

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 order to evaluate the results of the test, gross margin will be used as the performance metric.

2. What is the test period?

The test period is of 12 weeks, from 2016-April-29 to 2016-July-21.

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

The data should be aggregated at week level.

Step 2: Clean Up Your Data

1. The data has been aggregated;
2. Filtered the data to include only the applicable date range required for the A/B test, because the reporting period is at week level, we require 76 weeks of data - 2015-02-06 to 2016-07-21;
3. Created the week variables;
4. Summarized the data in order to get the weekly store traffic and store sales analysis data;
5. Summarized and aggregated the listing with the treatment stores in order to get the store list.

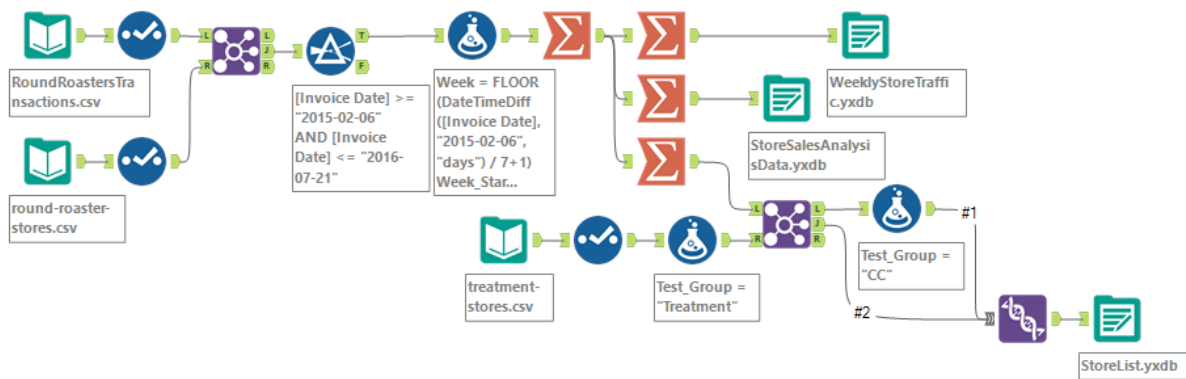


Figure 1. Clean data workflow in Alteryx.

Step 3: Match Treatment and Control Units

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

AvgMonthSales and Sq_Ft should be considered as control variables.

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

The report of the Pearson Correlation analysis shows that only AvgMonthSales has a high correlation with the performance metric Sum_Sum_Gross.Margin - 0.79.

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Sum_Gross.Margin	AvgMonthSales	Sq_Ft
Sum_Sum_Gross.Margin	1.000000	0.790358	-0.019345
AvgMonthSales	0.790358	1.000000	-0.046967
Sq_Ft	-0.019345	-0.046967	1.000000

Matrix of Corresponding p-values

	Sum_Sum_Gross.Margin	AvgMonthSales	Sq_Ft
Sum_Sum_Gross.Margin		0.0000e+00	5.1796e-02
AvgMonthSales	0.0000e+00		2.3119e-06
Sq_Ft	5.1796e-02	2.3119e-06	

Figure 2. Person correlation analysis report.

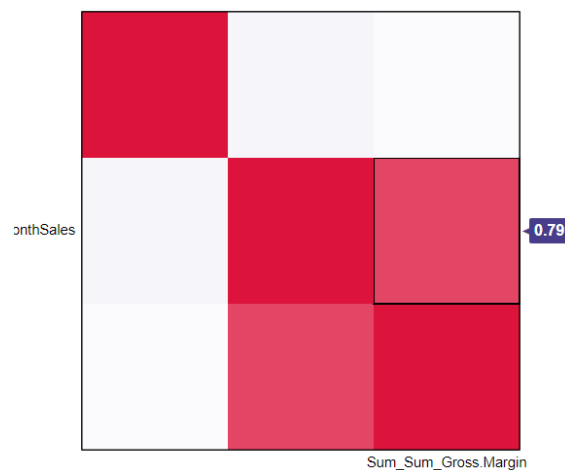


Figure 3. Correlation matrix scatterplot.

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

AvgMonthSales will be used as the control variable to match treatment and control stores, based on the report, p-value is < 0.05 , meaning this variable is statistically significant.

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

Table 1. 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	9238
2322	9388	3185
2341	2572	12586

Step 4: Analysis and Writeup

According to the results of the A/B test analysis, the treatment stores over the control stores had an increase over 18% in profit growth, thus, the company should roll out the updated menu to all stores.

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

According to the reports, the treatment stores had more than 18% increase in profit growth, therefore, the company should roll out the updated menu to all stores.

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

- a. The average lift of the west region was 39.1% at a significance level of 99.6% over the control stores, with an expected impact of ~\$531 per store per week.

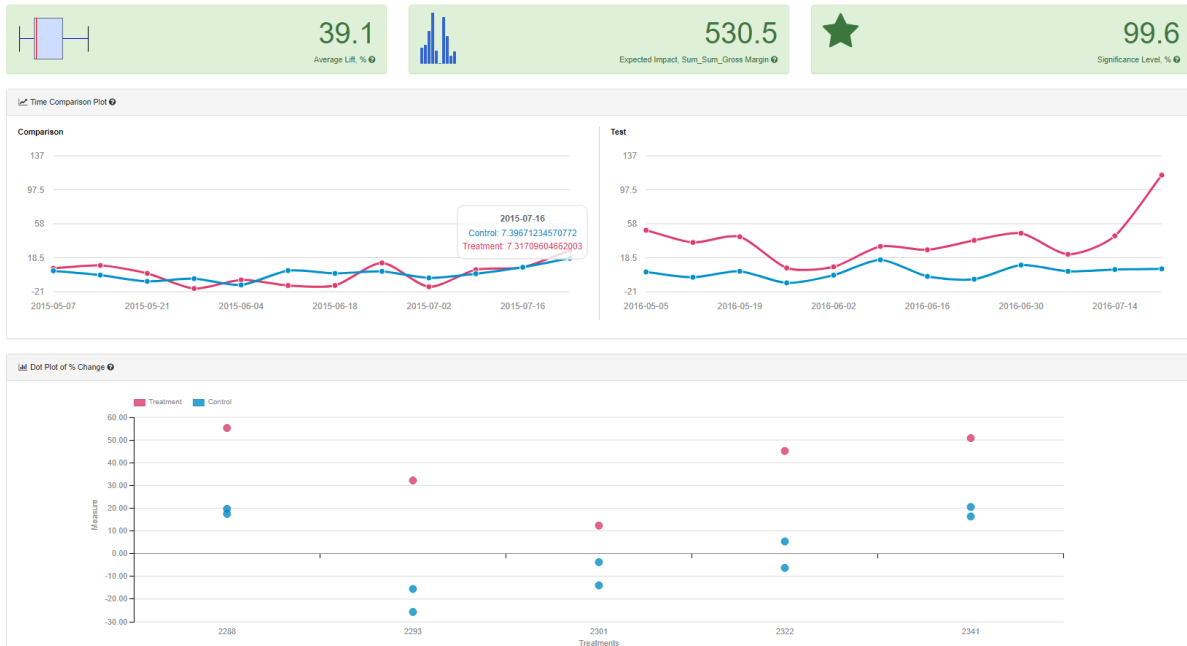


Figure 4. A/B test analysis of the west region.

- b. The average lift of the central region was 47.6% at a significance level of 99.6% over the control stores, with an expected impact of ~\$906 per store per week.

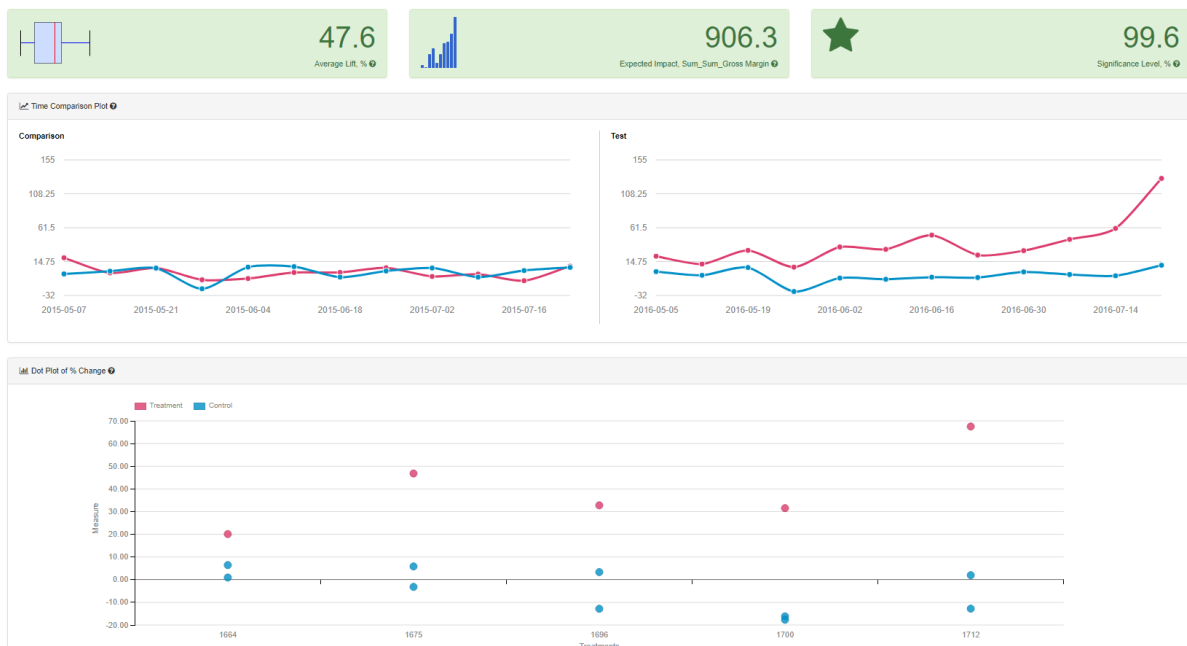


Figure 5. A/B test analysis of the central region.

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

The average lift overall was 43.4% at a significance level of 100% over the control stores, with an expected impact of ~\$718 per store per week.

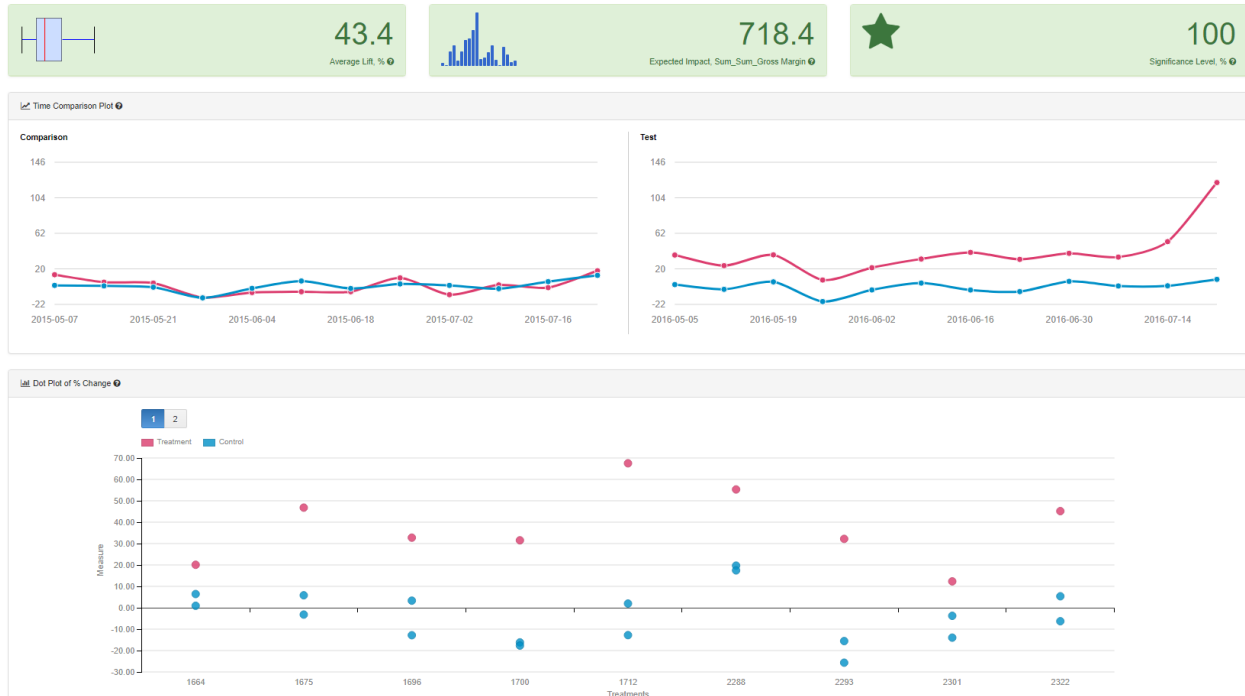


Figure 6. A/B test analysis overall.