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?**
   The *sum of gross margin per store per month by region* which represents the profit will be used as performance metric

2. **What is the test period?**
   The test period is from 29-April-2016 to 21-July-2016, which is a 12-week period.

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

Step 2: Clean Up Your Data

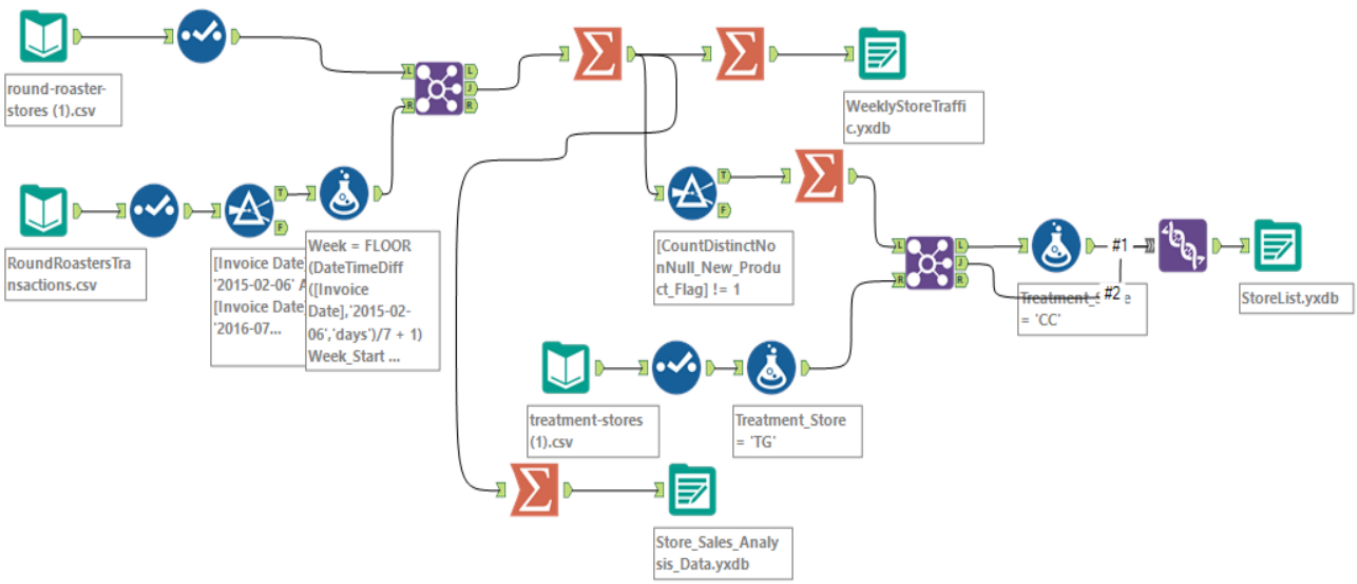


Figure 1: Alteryx workflow

Cleaning up the data involves using the three files, *round-roaster-stores.csv*, *RoundRoastersTransaction.csv* and *treatment-stores.csv* to create three datasets, *WeeklyStoreTraffic*, *StoreList*, and *Store_Sales_Analysis_Data.*

The snapshot of alteryx workflow above shows the complete process.

Step 3: Match Treatment and Control Units

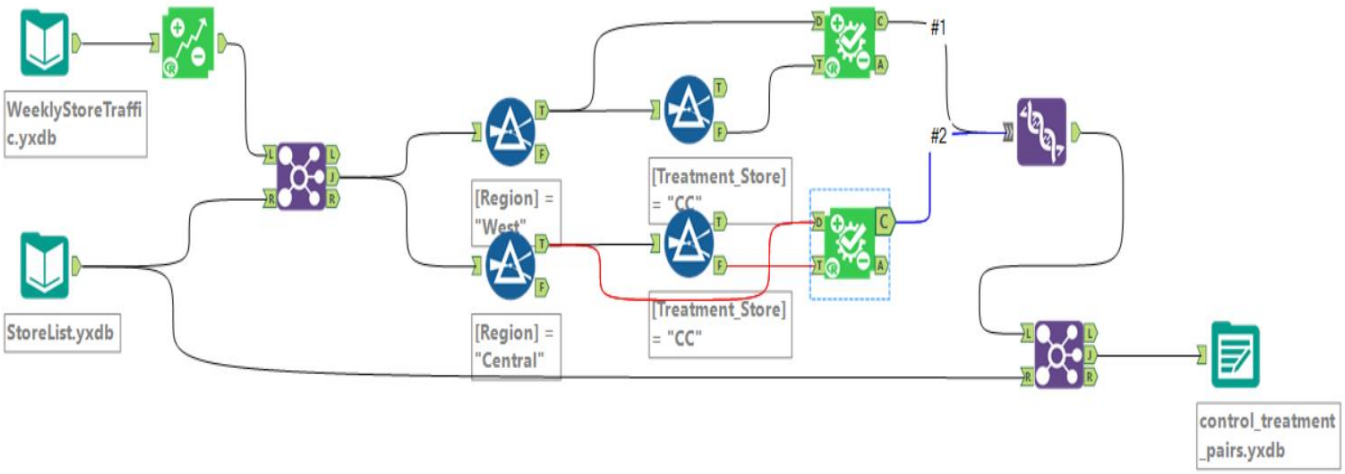


Figure 2. The Alteryx workflow that was used to generate the *control_treatment_pairs* dataset by using the AB trend and AB controls tools.

1. **What control variables should be considered?**
   Both AvgMonthSales and Sq_Ft are potential candidates for being control variables. However, to fully determine if they are truly a good choice, a full Pearson correlation matrix would need to be established.

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

   According to Table 1, the sum of gross margin and the average month sales have a strong correlation of 0.67 whereas the square footage and the sum of gross margin barely has any relationship. Matter of fact, the correlation between the sum of gross margin and the square footage is -0.01. Therefore, it makes sense to eliminate sq_ft from the control variable list.

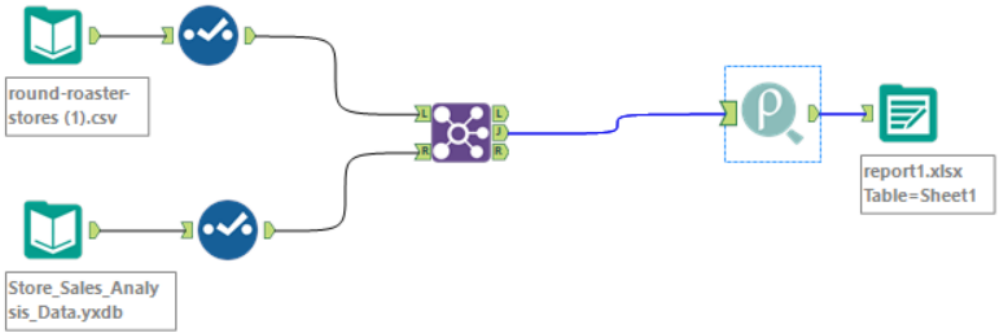


Figure 3. The Alteryx workflow for generating the full Pearson correlation matrix

Table 1. Full Pearson Correlation Matrix between performance metric and potential control variables.

FieldName	StoreID	Sq_Ft	AvgMonthSales	Sum_Gross Margin
StoreID	1	0.056518	0.220952463	0.01964551
Sq_Ft	0.056517994	1	-0.088965576	-0.010796338
AvgMonthSales	0.220952463	-0.08897	1	0.067273357
Sum_Gross Margin	0.01964551	-0.0108	0.067273357	1

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

   The AvgMonthSales, Trend and Seasonality would be used to match treatment and control stores.

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

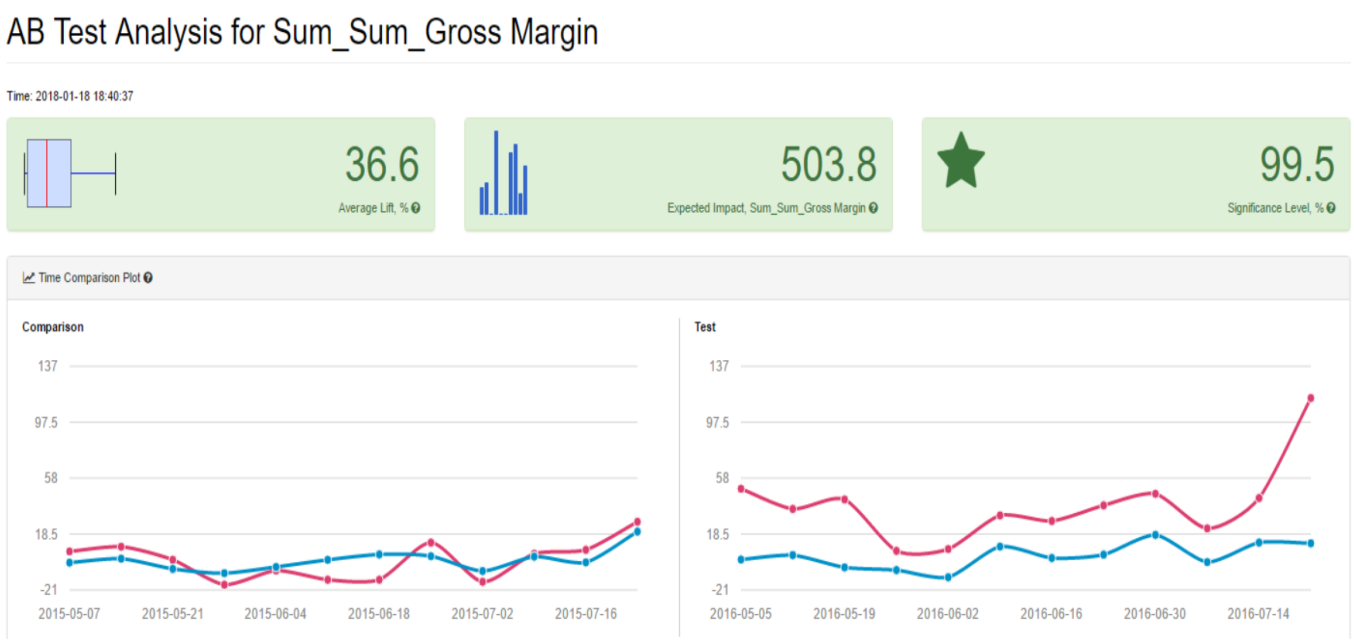
Treatment Store	Control Store 1	Control Store 2
1664	1964	7162
1675	1807	1508
1696	1863	7534
1700	7037	2014
1712	8162	2114
2288	9081	2568
2293	12219	9639
2301	9238	2301
2322	2409	3235
2341	2572	3102

Step 4: Analysis and Write-up

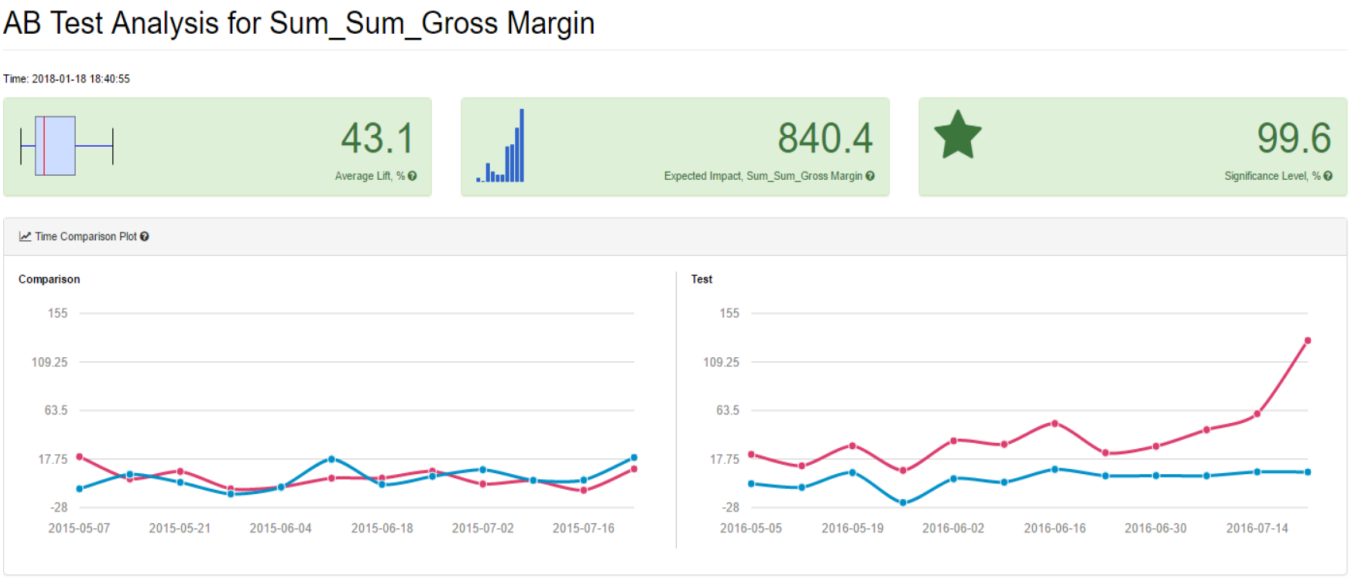
1. **What is your recommendation - Should the company roll out the updated menu to all stores?**

   The company definitely should roll out the updated menu to all stores. This recommendation is based on the obtained AB test analysis for both the West and the Central regions shown below.

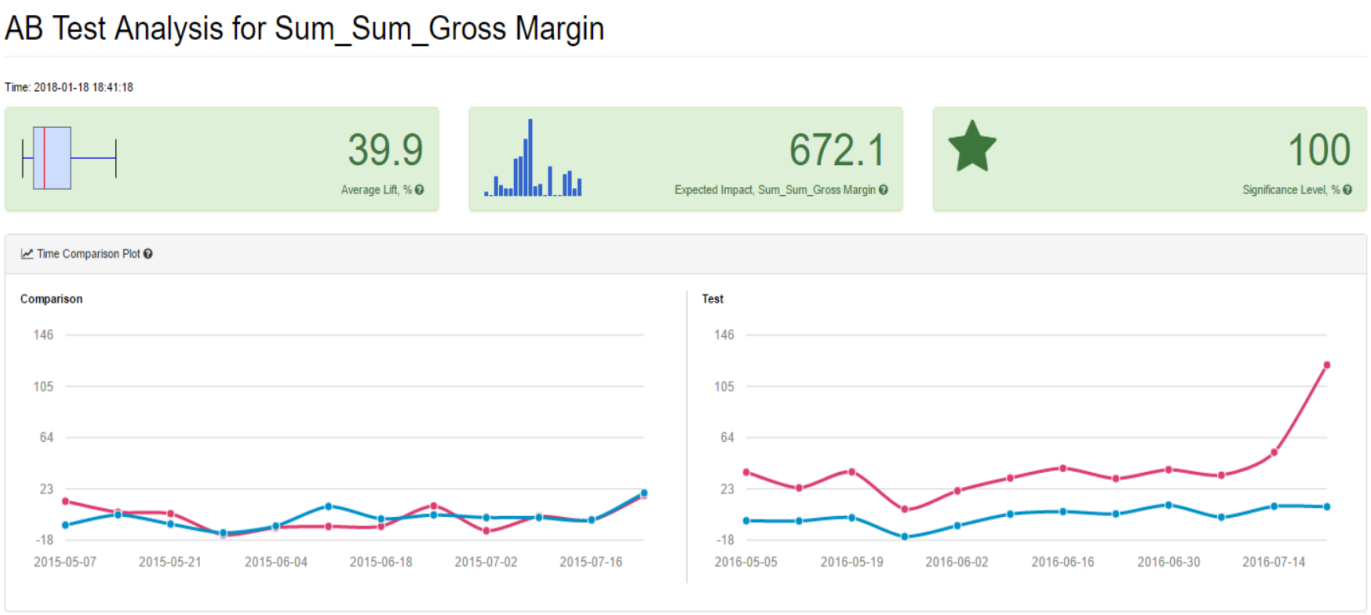
AB Test Analysis for the West Region



AB Test Analysis for the Central Region



Overall AB Test



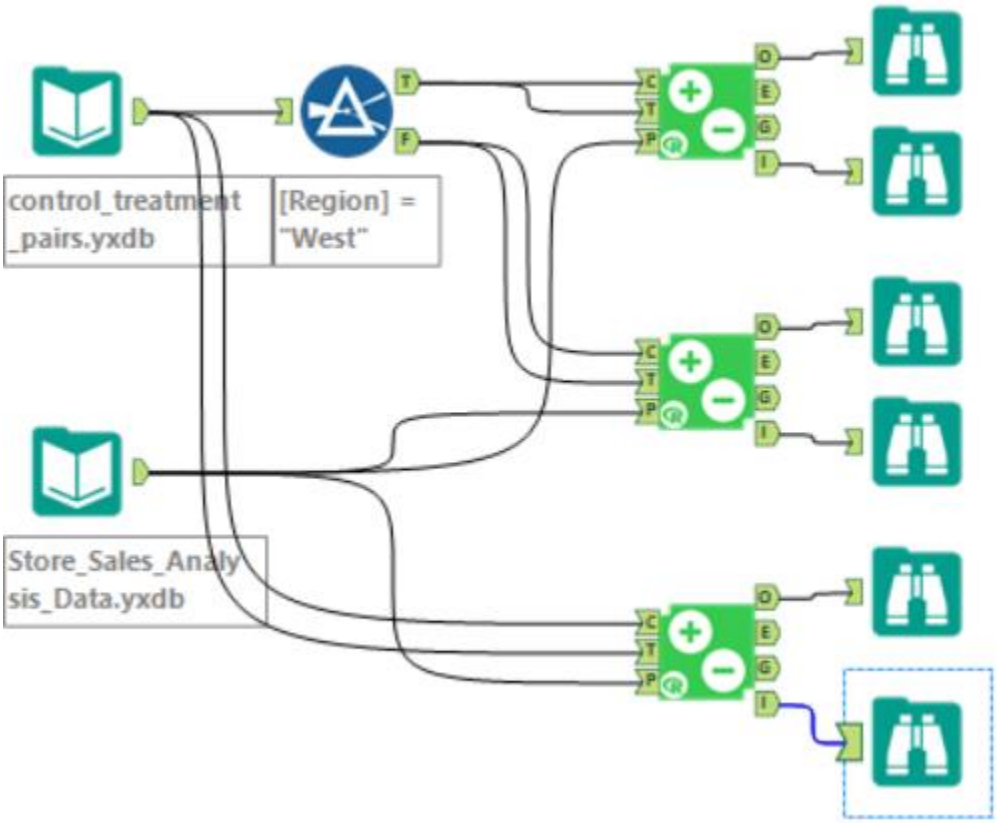


Figure 4. AB Analysis workflow

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

   The lift for the new many for the West region is 36.6% and that for the Central region is 43.1%. The statistical significance for the west and the central regions are 99.5 and 99.6, respectively.

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

   The lift from the new menu overall is 39.9%