Project: Analyzing a Market Test

Step 1: Plan Your Analysis

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

   Our goal is to predict the increase of the gross margin by predicting the impact on the profitability, Hence, Gross margin will be my performance matric to evaluate the results received from the A/B test to check for at least a 18% in profit growth.

2. What is the test period?

   12 weeks starting from 29-April-2016 to 21-July-2016

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

   Data will be aggregated at a weekly level.

Step 2: Clean Up Your Data

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.

   Apart from trend and seasonality I will be considering **Average Monthly Sales per Store** and **Sq_ft**.

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

Pearson Correlation Analysis

Full Correlation Matrix

	Sq_Ft	AvgMonthSales	Sum_Sum_Gross.Margin
Sq_Ft	1.000000	-0.046967	-0.024224
AvgMonthSales	-0.046967	1.000000	0.990978
Sum_Sum_Gross.Margin	-0.024224	0.990978	1.000000

Matrix of Corresponding p-values

	Sq_Ft	AvgMonthSales	Sum_Sum_Gross.Margin
Sq_Ft		0.59138	0.78196
AvgMonthSales	0.59138		0.00000
Sum_Sum_Gross.Margin	0.78196	0.00000	

Figure 1: Person Correlation Matrix

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

   Based on the Person Correlation Matrix I will be using trend, seasonality, and **Average Monthly Sales per Store** as the Sq_ft showed low correlation with the considered potential variables.

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

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

Step 4: Analysis and Writeup

1. What is your recommendation - Should the company roll out the updated menu to all stores?
   Yes, I would recommend the roll out of the updated menu to all stores as the AB analysis tools has shown high significance, an average lift, and an increase on the expected impact.
2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   Lift from the new Menu for West region with 99.5% of significance, 37.9 % lift, and an expected increase of 526.3 of the gross margins.

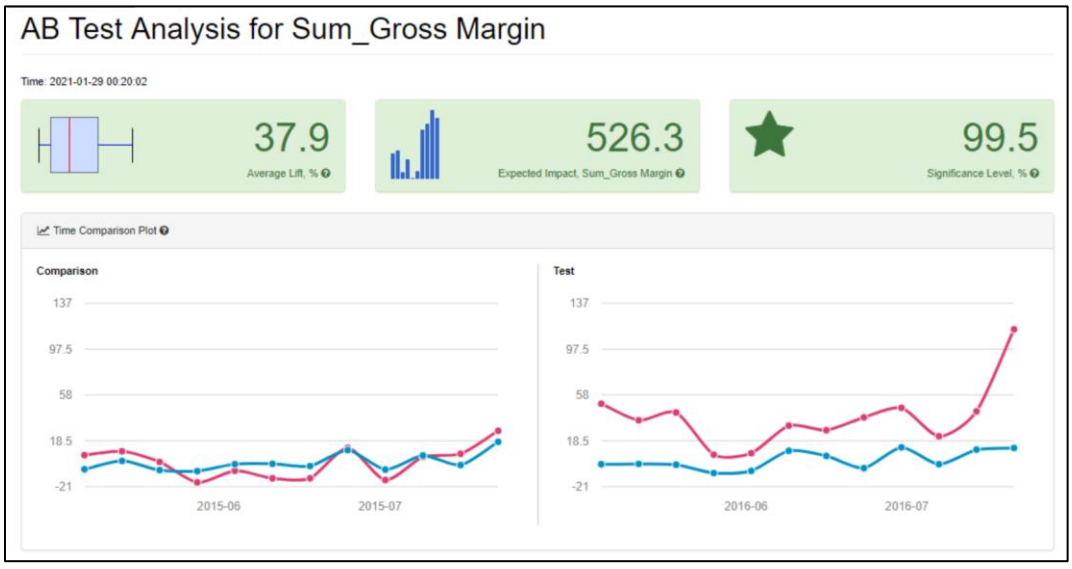

Figure 2: Lift from the new Menu for West region

Lift from the new Menu for Central region with 99.5% of significance, 43.5 % lift, and an expected increase of 835.5 of the gross margins.

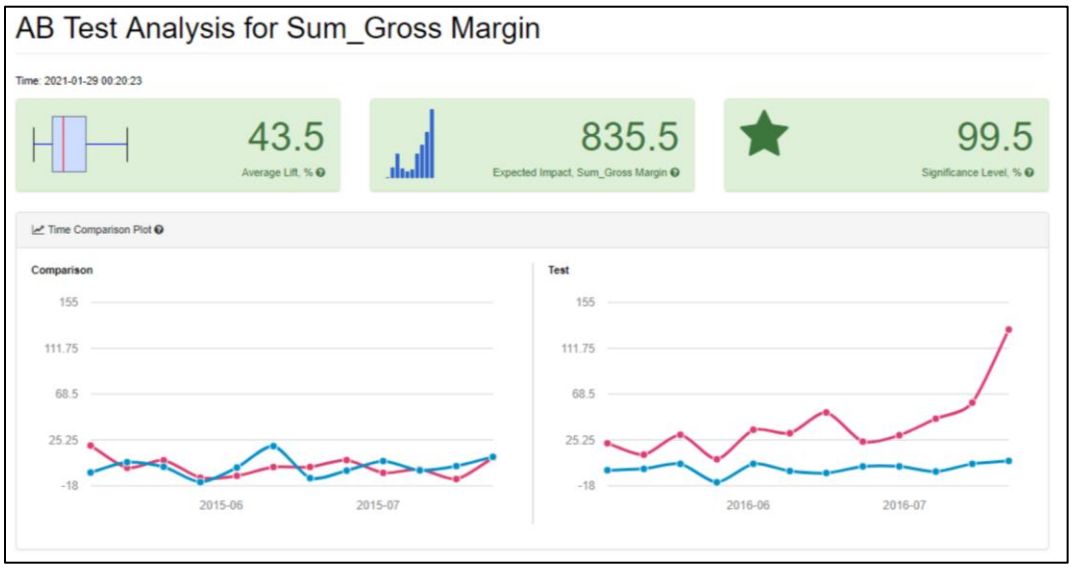

Figure 3: Lift from the new Menu for Central region

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

Lift from the new Menu for the West and Central region with 100% of significance, 40.7 % lift, and an expected increase of 680.9 of the gross margins.

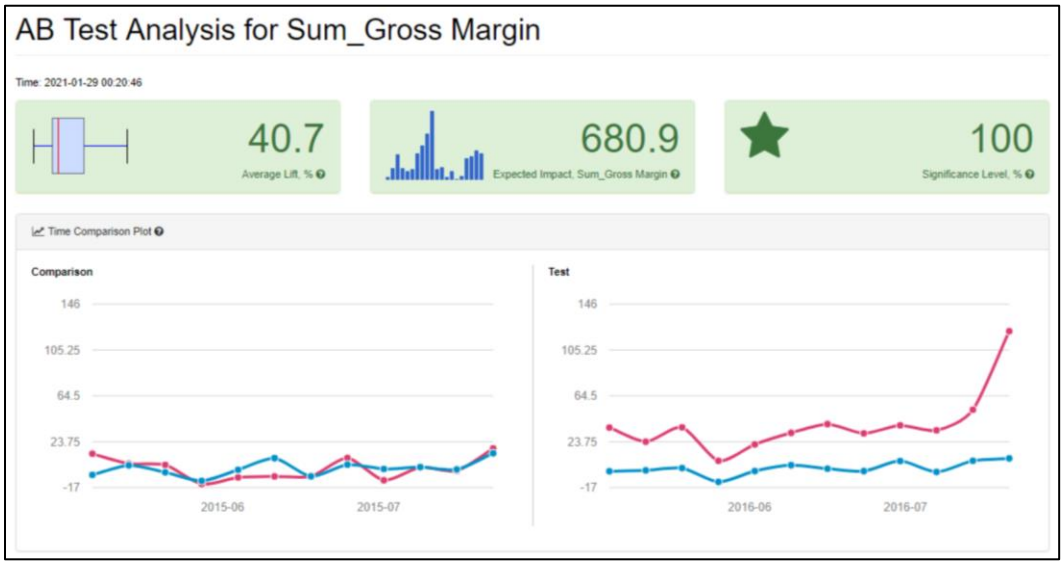

Figure 4: Lift from the new Menu for Central and West region

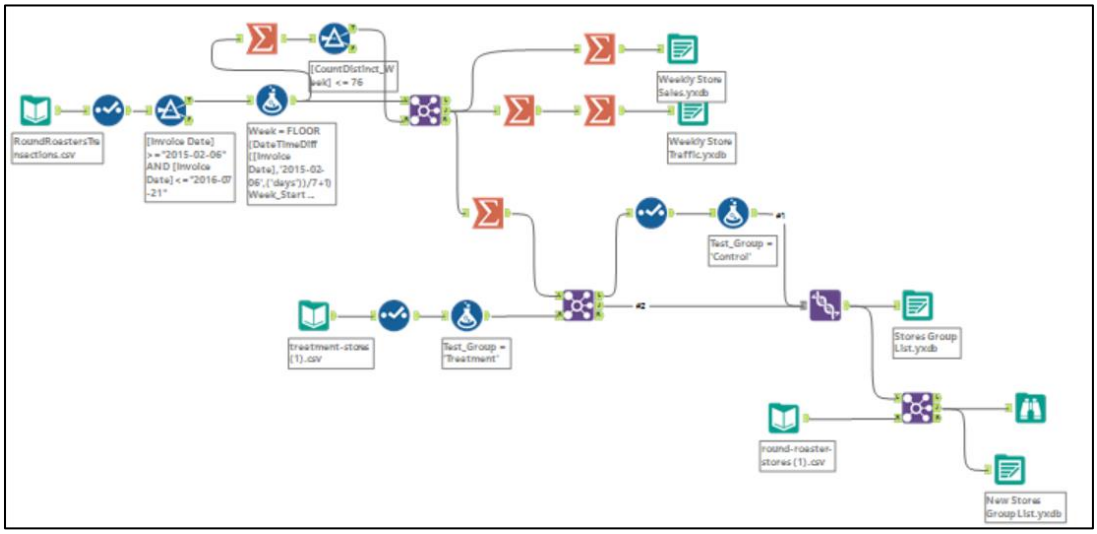

Figure 5:Data Prep

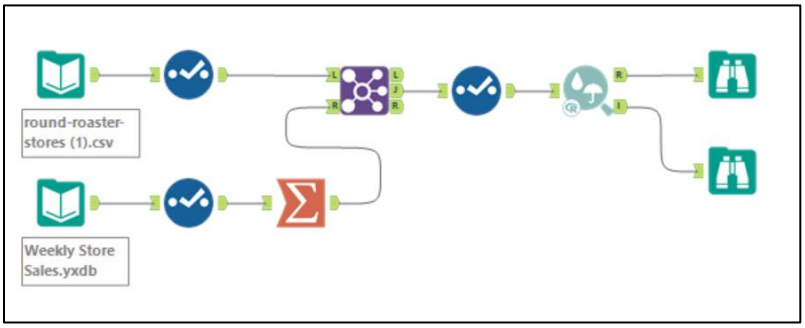

Figure 6:Pearson Correlation Workflow

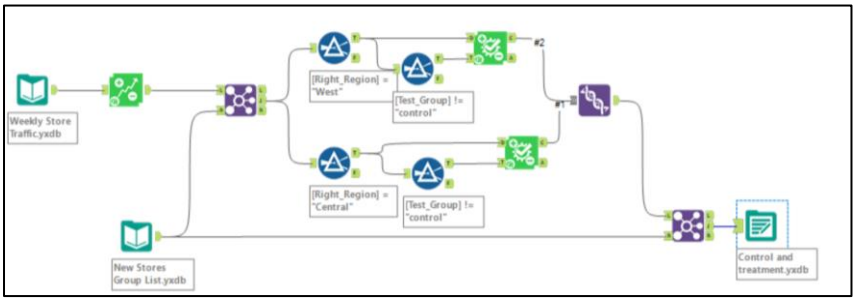

Figure 7:Control and Treatment Workflow

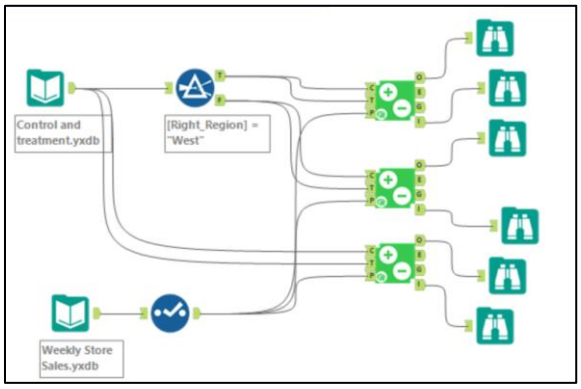

Figure 8:A/B analysis Workflow