

The neighboring cities of Gotham and Metropolis have complementary circadian rhythms: on weekdays, Ultimate Gotham is most active at night, and Ultimate Metropolis is most active during the day. On weekends, there is reasonable activity in both cities.

However, a toll bridge, with a two way toll, between the two cities causes driver partners to tend to be exclusive to each city. The Ultimate managers of city operations for the two cities have proposed an experiment to encourage driver partners to be available in both cities, by reimbursing all toll costs.

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?

**The experiment must prove that there are good number of pickups before and after the toll. The key measure is the number of pickups. If the number of pickups is high then the revenue is also high.**

2. Describe a practical experiment you would design to compare the effectiveness of the proposed change in relation to the key measure of success. Please provide details on:

a. how you will implement the experiment

**The experiment here is using the two-way toll by the driver.**

**For 30 days before the toll, find the sum of pickups available for each driver. (This will be only the pickups available in the respective city)**

**Implement the experiment (the driver starts using the toll)**

**For 30 days after the toll, do the same as before toll. (This time the pickups will be in both the cities for each driver)**

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

**Null Hypothesis:**

**Average of number of pickups before toll - Average of number of pickups after toll = 0.**

**Alternate Hypothesis:**

**The difference > 0**

**Statistical test: One sided T test**

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

**Calculate p-value. If less than 0.05, we can reject the null hypothesis and conclude that each driver will be get more pickups after toll.**