Project: Analyzing a Market Test

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?
   the *Gross.Margin* variable
2. What is the test period? 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. *AvgMonthSales* and *Sq_Ft*
2. What is the correlation between each potential control variable and your performance metric? The performance metric is *Sum_Gross.Margin.* Its correlation measure is 0.988219 with *AvgMonthSales* and -0.020353 with *Sq_Ft.*
3. What control variables will you use to match treatment and control stores?
   I will use *AvgMonthSales* because it is highly correlated with the performance metric, and I will not include *Sq_Ft* because it has very low correlation with the performance metric.
4. Please fill out the table below with your treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434
2288	9081	2568
2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin	1.000000	-0.020353	0.988219
Sq_Ft	-0.020353	1.000000	-0.046967
AvgMonthSales	0.988219	-0.046967	1.000000

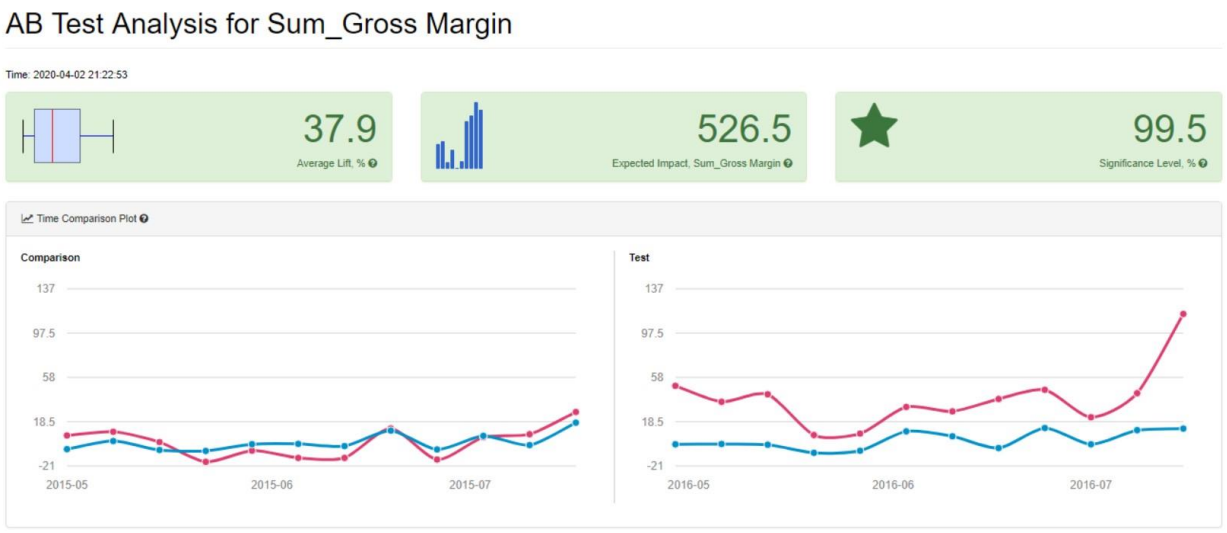
Step 4: Analysis and Writeup

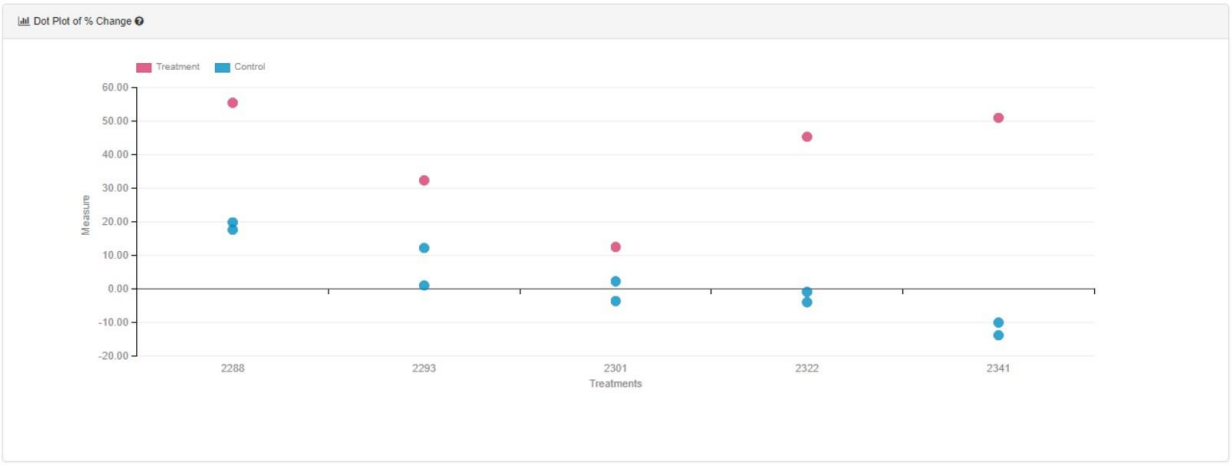
Conduct your A/B analysis and create a short report outlining your results and recommendations. (250 words limit)

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

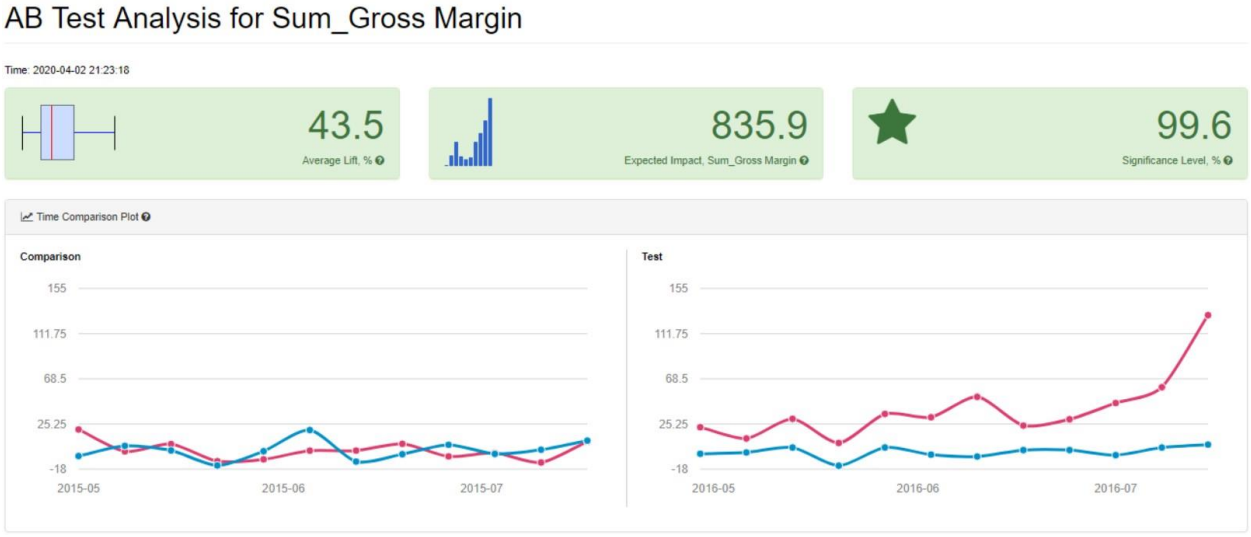
1. What is your recommendation - Should the company roll out the updated menu to all stores? Yes, because the average lift is greater than 18% which is enough to justify the marketing budget.
2. What is the lift from the new menu for West and Central regions (include statistical significance)? West - 37.9% lift with a 99.5% significance level
   Central - 43.5% lift with a 99.6% significance level
3. What is the lift from the new menu overall? 40.7%

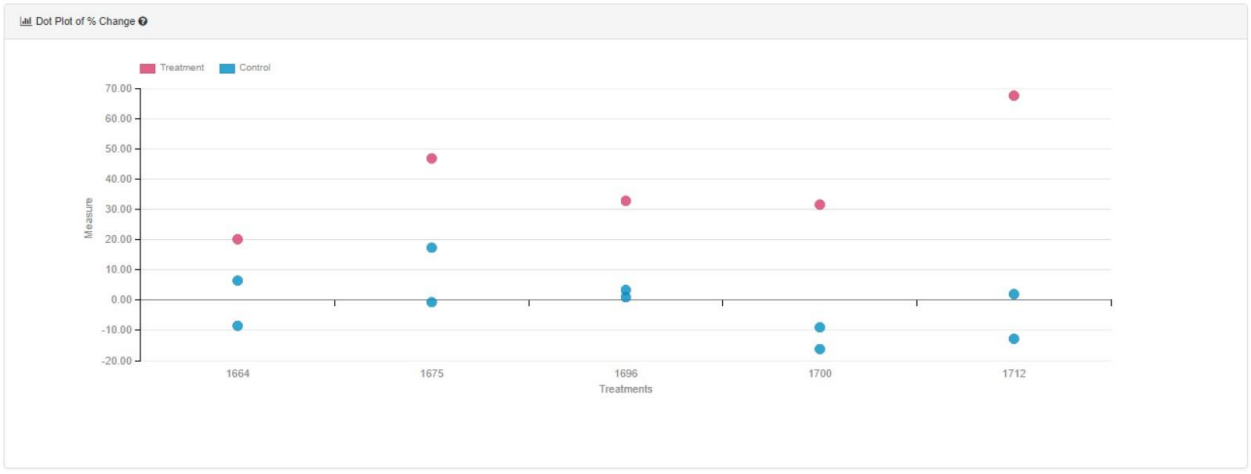
<u>West Region</u>



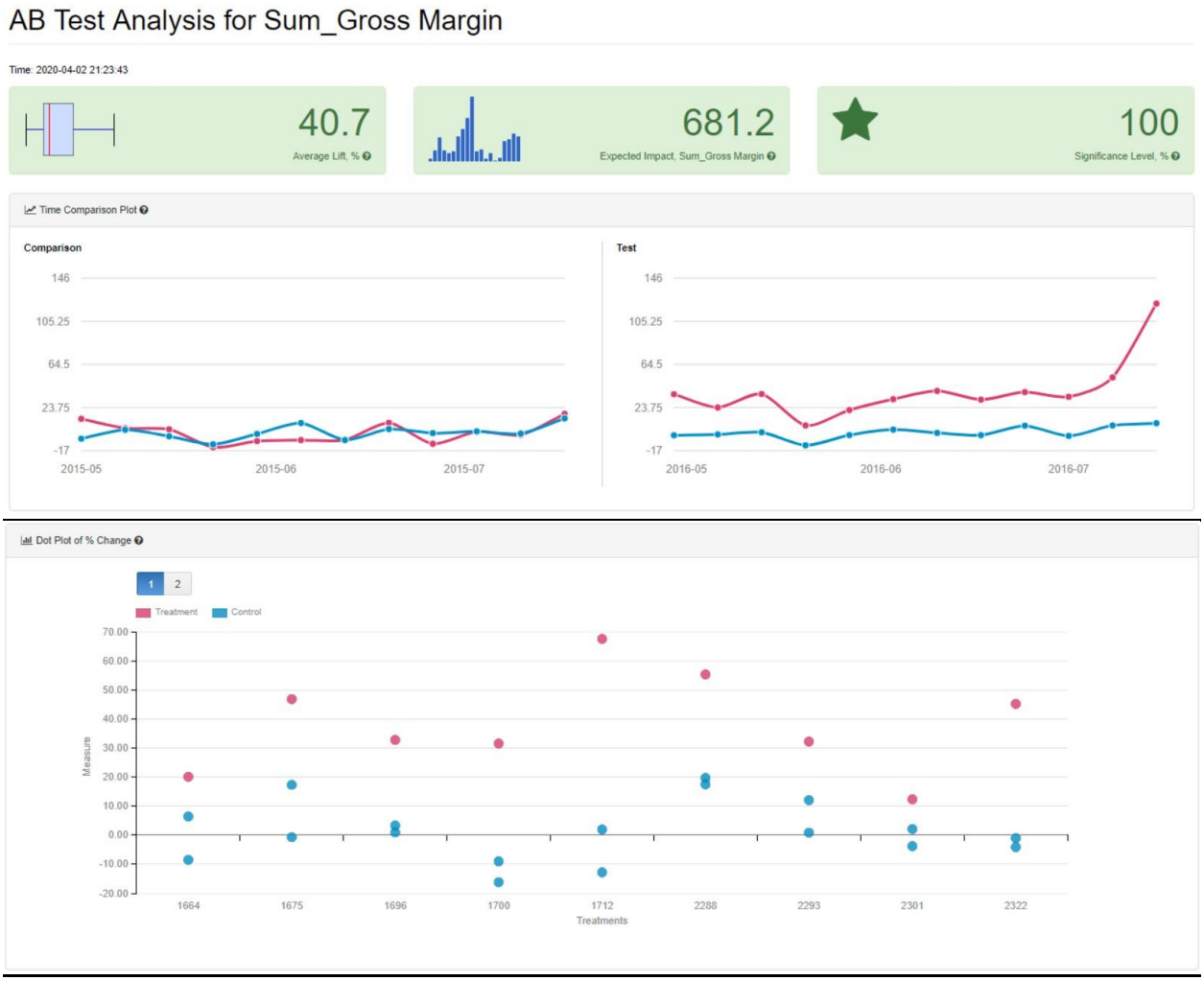


Central Region





Overall


AB Test Analysis for Sum_Gross Margin
Time: 2020-04-02 21:23:43
40.7
Average Lift, %
681.2
Expected Impact, Sum_Gross Margin
100
Significance Level, %
Time Comparison Plot
Comparison
Test
146
105.25
64.5
23.75
-17
2015-05
2015-06
2015-07
2016-05
2016-06
2016-07
Dot Plot of % Change
1
2
Treatment
Control
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
Measure
1664
1675
1696
1700
1712
2288
2293
2301
2322
Treatments