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?

I have chosen the sum of gross margin as the performance metrics to evaluate whether to introduce gourmet sandwiches and limited wine offerings to spur sales growth in Round Roasters

2. What is the test period?

The test period is from 29th April 2016 to 21st July 2016. Additionally, a time-period of 12 weeks is used as the test period.

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

The data has been aggregated at the weekly level.

Step 2: Clean Up Your Data

The given datasets **RoundRoasterTransaction** and **Round-Roaster-Store** datasets are first combined. In this experiment, 76 weeks data (6-Feb-15 to 21-Jul-16) is used. As A/B test requires 52 weeks of data in addition to a minimum of 12 weeks needed to calculate seasonality and for the period of testing each. 12 weeks is used as the test period lasted for 12 weeks.

I have also introduced the following new columns of data. They are *week*, *week_start* and *week_*end. These new columns are added to calculate the weekly traffic and sales for each store. **Treatment_Store** dataset is then used to create a list of control and treatment stores for this project.

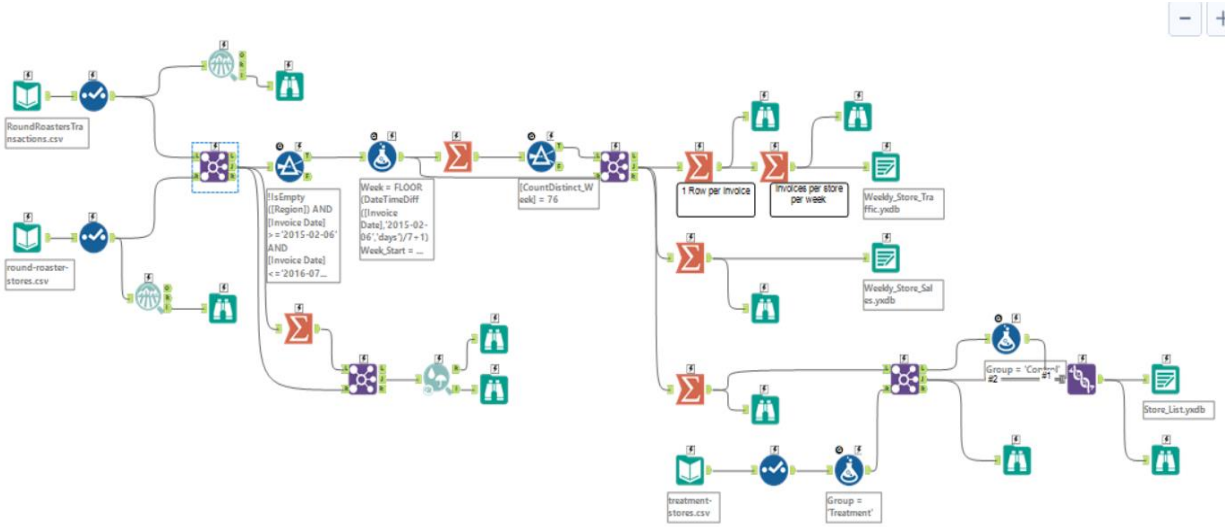


Figure 1: Alteryx Workflow to clean up data

Step 3: Match Treatment and Control Units

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

AvgMonthSales should be considered as constant variables while *Square Feet* is not required for analysis.

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

From the Pearson Correlation Analysis, *AvgMonthSales* has a high correlation of ~ 0.99 with the performance metric, i.e. Sum of Gross Margin. On the other hand, *Square Feet* has a poor correlation of -0.07.

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin	1.000000	-0.073361	0.987815
Sq_Ft	-0.073361	1.000000	-0.098990
AvgMonthSales	0.987815	-0.098990	1.000000

Figure 2: Pearson Correlation Analysis

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

AvgMonthSales data will be used together with Trend and Seasonality when matching 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	1964	8562
1675	1807	7584
1696	1863	7334
1700	7037	1508
1712	8162	7434
2288	2568	9081
2293	12219	9639
2301	11668	12019
2322	9238	9388
2241	2572	3102

Table 1: Treatment and Control Stores Pairs

Step 4: Analysis and Writeup

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

The company should update its menu at all the stores as the profit margin has increased by more than 18%.

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

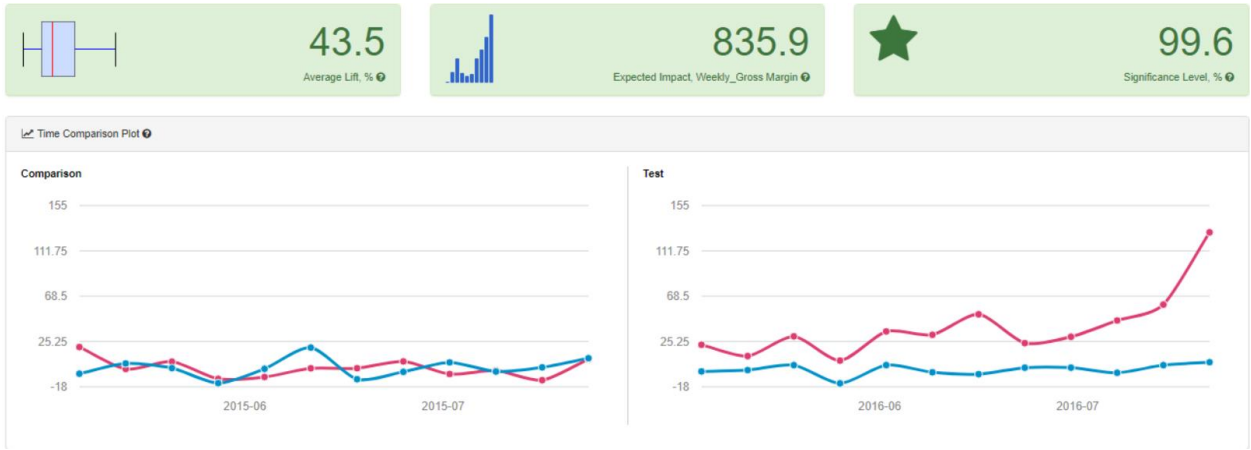
The lift for the West region is ~ **37.9** % while the lift for the Central region is ~**43.5**%. Overall both the regions have a statistical significance of **99.5**% and **99.6**% respectively.

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

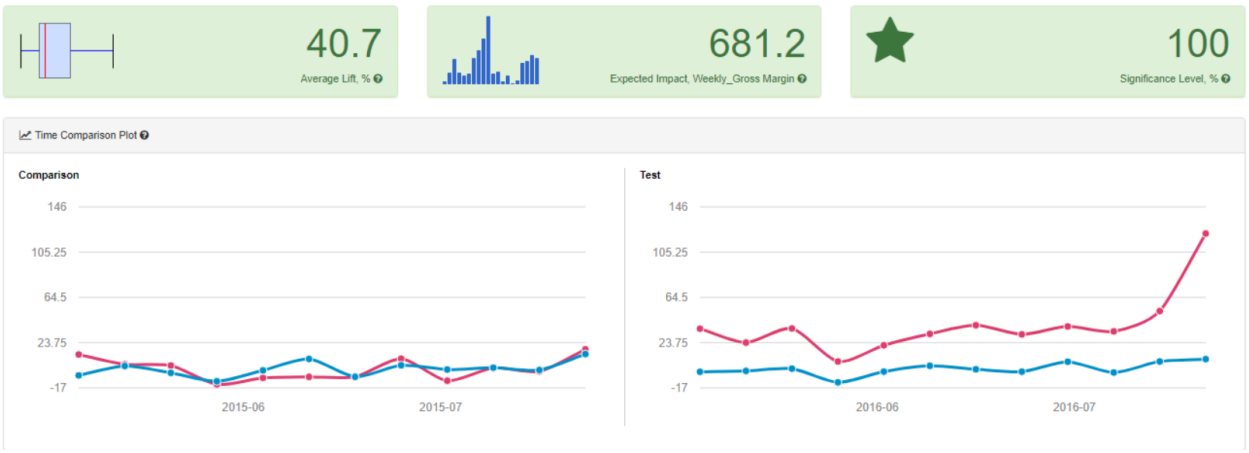
The lift for the new menu overall is 40.7 % with a statistical significance of 100%.

West Region

Central Region



Overall



Alteryx Workflows

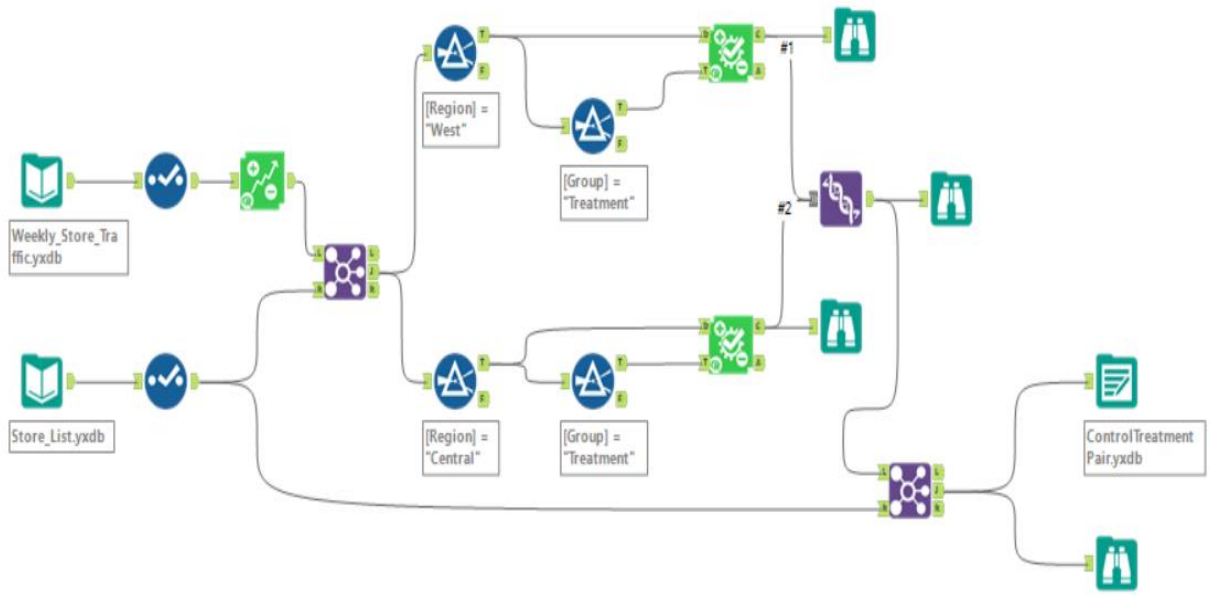


Figure 3: Treatment-Control pairing

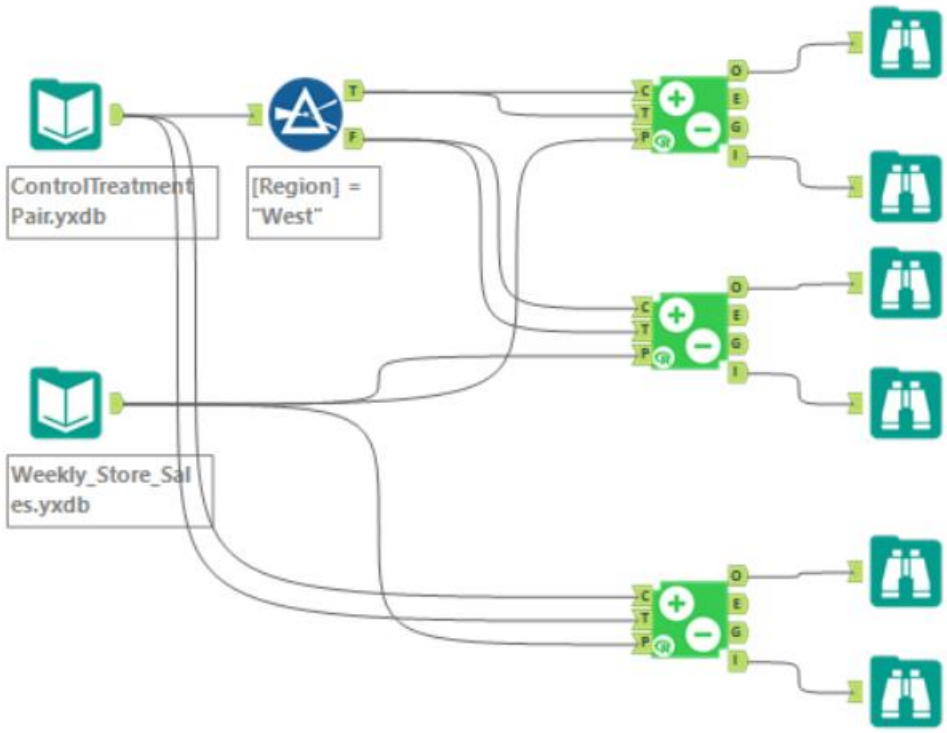


Figure 4: AB Testing