# WALMART RECRUITING -STORE SALES ANALYSIS & FORECASTING



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### BACKGROUND

Data Analysis and Prediction is very important in the Selling industry

Walmart is a very good data resource for the analysis. It's useful for the application in business.

### INTRODUCTION

- Analyze what factors can decide the sale of a Walmart store.
- prediction and forecasting of sales in 45 Walmart stores
- The data analysis is done based on the sale data for different departments in different weeks for each location in the past time

~ What can significantly decide the sales for a Walmart store?

~ How will be sale in holidays?

~ What will the sale for each store be like in future?

• What's your guess for these questions?

### DATA VARIABLES

- historical sales data for 45 Walmart stores in different areas.
- Store the store number
- Date the week
- Temperature average temperature in the region
- Fuel\_Price cost of fuel in the region
- CPI the consumer price index
- Unemployment the unemployment rate
- IsHoliday whether the week is a special holiday week

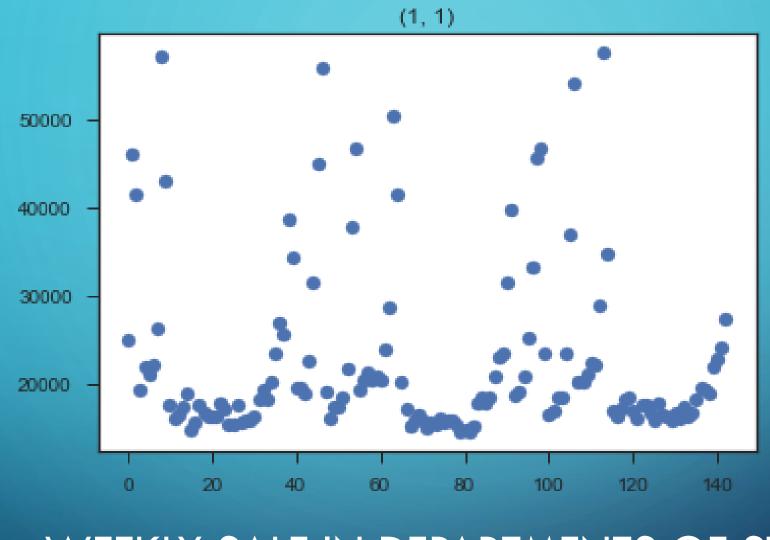
### DATA STRUCTURE

	Store	Dept	Date	Weekly Sales	isHoliday	Туре	Size	Temperature	Fuel_ Price	CPI	Unemployment
0	1	1	2010-02- 05	24924.50	False	Α	151315	42.31	2.572	211.096358	8.106
1	1	1	2010-02- 12	46039.49	True	Α	151315	38.51	2.548	211.242170	8.106
2	1	1	2010-02- 19	41595.55	False	Α	151315	39.93	2.514	211.289143	8.106
3	1	1	2010-02- 26	19403.54	False	Α	151315	46.63	2.561	211.319643	8.106
4	1	1	2010-03- 05	21827.90	False	Α	151315	46.50	2.625	211.350143	8.106

#### Unemployment -CPI 0.8 MarkDown5 -MarkDown4 -- 0.6 MarkDown3 -MarkDown2 -CORRELATION MarkDown1 -Fuel\_Price -- 0.2 Temperature Size isHoliday weeklySales -Dept -Store Dept weeklySales isHoliday Store Size Temperature Fuel\_Price MarkDown1 MarkDown2 MarkDown3 MarkDown4 MarkDown5

## PAIR PLOTS

- Weekly sale
- Fuel Price
- Size
- CPI
- Department
- Temperature
- Unemployment



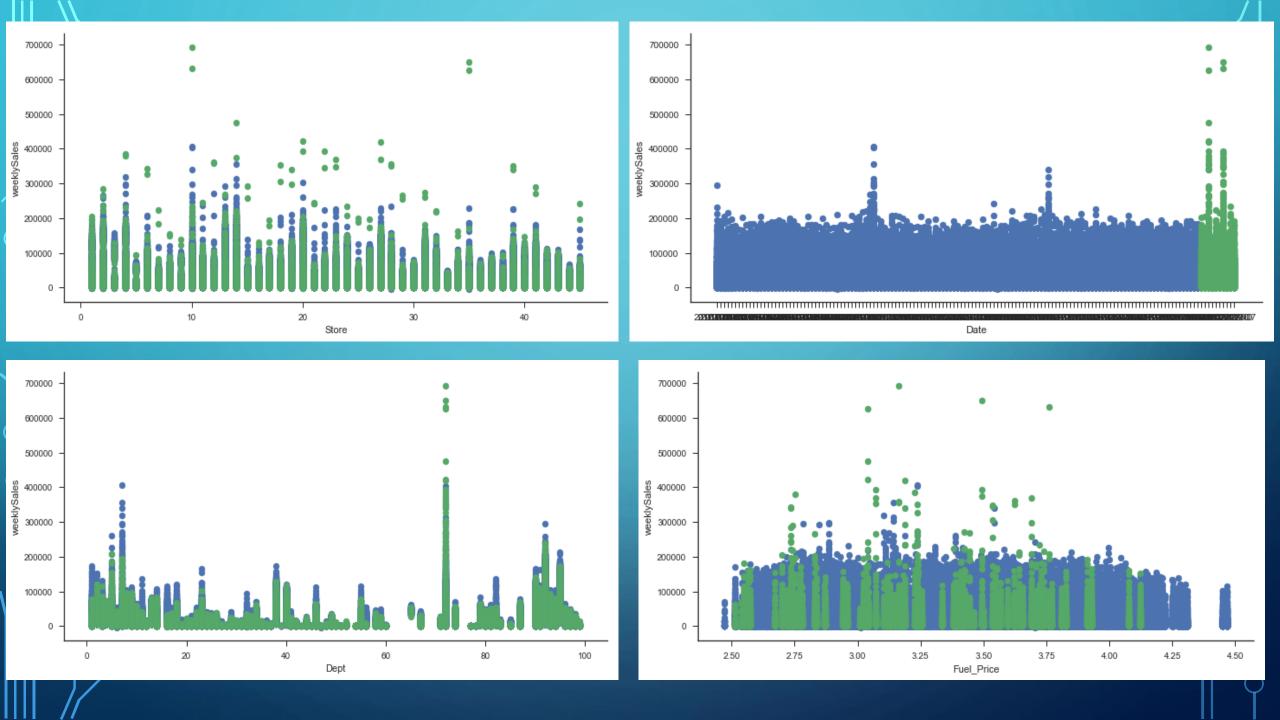
WEEKLY SALE IN DEPARTMENTS OF STORES

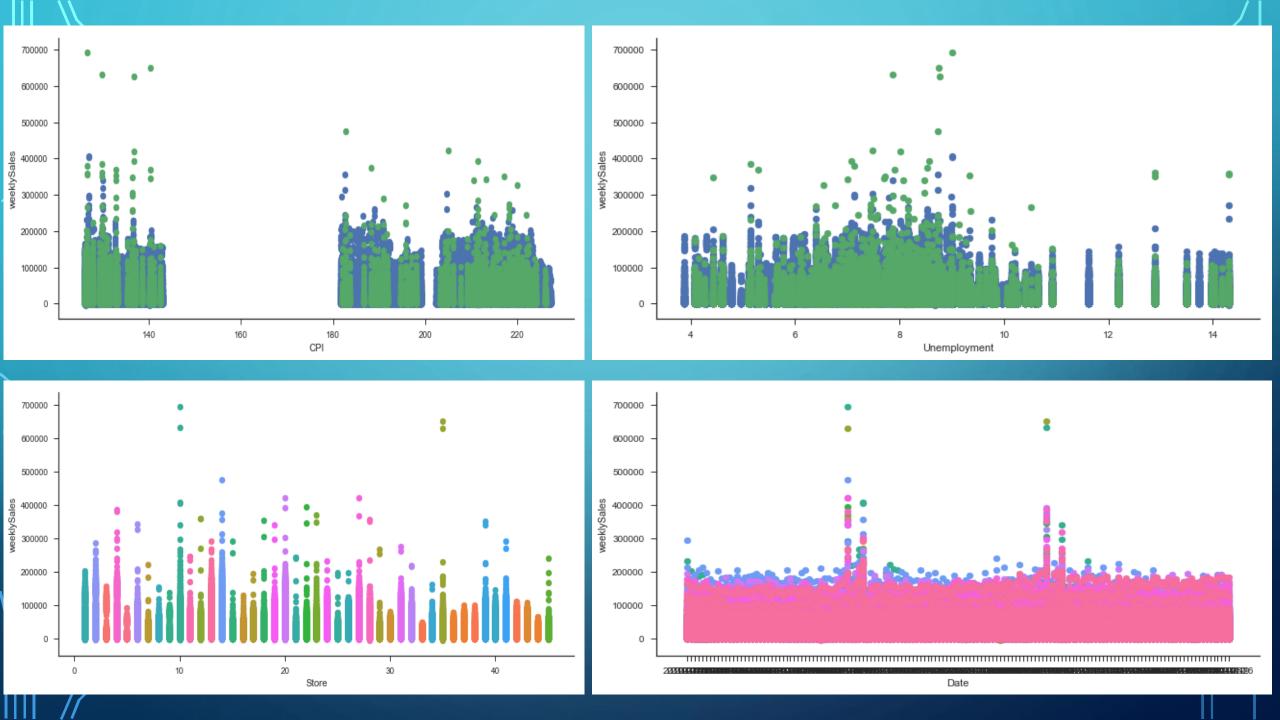
GROUP BY STORE AND DEPT

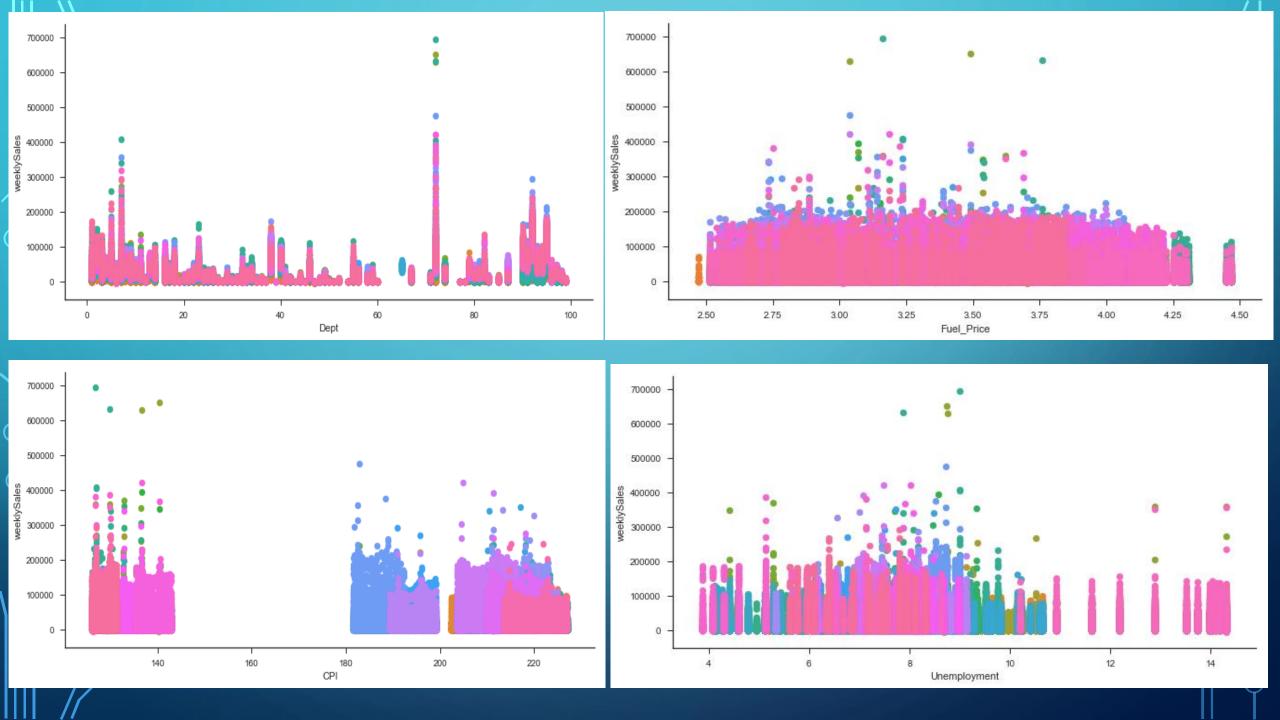
#### DATA ANALYSIS

Relationship between Weekly sale and
 'Store', 'Date', 'Dept', 'Fuel\_Price', 'CPI', 'Unemployment'
 in two different isHoliday Group(True or False).

Relationship between Weekly sale and
 'Store', 'Date', 'Dept', 'Fuel\_Price', 'CPI', 'Unemployment'
 in different Size Group.

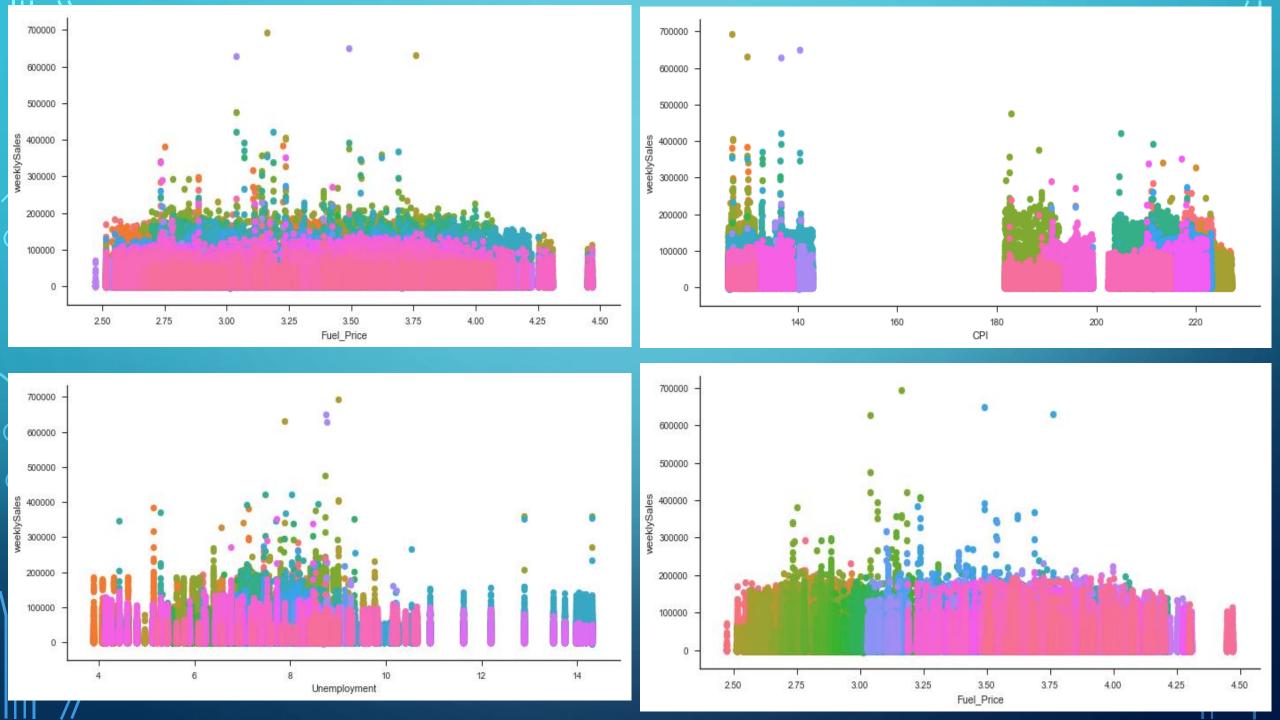


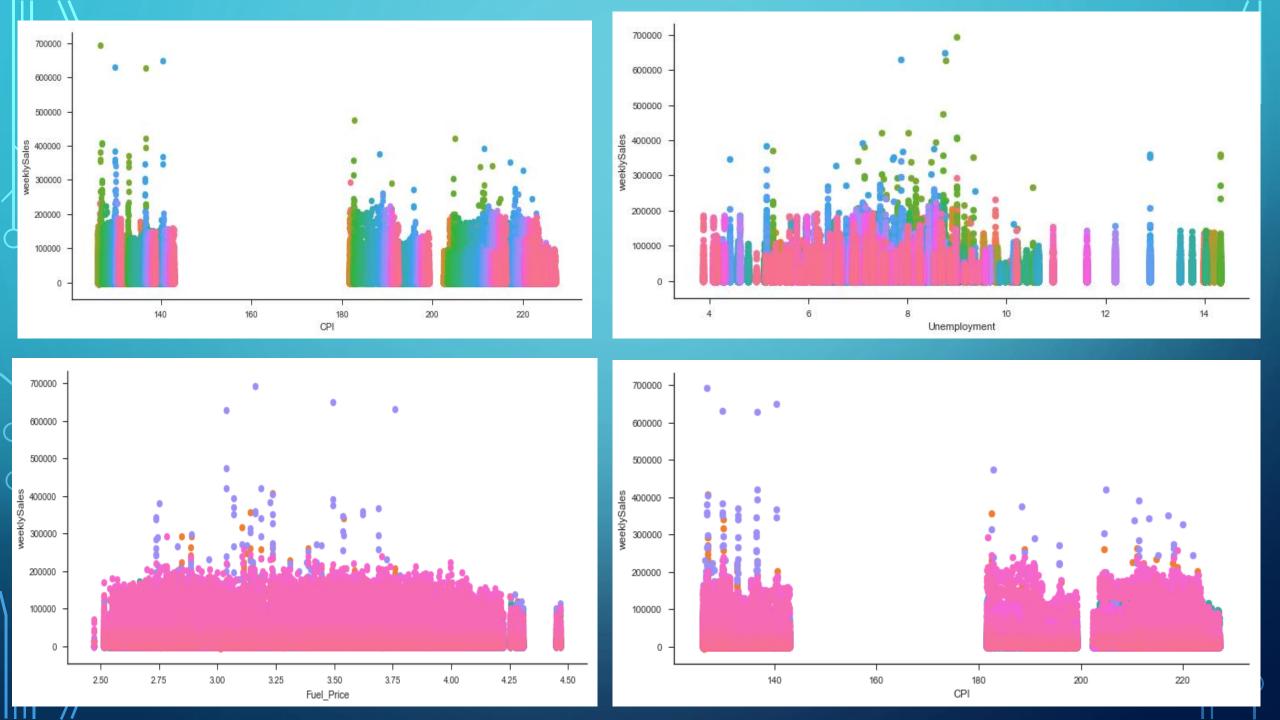


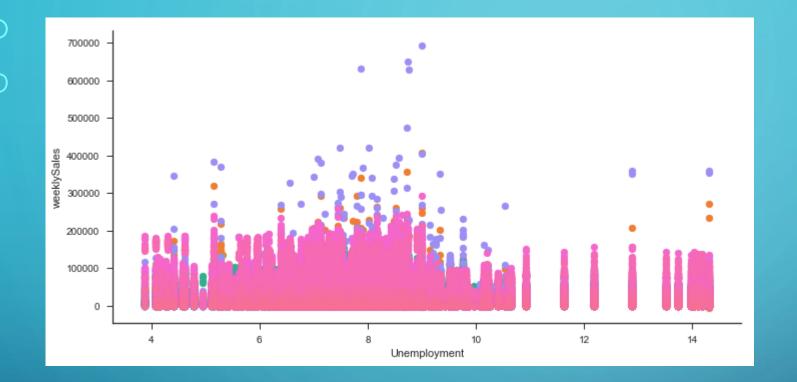


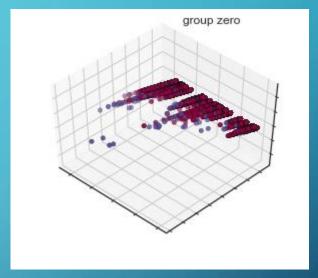
#### DATA ANALYSIS

- Relationship between Weekly sale and 'Fuel\_Price', 'CPI', 'Unemployment' in different Stores.
- Relationship between Weekly sale and 'Fuel\_Price', 'CPI', 'Unemployment' in different Date.
- Relationship between Weekly sale and 'Fuel\_Price', 'CPI', 'Unemployment' in different Dapartrments.









What We get from these graphs?

#### CONCLUSION

- 1. The situation of sale for different store are different. The sale of several specific holidays is much better than non-holidays. Some holidays even have less sale than regular non-holidays.
- 2. The end of the year has lots of holiday, and the sale of stores increase.
- 3. Different department have different sales. Most departments sell better in holiday than regular days.
- 4. For different stores (sizes is also different), the CPI is different.
- 5. Different sizes of stores have different unemployment situation.
- 6. For different Date, Fuel\_Price and CPI are different.
- 7. If the Fuel price is very high in holiday, the weekly sale just decrease and be very little.

### LINEAR REGRESSION

	Coefficients	Standard Errors	t values	P-values
0	6115.7007	400.665	15.264	0.0
1	-87.9700	2.764	-31.832	0.0
2	111.4940	1.098	101.565	0.0
3	0.0876	0.001	156.361	0.0
4	21.7148	1.912	11.358	0.0
5	-370.8796	75.879	-4.888	0.0
6	-22.1171	0.952	-23.242	0.0
7	-171.3561	19.494	-8.790	0.0

#### CONCLUSION& PREDICTION

The sale in the whole year is not with big up and down. Big increase of sale is in holiday.

I only get the prediction with continuous variables.

Weekly sale = 6115.7007- 87.9700\*Store + 111.4940\*Dept + 0.0876\* Size+ 21.7148\* Temperature -370.8796\* Fuel\_Price -22.1171\*CPI - 171.3561\* Unemployment

#### WHAT TO IMPROVE IN THE MODEL?

- Next step
- application