

Project: Analyzing a Market Test

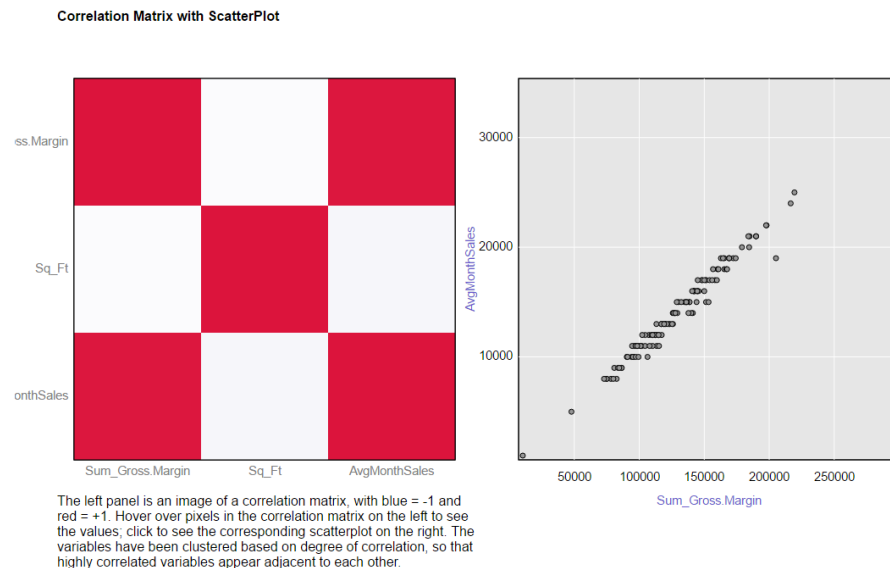
Complete each section. When you are ready, save your file as a PDF document and submit it [here](#).

Step 1: Plan Your Analysis

*To perform the correct analysis, you will need to prepare a data set. (500 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?

After calculating the correlation between variables – sq ft. , average month sales, sum gross sales.



We can see that sq ft has very low correlation between the toher two variables. Therefore we can eliminate sq ft as a potential performance metric variable.

2. What is the test period?

The test period here is for 12 weeks from 29th April 2014 to 21st July 2014.

But we need some historical data for the A/B testing to create trends and for comparison purposes. So, we use 76 weeks of data prior to the test dates.

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

The data should be aggregated at the weeks level. All our data is week attributes, the test periods and the historical data as well are in terms of week.

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.

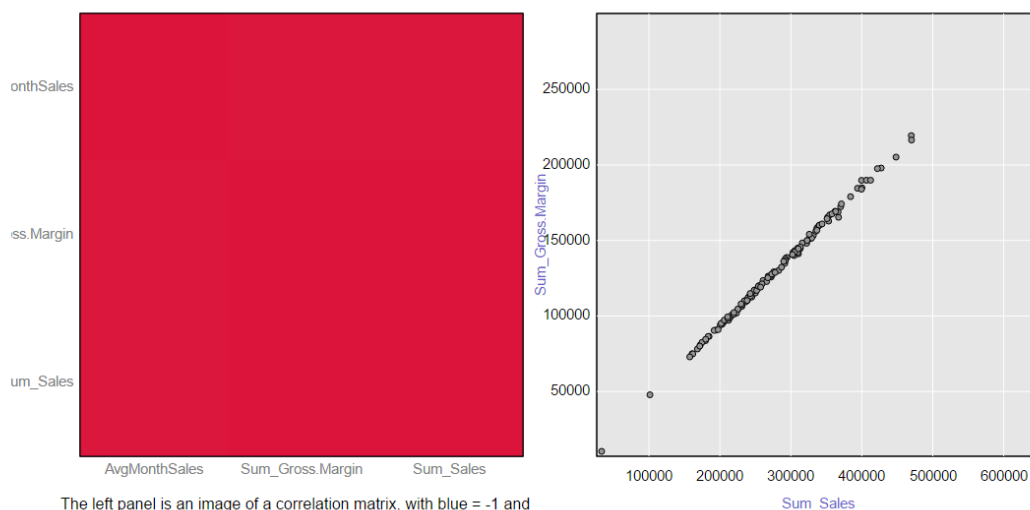
Only the storeID, average month sales and region as they are the only variables that are correlated and makes sense in including them as control variables. The rest are redundant variables and make no sense in using them as control variables.

Sq ft shows little to correlation with the other variables.

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

The correlation between average monthly sales and sum gross margin is about 0.99 which means there is very high correlation between each other but the other variables are not at all correlated like 'sqft'. Even sum of sales has high correlation with sum gross sales.

Correlation Matrix with ScatterPlot



The left panel is an image of a correlation matrix, with blue = -1 and red = +1. Hover over pixels in the correlation matrix on the left to see

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

We use the region and store ID as control variables to match treatment and control stores.

From the charts below we can say that the p value is below 0.05 for region vs storeID and sum of gross margin sales.

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2 records displayed, 2 fields, 1978 bytes

Table Report Profile

1 of 1 Fields

Records 1 to 2

Record Report

1 Welch's Two Sample t-test(s) of StoreID by Region

2

Test	t-Statistic	Degrees of Freedom	p-Value
Central vs West	-5.25317	101.13	8.3188e-07

Alteryx Designer x64 - analysiscorelation.yxmd - Browse (14)

2 records displayed, 2 fields, 2006 bytes

Table Report Profile

1 of 1 Fields

Records 1 to 2

Record Report

1 Welch's Two Sample t-test(s) of Sum_Gross.Margin by Region

2

Test	t-Statistic	Degrees of Freedom	p-Value
Central vs West	-2.17591	103.56	0.031835

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

Treatment Store	Control Store 1	Control Store 2
1664	1964	8112
1675	7284	1630
1696	1863	7534
1700	2014	7037
1712	8162	7434
2288	2568	3185
2293	9868	2686
2301	9524	9238
2322	9388	2409
2341	2572	9188

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?

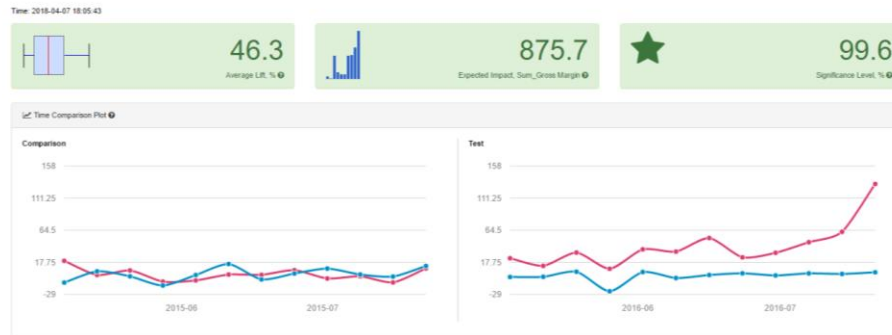
First considering the region 'west' we can say that there is a 37.8% lift and a 507.6\$ increase in the sum of weekly gross after the introduction of the new menu.

As for the region 'central' – there is a 46.3% lift which when considering the recommended values of lift to be between 30-50% - is in the acceptable range and there is a 875.7\$ increase in the weekly sum of gross margin.

Since there is a profit of about 500\$ in the west region and about 857\$ profit in the central region, we can recommend the company to roll out an updated menu to all the stores.

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

AB Test Analysis for Sum_Gross Margin



The above chart is for the central region.
 It shows 46.3% lift
 857.7\$ increase in the weekly sum of gross margin
 And 99.6% significance level.

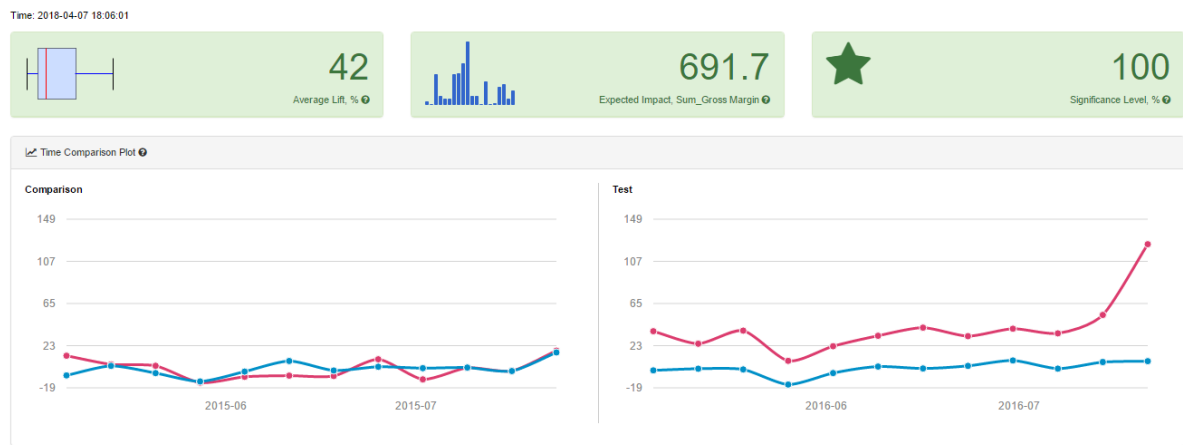
AB Test Analysis for Sum_Gross Margin



The above chart is for the west region.
 It shows 37.8% lift
 507.6\$ increase in the weekly sum of gross margin
 And 99.6% significance level.

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

AB Test Analysis for Sum_Gross Margin



The overall lift from the new menu is about 42% which is in the acceptable range of between 30-50%.