# Project: Analyzing a Market Test

## Step 1: Plan Your Analysis

*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?

   The sum of gross margin will be a great and significant for performance metrics.

2. What is the test period?

   The test period will be 12 weeks start from 2016-April-29 to 2016-July-22, but we need a data of 76 weeks.
   - Control data: 2015-February-06 to 2016-July-22 (76 weeks).
   - Treatment data: 2016-April-29 to 2016-July-22 (12 weeks).

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

   The data should be aggregated every week (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.*

Import Round Roaster Transaction and Round-Roaster-Store datasets to alteryx, Then auto-field the datasets and select the useful to be use letter on from each file, Then using a storeID to combined those to file, Then using filter tool to limit the data to only 76 weeks for control stores (`[Invoice Date]>="2015-02-06" AND [Invoice Date]<"2016-07-22"` ) and 12 weeks for treatment stores (`[Invoice Date]>="2016-04-29" AND [Invoice Date]<"2016-07-22"` )

## 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 Round Roasters Store file.

   I considered two variables from Round Roasters Store file: Sq-Ft and Avg Month Sales as variables control.

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

   Avg Month Sales has high correlation of 0.99 with performance metric (sum of gross margin) it is significant, and Sq-Ft has poor with negative 0.02.

**Pearson Correlation Analysis**

*Full Correlation Matrix*

| | Sq_Ft | AvgMonthSales | Sum_Sum_Sum_Gross.Margin |
|---|---|---|---|
| Sq_Ft | 1.000000 | -0.046967 | -0.024224 |
| AvgMonthSales | -0.046967 | 1.000000 | 0.990978 |
| Sum_Sum_Sum_Gross.Margin | -0.024224 | 0.990978 | 1.000000 |

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

   Based on full correlation Avg Month Sales will be significant with Trend and Seasonality.

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

   Using Reporting – basic table tool

Table

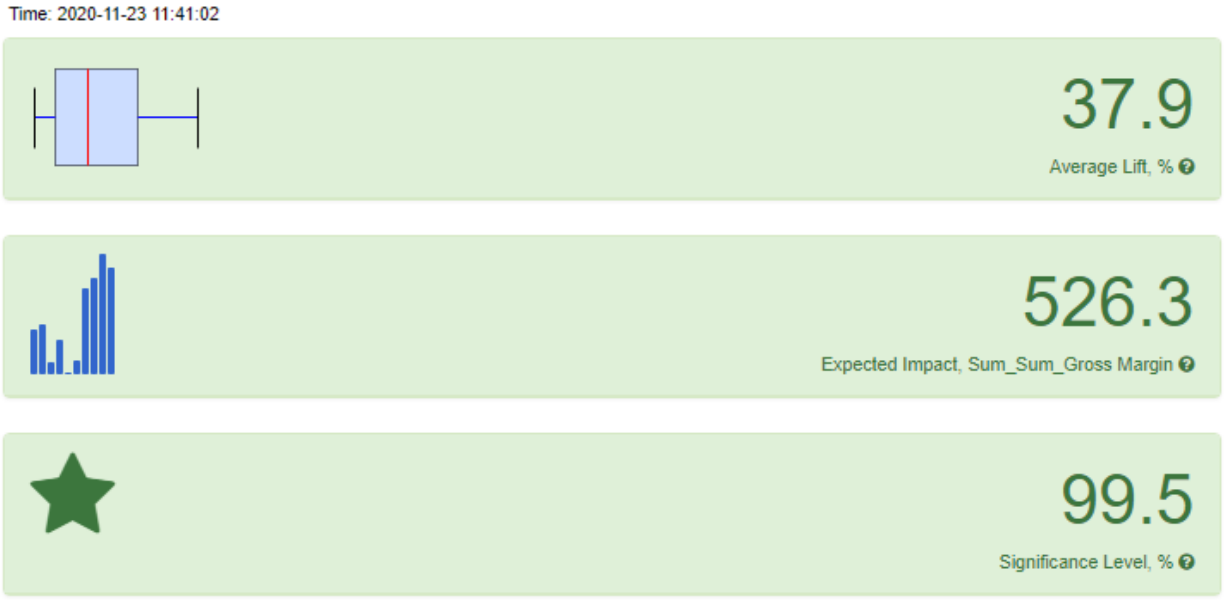
| Treatment Store | Control Store 1 | Control Store 2 |
|---|---|---|
| 1664 | 7162 | 8112 |
| 1675 | 1580 | 1807 |
| 1696 | 1964 | 1863 |
| 1700 | 2014 | 1630 |
| 1712 | 8162 | 7434 |
| 2288 | 9081 | 2568 |
| 2293 | 12219 | 9524 |
| 2301 | 3102 | 9238 |
| 2322 | 2409 | 3235 |
| 2341 | 12536 | 2383 |

# Step 4: Analysis and Writeup

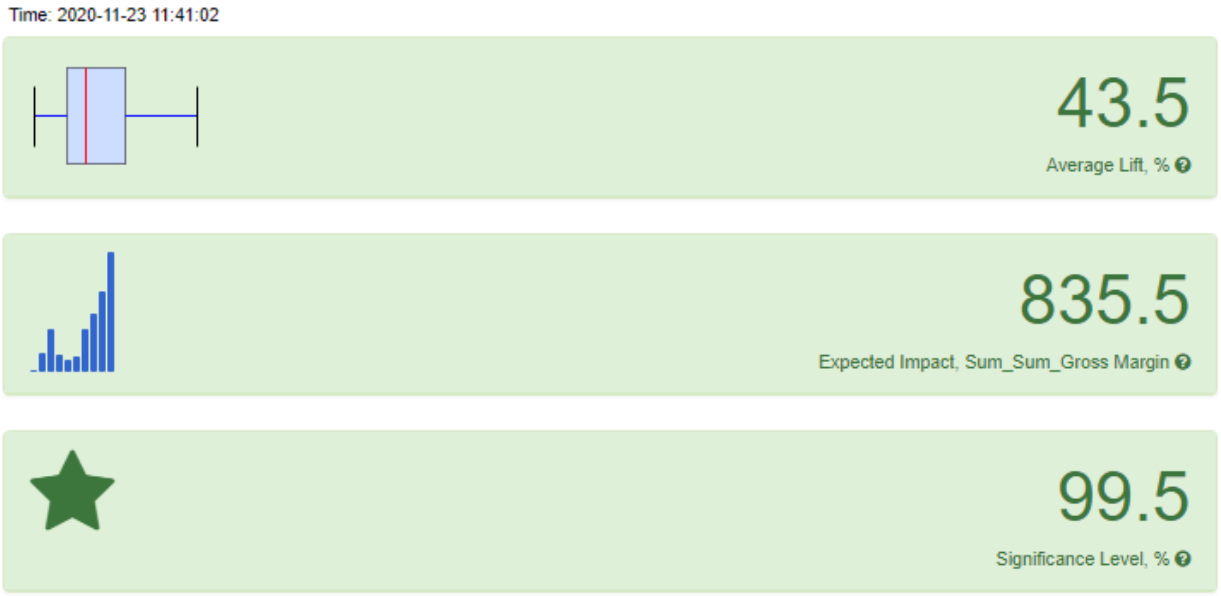
*Answer these questions. Be sure to include visualizations from your analysis:*

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

   - West region:
     The lift is 37.9% with significance level 99.5%

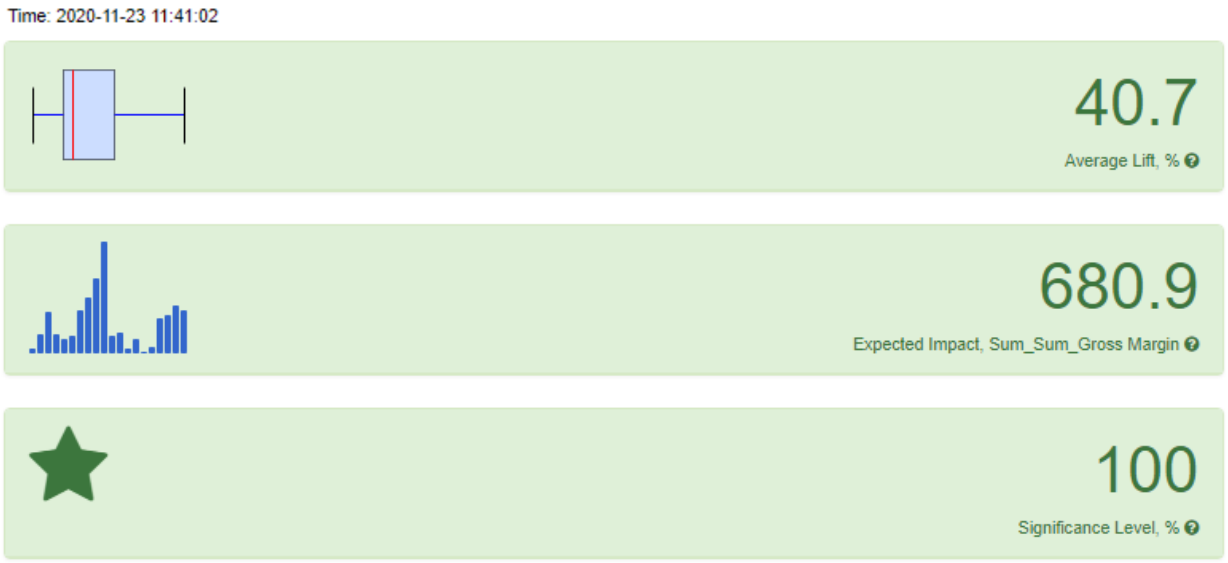



   - Central region
     The lift is 43.5% with significance level 99.5%



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

   The lift is 40.7% with significance level 100% with expected impact 680.9 in each week and 8171 in total of 12 weeks.




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

   Because the profit is rise 40.7% more than old menu, I recommend the company to update its menu in all its stores.
   - The outcome of an old menu was 20,427 dollars.
   - The predict outcome of apply the new menu is 20,427 + 8171 = 28,598 dollars.