Project: A/B Test a New Menu Launch

Step 1: Plan Your Analysis

To perform the correct analysis, you will need to prepare a data set. (250 word limit)
Answer the following questions to help you plan out your analysis:

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

   gross margin is the performance metric you'll use to evaluate the results of your test

2. **What is the test period?**

   The test period is 12 weeks, from 2016-April-29 to 2016-July-21

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

   The data should be aggregated at the week level.

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.
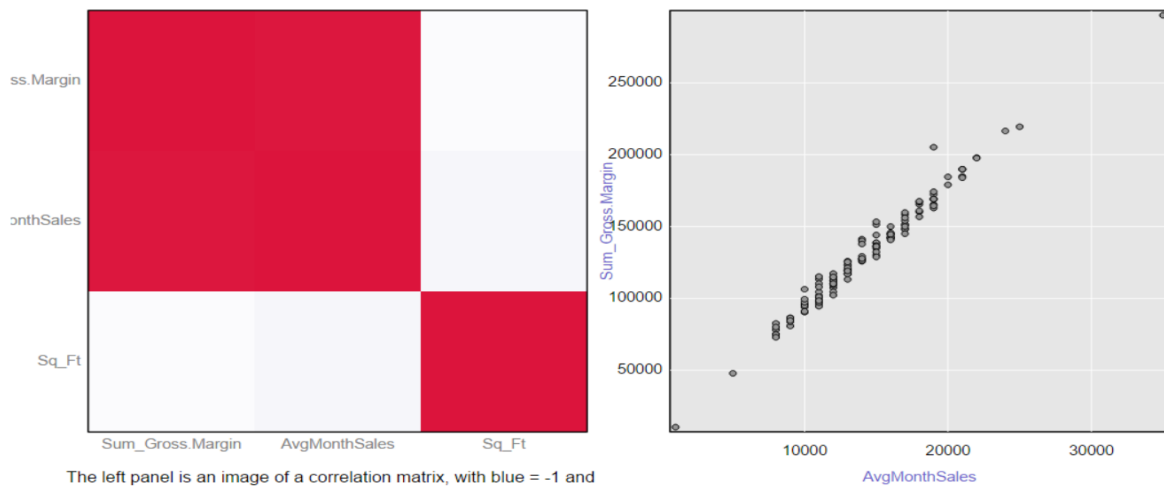
Step 3: Match Treatment and Control Units

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.**

   The only control variable that needs to be considered is Average monthly sales, the association analysis is as below

Association Analysis for Sum gross margin and Avg monthly sales

The left panel is an image of a correlation matrix, with blue = -1 and

2. **What is the correlation between each potential control variable and your performance metric?**

    The correlation between control variable and the performance metric is 0.99

3. **What control variables will you use to match treatment and control stores?**

    The control variable used to match the treatment and control stores are avg monthly sales, region and trend & seasonality

4. **Please fill out the table below with your treatment and control stores pairs:**

Treatment Store	Control Store 1	Control Store 2
2288	9081	2568
2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434

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:

1. **What is your recommendation - Should the company roll out the updated menu to all stores?**

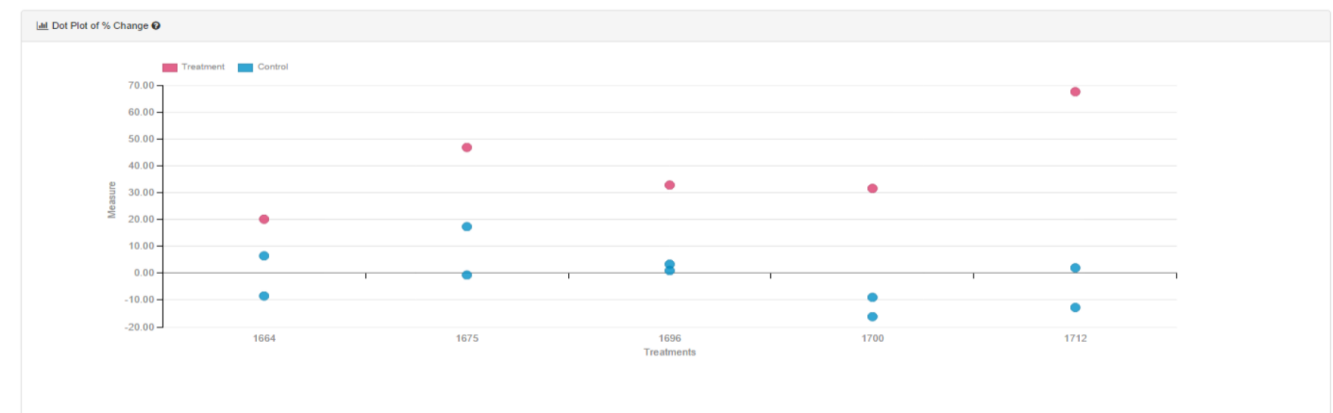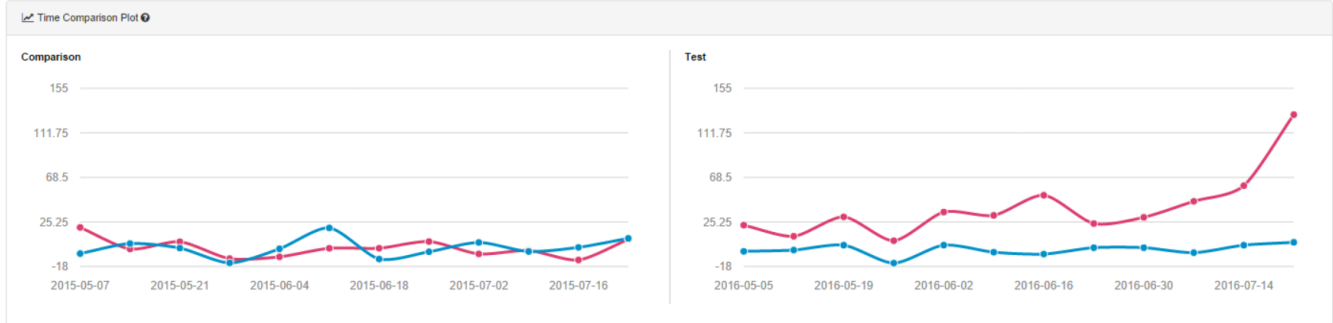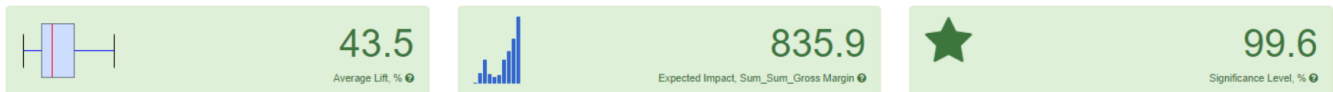   *The company should rollout the updated menu to all the stores*

2. **What is the lift from the new menu for West and Central regions (include statistical significance)?**
   The lift in the new menu are as below for the regions

Region	Lift	Statistical significance
Central region	43.50%	99.6%
West region	37.90%	99.5%

AB ANALYSIS FOR CENTRAL STORES

AB ANALYSIS FOR WEST STORES

	37.9		526.5	★	99.5
	Average Lift, %		Expected Impact, Sum_Sum_Gross Margin		Significance Level, %

Time Comparison Plot

Dot Plot of % Change
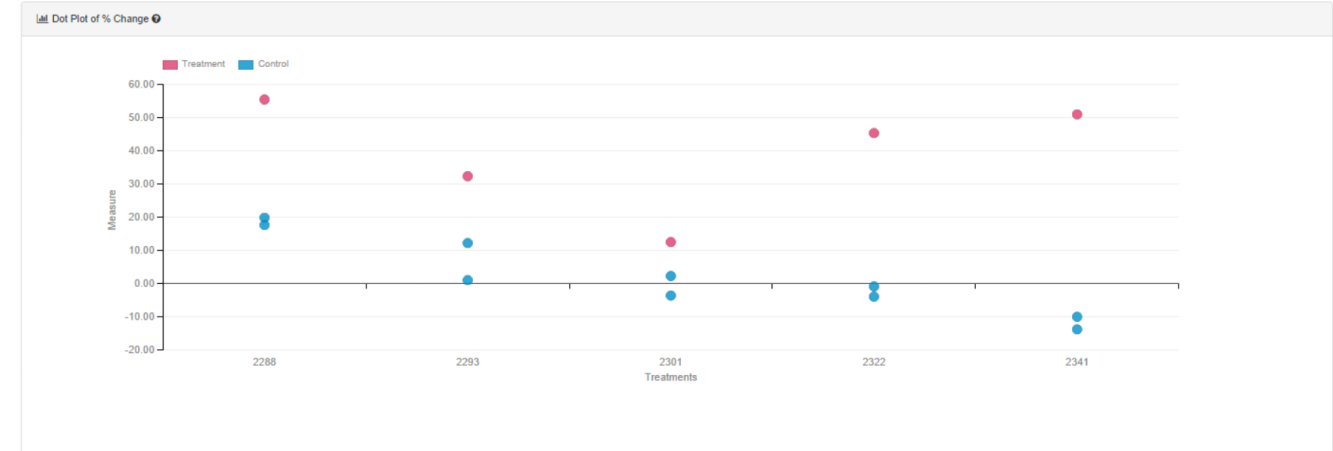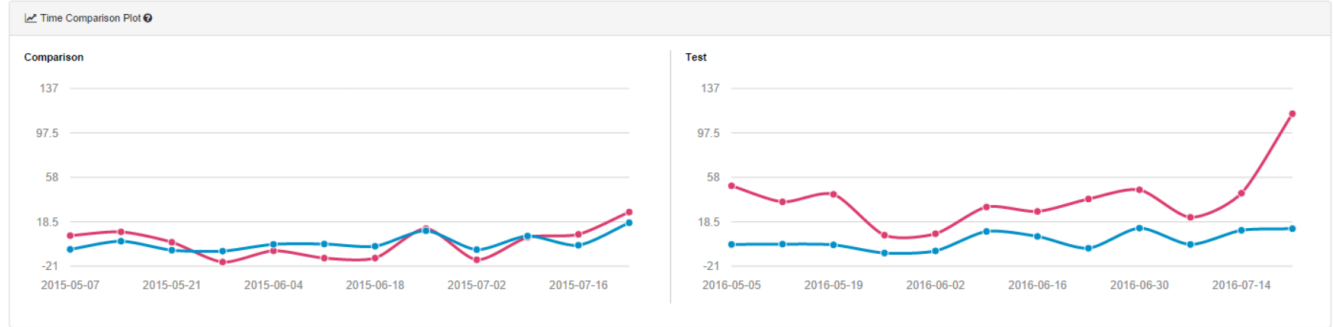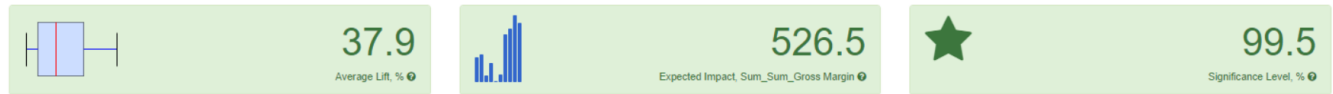
3. What is the lift from the new menu overall?

The overall lift from the new menu is 39.7%

AB ANALYSIS OVERALL

	39.7		671.3	★	100
	Average Lift, %		Expected Impact, Sum_Gross_Margin		Significance Level, %

Time Comparison Plot