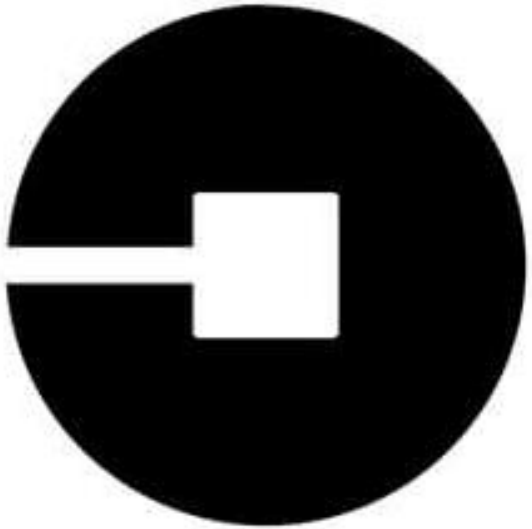


UBER SUPPLY- DEMAND GAP CASE STUDY

SUBMISSION

Pritha Banerjee

(DS-C7 2018)

UBER SUPPLY- DEMAND GAP ANALYSIS

Business Objective :

The aim of the analysis is to find the root-cause of the problem (i.e. trip cancellation and non-availability of cars) and provide solution to improve the situation to avoid revenue loss.

Strategy:

- To understand the trend of trips to and from city and airport.
- To find out maximum trip cancellation and non-availability of cars and analyse day wise and time-slot wise.

Goals of Data Analysis:

To address the problem Uber is facing - Trip cancellation and non-availability of cars.

- To prepare the available data for analysis.
- To derive metrics from the data available, like ‘trip time’, ‘time-slot’ etc.
- To understand each variable one at a time: ‘Status’, ‘Pick-up point’, etc.
- To analyse data segment-wise e.g. pick-up point wise or timeslot wise analysis.
- To analyse demand supply gap

UBER SUPPLY- DEMAND GAP ANALYSIS

DATA UNDERSTANDING

- **Collect Data**
- **Explore data**

Read Document: Uber Request Data.csv

The available data provides the following details for five weekdays from 11/06/2016 to 12/06/2016 about trips to and from Airport/ City:

There are Six Attributes of each request made by customer:

- **Request Id:** Unique Id for each request made by customer
- **Time of Request:** The date and time at which the customer made the trip request
- **Drop-off time:** The drop-off date and time, in case the trip was completed
- **Pick-up point**: The point from which the request was made
- **Driver id:** The unique identification number of the driver
- **Status of the request:** The final status of the trip, that can be either completed, cancelled by the driver or no cars available

DATA CLEANING & PREPARATION

- Identify data quality issues – Time of Request and Drop-off time needs uniform formatting
- Clean the data – Check for duplicate or missing values
- Derive new variables –
  - Derive day, time for each requests made by customer.
  - Derive Time slots through out the day for every requests made by customer.

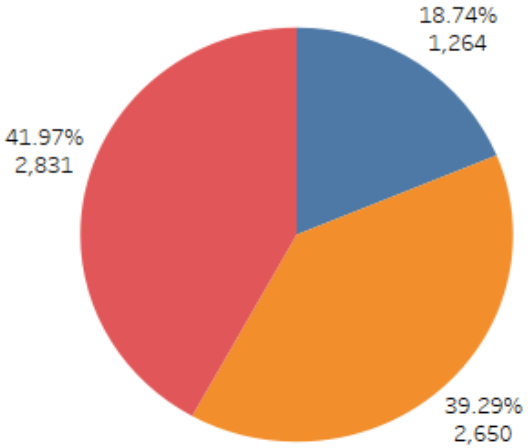
DATA ANALYSIS & VISUALISATION

- Identify the problem:
  Finding number of cancellation or non-availability of cars and finding the cause through out the day.
- Finding demand supply gap during different time-slots through out the day and from different pick-up points.

UBER SUPPLY- DEMAND GAP ANALYSIS

TRIP STATUS ANALYSIS

Univariate analysis of Trip Status shows us that 39.29% of total requests are unsuccessful due to Non-availability of Cars. 18.74% trips get cancelled. Thus making more than 50% failed trips.
That's a major concern.

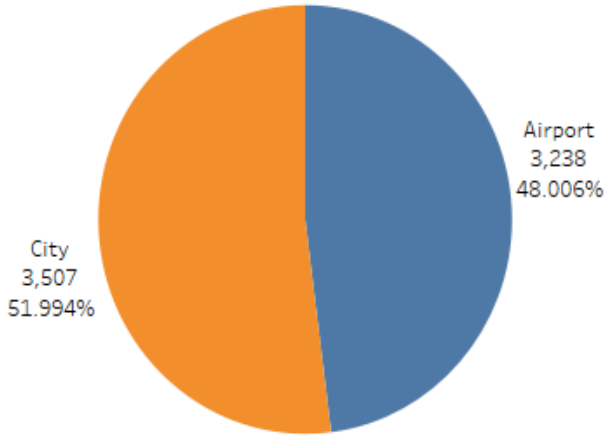


Total Number of Requests
6,745

Status
Cancelled
No Cars Available
Trip Completed

PICK-UP POINT ANALYSIS

Univariate analysis of Pick-up points shows that number of requests for trip to and from Airport/ City are more or less similar.



TOTAL NUMBER OF PICKUP REQUESTS
6,745

Pickup.point
Airport
City

UBER SUPPLY- DEMAND GAP ANALYSIS

Bivariate analysis of number of trip requests and trip status provide the following

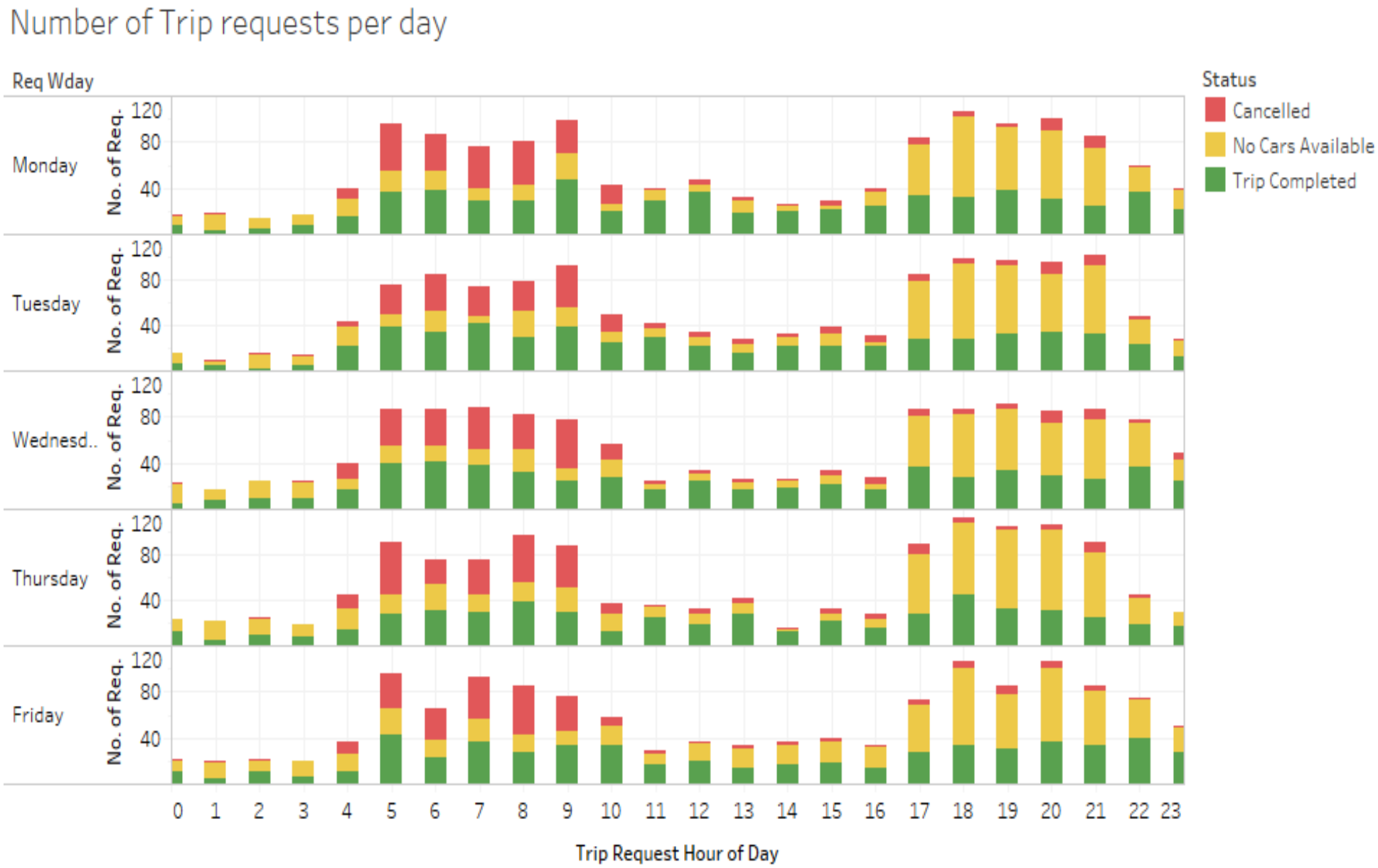
Observations:

1. **Maximum Trip requests** were made during 'early morning‘ and 'late evening‘ hours.

2. Maximum Trip requests were **cancelled** during the **early_Morning** hours.

3. Maximum **non-availability of cars** can be observed during **Late_Evening** Hours.

4. Similar trends are observed for all five weekdays.



UBER SUPPLY- DEMAND GAP ANALYSIS

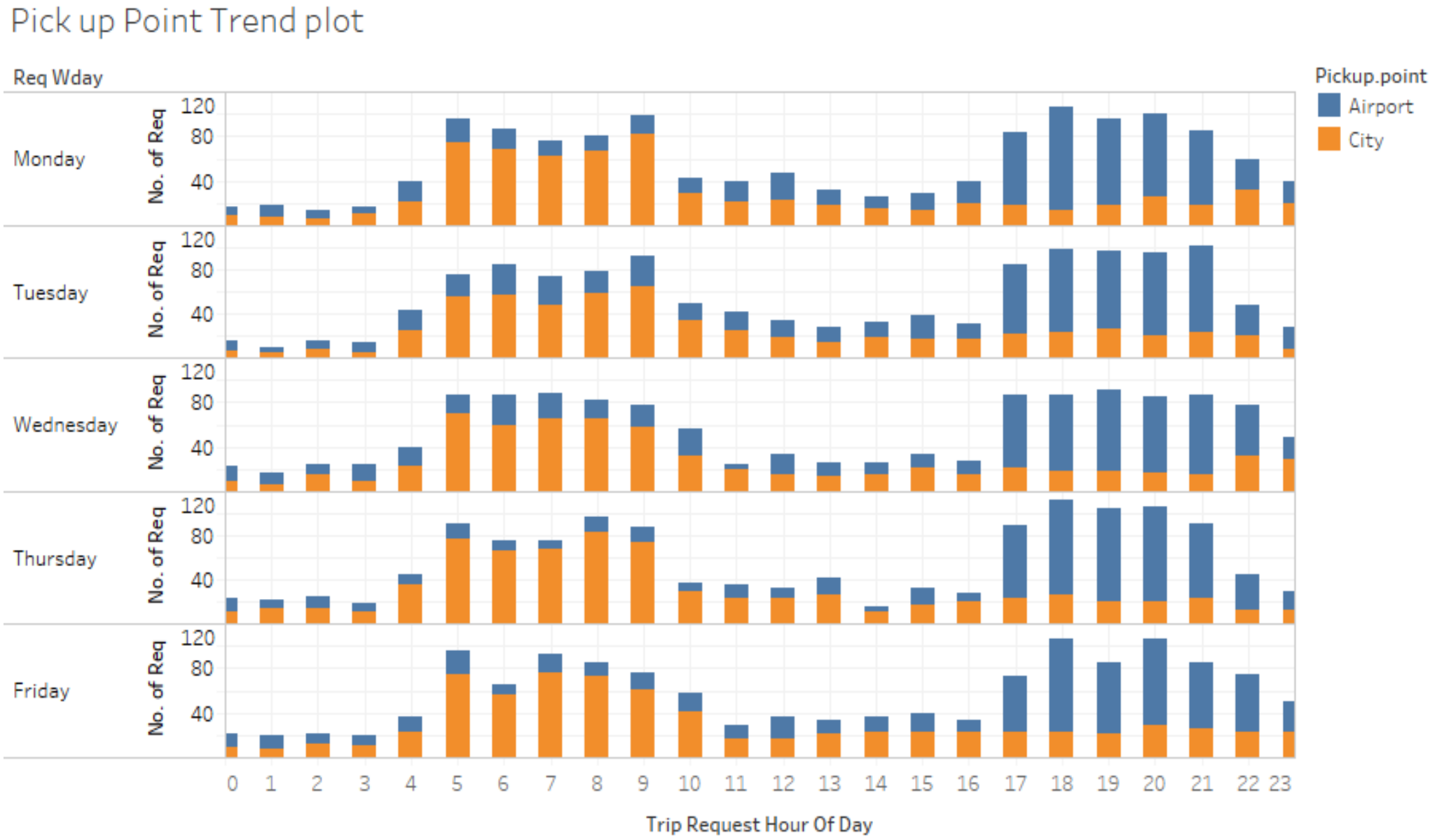
Bivariate analysis of number of trip requests and trip pick-up point provide the following

Observations:

1. Maximum Trip requests were made from **city** to airport during **'early morning'** hours.

2. Maximum Trip requests were made from **Airport** to city during the **Late_Evening** Hours.

3. Similar trends are observed for all five weekdays.



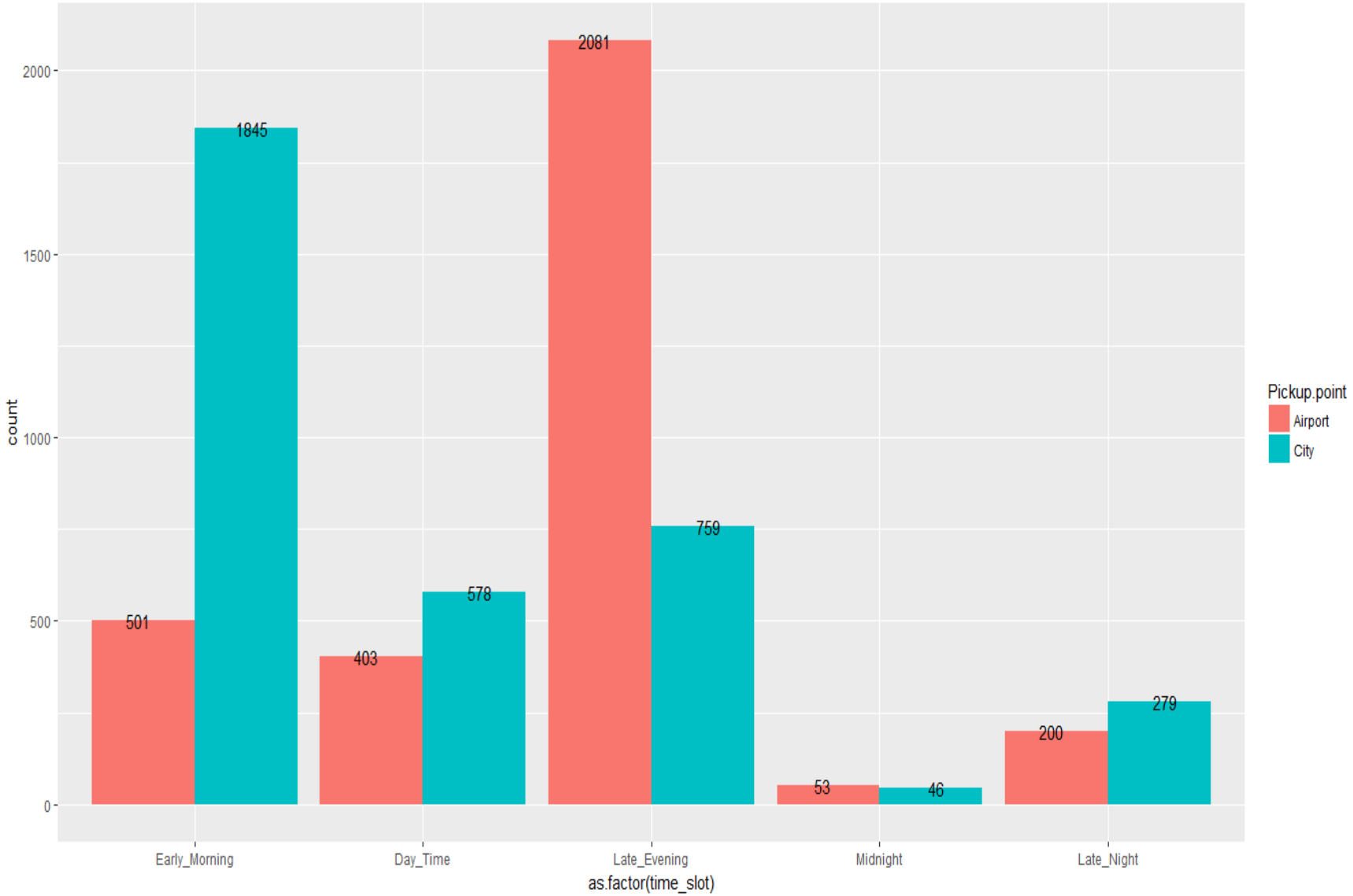
UBER SUPPLY- DEMAND GAP ANALYSIS

Before problem Analysis, an important point to note for Business development:

Early_Morning hours and **Late_Evening** hours are the Peak business hours.

Time slots have been allotted through out the day as following:

- After 12am till 4am : Late_Night Hours
- After 4am till 11 am : Early morning Hours
- After 11 am till 4pm : Day time
- After 4 pm till 11 pm : Late_Evening Hours
- 12 am: Minight

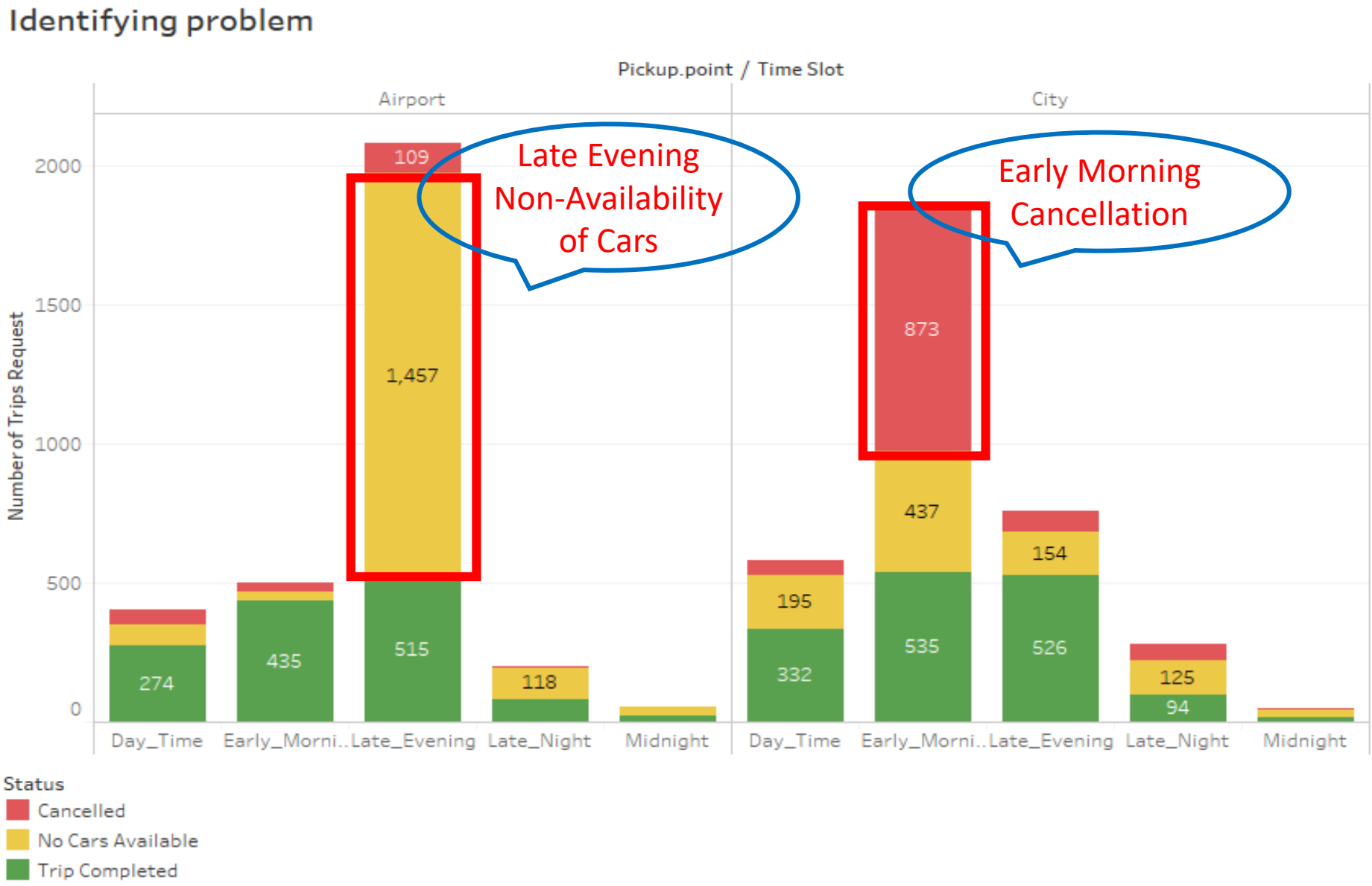


UBER SUPPLY- DEMAND GAP ANALYSIS

Identifying the major Problems:

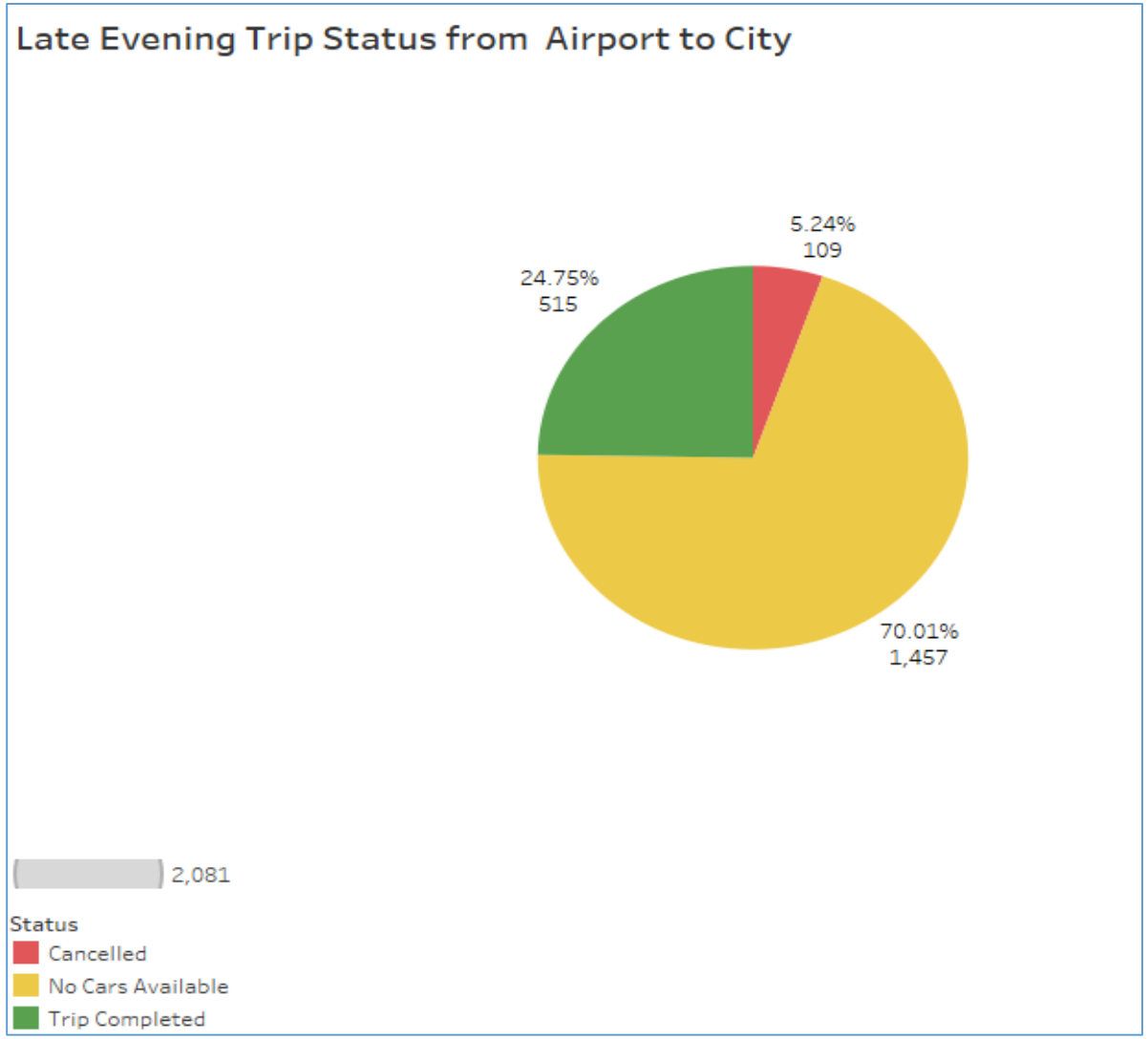
1. **Non-availability of Cars during Late_Evening hours, specially in case of airport to city trips.**

2. **Early_Morning Trip Cancellation, specially in case of city to airport trips**



UBER SUPPLY- DEMAND GAP ANALYSIS

Problem 1 Analysis: Non-availability of cars during Late Evening – Segmented Analysis



Non-availability of cars during Late Evening

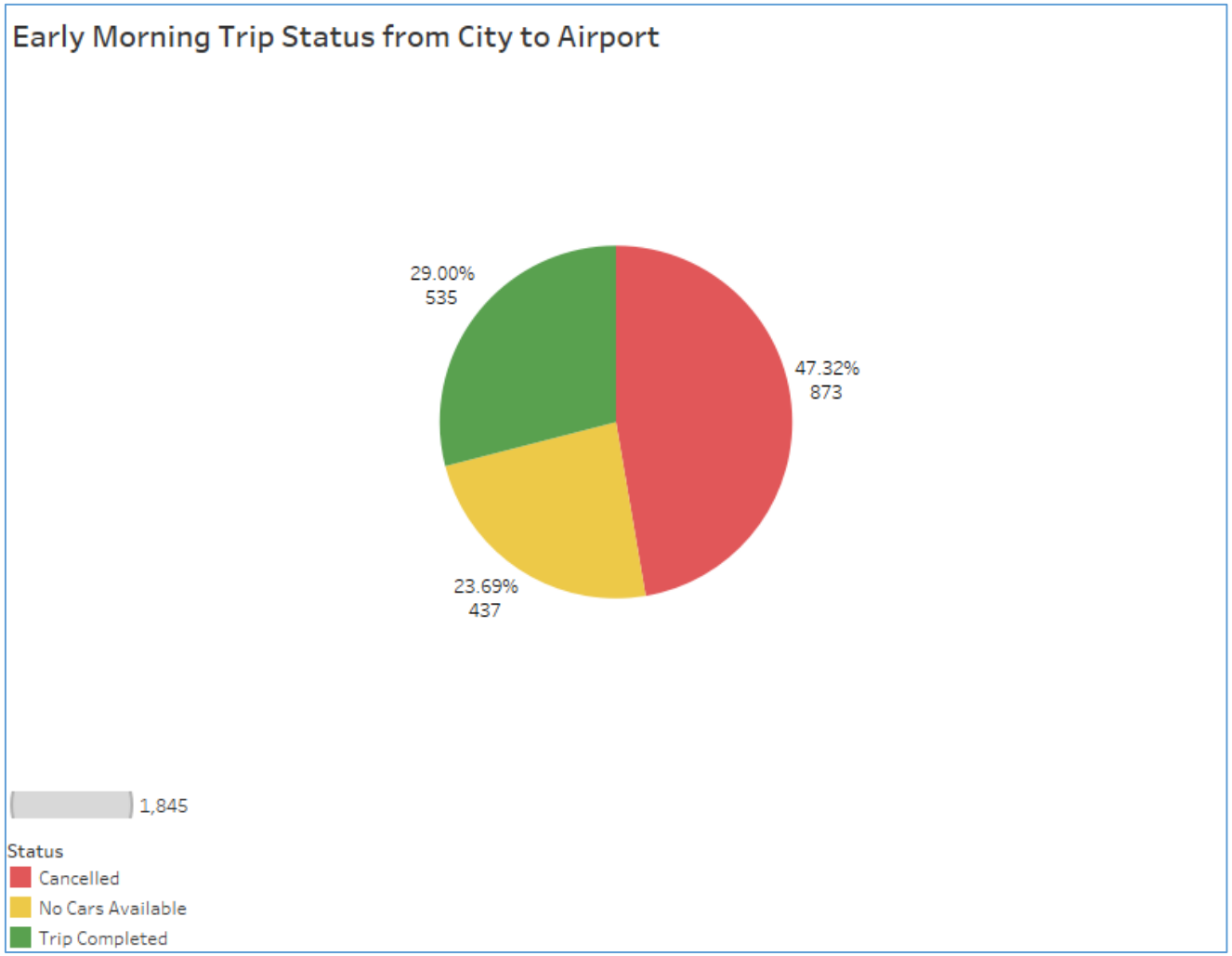
70.01% Trip requests failed due to non-availability of Cars at Airport.

Demand: Total Number of requests during late-Evening from Airport was recorded as 2081.

Supply: Only 515 trips were completed.

UBER SUPPLY- DEMAND GAP ANALYSIS

Problem 2 Analysis: Early Morning Cancellation – Segmented Analysis



Early Morning Cancellation:

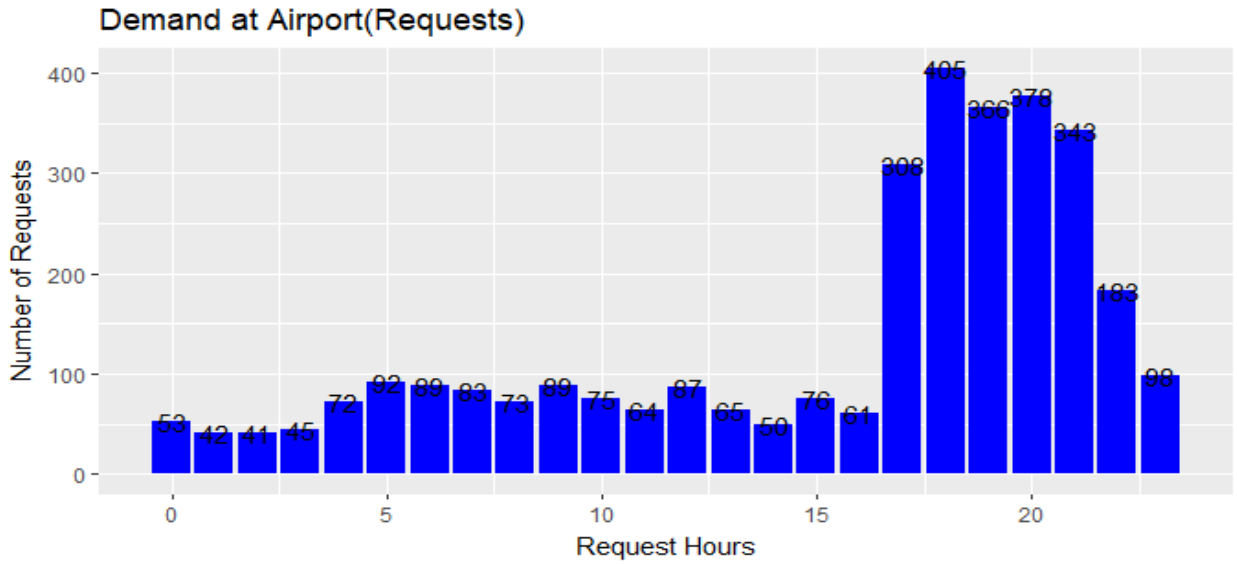
Early Morning Trip Cancellation from city to airport is 47.32%

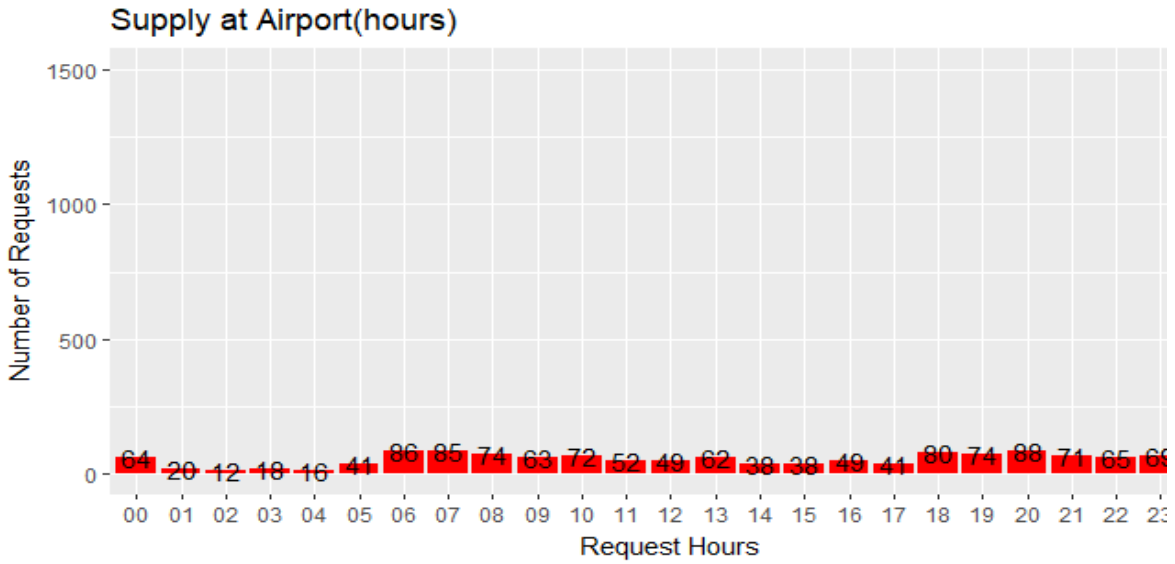
Demand: Total Number of requests is 1845.

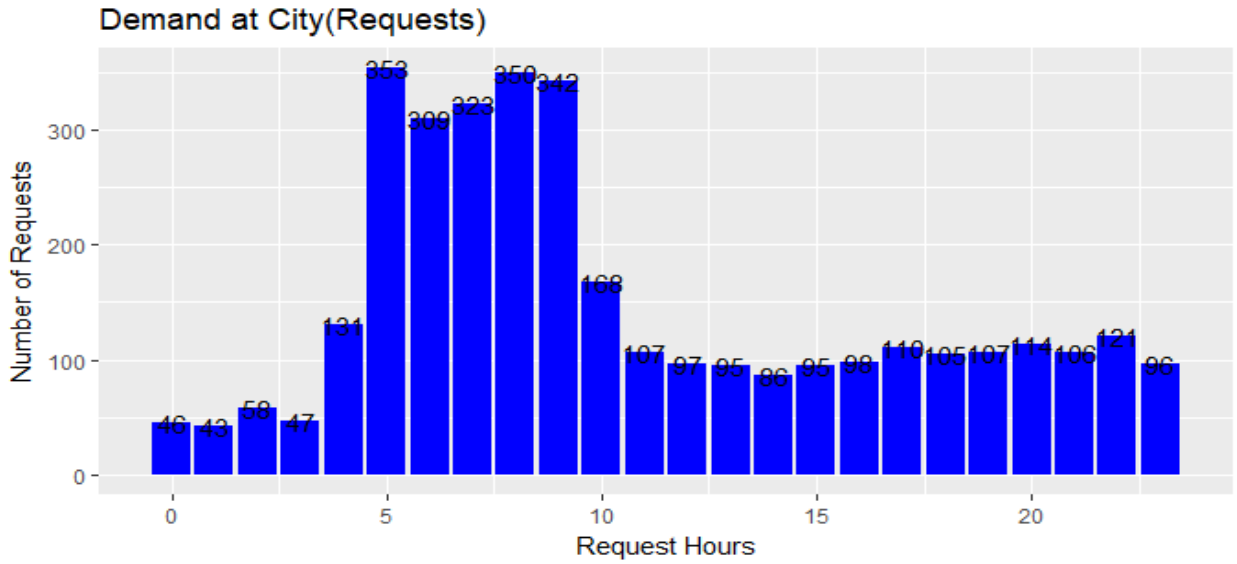
Supply: Only 535 trips were completed.

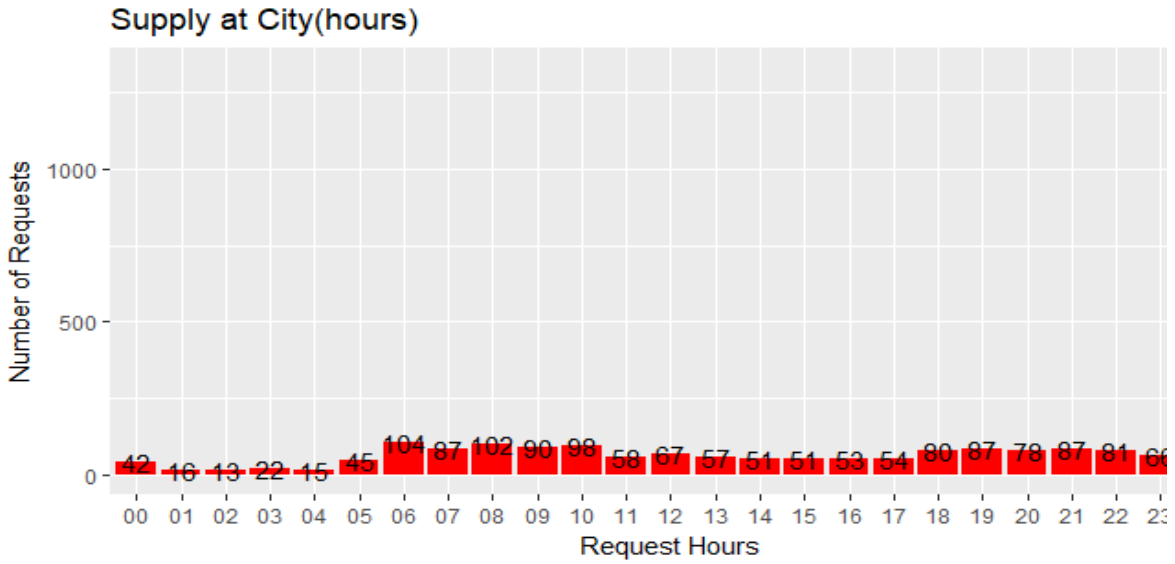
UBER SUPPLY- DEMAND GAP ANALYSIS

Demand Supply Gap at Airport and City









UBER SUPPLY- DEMAND GAP ANALYSIS

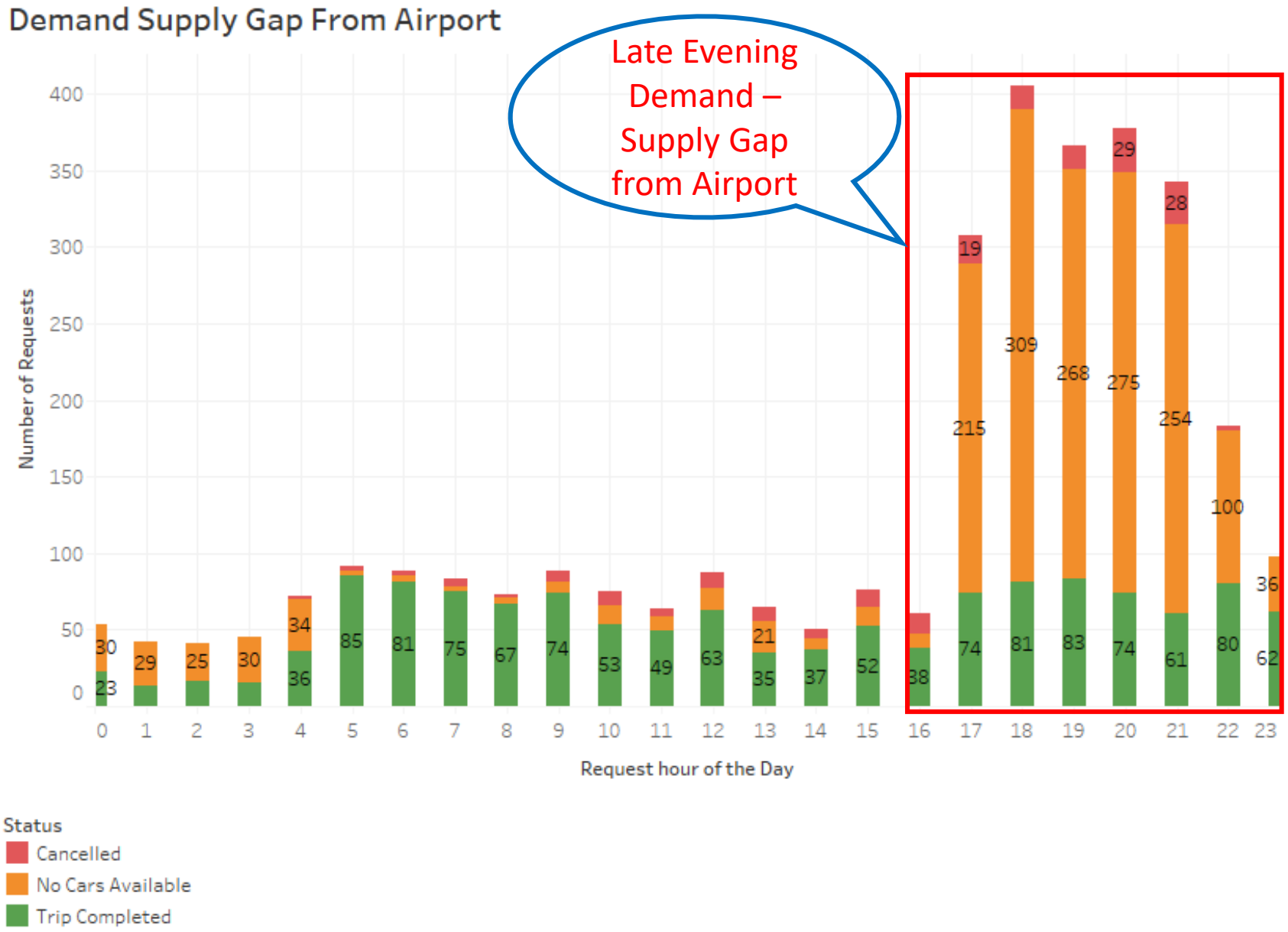
Maximum demand Supply Gap

Trips from Airport to City during Late Evening

From the data, it can be observed that maximum Demand Supply gap is for Airport To City Trips during The late evening hours of the day.

Total 1566 requests were unsuccessful from 4:00 pm to 11:00 pm

This may be due to non-availability of cars at the Airport during late evening Hours.



UBER SUPPLY- DEMAND GAP ANALYSIS

Probable cause and Recommendations

Addressing PROBLEM 1: Non-availability of cars during Late Evening at Airport

Probable Cause:

1. Less people coming to Airport during late evening hours. So, cars are not reaching airport in adequate numbers. Hence nearby airport, cars not available
2. Cars avoid going to airport for heavy traffic during after-office-hours. They might prefer short trips within the city.

Recommendation:

1. To ensure an increase in supply at the airport, drivers can be given a bonus to complete a trip from the airport in the evening.
2. Uber can also ask an adequate number of drivers to come to the airport without a passenger. They can wait at airport for accepting trip requests.
3. Pool rides of passengers from Airport to be promoted more and implemented so that lesser number of cars can serve more passengers.

Addressing PROBLEM 2: Early Morning Cancellation from City

Probable cause:

1. Long Waiting Time
2. Driver not responding in time

Recommendation:

1. To ensure that less number of trips are cancelled, passengers can be given a bonus for each trip they complete from the city to the airport in the early morning or can be fined if cancelled before a minimum waiting time.
2. Uber can make strict rules for on-time response of drivers to a passenger.
3. Uber can increase the supply of cars in city to reduce waiting time for the passengers

THANK YOU