Experiment and metrics design

The problem:

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**.

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?

I would say the reason of tending to be exclusive to each city is just profit.
The driver partners are not going to other city without much profit. Each city has circadian rhythms. For instance, if going to Gotham at daytime, there are not much passenger because Gotham is most active at night, The drivers are able to earn money just staying in Metropolis at day time rather than going to Gotham.
Also distance between each city is one of the reason why driver partners to tend to be exclusive to each city.
The key measure of success of this experiment is just trying weekends first. Because on weekends each city is active after that analysis a data how many drivers are going to other city. if result is not what we expected then trying other measure such as give to additional money to partner drivers that is going to other city with customer.

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
b. what statistical test(s) you will conduct to verify the significance of the observation
c. how you would interpret the results and provide recommendations to the city operations team along with any caveats.

We need to track a each drivers to grasp movement pattern to collect a data.
After collecting a data I will refer to use T-test to compare how many driver is going to other city after starting reimbursing all toll and before. also calculate critical value to reject null hypothesis or not.