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?

Ans: The KPI to decide, whether or not, to roll out the new menu is the profitability. The predicted profitability to justify the increased marketing budget to advertise the new menu should be at least **18%**. Hence, **gross margin** will be our performance metric.

2. What is the test period?

Ans: The test starts from **29th April 2016** and spreads over a span of 12 weeks. The test end date is **21st July 2016.**

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

Ans: The data should be aggregated on **weekly** level

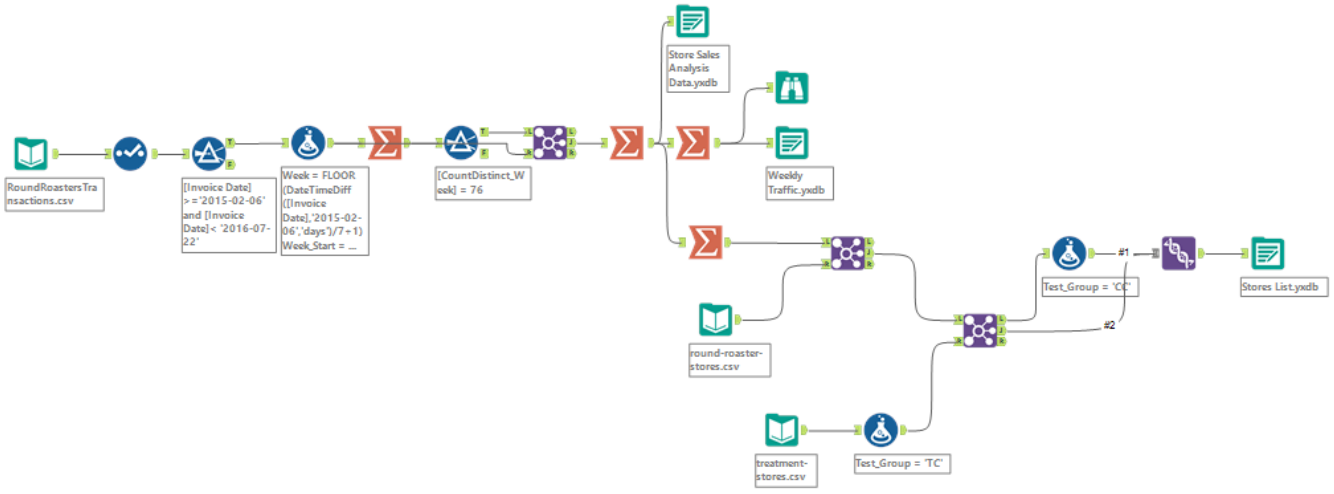
Step 2: Clean Up Your Data

Data Cleaning Process:

I used the files **'RoundRoastersTransactions.csv'**, **'round-roaster-store.csv'** and **'treatment-stores.csv'** to create two files that were eventually used to study trends and seasonality, match control units to treatment units and perform A/B analysis. The files that were produces are listed below:

- Weekly Traffic
- Stores List

The workflow that I created to produce above mentioned file is shown below:



The file **'Weekly Traffic'** where the transactions data has been aggregated on weekly level ended up having **10,108** rows and the file **'Stores List'** have **133** rows.

Weekly Traffic file has week number, week start and end date, weekly number of transactions (Count) in each store and sum of gross margin calculated.

Stores List file contains list of control and treatment stores tagged as CC and TC respectively.

Step 3: Match Treatment and Control Units

Apart from trend and seasonality...

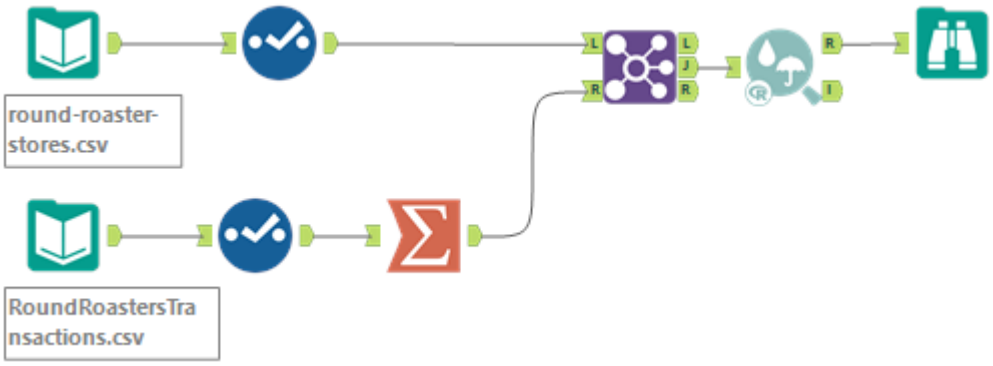
1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.

Ans: There are only two potential variables in the RoundRoastersStore file that could possibly be used as the control variables; **Sq_Ft** and **AvgMonthSales.**

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

Ans: I used Pearson Correlation in Alteryx to calculate the correlation of the performance metric; Gross Margin with Sq_Ft and AvgMonthlySales.

The workflow is attached below:



And the results are:

Pearson Correlation Analysis

Full Correlation Matrix

	Sq_Ft	AvgMonthSales	Sum_Gross.Margin
Sq_Ft	1.000000	-0.046967	-0.020353
AvgMonthSales	-0.046967	1.000000	0.988219
Sum_Gross.Margin	-0.020353	0.988219	1.000000

As seen in the result, I chose **AvgMonthlySales** as the control variable to match my

control units to the treatment units as its P-Value is **0.988** which is greater than 0.05. On contrary, Sq_Ft P-Value is -0.02 and hence it disqualifies from being a potential control variable.

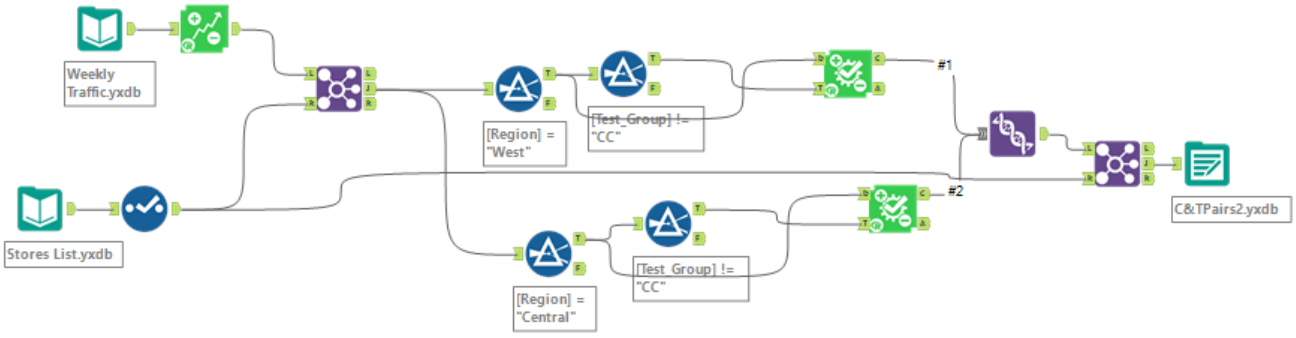
3. What control variables will you use to match treatment and control stores?

Ans: I chose **AvgMontlySales** as my control variable based on its P-Value.

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

Treatment Store	Control Store 1	Control Store 2
1664	7162	1964
1675	7284	2214
1696	1863	7334
1700	7037	2014
1712	8162	7434
2288	2568	9081
2293	12868	9639
2301	12536	9238
2322	9388	3185
2341	2572	12586

The workflow used to calculate trend and seasonality and match control units to treatment units is shown below:



Step 4: Analysis and Writeup

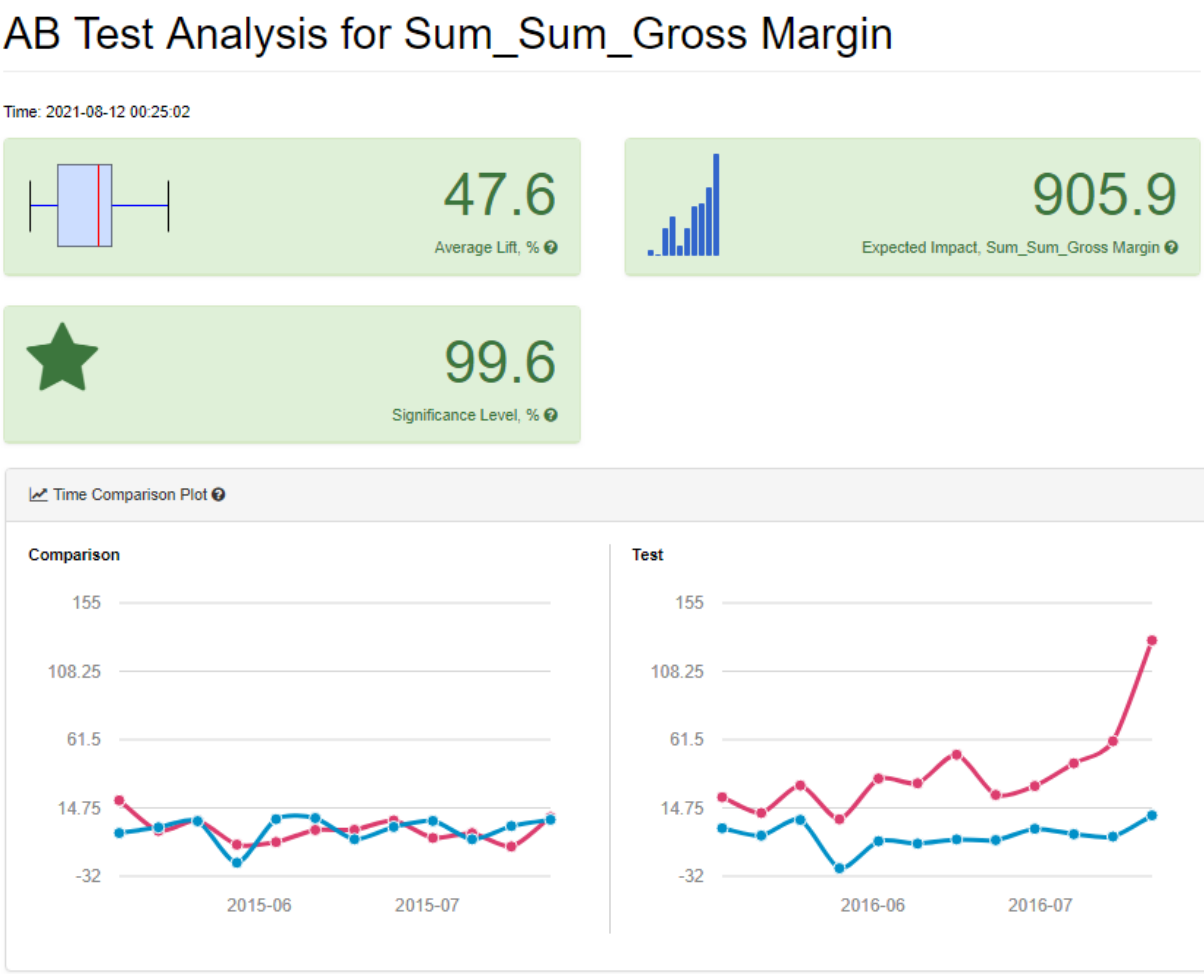
1. What is your recommendation - Should the company roll out the updated menu to all stores?

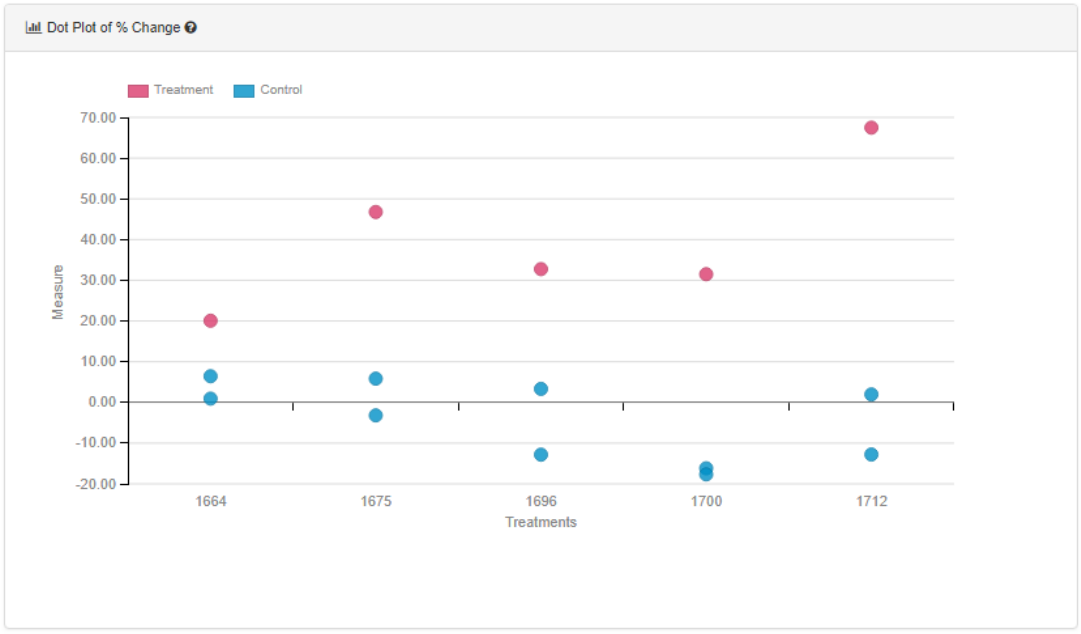
Ans: The project description says that the predicted profitability from the marketing budget, aka our gross margin, should be at least 18% if the new menu has to be rolled out. In the A/B Analysis result we see the incremental lift from each region and overall to be more than 18%. Hence, **the company should definitely roll out the new menu**.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?

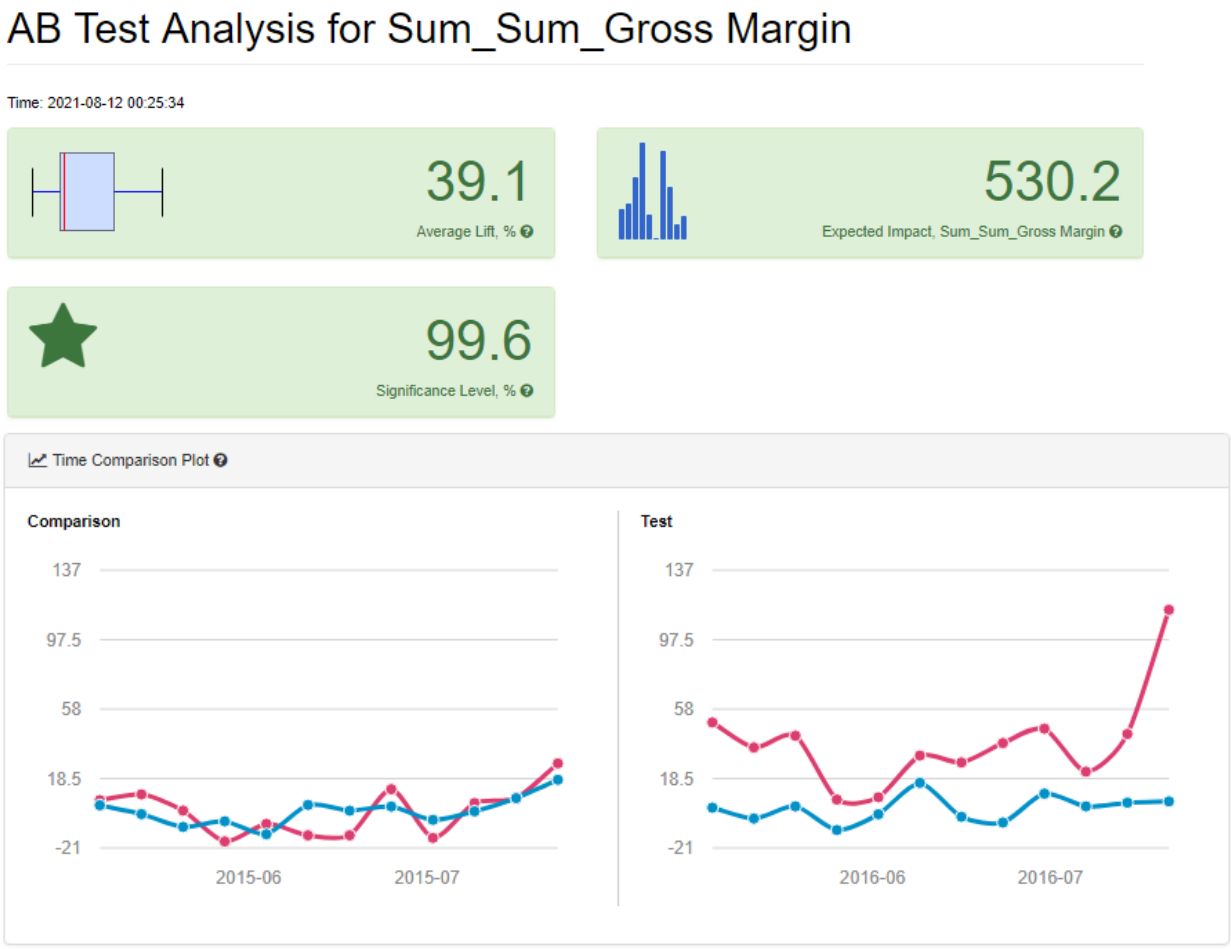
Ans: The results of A/B Analysis for each region are as below:

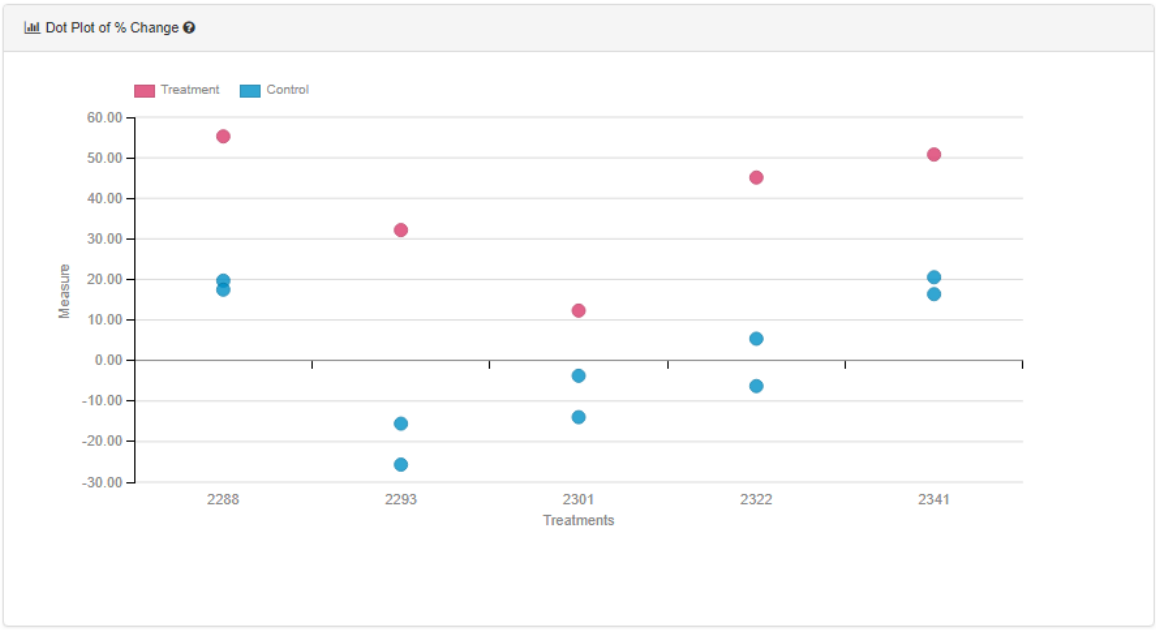
Central Region:





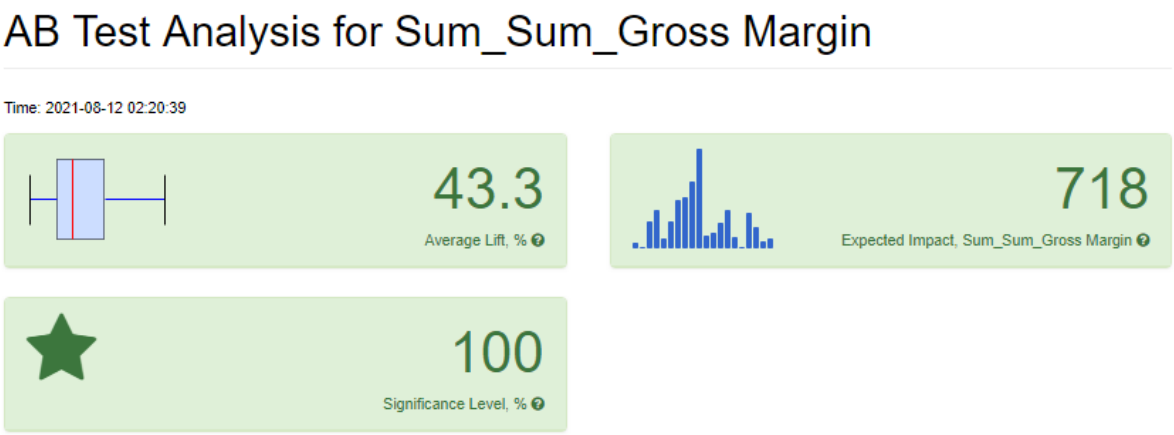
Western Region:

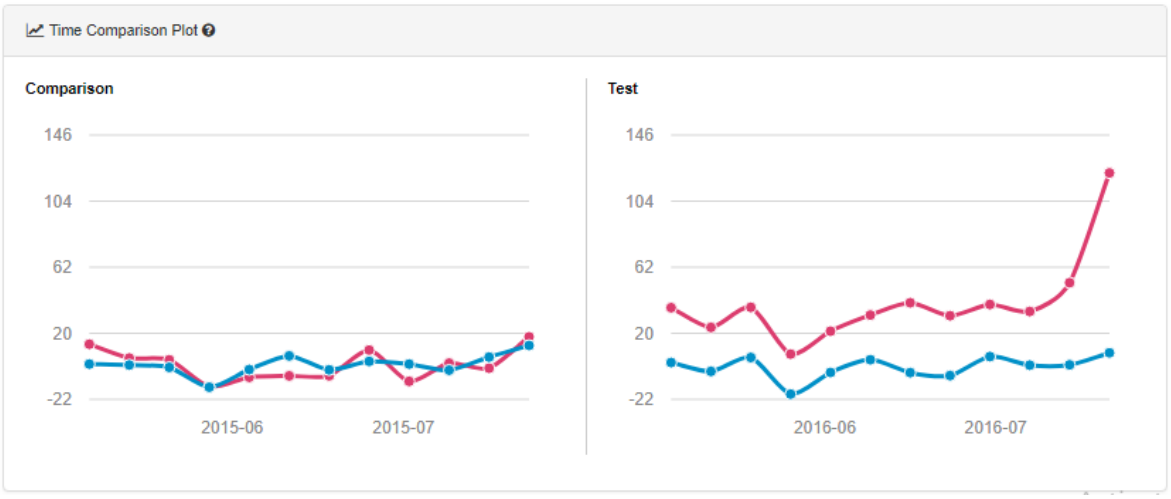


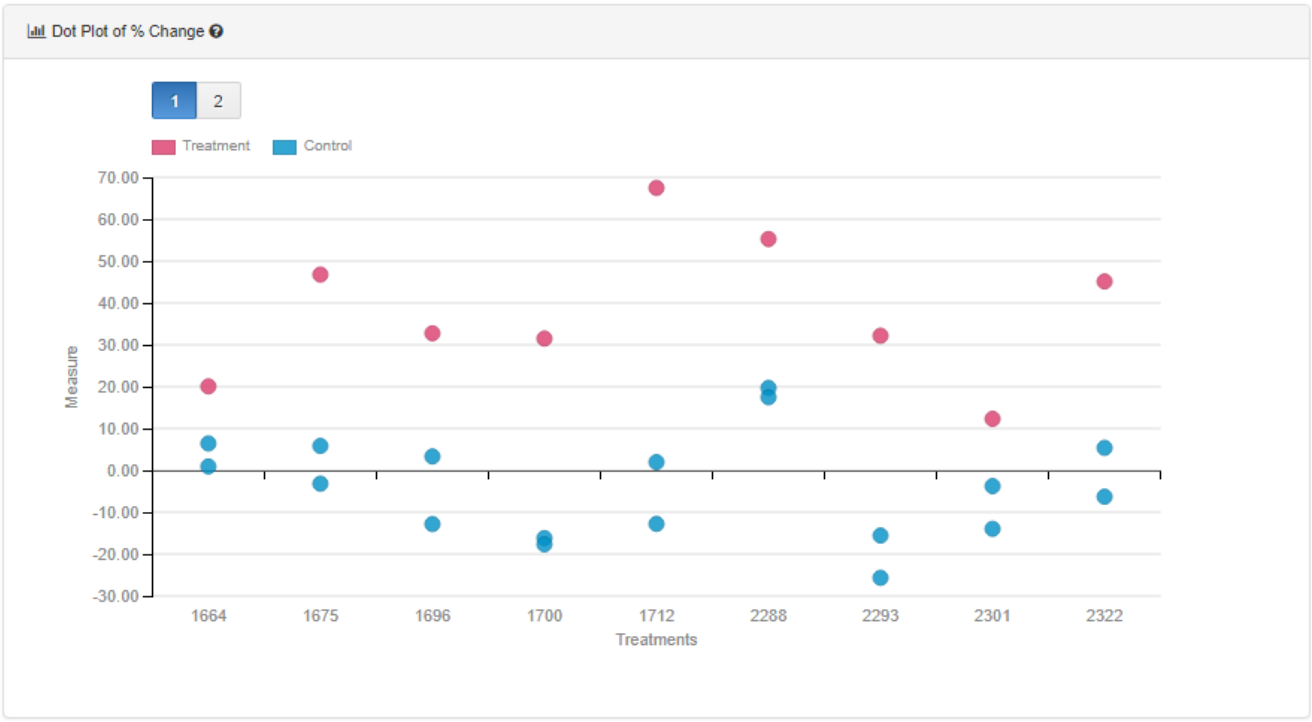


3. What is the lift from the new menu overall?

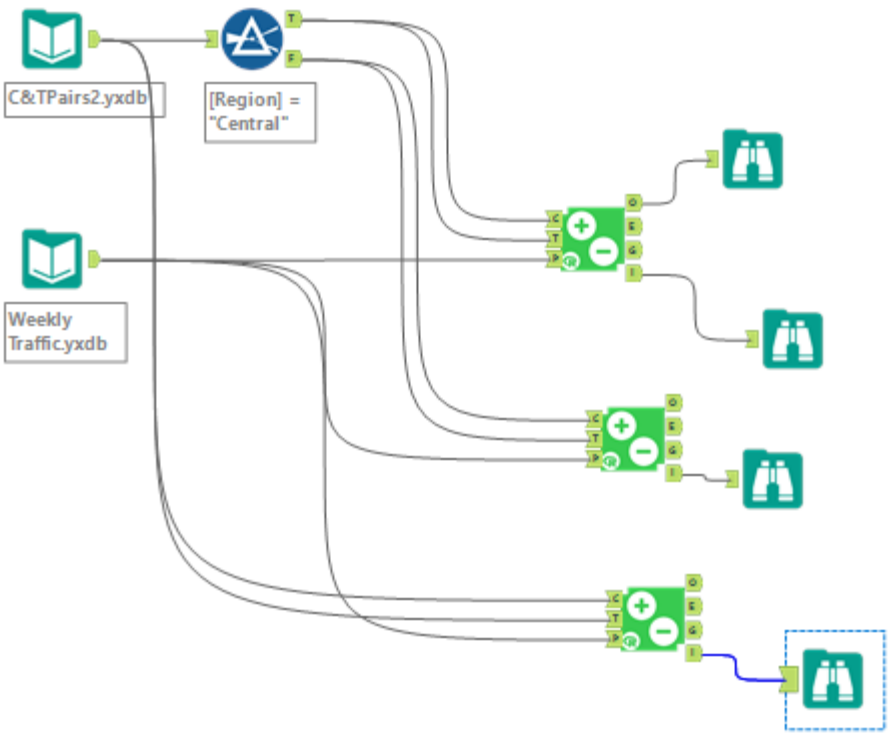
Ans: A/B test perform on overall dataset is shown below:







The workflow made to perform region wise and overall A/B Analysis is shown below: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