

Project: Analyzing a Market Test

Step 1: Plan Your Analysis

1. What is the performance metric you will use to evaluate the results of your test?
 - The gross margin variable which represents profit would be chosen as the performance metric. As, the data is given on transaction level we will have to aggregate it by weekly level to use it in our analysis.
2. What is the test period?
 - The test period is for 12 weeks (2016-April-29 to 2016-July-21).
 - But the data that is to be used is for 76 weeks as to calculate trend and seasonality we need to have 64 weeks of previous data before the test period. So, we need total of 76 weeks of data.
3. At what level (day, week, month, etc.) should the data be aggregated?
 - As the test ran for an amount of 12 weeks. So, it would be best if we aggregate data at weekly level. Monthly level the data will be less with which we may miss some points.

Step 2: Clean Up Your Data

For this section, the data was cleaned and aggregated weekly. New columns for week number, week start and week end were created. Using aggregation weekly sales and transactions were calculated which helped in further analysis.

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.
 - Sqft and avg monthly sales can be used as other control variables.
2. What is the correlation between each potential control variable and your performance metric?
 - Correlation between each is:

Record	FieldName	Gross Margin
1	Gross Margin	1
2	Sq_Ft	-0.024255
3	AvgMonthSales	0.990982

- As we can see that there is high correlation between performance metric and average monthly sales. So, we will use this variable as a control variable.
- The reason to reject Sqft is there is no correlation between performance metric and this variable.

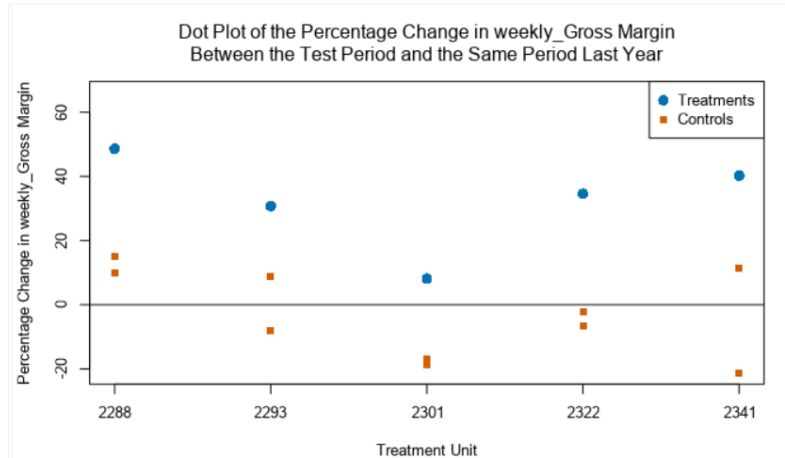
3. What control variables will you use to match treatment and control stores?
 - Trend
 - Seasonality
 - Average Monthly Sales
4. Please fill out the table below with your treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
1664	7162	1542
1675	1580	7584
1696	1964	8212
1700	2014	1630
1712	8162	7434
2288	9081	2568
2293	12219	9524
2301	11668	12286
2322	2409	9388
2341	2572	12536

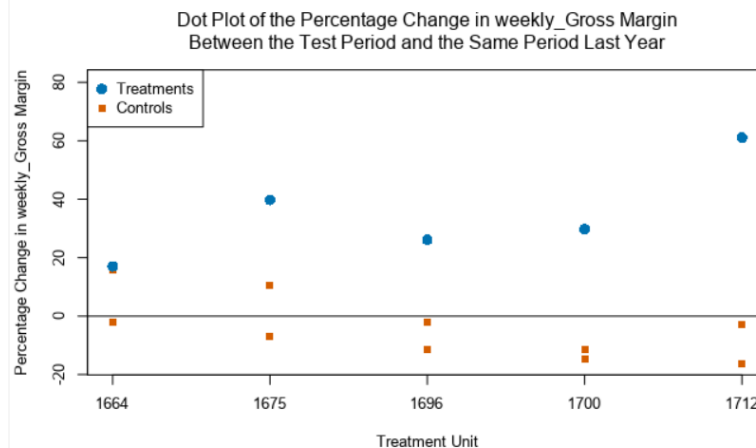
Step 4: Analysis and Writeup

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

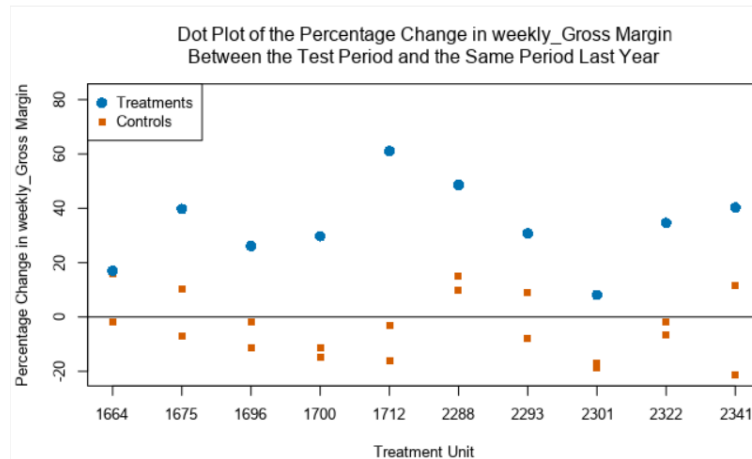
1. What is your recommendation - Should the company roll out the updated menu to all stores?
 - Yes, the company should roll out the updated menu to all the stores in central and west region. Since the significance level is above the threshold so we can clearly say that there is improvement in treatment group as even there is increase in profits as lift is greater than 18%.
2. What is the lift from the new menu for West and Central regions (include statistical significance)?
 - Lift and significance for West:
 - Lift → 37.6%
 - Significance → 99.7%
 - The new menu shows increase in gross margin by 511\$ weekly.



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- An examination of a dot plot chart allows for a rapid determination of whether (and which of) the treatment units outperformed the control units with respect to weekly_Gross Margin. As we can clearly see that treatment groups outperformed controls for west region.
- Lift and significance for central:
 - Lift → 42.5%
 - Significance → 99.6%
 - The new menu shows increase in gross margin by 808\$ weekly.



- - In this case we can see more clearly how treatment groups outperformed control groups for central region.
3. What is the lift from the new menu overall?
- Lift for overall menu is 40.1%. The overall new menu shows increase in gross margin by 660\$ weekly. Significance level is 100%.



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- An examination of a dot plot chart allows for a rapid determination of whether (and which of) the treatment units outperformed the control units with respect to weekly Gross Margin. Here, also we can see that treatment groups outperforms the control group.

So, based on this study it would be recommended to roll out T.V. Advertisement and updated menus to all the stores as it gives substantial growth in profits or weekly margin. The growth is above the threshold set which was 18%. Overall, it shows an increase of 40% with 100% significance. So, we should move forward with this plan.