# Project: Analyzing a Market Test

Step 1: Plan Your Analysis

1. What is the performance metric you'll use to evaluate the results of your test?

We will use profit (gross margin) as the performance metric and it needs to be at least 18% increase from the control period.

2. What is the test period?

2016 April 29 to 2016 July 21.

3. At what level (day, week, month, etc.) should the data be aggregated?

Weekly.

Step 2: Clean Up Your Data

In this step, you should prepare the data for steps 3 and 4. You should aggregate the transaction data to the appropriate level and filter on the appropriate data ranges. You can assume that there is no missing, incomplete, duplicate, or dirty data. You're ready to move on to the next step when you have weekly transaction data for all stores.

Here're the workflows I used to obtain weekly traffic data and store list data.
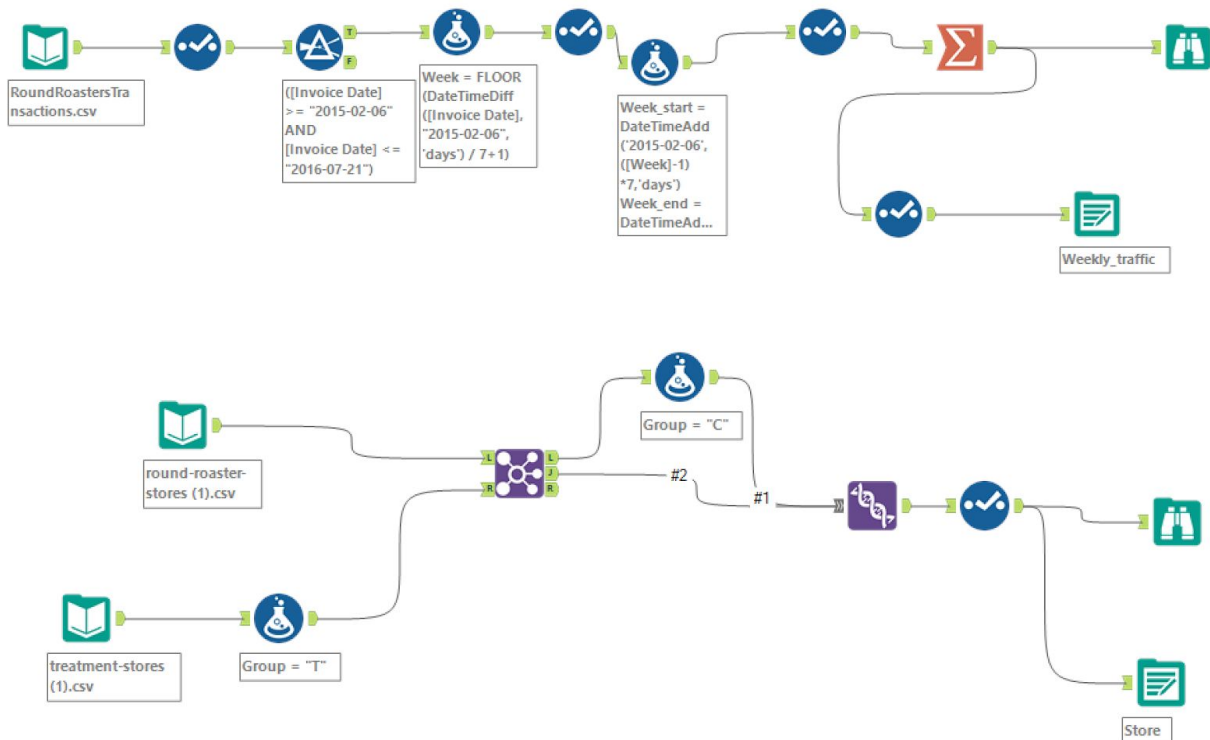
Step 3: Match Treatment and Control Units

In this step, you should create the trend and seasonality variables, and use them along with you other control variable(s) to match two control units to each treatment unit. Note: Calculate the number of transactions per store per week to calculate trend and seasonality.

Apart from trend and seasonality...
1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
    My first impression after looking at the file is that we should consider variables like Average Monthly Sales or Sq_Ft.
2. What is the correlation between your each potential control variable and your performance metric?

Record	FieldName	Sum_Sales	Sum_Gross Margin	Count	Sq_Ft	AvgMonthSales
1	Sum_Sales	1	0.998672	0.984772	-0.019093	0.766945
2	Sum_Gross Margin	0.998672	1	0.988085	-0.016551	0.768572
3	Count	0.984772	0.988085	1	-0.006979	0.771558
4	Sq_Ft	-0.019093	-0.016551	-0.006979	1	-0.047343
5	AvgMonthSales	0.766945	0.768572	0.771558	-0.047343	1

3. What control variables will you use to match treatment and control stores?
    I noticed that only AvgMonthSales has a positive correlation with Sum Gross Margin and invoice count, so I will only include it along with trends and seasonality.
4. Please fill out the table below with your treatment and control stores pairs:

| Treatment Store	Control Store 1	Control Store 2
1664	1964	7162
1675	1807	7584
1696	1863	7334
1700	7037	2014
1712	8162	7434
2288	2568	9081
2293	12686	9639
2301	9238	3235
2322	3235	9388
2572	2341	3102
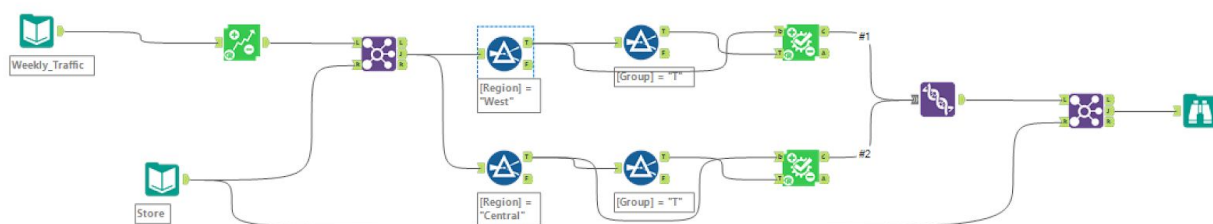
Step 4: Analysis and Writeup

Conduct your A/B analysis and create a short report outlining your results and
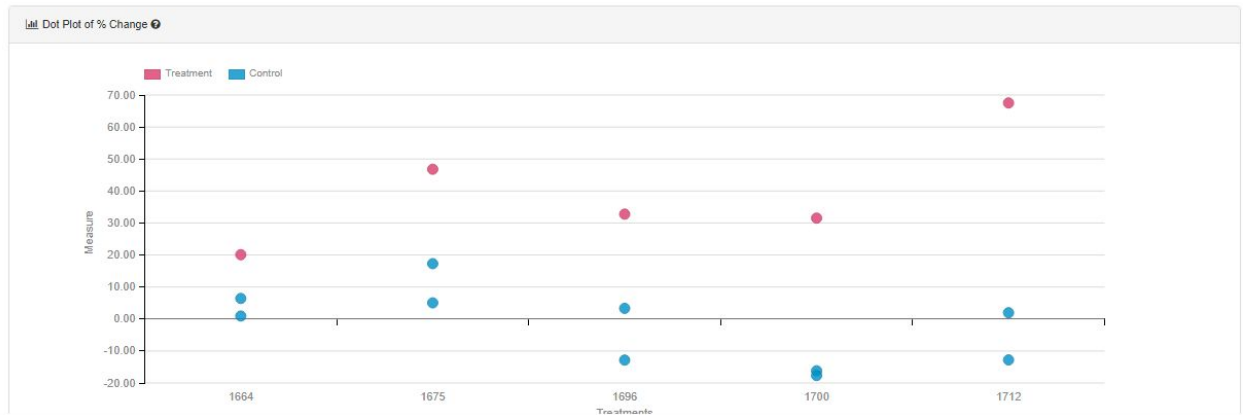
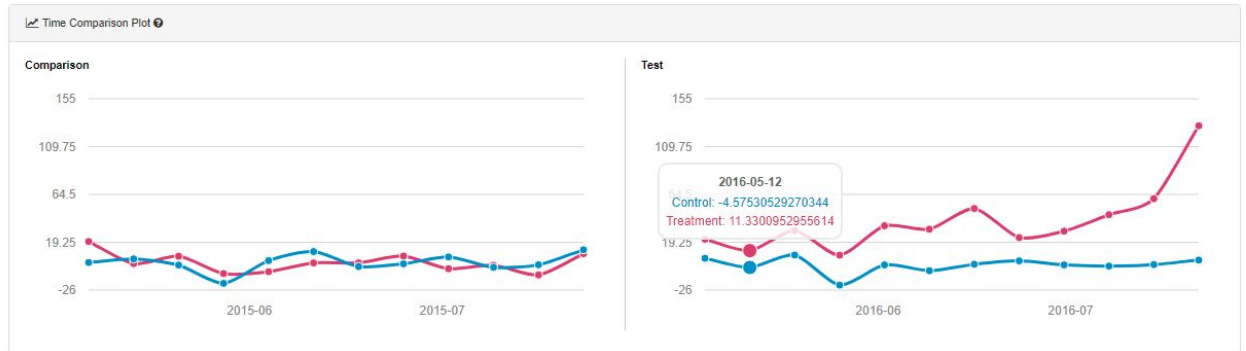*recommendations. (250 words limit)*

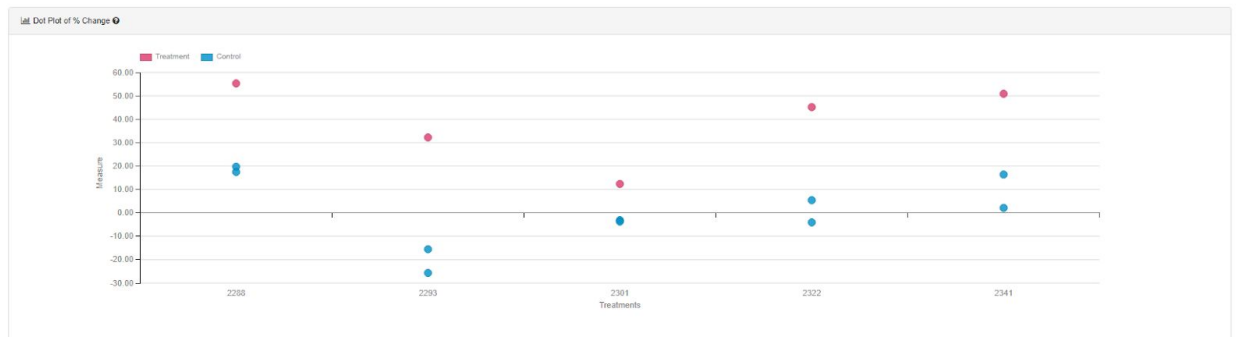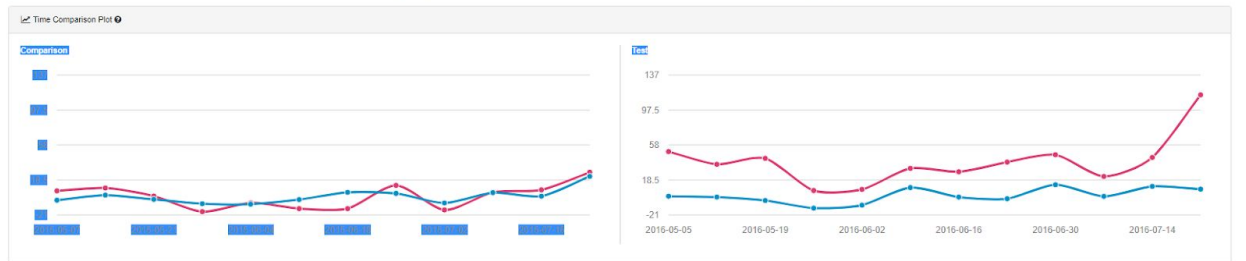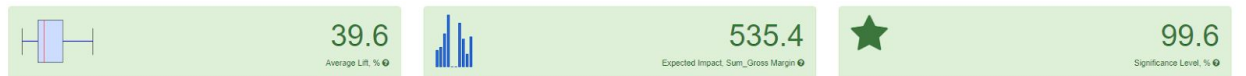*Answer these questions. Be sure to include visualizations from your analysis:*
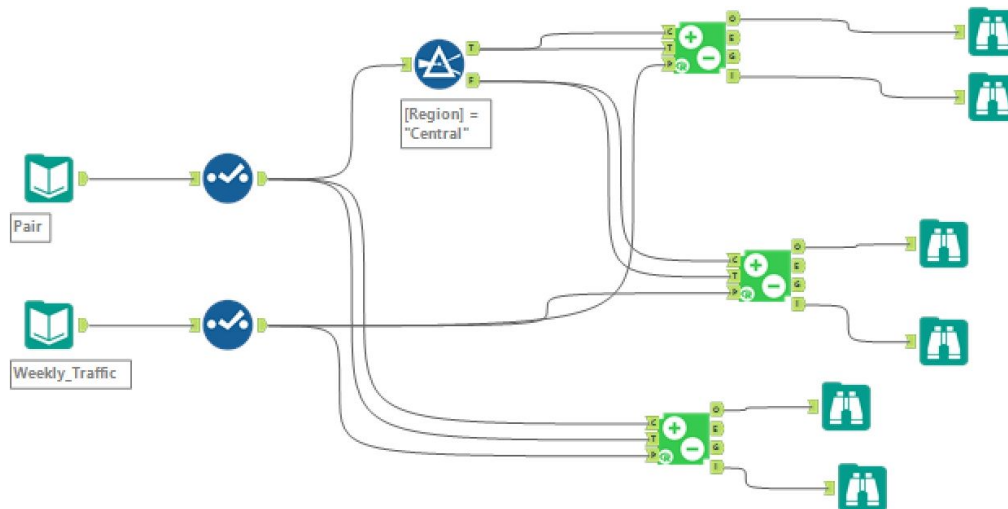
The company should roll out the new menu , in both Central and West, the lifts were both around 40% - both exceeding our expectation of 18% with the significance levels shown below.
Central:

Time: 2021-01-29 21:32:55

45.1	860.5	99.6
Average Lift, % ❓	Expected Impact, Sum_Gross Margin ❓	Significance Level, % ❓

📈 Time Comparison Plot ❓

Comparison

155
109.75
64.5
19.25
-26

2015-06   2015-07

Test

155
109.75

2016-05-12
Control: -4.57530529270344
Treatment: 11.3300952955614

19.25
-26

2016-06   2016-07

📊 Dot Plot of % Change ❓

■ Treatment   ■ Control

70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00

Measure

1664   1675   1696   1700   1712
Treatments

West

39.6	535.4	99.6
Average Lift, % ❓	Expected Impact, Sum_Gross Margin ❓	Significance Level, % ❓

📈 Time Comparison Plot ❓

Comparison

Test

137
97.5
58
18.5
-21

2016-05-05   2016-05-19   2016-06-02   2016-06-16   2016-06-30   2016-07-14

📊 Dot Plot of % Change ❓

■ Treatment   ■ Control

60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00

Measure

2288   2293   2301   2322   2341
Treatments

Overall:

42.3 Average Lift, %	**697.9** Expected Impact, Sum_Gross Margin	**100** Significance Level, %

Time Comparison Plot

Comparison

Test

2016-06-30
Control: 5.48160829041272
Treatment: 38.3331755488356

Dot Plot of % Change

Before you Submit

Please check your answers against the requirements of the project dictated by the rubric here. Reviewers will use this rubric to grade your project.