Project #5
Analyzing a Market Test

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1 Plan your analysis

Coffee restaurant Round Roasters tested a new menu to find out if it can drive enough sales to offset the cost of marketing the new menu. To evaluate whether the new menu facilitates sales growth for the Round Roasters chain, we will use the **sum of gross margin** as a performance metric. The test period spans **12 weeks from 29th April 2016 to 21st July 2016**. The data needs to be aggregated at **weekly level** for analysis.

2 Match treatment and control units

Region and AvgMonthSales should be considered as constant variables while Square Feet should ignored. Looking at person correlation analysis, we find the same results. AvgMonthSales has a high correlation value of 0.79 with p-value < 0.001, while Sq_Ft has close to no correlation with p-value > 0.05.

Pearson Correlation Analysis

Full Correlation Matrix

	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin	1.000000	-0.019345	0.790358
Sq_Ft	-0.019345	1.000000	-0.046967
AvgMonthSales	0.790358	-0.046967	1.000000

Matrix of Corresponding p-values

|	Sum_Gross.Margin	Sq_Ft	AvgMonthSales
Sum_Gross.Margin		5.1796e-02	0.0000e+00
Sq_Ft	5.1796e-02		2.3119e-06
AvgMonthSales	0.0000e+00	2.3119e-06	

Therefore, we will use Region, AvgMonthSales, Trend and Seasonality as control variables.

| 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

3 Analysis and writeup

The company should roll out the updated menu to all their stores. We find the sum of gross margin to have increased by 37.92%, from a total of 699,250,191.88 USD in the comparative period to 964,432,319.67 USD in the test period.
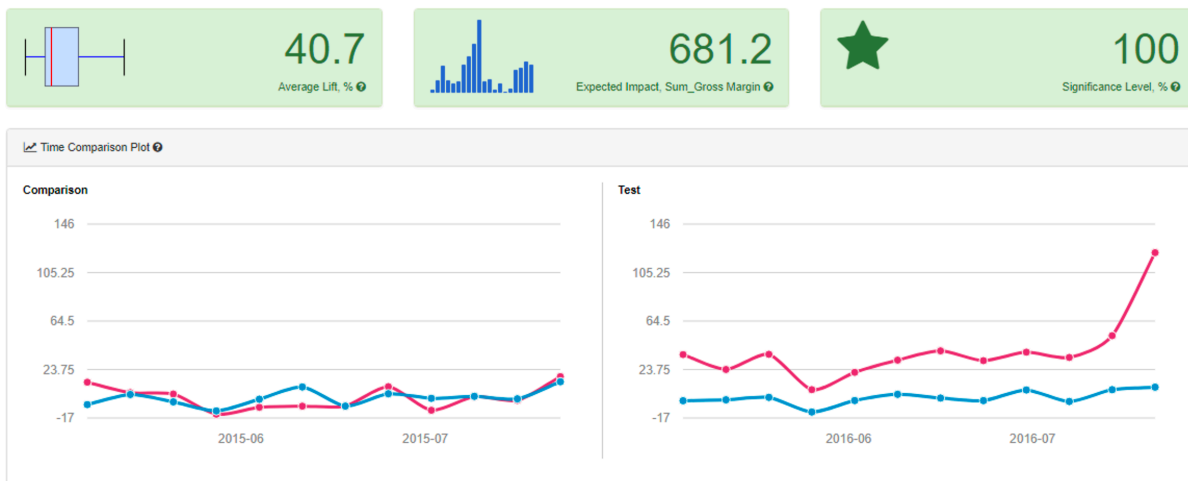
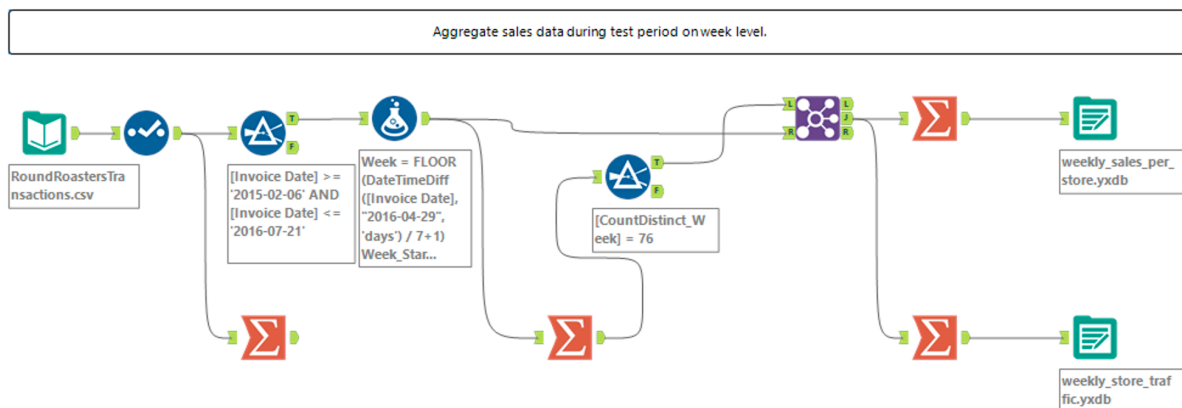The West region had a lift of 37.9% with 99.5% significance.
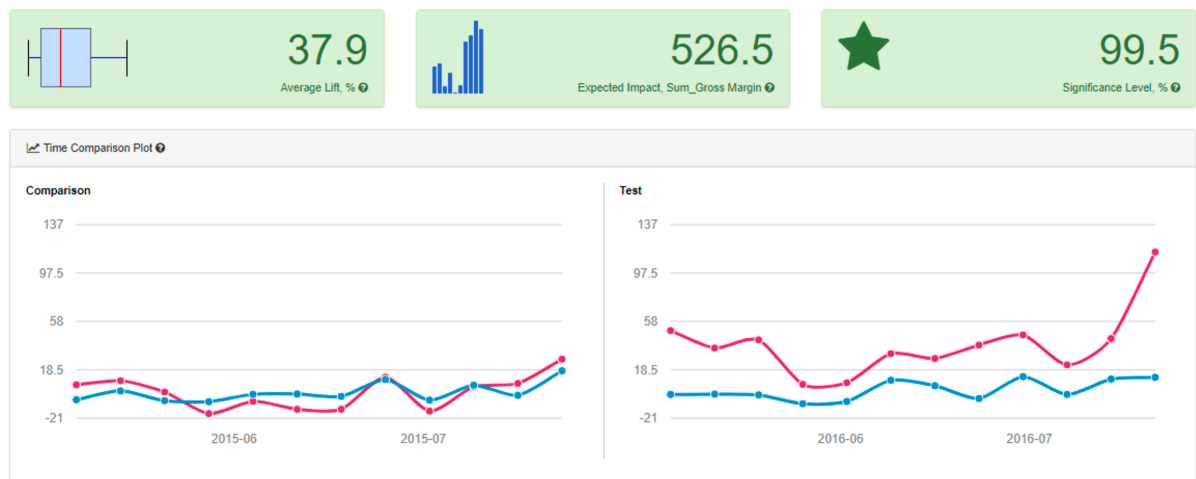
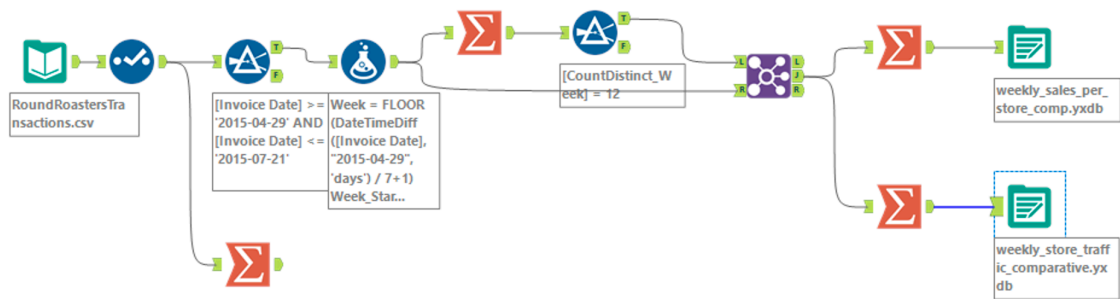The Central region had 43.5% lift with 99.6% significance.
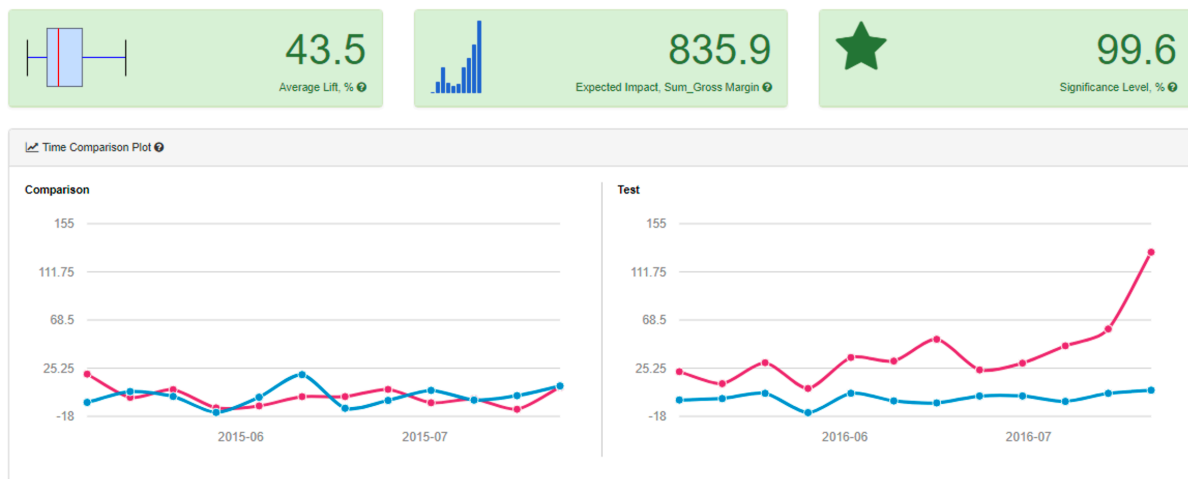
The new menu had a lift of 40.7% with 100% significance.

4 Alteryx Workflows

Aggregate sales data during test period on week level.

Aggregate sales data during comparative period on week level.

RoundRoastersTransactions.csv

[Invoice Date] >= '2015-04-29' AND [Invoice Date] <= '2015-07-21'

Week = FLOOR (DateTimeDiff ([Invoice Date], "2015-04-29", 'days') / 7 +1) Week_Star...

[CountDistinct_Week] = 12

weekly_sales_per_store_comp.yxdb

weekly_store_traffic_comparative.yxdb

Create a list of stores - treatment stores have 1 (True) value, else 0.

weekly_sales_per_store.yxdb

round-roaster-stores.csv

treatment-stores.csv

TreatmentStore = 1

#1

#2

stores.yxdb
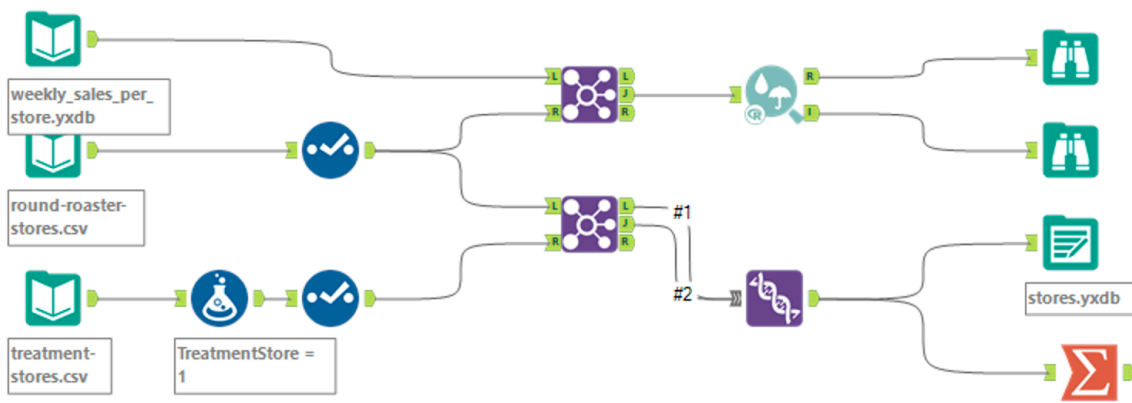
Get trend and seasonality variables to match two control units to each one treatment unit.

weekly_store_traffic.yxdb

stores.yxdb

[Region] = "West"

[TreatmentStore] = "1"

#1

[Region] = "Central"

[TreatmentStore] = "1"

#2

treatment_control_pairs.yxdb

Calculate gross margin compared to comparative period.

weekly_sales_per_
store_comp.yxdb

[Week_Start] >=
'2015-04-29'
AND [Week_End]
<= '2015-07-21'

weekly_store_traf
fic_comp.yxdb

weekly_sales_per_
store.yxdb

[Week_Start] >=
'2016-04-29'
AND [Week_End]
<= '2016-07-21'

New_Sum_Gross_
Margin =
[Sum_Gross
Margin] * 1.407

weekly_store_traf
fic.yxdb

Prev_Total_Gross_
Margin =
[Prev_Sum_Gross_
Margin]*
[Prev_Num_Traffic
]
New_Total_G...

Percentage =
[Sum_Difference]
/
[Sum_Prev_Total_
Margin]

result.csv

A/B Test Results for West and Central regions

matched_pairs.yx
db

[Region] =
"West"

weekly_sales_per_
store.yxdb