

Part 2 – Experiment and Metrics Design

Drivers tend to be exclusive to one city or the other, so the best way to measure the success of this experiment is to first identify drivers that are exclusive to Ultimate Gotham and driver that are exclusive to Ultimate Metropolis, then track the percentage of trips these users accepted in the alternative city before and after the experiment.

Lets explain this in an example. Driver A is identified to be exclusive to Ultimate Gotham, with only 13% of trips taking place in Ultimate Metropolis before the experiment. To measure whether the experiment is successful, I would have to see a statistically significant difference in the percentage of trips accepted in Ultimate Metropolis.

To perform this experiment, I would perform an A/B test for both groups of drivers to determine whether the percentages after the experiment are statistically different than the percentages before the experiment. For each group, I will take the resulting data, aggregate the trips of each driver, then find the average percentage of trips taking place in the alternative city. I will then bootstrap the controlled data, taken before the experiment, to produce a distribution of possible average percentages. I will determine this distribution's 90% confidence interval (as an example), to determine whether the experiment was successful. The confidence interval is the range of results that a percentage of the distribution's values fall between. In my example, a 90% confidence interval of $[-5, 5]$ means that 90% of the results fall between -5 and 5. If the average percentage of the experiment is contained within the 90% confidence interval, it means the experiment was unsuccessful because it is highly likely that the percentage computed from the experiment was produced by pure chance. If the average percentage falls outside of the 90% confidence interval, it means the value was statistically different from the value seen in the controlled data, thus the experiment was a success.