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 would be the metric used for evaluating the result. Gross_Margin represents the profit. A 18% increase is the profit compared to the test period would justify the need to the campaign.

2. What is the test period?
   The test period is Apr 29 2016 to Jul 21 2016 when the treatment was performed.

3. At what level (day, week, month, etc.) should the data be aggregated?
   The data is aggregated at the weekly level for 64 weeks, the 12 weeks when the treatment was performed and 52 weeks prior to the last week of the treatment to get the historical data.

Step 2: Clean Up Your Data

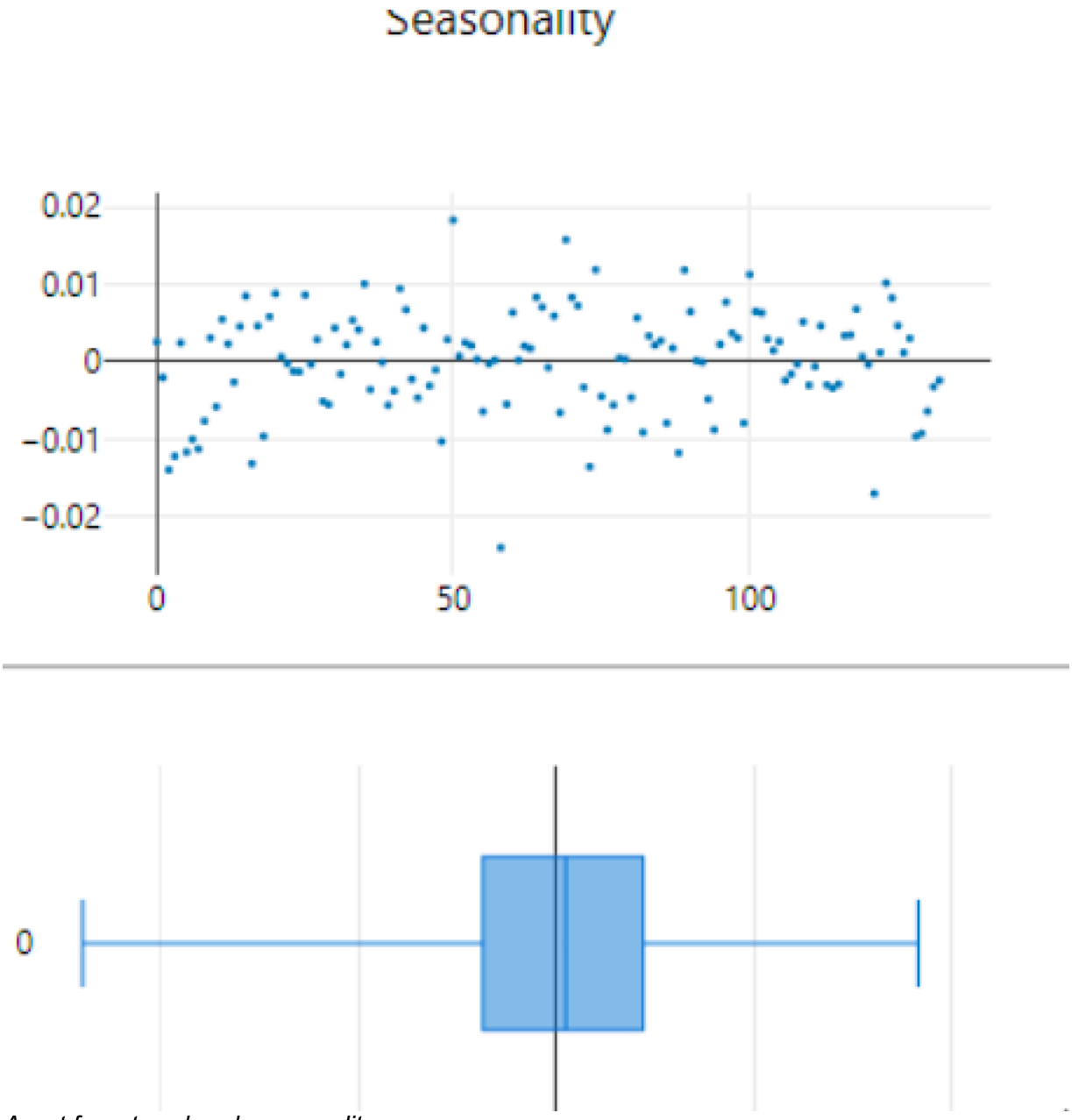
In this step, you should prepare the data for steps 3 and 4. You should aggregate the transaction data to the appropriate level and filter on the appropriate data ranges. You can assume that there is no missing, incomplete, duplicate, or dirty data. You're ready to move on to the next step when you have weekly transaction data for all stores.

Using the field summary analysis tool, it was determined that there was no duplicate , missing or incomplete data.

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.

Seasonality of the stores is depicted below.



Apart from trend and seasonality...

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   Sales volume in terms of AvgMonthSales was considered as it had a direct impact to the profits. Store Size in terms of Sqt_Ft was also considered as it was a numeric value. Region is categorical. It was also ignored as we would like to include only numeric variables as our performance metric is numeric too.

2. What is the correlation between your each potential control variable and your performance metric?
   Sales volume was positively correlated to the gross margin. Increase in sales resulted in increase in profit indicated by the gross margin. The store size was not correlated to gross margin. This could also be due to the location of a store. A small size store in

downtown could have more customers than a larger store in a suburban area. Hence store size was dropped for further analysis.

3. What control variables will you use to match treatment and control stores?
   Sales volume in terms AvgMonthSales, Trend and Seasonality were considered.

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

Treatment Store	Control Store 1	Control Store 2
1664	1662	7534
1675	7284	7584
1696	7334	7384
1700	7484	7584
1712	7434	2283
2288	8717	8917
2293	8867	8917
2301	2383	8917
2322	8817	8917
2341	8917	2333

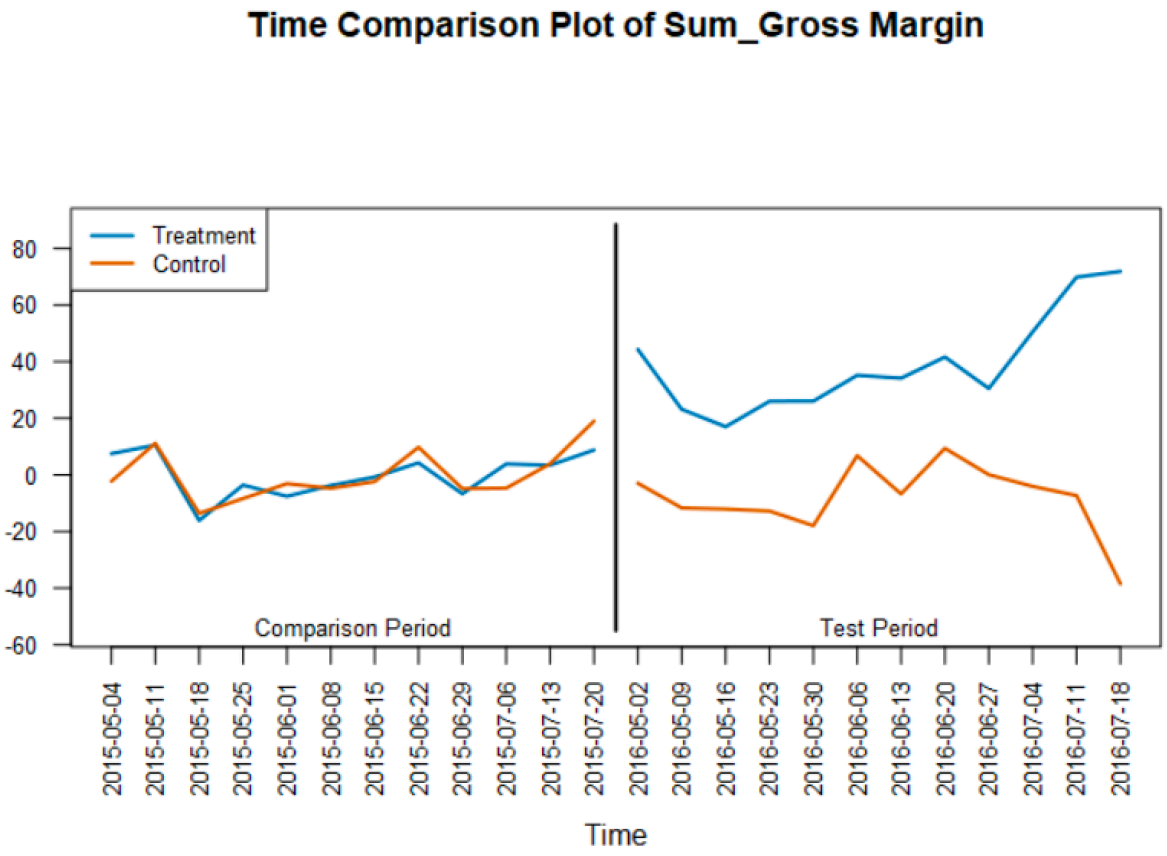
Step 4: Analysis and Writeup

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?
   Yes. There is a 39.9 % lift on the gross margin. The updated menu will result in an increase of $659.2 weekly. The company was ready to try if the gross margin increase was more than 18%.

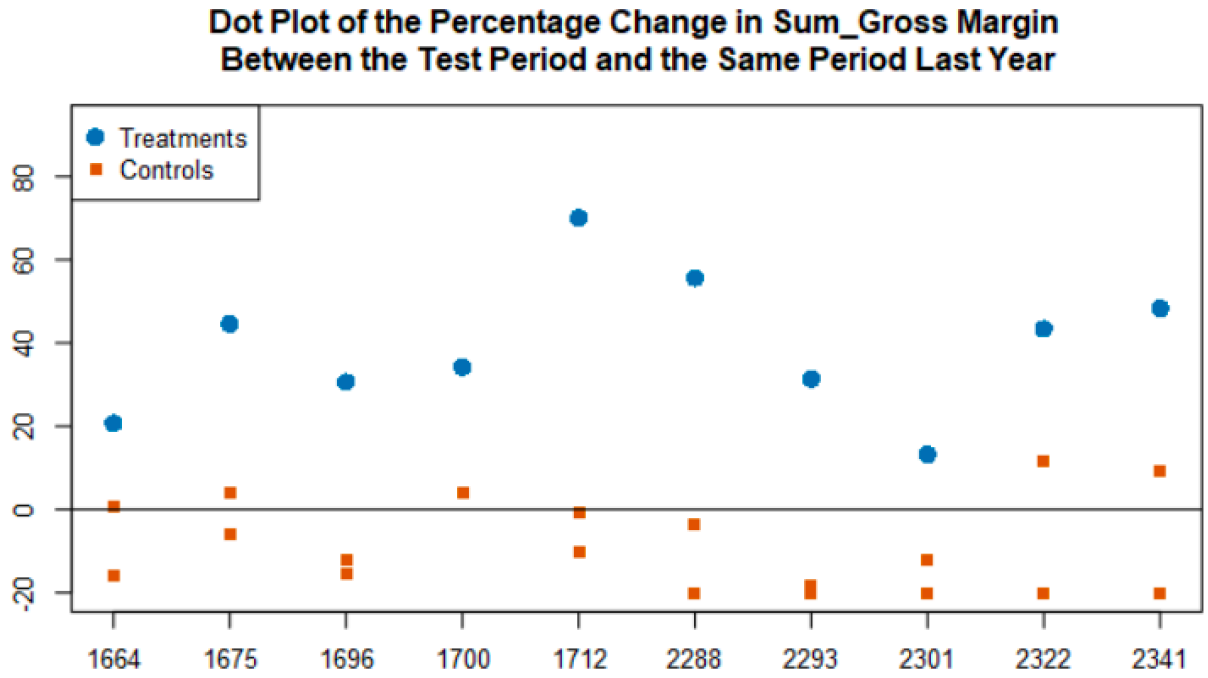
   The time comparison plot below provides the visualization of the average effect of the test treatment across the test units for the performance measure of interest. Last year during the same period , the treatment stores were performing similar to the control stores. During the treatment time period, its evident that the treatment stores outperformed the control stores.



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

The lift for West region was 36.6% . There was an expected increase of $501.6 per weekly for the gross margin. The statistical significance was 99.5 %

The Central region had more lift of 43.2%. Hence the expected profits in terms of gross margin was higher of $816.9 per week. The statistical significance was 99.6 %. All the treatment-control pairs exhibited positive lift for the treatment group.



3. What is the lift from the new menu overall?
   Overall lift with the new menu is 39.9 %. There is $659.2 increase in gross margin per week with 100 % significance.

   The new menu will definitely benefit the profit. Minimum increase would be 13.18 % while areas like downtown and cities where customers are higher can expect and increase as high as 60 %

   Following are the statistical significance of the roll out of menu for all the stores in all the regions.

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.