

Rocket Fuel:

Measuring the Effectiveness of Online Advertising

Marketing Analytics Case Study

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Agenda

- I. Background
- II. Data Overview
- III. Analysis & Findings
- IV. Insights & Interpretation
- V. Recommendations

Background



***Rocket Fuel** is an AI-driven AdTech company with online experimentation results to interpret for their client*

- *Was the online advertising campaign for TaskaBella effective & profitable?*
- *Are there any insightful patterns to glean from the data collected about customer response to ads?*
- *Was the A/B testing effort worthwhile?*



Data Overview



GIVEN,

user id & *test condition*,

converted - whether the user purchased the handbag or not

tot_impr - count of times they encountered the treatment or control condition

mode_impr_day: day of the week with highest number of impressions on the user level

mode_impr_hour: hour of the day with highest number of impressions on the user level

CALCULATE:

Revenue, Profit, Cost



Analysis & Findings

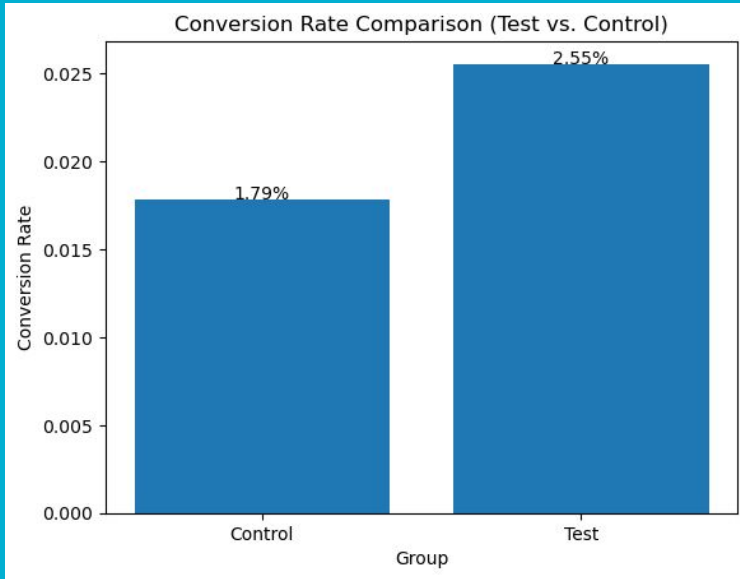


1. Marketing Effectiveness
2. ROI & Opportunity Cost
3. Ideal Impression Levels
4. Day & Time Effects

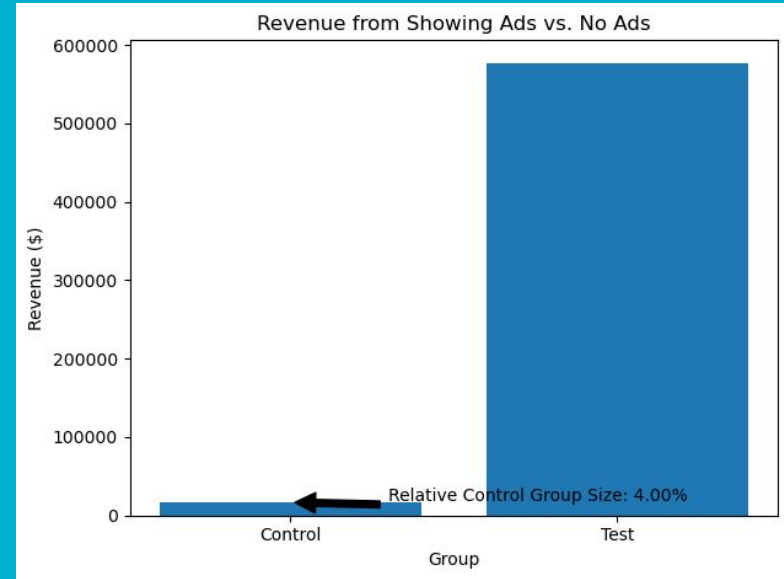


1 – Was the advertising campaign effective?

Yes, there was a positive lift
in conversion rate of 0.76%

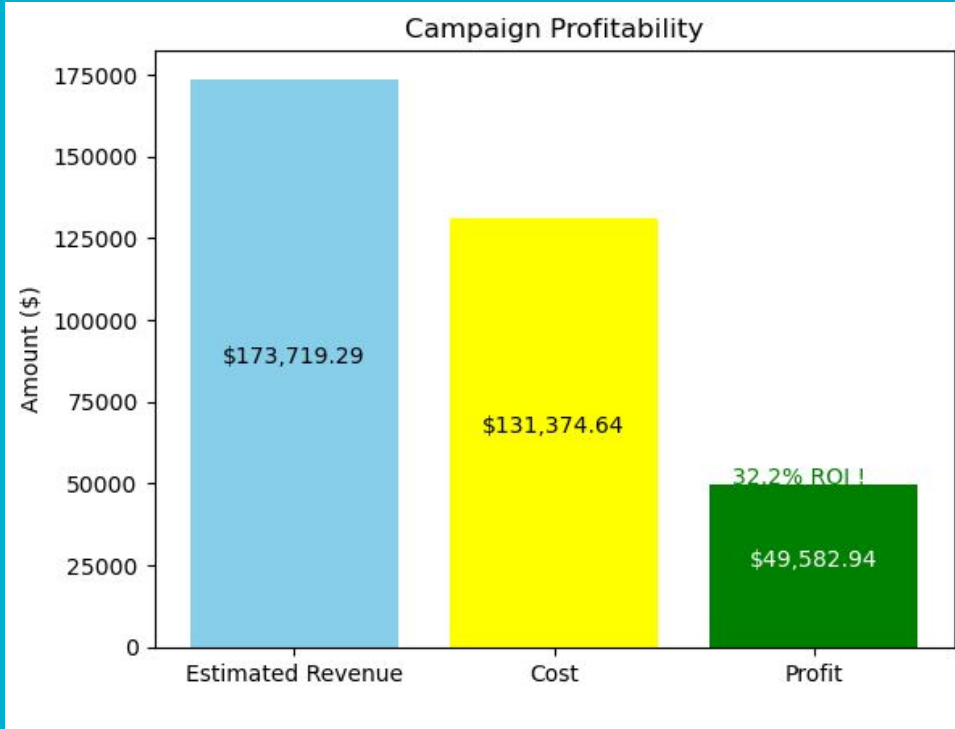


The campaign revenue from those who
were shown ads was significantly higher



588,101 users were included in the study. 4% were randomly assigned to the control group and shown now ads. The rest of the users went into the test group and were shown varying impressions counts at different times. The conversions were tracked. An independent samples t-test revealed ads did affect conversions and thus revenue (Mean of control = 0.018, SD= 0.132, Mean of test = 0.026, SD=0.158, $p < 0.001$).

2 – Was the campaign profitable?

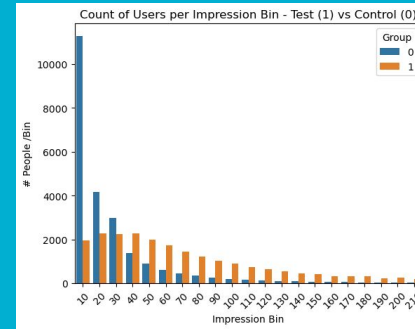
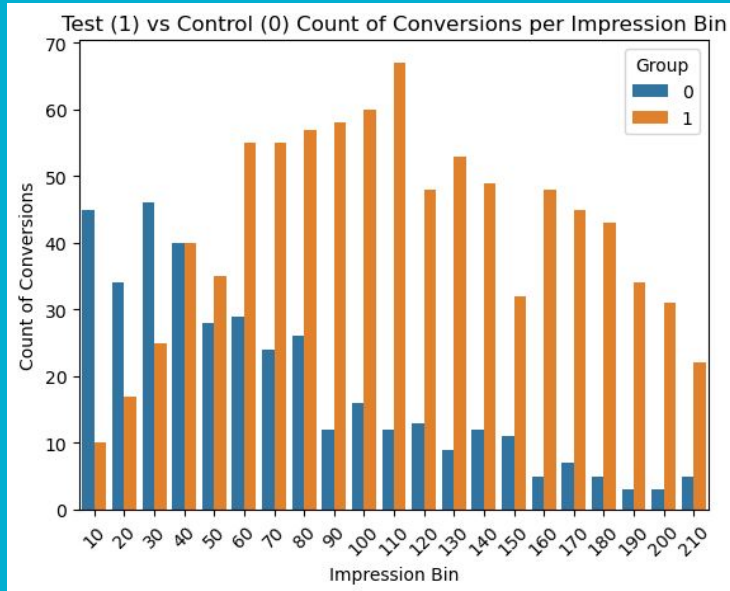


- ❖ Yes, it brought in revenue from both experimental groups
- ❖ The costs are justified by the profit
- ❖ The ROI was about 32%!
- ❖ Note: showing the control group ads could have potentially made an additional \$7,238.29

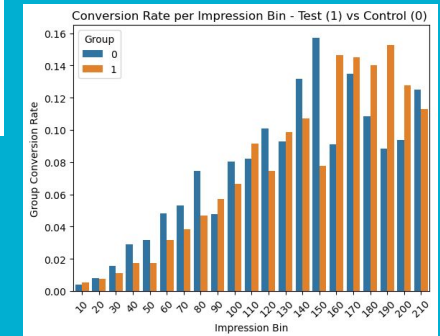
Opportunity Cost of using a Control Group: \$ 7238.29

3 – How did the number of impressions — influence the effectiveness of advertising?

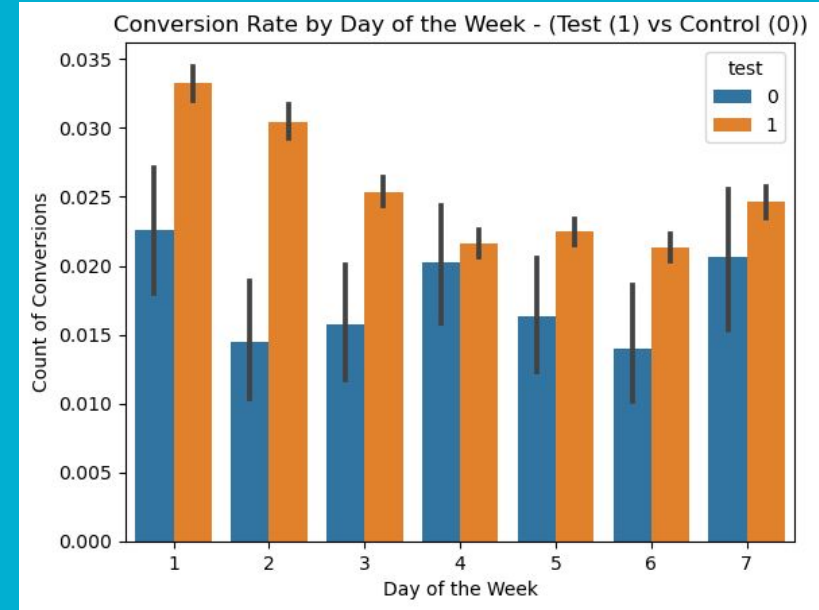
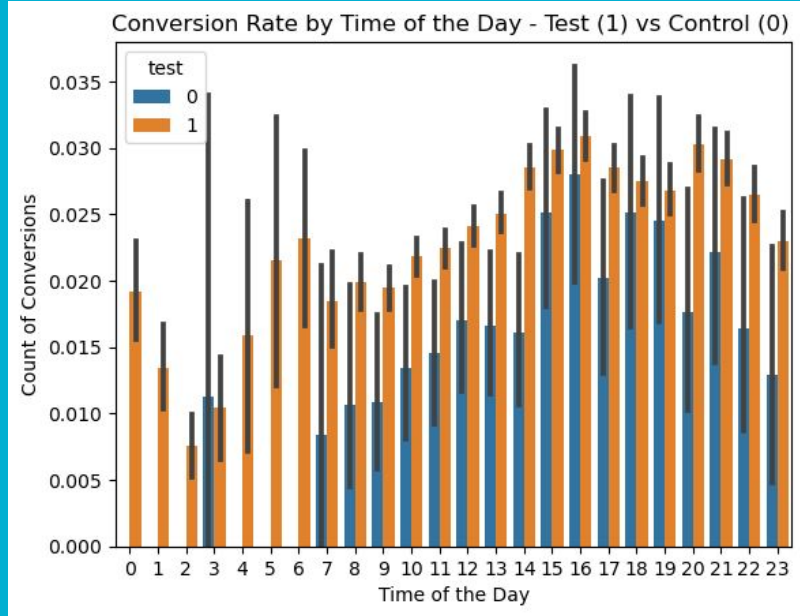
Ad viewers begin to convert to buyers in the range of 60-110 impressions, which is most effective. However, conversion rates drop as impressions rise to 110-160+.



Note: the reliability of the conversion rate varies by bin, considering the underlying control sample distribution is not normal & uneven



4 - How does the consumer response vary — by day of the week and time of the day?



The Ads are most effective in the mornings and early in the week on Mondays & Tuesdays

Insights & Interpretations

- ❖ There was a practically significant, positive lift in conversion as a result of the ad campaign
- ❖ The ROI made online A/B testing worthwhile
 - Informs Decision Making
 - Profitable
- ❖ The campaign was more effective at some days and times than others
- ❖ Despite the opportunity cost, having a larger control group would generate more robust and reliable results

3 Key Recommendations

- ❖ Keep Running These Ads - the Campaign was worth it
- ❖ To improve effectiveness, optimize days, times & # of impressions
 - Focus on the Early hours of the day
 - Zero in on the Beginning of the Week
 - Target 60-110 impressions/user
- ❖ Continue A/B testing - aim for the gold standard design for reliable marketing effectiveness measurement