1) What would you choose as the key measure of success of this experiment in encouraging driver partners to serve both cities, and why would you choose this metric?

While the reason for wanting partners to serve in both cities isn't explicitly stated here it only makes sense that it would be to maximize revenue. If that is the case then in order to maximize revenue the price paid per mile should be equal in both cities. If it is higher in one city over the other then there is lost profit as those in the more expensive city would have less incentive to take trips across the bridge.

Typically this would occur naturally as drivers would aim to take more trips in the more profitable city until prices settled at equilibrium but with a toll payment the profit is offset and in many cases would likely result in the driver losing money. Therefore, by eliminating the toll it is likely that this equilibrium can occur unless there is a confounding factor that isn't being taken into account. Therefore, I would settle on price equilibrium as my measure of a successful experiment.

2) Describe a practical experiment you would design to compare the effectiveness of the proposed change in relation to the key measure of success.

a. how you will implement the experiment

Assuming that we already know the percentage of drivers in each city, implementation would simply consist of setting up a system to reimburse drivers for their toll fees. If this percentage isn't known it would need to be measured prior to the experiment to ensure paying the fees is what caused the price to hit equilibrium.

b. what statistical test(s) you will conduct to verify the significance of the observation

For this experiment a hypothesis test makes the most sense. The percentage of all drivers between the two cities would be compared over time with the null hypothesis being that the proportion wouldn't change as a result of paying the fees.

c. how you would interpret the results and provide recommendations to the city operations team along with any caveats.

If the change in proportion of drivers in each city was large we could conclude that the experiment was practically significant. However, if there was little to no change or even a negative one then we would conclude that paying the fees was not practically significant and therefore didn't solve the problem.

I would have 2 recommendations for the operations team. First, ensure that the costs accrued from paying the fees are worth the extra revenue gained. If more money is paid than is being brought in and there isn't a way that this would balance out over time then this program wouldn't be worth it. Secondly however, if there are competitors in these 2 cities who are already doing

this or if by doing this Ultimate would gain an advantage over them then it is worth analyzing if a loss in revenue is worth it depending on the size of the loss. Without real data however, I can't say what this amount would be.