

## Step 1: Plan Your Analysis

1. What is the performance metric you'll use to evaluate the results of your test?  
The Gross Margin performance will be used to evaluate the results of my test.
2. What is the test period?  
Test period is from 4/29/2016 to 7/21/2016.
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

See [alteryx file, 1-aggregate-to-weekly-test-period.yxmd](#)

## Step 3: Match Treatment and Control Units

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.  
  
I would consider Region, Avg Months Sales, and Sq Ft as control variables.
2. What is the correlation between your each potential control variable and your performance metric?

By looking at the reports of Association Analysis tool, Avg Months Sales has p-value < 0.001 and Sq Ft has p-value > 0.05. Avg Months Sales is highly correlated with Gross Margin.

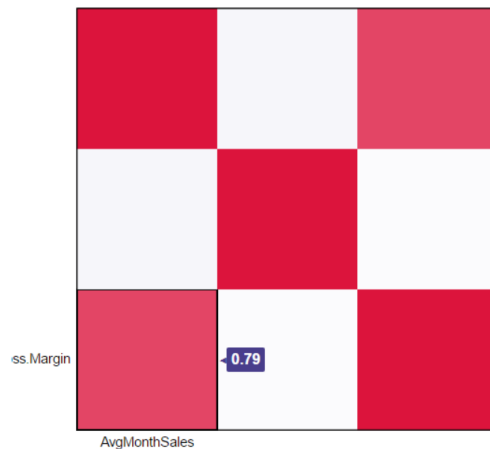
### Pearson Correlation Analysis

*Full Correlation Matrix*

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

*Matrix of Corresponding p-values*

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



3. What control variables will you use to match treatment and control stores?  
I would use Region and Avg Months Sales as control variables.
4. Please fill out the table below with your treatment and control stores pairs:

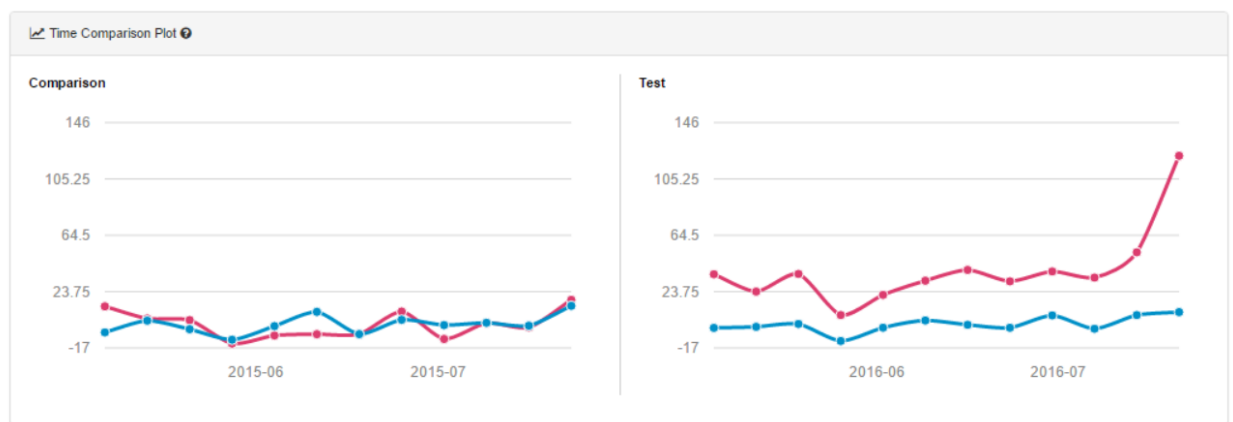
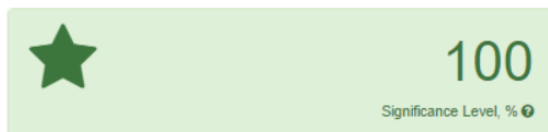
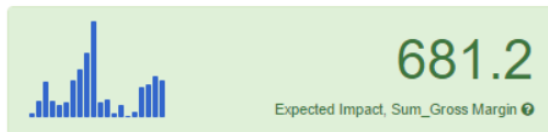
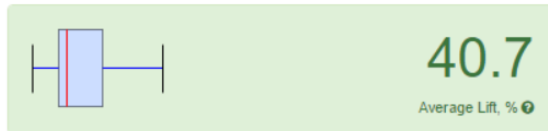
Treatment Store	Control Store 1	Control Store 2
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434
2288	9081	2568
2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383

## Step 4: Analysis and Writeup

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

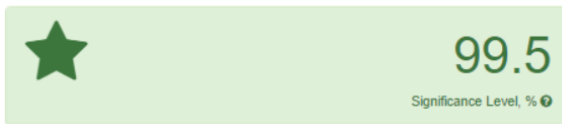
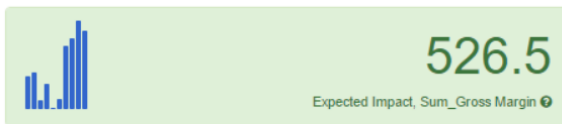
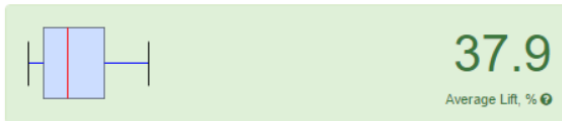
Total gross margin from the comparative period (2015/04/29 to 2015/07/21) was \$699,250,191.88. Predicted total gross margin from test period was (2016/04/29 to 2016/07/21) \$964432319.67. This is 37.92% increase in gross margin in profit growth compared to the comparative period and more than 18% increase which is the requirement for rolling out the new menu.

Changing to the new menu with gourmet sandwiches and limited wines offerings would improve gross margin. Therefore, the change should be rolled out across all stores.

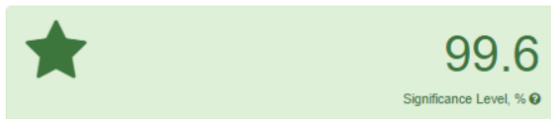
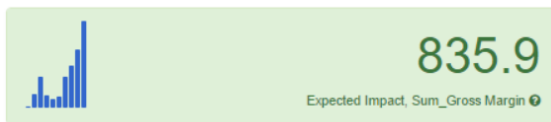
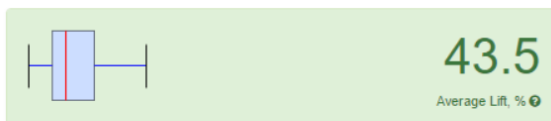


- What is the lift from the new menu for West and Central regions (include statistical significance)?

West Region had 37.9% lift with 99.5 significance.



Central Region had 43.5% lift with 99.6 significance.



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

New menu had 40.7% lift with 100% significance.

