Ultimate Inc. Challenge – Part 2 Answer

1) The key measure of success of this experiment is to measure the number of times each driver crosses the bridge. We shall see an increase in usage of the toll bridge if a driver is encouraged by the toll reimbursement.

2) a. To implement the experiment, we first collect data on the drivers' driving pattern for a month. The data shall show the number of times the drivers crossing the toll bridge each day. Then we start implementing the toll reimbursement and collect data again on the drivers' driving pattern for another month.

   b. To verify the significance of the observation, we will set up a null hypothesis that the drivers' driving pattern is the same before and after implementing the toll reimbursement. The probability of finding the observed result under the null hypothesis, p-value, will be calculated.

   c. We will choose the significance level of 0.05, i.e. p-value=0.05 or the corresponding confidence level of 95%, to verify if the result is statistically significant. If the p-value is less than 0.05, we can reject the null hypothesis. The drivers' driving pattern has changed after the toll reimbursement is implemented. We can then recommend the city operations team to continue the toll reimbursement. On the other hand, if the p-value is larger than 0.05, we can say that the null hypothesis is valid. The drivers' driving pattern did not change after the toll reimbursement is implemented. There maybe other factors causing the drivers to stay in one city.