# Project: Analyzing a Market Test

## Step 1: Plan Your Analysis

1. What is the performance metric you'll use to evaluate the results of your test?

   We can use the sum of Gross Margin to evaluate the result of introducing gourmet sandwiches and wines at Round Roasters.

2. What is the test period?

   The test will be run for a period of 12 weeks 04.29.16 to 07.21.16.

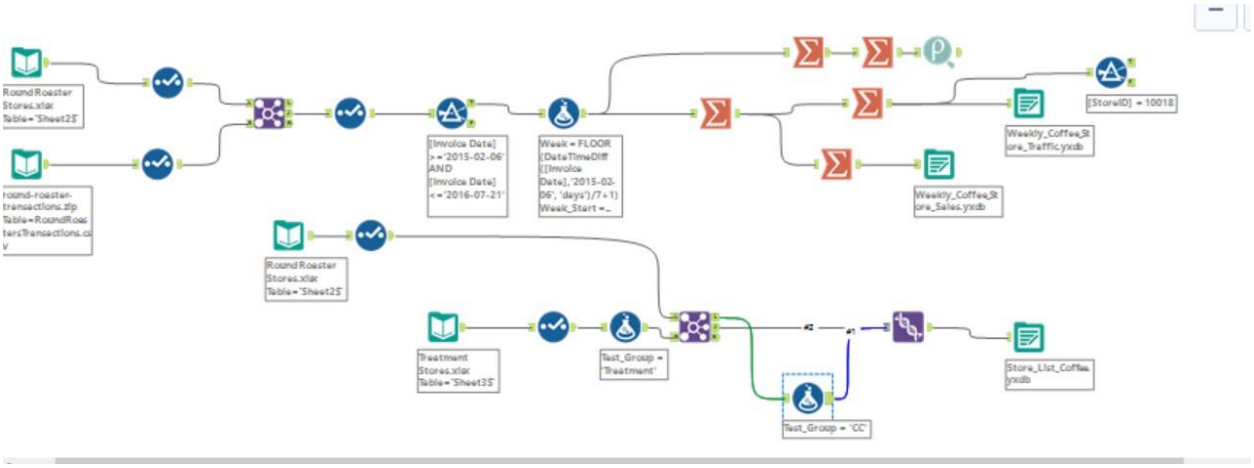
3. At what level (day, week, month, etc.) should the data be aggregated?

   Data should be aggregated at 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.*

Workflow for Data Preparation



# 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.*

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

   AvgMonthSales and Sq_Ft can be considered as control variables.

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

| | FieldName | Sq_Ft | AvgMonthSales | Sum_Sum_Gross Margin |
|---|---|---|---|---|
| 1 | Sq_Ft | 1 | -0.046873 | -0.01353 |
| 2 | AvgMonthSales | -0.046873 | 1 | 0.76485 |
| 3 | Sum_Sum_Gross Margin | -0.01353 | 0.76485 | 1 |

   As we can see above, the Pearson Correlation between Square Footage and Sum of Gross Margin is low (-0.0469). In comparison the correlation between Average Monthly Sales and Sum of Gross Margin is high (0.765). Hence, we should use Average Monthly Sales as the control variable.

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

   AvgMonthSales will be used to match treatment and control stores.

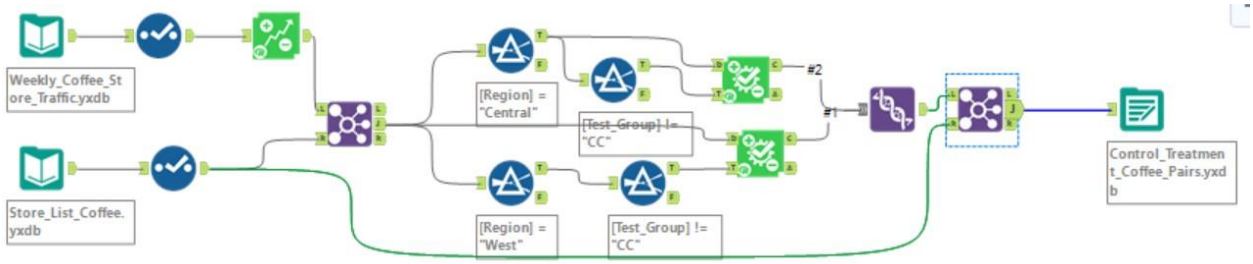
4. Please fill out the table below with your treatment and control stores pairs:

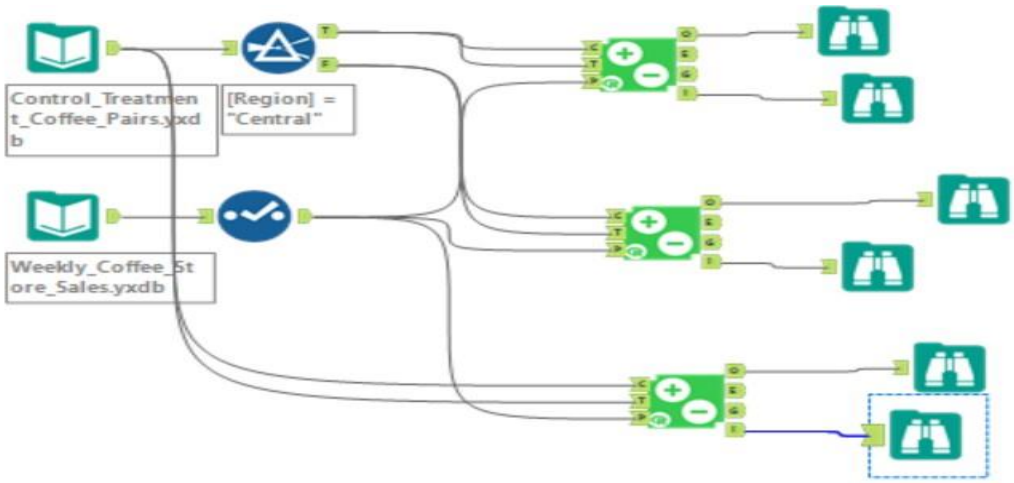
| Treatment Store | Control Store 1 | Control Store 2 |
|---|---|---|
| 1664 | 7162 | 8112 |
| 1675 | 1580 | 1807 |
| 1696 | 1964 | 1863 |
| 1700 | 2014 | 1630 |
| 1712 | 8162 | 7434 |
| 2288 | 9081 | 2568 |
| 2293 | 12219 | 9524 |
| 2301 | 3102 | 9238 |
| 2322 | 2409 | 3235 |
| 2341 | 12536 | 2383 |

# Step 4: Analysis and Writeup

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

Analysis Workflow

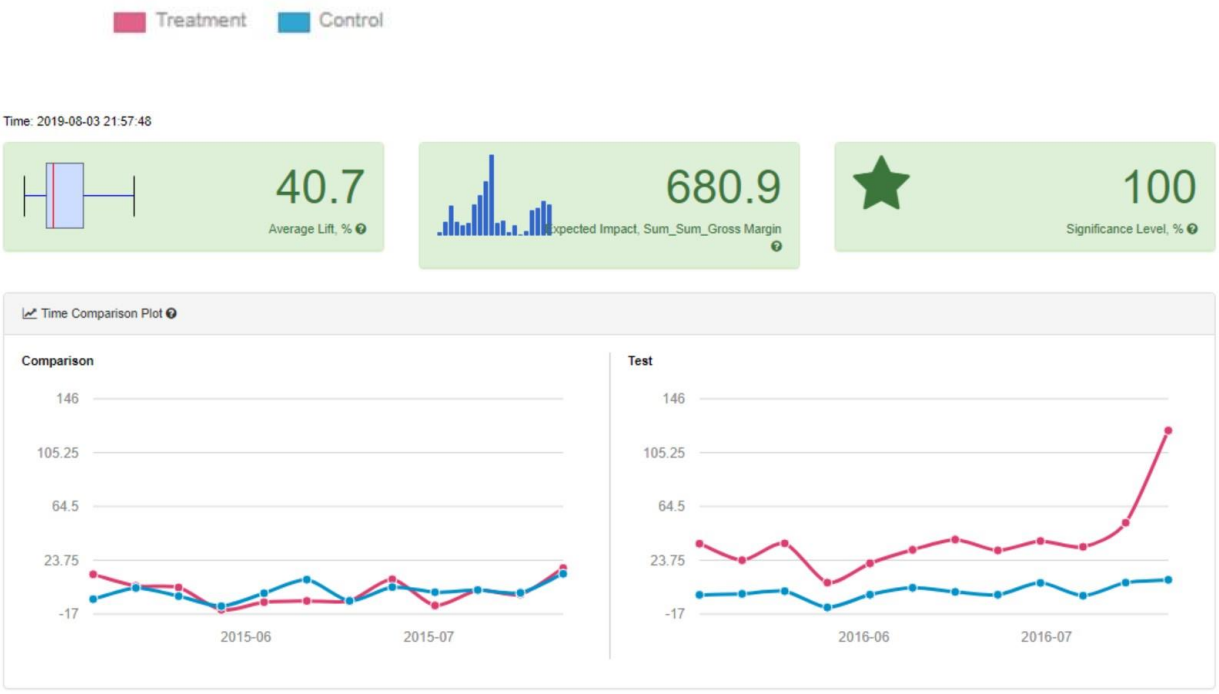


*Answer these questions. Be sure to include visualizations from your analysis:*

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

   AB Analysis for all Stores:

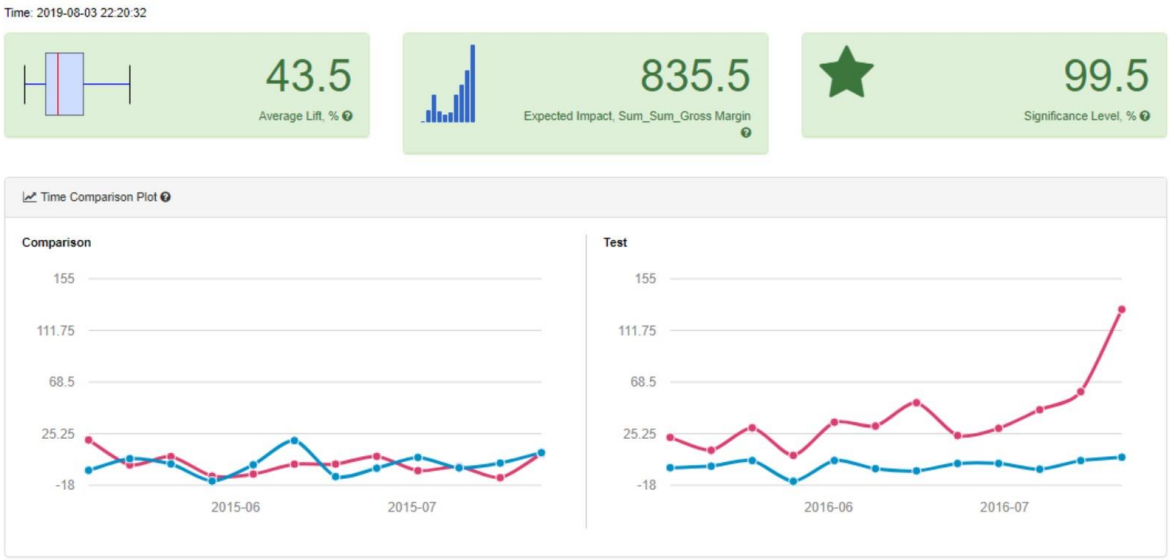



   From the above visuals, we can see that the company should roll out the updated menu to all stores. The average lift as a result of the new menu items would be 40.7% per store per week, or approximately $680.9 per store per week. The time comparison plot shows that during the test period there is a lift in sales of the treatment stores. This increase in profit is more than 18% of the management requirement.

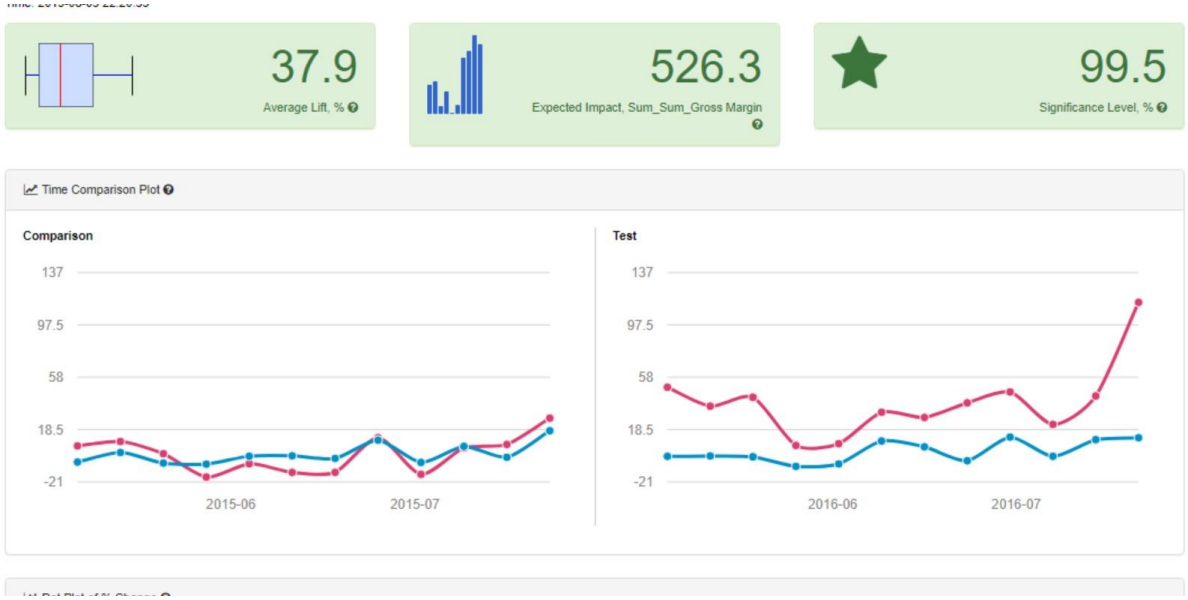
2. What is the lift from the new menu for West and Central regions (include statistical significance)?

   The lift from the new menu for the Central region is 43.5% with a significance of 99.5% and the lift for the West region is 37.9% with the significance of 99.5%. See next page.

Central:




West:




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

   The lift from the new menu over all is 40.7% with a statistical significance of 100%.