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 and Weekly Gross Margin

2. What is the test period?

   Test start date is 29/04/2016 to 21/07/2016 – 12 Weeks

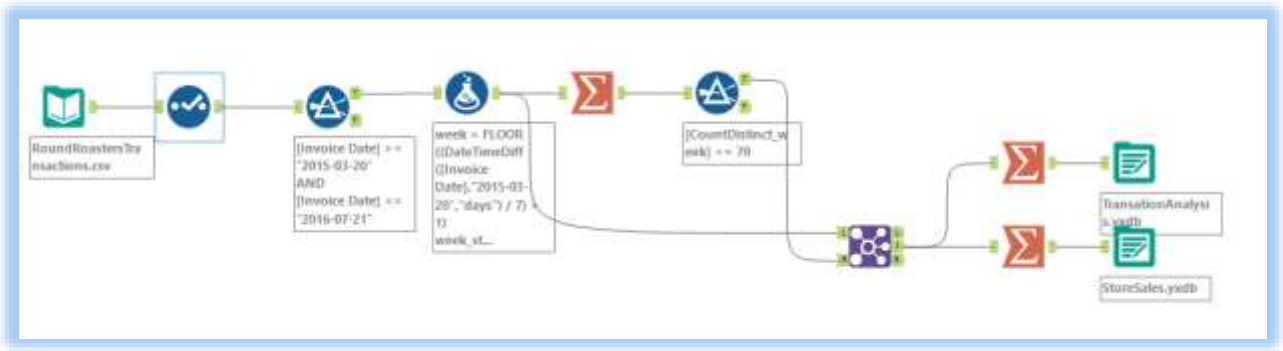
3. At what level (day, week, month, etc.) should the data be aggregated?

   As the test is done over 12 weeks, the data should be aggregated weekly.

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.

Workflow for Data cleaning and aggregation preparation:



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.

   Sq_Ft , AvgMonthSales,Trend, Seasonality.
   Sq_Ft has low correlation with Gross Margin hence it will not be used.

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

   Full Correlation Matrix

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales	Sum_Sales
Sum_Gross.Margin	1.000000	-0.016284	0.786797	0.998645
Sq_Ft	-0.016284	1.000000	-0.046967	-0.018969
AvgMonthSales	0.786797	-0.046967	1.000000	0.784568
Sum_Sales	0.998645	-0.018969	0.784568	1.000000

   Matrix of Corresponding p-values

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales	Sum_Sales
Sum_Gross.Margin		1.1616e-01	0.0000e+00	0.0000e+00
Sq_Ft	1.1616e-01		5.7960e-06	6.7213e-02
AvgMonthSales	0.0000e+00	5.7960e-06		0.0000e+00
Sum_Sales	0.0000e+00	6.7213e-02	0.0000e+00	

   0.7867

3. What control variables will you use to match treatment and control stores?
   AvgMonthSales, Trend, Seasonality can be used however Sq_Ft cannot .

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

Treatment Store	Control Store 1	Control Store 2
1664	12019	11868
1675	3235	11818
1696	3102	2383
1700	8717	9968
1712	10568	9017
2288	7484	2568
2293	9589	7811
2301	9524	8362
2322	7284	1580

2341	7162	12286

Record	Controls	Treatments
1	11868	1664
2	12019	1664
3	11818	1675
4	3235	1675
5	2383	1696
6	3102	1696
7	9968	1700
8	8717	1700
9	9017	1712
10	10568	1712
11	2568	2288
12	7484	2288
13	7811	2293
14	9589	2293
15	8362	2301
16	9524	2301
17	1580	2322
18	7284	2322
19	12286	2341
20	7162	2341

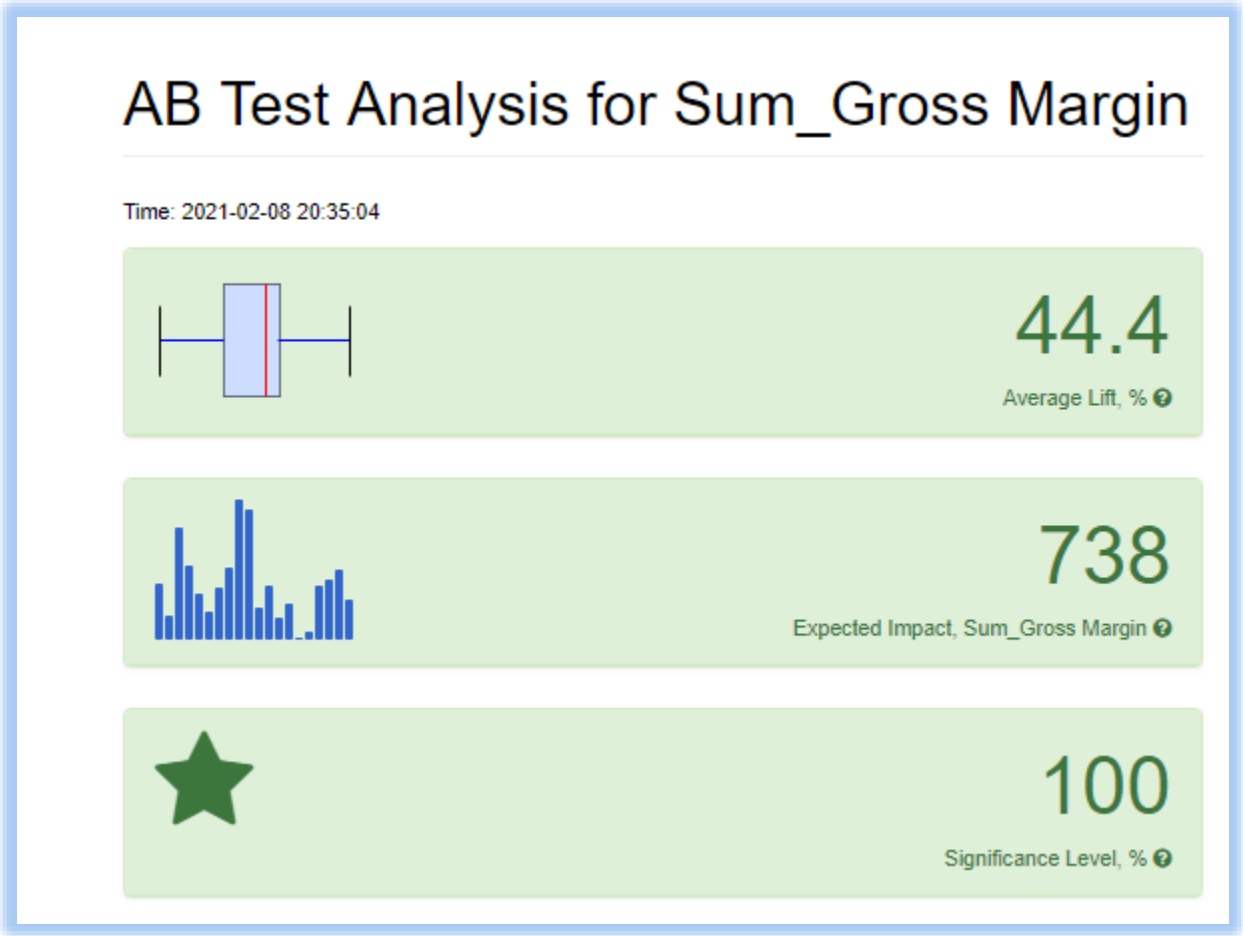
Step 4: Analysis and Writeup

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 AB analysis model predicts a 44.4% overall lift and a significance level of 100 which is greater than at least 18% increase in profit growth hence we should roll out the updated menu



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

   West Lift: 37.1
   West statistical significance:99.4

   Central Lift:41.4

Central statistical significance:99.4

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

44.4% overall lift and a significance level of 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.