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 is **Gross_Margin** or **Profit**.
2. What is the test period?
   The test period is from **April 29 2016** to **July 21 2016**. The test ran for a total of 12 weeks.
3. At what level (day, week, month, etc.) should the data be aggregated?
   The data should be aggregated at **week** level.

Step 2: Clean Up Your Data

In this step, you should prepare the data for steps 3 and 4. You should aggregate the transaction data to the appropriate level and filter on the appropriate data ranges. You can assume that there is no missing, incomplete, duplicate, or dirty data. You're ready to move on to the next step when you have weekly transaction data for all stores.

Step 3: Match Treatment and Control Units

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   Average Monthly Sales and **Square Feet** of stores are considered as control variables.

2. What is the correlation between your each potential control variable and your performance metric?
   There is a high correlation between the performance metric and sales.
   There is no correlation between the performance metric and Sq_Ft and Avg Monthly Sales

FieldName	Gross Margin	Sales	Sq_Ft	AvgMonthSales
GrossMargin	1	0.95911	-0.006901	0.00829
Sales	0.95911	1	-0.008894	0.00974
Sq_Ft	-0.006901	-0.008894	1	-0.09899
AvgMonthSales	0.00829	0.00974	-0.09899	1

3. What control variables will you use to match treatment and control stores?
   Average Monthly Sales, Trend and Seasonality

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

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

Step 4: Analysis and Writeup

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

Yes, the store should roll out the updated menu to all stores. We can see from the above figure that there is an average lift of 42% which is way more than the 18% threshold given by the company. Also it can be seen that the addition of new menu has an expected increase of $694 per store per week.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?
For **Central** Lift is 47.2% and Significance level is 99.6%

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
47.2%	886	99.6%

Summary Statistics for Sum_Gross Margin by Test Group

Statistic	Treatment	Control
Average	42.52	-2.34
Minimum	22.64	-17.34
Maximum	69.43	19.06
Standard Deviation	17.69	10.32

For **West** the lift is 36.6% and significance level is 99.7%.

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
36.6%	503	99.7%

Summary Statistics for Sum_Gross Margin by Test Group

Statistic	Treatment	Control
Average	41.13	4.36
Minimum	19.27	-13.82
Maximum	54.87	23.15
Standard Deviation	14.61	10.64

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

Lift Analysis for Sum_Gross Margin

Lift	Expected Impact	Significance Level
41.9%	694	100.0%

Summary Statistics for Sum_Gross Margin by Test Group

Statistic	Treatment	Control
Average	41.83	1.13
Minimum	19.27	-17.34
Maximum	69.43	23.15
Standard Deviation	15.81	10.91

The overall lift is 41.9% and the significance level is 100%