Uber Supply-Demand Gap Case Study

Business Context and Problem

- Uber is a rental car company which helps people to go from one place to another. The Uber platform is fully automated and it works just with simple taps on your mobile or laptop. People request for car and different Uber drivers accept the request and everything else fall into its place

- Of late Uber started noticing two revenue loss problems
  - Problem of trip cancellation by the drivers for specified source and destination
  - Non-availability of cars during some period of time in the specified source and destination

Understanding Data

Data

- 6745 observations i.e. trip requests
- Trip requests are within the date range of 11 Jul 2016 to 16 Jul 2016
- Data is considered only for the trip to and from the airport

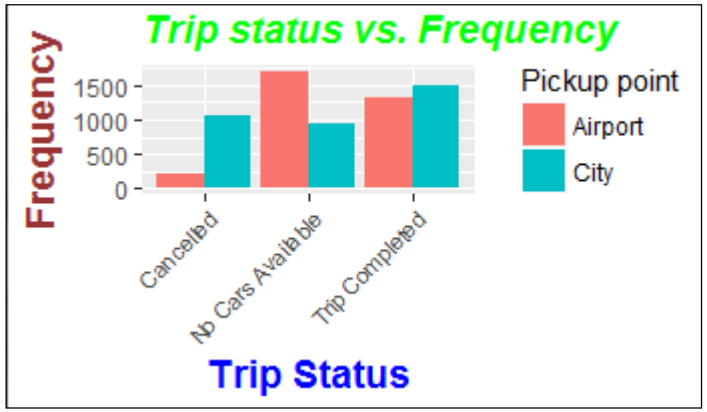
Assumptions

- 5 different time slots are created out of the requested hours – Early morning (midnight to 4 am), morning (4 am to 9 am), Mid day (9 am to 4 pm), Evening (4 pm to 9 pm) and late night (9 pm to midnight)

Most pressing problems for Uber

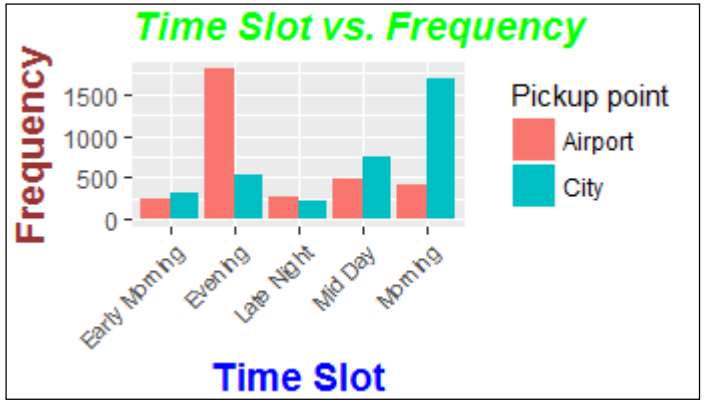
- Problem 1

Let us create a bar chart with different trip status in x axis and frequency of requests in y axis. At the same time identify in which routes cancellation and non availability of cars are more. It is seen that cancellation is more when requested from city and non availability of cars is more when requested from airport.



- Problem 2

Let us create a bar chart with different time slots in x axis and frequency of requests in y axis. At the same time identify the time slots where demand is more - from city or from airport. It is seen that demand is more from city during morning time and demand is more from airport during evening time. This causes a supply and demand gap at different time slots

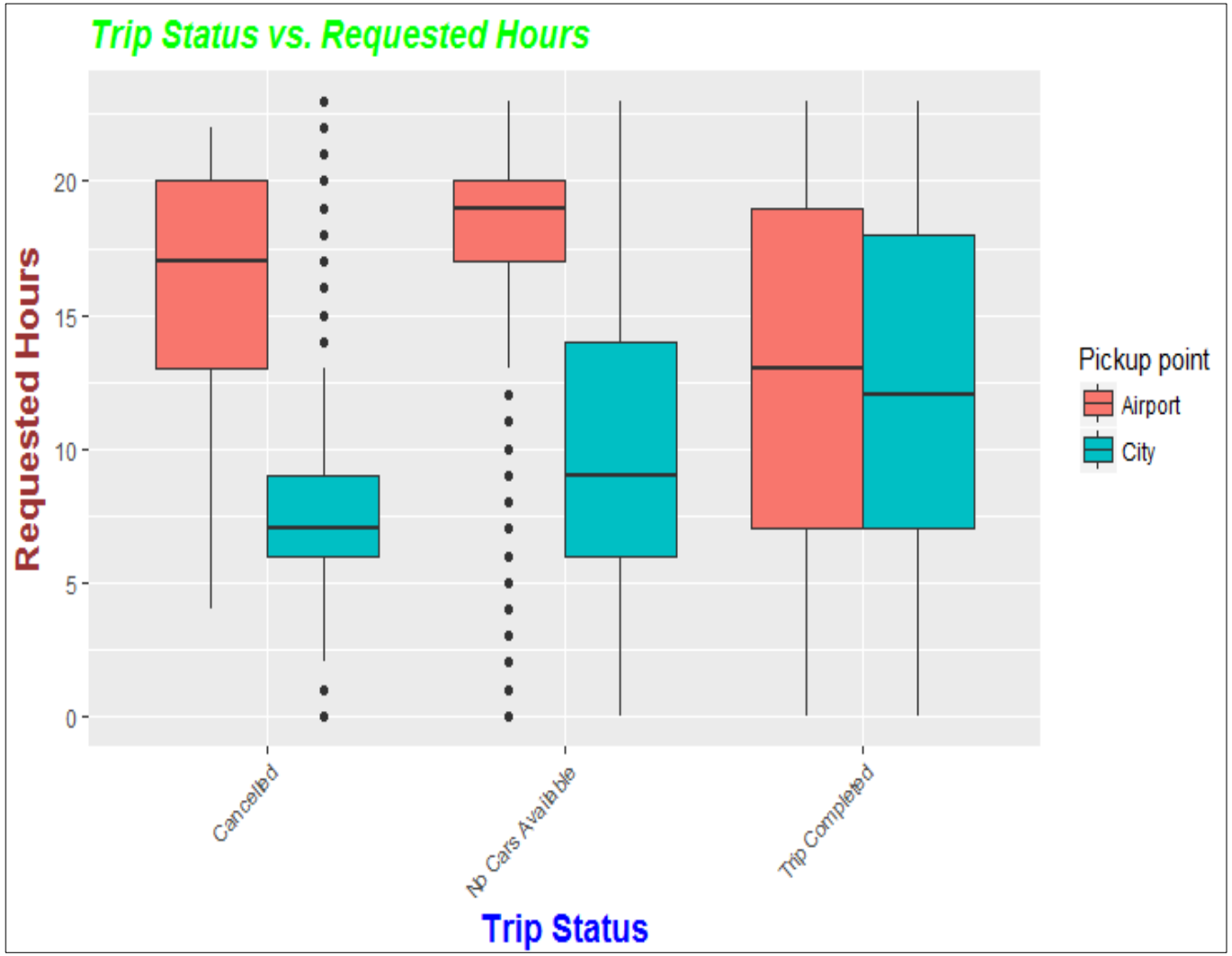


Analysis – Cancellation of Cars

- The aim of analysis is to identify the root cause of the problem (i.e. cancellation of cars)

- Looking closely into the box plot for the 'CANCELED' request, it could be found that approximately between 9 am to 1 pm there are few or no requests from airport to city. If a driver reaches airport between this time, he/she has to wait for long hours before the next passenger can be on-boarded.
  During this time, driver can make other trips within the city and make more money instead of idle time at airport

- Idle wait time at airport could be one of the reasons that drivers are cancelling the request



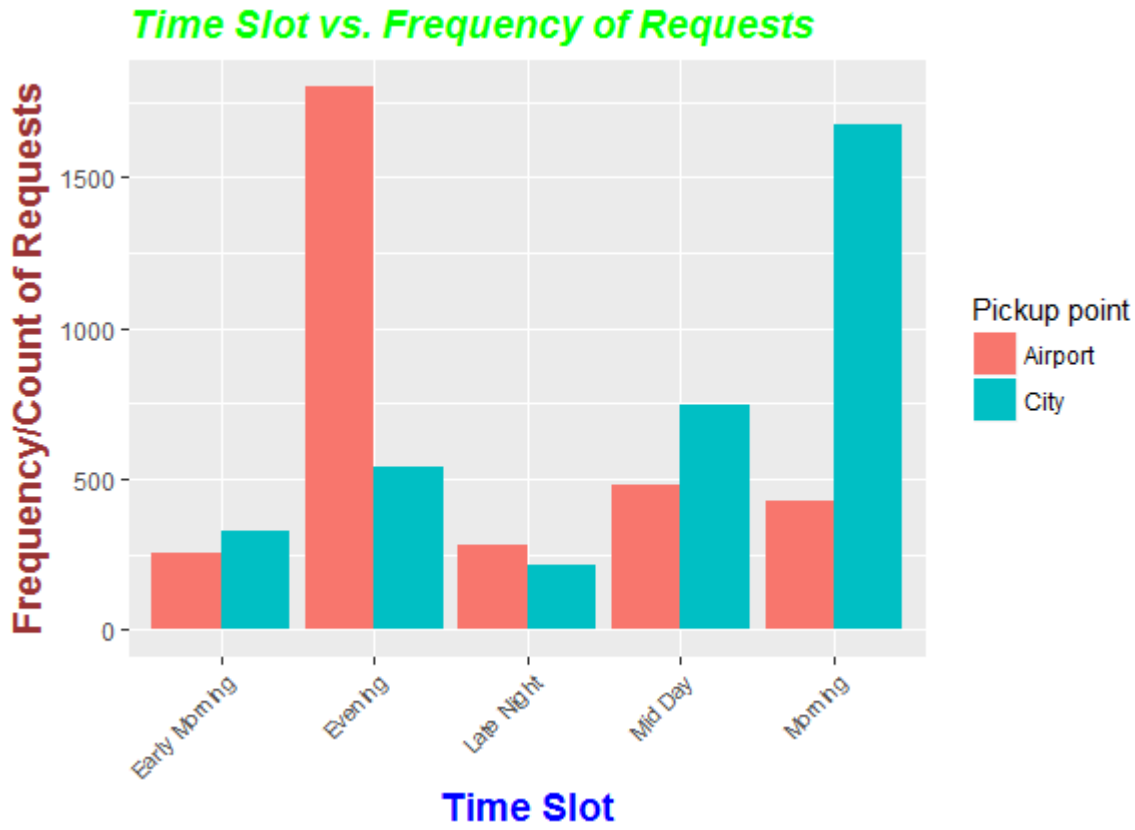
Analysis – Supply and Demand Gap / Non availability of cars

- The aim of analysis is to identify the root cause of the problem (i.e. Supply and demand gap)

- Here we can see that more numbers of requests are raised from city to airport between 4 am to 9 am (morning time slot) and from airport to city between 4 pm to 9 pm (evening slot). Early morning people prefer to travel from city to airport and in late evening people prefer to come back from airport to city

- The number of cars that are run by Uber remains the same but there is a mismatch in supply and demand. In the morning demand is more from city to airport in contrast to supply. Similarly, demand is more in the evening from airport to city in contrast to supply

- Mismatch in supply and demand could be because of the reason that people prefer to catch early morning flight and tend to return by evening flight whereas the number of Uber cars remain the same



Recommendations

- Below are the two recommendations to improve the current situation

- Cancellation of cars – Idle time at airport
  - Uber drivers can be given extra benefits if driving at odd time to the airport. Benefits could be in the form of 50% raise in the trip cost. This way the idle waiting time at airport can be compensated

- Supply Demand Gap - Non availability of cars
  - Uber company can start providing more benefits to the new prospect drivers so that more drivers are willing to join Uber. This way the supply and demand can be made proportion to some extent.