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?
   The performance metric I used to evaluate the results of my test is gross margin, which represents profit. The company needs to figure out whether a new menu can drive enough sales to offset the cost of marketing it. At least 18% increase in profit growth compared to the comparative period while compared to the control stores is enough to justify the increased marketing budget.

2. What is the test period?
   The test ran for a period of 12 weeks (from 29 April 2016 to 21 July 2016) where five stores in each of the test markets (Denver and Chicago cities) offered the updated menu along with television advertising.

3. At what level (day, week, month, etc.) should the data be aggregated?
   The data was 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 your 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.
   Before matching treatment and control units, I used Region to separate the stores. Control variables which could be considered are AvgMonthSales (average monthly sales) and Sq_ft (square footage).

2. What is the correlation between your each potential control variable and your performance metric?
   I used a correlation matrix to find the most correlated variable to the performance matrix

(total gross margin).

Record 1 | Layout

Pearson Correlation Analysis

Focused Analysis on Field Sum_Gross.Margin

	Association Measure	p-value
AvgMonthSales	0.987815	0 ***
Sq_Ft	-0.073361	0 ***

Full Correlation Matrix

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin	1.000000	-0.073361	0.987815
Sq_Ft	-0.073361	1.000000	-0.098990
AvgMonthSales	0.987815	-0.098990	1.000000

Matrix of Corresponding p-values

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin		0	0
Sq_Ft	0		0
AvgMonthSales	0	0	

Figure 3.1: Pearson Correlation Analysis

Figure 3.1 shows that average monthly sales (AvgMonthSales) is highly, positively correlated with total gross margin (Sum_Gross.Margin), with a correlation coefficient of 0.988. However, there is almost no correlation between square footage (Sq_Ft) and average monthly sales, since their correlation coefficient is only -0.073.

3. What control variables will you use to match treatment and control stores?
   I used the average monthly sales as a control variable to match treatment and control stores. I also used trend and seasonality when building the treatment control pairs.

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?
   The company should roll out the updated menu to all stores as it is predicted that there will be incremental lift of more than 18%. (Details are provided below.)

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

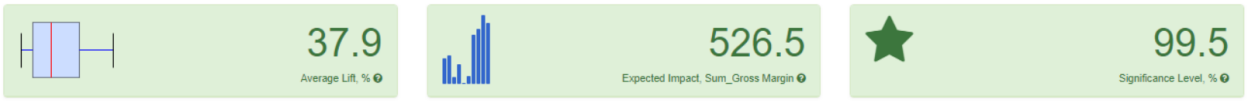


Figure 4.1: AB Test Analysis for the West Region

Figure 4.1 shows that the treatment stores in the West region showed 37.9% gross margin improvement at a significance of 99.5% over the control stores. In other words, the average lift as a result of the updated menu and television advertising would be 37.9% per store weekly, or approximately $526.5 per store weekly.

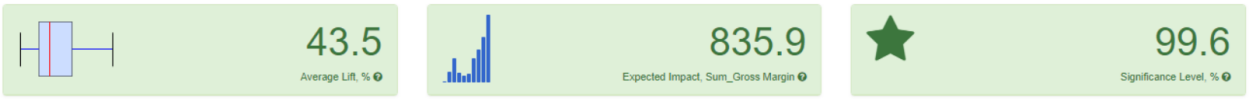


Figure 4.2: AB Test Analysis for the Central Region

Figure 4.2 shows that the treatment stores in the Central region showed 43.5% gross margin improvement at a significance of 99.6% over the control stores. In other words, the average lift as a result of the updated menu and television advertising would be 43.5% per store weekly, or approximately $835.9 per store weekly.

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

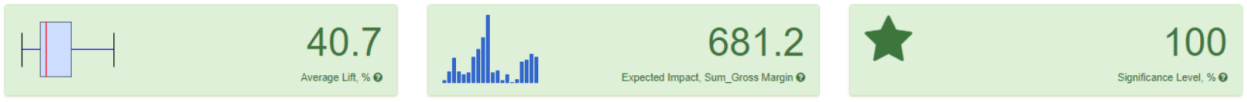


Figure 4.3: Overall AB Test Analysis

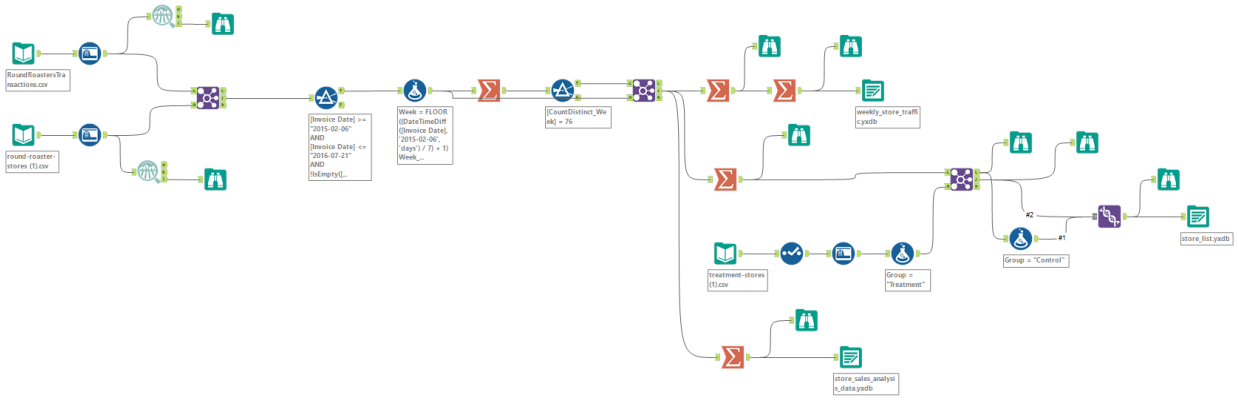
Figure 4.3 shows that on average, the treatment stores in both regions showed 40.7% gross margin improvement at a significance of 100% over the control stores. In other words, the average lift as a result of the updated menu and television advertising would be 40.7% per store weekly, or approximately $681.2 per store weekly.

Before you Submit

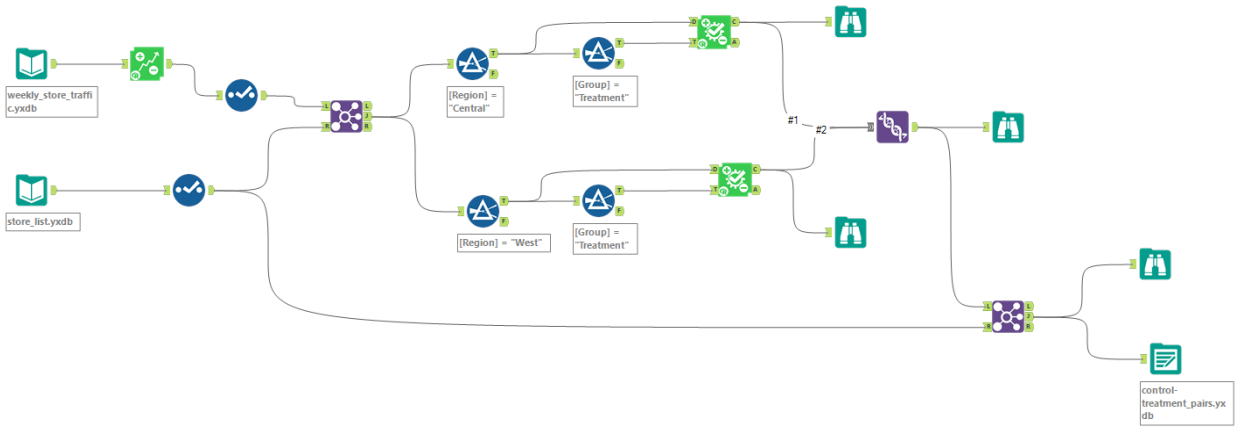
Please check your answers against the requirements of the project dictated by the rubric here. Reviewers will use this rubric to grade your project.

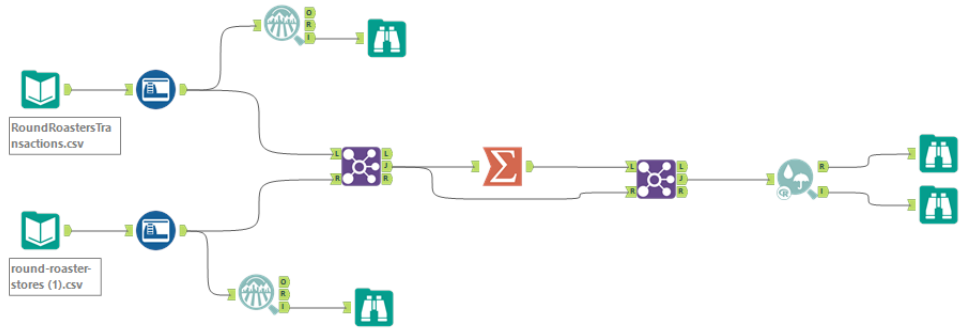
Appendices

Alteryx Workflow for Step 2:



Alteryx Workflow for Step 3:





Alteryx Workflow for Step 4: