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?
   Increase in profit growth – incremental lift, calculated by Gross Margin in RoundRoastersTransactions data.
2. What is the test period?
   12 weeks.
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.
   Numeric values: Sq_Ft and AvgMonthSales.
2. What is the correlation between your each potential control variable and your performance metric?

	FieldName	Sq_Ft	AvgMonthSales	Sum_Gross Margin
1	Sq_Ft	1	-0.046967	-0.019345
2	AvgMonthSales	-0.046967	1	0.790358
3	Sum_Gross Margin	-0.019345	0.790358	1

   Only AvgMonthSales was highly correlated with Weekly gross margin.
3. What control variables will you use to match treatment and control stores?
   Trend, Seasonality, AvgMonthSales
4. Please fill out the table below with your treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
1664	7162	12536

1675	12269	12786
1696	12019	11668
1700	2902	2468
1712	10018	12736
2288	1580	2568
2293	8362	8262
2301	1964	7534
2322	9388	3185
2341	2572	12586

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?
   The company should roll out the updated menu to all stores with the following reasons:

   A comparison of the treatment-control pairs indicates an average lift in Weekly Gross Margin for the treatment units over the control units of 38.0%, which is higher than 18%. All the below plots proved that while control stores showed nearly unchanged, treatment stores increased rapidly in Weekly gross margin over the test period.

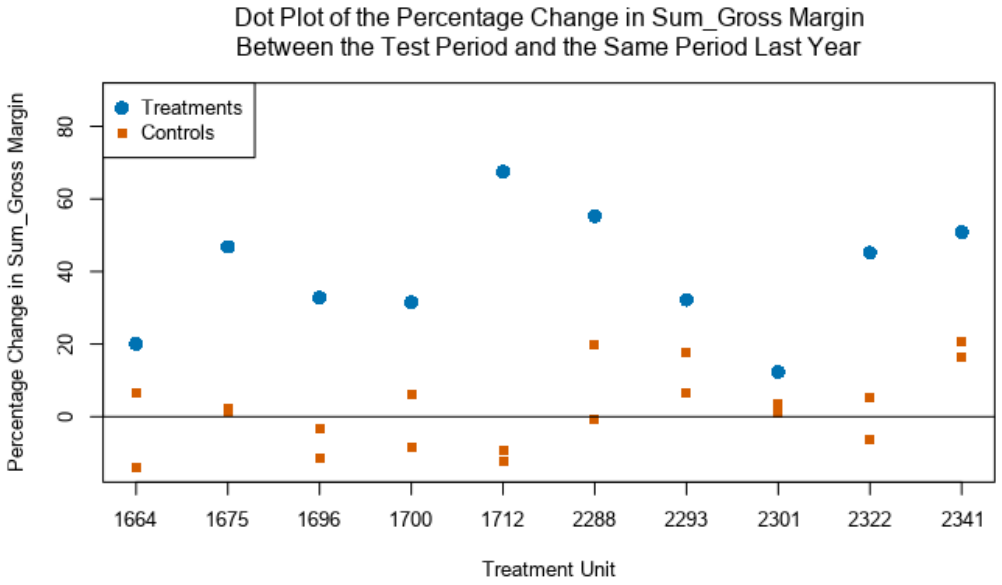
Lift Analysis for Weekly Gross Margin

Lift	Expected Impact	Significance Level
38.0%	651	100.0%

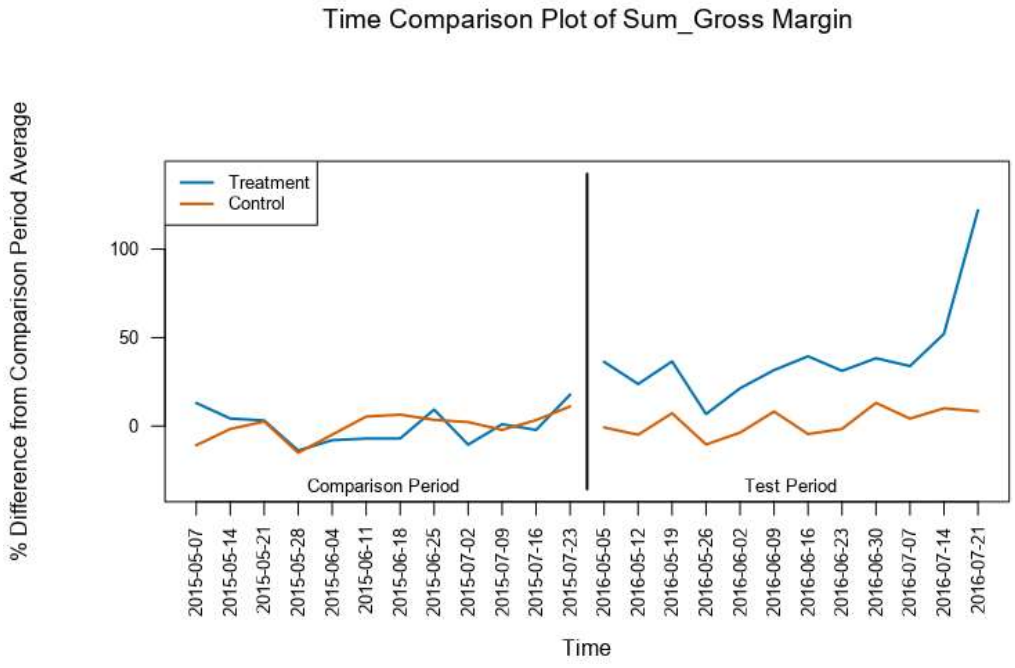
Summary Statistics for Weekly Gross Margin by Test Group

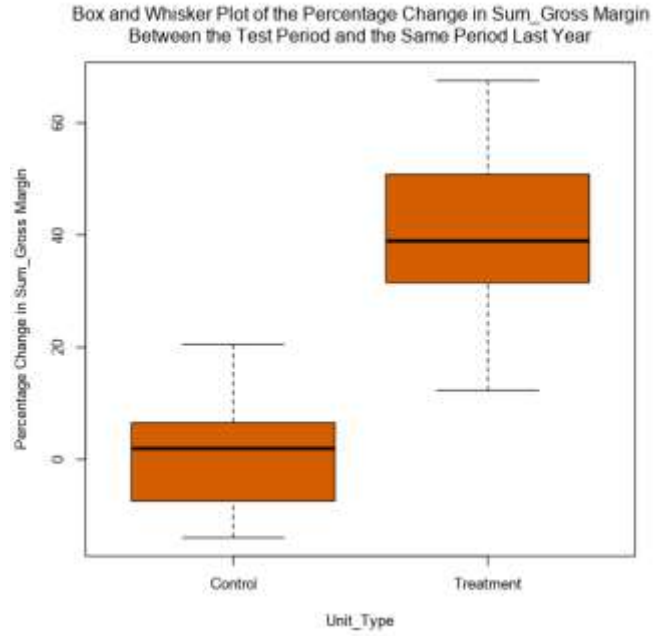
Statistic	Treatment	Control
Average	39.45	2.11
Minimum	12.34	-13.96
Maximum	67.52	20.53
Standard Deviation	16.30	10.66

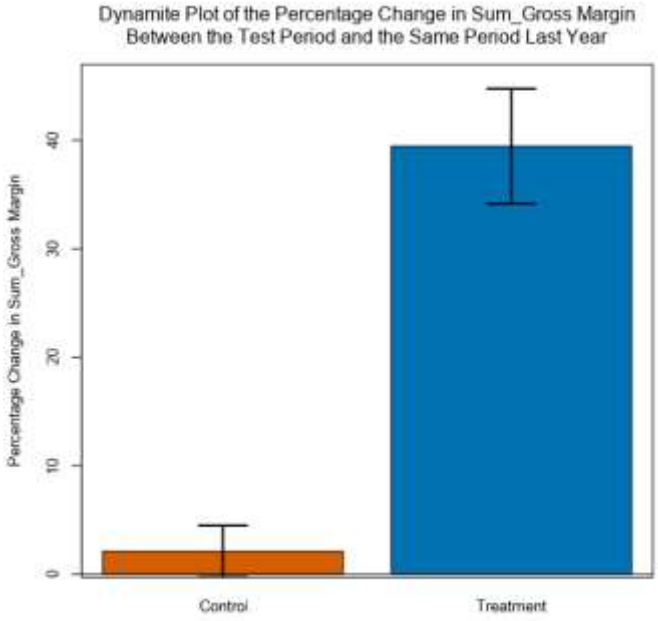
Plots of the Test Results

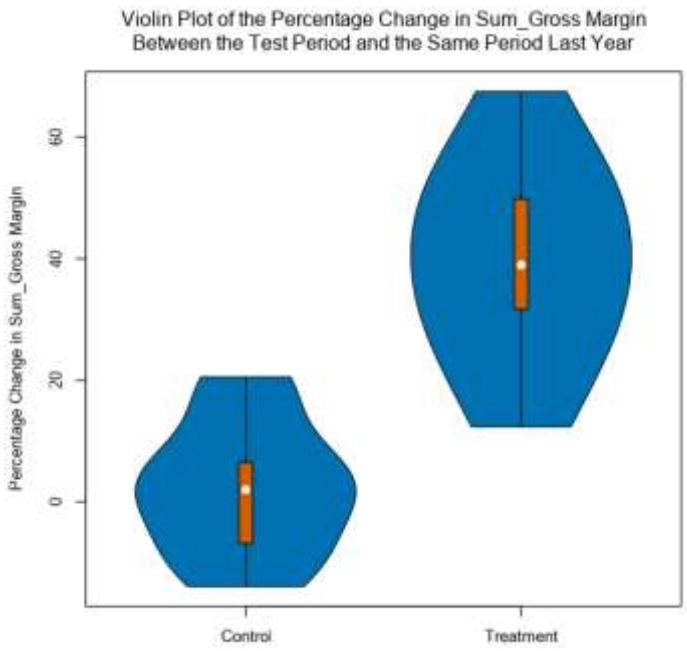

Dot Plot of the Percentage Change in Sum_Gross Margin
Between the Test Period and the Same Period Last Year
Treatments
Controls
Percentage Change in Sum_Gross Margin
0
20
40
60
80
1664
1675
1696
1700
1712
2288
2293
2301
2322
2341
Treatment Unit

7


Time Comparison Plot of Sum_Gross Margin
Treatment
Control
% Difference from Comparison Period Average
100
50
0
Comparison Period
Test Period
2015-05-07
2015-05-14
2015-05-21
2015-05-28
2015-06-04
2015-06-11
2015-06-18
2015-06-25
2015-07-02
2015-07-09
2015-07-16
2015-07-23
2016-05-05
2016-05-12
2016-05-19
2016-05-26
2016-06-02
2016-06-09
2016-06-16
2016-06-23
2016-06-30
2016-07-07
2016-07-14
2016-07-21
Time


Box and Whisker Plot of the Percentage Change in Sum_Gross Margin
Between the Test Period and the Same Period Last Year
Percentage Change in Sum_Gross Margin
0
20
40
60
Control
Treatment
Unit_Type


Dynamite Plot of the Percentage Change in Sum_Gross Margin
Between the Test Period and the Same Period Last Year
Percentage Change in Sum_Gross Margin
0
10
20
30
40
Control
Treatment



2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   West region: 39.1%; significance level 99.6%
   Central region: 38%; significance level 100%
3. What is the lift from the new menu overall?
   38%; significance level 100%

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.