# Project: Analyzing a Market Test

## Step 1: Plan Your Analysis

1. What is the performance metric you'll use to evaluate the results of your test?
    - The performance metric will be the increase in profit growth.
2. What is the test period?
    - The test ran for 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?
    - The data should be aggregated at weekly level.

## Step 2: Clean Up Your Data

Field that should be removed:

- Fields that logically does not have a relationship with the target variable in:
    - round-roaster-stores.csv and treatment-stores.csv:
        - Right_Name | Name
        - Phone Number
        - Street Combined
        - Street 1
        - Street 2
        - Street 3
        - City
        - State | Right_State
        - Postal Code
        - Country
        - Coordinates
        - Latitude
        - Longitude
        - Timezone
        - Current Timezone Offset
        - Olson Timezone
    - round-roaster-transactions.csv:
        - SKU
        - Product
        - QTY
        - Size

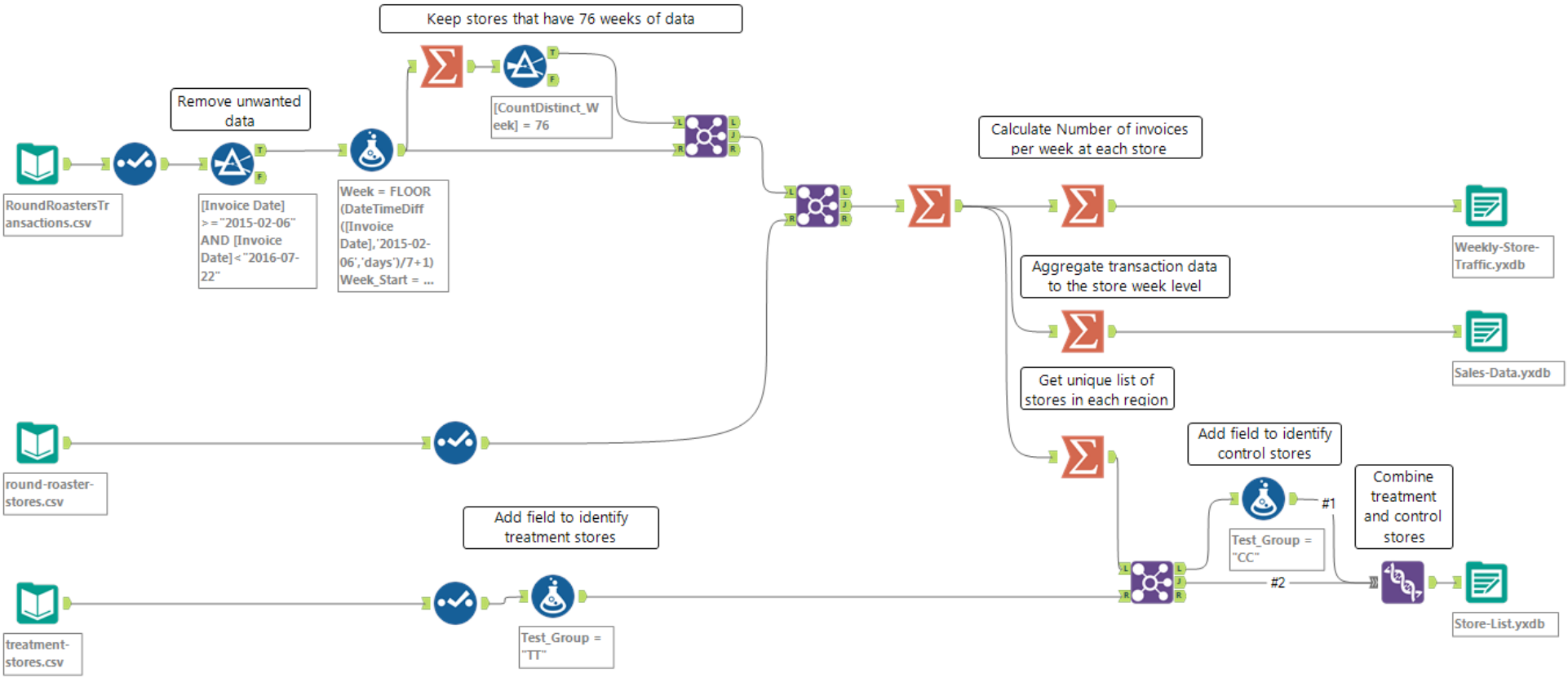


**Figure 1:** Cleaning Data Workflow

# Step 3: Match Treatment and Control Units

1. What control variables should be considered?

   - Sq_Ft
   - AvgMonthSales

2. What is the correlation between your each potential control variable and your performance metric?

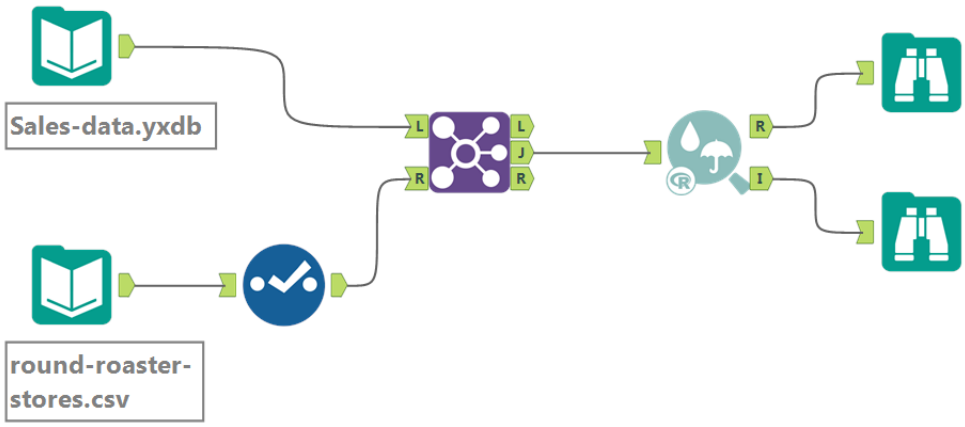


**Figure 2:** Analyzing Correlation Workflow

- The correlation should be at least 0.70 to be considered “high”, As we can see in the figures below AvgMonthSales surpassed that value (0.79) while Sq_Ft has a very low value (-0.02).

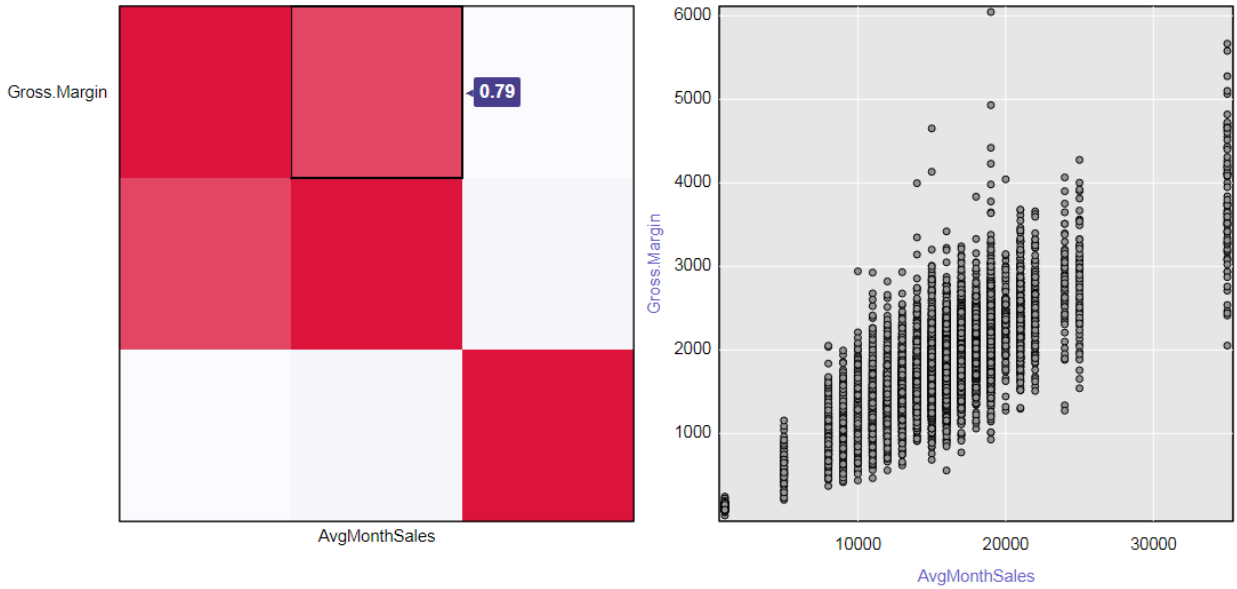


**Figure 3:** Correlation Matrix with ScatterPlot AvgMonthSales vs Gross.Margin

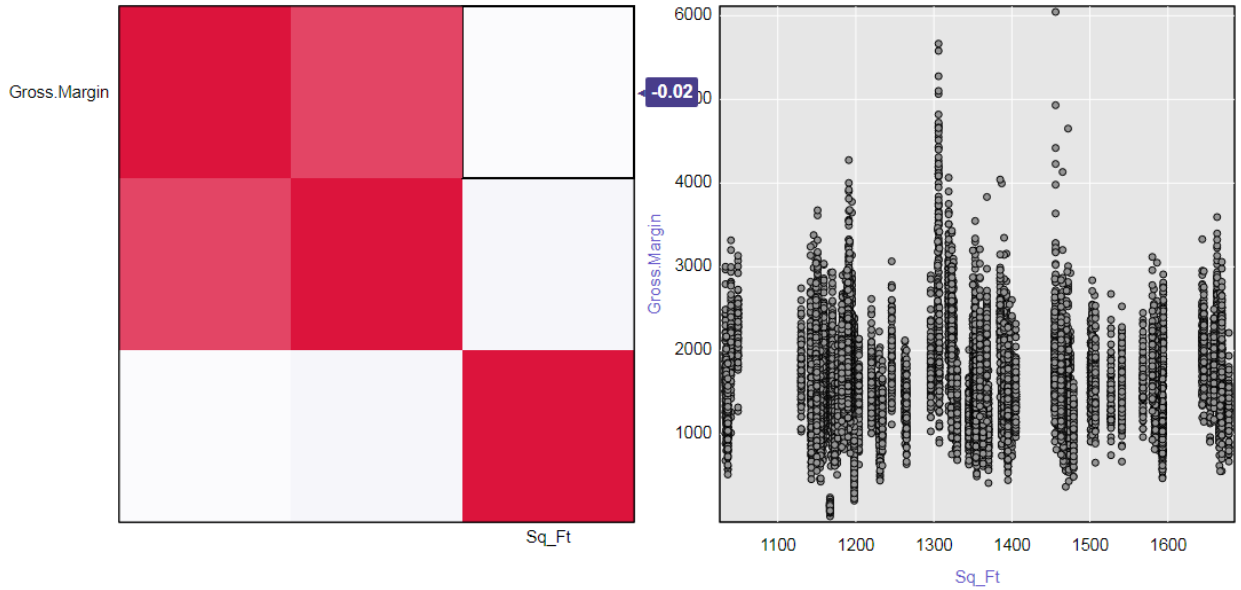


**Figure 4:** Correlation Matrix with ScatterPlot Sq_Ft vs Gross.Margin

3. What control variables will you use to match treatment and control stores?

    - Trend
    - Seasonality
    - AvgMonthSales

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

| Treatment Store | Control Store 1 | Control Store 2 |
|---|---|---|
| 1664 | 8112 | 7162 |
| 1675 | 1807 | 1580 |
| 1696 | 1863 | 1964 |
| 1700 | 1630 | 2014 |
| 1712 | 7434 | 8162 |
| 2288 | 2568 | 9081 |
| 2293 | 9524 | 12219 |
| 2301 | 9238 | 3102 |
| 2322 | 3235 | 2409 |
| 2341 | 2383 | 12536 |

**Table 1:** Treatment and Control Stores Pairs

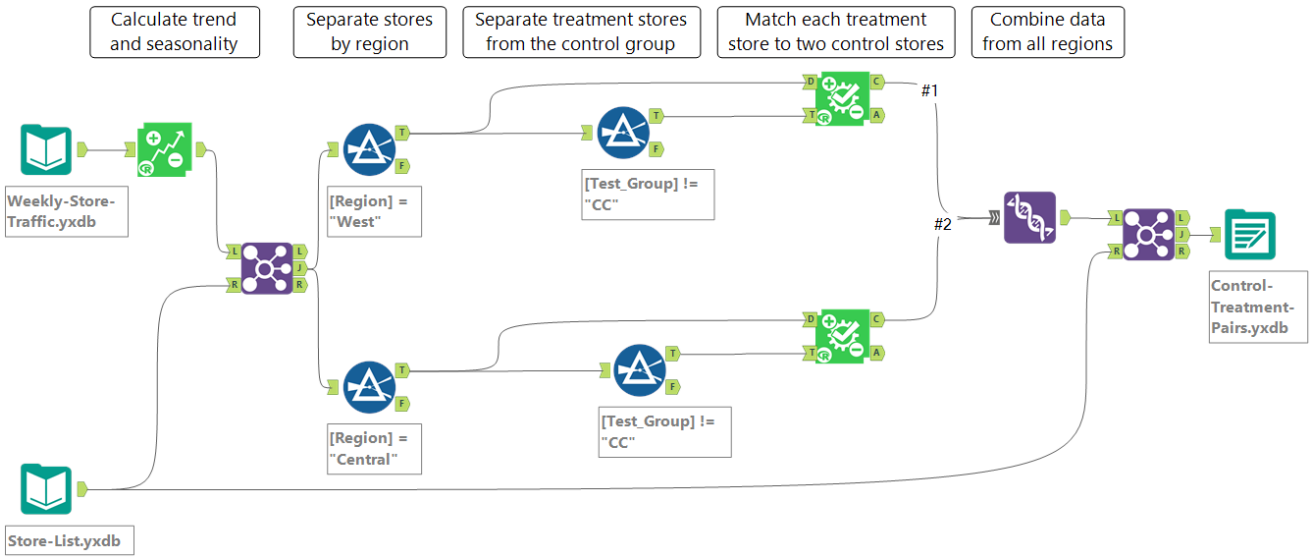


**Figure 5:** Matching Treatment and Control Pairs Workflow

## Step 4: Analysis and Writeup

The updated menu has more than 18% increase in profit growth. Therefore the new menu should be rolled out across all stores.

The results for the west region are:

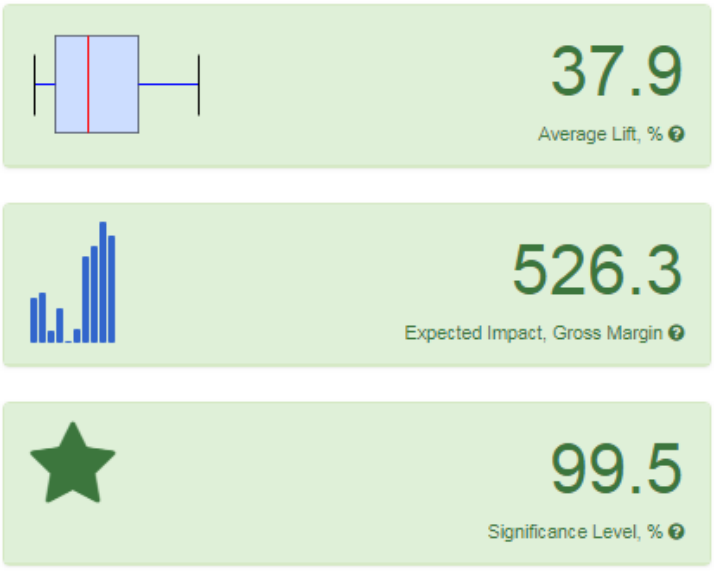


**Figure 6:** West region results

A comparison of the treatment-control pairs indicates an average lift in Gross Margin for the treatment units over the control units of 37.9%, which results in an expected impact of 526 on Gross Margin, with 100.0% of the treatment-control pairs exhibiting a positive lift for the treatment units.

The results for the central region are:

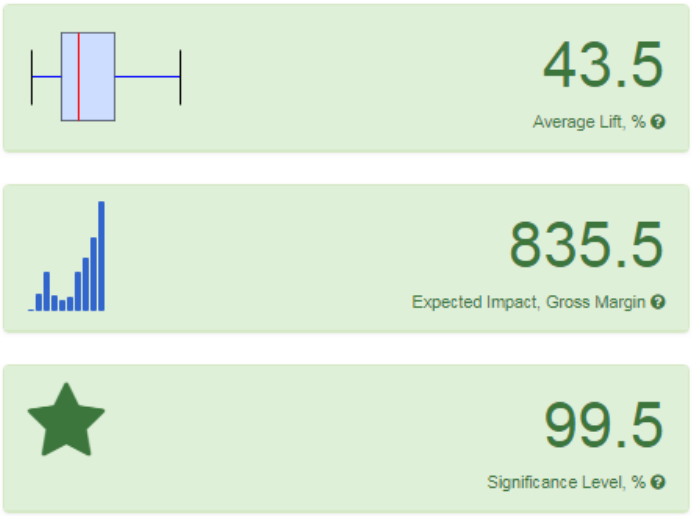


**Figure 7:** Central region results

A comparison of the treatment-control pairs indicates an average lift in Gross Margin for the treatment units over the control units of 43.5%, which results in an expected impact of 835 on Gross Margin, with 100.0% of the treatment-control pairs exhibiting a positive lift for the treatment units.

The overall results for the new menu are:

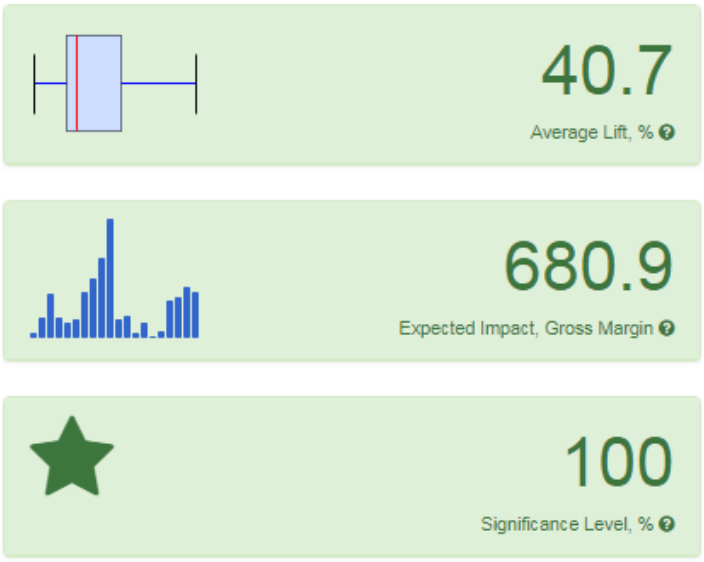


**Figure 8:** Overall results for the new menu

A comparison of the treatment-control pairs indicates an average lift in Gross Margin for the treatment units over the control units of 40.7%, which results in an expected impact of 681 on Gross Margin, with 100.0% of the treatment-control pairs exhibiting a positive lift for the treatment units.