

Project: Analyzing a Market Test

Complete each section. When you are ready, save your file as a PDF document and submit it [here](#).

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?

I will use gross margin as the performance metric to evaluate my analysis.

2. What is the test period?

The test period ran for a period of 12 weeks starting from 2016-April-29 to 2016-July-21.

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

I aggregated the data at week level because this period will give enough time to compare stores

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 your 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.

I believe, square feet and Average Monthly Sales for each store along with trend and seasonality should be considered as control variables.

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

As you can see from the table below, the variable Square Feet is not a good control variable as it is not highly correlated to the Gross Margin, however, the Average Monthly Sales for store is highly correlated to Gross Margin for each store (correlation coefficient of 0.9909).

Full Correlation Matrix

	Sq_Ft	AvgMonthSales	Sum_sum_Gross.Margin
Sq_Ft	1.000000	-0.046967	-0.024255
AvgMonthSales	-0.046967	1.000000	0.990982
Sum_sum_Gross.Margin	-0.024255	0.990982	1.000000

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

I will use Sales along with trend and seasonality as control variable because it is highly correlated to performance metrics.

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

Treatment Store	Control Store 1	Control Store 2
1664	2572	7162
1675	2952	9968
1696	11668	7534
1700	10068	2902
1712	12486	10468
2288	2214	1580
2293	12219	12686
2301	1964	9238
2322	6992	2409
2341	3185	2568

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?

Below I have brought the report output for the 2 regions of central and west respectively.

AB Test Analysis for sum_Gross Margin

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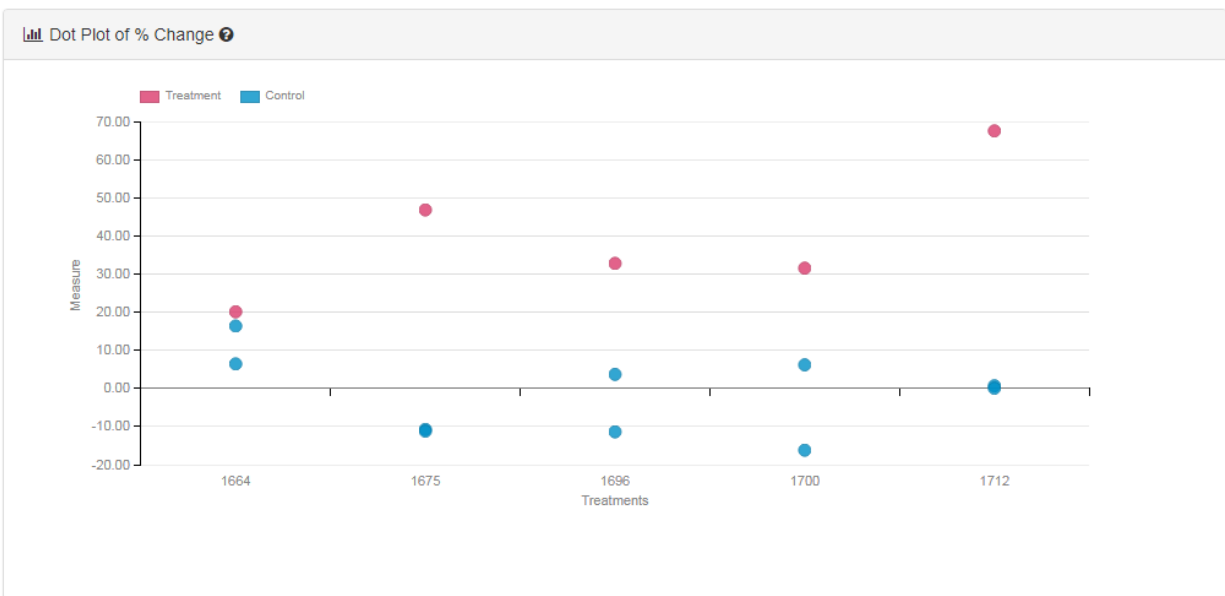
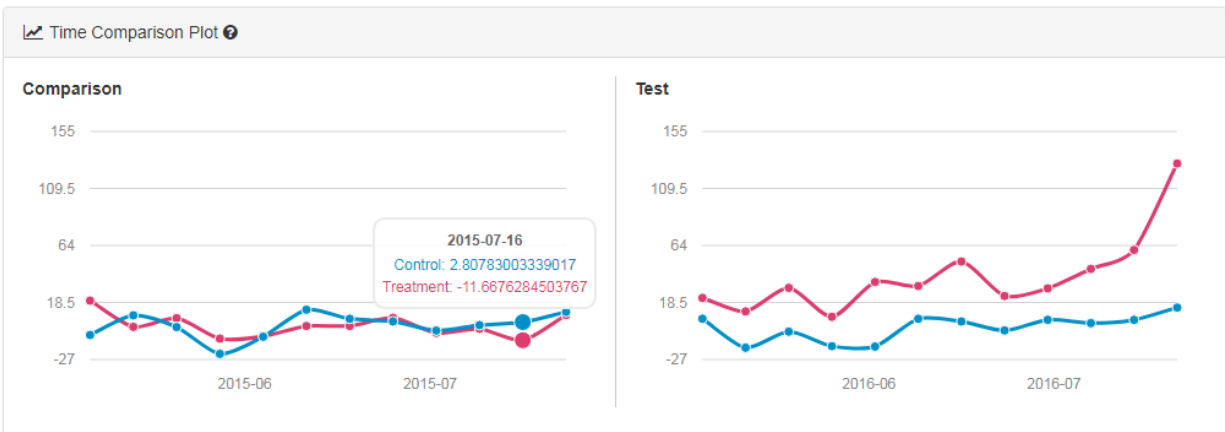


Figure 1- AB test analysis for Central Region Stores

AB Test Analysis for sum_Gross Margin

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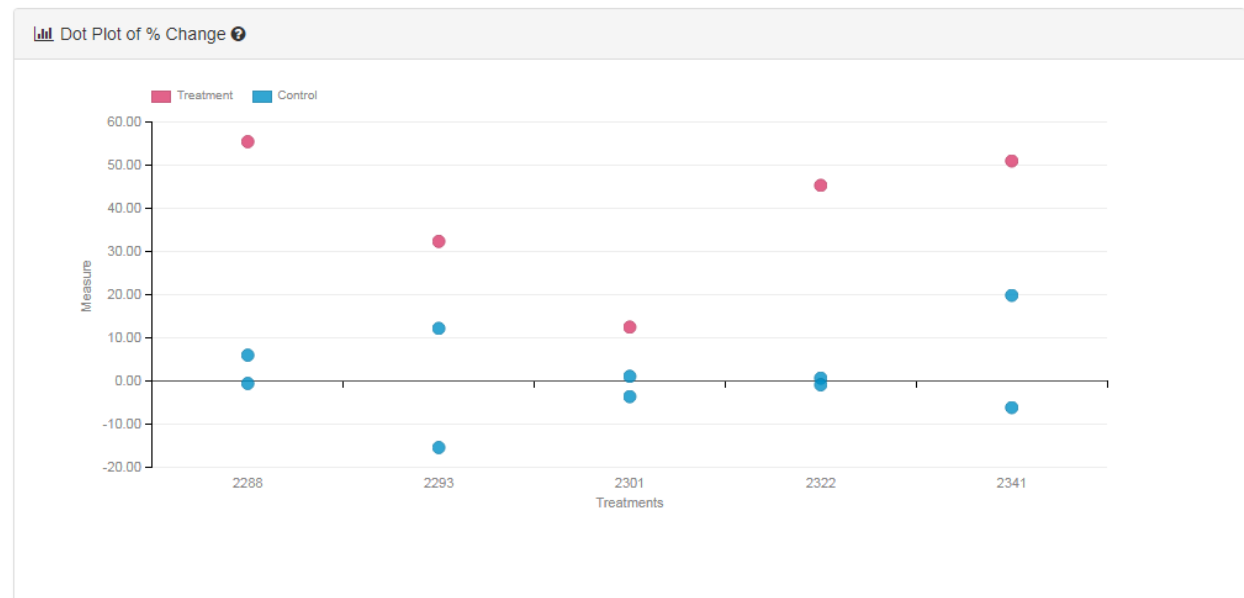
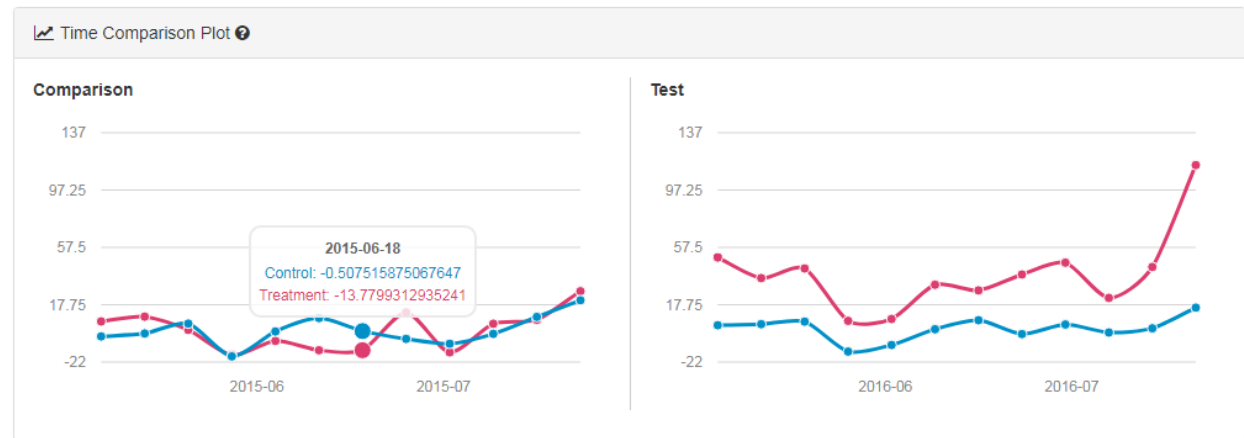
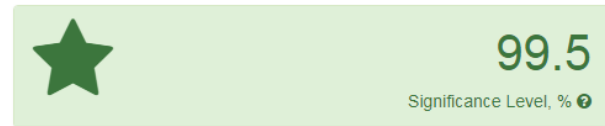
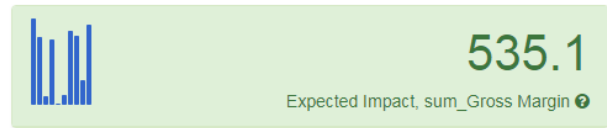
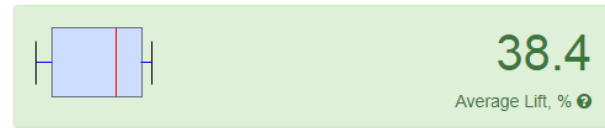


Figure 2 - AB test analysis for West Region Stores

Considering the threshold of 18% set by management, we see higher ROI for both regions, therefore, I would strongly recommend the management to roll out the new menu to all stores.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?

As you can see from the figures above, the test has shown that rolling out the new menu will result in 43.8% lift in Central area and 38.4% lift in West area in terms of gross margin of the stores. The results suggest that the outcome is also statistically significant at significant level of 99.6% and 99.5% for Central and West respectively.

3. What is the lift from the new menu overall?

We will see an expected impact of gross margin per week of around \$827 in Central area and \$535 in West. On average, we can expect around 41.1% lift overall and \$681.25 increase in gross margin per store per week.

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.