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?
   Ans: The growth of the profit.
2. What is the test period?
   Ans: a period of 12 weeks (2016-April-29 to 2016-July-21) .
3. At what level (day, week, month, etc.) should the data be aggregated?
   Ans: At weekly 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.

Ans:

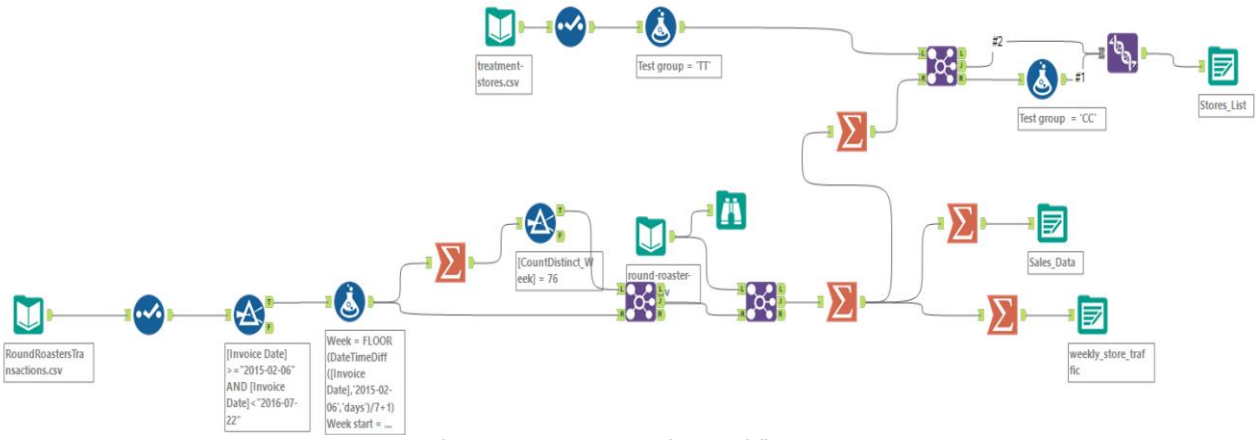

Figure 1 Data preparation workflow

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.
   Ans:
   - Sqt_ft.
   - AvgMonthsSales.
2. What is the correlation between your each potential control variable and your performance metric?
   Ans: Based on Pearson correlation analysis, we can see that AvgMonthsSales has a high correlation of 0.79 with the performance matrix and law value with Sqt_ft -0.02

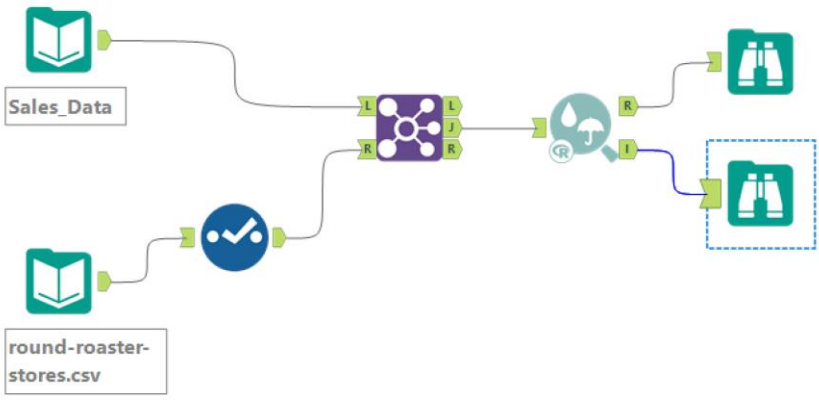

Figure 2 Correlation workflow

Full Correlation Matrix

	Gross.margin	Sq_Ft	AvgMonthSales
Gross.margin	1.000000	-0.018713	0.788959
Sq_Ft	-0.018713	1.000000	-0.046967
AvgMonthSales	0.788959	-0.046967	1.000000

Figure 3 Pearson Correlation Analysis

3. What control variables will you use to match treatment and control stores?
   Ans:
   - AvgMonthsSales.
   - Trend.
   - Seasonality.

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	1863	1964
1700	1630	2014
1712	7434	8162
2288	2568	9081
2293	9524	12219
2301	3012	9238
2322	2409	3235
2341	2383	12536

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?
   Ans: The company should roll out the updated menu sense the test show a profitable result (more than 18%)

2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   West region:
   - Average lift: 38%
   - Gross margin: 510$ per store per week
   - Significant level: 99.4%

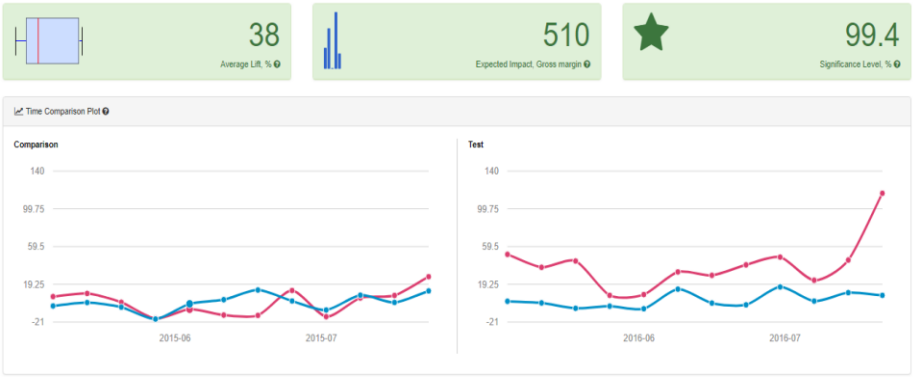

Figure 4 West region menu statistical observation.

Central region:

- Average lift: 43.5%
- Gross margin: 835.9$ per store per week
- Significant level: 99.6%

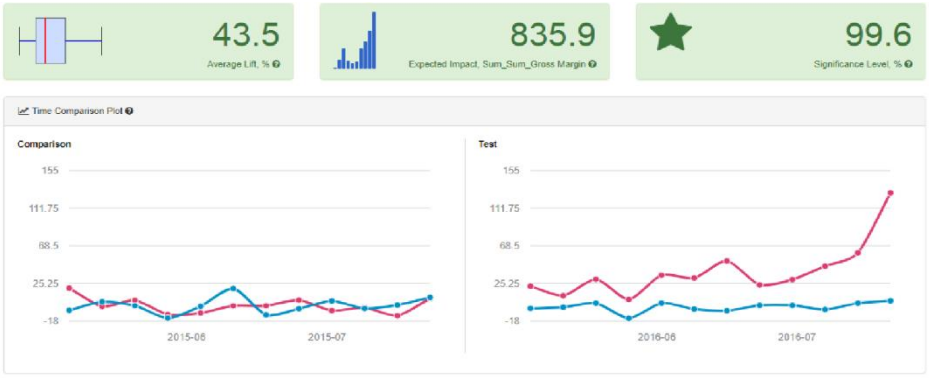

Figure 5 Central region menu statistical observation

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

Overall:

- Average lift: 39.9%
- Gross margin: 659.2$ per store per week
- Significant level: 100%

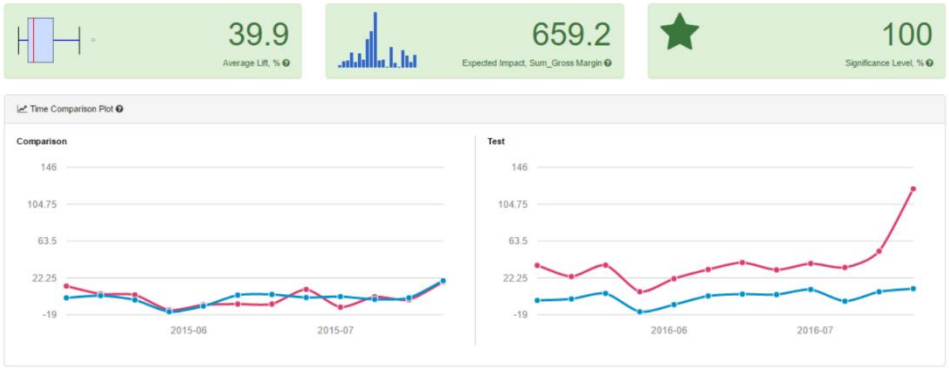

Figure 6 Overall statistical observation

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.