



# WALMART RECRUITING - STORE SALES ANALYSIS & FORECASTING



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- FINAL PROJECT
- EMES 6992
- GWU



# Walmart

Supercentre

The image shows the exterior of a Walmart Supercentre. The main sign is on a blue background with the word 'Walmart' in white and the yellow sunburst logo. Below it, 'Supercentre' is written in a smaller, gold-colored font. The building has a tan-colored facade on the sides. In the foreground, there is a paved area with blue bollards and several people walking. Two Canadian flags are visible on tall poles.

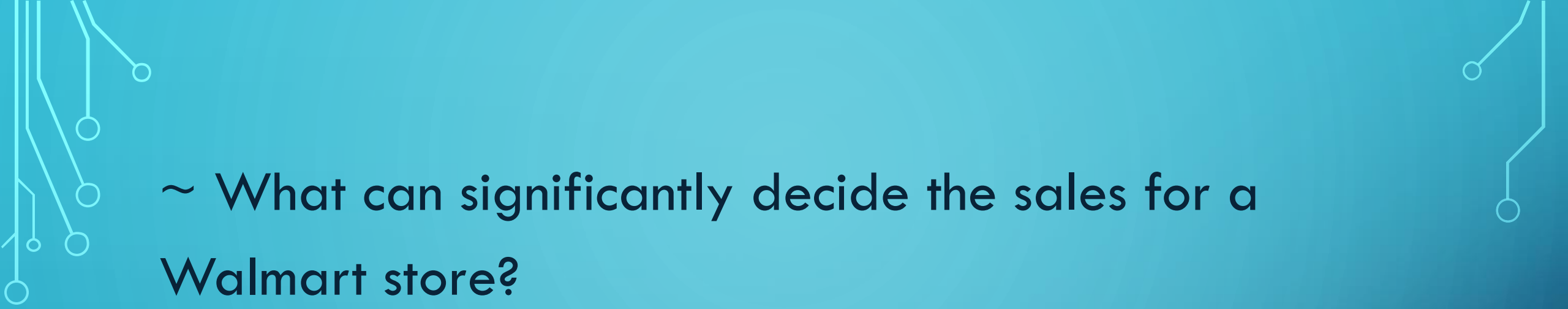
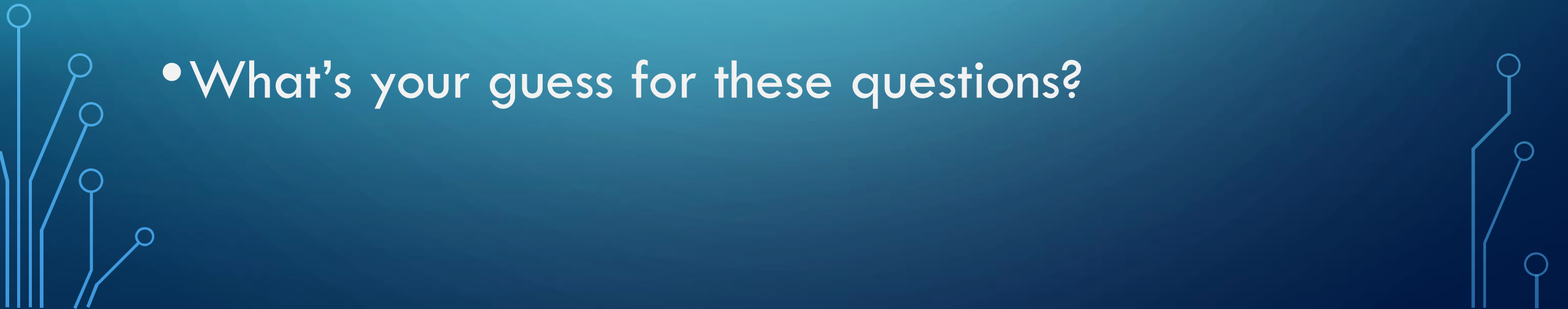
# BACKGROUND

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

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- ~ 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?
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- What's your guess for these questions?
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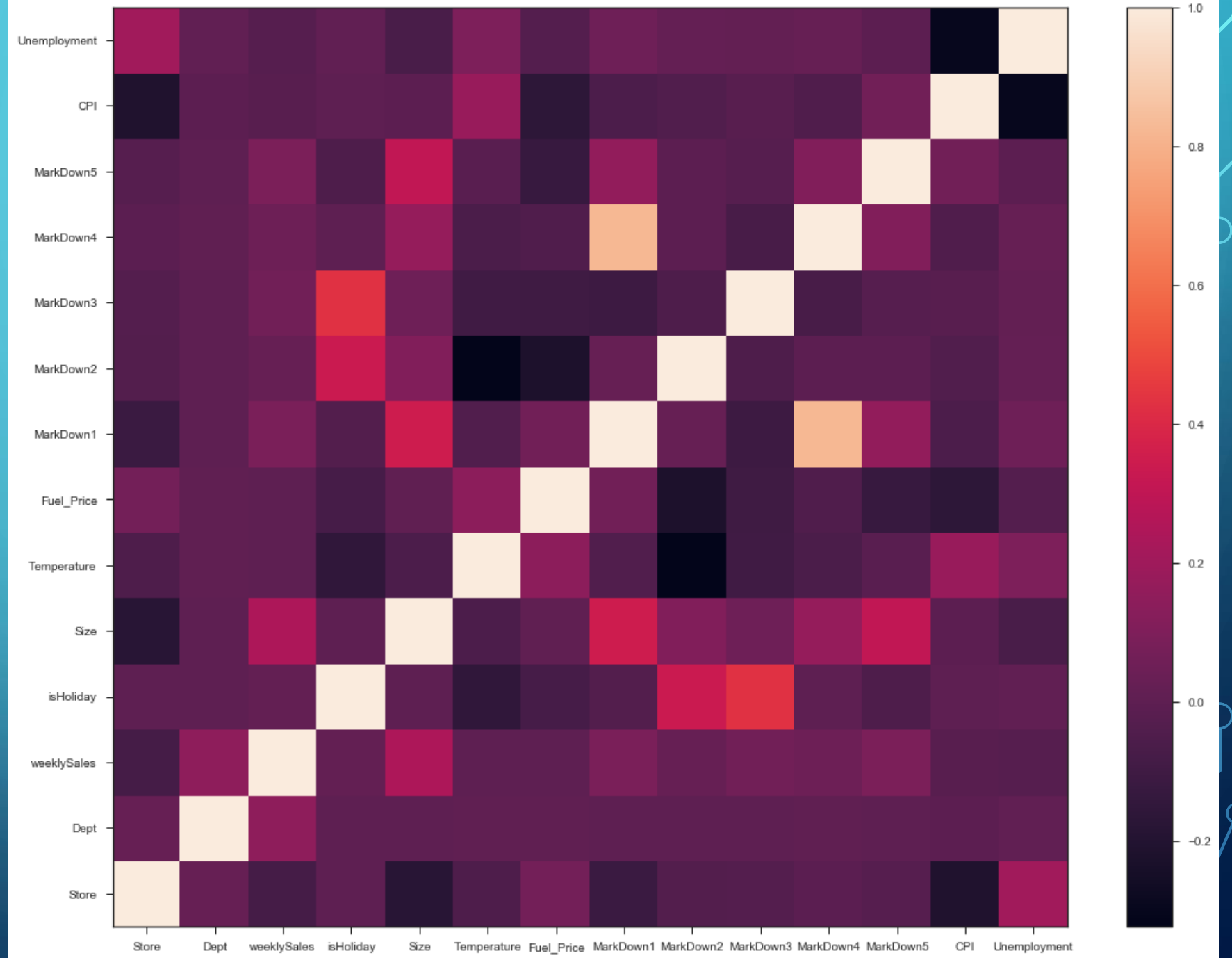


# DATA VARIABLES

- 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

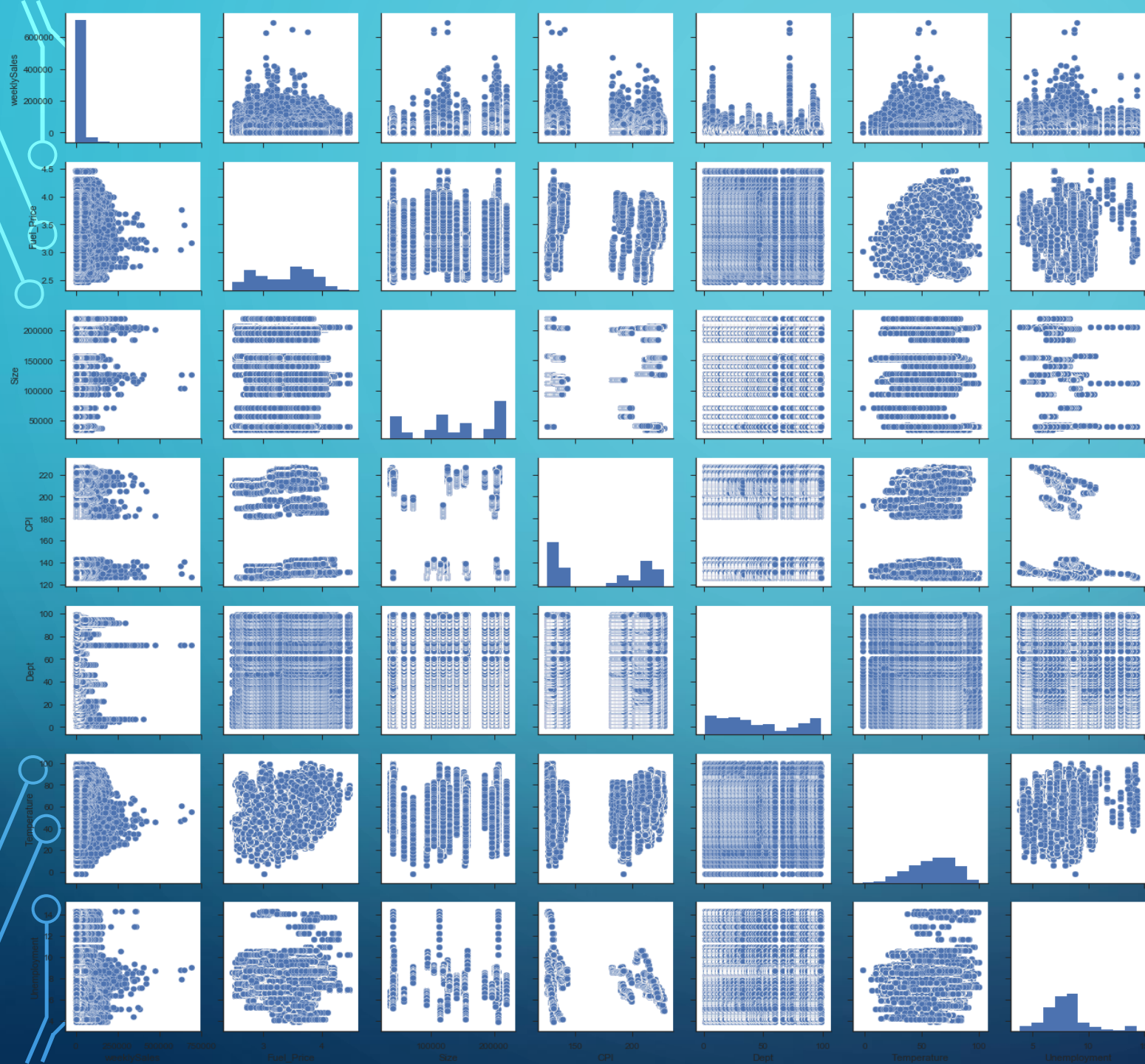
	Store	Dept	Date	Weekly Sales	isHoliday	Type	Size	Temperature	Fuel_Price	CPI	Unemployment
0	1	1	2010-02-05	24924.50	False	A	151315	42.31	2.572	211.096358	8.106
1	1	1	2010-02-12	46039.49	True	A	151315	38.51	2.548	211.242170	8.106
2	1	1	2010-02-19	41595.55	False	A	151315	39.93	2.514	211.289143	8.106
3	1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

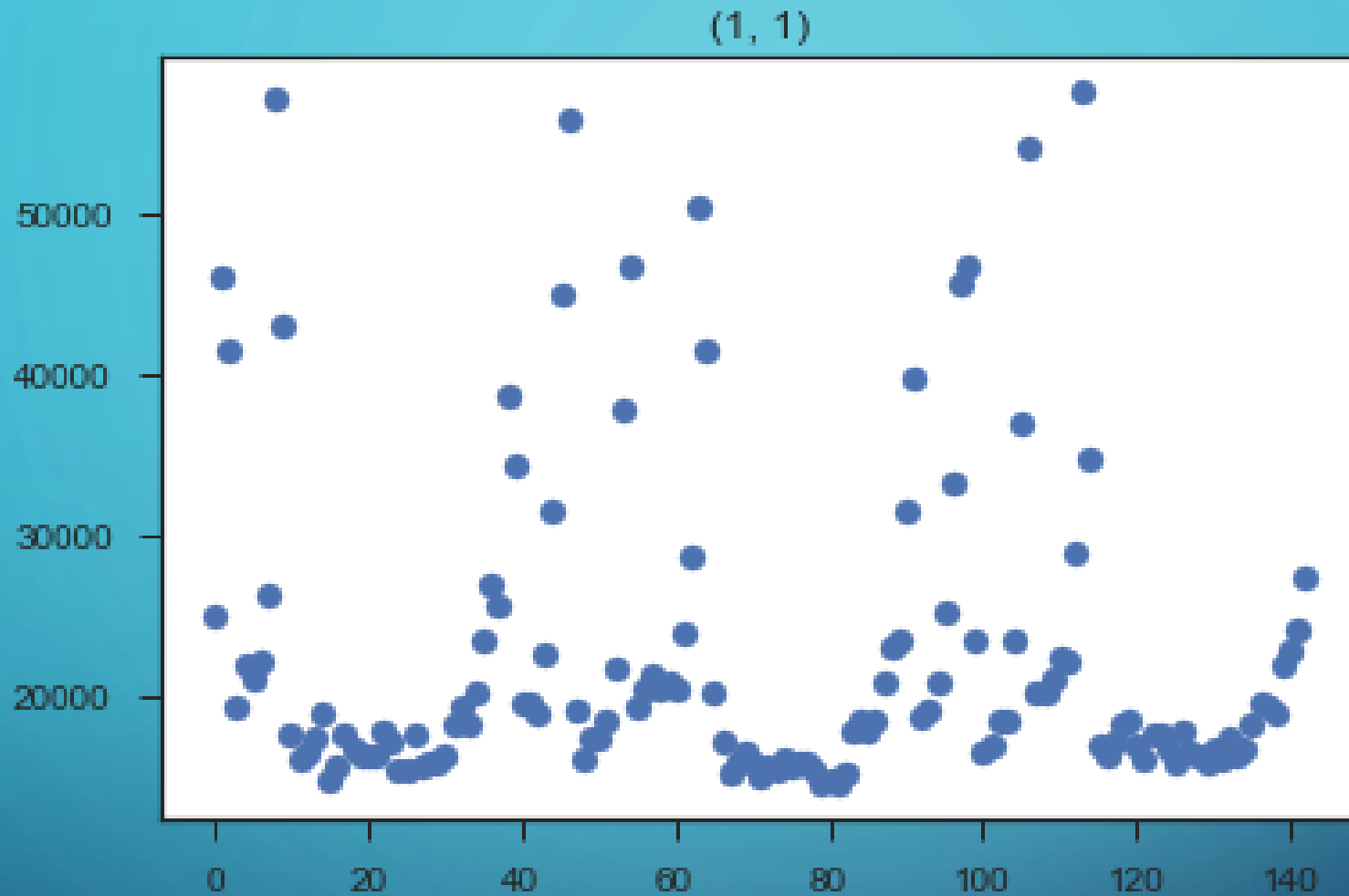
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# PAIR PLOTS

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

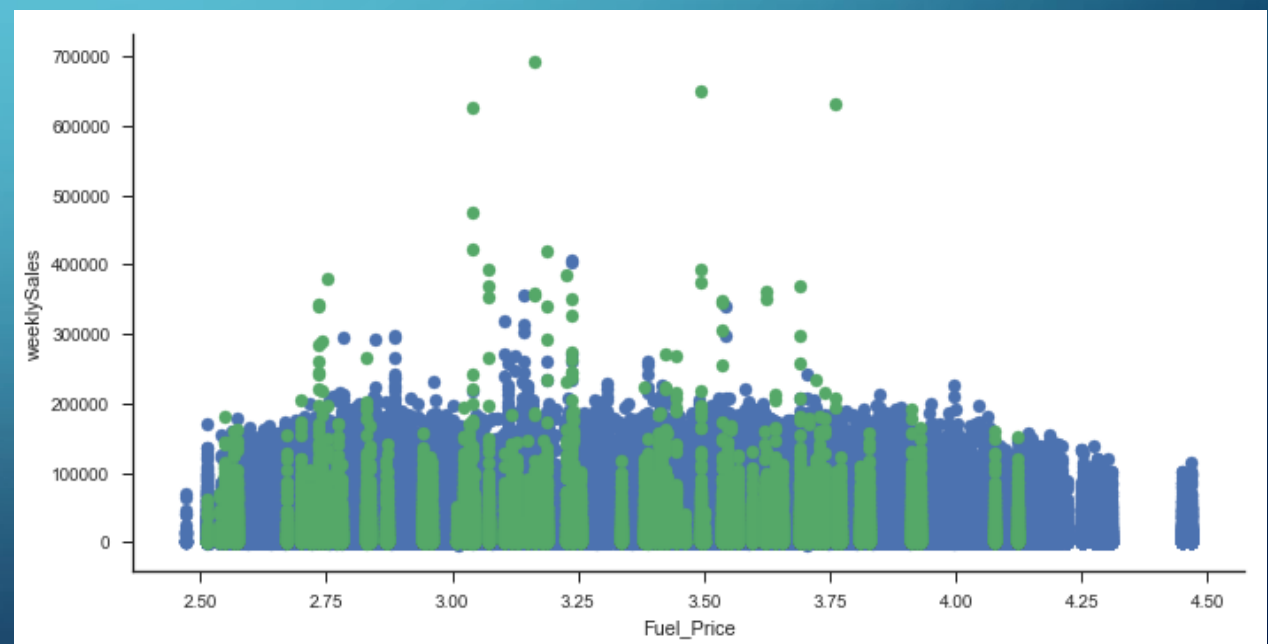
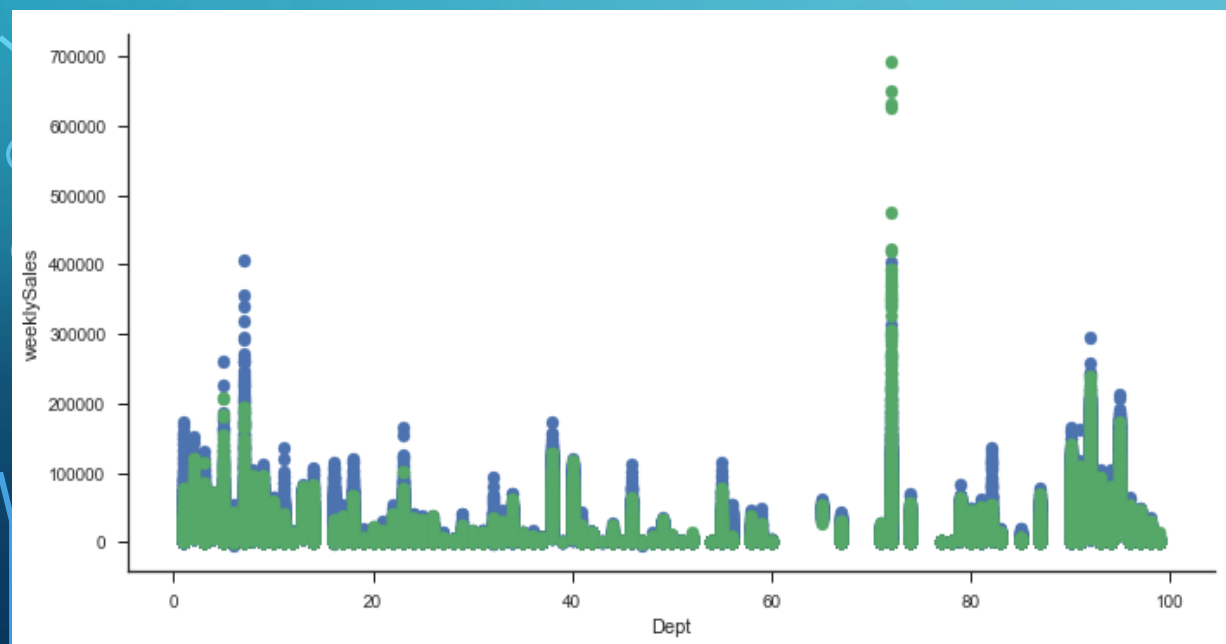
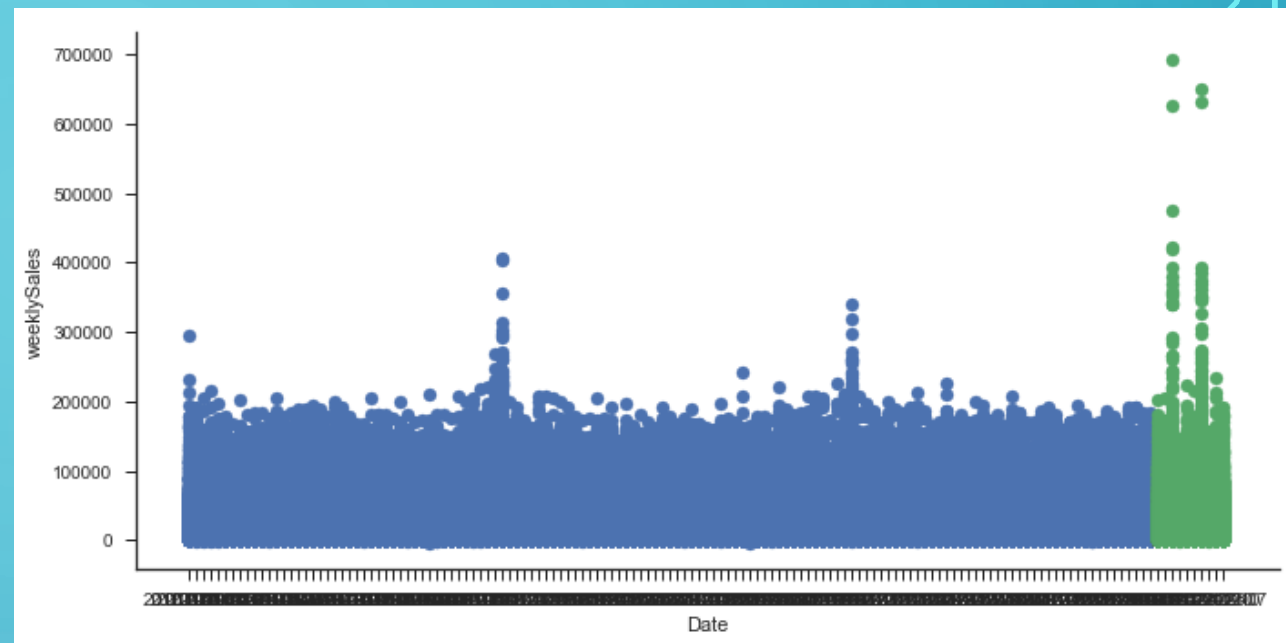
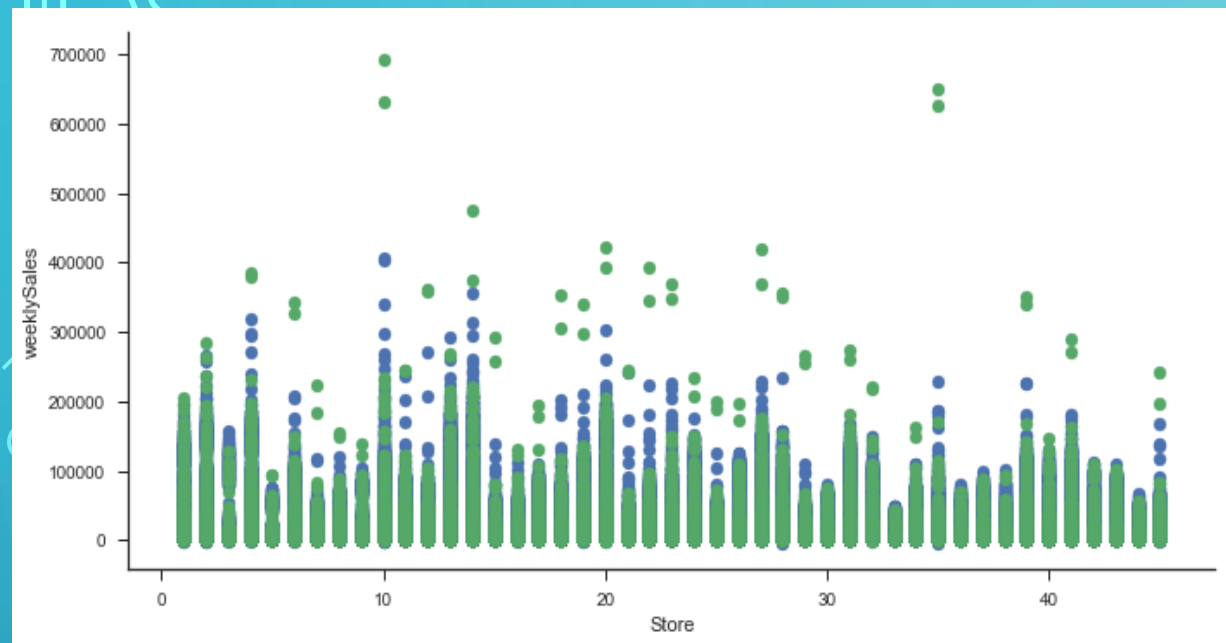


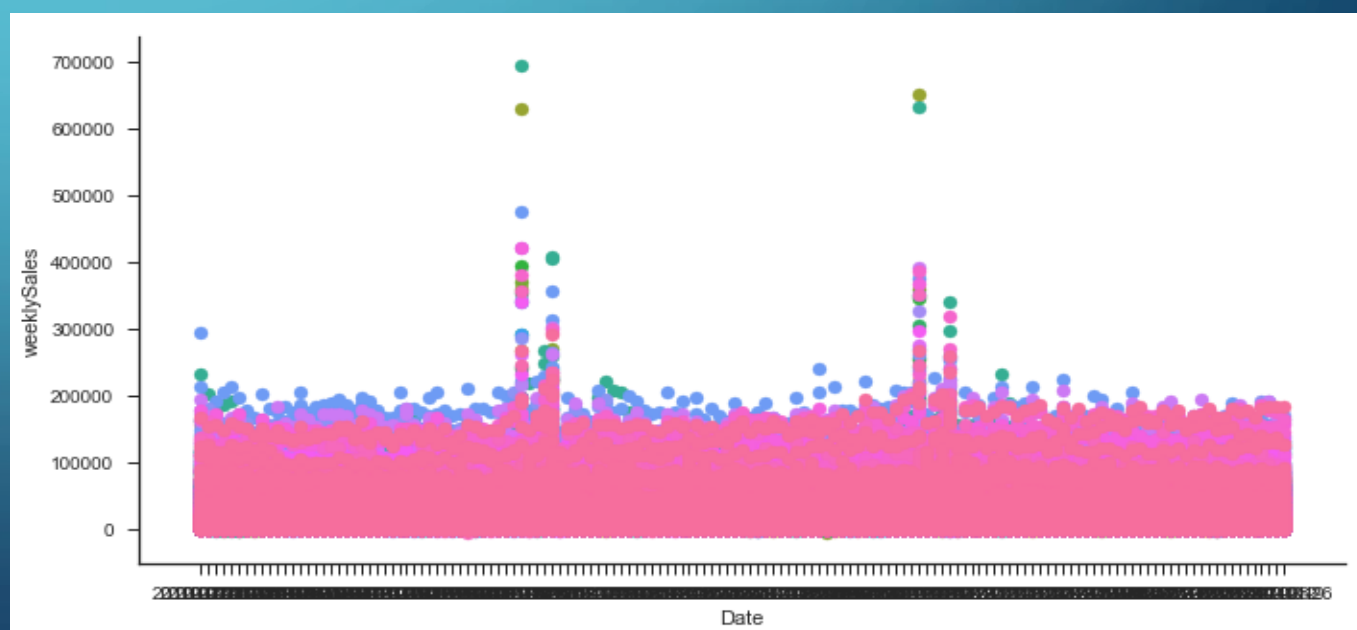
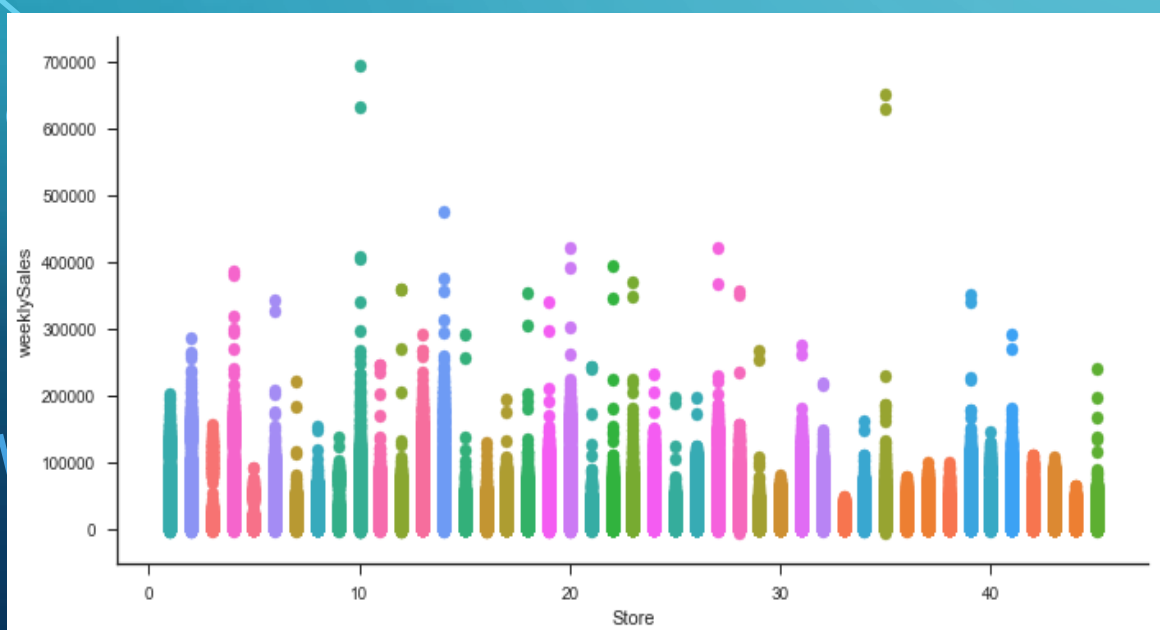
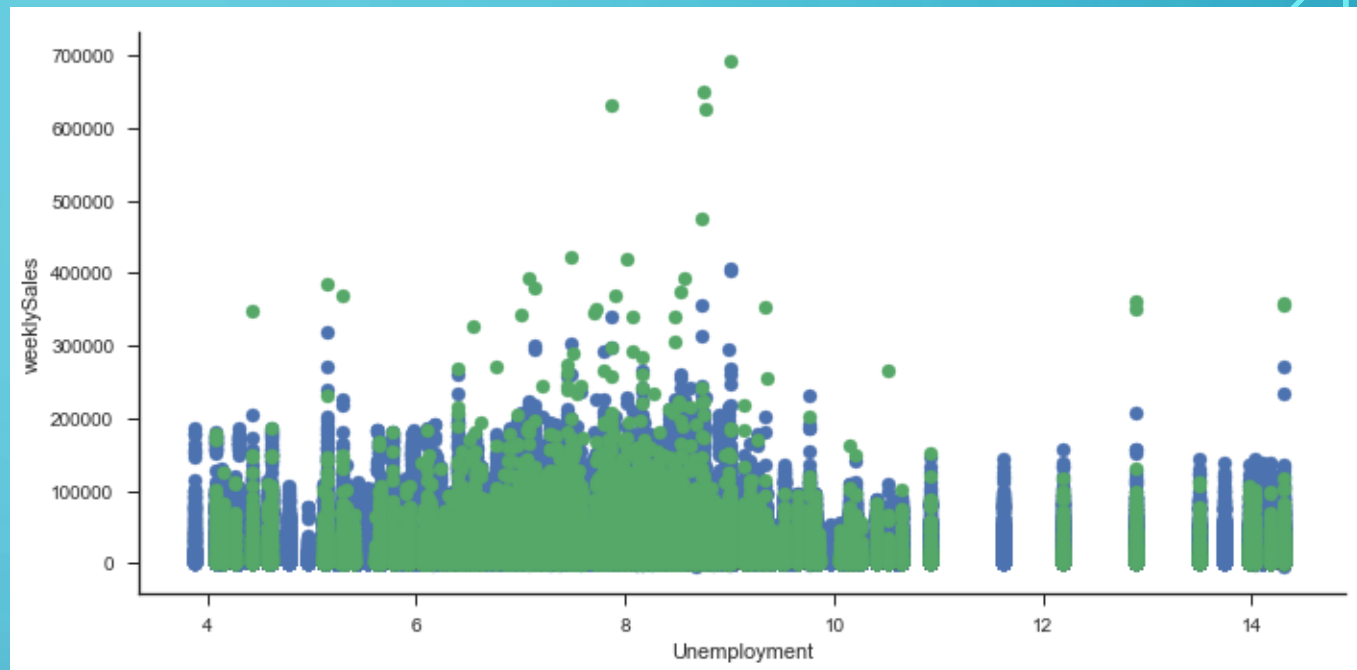
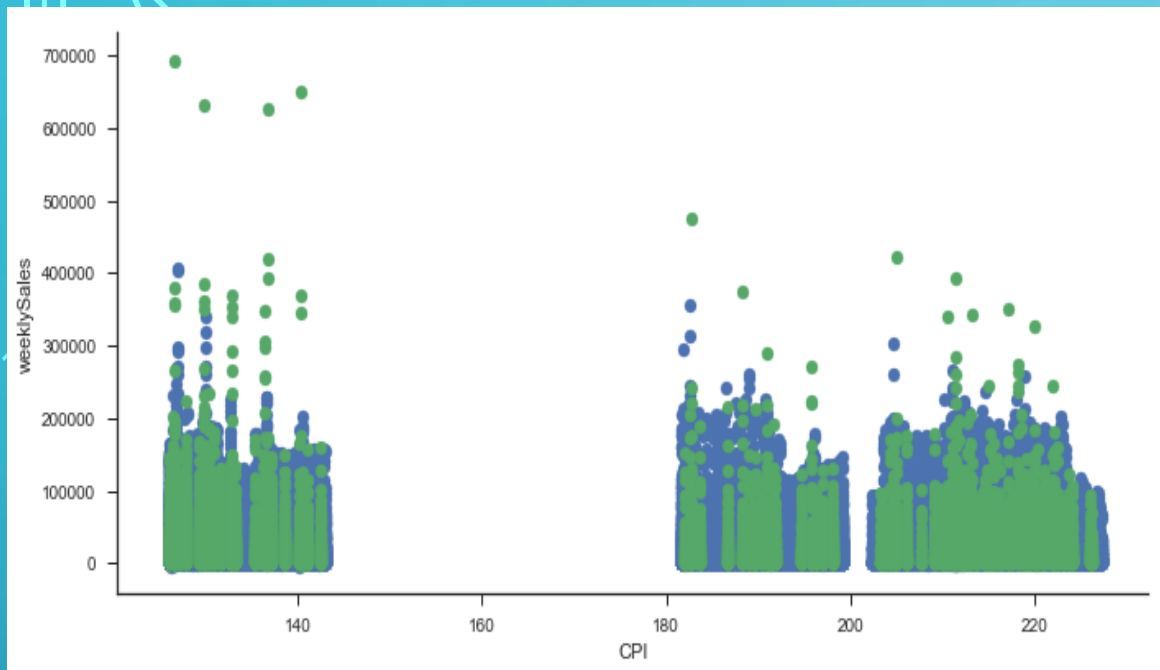


WEEKLY SALE IN DEPARTMENTS OF STORES  
GROUP BY STORE AND DEPT

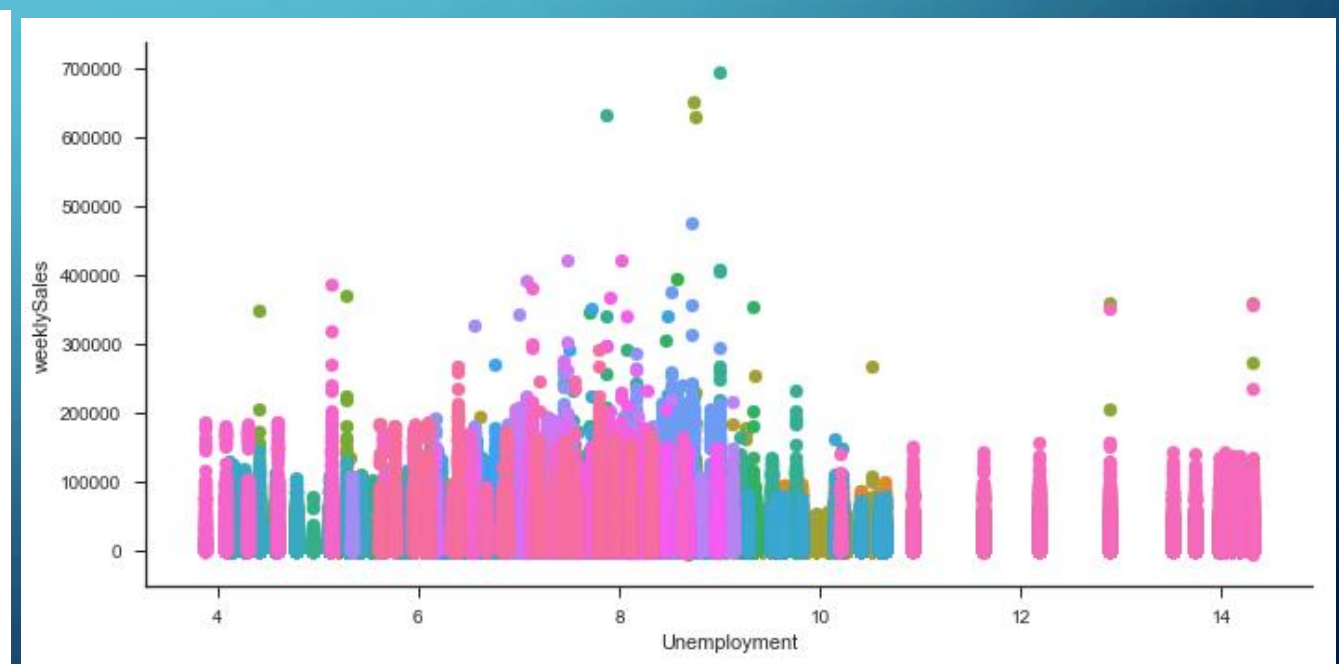
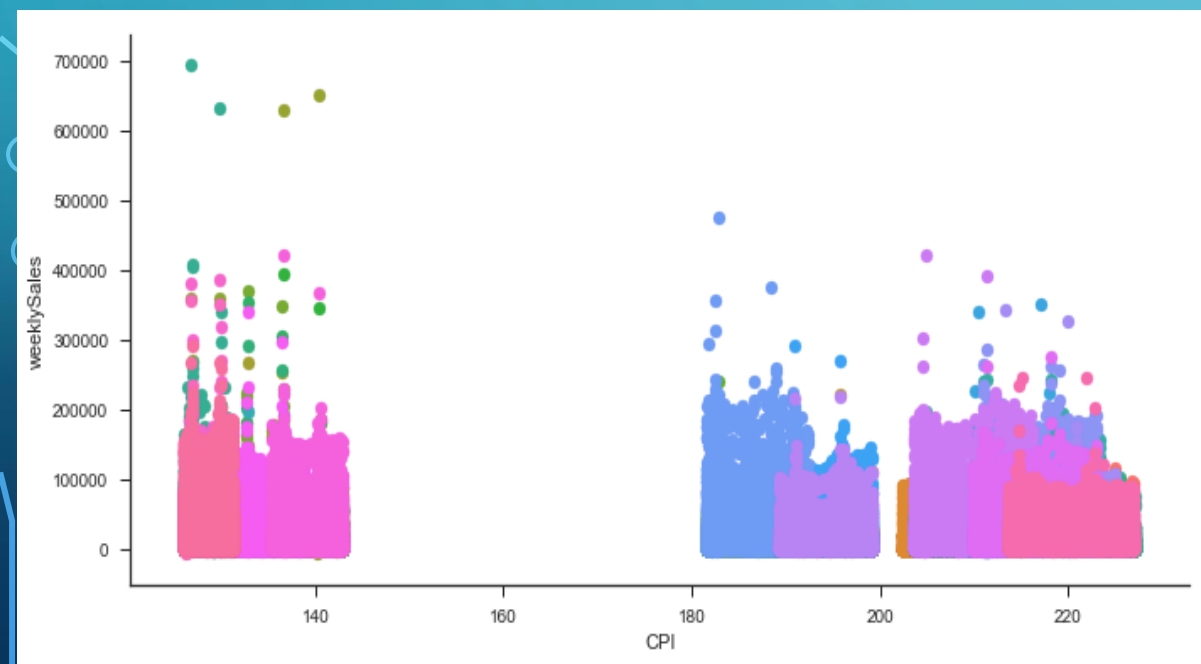
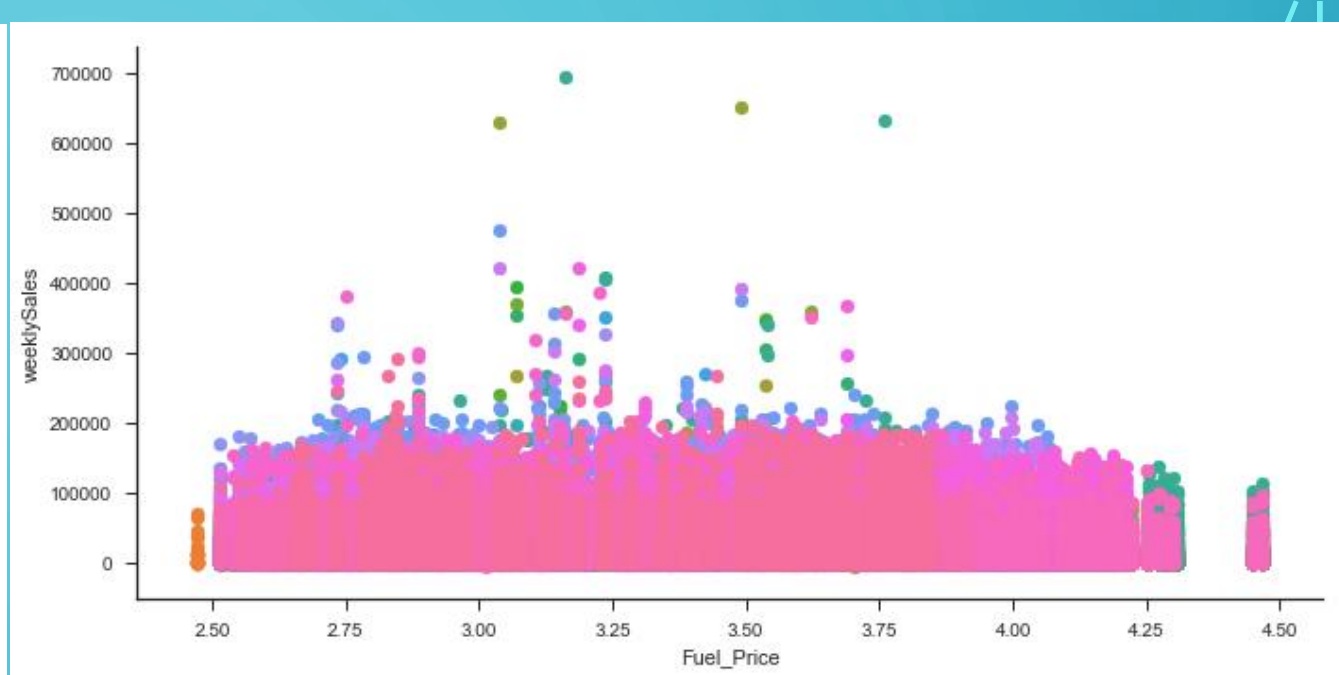
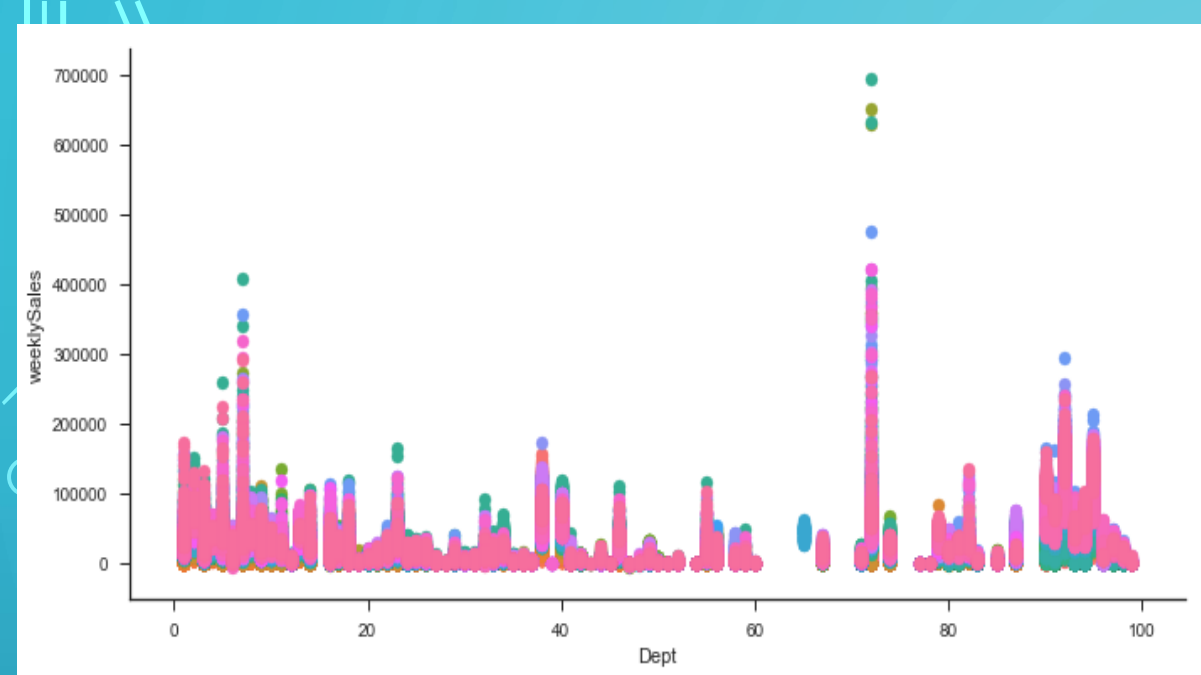
# DATA ANALYSIS

- 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.





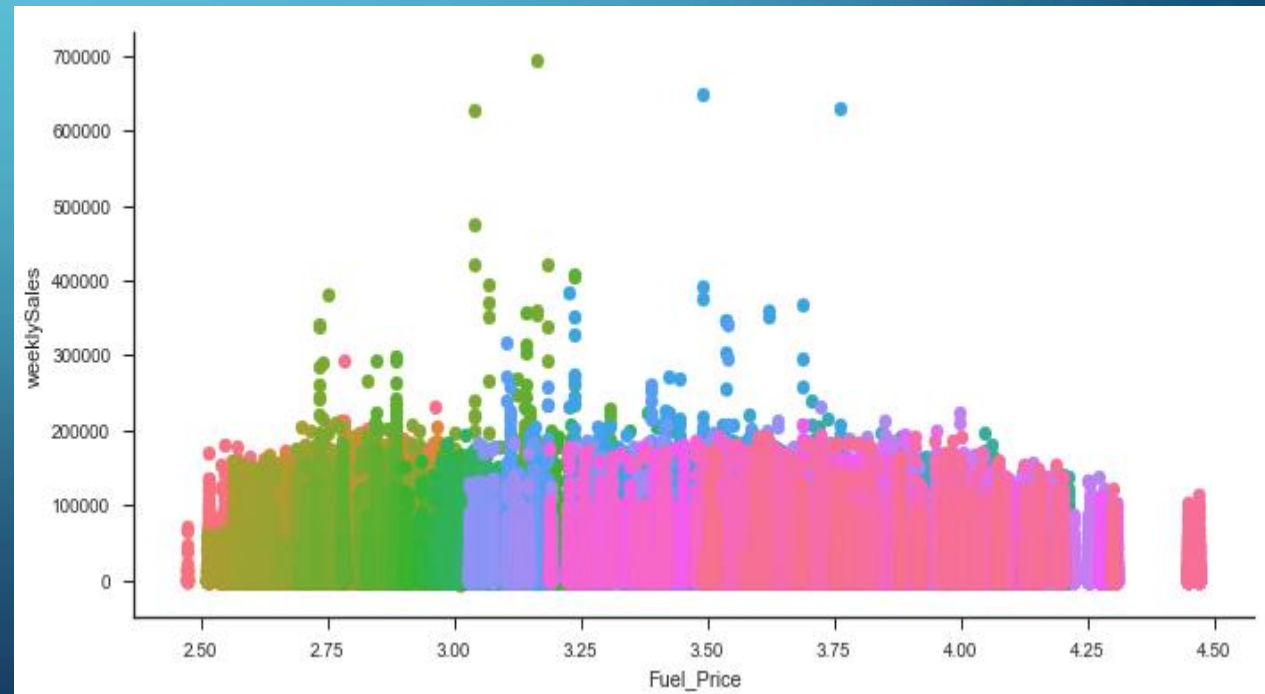
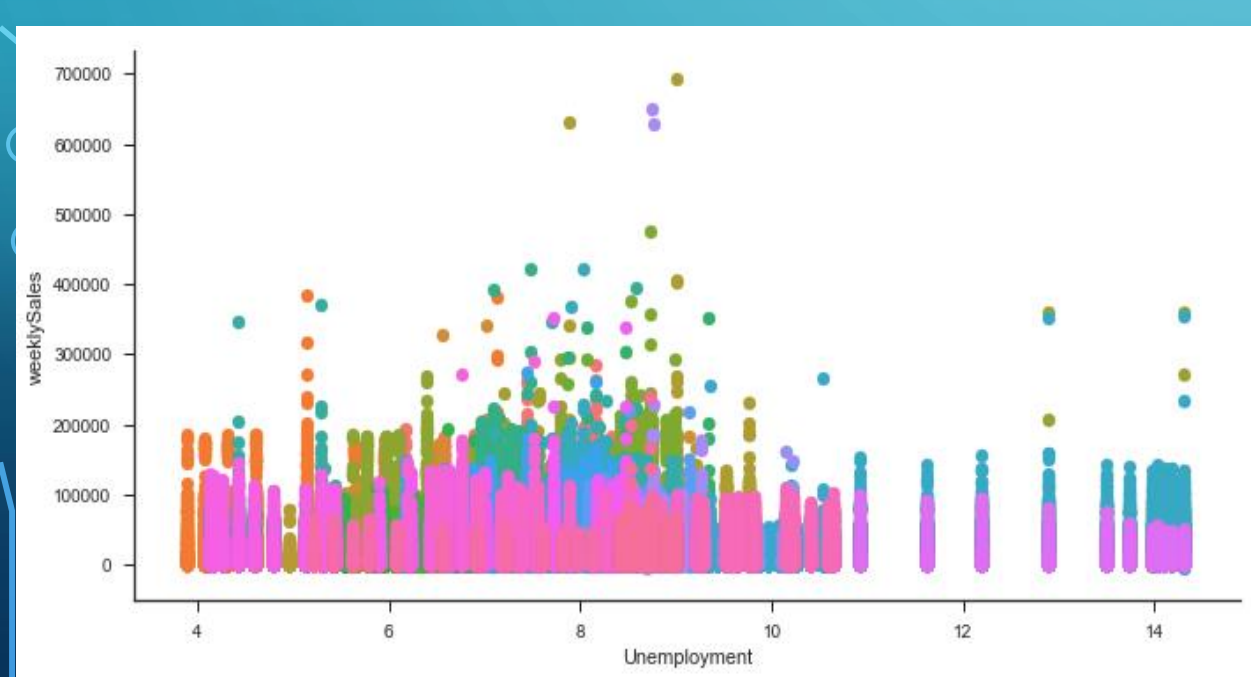
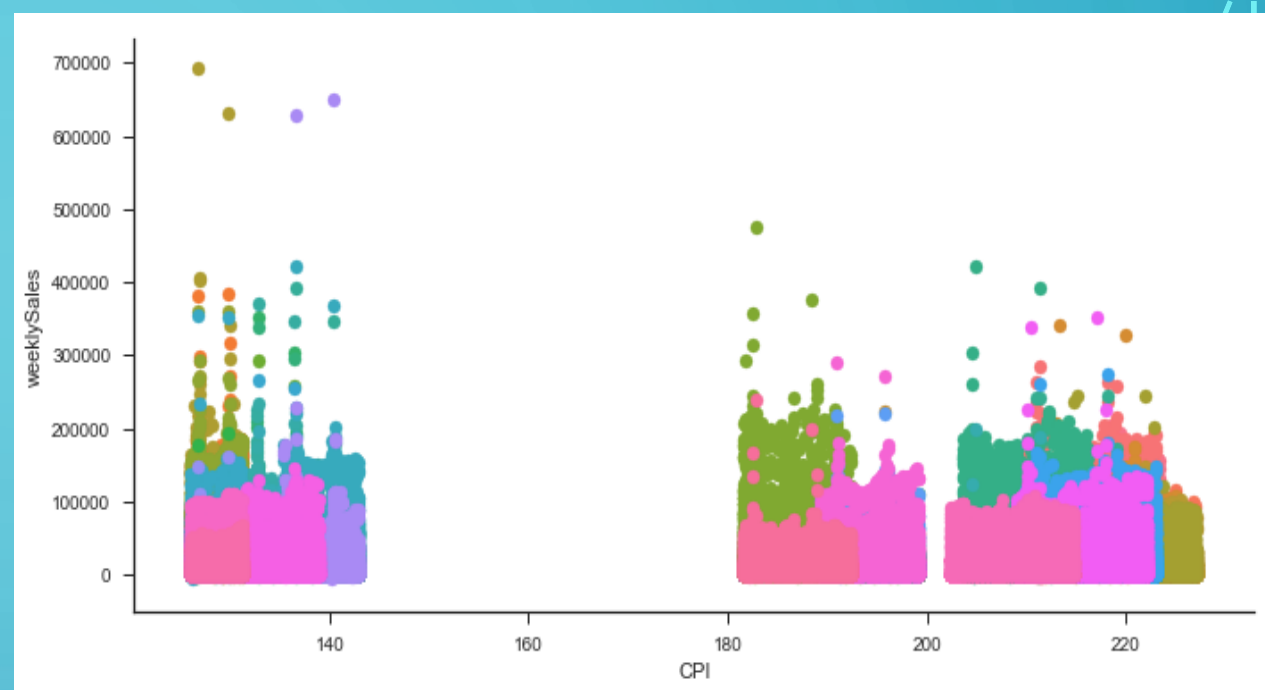
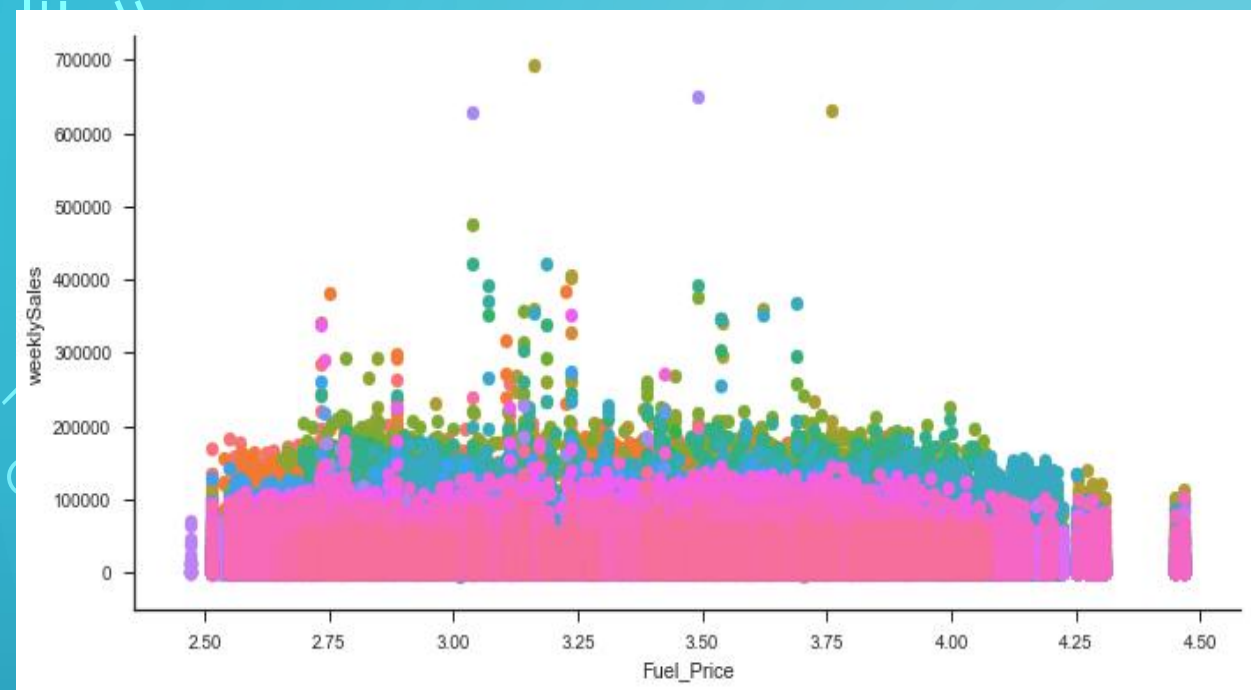


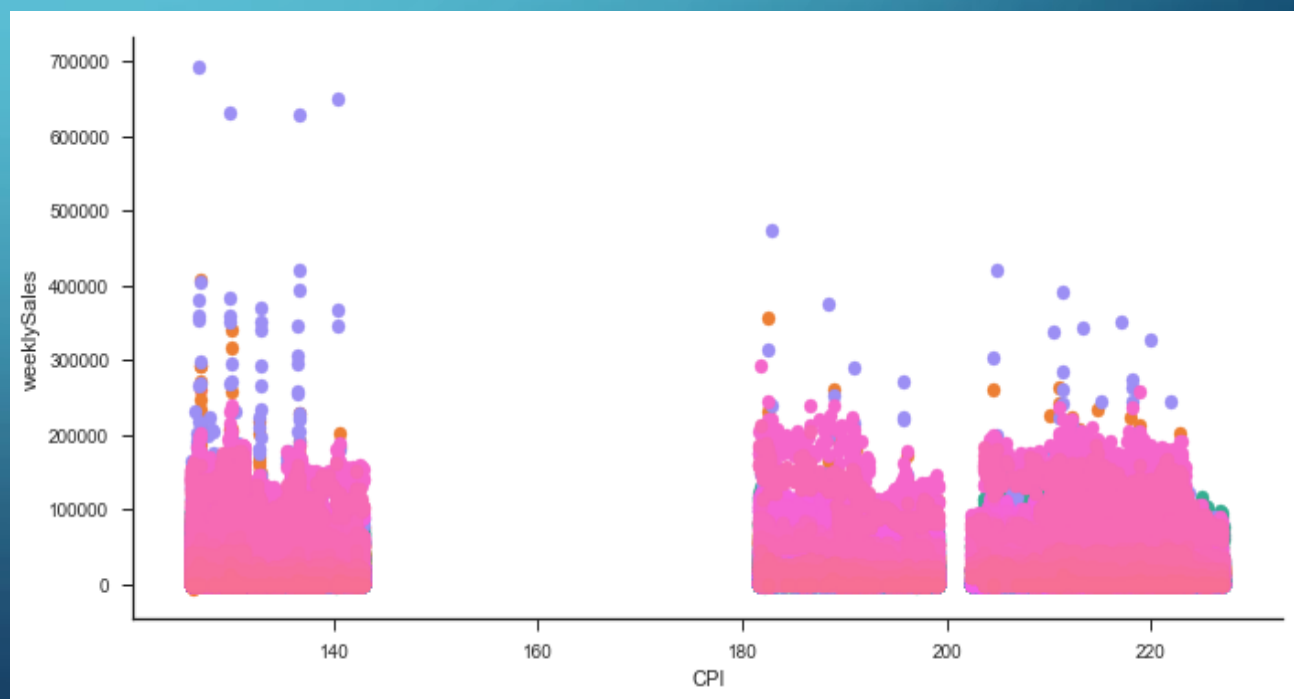
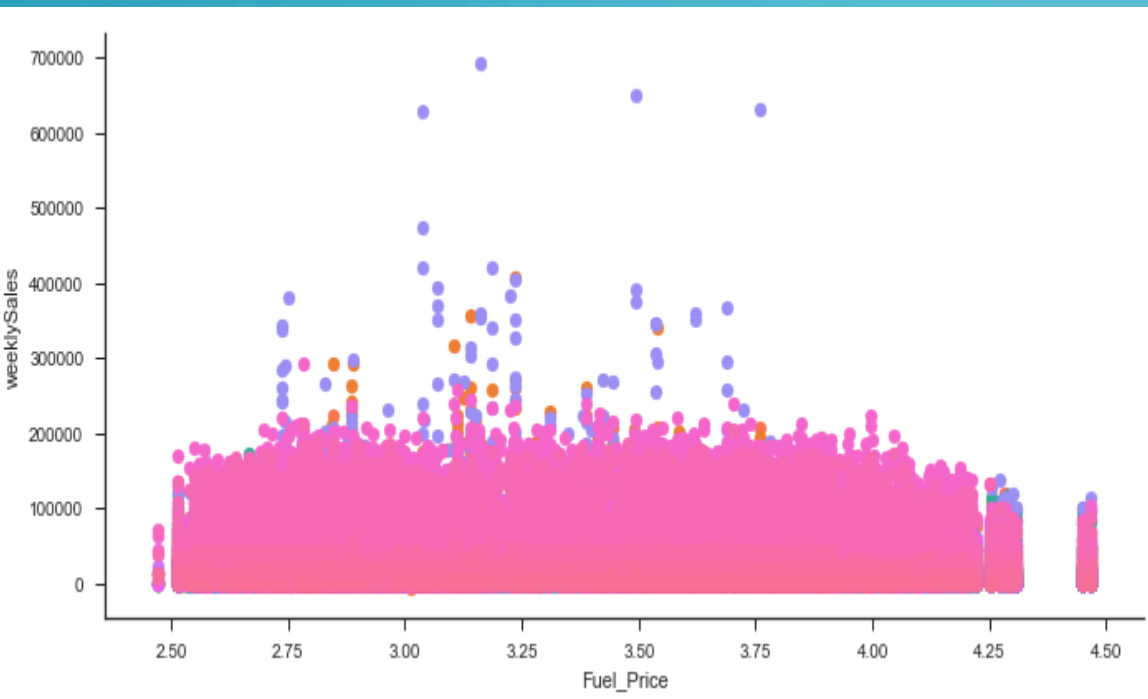
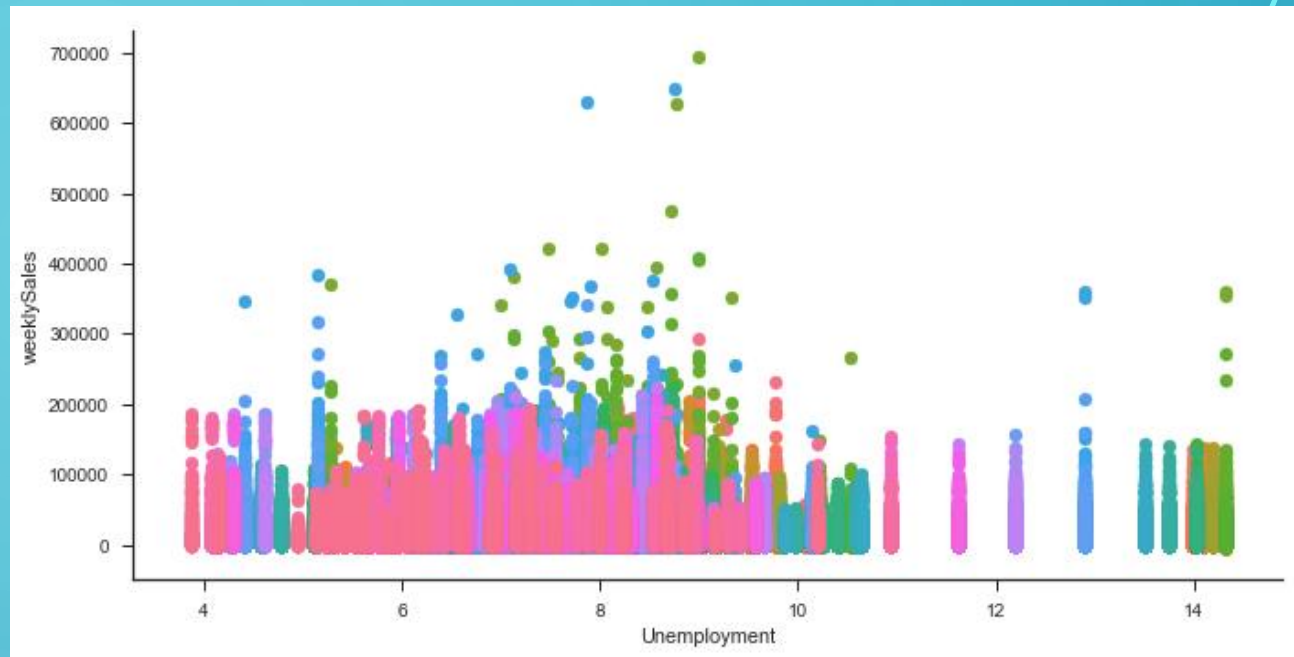
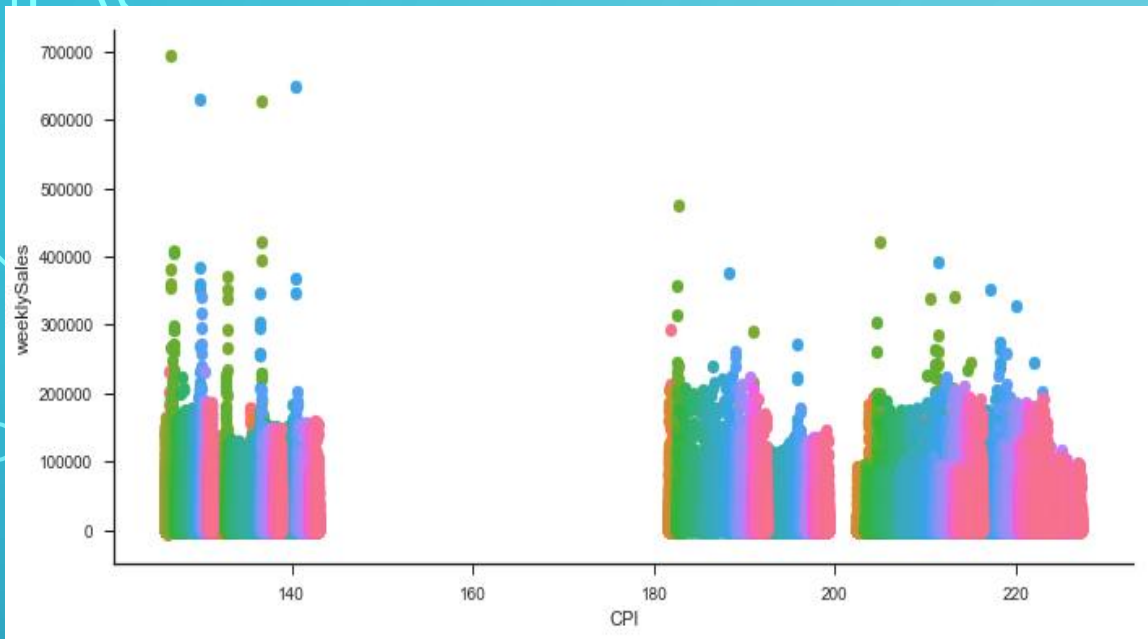


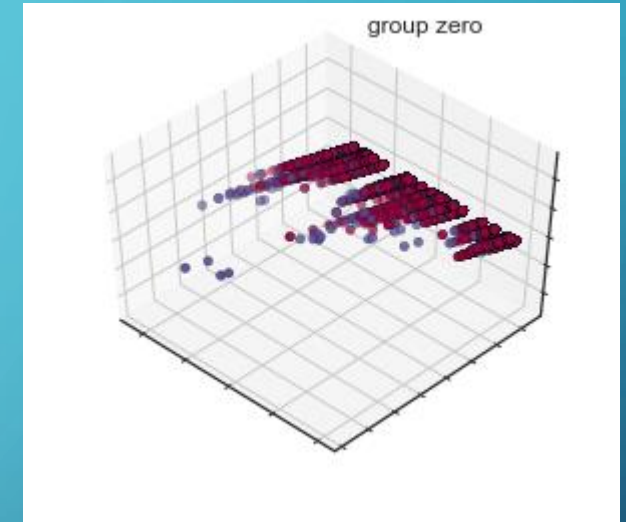
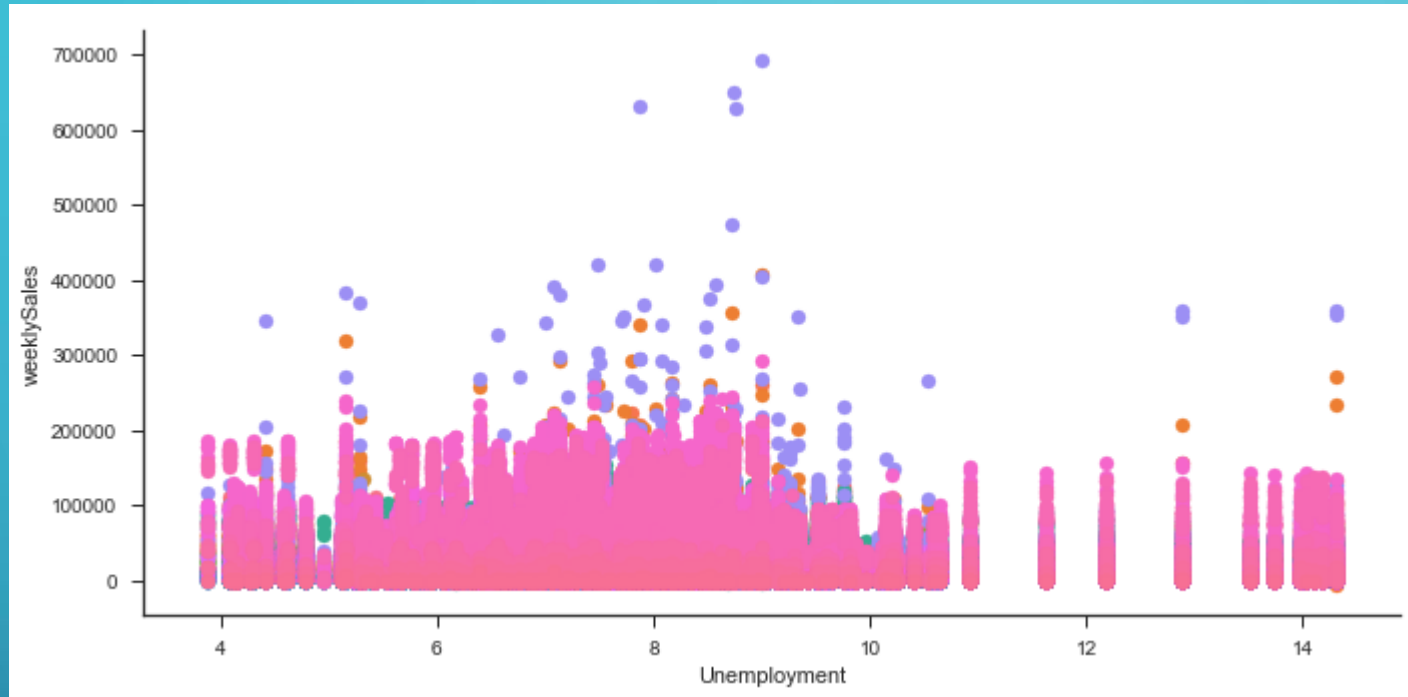


# DATA ANALYSIS

- 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 **Departments**.







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.

# 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.

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