Project: Analyzing a Market Test

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 the gross margin was chosen as the metric to evaluate the performance of the introduction of a new menu in the Road Roasters' stores because operatively this parameter reflects in a better way the performance of any business unit.

   The evaluation will be driven by an A/B Test Analysis with the introduction of gourmet sandwiches and wine offerings some stores from Chicago and Denver.

2. What is the test period?
   The test period is of 12 weeks from: April 29,2016 to July 21, 2016.

3. At what level (day, week, month, etc.) should the data be aggregated?
   Being consistent with the test period, the data level should be aggregated per week also.

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.

Some consideration to clean and prepare the data to run a correct analysis were:

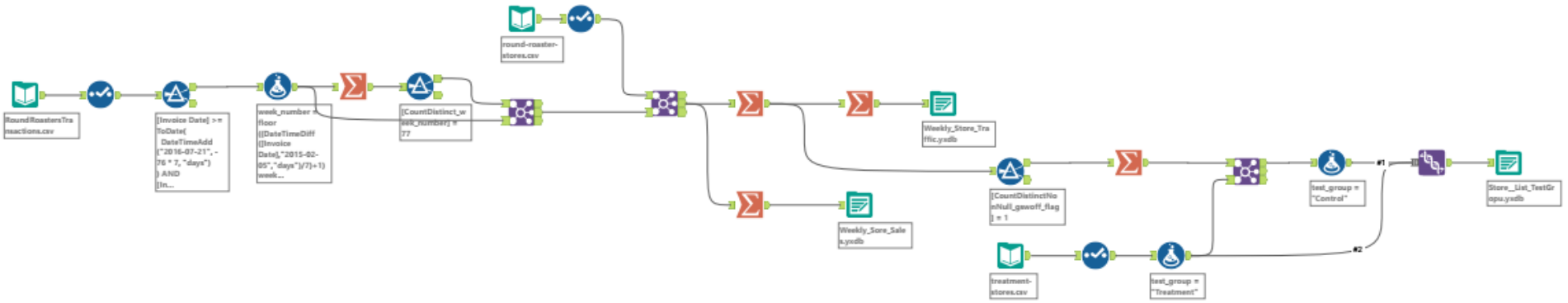
1st. After import data from files: RoundRoasterTransaction.cvs, round-roaster-stores, and treatment-stores.cvs some types of data were adequate like: Invoice date as a date, Gross Margin and Sales as Fixed Decimal (adjusted to two decimal digits), and in some case the fields like Region, State and City were sorted. To calculate trend and seasonality were considered 76 weeks of transaction data: 1 year + 12 periods (weeks) of historical data plus 12 weeks of data from the experiment (April 29, 2016 to July 21, 2016).

2nd. To calculate the weekly traffic by store and identify which of them sold gourmet sandwich and/or wine were added the following fields:

Aggregate Data Filed	Formula
week_number	FLOOR((DateTimeDiff([Invoice Date],"2015-02-05","days")/7)+1)
week_start	DateTimeAdd("2015-02-05",7*([week_number]-1),"days")
week_end	DateTimeAdd([week_start],6,"days")
gswoff_flag	IIF([Category]="Sandwich" or [Category]="Wine", 1, null())

3rd. To the identification of treatment and control stores the filed: test_group was aggregate to the data.

Cleaning and 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.

To calculate trend, seasonality and found the treatment-control units the following considerations made:

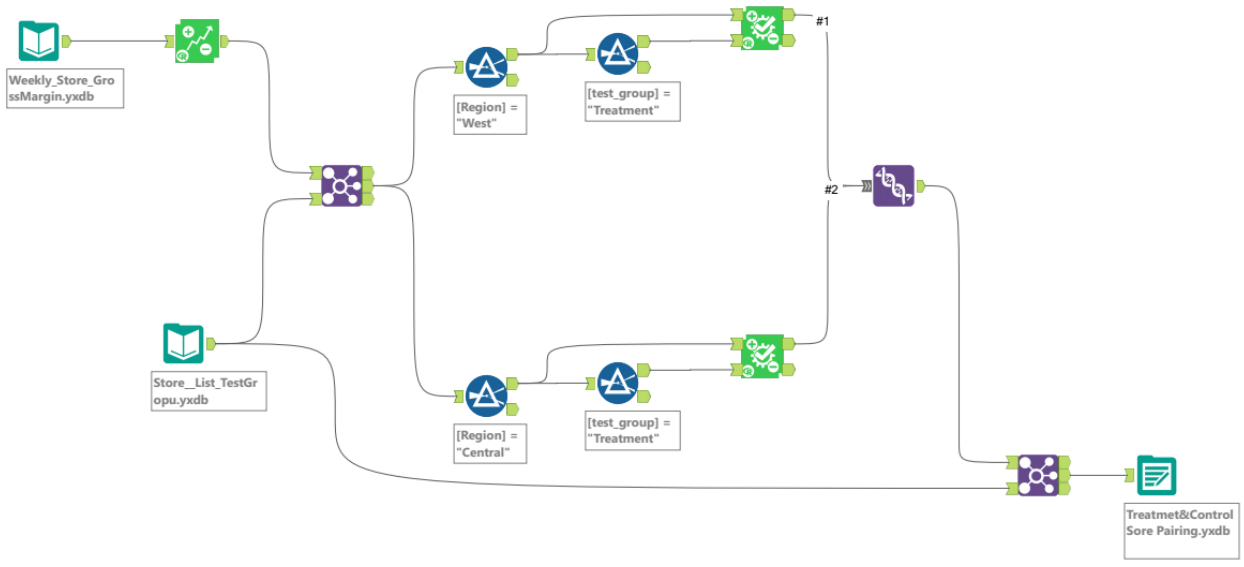
1st. After the importation of data from Weekly_Store_GrossMargin.cvs file; the AB Trend tool was set-up as is indicated:

AB Trend Tool Set-Up	Data
Unit Identifier	StoreID
Reporting Periods Dates	week_end
Performance Measure	Sum_Gross Margin
Report Period Type	Weekly
Number of periods to calculate the trend	12
Test Start Date	April 29, 2016

2nd. To find the pairs of control and treatment units the AB Controls tool was utilized considering two store groups by region: West and Central. The AB Controls tool where set-up as is indicated:

AB Control Tool Set-Up	Data
Treatment Units	StoreID
Selection Measurements	StoreID
Measurements to match control units	Trend & Seasonality
Number of control units for treatment units	2
Each control unit to be assigned to only a single treatment	Active

The following picture is the workflow for looking for control & treatment units:



Apart from trend and seasonality...

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   The variables considered were square feet by store (Sq_Ft) and average sales by month (AvgMonthSales) as numeric variables related to sales and gross margin

2. What is the correlation between your each potential control variable and your performance metric?
   According to Person correlation analysis:

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Gross.Margin	Sum_Sq_Ft	Sum_AvgMonthSales
Sum_Gross.Margin	1.00000	0.88696	0.96625
Sum_Sq_Ft	0.88696	1.00000	0.85077
Sum_AvgMonthSales	0.96625	0.85077	1.00000

The correlation between average monthly sales and gross margin is of 0.96625 against the correlation between square feet (Sq_Ft) and gross margin of 0.88696

3. What control variables will you use to match treatment and control stores?
   The control variables used to match treatment and control units were trend, seasonality driving by the gross margin as performance measure

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

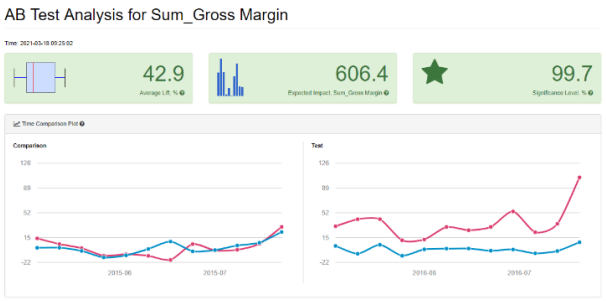
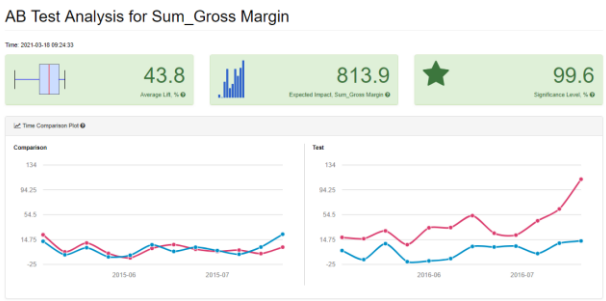
Treatment Store	Control Store 1	Control Store 2
1664	1964	7584
1675	1508	8112
1696	7284	7334
1700	7037	7384
1712	1857	6992
2288	3002	11318
2293	8817	11768
2301	9017	12536
2322	10468	11668
2341	2572	11368

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?
   Road Roaster company should roll out the new menu in all their stores. According to the A/B Tests Analysis, the introduction of the new menu will increase 43.4% of the gross margin in general (more than 18%), this 43.3% represents a new gross margin of $23,965,982.45 an increase of $7,253,302.51 against a gross margin of $16,712,679.94 getting with the traditional menu.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   The average lift for the West region is 42.9% with a significance level of 99.7% and 43.8% for the Central region with a significance level of 99.6%

West Region	Central Region
	

3. What is the lift from the new menu overall?
   The average lift from the new menu overall is 43.4% with a significance level of 100%