Experiment and metrics design

The key measure of success that I would choose in this experiment is the profit produced by drivers working in their non-respective cities. The reason why I chose this metric is because what Ultimate wants is to increase profits by allowing their drivers to freely operate between cities without being mitigated by toll costs. The experiment that I would implement consists of tracking the profit trend for the two cities before reimbursing all toll costs and then tracking the profit trends for the two cities after reimbursing all toll costs. It is worth noting that if Ultimate were to reimburse all toll costs, that this would be an additional cost that would have to be subtracted from revenue gained from drivers operating freely between both cities in order to accurately compute profit. Furthermore, we could convert our measure of success into average profit by quarter so as to maintain an accurate and consistent picture of our measure of success.

The statistical test I will conduct will be a t-test for the difference in the average profit between before reimbursing all toll costs and after. The null hypothesis will be that there is no difference in the two averages and the alternate hypothesis will be that the average profit after reimbursing all toll costs is higher than before reimbursing them. Based upon the significance of the difference in the averages, I would either recommend that the city operations team continue with their new plan (if the average profit was significantly higher after implementation of the plan than before), recommend that the team not implement it (if average profit was less than the average profit before implementation), or to state that there was no significant difference between the two averages. In the last case, I would still recommend that the team not reimburse all toll costs so as to reduce the number of costs.