

## RocketFuel Assignment

Your team is getting ready to present campaign results to Taskabella representatives. In anticipation of the meeting, you prepare an internal brief that will guide your team through the presentation. You need not prepare presentation slides. Instead, prepare a written brief by answering the questions posed below. Your role is both i) to conduct the analysis on the data that you got from engineering team running the test, and more importantly, ii) to explain the what the results mean and interpret them for the Taskabella team. Submit a single document (docx or pdf) that contains all your analyses, explanations, and specific answers to the following questions:

1. Was the advertising campaign effective?
  - a. Explain the experimental setup, describe what the control group was exposed to and what would be some alternatives.
  - b. Did additional consumers convert as a result of the ad campaign? Compare the test and control groups and run a statistical test.
  - c. Discuss why the control and test groups were randomized and how you can reassure Taskabella that randomization was properly done.
  - d. Was the size of the control group properly chosen, would you recommend a different size for the next experiment?
2. Was the campaign profitable?
  - a. What is the expected financial impact from the conversions resulting from the ads (excluding all advertising costs)? In other words, how much more money is TaskaBella making by running the advertising?
  - b. How much was the cost of the ad campaign?
  - c. Calculate the ROI of the campaign. Was the campaign worth it?
  - d. What was the opportunity cost of including a control group; how much more could have TaskaBella made with a smaller control group or not having a control group at all?
3. How did the number of impressions seen by each user influence the effectiveness of advertising?
  - a. Plot the percentage of users converting among those in the control group and among those exposed to the ad as functions of impressions seen (number of impressions on x axis, percentage of converting users on y axis). Group together numbers of impressions as necessary to obtain a meaningful plot and pick a reasonable range for the highest number of impressions displayed.
  - b. What can you infer from the plot? In what region is advertising most effective?
  - c. What do the above figures imply for the design of the next campaign assuming that consumer response would be similar?
4. How does consumer response to advertising vary on different days of the week and at different times of the day?
  - a. Plot the percentage of users converting among those in the control group and among those exposed to the ad as a function of the day of the week (mode\_impr\_day on x axis, percentage of converting users on y axis )

- b. Draw the same plot for hours within a day (mode\_impr\_hour, excluding the period between midnight and 8am).
  - c. What days/hours is advertising the most/least effective?
- 5. You are hoping that Taskabella will run more campaigns with Rocketfuel, but they are looking for the provider that can offer the A/B tests. How would you modify the experimental setup to improve it and to alleviate any concerns that came up during the first iteration?