# UBER CASE STUDY

SUBMISSION

BY

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Description :

As less than 10% of worlds citizens own automobiles, the frequency at which citizens commute on taxis, buses, trains, and planes is very high. UBER and other ride sharing service, roughly processes over 11 million trips, plans over 9 billion routes and collects over 50TB of data per day. To meet needs of riders, these services must continually innovate to improve cloud computing and big data technologies and algorithms in order to process this massive amount of data and uphold service reliability. Supply-demand forecasting is critical to enabling these services to maximize utilization of drivers and ensure that riders can always get a car whenever and wherever they may need a ride. Supply-demand forecasting helps to predict the volume of drivers and riders at a certain time period in a specific geographic area. For instance, demand tends to surge in residential areas in the mornings and in business districts in the evenings. Supply-demand forecasting allows these services to predict demand surges and guide drivers to those areas. The end result is higher earnings for drivers and no surge pricing for riders!
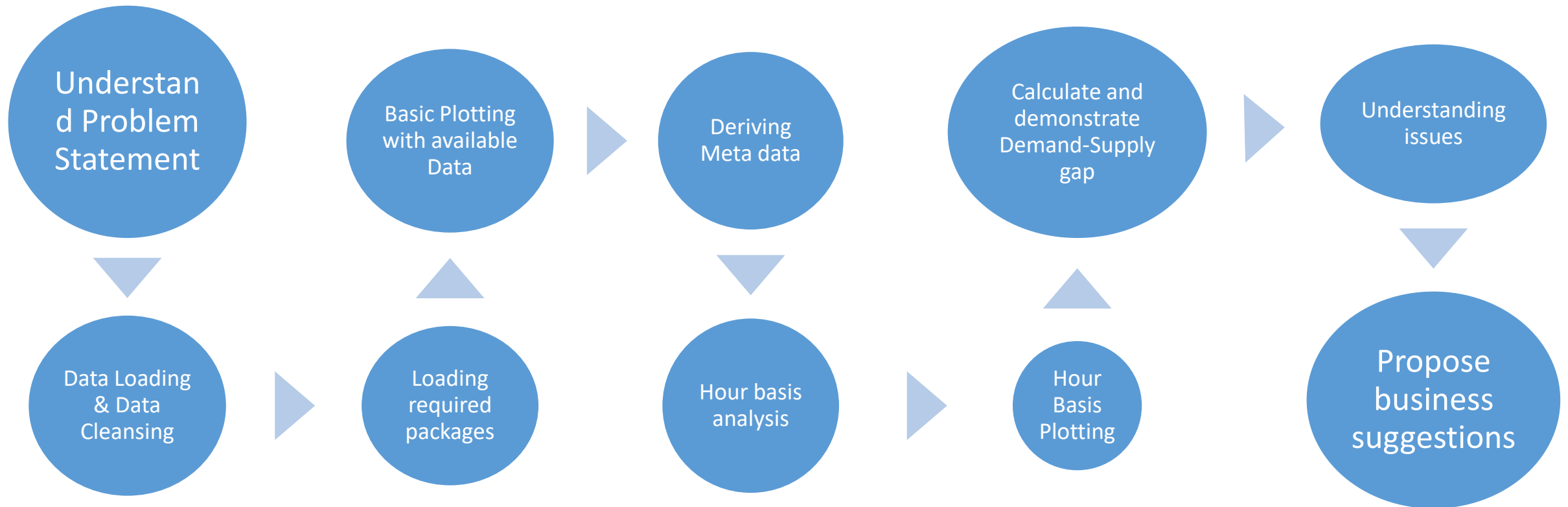
Aggregated Cab Demand Hourly Basis within 00-23 hours
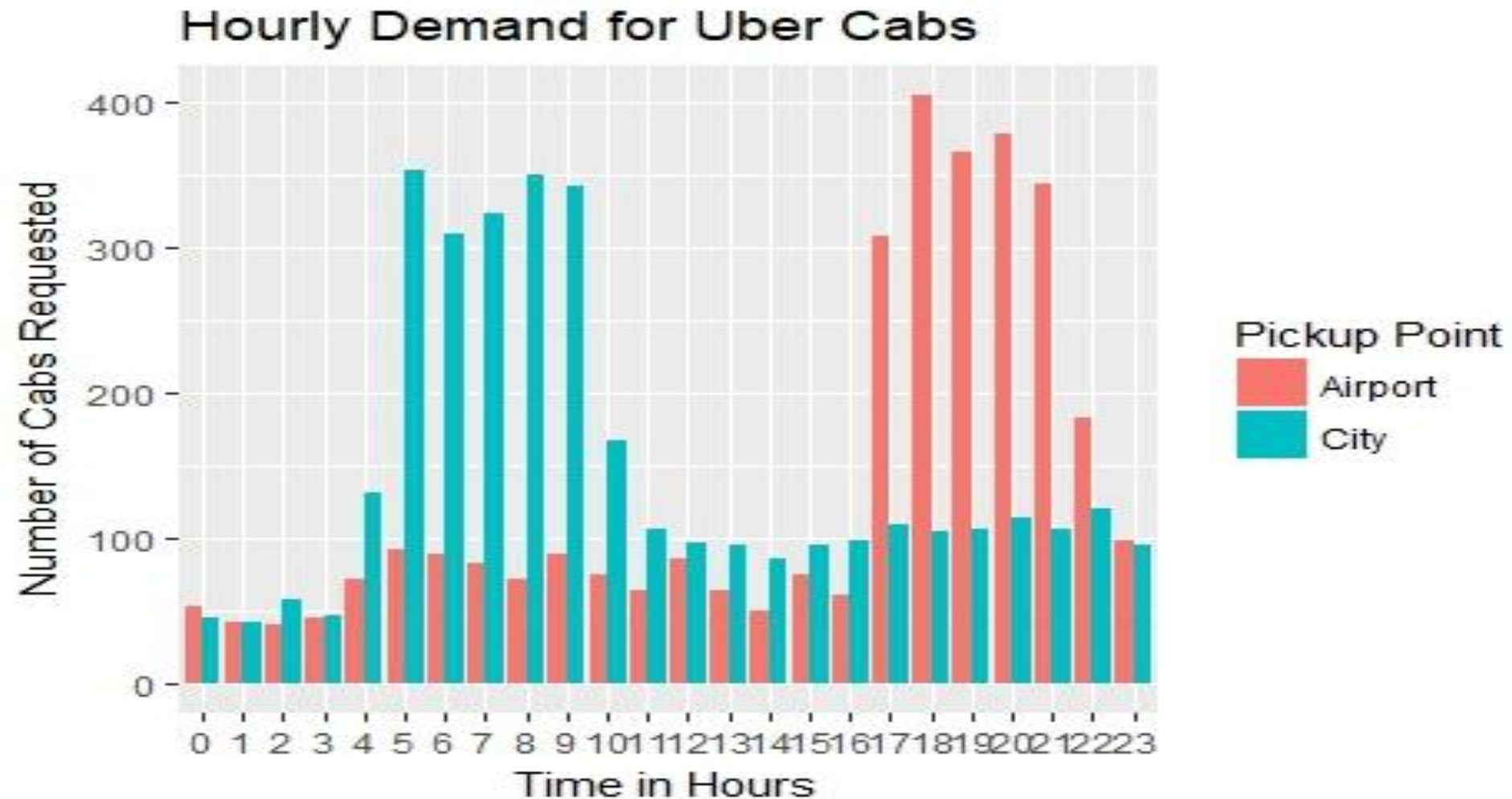
Time slots have been created as to understand the cab demand and completed trips within 0000-2300 hours. The time-slots are as follows :

Pre_Morning : 00-04 hours

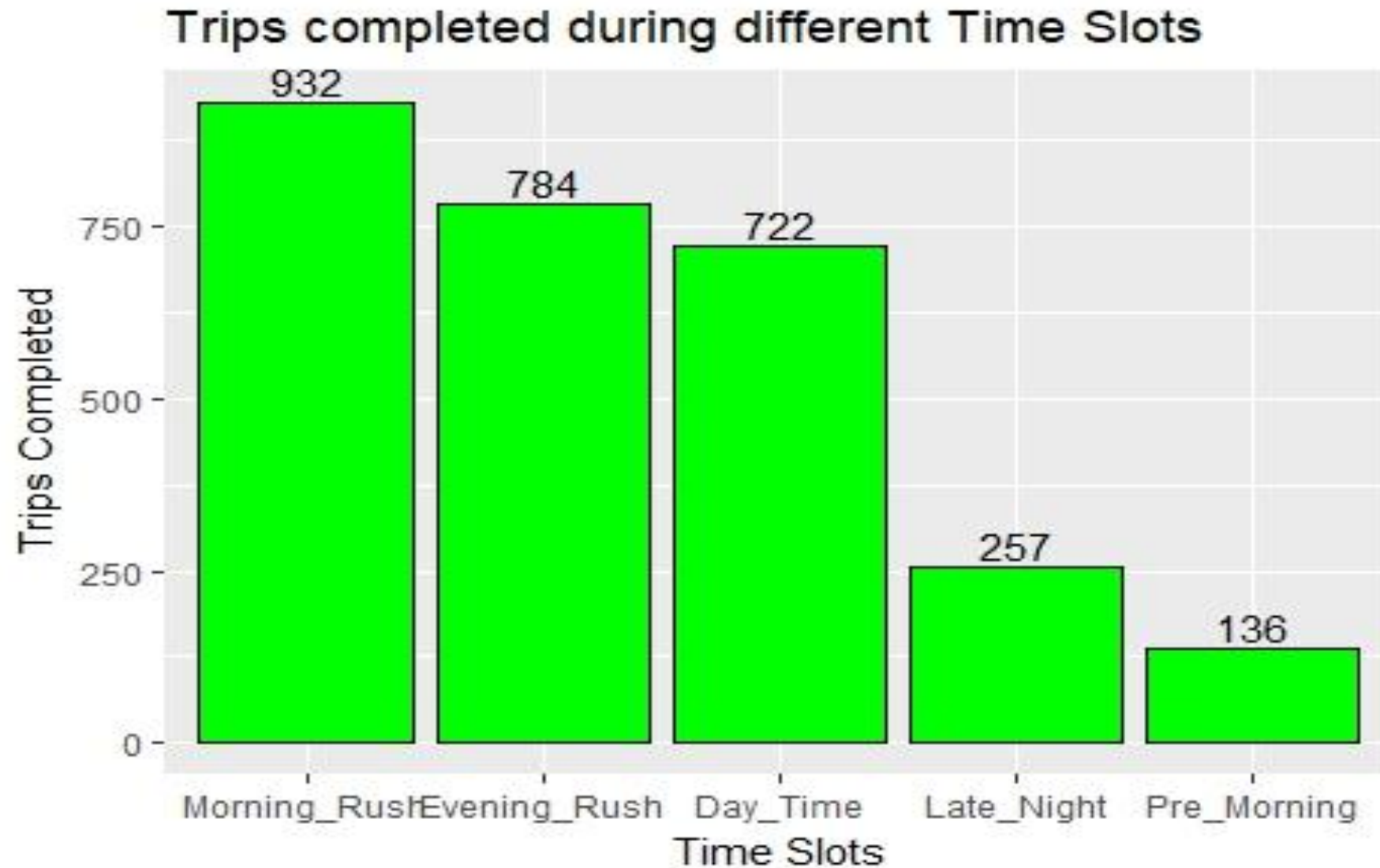**Morning_Rush** : 04-09 hours

Day_Time : 09-16 hours

Evening_Rush : 16-21 hours

Late_Night : 21-23 hours

Note: The division of time-slots may not have one right answer.

The following is plot of trips completed during different timeslots and the count of trips is shown as well in the plot.
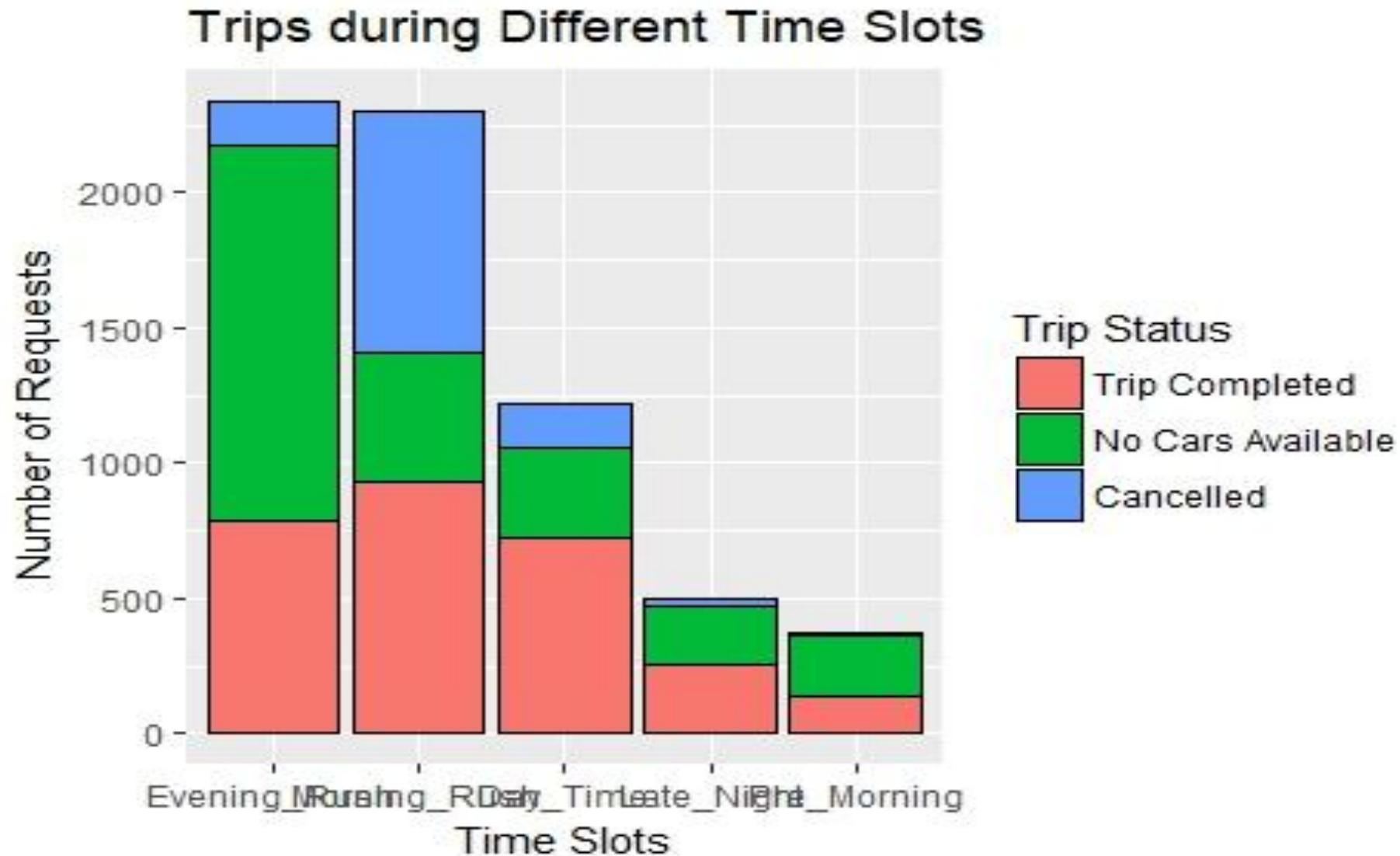
Trips Completed During Different Timeslots

Trip Count :

Pre_Morning   : 136

Morning_Rush   : 932

Day_Time   : 722

Evening_Rush   : 784

Late_Night   : 257

This can be interpreted easily that irrespective of cab demands or requests, completed trip count has surge at time between 04-09 hours and 16-21 hours.

Trip Requests During Different Time-slot

Observations :

1. The above is stacked bar chart where each bar represents a time slot and y axis shows the frequency of requests. Different proportions of bars represents the completed, cancelled and no cars available out of the total customer requests.

2. There are total 15 possible scenarios (5 slots * 3 trip status)

3. Issue analysis as per above plot:

- Problem 1: A large number of trips got cancelled during the Morning_Rush time slot.

- Problem 2: Cabs were not available for a large number of requests during the Evening_Rush time slot

Morning Rush Cab Status
Airport = 2.80% & City = 97.20%
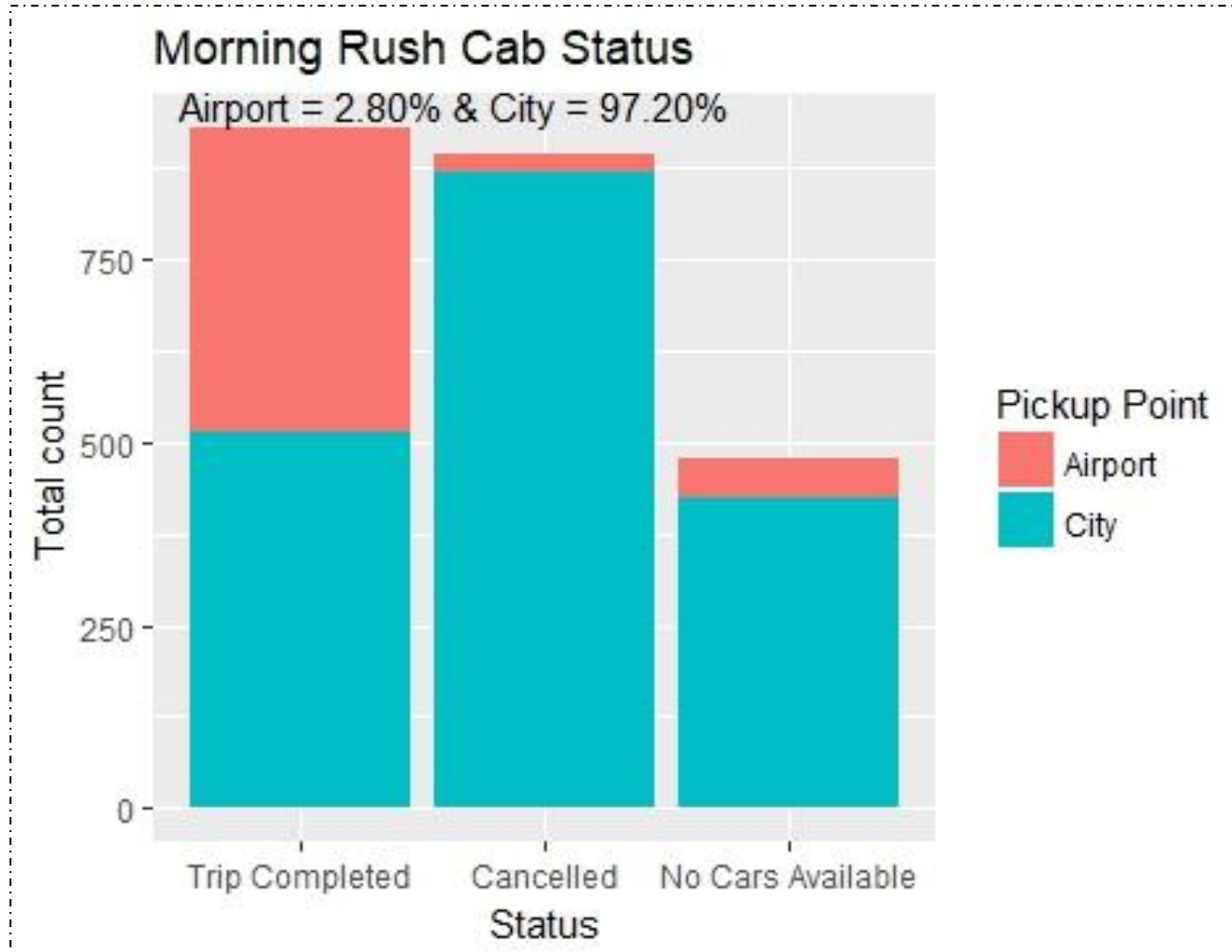
This plot is to find out if the problem is more severe for pick-up requests made at the airport or the city.

Observation :
Percentage of total issue exists :
• Airport   : 2.80 %
• City   : 97.20 %

Problem 1 Demand-Supply Gap Analysis :

In this time slot the issue is -- demand is the number of trip requests made at the city, whereas the supply is the number of trips completed from city to the airport.

No. of trip requests made in city   : 1808
No. of trips completed from city to airport   : 514

Reason for Problem 1 :

A large number of flights leave the airport during Morning rush time slot. There are very less incoming flights in the Morning rush. A driver who reaches airport during that time has to spend idle time to pick a customer back to the city. The driver could utilize this idle time for other trips if he chooses not to go to the airport. Otherwise he has to return back empty seated which is a waste of gas mileage for him. Due to this a large number of service requests were cancelled in morning rush resulting in huge supply demand gap.

Recommendation for Problem 1 :

Recommendations for morning rush slot from city :

(1) Reducing the percentage charged from cab drivers for utilizing Uber services for making a trip to the airport.

(2) Charging more money from the customers for trips

(3) Share this data with cab drivers and customers to better understand the issue.

(4) Allocate morning starting points for Cab drivers at Airport so that customers can avail cabs from there

Evening Rush Cabs Status

Airport - 94.90% & City = 5.10%

Pickup Point
- Airport
- City
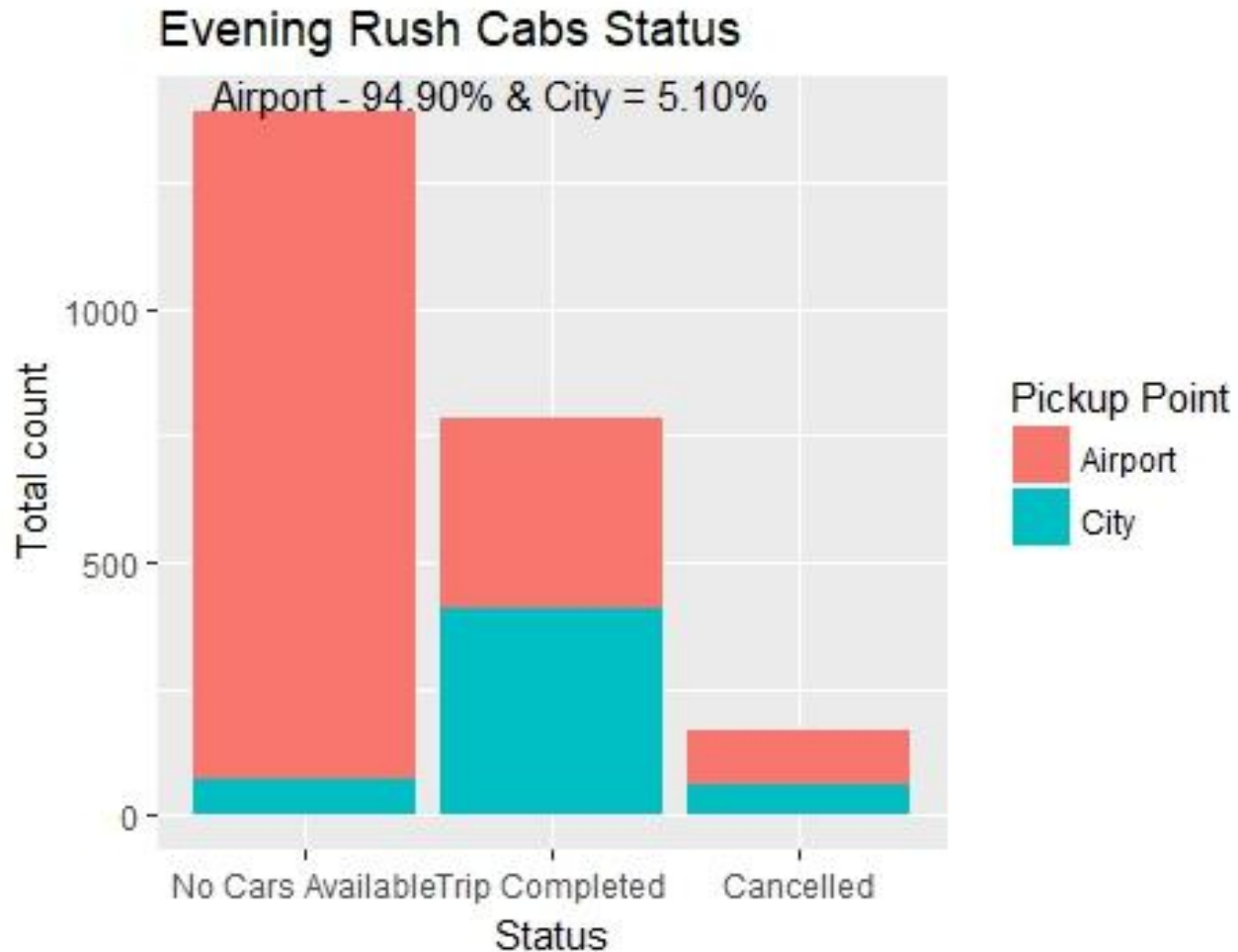
This plot is to find out if the issue is for pick-up request made at the airport or the city.

Observation :
Percentage of total issue exists :
- Airport   : 94.90 %
- City   : 5.10 %

Problem 2 Demand-Supply Gap Analysis :

In this time slot the issue is -- demand is the number of trip requests made at the airport, whereas the supply is the number of trips completed from airport to the city.

No. of trip requests made in city   : 1800
No. of trips completed from city to airport   : 373

Reason for Problem 2 :

At the airport Incoming flights are more and outgoing flights are less during Evening rush slot. As the outgoing flights are less, the cabs coming to the airport are also very less during that time. This is drastically reducing the availability of cabs at airport in the evening rush time slot. As the incoming flights are more, the passengers are also more in the evening. These passengers are not getting sufficient cabs to leave the airport in the evening. This is leading to a huge supply demand gap at the airport in evening rush time slot.

Recommendation for Problem 2 :

Recommendations for evening rush slot from airport :

(1) Reducing the percentage charged from cab drivers for utilizing UBER services for making a trip to the airport.

(2) Charging more money from the customers for trips

(3) Share this data with cab drivers and customers to better understand the issue.