# Project: Analyzing a Market Test

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

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## 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?**

The sum of gross margin will be used as performance metric to determine whether the menu changes should be applied to all stores.

2. **What is the test period?**

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

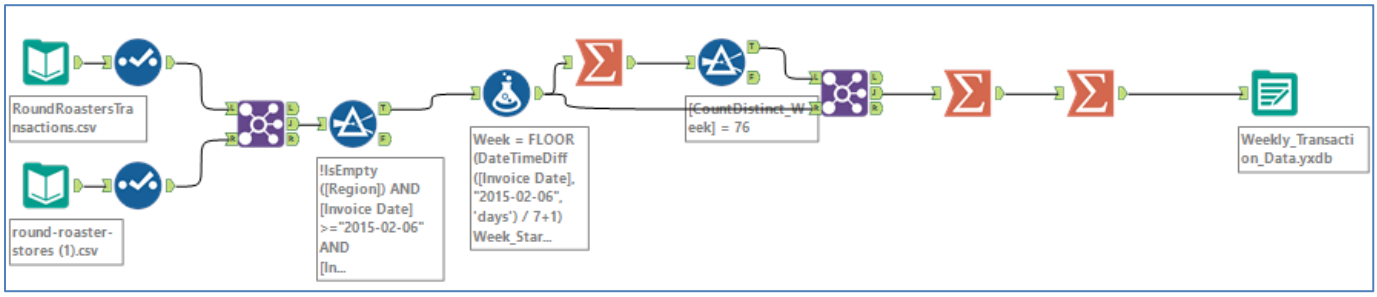
3. **At what level (day, week, month, etc.) should the data be aggregated?**

The data should be aggregated at the 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.*

- RoundRoastersTransactions data and round-roaster-stores data were aggregated at the week level



| Record # | StoreID | Week | Week_Start | Week_End | Count of transactions |
|---|---|---|---|---|---|
| 1 | 10018 | 1 | 2015-02-06 | 2015-02-12 | 308 |
| 2 | 10018 | 2 | 2015-02-13 | 2015-02-19 | 288 |
| 3 | 10018 | 3 | 2015-02-20 | 2015-02-26 | 204 |
| 4 | 10018 | 4 | 2015-02-27 | 2015-03-05 | 320 |
| 5 | 10018 | 5 | 2015-03-06 | 2015-03-12 | 284 |
| 6 | 10018 | 6 | 2015-03-13 | 2015-03-19 | 288 |
| 7 | 10018 | 7 | 2015-03-20 | 2015-03-26 | 194 |
| 8 | 10018 | 8 | 2015-03-27 | 2015-04-02 | 286 |
| 9 | 10018 | 9 | 2015-04-03 | 2015-04-09 | 274 |
| 10 | 10018 | 10 | 2015-04-10 | 2015-04-16 | 215 |
| 11 | 10018 | 11 | 2015-04-17 | 2015-04-23 | 277 |
| 12 | 10018 | 12 | 2015-04-24 | 2015-04-30 | 251 |
| 13 | 10018 | 13 | 2015-05-01 | 2015-05-07 | 201 |
| 14 | 10018 | 14 | 2015-05-08 | 2015-05-14 | 207 |
| 15 | 10018 | 15 | 2015-05-15 | 2015-05-21 | 334 |
| 16 | 10018 | 16 | 2015-05-22 | 2015-05-28 | 243 |
| 17 | 10018 | 17 | 2015-05-29 | 2015-06-04 | 321 |
| 18 | 10018 | 18 | 2015-06-05 | 2015-06-11 | 406 |

## 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.**

- In order to detect which variables in the RoundRoastersStore file have correlation with gross margin field, the Association Analysis Tool was used.
- The only numeric variables that can be set as numeric measures are **AvgMonthSales** and **Sq_Ft**
- The control variable that was selected is **AvgMonthSales**, since it's highly correlated with the sum of gross margin
- The **Sq_Ft** field will not be selected because it has a poor correlation with the sum of gross margin

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

- After applying Pearson Correlation Analysis, the Full Correlation Matrix is

*Full Correlation Matrix*

| | Sum_Gross.Margin | AvgNo0_Sq_Ft | AvgNo0_AvgMonthSales |
|---|---|---|---|
| Sum_Gross.Margin | 1.000000 | -0.020353 | 0.988219 |
| AvgNo0_Sq_Ft | -0.020353 | 1.000000 | -0.046967 |
| AvgNo0_AvgMonthSales | 0.988219 | -0.046967 | 1.000000 |

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

- Besides Trend and Seasonality, the AvgMonthSales will be used as a numeric measure 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 | 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 |

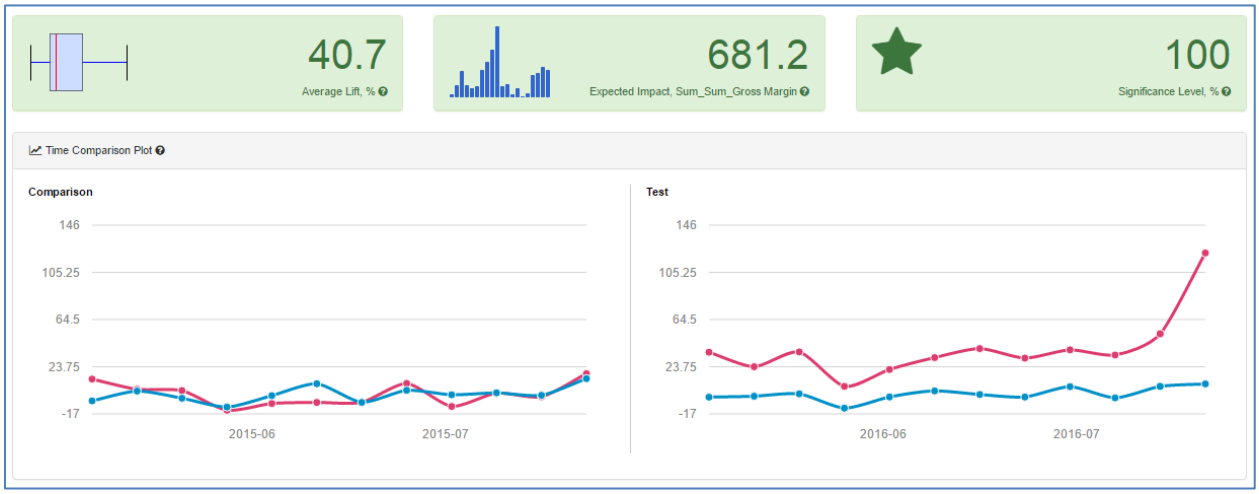
## Step 4: Analysis and Writeup

*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:*

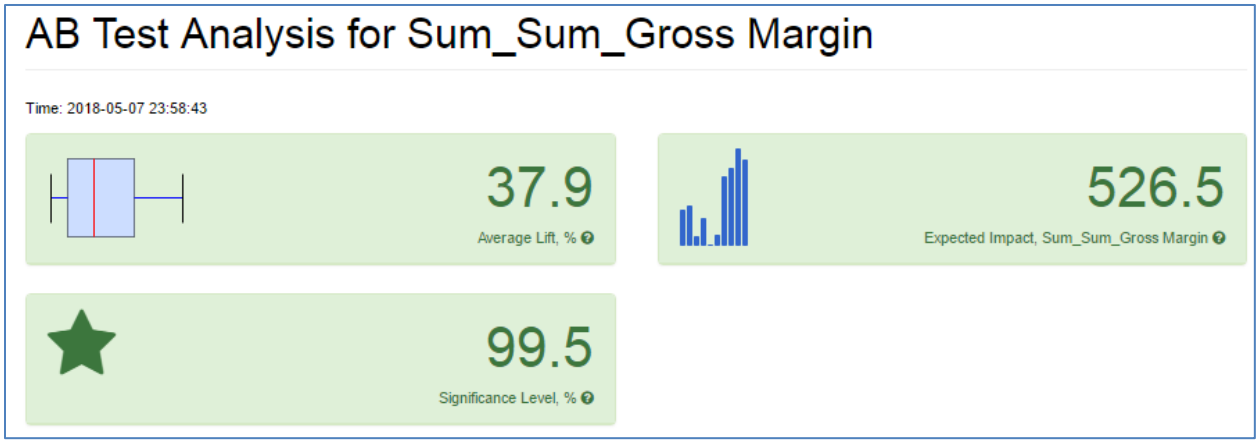
1. **What is your recommendation - Should the company roll out the updated menu to all stores?**

Yes, the company should roll out the updated menu to all stores, since the sum of gross margin increased by more than 18% during test period.

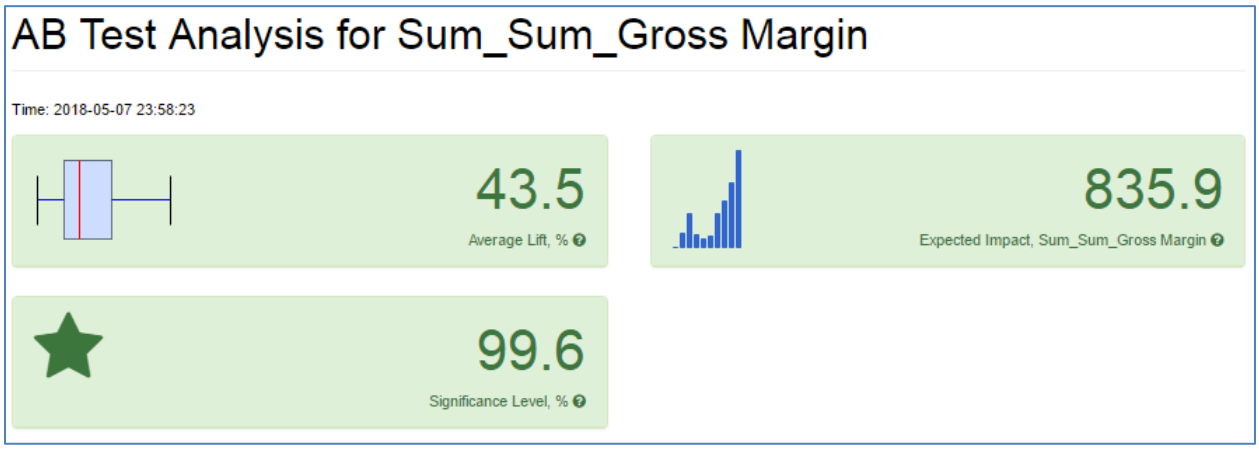



2. **What is the lift from the new menu for West and Central regions (include statistical significance)?**

- For West region, the average lift is 37.9% and Significance Level is 99.5%

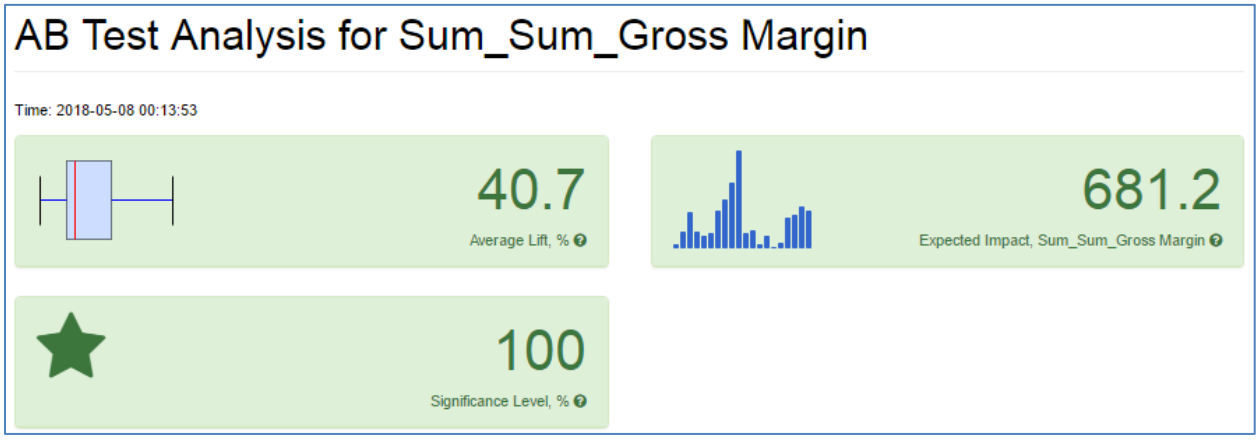



- For Central region, the average lift is 43.5% and Significance Level is 99.6%




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

For the new menu overall, the average lift is 40.7% and Significance Level is 100%



## 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.