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?

In this case I'll rely on the sum of the gross margin and use it as a performance metric to evaluate the result of my test and make the final decision whether Round Roasters should apply the new changes "gourmet sandwiches and limited wine offerings" to all stores or not.

2. What is the test period?

The test period for this case will be 12 weeks (2016-April-29 to 2016-July-21).

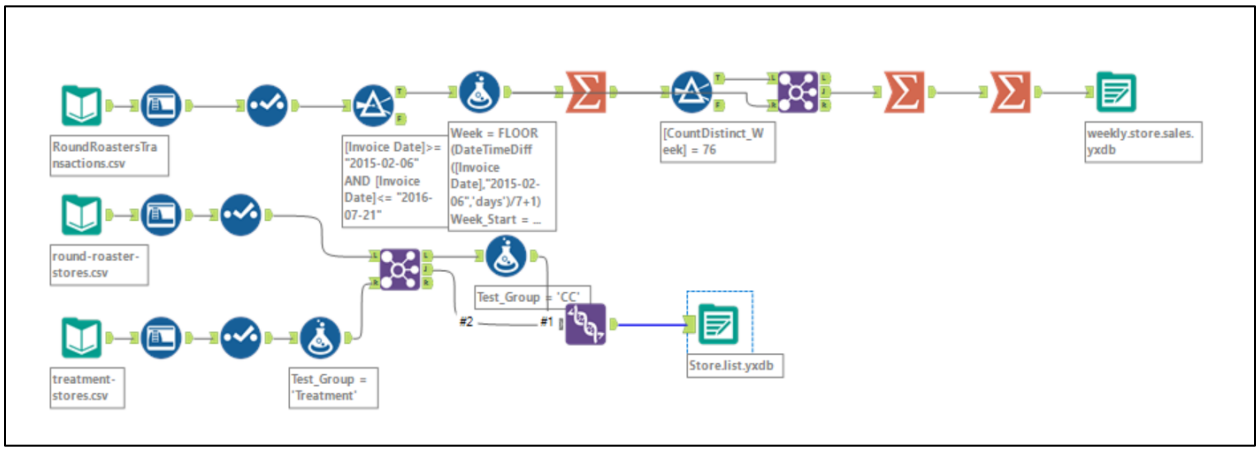
3. At what level (day, week, month, etc.) should the data be aggregated?

For this project, the data will be aggregated on a weekly level.

Step 2: Clean Up Your Data

In order to prepare the given data for the next step, I started with the **weekly.store.sales** which will be used for creating trends and seasonal patterns that are required for matching treatment and control stores later. **Store.list** is also generated to be used in matching and assigning control groups "stores" to the treatment groups. All the stores in the dataset have data of 76 weeks.

The graph below shows a screenshot of my Alteryx workflow.



Graph 1: Data Preparation workflow

Step 3: Match Treatment and Control Units

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

From the given file, two variables **AvgMonthSales** & **Sq_Ft** will be tested as potential control variables.

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

After running the association analysis, the graph below shows that **AvgMonthSales** has a high correlation (0.988) with the performance metric -compared with **Sq_Ft** correlation- and hence **AvgMonthSales** will be included as a control variable to match the treatment and control stores.

Pearson Correlation Analysis

Full Correlation Matrix

	Sq_Ft	AvgMonthSales	Sum_Gross.Margin
Sq_Ft	1.000000	-0.046967	-0.025067
AvgMonthSales	-0.046967	1.000000	0.988425
Sum_Gross.Margin	-0.025067	0.988425	1.000000

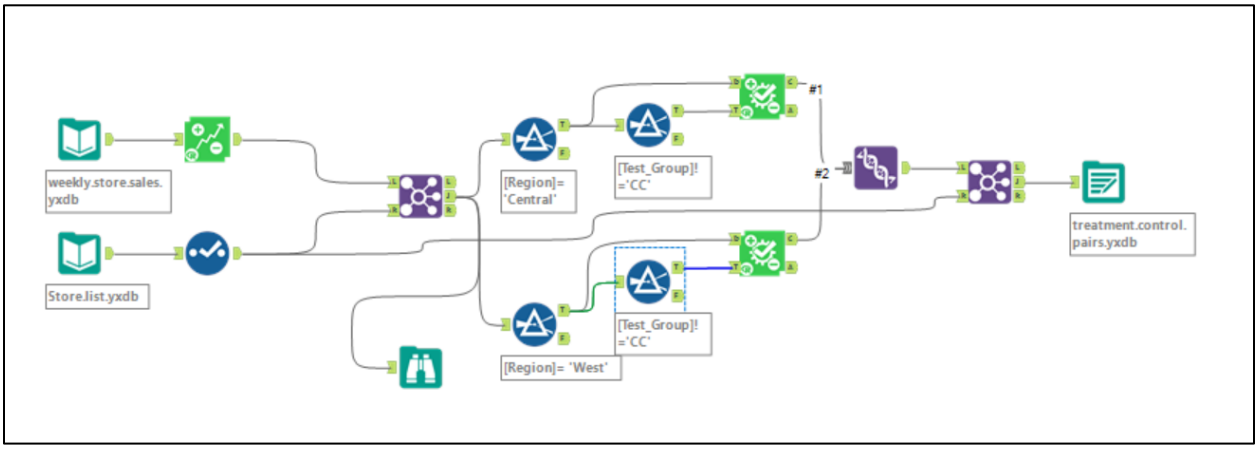
Graph 2: Association Analysis Report

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

AvgMonthSales will be used along with trends and seasonality to match treatment and control stores.

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

Treatment store	Control Store1	Control Store2
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



Graph 3: Preparing Control & Treatment Units Workflow

Step 4: Analysis and Writeup

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

Yes, Round Roasters should roll out the updated menu at all its stores. As the AB analysis reports show that the average lift of each region and overall exceeded 18%. This increase in the stores profit should be enough to offset and justify the marketing budget - graphs are provided in the next page-.

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

Lift	Expected Impact	Significance Level
37.9%	527	99.5%

   - Central Region

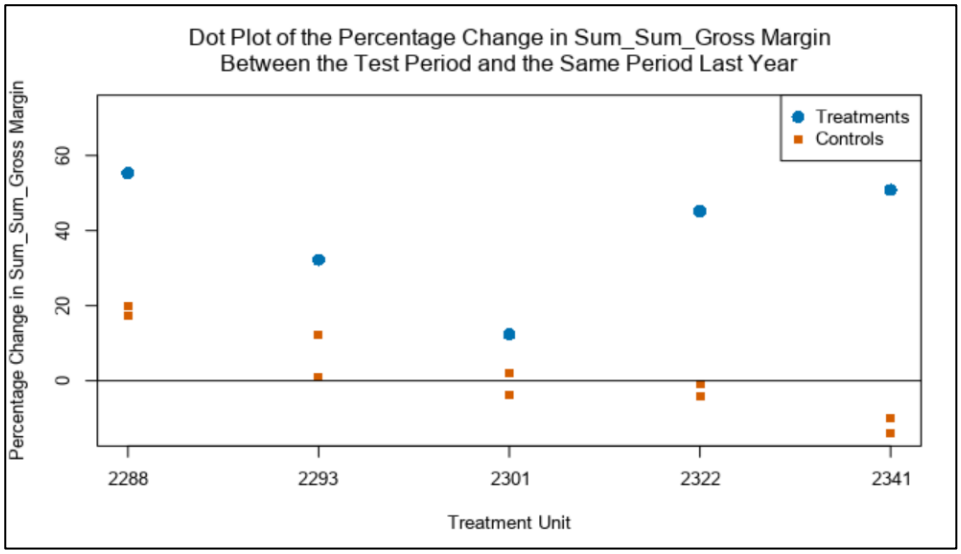
Lift	Expected Impact	Significance Level
43.5%	836	99.6%

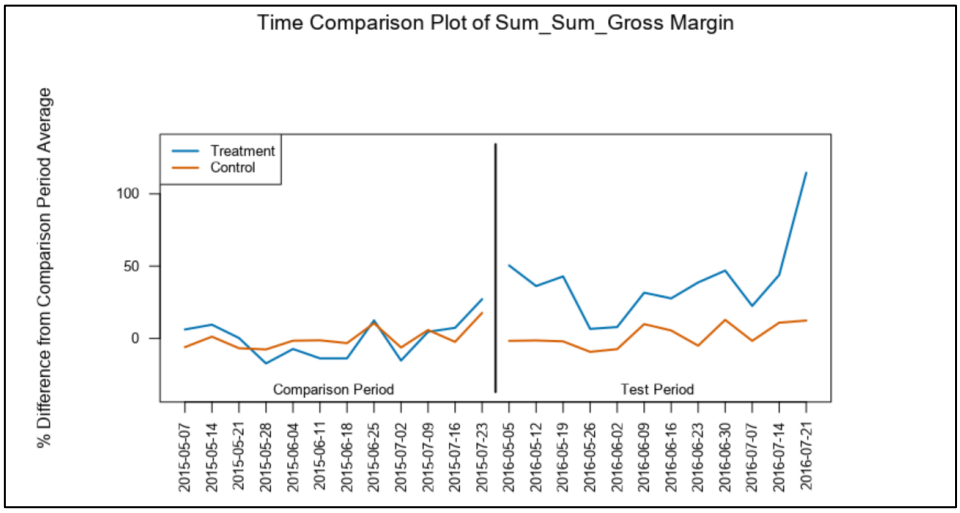
3. What is the lift from the new menu overall?

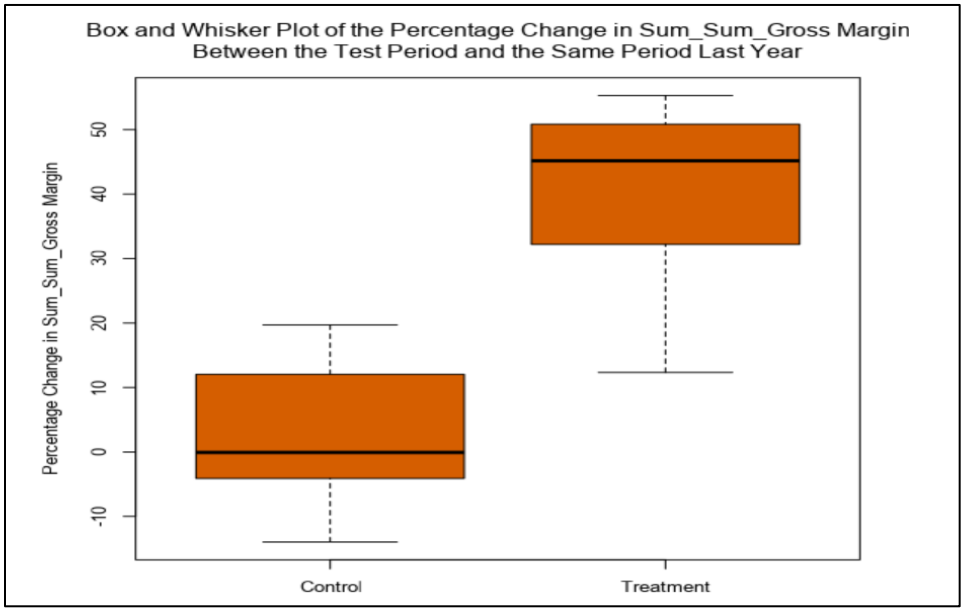
Lift	Expected Impact	Significance Level
40.7%	681	100.0%

In conclusion, the test overall result shows that launching the new menu will improve the profit by 40.7% at 100% significant, which results in $ 681 increase in the profit at each store per week and referring to project details this predicted increase is greater than 18%.

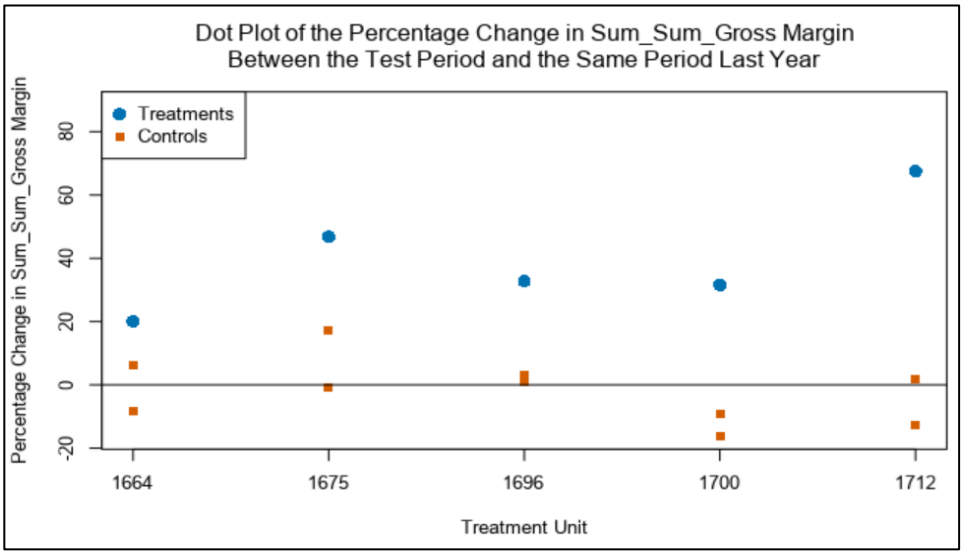
- West Region Test Result (Graphs)

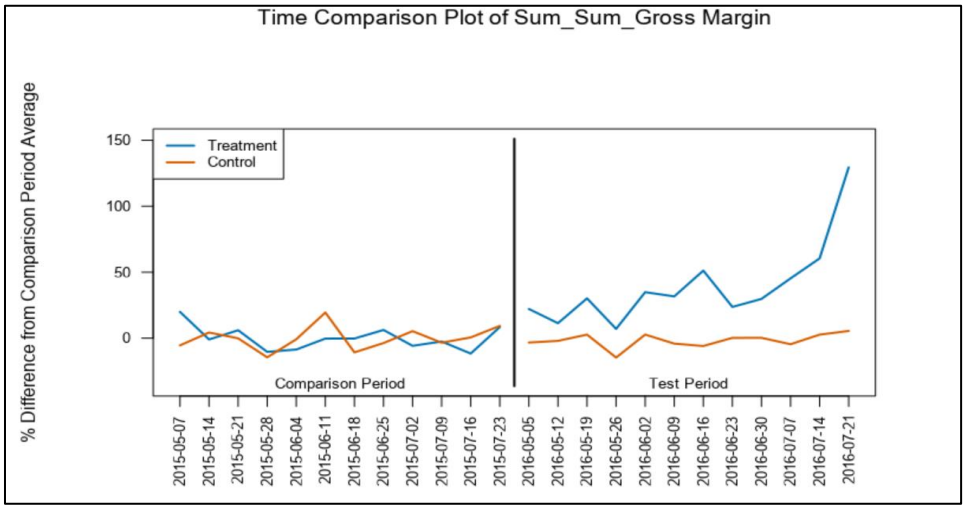


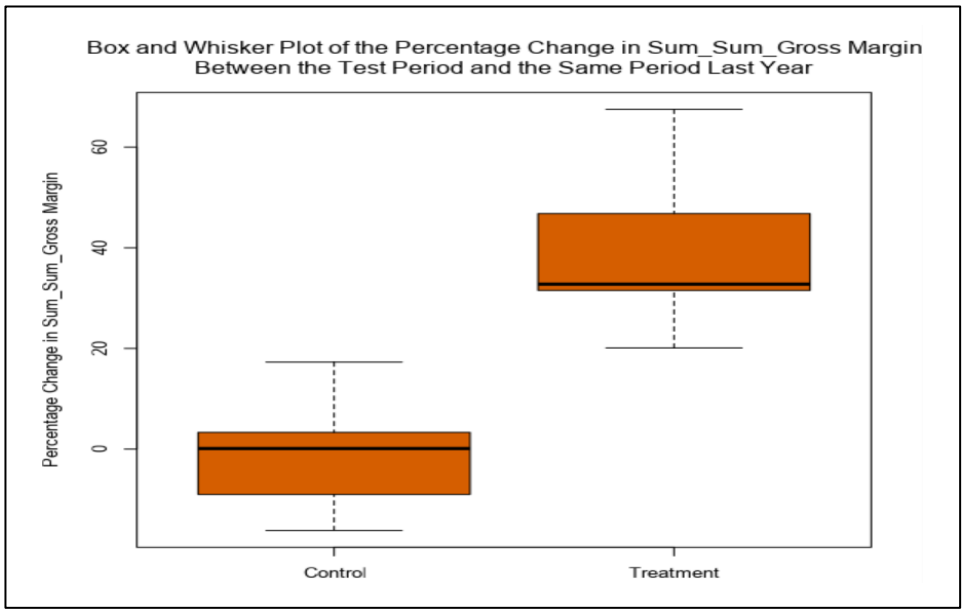




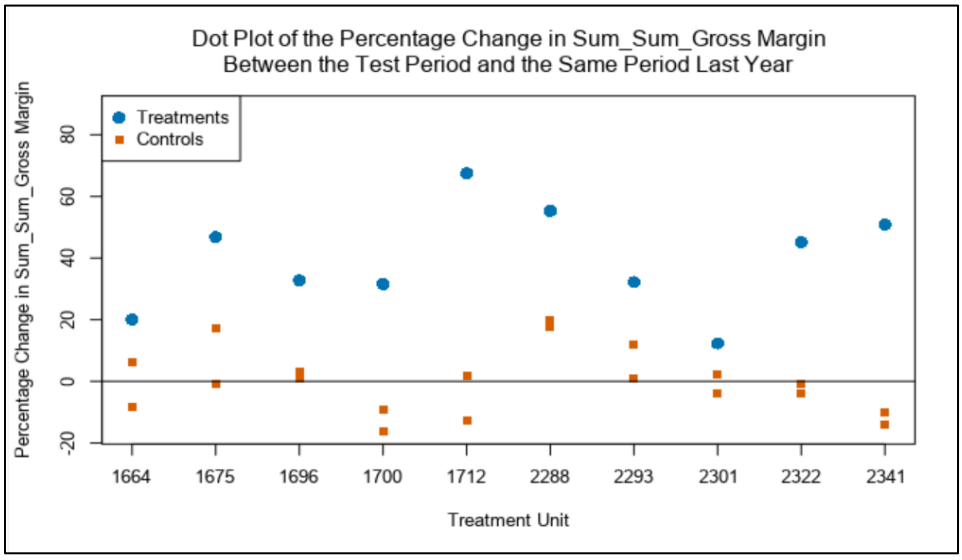
- Central Region Test Result (Graphs)

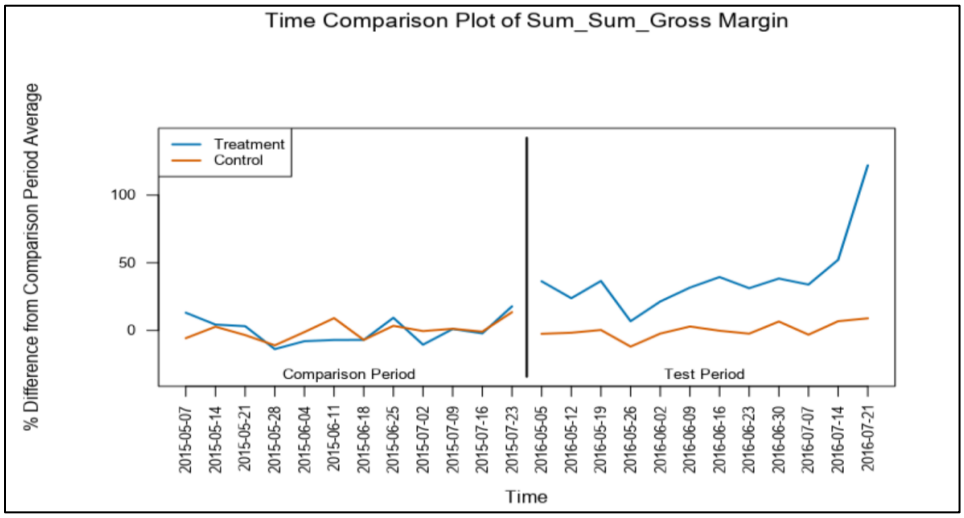


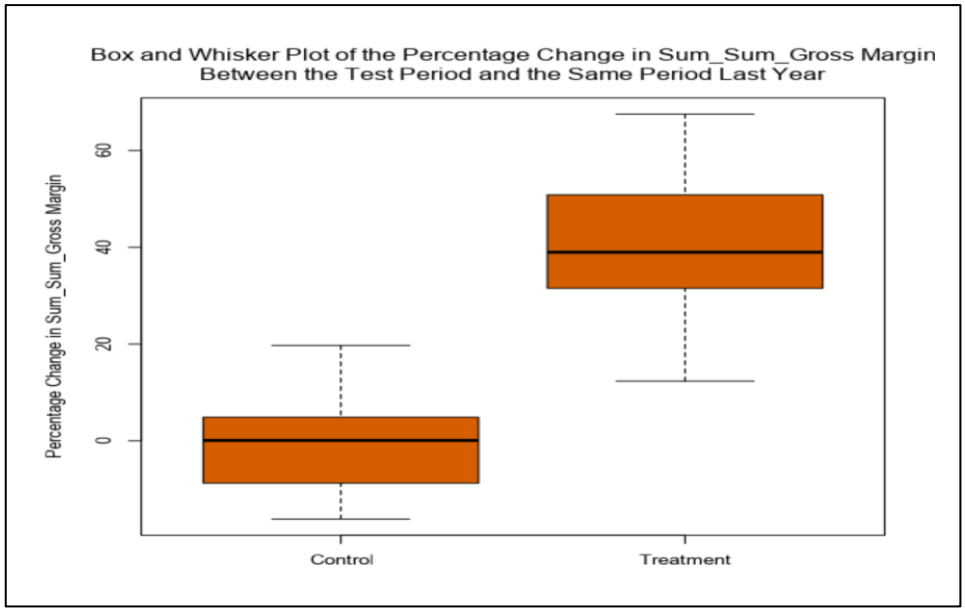




- The Overall Test Result (Graphs)







- AB Analysis Workflow