Part 2 Take Home Challenge

There are several ways to assess whether the measures taken have been successful. You can look at the total number of rides taken before and after the measure was taken as well as total revenue from before and after the measure was taken. You can also look at the proportion of new user sign ups, or how many new customers have been gained since the measure was implemented and whether or not this is comparable to the proportion of new customers gained in a specific time period before this measure was introduced. You can also look at customer retention and see whether this increases at all.

This project does not not specify what metrics are most important to the company so I would recommend looking at profitability during this time and in this geographic location as well as the number of rides taken during peak times in both cities.

a. To implement the experiment, I would take data from the ride share service pertaining to evening hours in Gotham during the week, day time hours in Metropolis during the week, and evening hours in both cities during the weekends. I would also take data regarding total earnings for both cities from a month before the tolls are reimbursed and from the month follow the toll reimbursement.
b. With the null hypothesis that there has been no change in the average number of rides during the previously stated times of day in both locations I would perform a one sample Z test to compare average number of rides taken before toll reimbursement and after toll reimbursement. I would use the alpha value of 0.05 as this seems like a reasonable threshold for this particular project and is widely used in industry. After finding the critical value based on the p-value (alpha) I am using and see if the Z score is larger than my critical value in which case I would reject the null hypothesis. I would perform this test for all peak times and locations as previously stated.
c. If the null hypothesis can be rejected and the average number of rides has gone up I would recommend keeping the toll reimbursement policy if profits have also increased. However, if perhaps for some reason the cost of paying tolls has caused the rides to no longer be profitable then I would discourage the company from keeping the policy even if the average number of rides has increased. If the average number of rides has not increased and the null hypothesis cannot be rejected I would once again examine the profitability during the time period and either suggest the policy be cancelled or more data could be collected to get more insight. Policy changes like this can have an effect on how people are using the ride share service and could affect profitability even if the actual number of rides does not increase. Additionally, it might be good to do a similar test looking at the average cost per ride before and after the toll reimbursement to determine whether this program has had an effect on the way people are using the ride share service.