UBER SUPPLY DEMAND GAP STUDY

UBER

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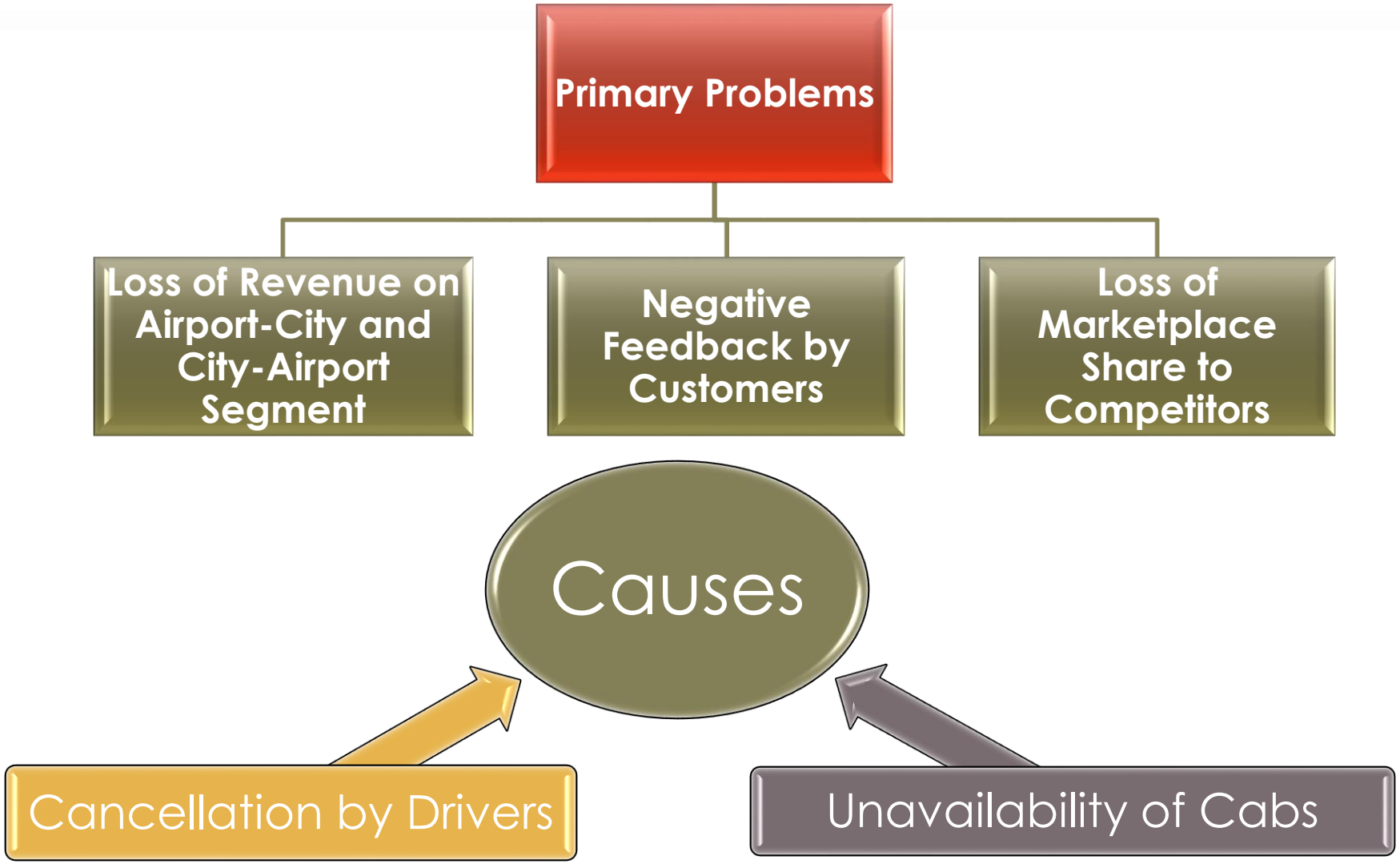
PROBLEMS AND DRIVERS



OUTLINE OF THE PROBLEM SOLVING METHODOLOGY

Data Sourcing and Cleaning

- Read the Source data to R
- Clean the data, Fix Rows and Columns, Standardize Data format and fix Date time Issues

Univariate and Bivariate Analysis

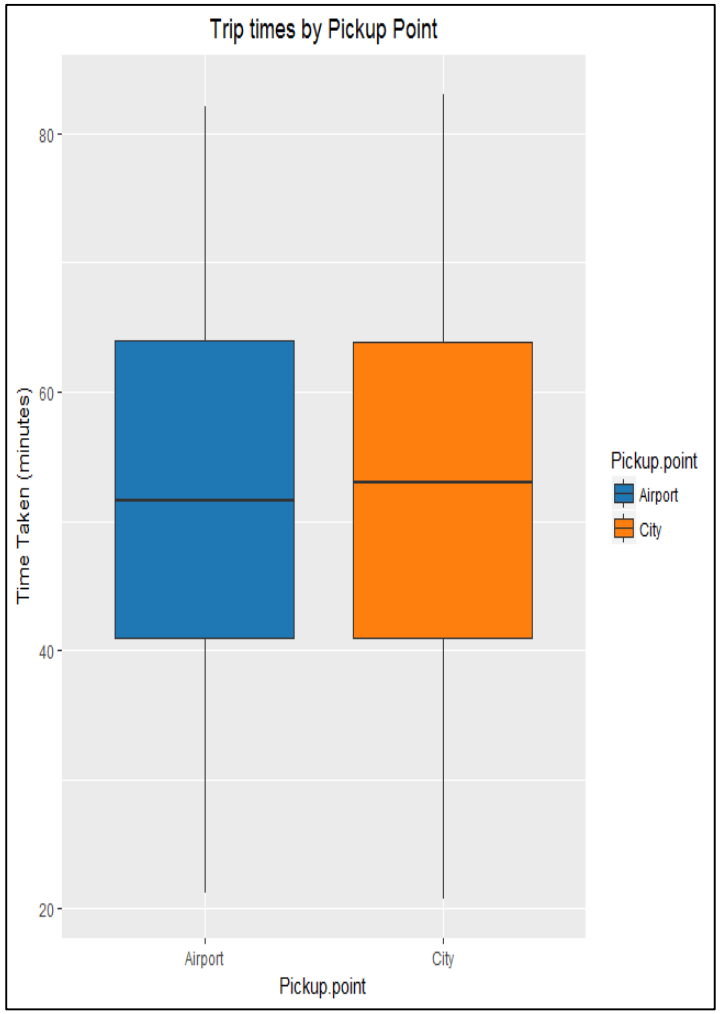
- Perform Univariate Analysis to learn about the data and uncover any interesting Patterns
- Perform Bivariate Analysis to uncover how Target variable depends on other variables

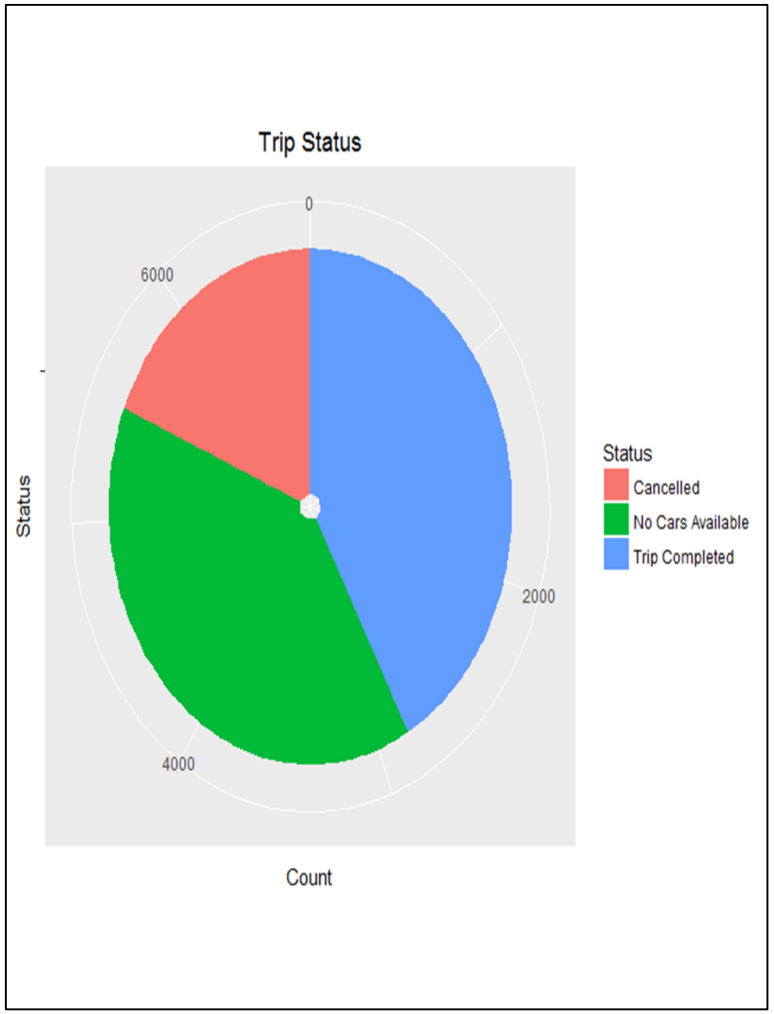
Visual Analysis of Supply Demand Gap

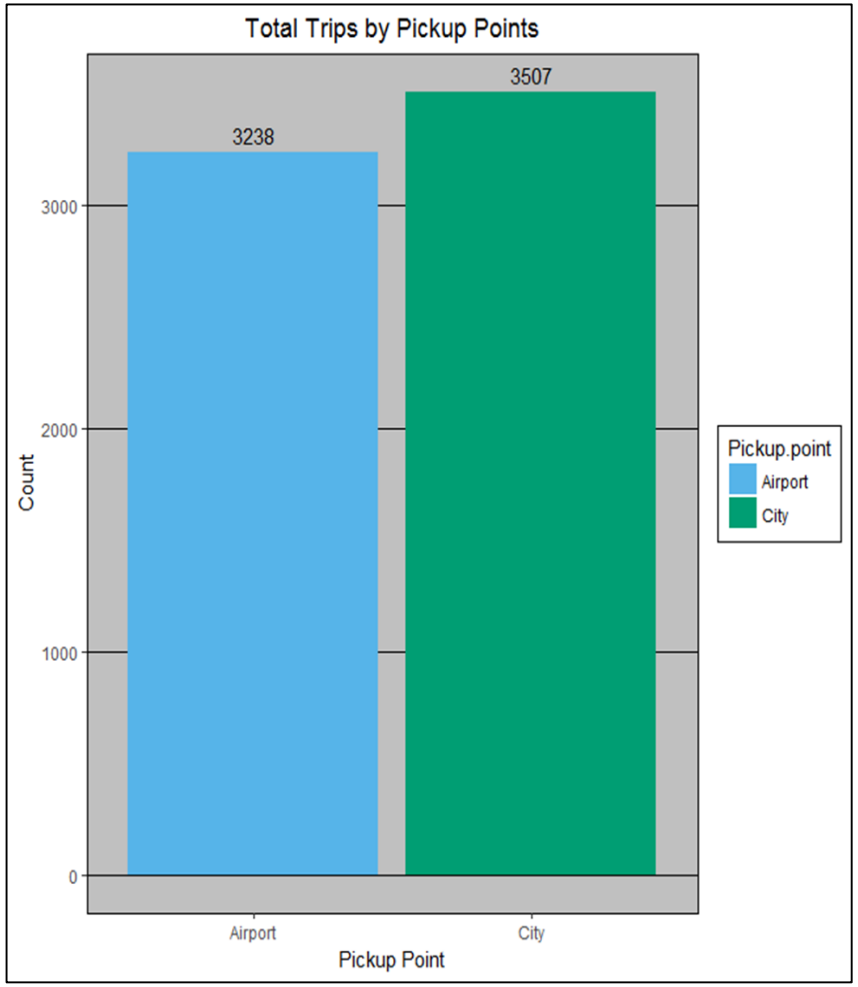
- Uncover through EDA and Visual Analytics the Supply Demand gap
- Identify the driving factors behind this gap via RCA and suggest remedies for the same

UNIVARIATE ANALYSIS RESULTS

- There is no significant variation in Trip times from Airport-City or City-Airport
- Trips Completed and No cars available are nearly same which is a cause for concern
- Trips originating from Airport and City are roughly equal in Number. No large imbalance exists.

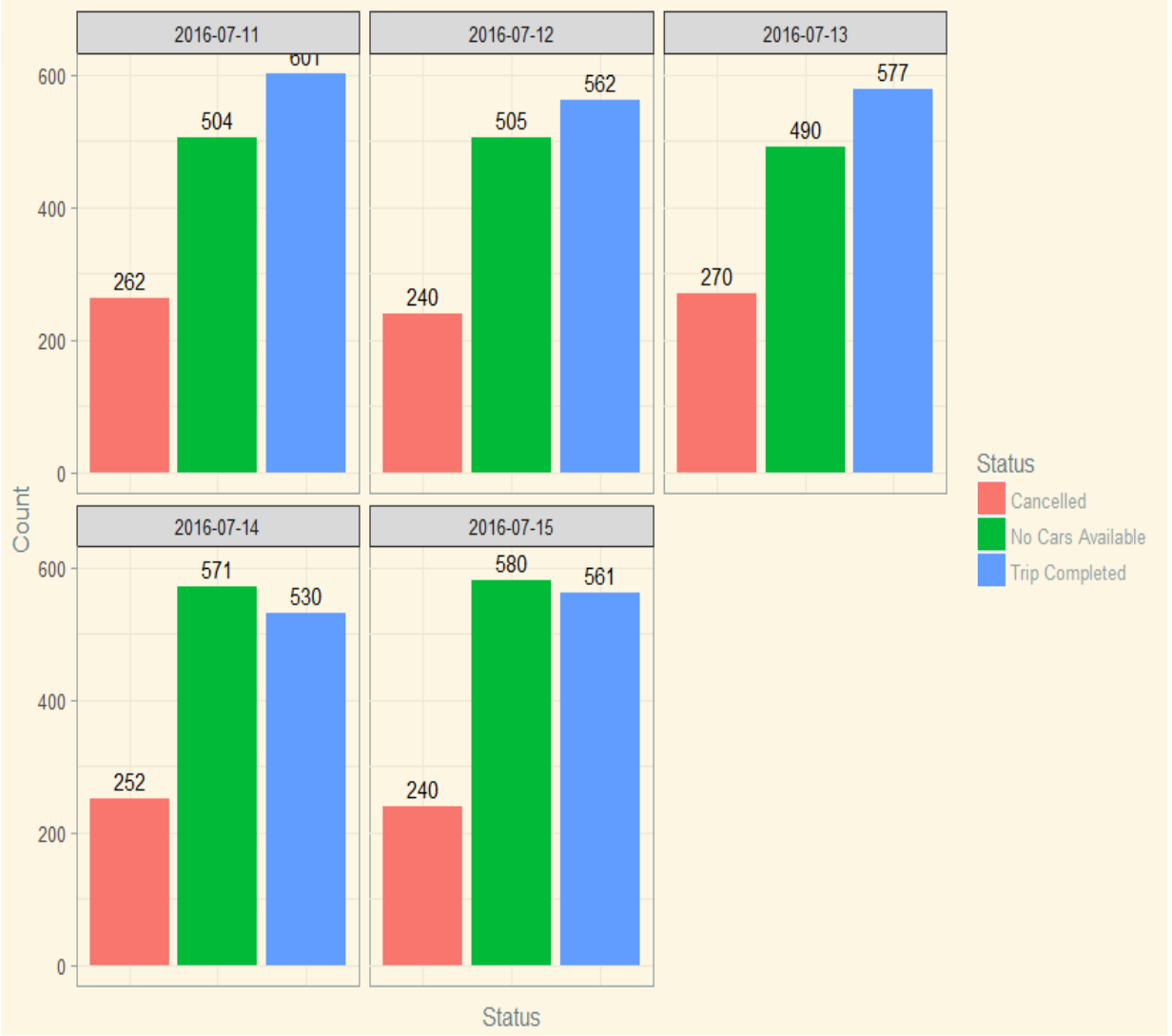




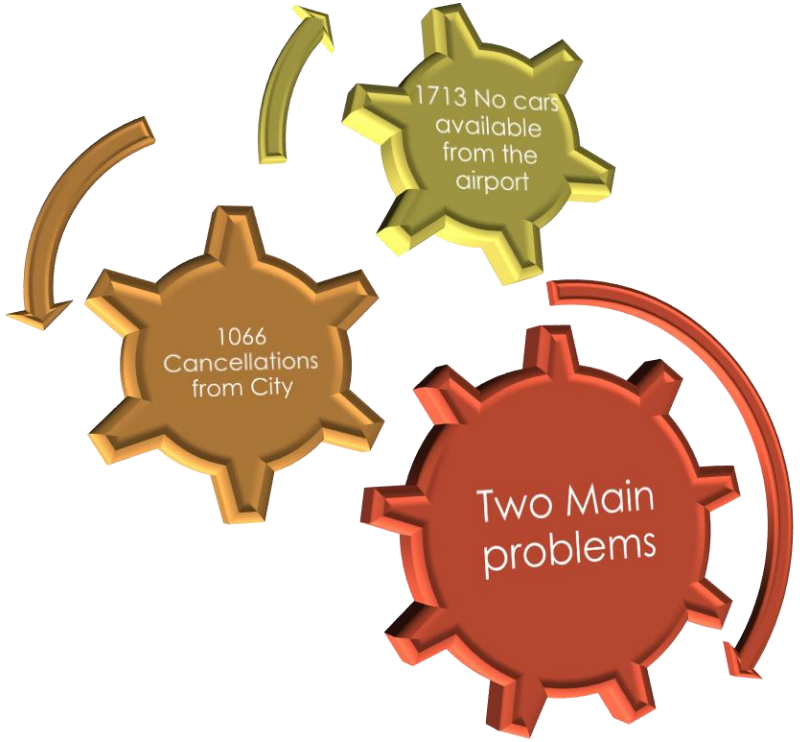


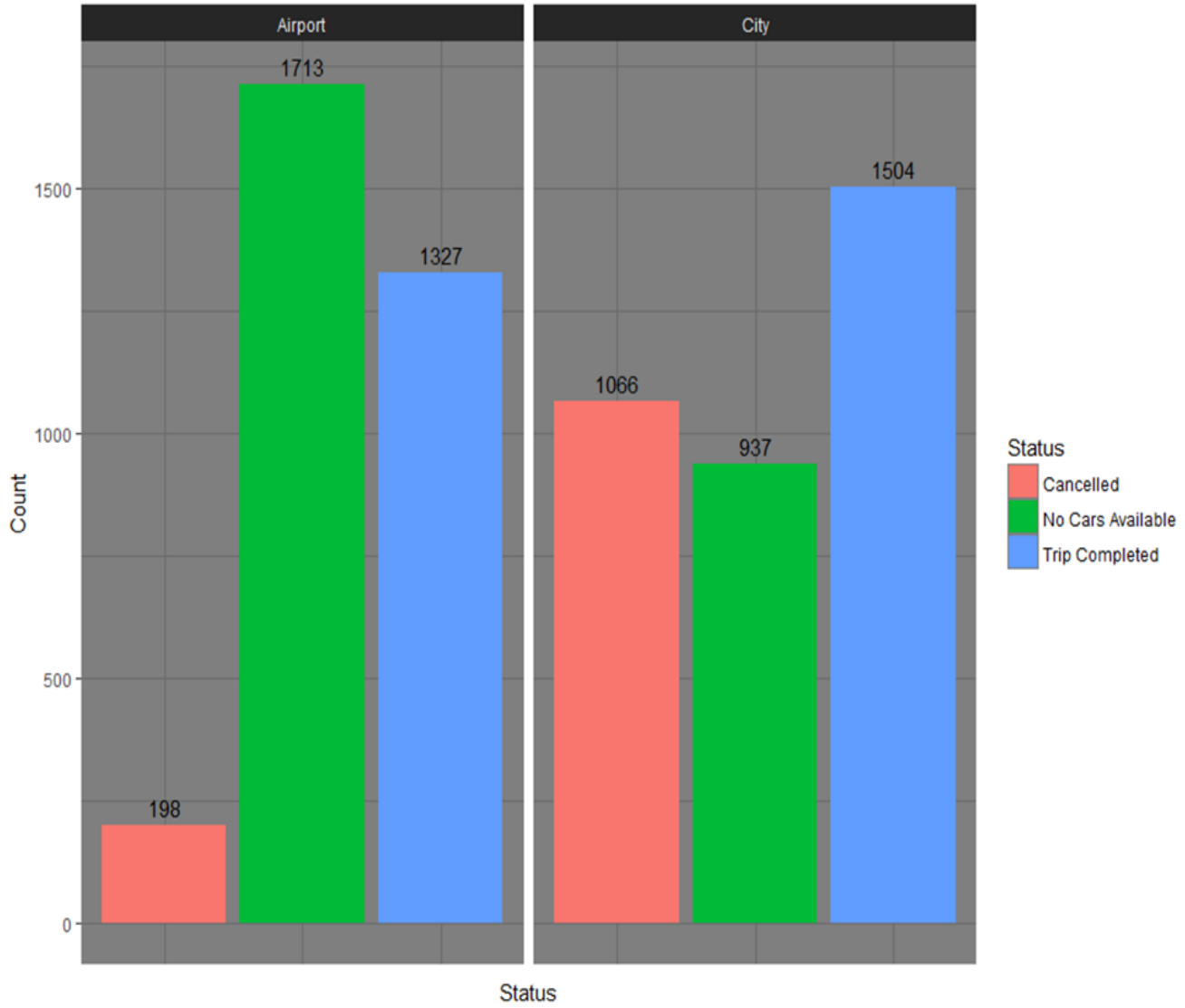
BIVARIATE ANALYSIS- TRIP STATUS ACROSS DATES

- *Cancellations, Car Unavailability and Trip Completions remain roughly the same across 5 days of observation*
- *There is no significant trend or variation of Trip Status by Days*
- *No Cars available remains consistently high which is a definite cause for concern as seen earlier also*



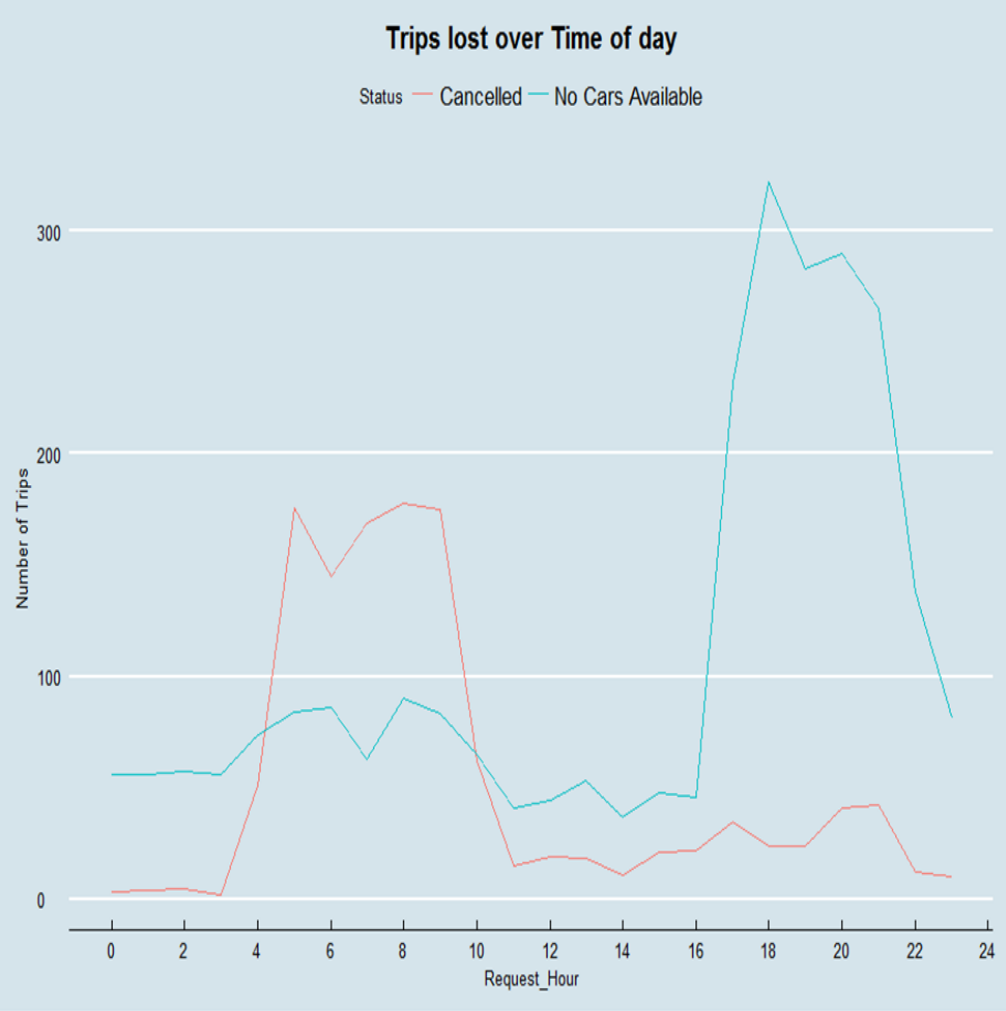
BIVARIATE ANALYSIS- TRIP STATUS BY PICKUP POINT



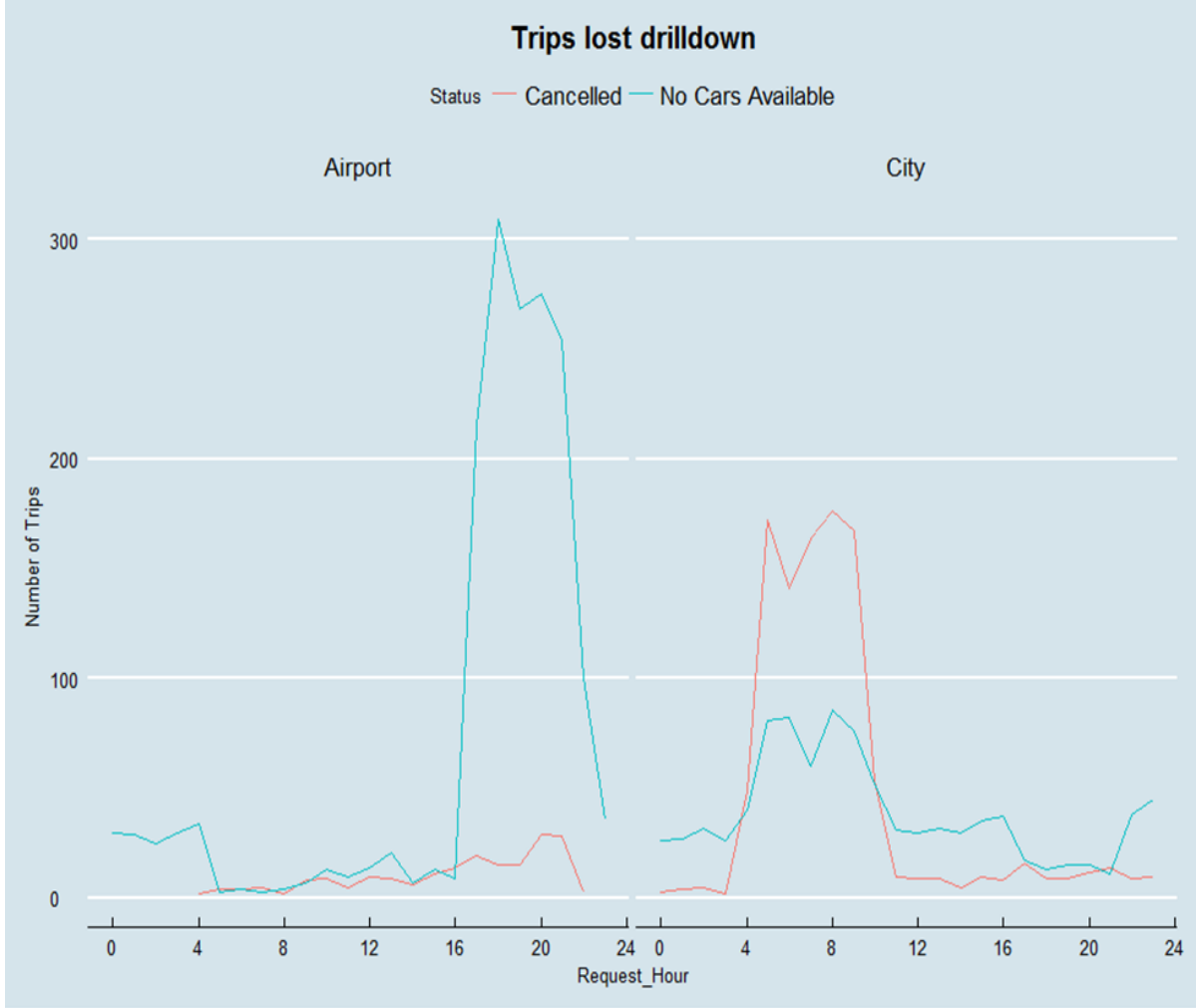


BIVARIATE ANALYSIS- TRIPS LOST OVER TIME OF DAY

- ❑ Large spike in cancellations between 5 and 10 Hours
- ❑ Even larger spike in No Cars Available between 17 and 22 hours



- ❑ Most instances of unavailability of cars originates from the airport
- ❑ Most instances of Cars cancellation arises from the City



INSIGHTS- UNIVARIATE AND BIVARIATE ANALYSIS

1. Visually identify the most pressing problems for Uber
Create plots to visualize the frequency of requests that get cancelled or show 'no cars available'; identify the most problematic types of requests (city to airport / airport to city etc.) and the time slots (early mornings, late evenings etc.) using plots – Done in slides 6 and 7

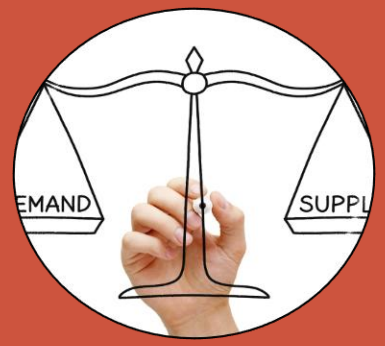
The most problematic requests are (in the order of losses):-

- Requests originating from Airport during late evening (between 5 and 10 PM)
- Requests originating from the City during early morning (between 5 and 10 AM)

The reasons for the problems are:-

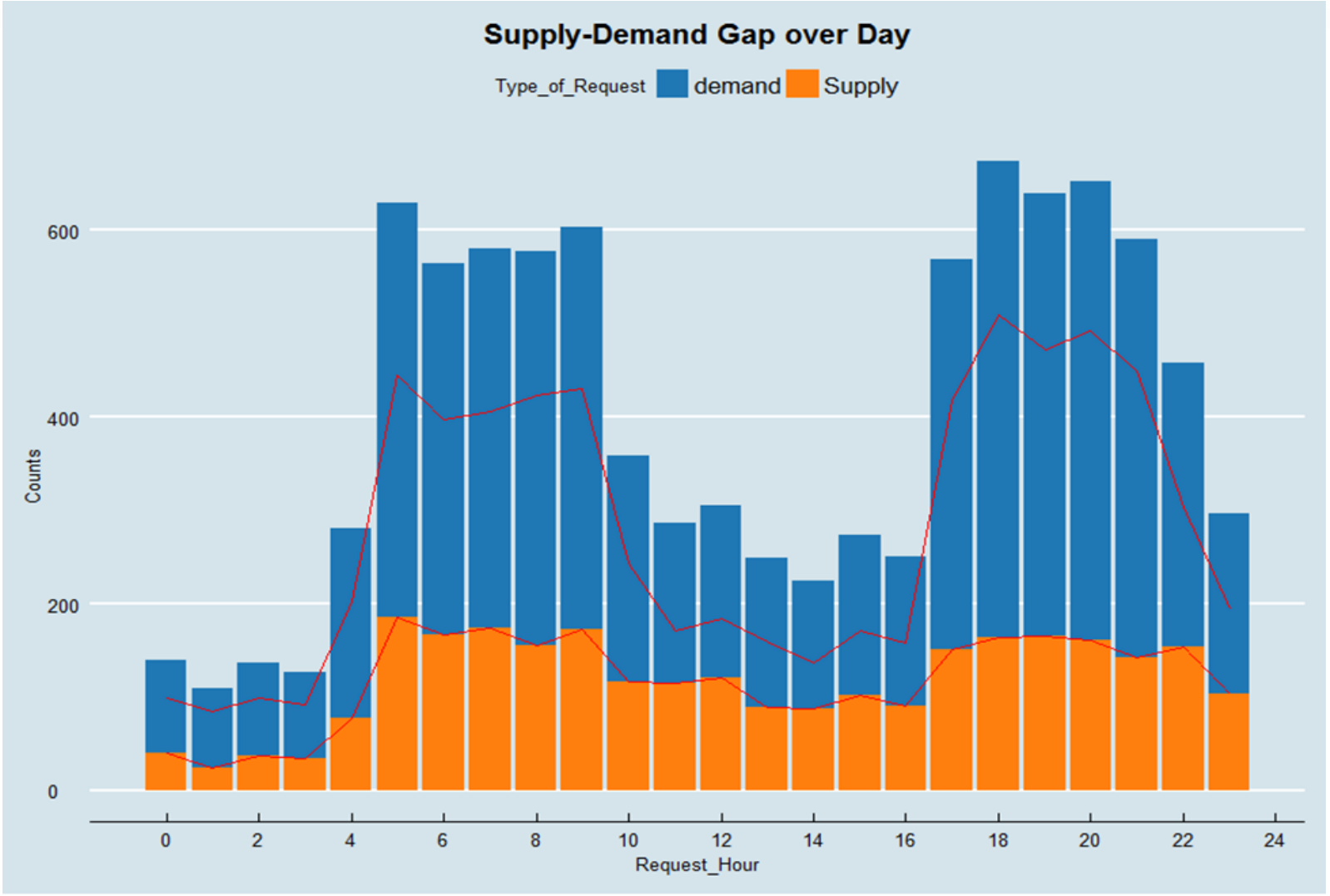
- Unavailability of cars from Airport during late Evening
- Trip cancellations by Drivers for Trip Requests from the City during early Morning
- Unavailability of cars from City during early Morning (to a lesser degree)

SUPPLY DEMAND GAP ANALYSIS



2. Find out the gap between supply and demand and show the same using plots

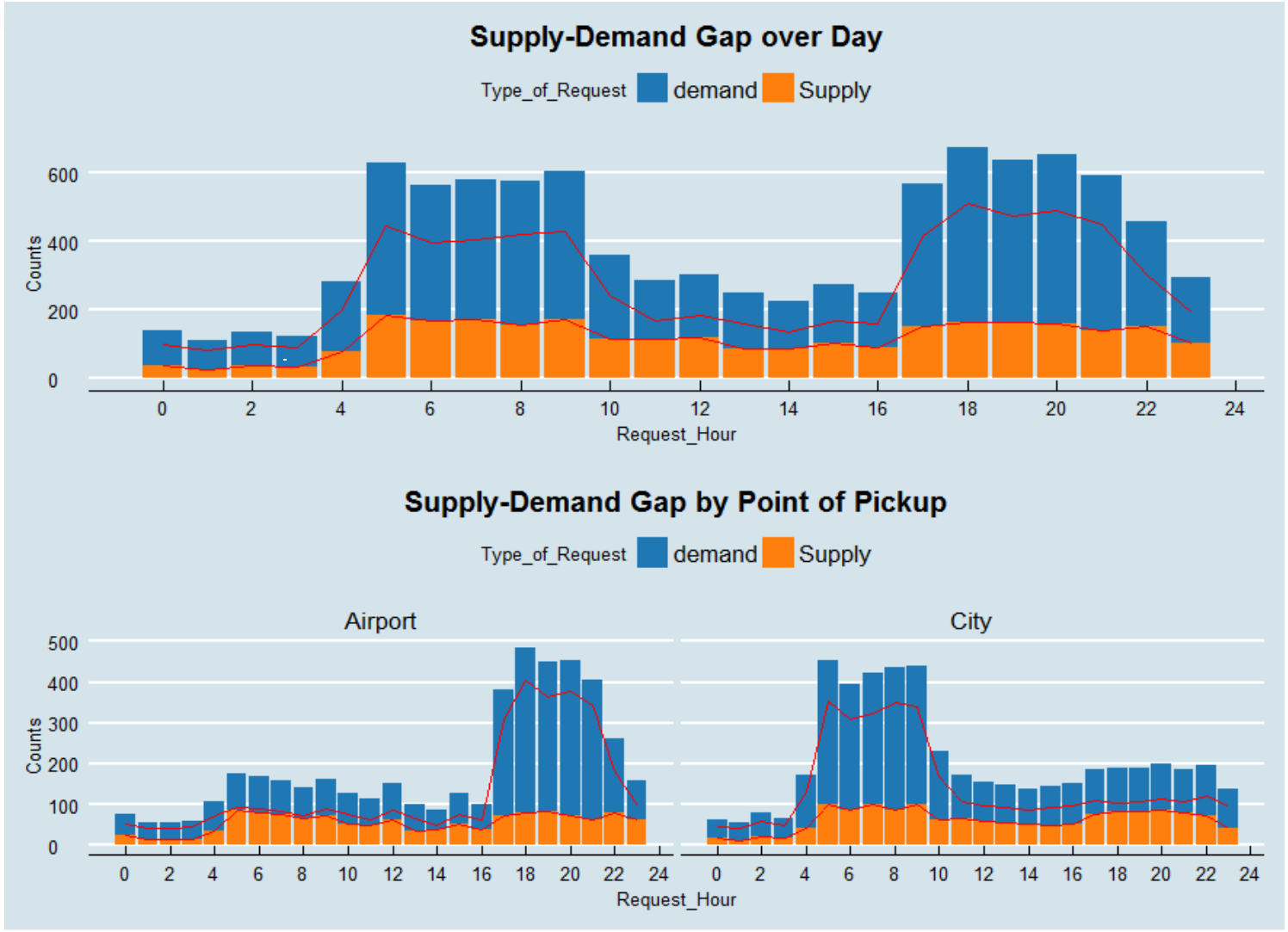
- There is a peak in the supply-demand gap during early Morning Hours between 5 and 10 AM
- There is another peak in evening hours between 5 and 10 PM
- At other times the Supply demand gap is negligible



SUPPLY DEMAND GAP DRILLDOWN

On drilling, down at the Pickup point level, we uncovered the reasons for the Supply demand Gap: -

- The early morning spike in supply demand gap is contributed mainly by cancellations from the city
- The Late-night spike is contributed mainly due to unavailability of cars at the Airport

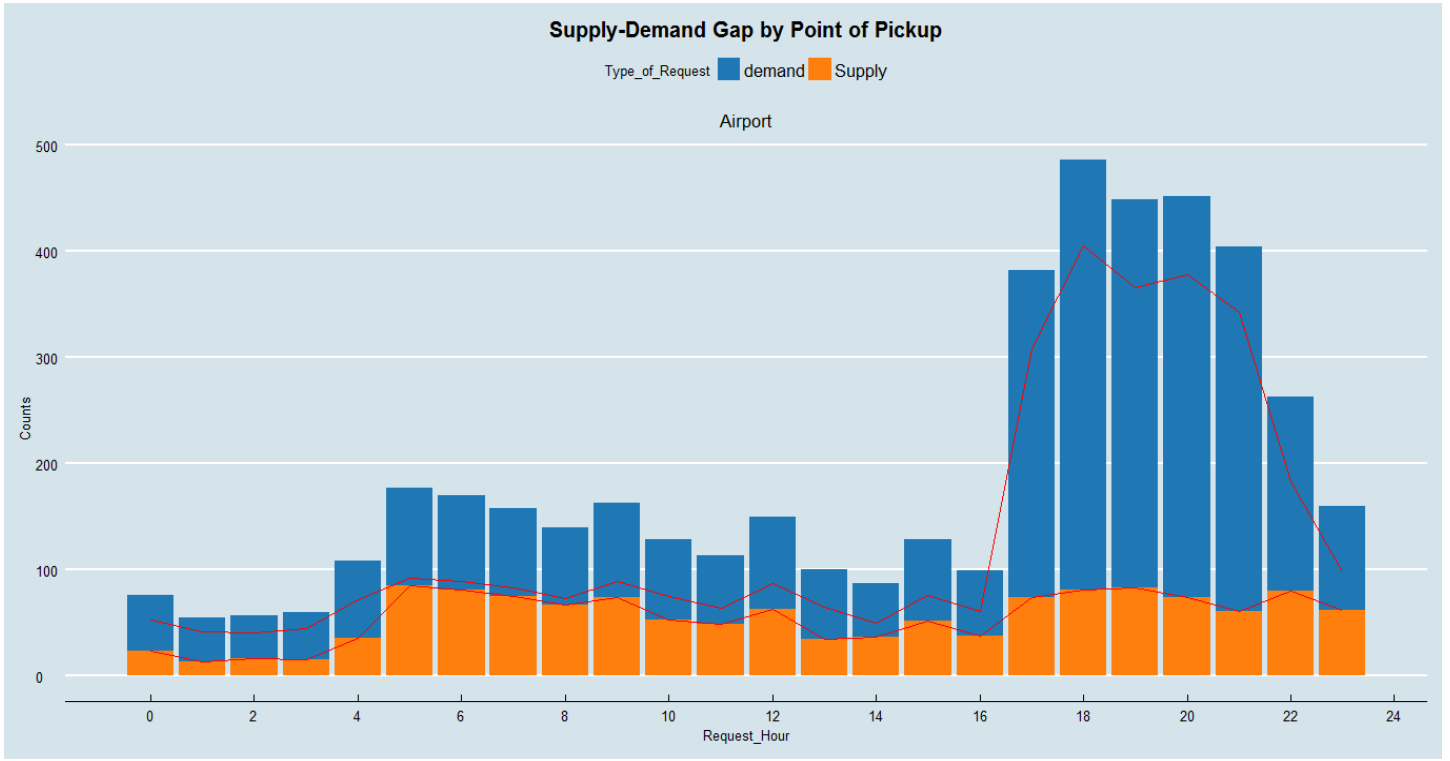


SUPPLY DEMAND GAP REASONS (HYPOTHESIS)

Early Morning Supply Demand Gap- City

- Caused due to large number of "cancellations" between 5 AM and 10 AM. Possible reason for cancellations might be that drivers face large wait times on completing a Trip to the Airport due to which they refuse to take up City- Airport trips during Early Morning.

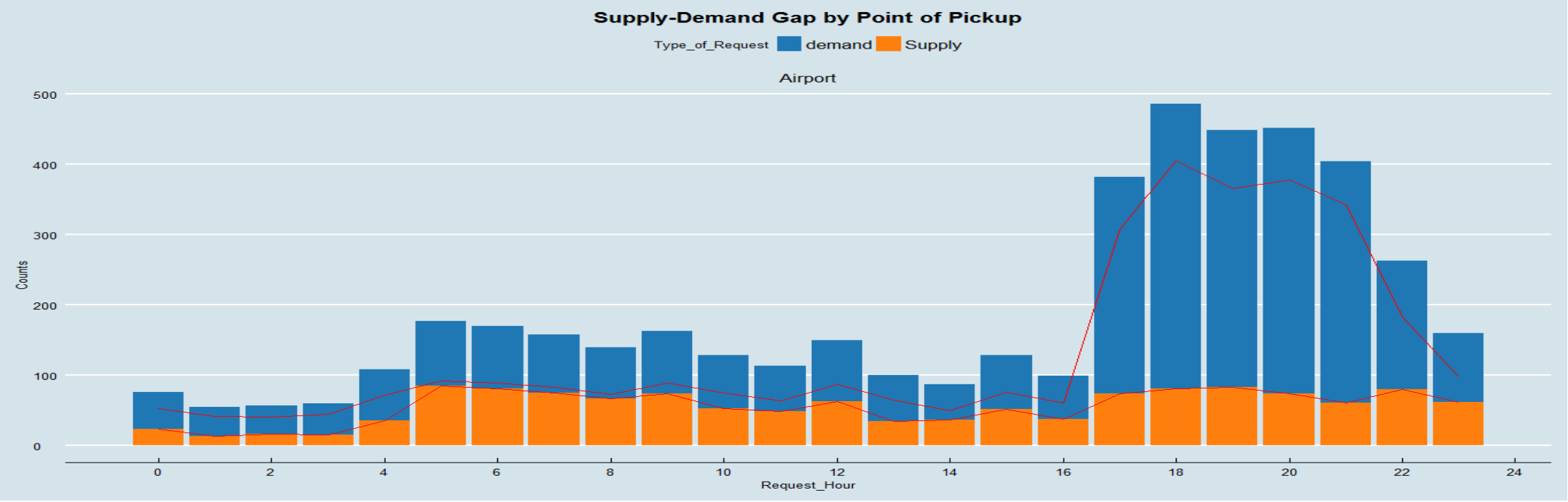
Low demand for Early Morning trips from the Airport to City, which leads to long wait times for Drivers who arrive at the Airport during this time



SUPPLY DEMAND GAP REASONS- CONTD.

Late night Supply Demand Gap- Airport

- Caused by huge spike in demand at the Airport between 5 PM and 10 PM. There is not Enough organic Supply from the city to cope up with this spike in Demand. This may be caused because there are many more Flights landing between this time than Flights leaving from the City.



RECOMMENDATIONS TO RESOLVE THE SUPPLY-DEMAND GAP

4. Recommend some ways to resolve the supply-demand gap

- Providing a small but dedicated fleet of cabs at the airport between evening and late night hours. Since there seems to be a huge demand spike in the No. of Requests at this time having a dedicated fleet of cabs will reduce instances of "No Cars available". In order to divert less cars to the Airport UBER might also look at implementing a share cab feature such that travelers don't have to book the entire cab by themselves if they don't want to.
- Providing a lump sum compensation to drivers for waiting at the airport during early morning hours or providing a portion of the fuel costs. This will encourage drivers not to cancel rides between the city and Airport during the morning time slot (5 to 10 AM) during which there are many flights leaving from the city.
- There is also a problem of unavailability of cars from the city during early morning (to a lesser degree). It can be alleviated by encouraging more drivers to take up the early morning shift, perhaps by giving them slightly higher compensation.

IMPROVING THE CASE STUDY

- This case study can be improved with some additional Data and Resources which are highlighted below:-
  - Time Table of flights landing and departing from the Airport for all times of the day. This would give a prior indication in the surge of Demand at either the Airport or the City and can be used to make real-time decisions of where to divert any additional cabs.
  - Shift timings for drivers and wait times faced between trips. This would help to provide a concrete indication of why drivers refuse to take early morning Trip requests to the Airport and suggest ways to mitigate the same.