Project: Analyzing a Market Test

Valencia Becerra Gerardo

Step 1: Plan Your Analysis

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

   The predicted impact to profitability should be enough to justify the increased marketing budget: at least 18% increase in profit growth compared to the comparative period while compared to the control stores; otherwise known as *incremental lift*. In the data, profit is represented in the **gross_margin** variable. We'll use **Weekly Gross Margin** for the A/B Analysis Tool.

2. What is the test period?

   The test ran for a period of 12 weeks (2016-April-29 to 2016-July-21) where five stores in each of the test markets offered the updated menu along with television advertising.

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

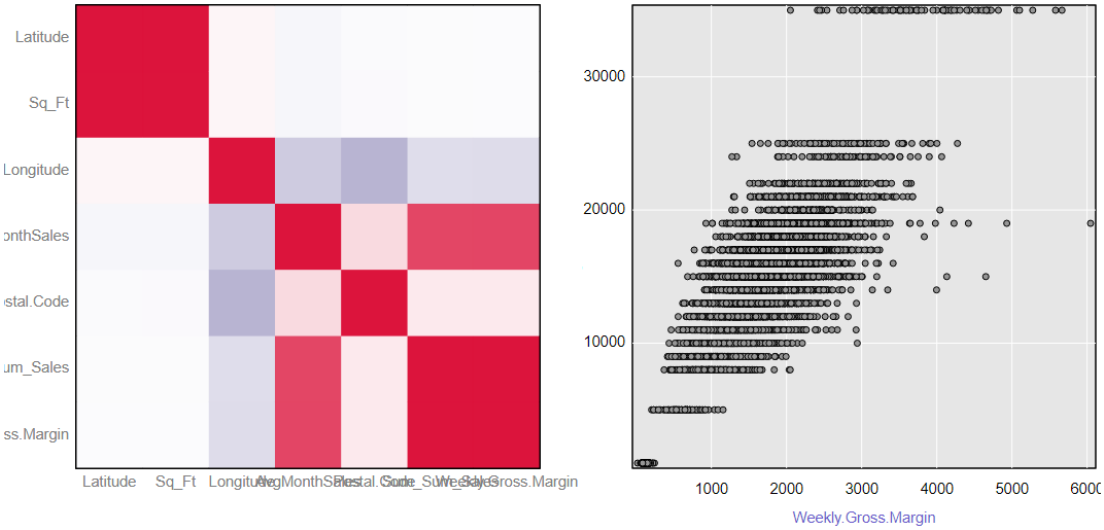
Step 3: Match Treatment and Control Units

Apart from trend and seasonality...

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

   The control variables that should be considered are: **AvgMonthSales** and **Sq_Ft** as the other variables (Latitude, Longitude, Postal Code) all express the same thing, and then highly correlated between them, but we are separating the analysis between West and Central Regions so these variables are not useful for insights. Between AvgMonthSales and Sq_Ft, we'll choose **AvgMonthSales** as the control variable as it has a lot of correlation with Gross Margin, our target variable of interest.

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



The correlation between Weekly Gross Margin and AvgMonthSales (right plot) is 0.79.
The correlation between Weekly Gross Margin and Sq_Ft is –0.02

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

   Trend, Seasonality and AvgMonthSales.

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

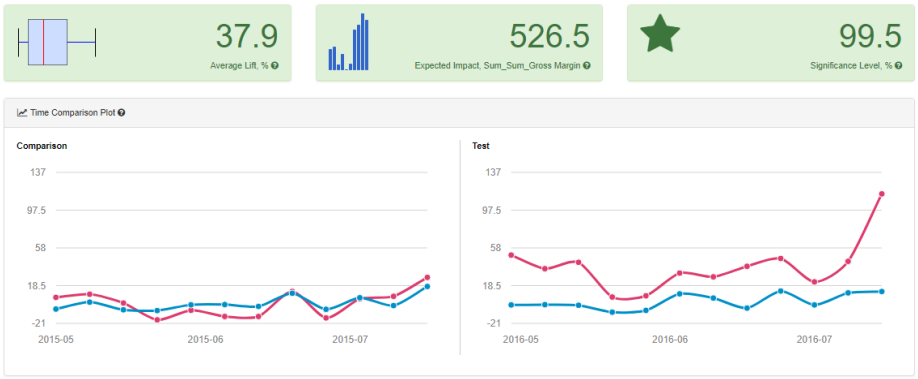
Step 4: Analysis and Writeup

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

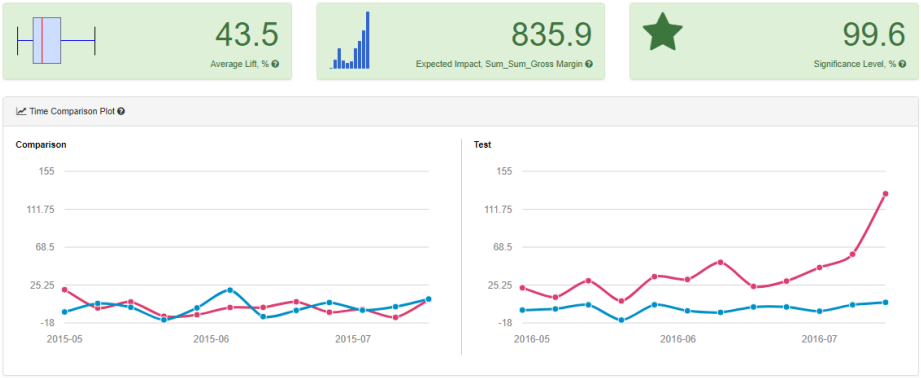
   Yes. The company should roll out the updated menu to all stores as the expected profit is bigger than the increased marketing budget.

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

   The lift for the *West* region is 37.9 with 99.5% statistical significance.



   The lift for the *Central* region is 43.5 with 99.6% statistical significance.



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

   The lift for the *new menu overall* is 40.7 with 100% statistical significance.