

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?
The performance metric that I used to evaluate the results of my test is profit via gross margin.
2. What is the test period?
The test period covers April 29, 2016 till July 21, 2016, which is twelve weeks.
3. At what level (day, week, month, etc.) should the data be aggregated?
The data should be aggregated at the level of week based on the experiment time.

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. Completed

Step 3: Match Treatment and Control Units

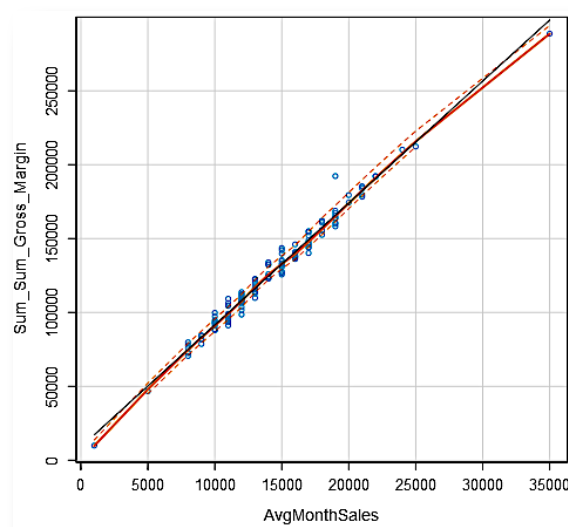
In this step, you should create the trend and seasonality variables, and use them along with your other control variable(s) to match two control units to each treatment unit. Note: Calculate the number of transactions per store per week to calculate trend and seasonality.

Apart from trend and seasonality...

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
The control variables that should be considered include the calculated Trend and Seasonality among possible others.
2. What is the correlation between your each potential control variable and your performance metric?
By using the Association Analysis tool (see the table below), the correlation between each potential control variable (i.e. Sq_Ft and AvgMonthSales) and the performance metric (i.e. Gross Margin) showed a strong correlation between AvgMonthSales and Gross Margin only (i.e. the correlation between Sq_Ft and Gross Margin is weak and hence should be ignored).

	Association Measure	p-value
AvgMonthSales	0.990982	0.00000 ***
Sq_Ft	-0.024255	0.78168

Moreover, for the variable AvgMonthSales the p-value is 0.0000, the correlation is 0.99, and the statistical significance shows ***. Accordingly, the linear relationship between AvgMonthSales and Gross Margin is good and verifiable though the scatterplot as shown below.



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

The control variables are used to match treatment and control stores via calculating the aggregated data of store and the AB Trend tool (see the configuration of AB Trend on the right).

Hence, by AvgMonthSales, Trend, and Seasonality as the control variables, each treatment unit is matched with two control units on a workflow for the west region and the central region.

Input Data

Select the unit identifier

StoreID

Select the field with the reporting period dates

Week_End

Select the performance measure to use

CountDistinct_Invoice Number

Date Values

Report Period Type

Weekly

Number of periods to calculate the trend.

12

Test Start Date

April 2016

Mon	Tue	Wed	Thu	Fri	Sat	Sun
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

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

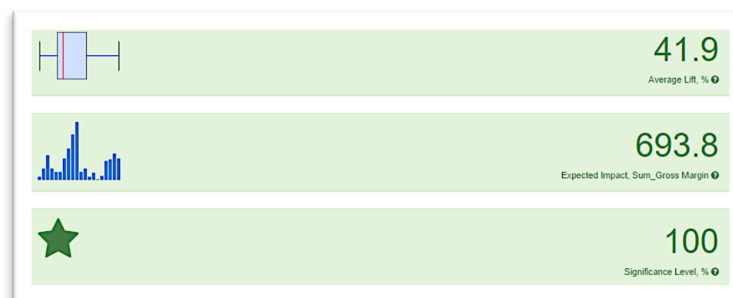
Treatment Store	Control Store 1	Control Store 2
2288	2568	9081
2293	12686	9639
2301	12536	9238
2322	9388	3185
2341	2572	12586
1664	1964	7162
1675	7284	2214
1696	1863	7334
1700	7037	2014
1712	8162	7434

Step 4: Analysis and Writeup

Answer these questions. Be sure to include visualizations from your analysis:

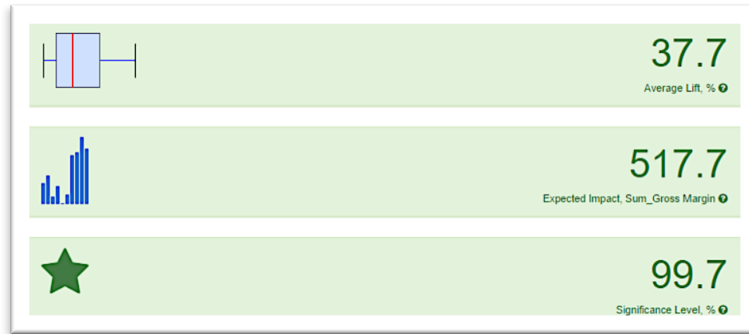
1. What is your recommendation - Should the company roll out the updated menu to all stores?
2. What is the lift from the new menu for West and Central regions (include statistical significance)?
3. What is the lift from the new menu overall?

A/B analysis is conducted on the west region, central region, and both regions. The results are shown below:



Both regions

Hence, introducing the new menu in both west and central regions will favorably affect the gross margin, where 41.9% of average lift would push customers to spend \$693.8 more weekly, and the significance level of the t-test returns 100%.



West region

For the west region, introducing the new menu is also profitable and thereby recommended. The average lift is 37.7% which will increase the profit by \$517.7 weekly, and the significance level is 99.7%.



Central region

Nevertheless, the central region reached also good numbers in the analysis and accordingly the new menu should be introduced. The average lift is 46% that will rise the profit to \$869.9 weekly, and the significance level of t-test is 99.6%.

Therefore, the recommendation is to introduce the new menu to all stores in both regions to achieve significant profit.