



**Date:** November 25, 2024

**MGT 6304-A:** Customer Relationship Management

**Instructor:** Dr. Nan Zhao



# **Rocket Fuel: Measuring the Effectiveness of Online Advertising**

Zsolt Katona, Brian Bell

**Presenters:** Akshat Karwa, Mehul Rastogi

# Context and Key Assumptions



- **TaskaBella** manufactures women's luxury accessories.
- Our objective is to show that the pilot ad campaign was effective.
- Costs of impressions per thousand (CPM) was \$9.
- A converting user on average generates \$40 profit.

# Study Groups & Conversion Analysis -



## Test vs. Control Group Distribution:

- Test Group (Exposed to Ads): 564,577 users (96%)
- Control Group (No Ad Exposure): 23,524 users (4%)
- Total Study Population: 588,101 users

## Conversion Performance:

- Test Group Conversions: 14,423 purchases
  - Conversion Rate: 2.5547%
- Control Group Conversions: 420 purchases
  - Conversion Rate: 1.7854%

# Study Groups & Conversion Analysis -



## Campaign Impact:

- Net Conversion Lift: 0.7692%
- Total Conversions: 14,843 purchases
- Overall Conversion Rate: 2.52%

The advertising campaign was effectively able to drive consumer conversions. The test group that was exposed to advertising achieved a conversion rate of 2.55%, that significantly outperforms the control group's conversion rate of 1.79%. The control group was adequately sized to 4\$ of total users which is sufficient statistical power to detect meaningful lift in conversion rates. Thus, the findings are robust and provide strong evidence that the advertising campaign influenced consumer behavior and generated additional conversions. There was 0.77% improvement in conversion rates which validates the campaign's effectiveness.

# Financial Impact of Ad Campaign -



## Conversion Impact:

- Actual Conversions with Ad (Conversions in Test Group) : 14,423 users
- Expected Conversions without Ad (No Test Group) : 10,080 users
- Incremental Conversions due to Ad Campaign : 4,343 users

## Financial Results:

- Customer Value: \$40 per conversion
- Total Campaign Profit = Additional Conversions x Customer Value = \$173,719.29

# Ad Campaign Cost Analysis -



## Campaign Expenditure:

- Total Ad Impressions Delivered: 14,597,182
- Cost Per Thousand Impressions (CPM): \$9
- Total Campaign Investment: \$131,374.64
- Cost per User Reached: \$0.2234
- Cost per Conversion: \$30.2497

# Ad Campaign Profitability Analysis -



## Return on Investment Analysis:

- Total revenue generated due to Ads: \$173,719.29
  - Campaign Cost: \$131,374.64
  - Net Profit: \$42,344.65
  - Return on Investment: 32.23%
- 
- We see a very strong ROI as every \$1 spent returned \$1.32.
  - \$42,344.65 was generated as net profit by the ad campaign.

# Opportunity Cost Analysis -



## **Absence of Control Group:**

- Expected Conversions at Test Rate for entire population (2.55%): 601 users
- Actual Control Group Conversions (1.79%): 420 users
- Missed Conversions due to presence of Control group: 181 users
- Based on \$40 consumer value, Opportunity Cost: \$7,238.29
- This opportunity cost represents the potential revenue sacrifice due to presence of control group.



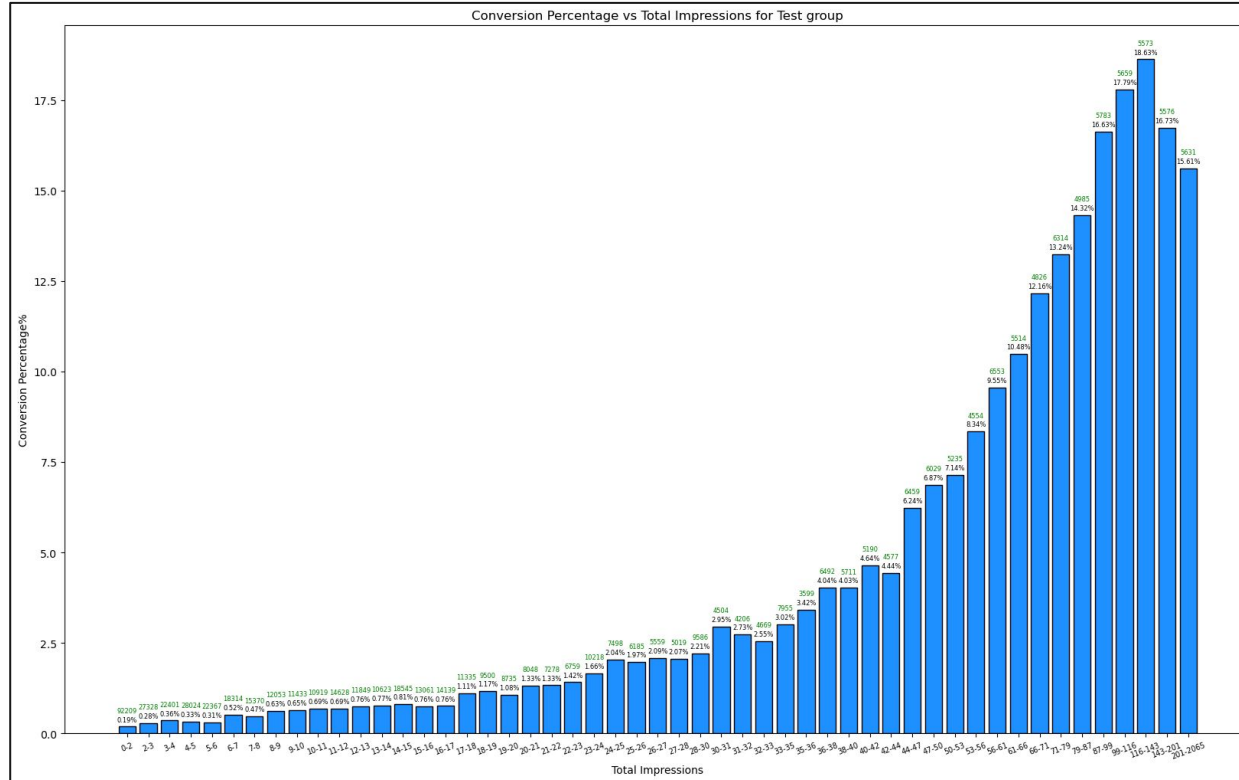
# Impact of size of Control Group -



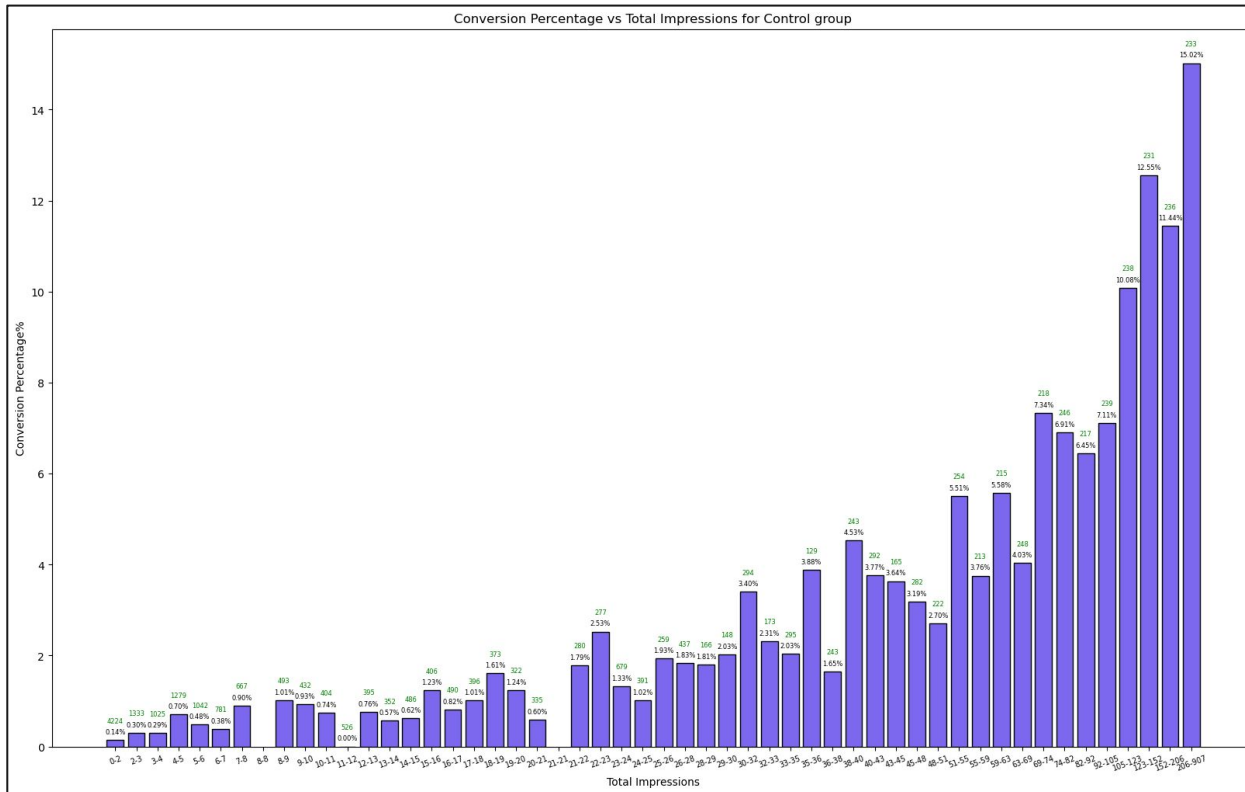
## Different Control Group Size Strategies:

- Control Group Size: 0% of user population
- Opportunity Cost: \$7238.2908
  
- Control Group Size: 1% of user population
- Opportunity Cost: \$5428.715
  
- Control Group Size: 2% of user population
- Opportunity Cost: \$3619.1392
  
- Control Group Size: 3% of user population
- Opportunity Cost: \$1809.5635

# Role of Number of Impressions (Test Group)



# Role of Number of Impressions (Control Group)

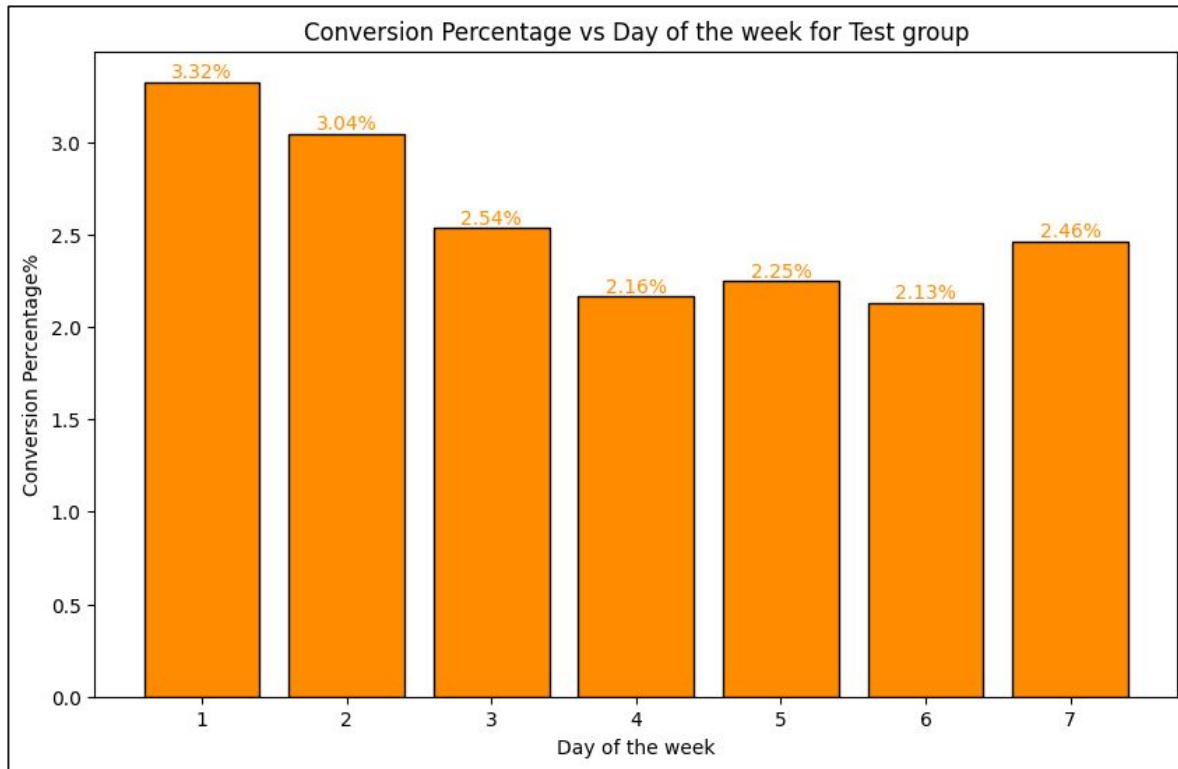


# Role of Number of Impressions

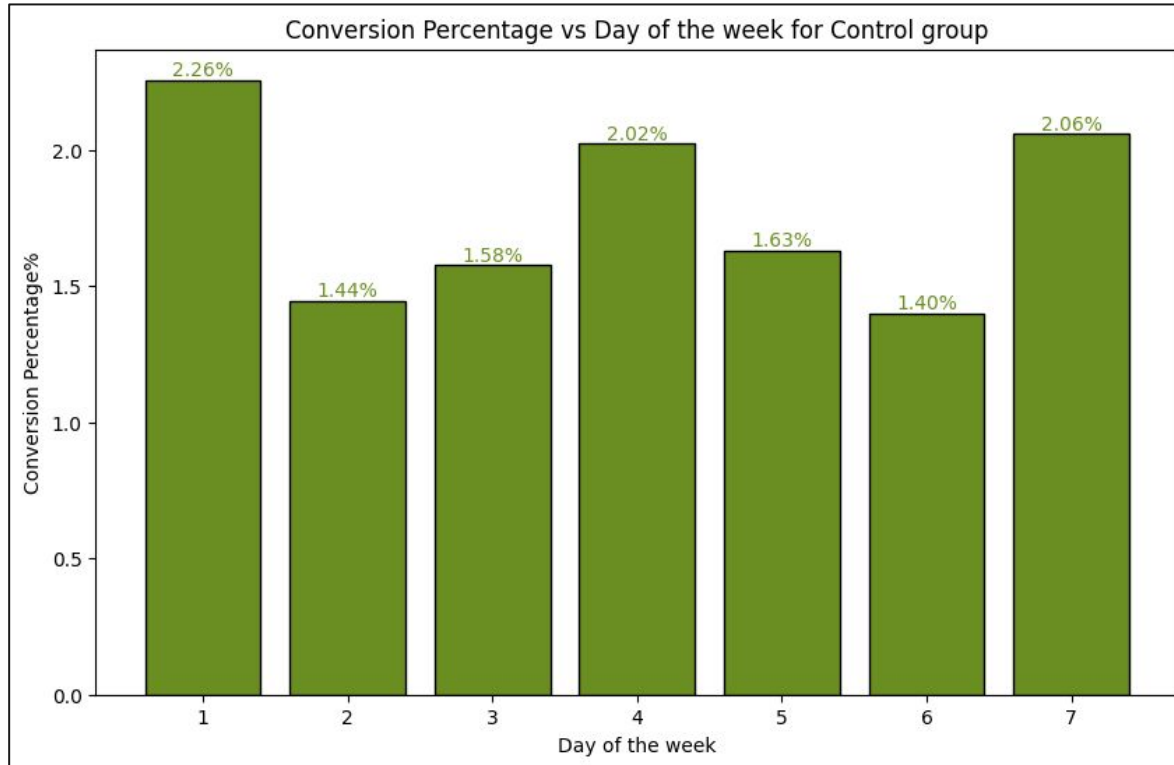


- Percentage of rows with total impressions greater than 200: **0.0101%**
- Number of rows with greater than 200 impressions: **5952**
- **87-201** is the best impression range for Test Group.
- **105+** is the best impression range for the Control group.
- Ad efficiency can be maximized using these metrics and graphs.

# Dependency on Day of the Week (Test Group)



# Dependency on Day of the Week (Control Group)



# Dependency on Day of the Week



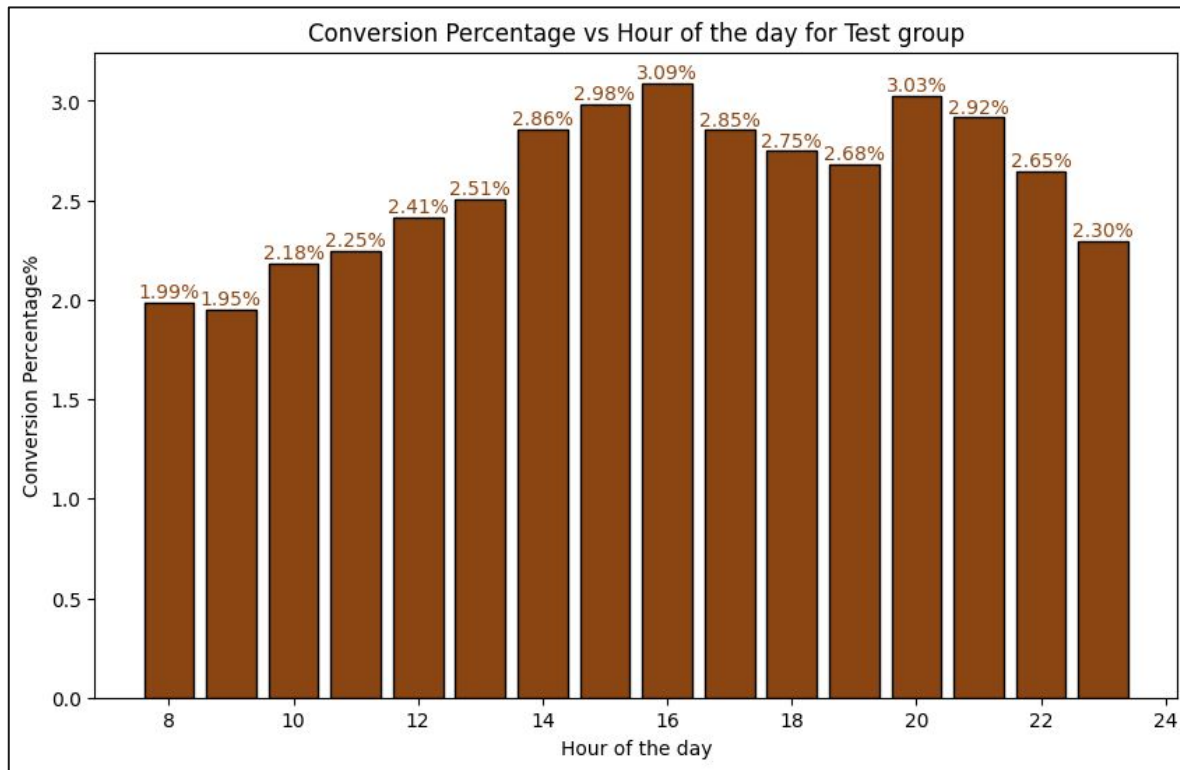
**Control group Conversion rates in sorted order  
Daywise -**

- **Saturday, 1.399**
- Tuesday, 1.4447
- Wednesday, 1.5759
- Friday, 1.6302
- Thursday, 2.0230
- Sunday, 2.0594
- **Monday, 2.2558**

**Test group Conversion rates in sorted order Daywise -**

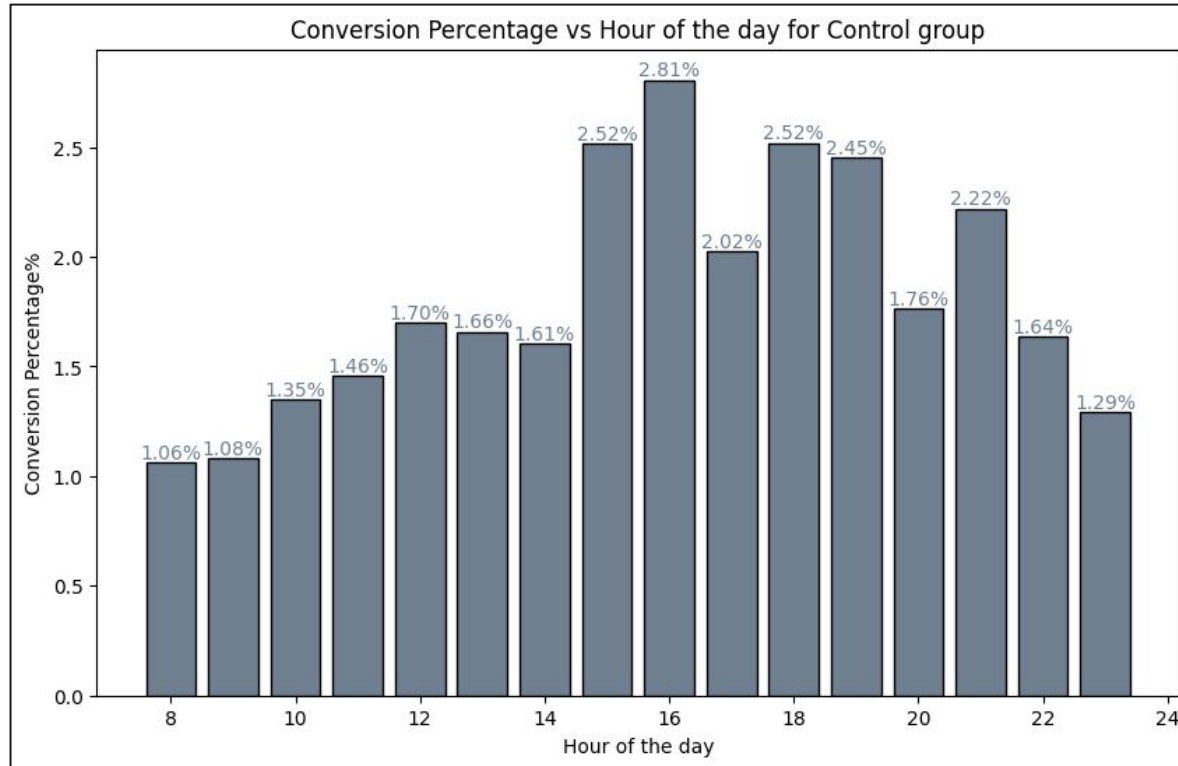
- **Saturday, 2.1306**
- Thursday, 2.1637
- Friday, 2.2464
- Sunday, 2.4619
- Wednesday, 2.5355
- Tuesday, 3.0440
- **Monday, 3.3241**

# Dependency on Hour of the Day (Test Group)





# Dependency on Hour of the Day (Control Group)



# Dependency on Hour of the Day



Control group Conversion rates in sorted order Hourwise -

- **8, 1.062**
- 9, 1.0815
- 23, 1.2924
- 10, 1.3468
- 11, 1.4556
- 14, 1.6051
- 22, 1.6357
- 13, 1.6589
- 12, 1.6990
- 20, 1.7641
- 17, 2.0245
- 21, 2.2201
- 19, 2.4513
- 15, 2.5164
- 18, 2.5177
- **16, 2.8054**

# Dependency on Hour of the Day



Test Group Conversion rates in sorted order Hourwise -

- 9, 1.9528
- 8, 1.9860
- 10, 2.1840
- 11, 2.2469
- 23, 2.2970
- 12, 2.4138
- 13, 2.5063
- 22, 2.6455
- 19, 2.6809
- 18, 2.7470
- 17, 2.8537
- 14, 2.8575
- 21, 2.9174
- 15, 2.9844
- 20, 3.0273
- 16, 3.0892



**THANK YOU!**

**QUESTIONS?**