Project: Analyzing a Market Test

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Step 1: Plan Your Analysis

1. **What is the performance metric you'll use to evaluate the results of your test?**
   As mentioned in the project details, we want to increase the profit by at least 18% in the comparative period. So, our performance metric here to compare between the two groups is Profit.

2. **What is the test period?**
   As mentioned in the project details, the period of the test is 12 weeks between (29-Apr-16 to 21-Jul-16).

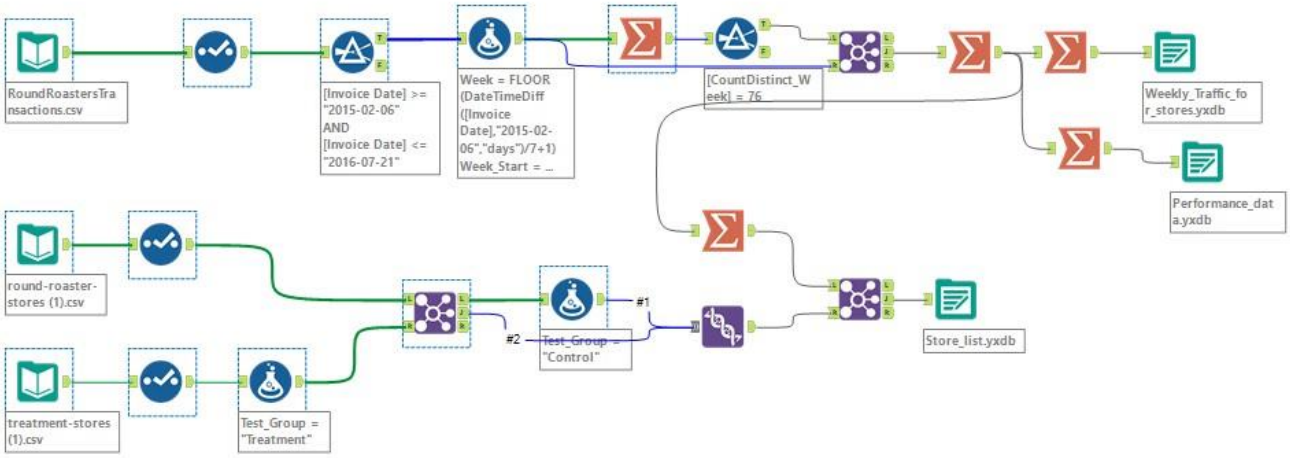
3. **At what level (day, week, month, etc.) should the data be aggregated?**
   The data will be aggregated on a weekly level. The level of granularity will give us a reasonable way to see the difference between the progress for each group correctly.

Step 2: Clean Up Your Data

Four columns have been added to the Week, WeekStart, WeekEnd,.

In this step we end up with three different files:

1. Weekly_traffic: To feed A/B trend tool to help match our treatment stores with control.
2. Stores_List: To feed A/B control tool to help match our treatment stores with control.
3. Stores_sales: To run our A/B and get our final results.

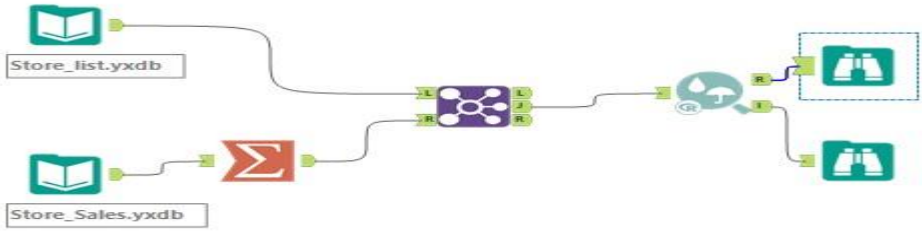


Step 3: Match Treatment and Control Units

1. **What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.**

   AvgMonthSales & Sq_Ft

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



Pearson Correlation Analysis

Full Correlation Matrix

	Sq_Ft	AvgMonthSales	Sum_Sum_Sum_Gross.Margin
Sq_Ft	1.000000	-0.040063	-0.028444
AvgMonthSales	-0.040063	1.000000	0.994571
Sum_Sum_Sum_Gross.Margin	-0.028444	0.994571	1.000000

Matrix of Corresponding p-values

	Sq_Ft	AvgMonthSales	Sum_Sum_Sum_Gross.Margin
Sq_Ft		0.65997	0.75481
AvgMonthSales	0.65997		0.00000
Sum_Sum_Sum_Gross.Margin	0.75481	0.00000	

3. **What control variables will you use to match treatment and control stores?**
   AvgMonthSales because “Pearson Correlation Analysis” indicates that is statistically significant Sq_ft will be excluded.

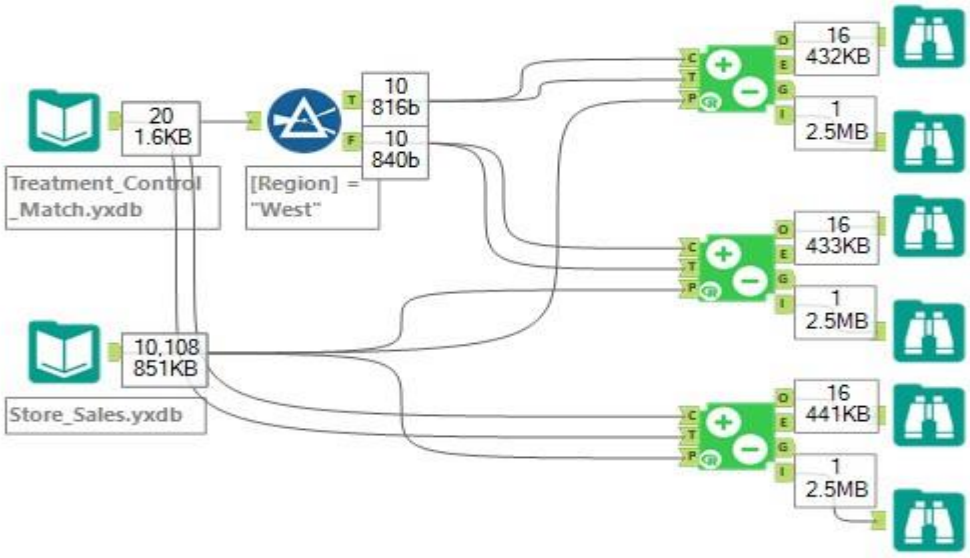
4. **Please fill out the table below with your treatment and control stores pairs:**

Treatment Store	Control Store 1	Control Store 2
1675	7284	2214
1696	1863	7334
1700	7037	2014
1712	8162	7434
2288	2568	9081
2293	12686	9639
2301	12536	9238
2322	9388	3185
2341	2572	12586

Step 4: Analysis and Writeup

Conduct your A/B analysis and create a short report outlining your results and recommendations. (250 words limit)

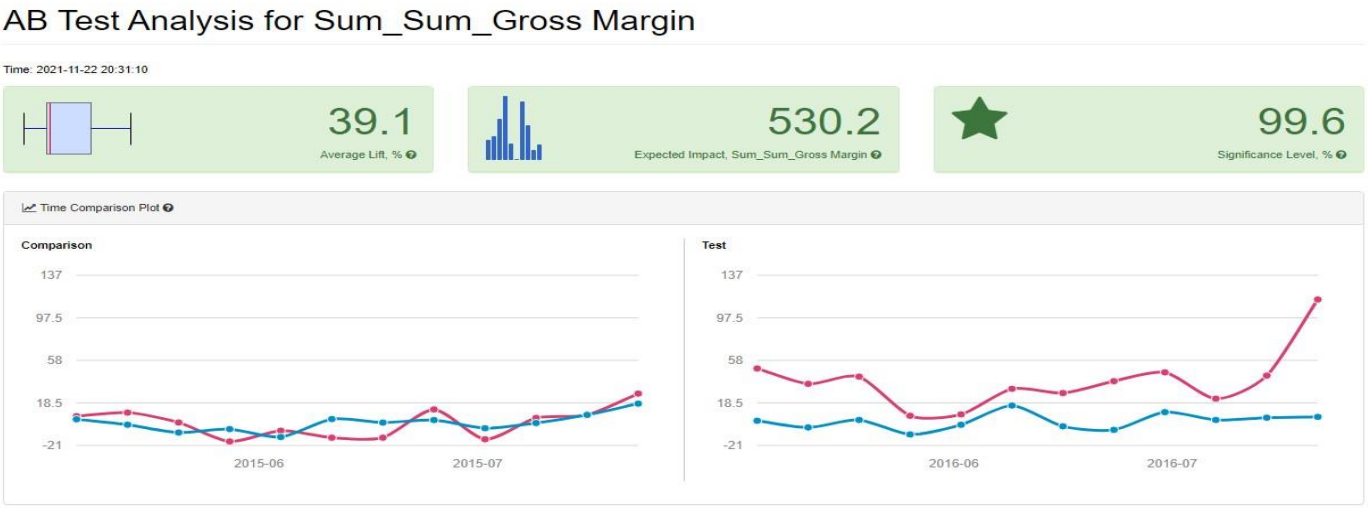
Answer these questions. Be sure to include visualizations from your analysis:



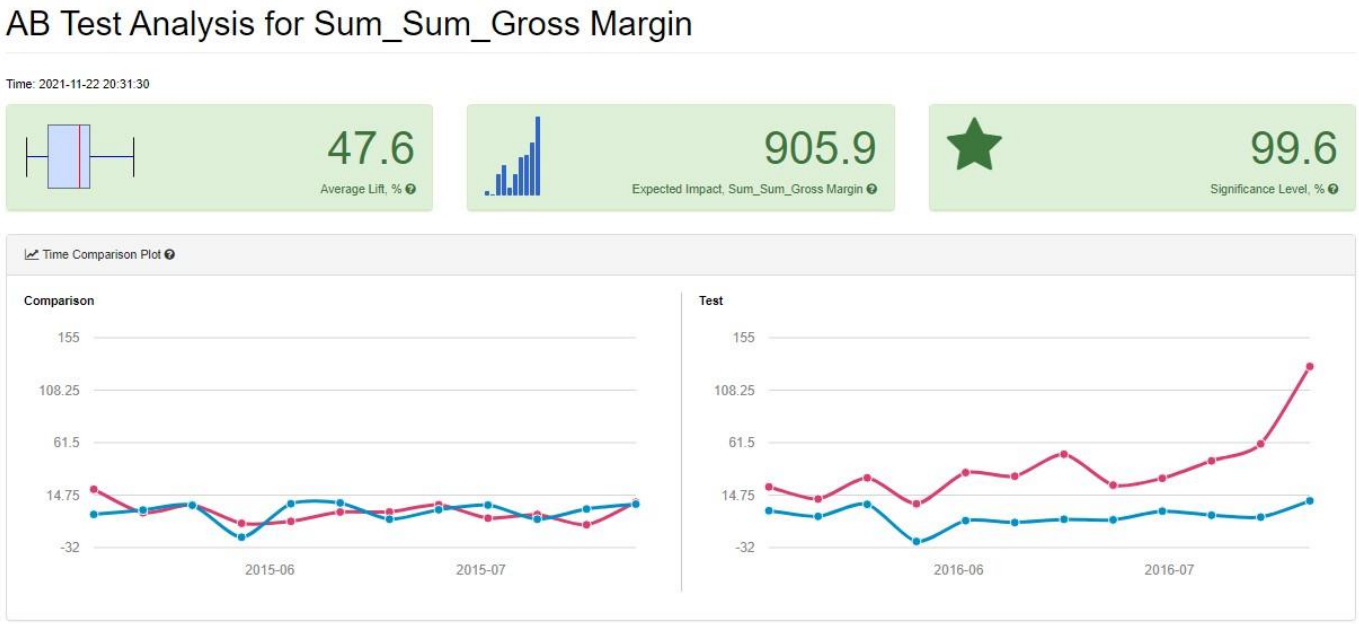
1. **What is your recommendation - Should the company roll out the updated menu to all stores?**

   The company should update the menu in the rest of the branches as the A/B test results suggest. The profit growth will exceed the threshold for upgrading the marketing budget.

2. **What is the lift from the new menu for West and Central regions (include statistical significance)?**
   For west:
   The average percentage change in Gross Margin was 39.1% for the treatment units in the test period relative to the comparison period. This same measure was 1.4% for the control units, with the difference between the treatment and control units being 37.7%, which is highly statistically significant.



For East:
The average percentage change in Gross Margin was 39.7% for the treatment units in the test period relative to the comparison period. This same measure was -4.4% for the control units, with the difference between the treatment and control units being 44.1%, which is highly statistically significant.



3. What is the lift from the new menu overall?
The average percentage change in Gross Margin was 39.4% for the treatment units in the test period relative to the comparison period. This same measure was -1.5% for the control units, with the difference between the treatment and control units being 40.9%, which is highly statistically significant.