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Part 2 - Experiment and metrics design

Answer to question 1:

What I would you choose as the key measure of success of this experiment in encouraging driver partners to serve both cities would be to measure the change in bridge toll revenue or tickets, on an individual driver basis, per day.

Answer to question 2 part a:

The instructions for this project are vague, but I'll try to build on my own interpretation of what the company Ultimate is and what driving partners represent. I'll assume Ultimate is a ride-share app and driver partners are its contractor-based employees who have to foot the bridge toll cost at the moment. If this is true, the drivers have an ability to choose which rides for hire appear on his or her phone and it makes more sense to stay within city limits to earn the biggest profit. The app provides records of all trips requiring the bridge toll cost that the driver partners complete. To implement this experiment, I would need to know every trip requiring the driver partner to cross the toll bridge in a 24 hour period. I would consider data from before the bridge toll reimbursement proposition, as well as afterward.

Answer to question 2 part b:

The observable statistical test I will conduct to verify the significance of the observation is a hypothesis test that compares the proportion drivers who cross from the city with less demand to the city with greater demand during a 24 hour period. The null hypothesis would be that the proportion of drivers is the same irrespective of our reimbursement proposal.

Answer to question 2 part c:

If I were to observe a large positive change in frequency of driver's trips from one city during a period of low demand to the other city during high demand after the reimbursement proposal was implemented, this would be an indicator that paying driver's bridge fees was an effective enhancement. This would be relayed to the city operating team as a successful experiment.

In the event that only a small positive change (or no change at all) in frequency of driver's trips from one city during a period of low demand to the other city during high demand after the reimbursement proposal was implemented, this would be an indicator that paying driver's bridge fees was not a big enough incentive for drivers and further propositions are necessary to encourage trips between both cities.