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?
   Gross Margin
2. What is the test period?
   12 weeks (2016-April-29 to 2016-July-21)
3. At what level (day, week, month, etc.) should the data be aggregated?
   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.
   - AvgMonthlySales
   - SQ-FT

2. What is the correlation between your each potential control variable and your performance metric?
   Correlation between store Average month sales and sum of Gross margin is 0.79, which indicates a strong positive relationship.
   However, SQ-FT does not correlate to Gross Margin, the correlation value is -0.02

Full Correlation Matrix

	Sum_Sum_Gross.Margin	AvgMonthSales
Sum_Sum_Gross.Margin	1.00000	0.78841
AvgMonthSales	0.78841	1.00000

Full Correlation Matrix

	Sum_Sum_Gross.Margin	Sum_Sum_Sales	Sq_Ft
Sum_Sum_Gross.Margin	1.000000	0.998668	-0.020449
Sum_Sum_Sales	0.998668	1.000000	-0.023146
Sq_Ft	-0.020449	-0.023146	1.000000

3. What control variables will you use to match treatment and control stores?
   The control variables are (Trend, Seasonality, and AverageMonthSales)
   I didn't include the other variables which are (SQ-FT, Coordinates, Postal code, Time zone) because they have either no correlation or a very low correlation between the variable and the performance metric.)
4. Please fill out the table below with your treatment and control stores pairs:

Treatments	Controls 1	Controls 2
1664	1964	8112
1675	7284	1807
1696	1863	7534
1700	2014	7037
1712	8162	7434
2288	2568	3185
2293	9868	8867
2301	9524	12219
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?

I believe the company should introduce the menu to all stores, as it generated a significance increase in Gross Margin.

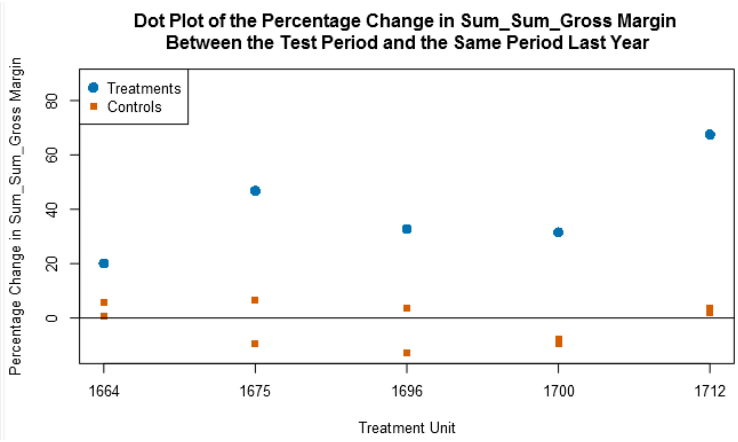
2. What is the lift from the new menu for West and Central regions (include statistical significance)?

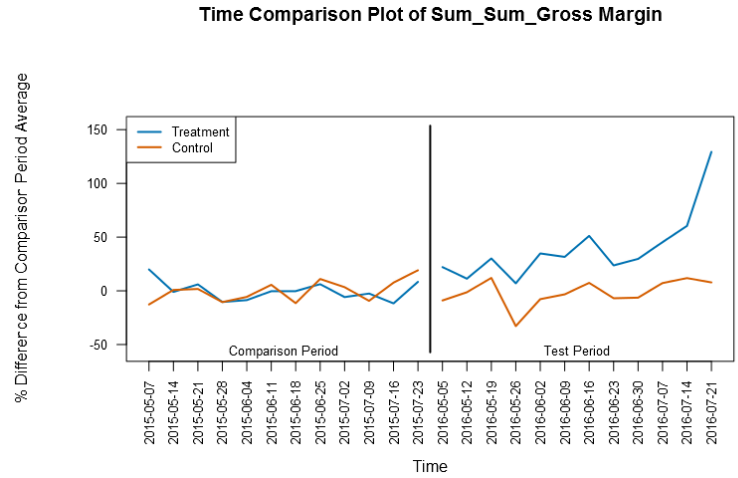
For Central:

The lift on gross margin when the new menu rolled out in the Central region was 45.6, at a significance level of 99.6%.

The following visualizations show Analysis of the Test on the Measure Gross Margin for Central region.

Which mean the increase in gross margin in Central region will be around $877, per store per week.



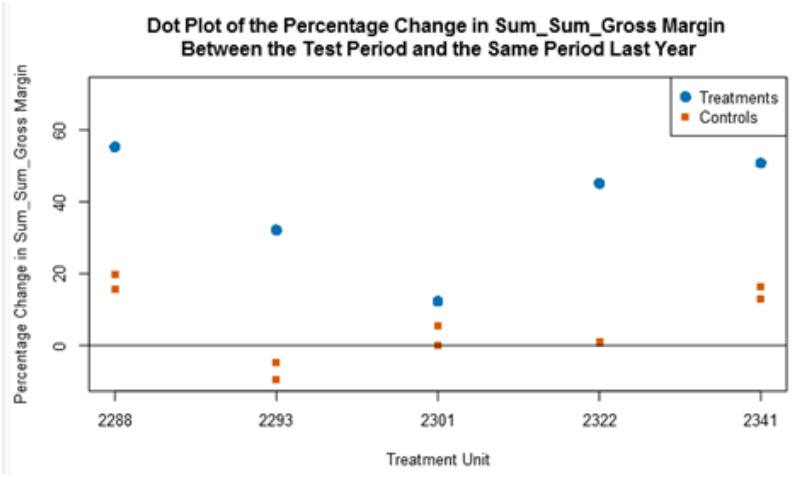


For West:

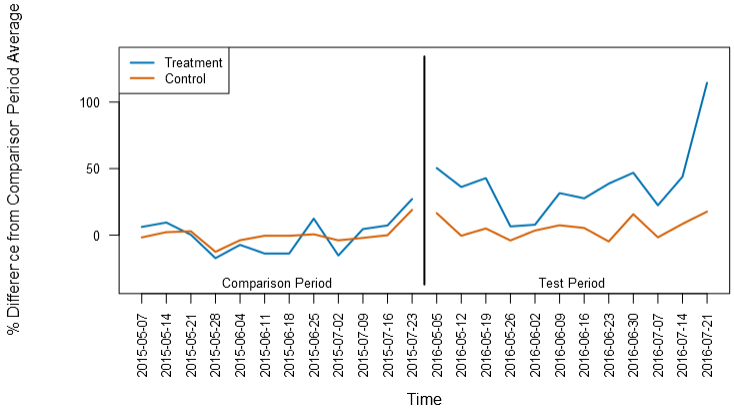
The lift is 36.5% with a significance level of 99.4%.

The following visualizations show Analysis of the Test on the Measure Gross Margin for West region.

Which mean the increase in gross margin in West region will be around $506, per store per week.

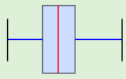


Time Comparison Plot of Sum_Sum_Gross Margin



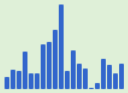
3. What is the lift from the new menu overall?

The overall lift is 41.1%



41.1

Average Lift, %

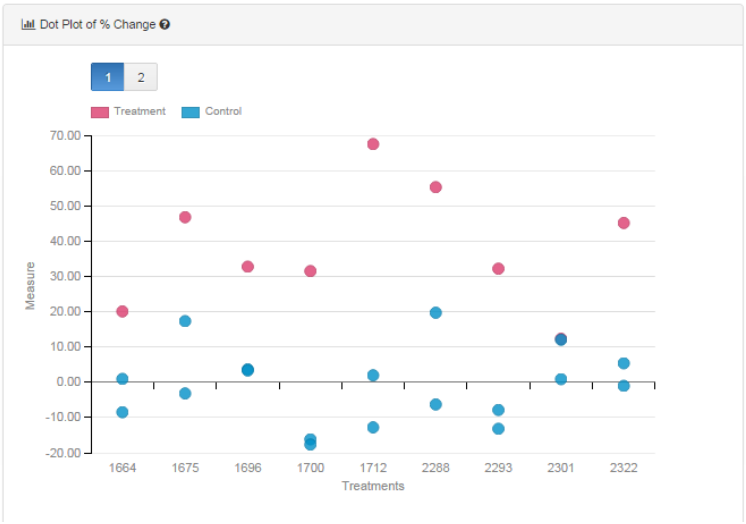


691.3

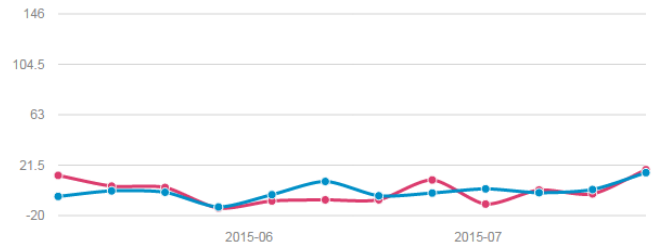
Expected Impact, Sum_Sum_Gross Margin

100

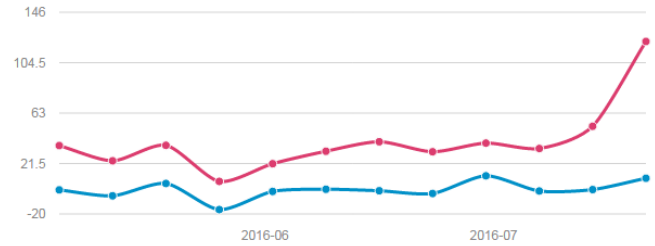
Significance Level, %



Comparison



Test



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.