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?
   The **gross_margin** variable which represents profit in the data is the performance metric that will be used to evaluate the results of the test.
2. What is the test period?
   The test ran for a period of 12 weeks from 2016-April-29 to 2016-July-21.
3. At what level (day, week, month, etc.) should the data be aggregated?
   Data is to be aggregated on a weekly 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.
   AvgMonthSales and Sq_ft are the numeric variables in the round roasters stores file that will be considered as possible control variables.
2. What is the correlation between each potential control variable and your performance metric?
   I utilized the Alteryx Association Analysis tool to calculate correlation between other numeric measures and the performance metric (gross margin) and the following were the results

Pearson Correlation Analysis

Focused Analysis on Field Gross.Margin

	Association Measure	p-value
AvgMonthSales	0.990982	0.00000***
Sq_Ft	-0.024255	0.78168

Full Correlation Matrix

	Gross.Margin	Sq_Ft	AvgMonthSales
Gross.Margin	1.000000	-0.024255	0.990982
Sq_Ft	-0.024255	1.000000	-0.046967
AvgMonthSales	0.990982	-0.046967	1.000000

Observing the association measure values and the p-values we rule out Sq_Ft as having very little correlation with gross_margin variable and we are left with AvgMonthSales as it has very high correlation with gross_margin variable.

3. What control variables will you use to match treatment and control stores?
   Together with the created trend and seasonality variables we shall use the AvgMonthSales to match control units to treatment units.
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)

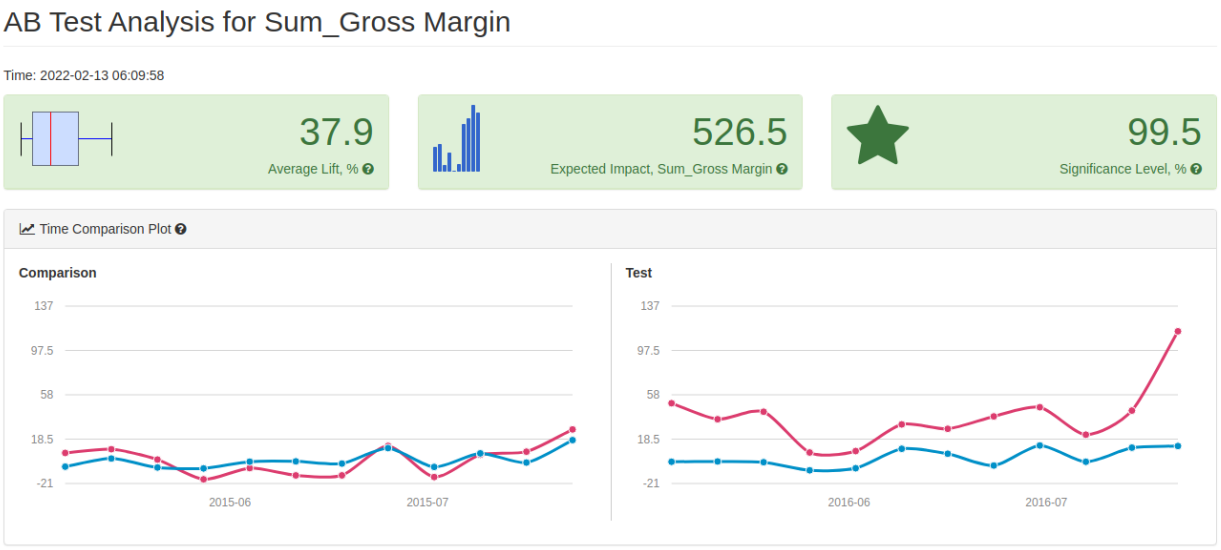
Answer these questions. Be sure to include visualizations from your analysis:

1. What is your recommendation - Should the company roll out the updated menu to all stores?
   Based on the results of the AB Test analysis I would recommend the company roll out the updated menu to all stores because the predicted impact to profitability was more than enough to justify the increased marketing budget. The incremental lift from the new

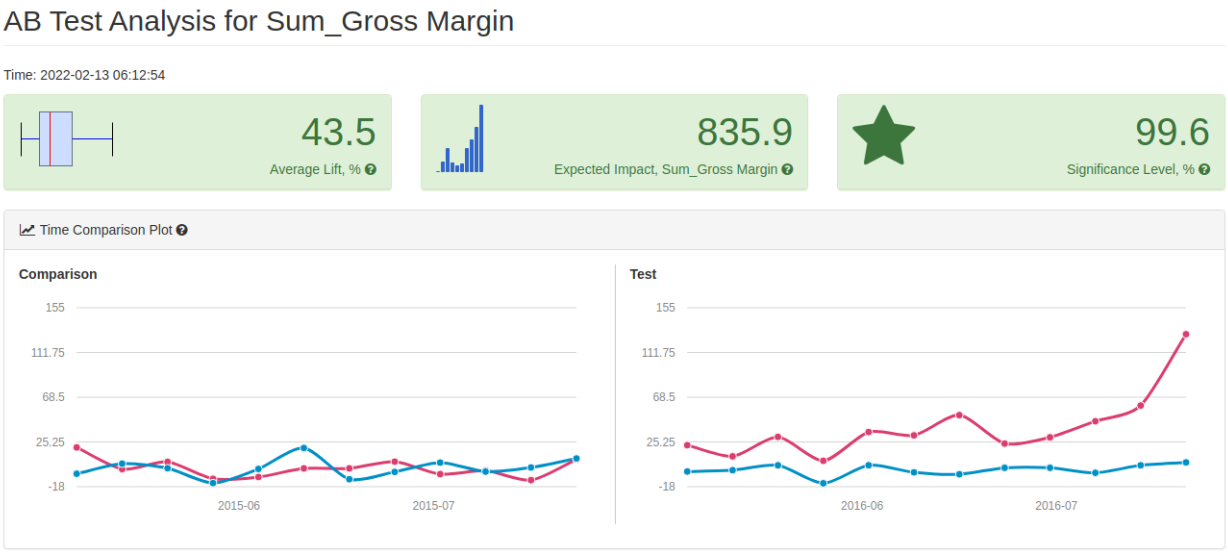
menu overall is 40.7% whereas the set limit was at least 18%.

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

The lift from the new menu for West region was 37.9% as shown by the report:

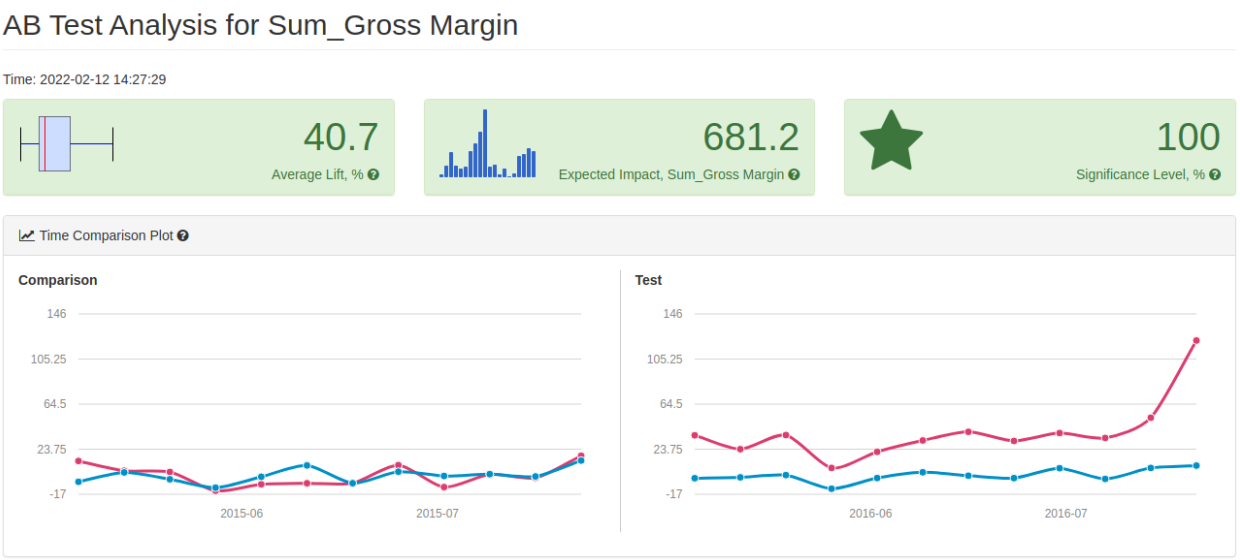


The lift from the new menu for Central region was 43.5% as shown by the report:



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

   The lift from the new menu overall is 40.7% as depicted below



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.