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?
   Answer: The gross margin.

2. What is the test period?
   Answer: 12 weeks. From the 29th of April 106 to the 21st of July 2016.

3. At what level (day, week, month, etc.) should the data be aggregated?
   Answer: The data should be aggregated on a weekly basis/level.

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.
   Answer: Square foot(size of the store) and the average monthly Sales.

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

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Sum_Gross.Margin	1.000000	-0.019345	0.790358
Sq_Ft	-0.019345	1.000000	-0.046967
AvgMonthSales	0.790358	-0.046967	1.000000

3. What control variables will you use to match treatment and control stores?
   Answer: Trend, Seasonality and the Average monthly Sales.

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

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?
   Answer: My recommendation is that the company roll out the updated menu across all the stores because the analysis of the test shows that the new menu will lead to a very significant increase in Sales for the stores as the stores that the new menu was tested in showed an increase in Sales margin with very high statistical significance which implies that the sales was due to the addition of a new menu.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   Answer: The lift for the central region is 43.5% increase in Sales margin and a statistical significance of 99.6% while the lift for the West region is 37.9% and a statistical significance of 99.5%.

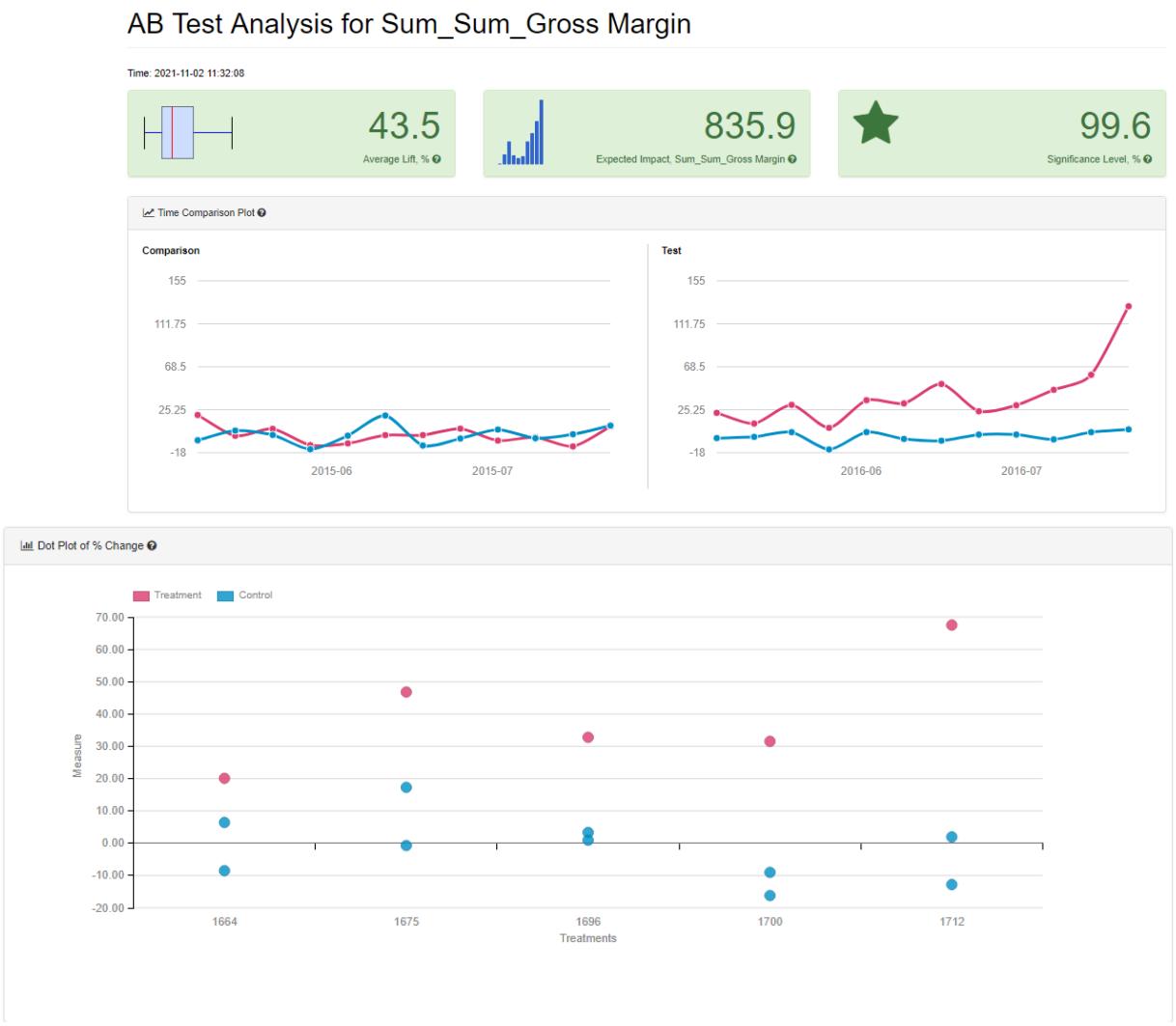

Figure 1: Lift and comparison for the Central Region

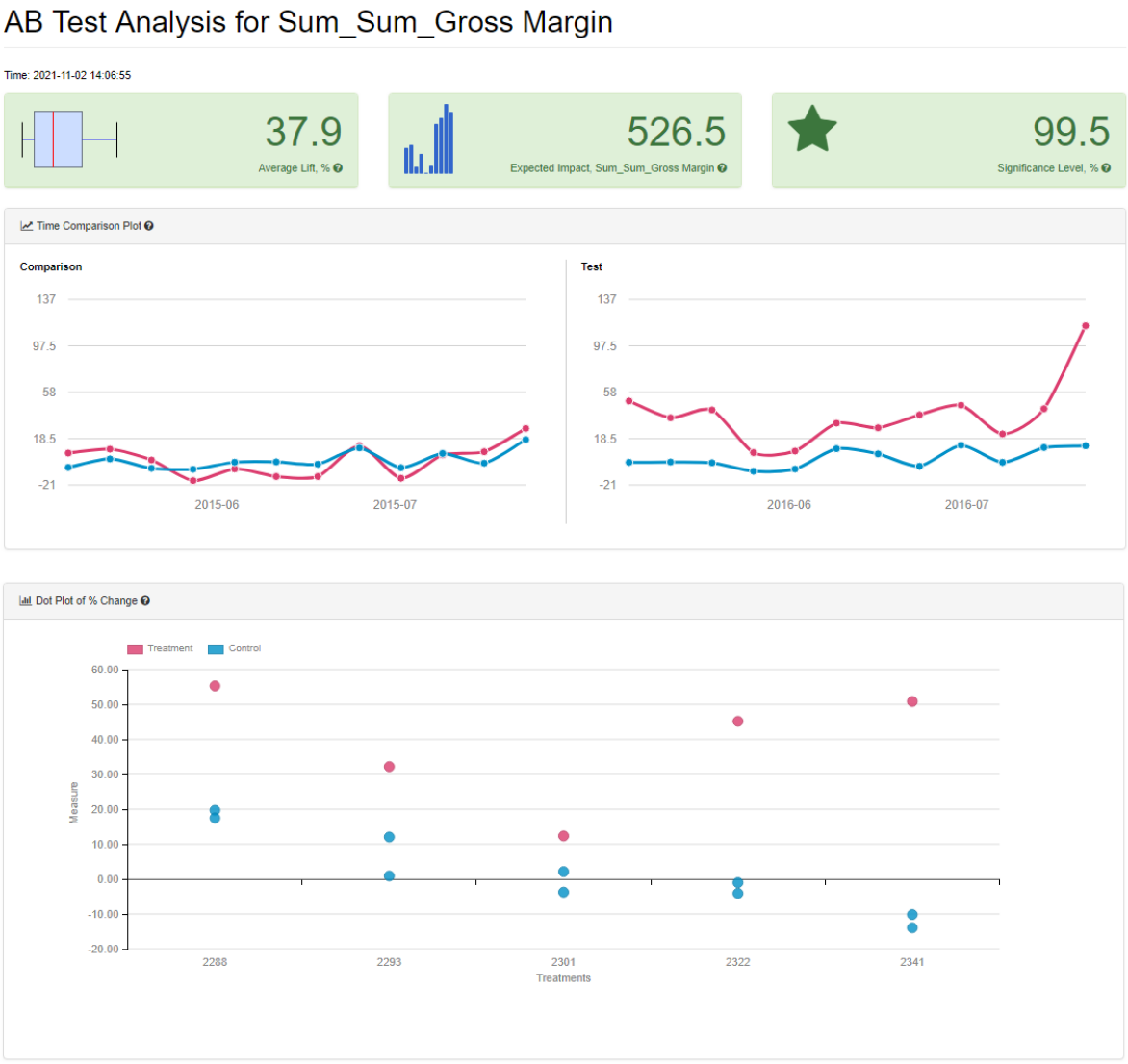

Figure 2: Lift and comparison for the West Region

3. What is the lift from the new menu overall?
   Answer: 40.7% with a statistical significance of 100%

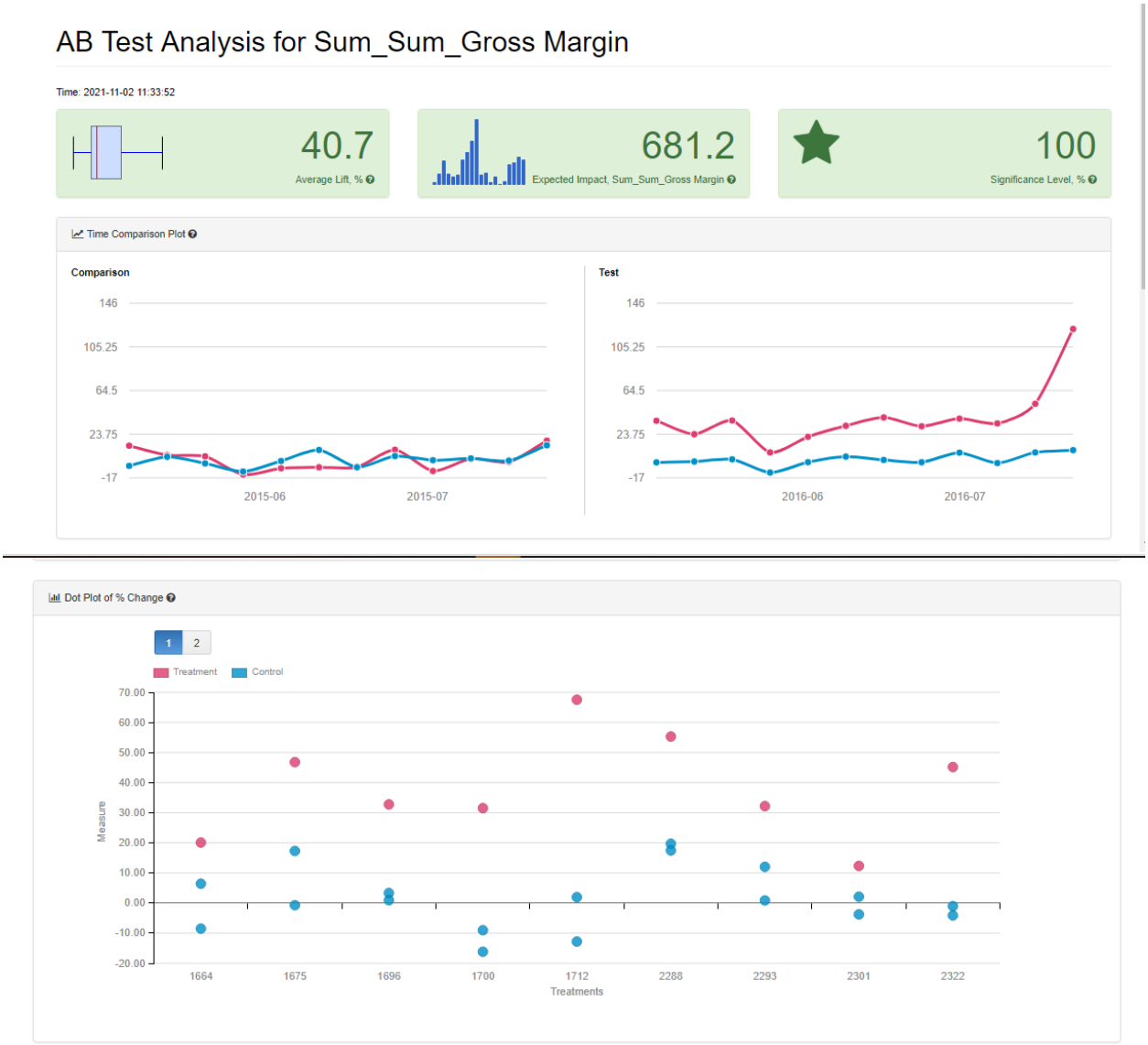

Figure 3: Overall lift and comparison

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.