# Project: Analyzing a Market Test

Complete each section. When you are ready, save your file as a PDF document and submit it here.

## Step 1: Plan Your Analysis

*To perform the correct analysis, you will need to prepare a data set. (500 word limit)*
*Answer the following questions to help you plan out your analysis:*

1. What is the performance metric you'll use to evaluate the results of your test?
   Gross margin
2. What is the test period?
   The test period is 2016-April-29 to 2016-July-21
3. At what level (day, week, month, etc.) should the data be aggregated?
   The data needs to be aggregated at week level.

## Step 2: Clean Up Your Data

*In this step, you should prepare the data for steps 3 and 4. You should aggregate the transaction data to the appropriate level and filter on the appropriate data ranges. You can assume that there is no missing, incomplete, duplicate, or dirty data. You're ready to move on to the next step when you have weekly transaction data for all stores.*

## Step 3: Match Treatment and Control Units

*In this step, you should create the trend and seasonality variables, and use them along with you other control variable(s) to match two control units to each treatment unit. Note: Calculate the number of transactions per store per week to calculate trend and seasonality.*

*Apart from trend and seasonality...*

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   Average monthly sales, sq. ft. data
2. What is the correlation between your each potential control variable and your performance metric?

Record | Layout

**Pearson Correlation Analysis**

*Full Correlation Matrix*

| | Sum_Gross.Margin | Sq_Ft | AvgMonthSales |
|---|---|---|---|
| Sum_Gross.Margin | 1.000000 | -0.019350 | 0.790367 |
| Sq_Ft | -0.019350 | 1.000000 | -0.046967 |
| AvgMonthSales | 0.790367 | -0.046967 | 1.000000 |

*Matrix of Corresponding p-values*

| | Sum_Gross.Margin | Sq_Ft | AvgMonthSales |
|---|---|---|---|
| Sum_Gross.Margin | | 5.1733e-02 | 0.0000e+00 |
| Sq_Ft | 5.1733e-02 | | 2.3119e-06 |
| AvgMonthSales | 0.0000e+00 | 2.3119e-06 | |

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

   Average monthly sales, trend and seasonality.

   The avg. monthly sales is more correlated to gross margin with R value of 0.79.

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

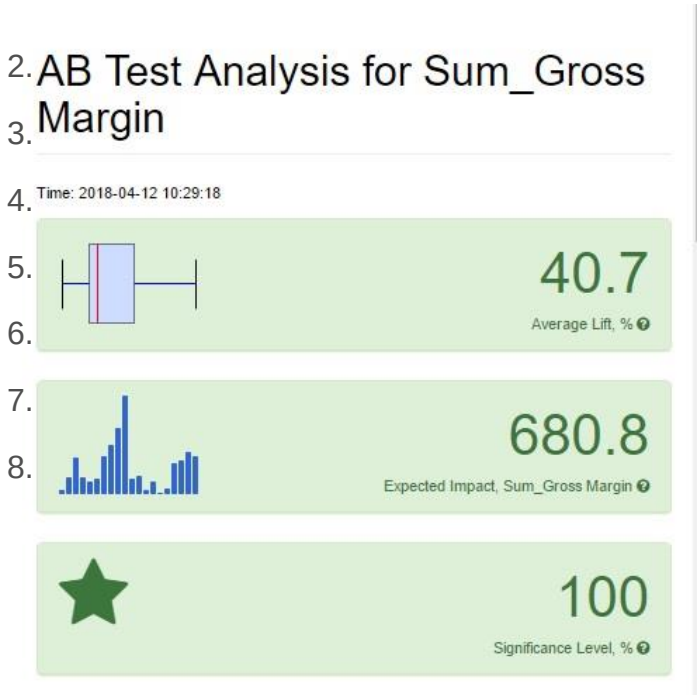
| Treatment Store | Control Store 1 | Control Store 2 |
|---|---|---|
| 2288 | 2568 | 9081 |
| 2293 | 12219 | 9524 |
| 2301 | 3102 | 9238 |
| 2322 | 2409 | 3235 |
| 2341 | 12536 | 2383 |
| 1664 | 7162 | 8112 |
| 1675 | 1580 | 1807 |
| 1696 | 1863 | 1964 |
| 1700 | 1630 | 2014 |
| 1712 | 7434 | 8162 |

## Step 4: Analysis and Writeup

*Conduct your A/B analysis and create a short report outlining your results and recommendations. (250 words limit)*

*Answer these questions. Be sure to include visualizations from your analysis:*

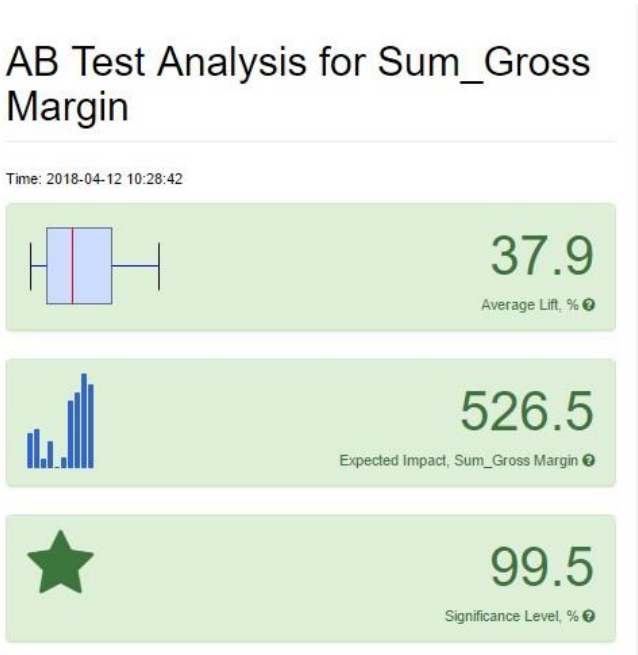
1. What is your recommendation - Should the company roll out the updated menu to all stores?



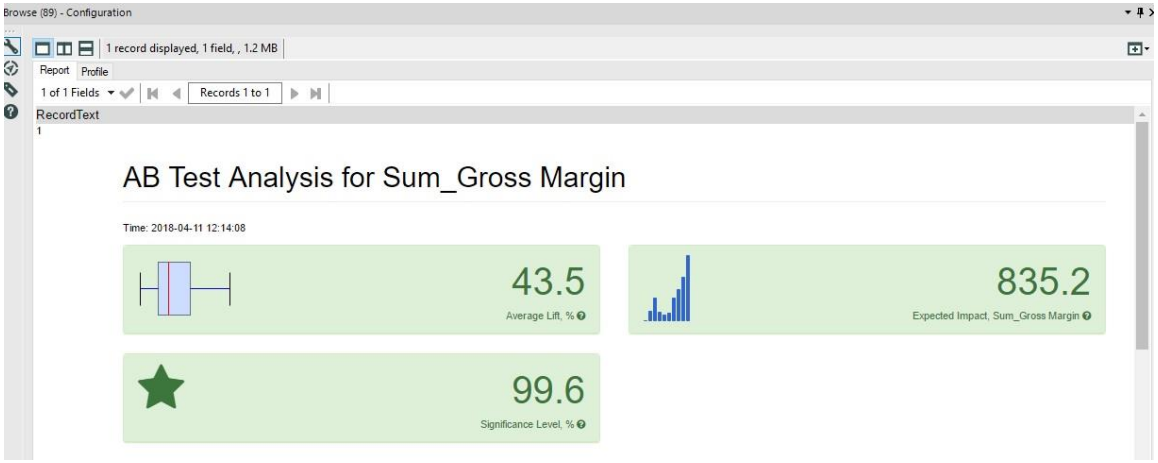
The report showed 40.7% improvement at a significance of 100%. The average lift by changing the menu would be 40.7% per store per week or approximately $680.8 per store per week. Seems like a pretty good increase considering the menu change overall. The company should roll out the menu change all over.

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

   West region Lift= 37.9%

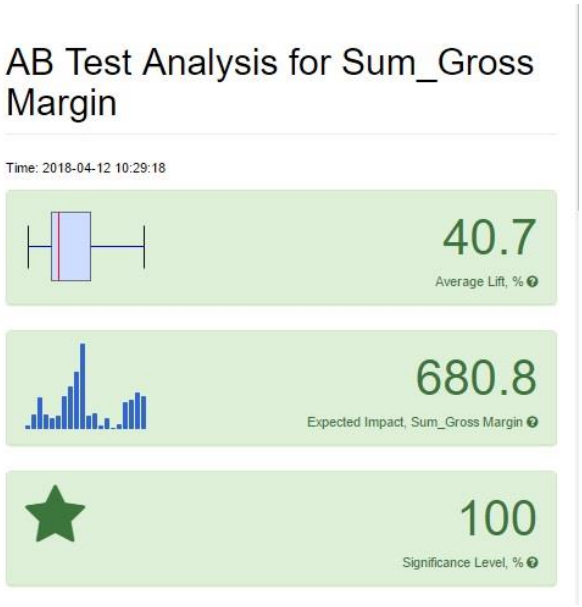


Central region lift= 43.5%




What is the lift from the new menu overall?

The overall lift of new menu = 40.7%




# Before you Submit

Please check your answers against the requirements of the project dictated by the rubric here. Reviewers will use this rubric to grade your project.

**References**

**Udacity forum**