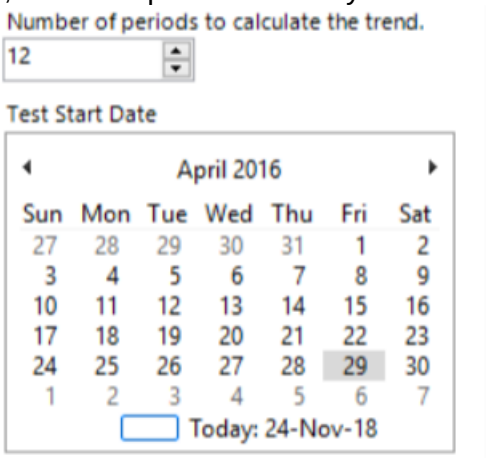
Project: Analyzing a Market Test

Step 1: Plan Your Analysis

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?
   For performance metric we use the sum of gross margin per store per month by region this metric will help to evaluate whether the new gourmet sandwich and limited wine will increase the sale growth of round roasters.
2. What is the test period?
   Test period is of 12 weeks, from 29 April 16 to 21 July 16.



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

Step 2: Clean Up Your Data

The following is data cleanup process

- First identify no of weeks needed for AB analysis
  - Total of 52 weeks + 12 weeks minimum for weekly level.
  - The experiment is of 12 weeks test duration
  - Hence, 52+12+12=76 weeks of data is needed for report.
- Cleanup unnecessary data, before 06-Feb-2015 & after 12-July-2016 from RoundRoastersTransactions.csv
- week, week_start, week_end, new_product_flag, this 4 colomns are created to RoundRoastersTransactions.csv using Floor, DateTimeDiff & DateTimeAdd functions.
- Now we join RoundRoastersTransactions.csv & round_roasters_stores.csv using store_id.
- Summarizing the joind data by store_id, region.

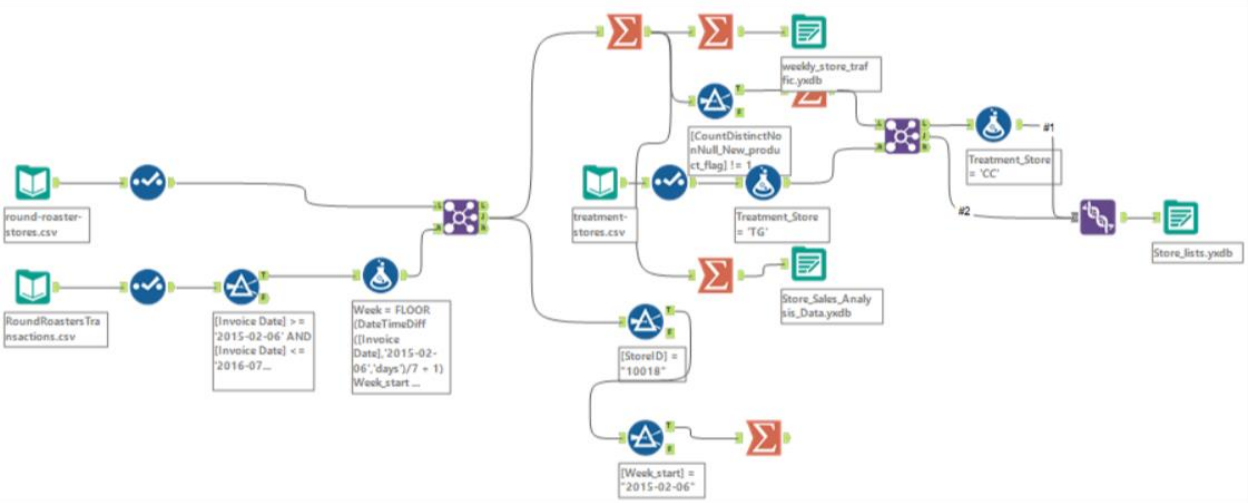


Fig. 2.1 Workflow for cleaning up data

Step 3: Match Treatment and Control Units

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   AvgMonthSales & Sq_Ft should be considered as control variables however we need a full pearson correlation matrix for determining that they are really a good choice.
2. What is the correlation between your each potential control variable and your performance metric?

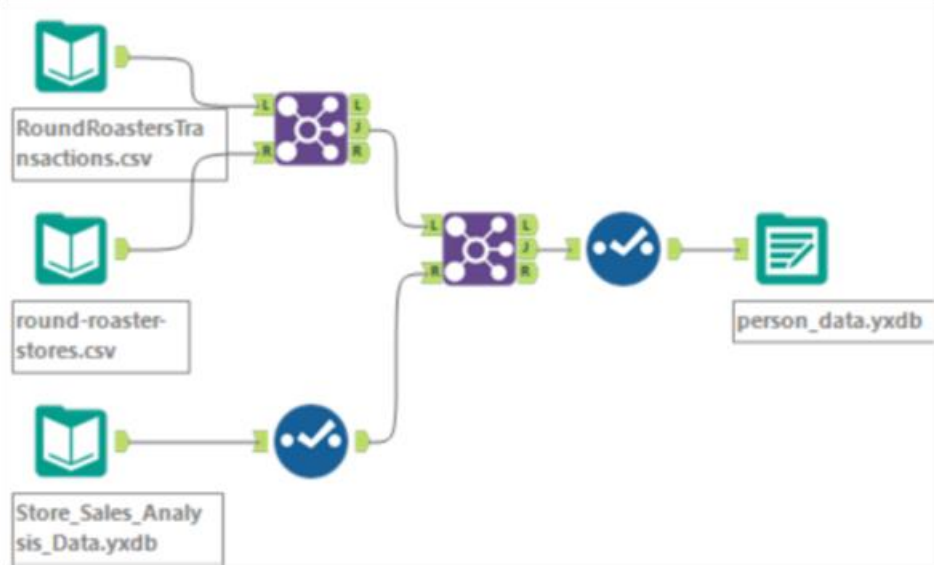


Fig. 3.1 Generating dataset for Pearson Correlation workflow

Fig 3.2 Generating Full Pearson correlation matrix

FieldName	Sq_Ft	AvgMonthSales	Sum_Sum_Sales	Sum_Sum_Gross Margin
Sq_Ft	1	-0.098990132	-0.06407915	-0.061912607
AvgMonthSales	-0.09899013	1	0.786283812	0.787443833
Sum_Sum_Sales	-0.06407915	0.786283812	1	0.9986944
Sum_Sum_Gross Margin	-0.06191261	0.787443833	0.9986944	1

Table 3.1 Full Pearson Correlation Matrix between performance metric and control variables workflow

From Table 3.1 sum of gross margin and average onth sales have strong correlation (0.78). The square footage & the sum of gross margin doesn't seem in any relationship. The correlation between between the sum of gross margin and square footage is -0.06. Hence eliminating sq_ft from control variable list.

3. What control variables will you use to match treatment and control stores?
   The AvgMonthSales, Trend and Seasonality used to match treatment & 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	1964	7162
1675	1807	1508
1696	1863	7534
1700	7037	2014
1712	8162	2114
2288	9081	2568
2293	12219	9639
2301	9238	2301
2322	2409	3235
2341	2572	3102

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?
   AB Test analysis for both west and central regions shows depict that company should

roll out updated menu to all stores.

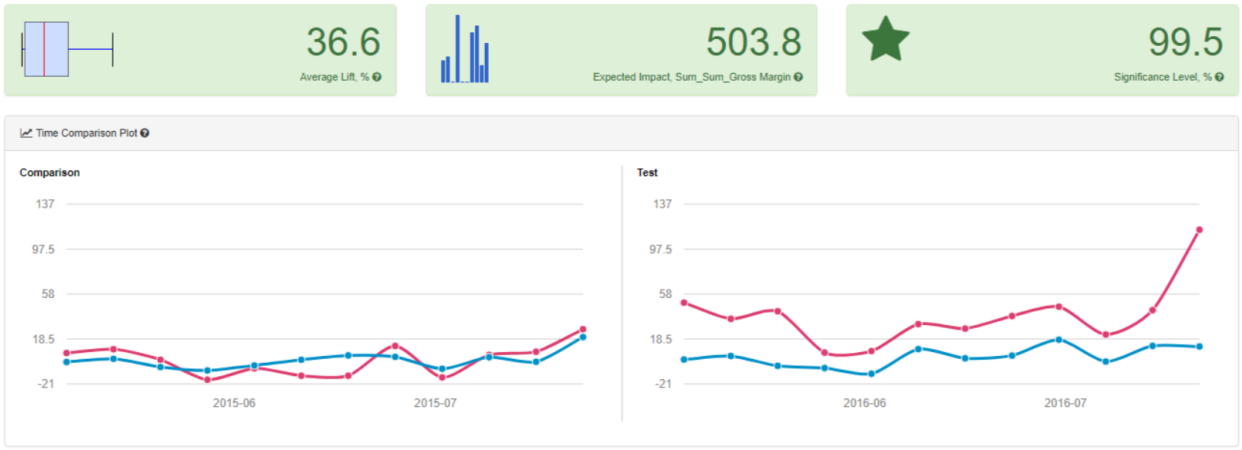


Fig 4.1 AB Test analysis for west region

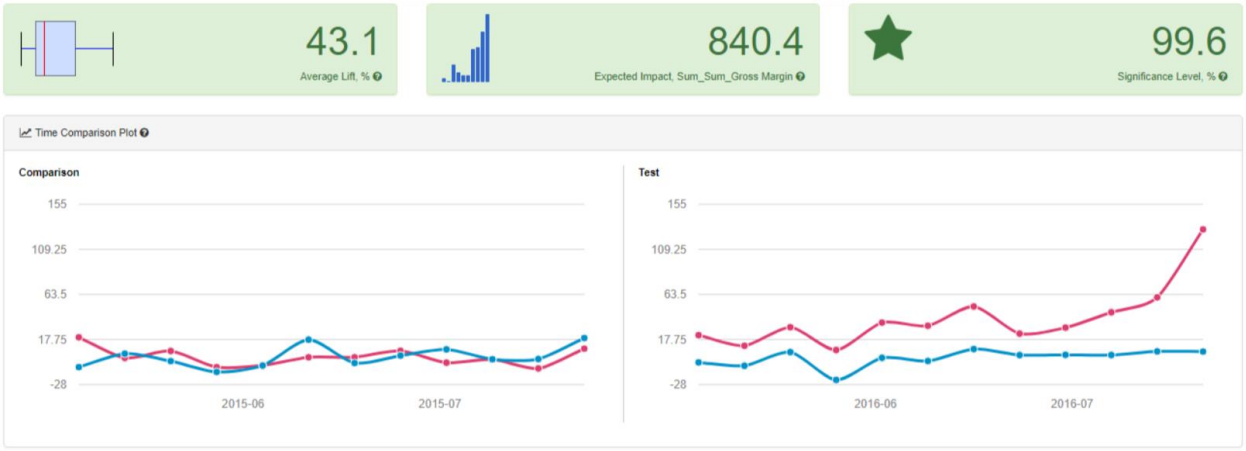


Fig 4.2 AB Test Analysis for Central Region

Fig 4.3 Overall AB Test

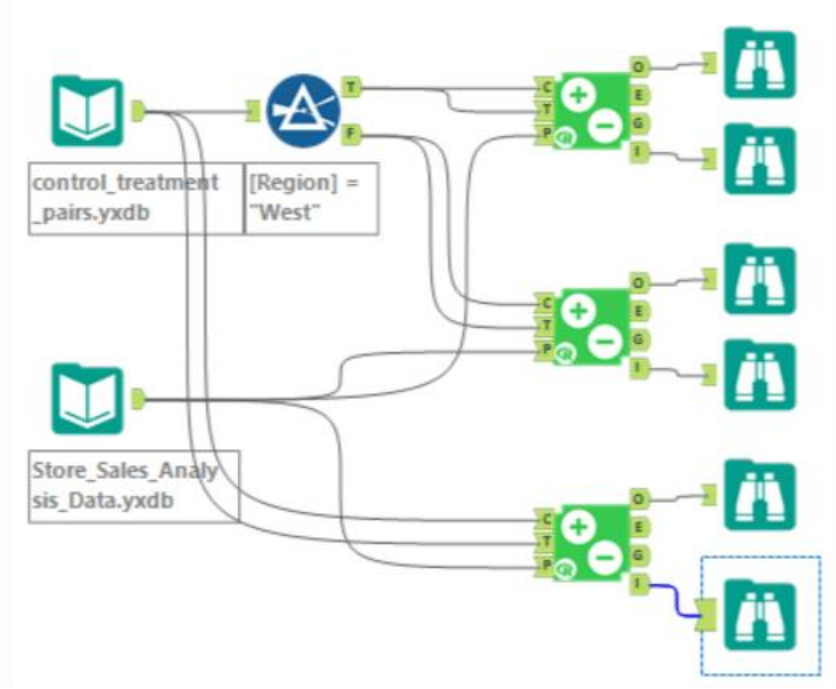


Fig 4.4 AB Analysis workflow

2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   For west region new menu lift is 36.6%, for central region it is 43.1%. Statistical significance for west region is 99.5 and for central region it is 99.6.
3. What is the lift from the new menu overall?
   The overall lift for new many is 39.9%