Walmart Retail Sales Analysis

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Introduction

This Power BI project analyzes sales data from 45 Walmart stores (2010–2012). It explores how sales vary by store type, time of year, holidays, and markdown levels.

Dashboard Highlights:

- Sales totals and averages
- Trends over time and by store type
- Effects of holidays and markdowns

Tools Used: Power BI, Power Query (for cleaning), DAX, visuals like cards, histograms, and line charts.

Dataset Overview

This dataset comes from a Kaggle retail forecasting challenge based on anonymized data from **45 Walmart stores**. It includes historical weekly sales from **2010 to 2012**, along with markdowns, holidays, and economic factors.

There are three tables:

- **Stores** – Includes store number, type (A, B, or C), and size.
- **Features** – Contains temperature, fuel prices, CPI, unemployment, markdowns, and holiday indicators.
- **Sales** – Weekly department-level sales data with holiday flags.

Store numbers are anonymized, and store types represent different store formats. The dataset is used to analyze how **markdowns and holidays impact sales**.

Data Preparation in Power BI

- Cleaned all three datasets using **Power Query Editor** to ensure data consistency and quality.
- Fixed incorrect data types (e.g., converted text fields to numeric where appropriate).
- Used "Column from Examples" to format the date column into MM-DD-YYYY format.
- Replaced "NA" values with null to properly handle missing data.
- Created an explicit DAX measure for calculating Total Sales to enable flexible and optimized aggregation in visuals.
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Sales Dataset

	Store	Dept	Date	Weekly_Sales	IsHoliday
1	1	1	2/5/2010	24924.5	FALSE
2	1	1	2/12/2010	46039.49	TRUE
3	1	1	2/19/2010	41595.55	FALSE
4	1	1	2/26/2010	19403.54	FALSE
5	1	1	3/5/2010	21827.9	FALSE
6	1	1	3/12/2010	21043.39	FALSE
7	1	1	3/19/2010	22136.64	FALSE
8	1	1	3/26/2010	26229.21	FALSE
9	1	1	4/2/2010	57258.43	FALSE
10	1	1	4/9/2010	42960.91	FALSE
11	1	1	4/16/2010	17596.96	FALSE
12	1	1	4/23/2010	16145.35	FALSE
13	1	1	4/30/2010	16555.11	FALSE
14	1	1	5/7/2010	17413.94	FALSE
15	1	1	5/14/2010	18926.74	FALSE

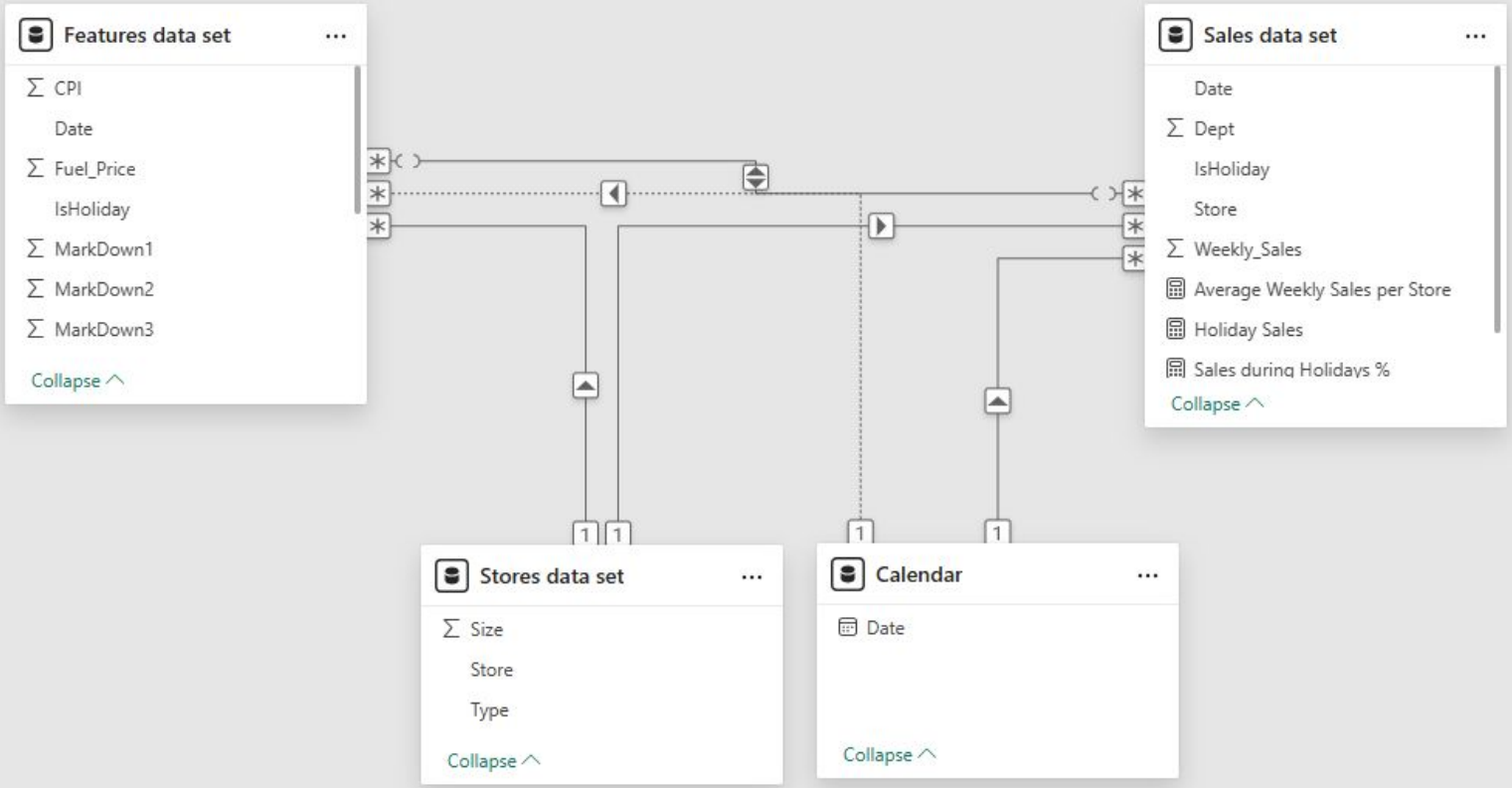
Features Dataset

	Store	Date	1.2 Temperature	1.2 Fuel_Price	1.2 MarkDown1	1.2 CPI	1.2 Unemployment	IsHoliday
1	1	2/5/2010	42.31	2.572	null	211.0963582	8.106	FALSE
2	1	2/12/2010	38.51	2.548	null	211.2421698	8.106	TRUE
3	1	2/19/2010	39.93	2.514	null	211.2891429	8.106	FALSE
4	1	2/26/2010	46.63	2.561	null	211.3196429	8.106	FALSE
5	1	3/5/2010	46.5	2.625	null	211.3501429	8.106	FALSE
6	1	3/12/2010	57.79	2.667	null	211.3806429	8.106	FALSE
7	1	3/19/2010	54.58	2.72	null	211.215635	8.106	FALSE
8	1	3/26/2010	51.45	2.732	null	211.0180424	8.106	FALSE
9	1	4/2/2010	62.27	2.719	null	210.8204499	7.808	FALSE
10	1	4/9/2010	65.86	2.77	null	210.6228574	7.808	FALSE
11	1	4/16/2010	66.32	2.808	null	210.4887	7.808	FALSE
12	1	4/23/2010	64.84	2.795	null	210.4391228	7.808	FALSE
13	1	4/30/2010	67.41	2.78	null	210.3895456	7.808	FALSE
14	1	5/7/2010	72.55	2.835	null	210.3399684	7.808	FALSE
15	1	5/14/2010	74.78	2.854	null	210.3374261	7.808	FALSE

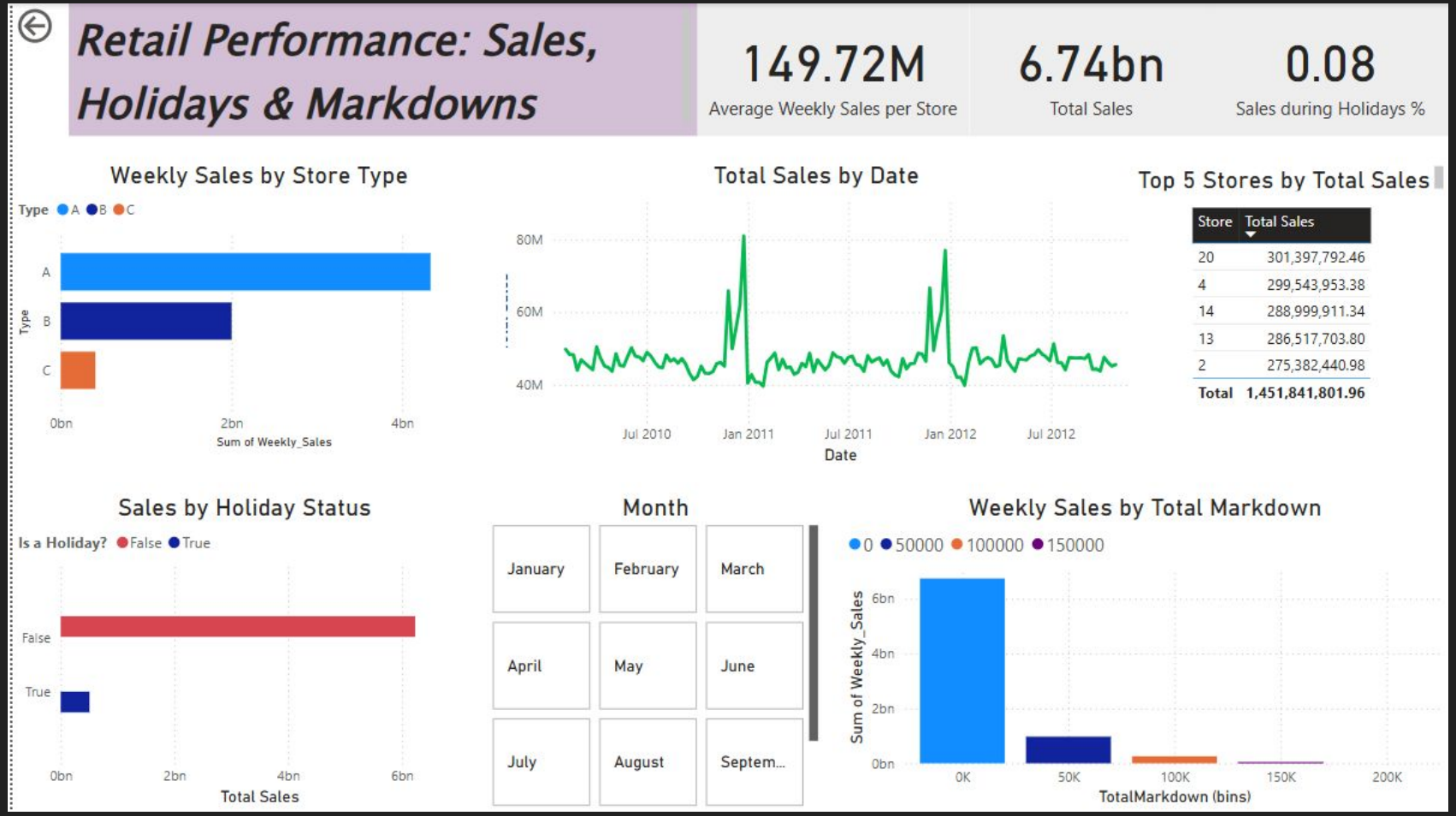
Stores Dataset

	Store	Type	Size
1	1	A	151315
2	2	A	202307
3	3	B	37392
4	4	A	205863
5	5	B	34875
6	6	A	202505
7	7	B	70713
8	8	A	155078
9	9	B	125833
10	10	B	126512
11	11	A	207499
12	12	B	112238
13	13	A	219622
14	14	A	200898
15	15	B	123737

Model


Features data set
CPI
Date
Fuel_Price
IsHoliday
MarkDown1
MarkDown2
MarkDown3
Collapse
Sales data set
Date
Dept
IsHoliday
Store
Weekly_Sales
Average Weekly Sales per Store
Holiday Sales
Sales during Holidays %
Collapse
Stores data set
Size
Store
Type
Collapse
Calendar
Date
Collapse
1
1
1
1

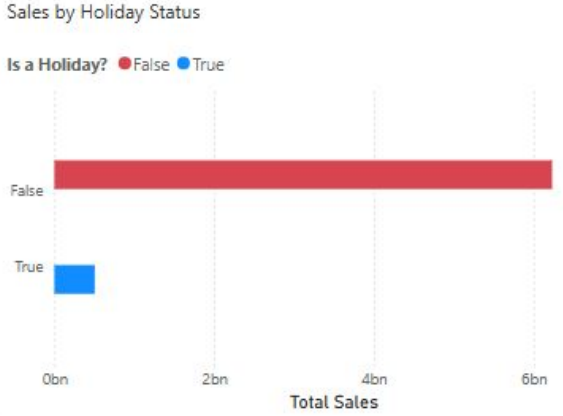
Report

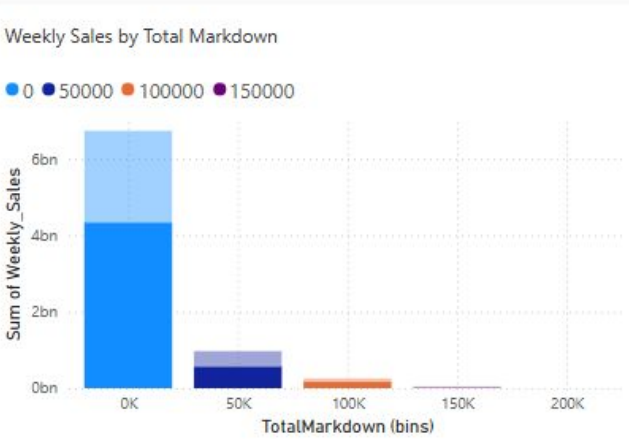

Retail Performance: Sales, Holidays & Markdowns
149.72M
Average Weekly Sales per Store
6.74bn
Total Sales
0.08
Sales during Holidays %
Weekly Sales by Store Type
Type A B C
A
B
C
Type
0bn
2bn
4bn
Sum of Weekly_Sales
Total Sales by Date
80M
60M
40M
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Jul 2012
Date
Top 5 Stores by Total Sales
Store
Total Sales
20 301,397,792.46
4 299,543,953.38
14 288,999,911.34
13 286,517,703.80
2 275,382,440.98
Total 1,451,841,801.96
Sales by Holiday Status
Is a Holiday? False True
False
True
0bn
2bn
4bn
6bn
Total Sales
Month
January
February
March
April
May
June
July
August
Septem...
Weekly Sales by Total Markdown
0 50000 100000 150000
Sum of Weekly_Sales
6bn
4bn
2bn
0bn
0K
50K
100K
150K
200K
TotalMarkdown (bins)

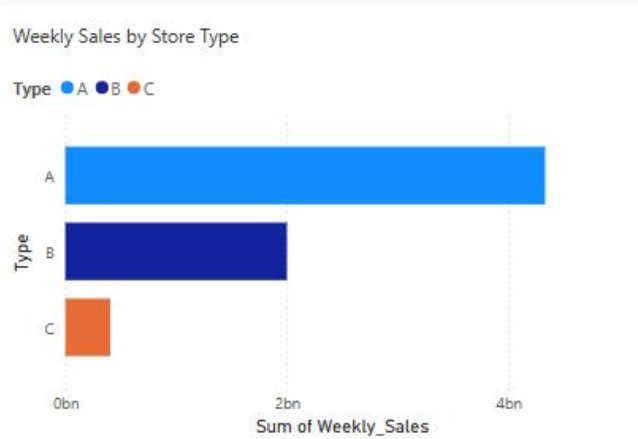
Dashboard

Top Stores by Sales

Store	Total Sales
20	301,397,792.46
4	299,543,953.38
14	288,999,911.34
13	286,517,703.80
2	275,382,440.98
Total	**1,451,841,801.96**







Key Insights

- **Avg Weekly Sales/Store**: $149.72M
- **Total Sales**: $6.74B
- **Holiday Sales**: Only 0.08% of sales happened during holidays.
- **Store Type A** had the highest weekly sales.
- **Sales Spikes** seen in Nov–Dec, likely from holiday shopping.
- **Most Sales** occurred during non-holiday weeks.
- **Highest Sales** happened when markdowns were **$0–50K**. Larger markdowns didn’t always boost sales.

Conclusion

This dashboard helped uncover key retail patterns in Walmart sales between 2010 and 2012:

- **Store Type A** outperformed others in weekly sales.
- **Holiday weeks** had limited impact on total sales.
- **Sales peaked** in November and December due to holiday shopping.
- **Moderate markdowns** ($0–50K) were more effective than higher ones.

Using Power BI, I was able to clean, model, and visualize large datasets to generate insights that could help guide business decisions