Project: Analyzing a Market Test

Step 1: Plan Your Analysis

a coffee restaurant in the United States of America. The executive team conducted a market test with a new menu and needs to figure whether the new menu can drive enough sales to offset the cost of marketing the new menu. Your job is to analyze the A/B test and write up a recommendation to whether the Round Roasters chain should launch this new menu.

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

   In the data, profit is represented in the *gross_margin* variable which is going to be our performance metric to evaluate the result
   I should analyze 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*.

2. **What is the test period?**

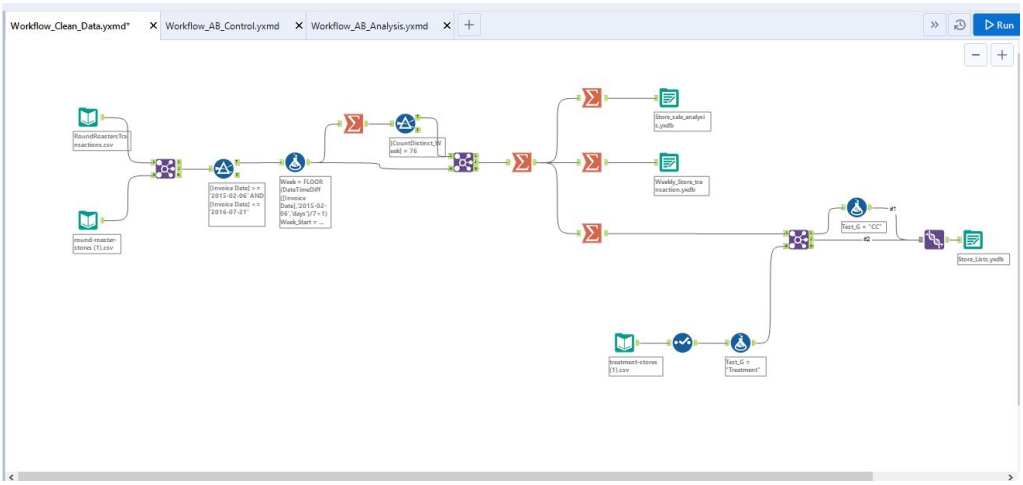
   The test ran for a period of 12 weeks (2016-April-29 to 2016-July-21) where five stores in each of the test markets offered the updated menu along with television advertising.

3. **At what level (day, week, month, etc.) should the data be aggregated?**
   the data should be aggregated in a Week leve.

Step 2: Clean Up Your Data

the cleaning and filtering process is shown below using the Alteryx workflow.

*1- **Joining** RoundRoastersTransaction file with round-roaster-stores file*
2- then filter the invoice Date to 2015-02-06
3- Joining the date data and summarizing three output to prepare for analysis
4- summarize to get the Store_sale analysis to help with AB analysis
5- summarize to get the weekly_Store_transactions
6- summarize to get store_Lists.
7- In order to get Store_Lists, we need to input Treatment-store file to classify Test_G to "Treatment" then join it with Store_list then union with Join with Test_G "CC". This way, we got Store Treatments List.



Step 3: Match Treatment and Control Units

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

   I will be using Trend and Seasonality with AvgMonthSales for AB Control for both Regions

2. **What is the correlation between your each potential control variable and your performance metric?**
3.

   After doing the full correlation matrix, I found out that AvgMonthSale is higher than sq_ft. AvgMonthSale is 0.79 which has a positive significant while sq_ft has -0.1

4. **What control variables will you use to match treatment and control stores?**
   Trend, Seasonality and AvgMonth for AB control

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

Treatment Store	Control Store 1	Control Store 2
1664	1964	7162
1675	7284	2214
1696	1863	7334
1700	7037	2014
1712	8162	7434
2288	2568	9081
2293	12686	9639
2301	12536	9236
2322	9388	3185
2341	2572	12586

Step 4: Analysis and Writeup

1. **What is your recommendation - Should the company roll out the updated menu to all stores?**
   the company should roll out the updated menu to all stores since The predicted impact to profitability should be enough to justify the increased marketing budget: at least 18% increase in profit growth

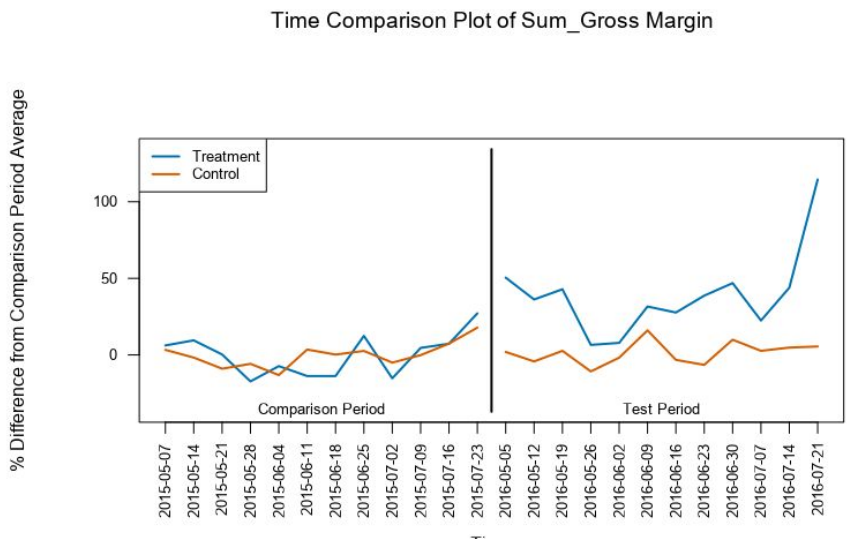
2. **What is the lift from the new menu for West and Central regions (include statistical significance)?**

   West:

   The report below shows West Lift Analysis of the significance Level 99.6 with LIft improvement of 39.1% this means that West has expected impact of $530 increase per store per week

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
39.1%	530	99.6%



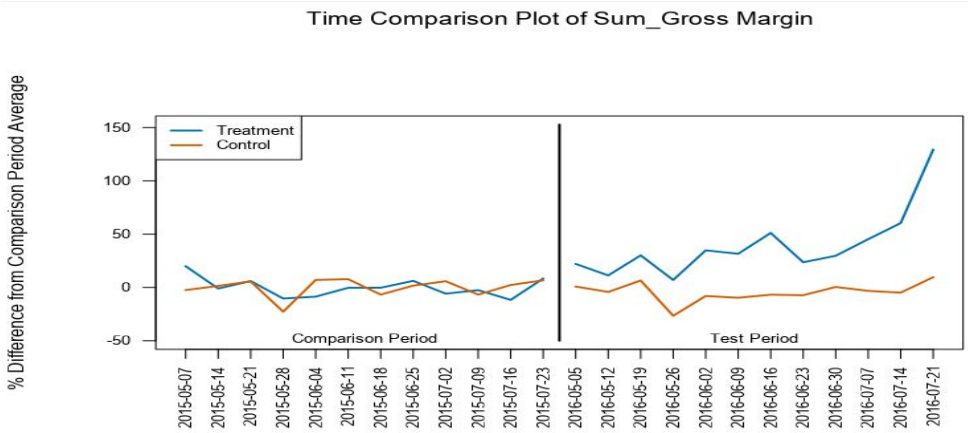
Central:

The Lift analysis shows very strong performance for the central region if rolling out new menu in Lift with 47.6% improvement and significance level 99.6. Also with expected impact 906$ per store per week

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
47.6%	906	99.6%

We can notice that the Treatment line in the Time Comparison Plot for the Central Region has increased over time per week while control steadily fluctuated in the Test Period.

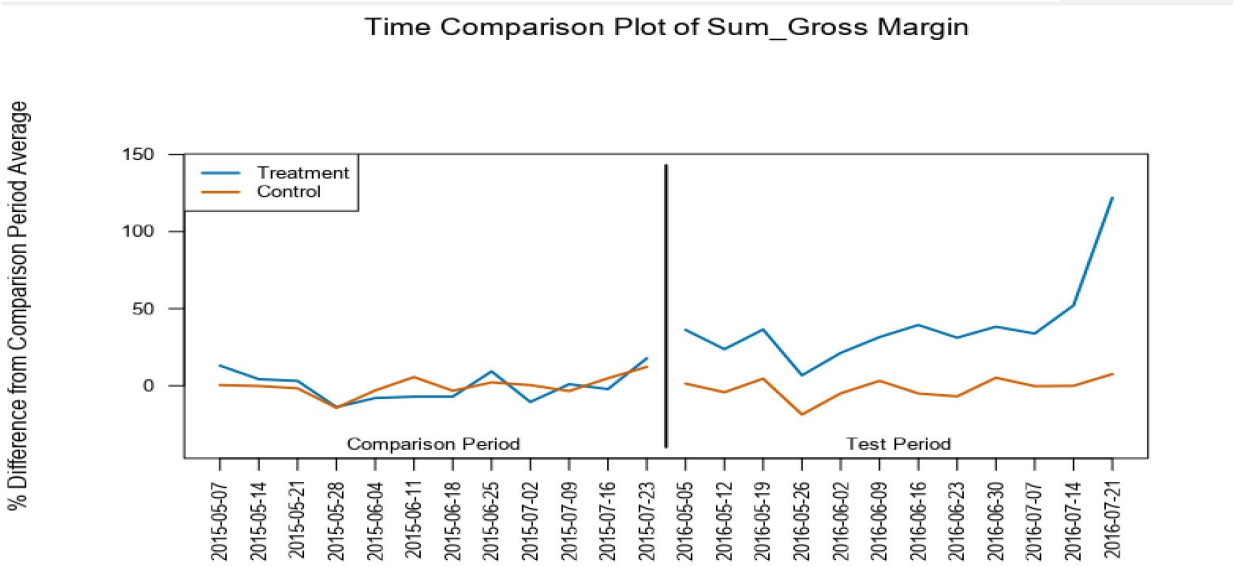


3. **What is the lift from the new menu overall?**

the improvement for the new menu overall is still positive with 43.3% and significance level 100% with expected impact 718% per store per week. Also, we can see the Time Comparison Plot shows increases in the Treatment line in Test Period which

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
43.3%	718	100.0%



This is the workflow to get the AB Analysis