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?

Performance metric will be Gross margin

2. What is the test period?

The test period is 12 week

3. At what level (day, week, month, etc.) should the data be aggregated?

As per my understanding data should be aggregated weekly

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.

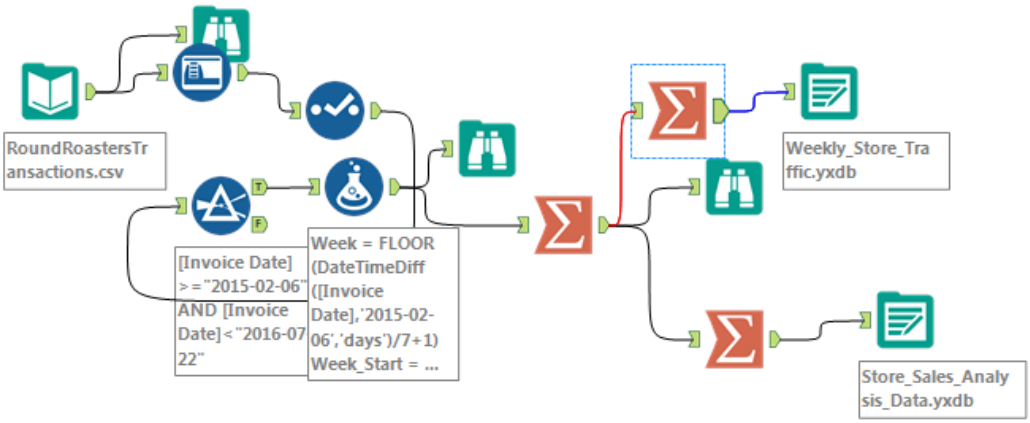


Figure 1: cleaning & summarizing data

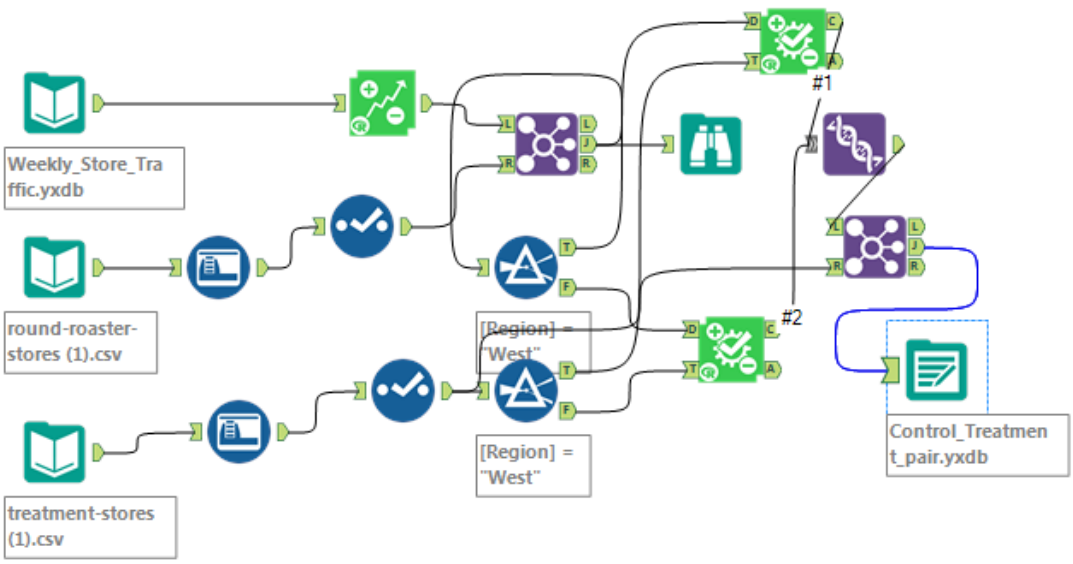


Figure 2: AB trend & AB Control Region wise

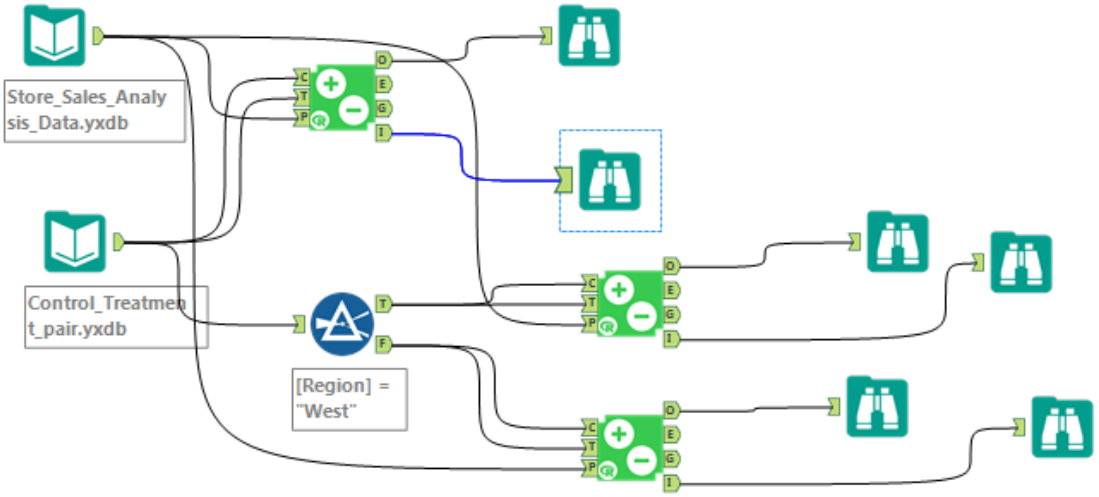


Figure 3: AB analysis Region and Overall

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...

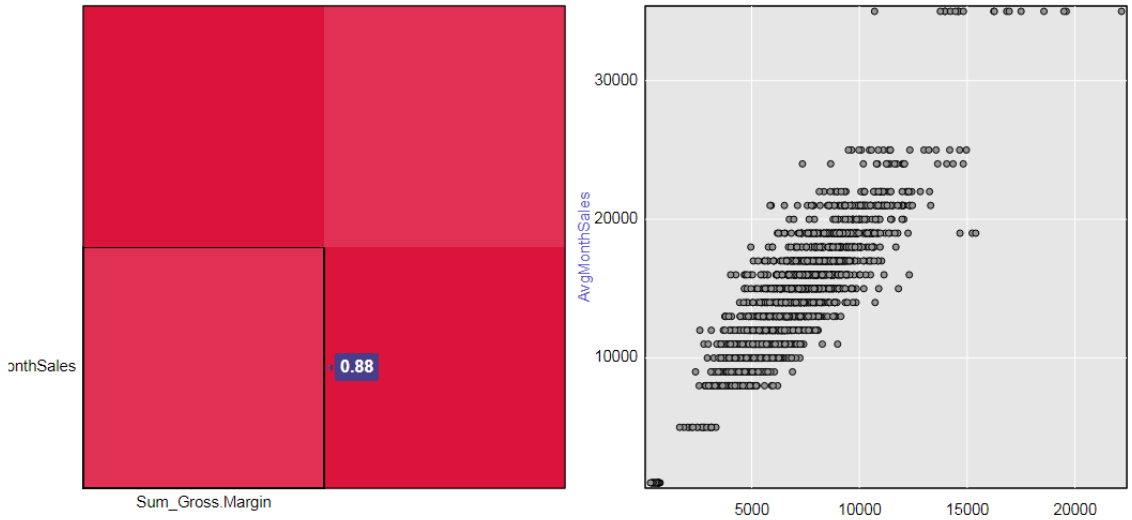
1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.

Average monthly sales

Sq_ft

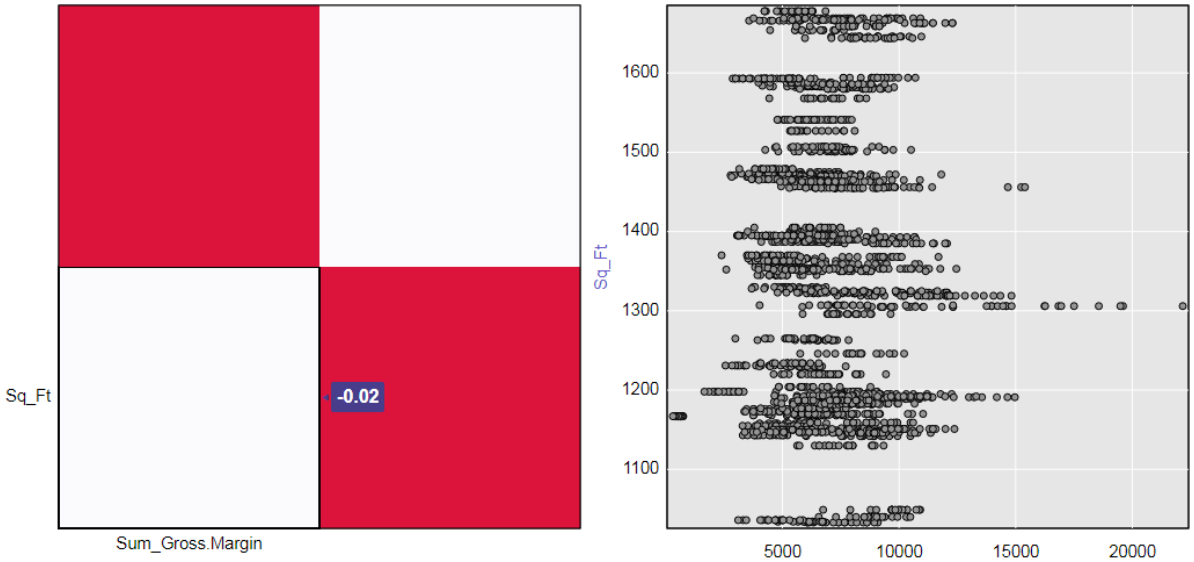
2. What is the correlation between your each potential control variable and your performance metric?

There is a positive correlation of .88 between Avg monthly sales and sum_gross margin



The left panel is an image of a correlation matrix, with blue = -1 and red = +1. Hover over pixels in the correlation matrix on the left to see the values; click to see the corresponding scatterplot on the right. The variables have been clustered based on degree of correlation, so that highly correlated variables appear adjacent to each other.

There is no correlation between sq_ft and sum_gross margin.



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3. What control variables will you use to match treatment and control stores?

Avg monthly sales

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

Treatment Store	Control 1	Control 2
1664	12586	12019
1675	12786	3235
1696	3102	12286
1700	9968	2952
1712	10018	10468
2288	9081	1807
2293	12219	8362
2301	1964	1863
2322	2409	7284
2341	7162	12536

Step 4: Analysis and Writeup

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

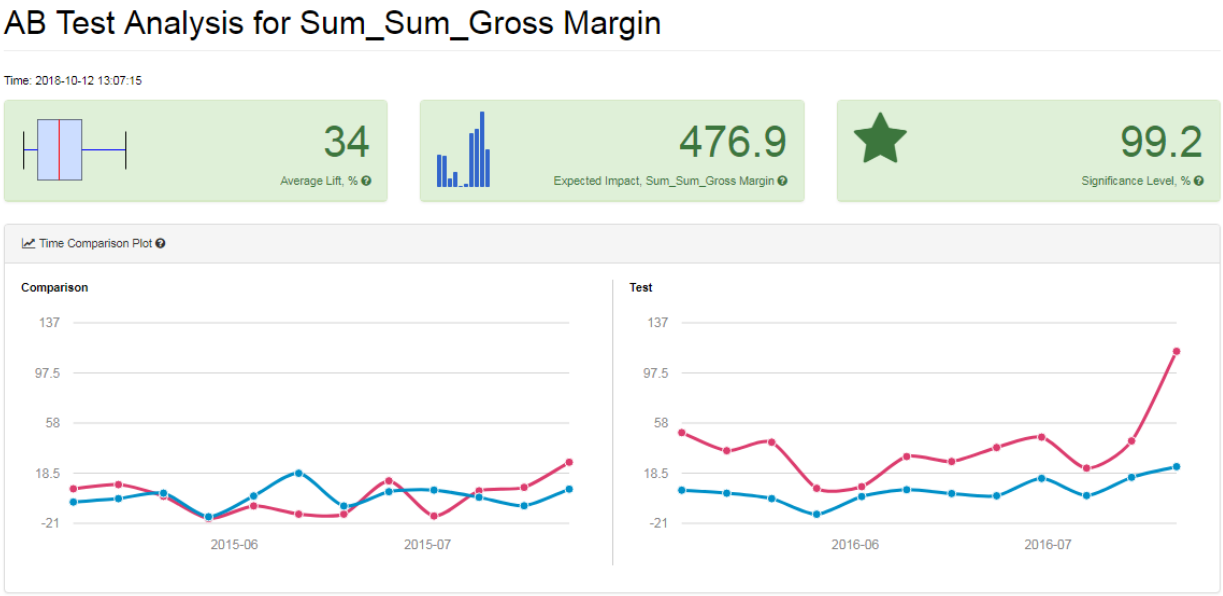
Answer these questions. Be sure to include visualizations from your analysis:

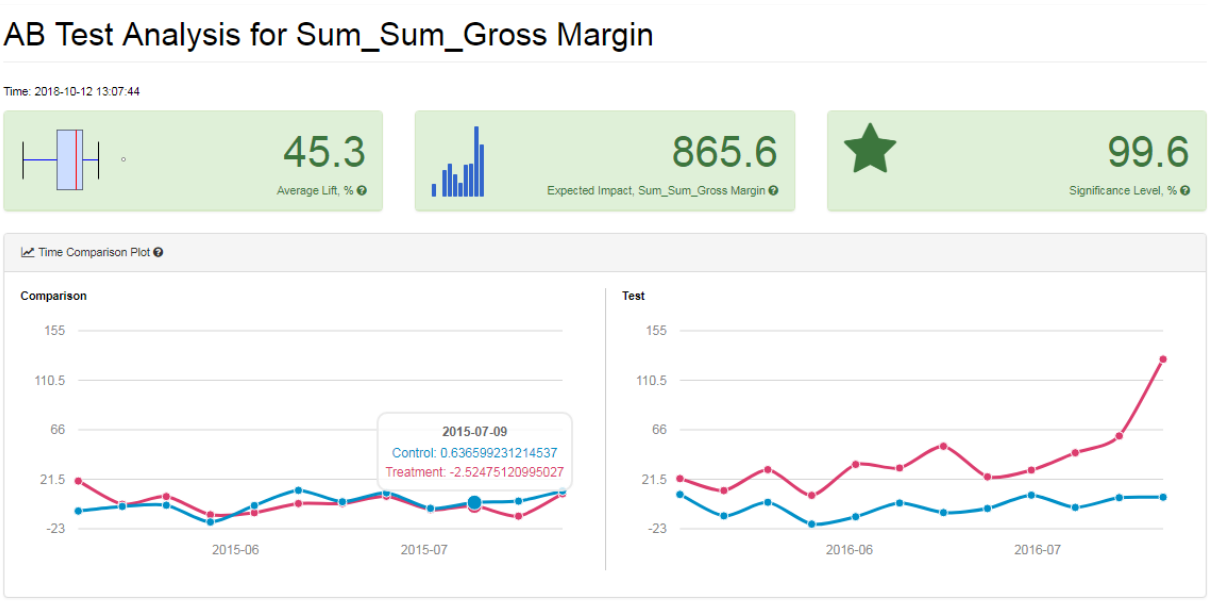
1. What is your recommendation - Should the company roll out the updated menu to all stores?

There is a clear increase in the profit margin of the treatment stores because of the advertisement and new additions in the menu.
The company should go ahead and roll out the updated menu in all its stores.

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

There seems to be 34% lift with 99.2 % significance level in ‘West’ region
There seems to be 45.3% lift with 99.6 % significance level in the ‘Central’ region





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

Overall there seems to be 39.7 % lift with 100 % significance level from the new menu.

AB Test Analysis for Sum_Sum_Gross Margin

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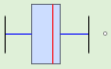

39.7

Average Lift, %

671.2

Expected Impact, Sum_Sum_Gross Margin

100

Significance Level, %

Time Comparison Plot