Project of Walmart Store

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1 PROBLEM STATEMENT

A retail store that has multiple outlets across the country are facing issues in managing the inventory - to match the demand with respect to supply.

1. You are provided with the weekly sales data for their various outlets. Use statistical
analysis, EDA, outlier analysis, and handle the missing values to come up with various
insights that can give them a clear perspective on the following:
a. If the weekly sales are affected by the unemployment rate, if yes - which stores are suffering the most?
b. If the weekly sales show a seasonal trend, when and what could be the reason?
c. Does temperature affect the weekly sales in any manner?
d. How is the Consumer Price index affecting the weekly sales of various stores?
e. Top performing stores according to the historical data.
f. The worst performing store, and how significant is the difference between the highest and lowest performing stores.
2. Use predictive modelling techniques to forecast the sales for each store for the next 12 weeks.

2 PROJECT OBJECTIVE

In this project review store data generated by ecommerce company and this will be analysed for getting insights which can help management and other team to generate the good business and solve the problem.

In this project our team will work on Machine Learning model to get better prediction and show forecasts and get good result of business.

3 DATA DESCRIPTION

The Data contains 6435 rows and 8 columns.

Feature Name	Description
Store	**Store number**
Date	**Week of Sales**
Weekly_Sales	**Sales for the given store in that week**
Holiday_Flag	**If it is a holiday week**
Temperature	**Temperature on the day of the sale**
Fuel_Price	**Cost of the fuel in the region**
CPI	**Cost of the fuel in the region**
Unemployment	**Unemployment Rate**

Data Description: The data description showing the total count, mean, standard deviation(std), minimum, etc. for the numeric features is as shown in the Table

	Store	Weekly_Sales	Holiday_Flag	Temperature	Fuel_Price	CPI	Unemployment
count	6435	6435	6435	6435	6435	6435	6435
mean	23	1046964	0	60	3	171	7
std	12	564366	0	18	0	39	1
min	1	209986	0	-2	2	126	3
25%	12	553350	0	47	2	131	6
50%	23	960746	0	62	3	182	7
75%	34	1420158	0	74	3	212	8
max	45	3818686	1	100	4	227	14

4-Datainfo

Feature	Type
Store	int64
Date	object
Weekly_Sales	float64
Holiday_Flag	int64
Temperature	float64
Fuel_Price	float64
CPI	float64
Unemployment	float64

Note: Provided data is very good in reference of Null Value because there is no null value

Cor-relation of the features:

	Store	Weekly_Sales	Holiday_Flag	Temperature	Fuel_Price	CPI	Unemployment
Store	1.00	-0.3353	4.386841	-0.022659	0.060023	-0.209492	0.223531
Weekly_Sales	-3.353320	1.000000	3.689097	-0.063810	0.009464	-0.072634	-0.106176
Holiday_Flag	-4.386841	0.036891	1.00000	-0.155091	-0.078347	-0.002162	0.010960

Temperature	-2.265908	-0.063810	-1.55091	1.000000	0.144982	0.176888	0.101158
Fuel_Price	6.002295	0.009464	-7.83465	0.144982	1.000000	-0.170642	-0.034684
CPI	-2.094919	-0.072634	-2.16209	0.176888	-0.170642	1.000000	-0.302020
Unemployment	2.235313	-0.106176	1.09602	0.101158	-0.034684	-0.302020	1.000000

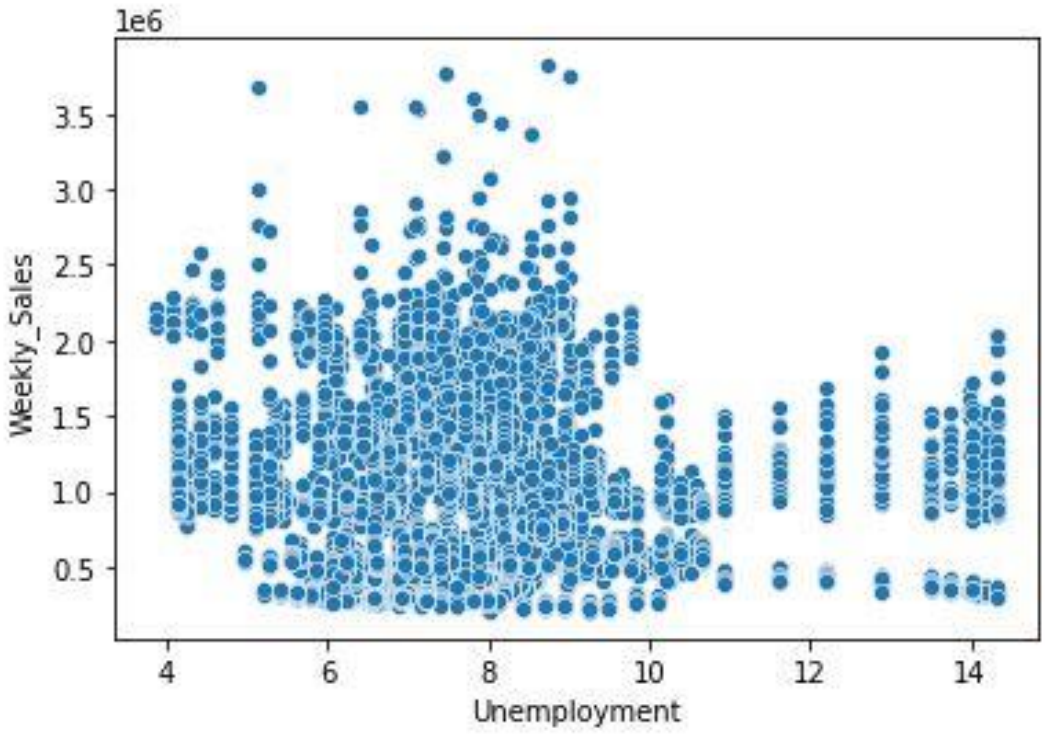
Problem:

If the weekly sales are affected by the unemployment rate, if yes - which stores are suffering the most?

Cor-relation of weekly Sales and Unemployment:

	Unemployment	Weekly_Sales
Unemployment	1.000000	-0.106176
Weekly_Sales	-0.106176	1.000000

Scatterplot

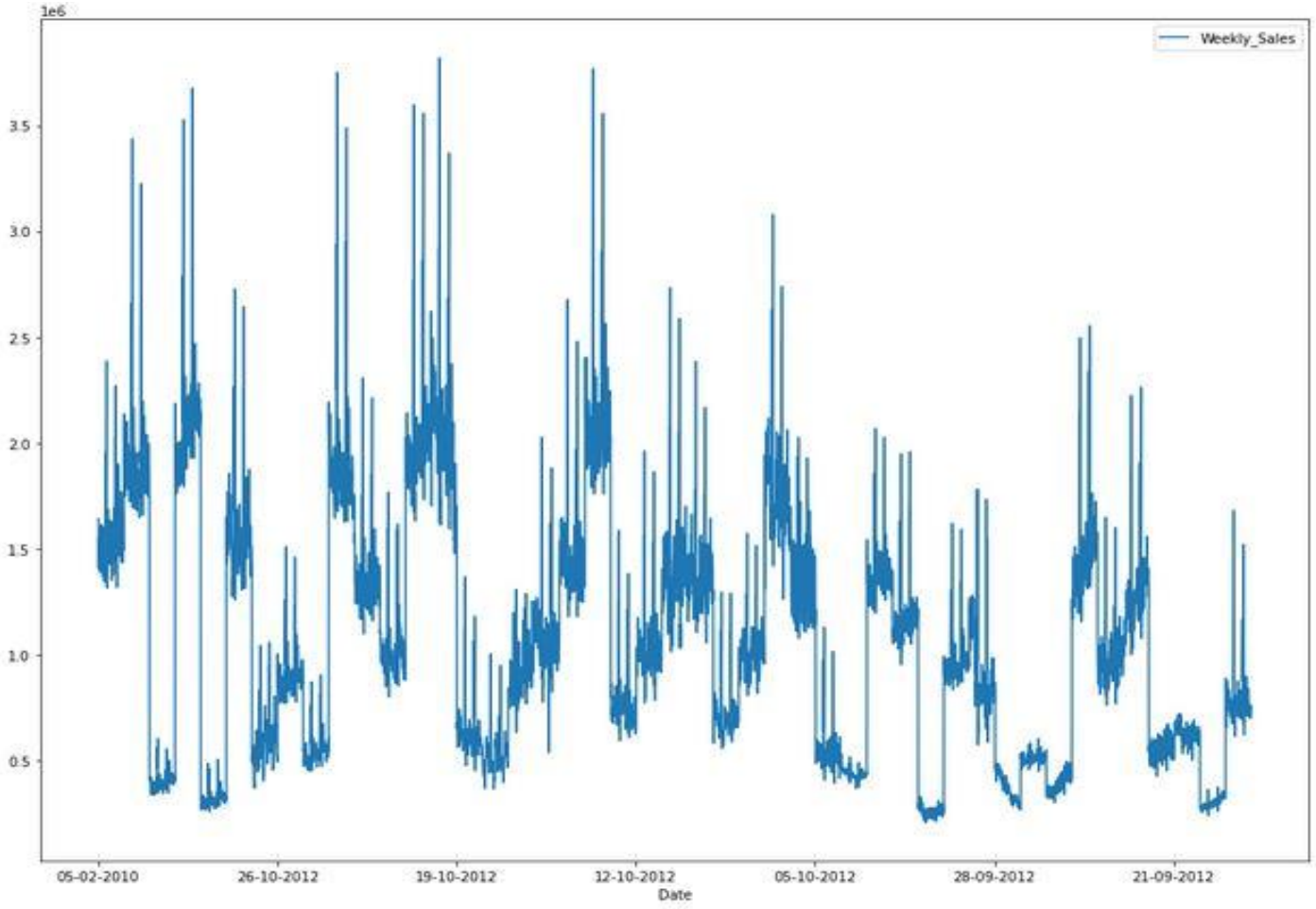


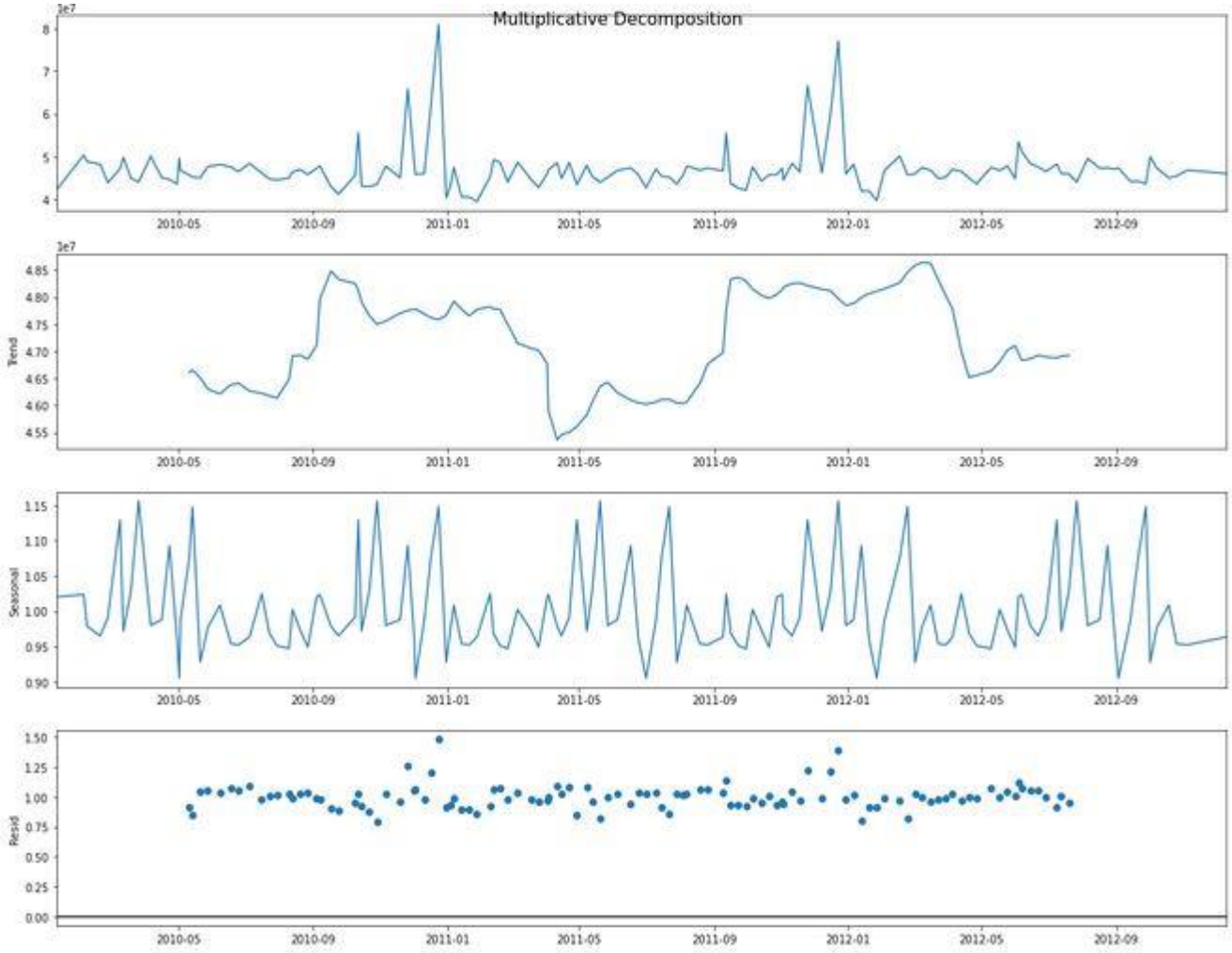
Insights: **We found the Negative relationship between Weekly sales and Unemployment of -0.10.**

Most Affected Store-

Store	Weekly_Sales	Unemployment
33	37160221.96	1220.241

Problem: If the weekly sales show a seasonal trend, when and what could be the reason?





Insights: **In the provided data we see a Seasonal Trend. As per data every year in the beginning of year sales go down and at end of the year sales goes high. Possible reason for this can be due Christmas sale every sales store makes a good sale and after that sales go normal.**

Problem: Does temperature affect the weekly sales in any manner?

Cor-relation of weekly Sales and Temperature:

	Weekly_Sales	Temperature
Weekly_Sales	1.000000	-0.076393
Temperature	-0.076393	1.000000

Insights: **Temperature does not effects sales on large scale but it effects as can we see there is cor-relation between sales and temperature negative 0.76.**

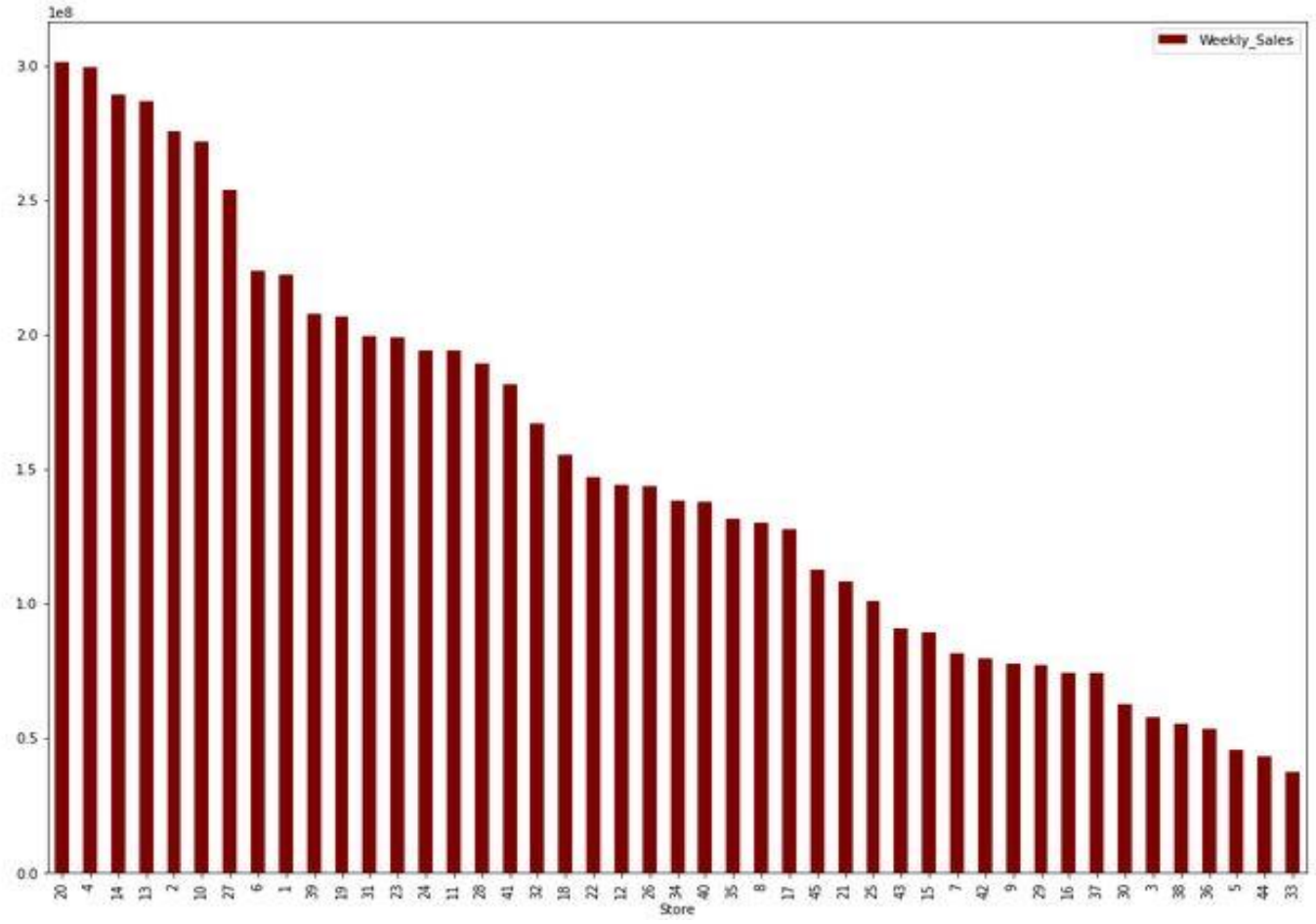
Problem: How is the Consumer Price index affecting the weekly sales of various stores?

Cor-relation of weekly Sales and Temperature:

	Weekly_Sales	CPI
Weekly_Sales	1.000000	-0.076567
CPI	-0.076567	1.000000

Insights: As per data CPI is not much affecting the sales the relation between sales and CPI is negative which is obvious. As per our data relation is -0.076 which is not much considerable.

Top and worst performing stores according to the historical data:



Insights: As per historical data store no 20,4,14,13 and 2 are the top performer store and 33,44 and 5 are worst performing store and there is very significate difference between top performer which is store no 20 and worst performing store which is 33 is Rs. 264237570.49.

Walmart
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