^2 suggests that weekly Walmart sales move independently of short-term fluctuations in fuel prices.
- **Potential Reasons:** Customers may not drastically alter shopping habits based solely on weekly or monthly changes in gas prices. Other factors such as seasonality, promotions, or local economic conditions likely have a more substantial impact on sales.

- **Next Steps:** Consider analysing regional differences or combine fuel price with other economic variables to see if a multi-factor model shows a stronger relationship.

2. Impact of CPI on Sales by Year (Line Chart)



What It Shows

- This line chart plots the **sum of weekly sales** (blue line) alongside the **sum of CPI** (purple line) over the years 2010, 2011, and 2012.
- Visually, you can observe whether sales and CPI move in tandem (rising or falling together) or diverge.

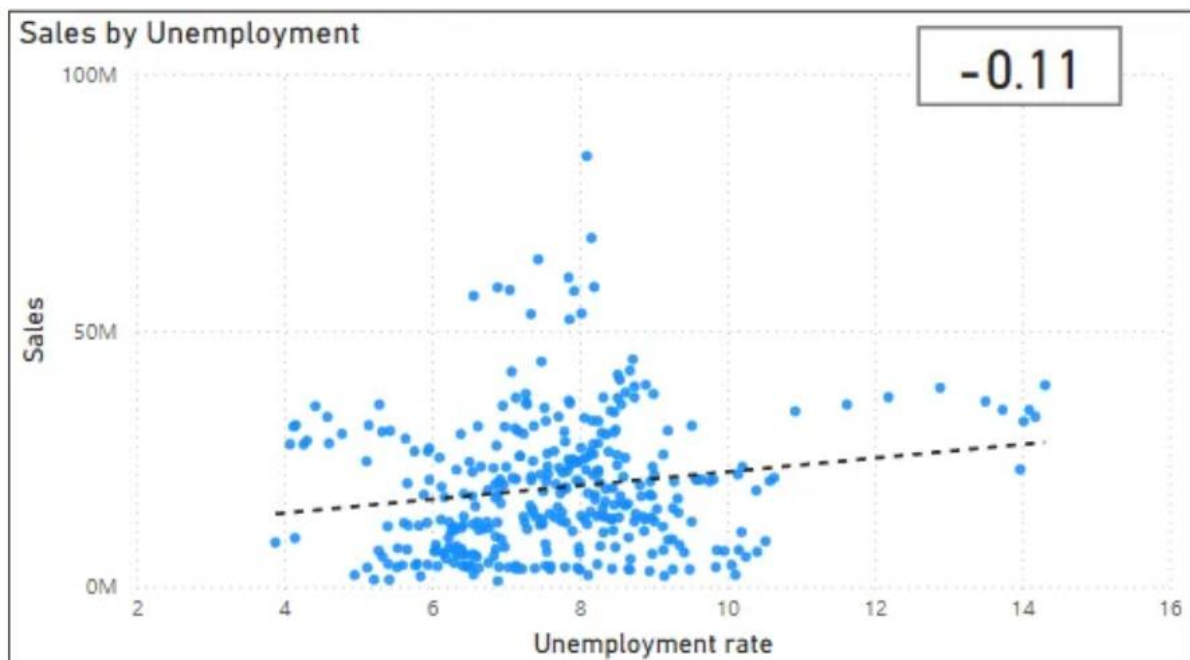
R-Squared = -0.07

- A negative R^2 value (here, **0.07**) signals a **very weak or non-existent relationship** in this simplistic model. It implies that CPI fluctuations do not explain weekly sales trends in a linear way; in fact, this result suggests that trying to fit a simple linear model does worse than guessing a constant mean.

Interpretation

- **Lack of Predictive Power:** CPI changes do not appear to meaningfully predict Walmart's overall sales for the given period.
- **Possible Explanations:** Walmart's pricing strategy, customer base, and product mix might not vary closely with inflation in the short term, or other factors (like holiday effects or store expansions) overshadow CPI's influence.
- **Further Analysis:** Examine CPI in combination with other variables (unemployment, holiday flags, etc.) or consider different time lags (e.g., delayed effect of inflation on consumer spending) for a more robust perspective.

3. Sales by Unemployment (Scatter Plot)



What It Shows

- Each dot represents a single week, plotting **weekly sales** (y-axis) versus the **unemployment rate** (x-axis) for that week (or region).
- The **dotted trend line** attempts to capture any linear relationship between unemployment and sales.

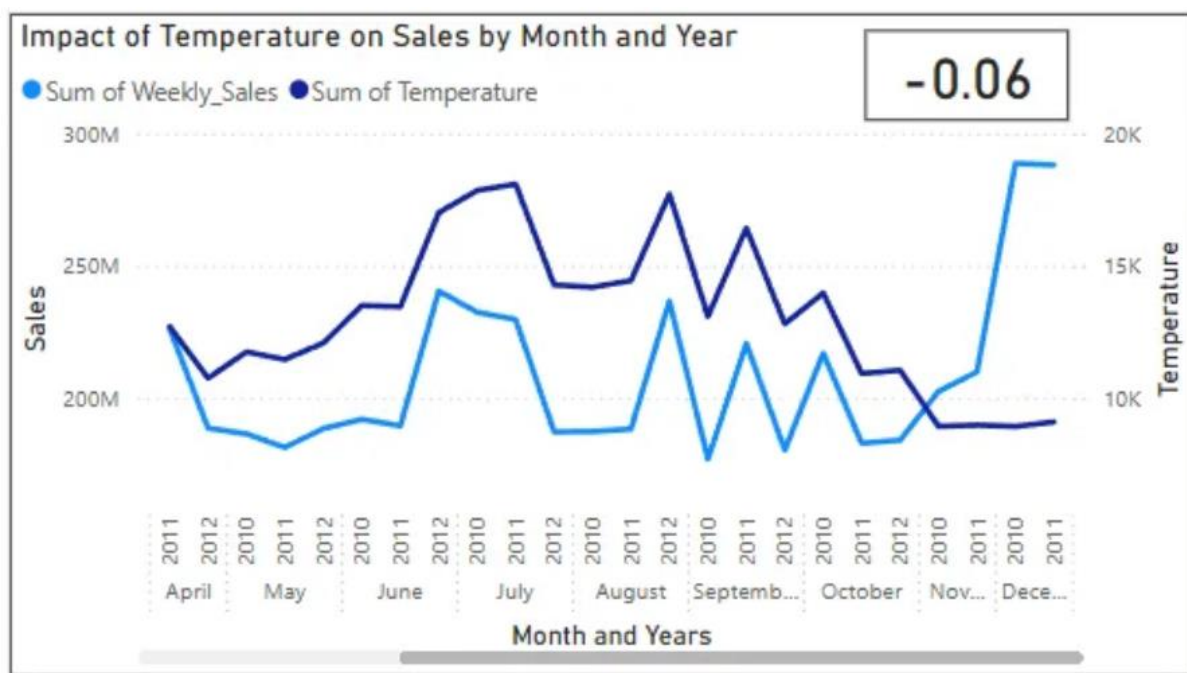
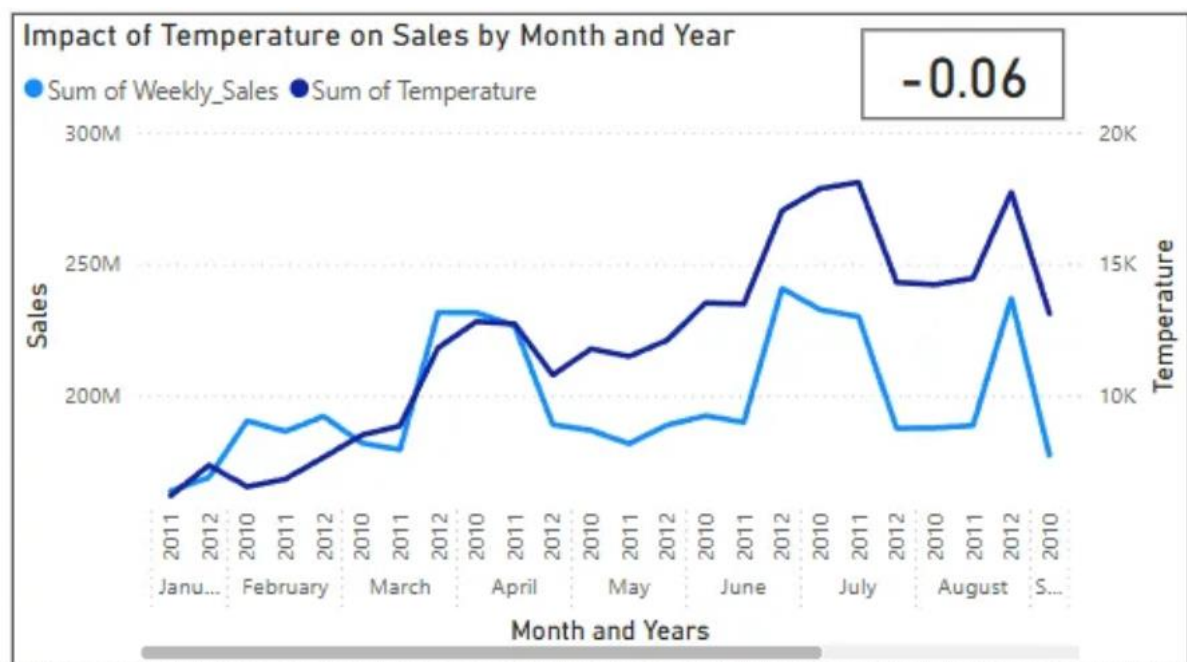
R-Squared = -0.11

- A negative R^2 (-0.11) indicates that using unemployment alone to predict weekly sales *fits worse than a simple average*—effectively, **unemployment rate does not meaningfully explain** changes in sales.
- The negative value underscores that there is **no useful linear correlation** in this model: weekly sales do not reliably go up or down as unemployment changes.

Interpretation

- **Minimal to No Correlation:** Despite some points being higher or lower in sales at different unemployment levels, the scatter is wide and lacks a clear pattern.
- **Likely Other Factors:** Promotional activity, seasonality, or local consumer behaviour might overshadow the effect of unemployment in this dataset.
- **Further Analysis:** A deeper, multi-variable approach (including holiday flags, temperature, store size, etc.) may reveal combined effects that a simple unemployment-vs.-sales view cannot capture.

4. Impact of Temperature on Sales (Line Chart)



What It Shows

- Two lines, one for **Sum of Weekly Sales** and one for the **Sum of Temperature**, plotted **month by month** (with the year labelled along the x-axis).
- Once again, a month-by-month overlay of total sales (one axis) and average temperature (the other axis), just focusing on a different portion of the timeline (e.g., later months into the next year).
- You can visually see whether sales and temperature track similarly do they rise or fall together?

R-Squared = -0.06

- An R^2 of **-0.06** again signals a **very weak (effectively no) linear correlation** between temperature and sales in this timeframe.

Interpretation

- **No Strong Relationship:** Sales do not appear to move consistently higher or lower as temperature changes.
- **Seasonal vs. Actual Weather Effects:** Although we often expect weather to influence consumer behaviour, these data suggest that any effect of temperature on Walmart's weekly sales is small or overshadowed by other seasonal and promotional factors.

Final Leaderboard of Stores

Store	Sum of Weekly_Sales	Store_Rank
20	30,13,97,792.46	1
4	29,95,43,953.38	2
14	28,89,99,911.34	3
13	28,65,17,703.80	4
2	27,53,82,440.98	5
10	27,16,17,713.89	6
27	25,38,55,916.88	7
6	22,37,56,130.64	8
1	22,24,02,808.85	9
39	20,74,45,542.47	10
19	20,66,34,862.10	11
31	19,96,13,905.50	12
23	19,87,50,617.85	13
24	19,40,16,021.28	14
11	19,39,62,786.80	15
28	18,82,62,680.58	16

Store	Sum of Weekly_Sales	Store_Rank
25	10,10,61,179.17	30
43	9,05,65,435.41	31
15	8,91,33,683.92	32
7	8,15,98,275.14	33
42	7,95,65,752.43	34
9	7,77,89,218.99	35
29	7,71,41,554.31	36
16	7,42,52,425.40	37
37	7,42,02,740.32	38
30	6,27,16,885.12	39
3	5,75,86,735.07	40
38	5,51,59,626.42	41
36	5,34,12,214.97	42
5	4,54,75,688.90	43
44	4,32,93,087.84	44
33	3,71,60,221.96	45

1. Overview

The leaderboard displays each Walmart store's **total weekly sales** over a three-year period (2010–2012), then ranks them in descending order—from the highest-performing (Rank 1) to the lowest (Rank 45). This clear hierarchy offers insight into which stores are driving the most revenue and which may require strategic intervention.

2. Ranking Details

- **Store:** The unique numeric ID that identifies each location.
- **Sum of Weekly_Sales:** The aggregated dollar amount from all recorded weekly sales for that store.
- **Store_Rank:** The store's position when sorted by total sales (1 = highest, 45 = lowest).

3. Key Observations

1. Top Performers

- Stores **20**, **4**, **14**, and **13** hold the top four ranks, each exceeding a substantial threshold in total sales (billions of dollars). Their strong performance may stem from prime locations, effective inventory mix, or consistently high foot traffic.

2. Upper-Middle Tier

- Mid-range stores (e.g., Store **1, 39, 19, 31**) show considerable total sales but do not reach the top 5. These stores still play a significant role in overall performance and may offer opportunities for targeted improvements to reach elite levels.

3. Lower-Ranked Stores

- Toward the bottom of the list, stores like **33, 44, 5, 36** generate significantly lower cumulative sales—often well under half of the top performers. Potential reasons may include smaller local populations, less competitive pricing, or operational hurdles that need addressing.

4. Possible Factors Influencing the Rankings

- **Location Demographics:** Dense urban vs. sparsely populated rural areas.
- **Store Size & Inventory:** Larger super centre's might have broader product assortments, driving higher sales.
- **Local Economy:** Varying unemployment, median income, or competition can impact consumer spending.
- **Holiday & Seasonal Effects:** Stores particularly effective at holiday promotions may gain a sales edge.

5. Recommendations

1. **Benchmark Analysis:** Study the top-ranked stores' tactics—staffing, inventory strategy, promotional campaigns—and see if they can be replicated or adapted at mid- or lower-performing locations.
2. **Store-Specific Action Plans:** Investigate why certain stores lag (e.g., local competition or merchandising issues) and implement targeted improvements, such as in-store events or localized advertising.
3. **Resource Allocation:** Consider allocating extra marketing, managerial support, or capital investment to lower-ranked stores with potential growth or realignment opportunities.
4. **Ongoing Monitoring:** Regularly update this leaderboard to gauge improvement over time and ensure high-level visibility of store-by-store shifts in performance.

Final Verdict

Overall, Walmart's 2010–2012 sales data reveals several important insights:

1. Store-Level Variation Trumps Macroeconomic Factors

- The top-ranked stores (e.g., Stores 20, 4, 14, and 13) greatly outperform the bottom tier, suggesting that **store-specific factors**—such as location demographics, effective merchandising, and local promotions—exert a stronger influence on weekly sales than do broad economic indicators.
- Key external variables (Fuel Price, CPI, Unemployment) show **little to no linear correlation** with weekly sales, indicating these drivers alone cannot explain performance differences.

2. Holiday Weeks Provide a Modest Lift

- Average weekly sales are consistently higher during holiday weeks (about 7–8% more), demonstrating that promotions and holiday traffic do boost revenue, albeit not dramatically.
- However, holiday sales in 2012 dropped sharply compared to 2011, suggesting a need to re-examine holiday strategies and local store execution during that period.

3. Seasonality and Overall Trends

- Monthly and yearly views confirm **typical seasonal patterns**, with sales often peaking mid-year or in key holiday months.
- 2011 emerged as the strongest overall year, while 2012's decline underscores the impact that strategic, competitive, or economic changes can have on performance.

4. Recommendations for Sustained Growth

- **Benchmark Top Performers:** Adopt best practices from high-ranking stores—optimizing staffing levels, product mix, and promotions.
- **Focus on Underperformers:** Identify whether local competition, demographics, or store operations explain weaker sales; implement targeted improvements accordingly.
- **Refine Holiday & Seasonal Tactics:** Strengthen holiday campaigns and investigate any structural shifts that caused the 2012 holiday drop.
- **Further Multivariable Analysis:** Future models should combine economic data with store-level attributes, advertising spend, and customer demographics to uncover more nuanced drivers of sales.

In short, while external economic factors played only a minor direct role in these three years of data, **store-specific strategies, holiday promotions, and seasonal rhythms** clearly shape Walmart's sales outcomes. By learning from top performers and continuously monitoring shifts in consumer behaviour, Walmart can maintain and enhance its competitive edge across its entire store portfolio.