UBER Case Study

Submitted by:

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Business Understanding and Introduction

- Uber Technology Inc. is a peer to peer ride sharing, taxi cab, food delivery and transport network company.
- Headquarters in ***San Francisco, California***.
- Currently operating in 633 countries.
- Its platform can be accessed via ***Website*** and ***Mobile app***.
- ***Industry*** : Transportation, Delivery (commerce)
- ***Service*** : Vehicle for Hire, Delivery (commerce)

*Information courtesy : Wikipedia

Problem and Goal Analysis

Problem:

- Customers are experiencing inconvenience due to request cancellation and no car available response for their requests.

Goals:

- The goal of the analysis to find the root cause of the problematic situation.
- Recommend ideas to improve customer experience and business profits

Data Understanding

Data Source: Data is provided by ***Uber Inc.*** and is in ***.csv file*** format.

Data Understanding: Data file contains the columns with following attributes.

- ✓ Request Id
- ✓ Pickup point
- ✓ Driver Id
- ✓ Status
- ✓ Request Timestamp
- ✓ Drop Timestamp

Assumptions and Demarcations

Assumptions:

- The status '**Cancelled**' is only shown when the drivers cancel the trip. There is no technical glitch in the software.
- The status '**No Cars Available**' appears when the software or server fails to find any ride or cab in the vicinity of the requester.
- Request raised by the Customer will be termed as **Demand** irrespective of their final status.
- Request that gets responded and results in '**Trip Completed**' status will be termed as **Supply**.
- Request that have final status as **Cancelled** or **No Cars Available** will not be counted under **Supply**.

Demarcations:

- Data is limited to 5 working days only.
- Only trips from airport to city and city to airport are considered.

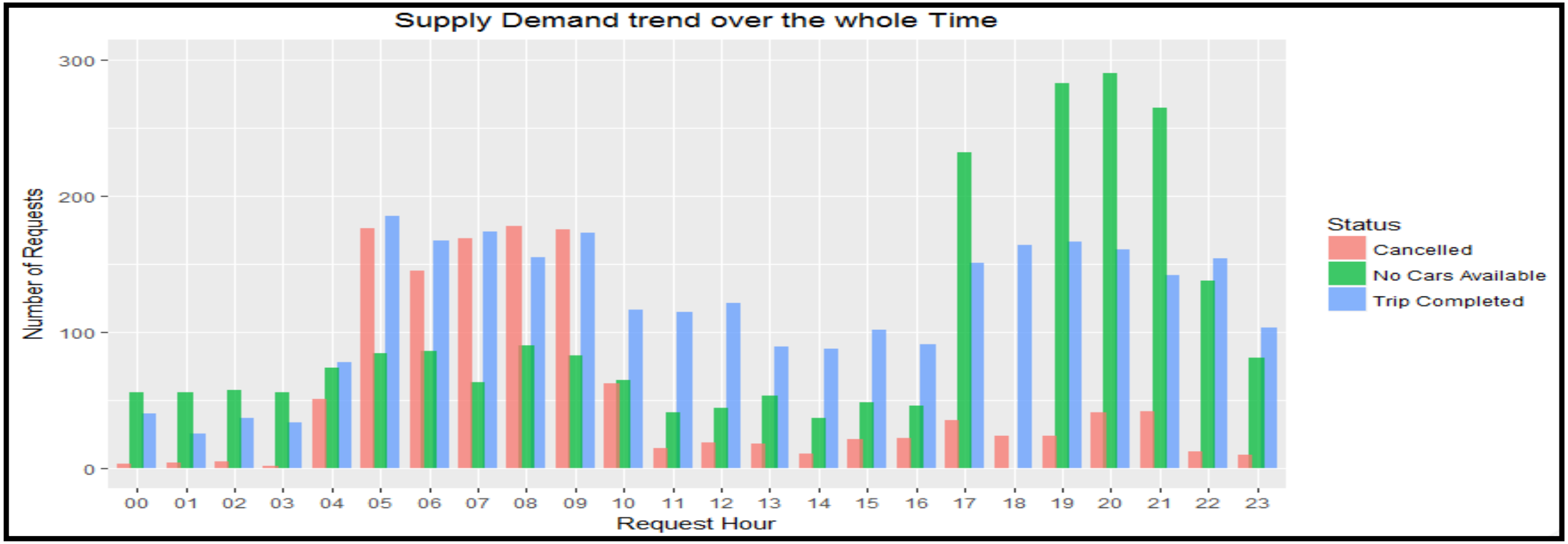
Methodology

The whole case study is divided in to four check points:

Milestones	Operations Performed	Methodology/ Tools used
Check Point 1	• Data Preparation: This includes Data Cleansing and Formatting. • Separate 'Request Time' from 'Request timestamp' column • Extract 'Request Hour' from 'Request Time'	▪ Lubridate Package, ▪ Tidyr Package, ▪ Stringr Package, ▪ Dplyr Package, ▪ Derived Matrices.
Check Point 2	• Visually identify the frequency of requests in cancelled and No cars available status	▪ Univariate analysis, ▪ Segmented Univariate analysis.
Check Point 3	• Visually analysis Demand and Supply gap for: Airport to City & City to Airport	▪ Univariate analysis, ▪ Segmented Univariate analysis.
Check Point 4	• Result Analysis Recommendations and Conclusion	▪ Based on plots derived from the above analysis.

Visualizing the whole data

Plot No :- 1

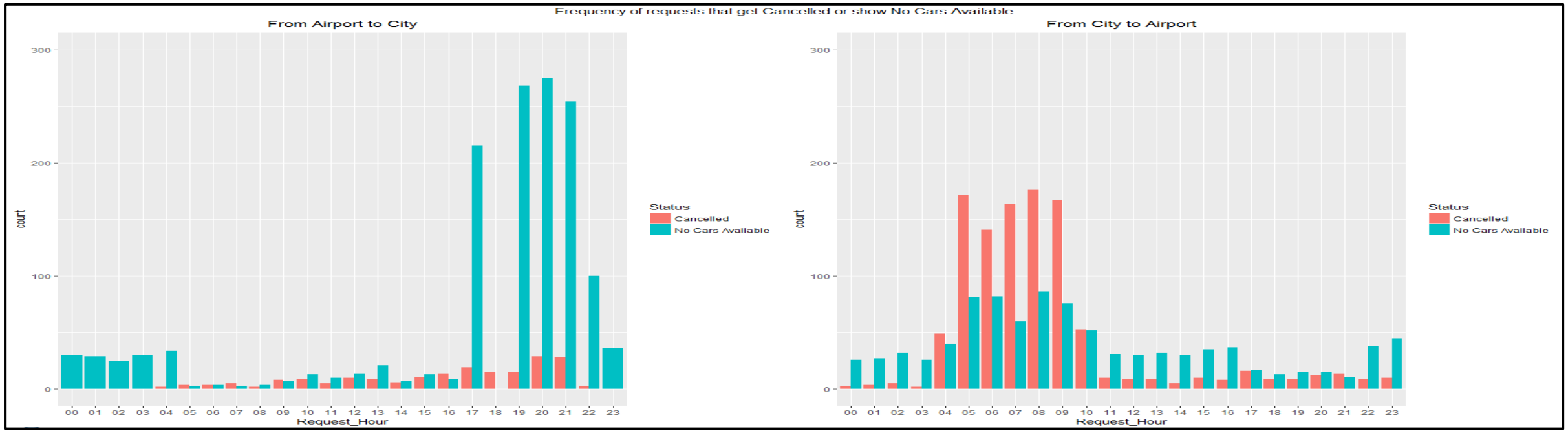


Plotting and visualizing the whole data:

- ✓ It is clearly evident that there is a problem of demand and supply across the day.
- ✓ The ***Pink bar*** represents the 'cancelled' trips, ***Green Bar*** represents 'no cars available' whereas, ***Blue Bar*** represents 'trip completed'.

Demand with Cancelled and No Cars Available status

Plot No :- 2



In Evening:

Problematic pickup point:
- Airport to City

Problematic type of request:
- No Cars Available

Problematic Time slot:
- From 5 p.m. to 10 p.m.

In Morning:

Problematic pickup point:
- City to Airport

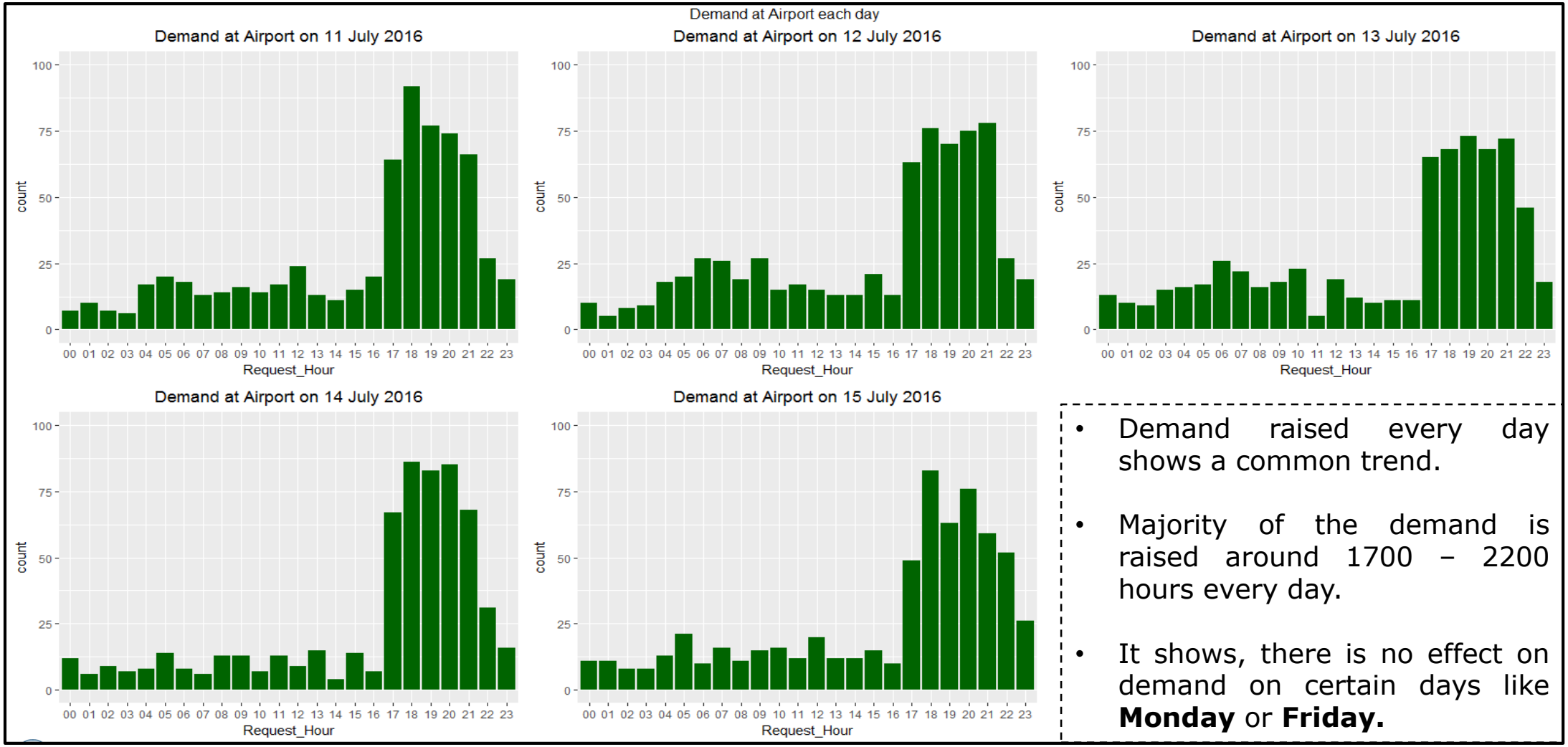
Problematic type of request:
- Cancelled

Problematic Time slot:
- From 4 a.m. to 10 a.m.

Thus the most problematic time slot is in the evening till late night when No cars Available status is observed.

Daily demand raised at Airport

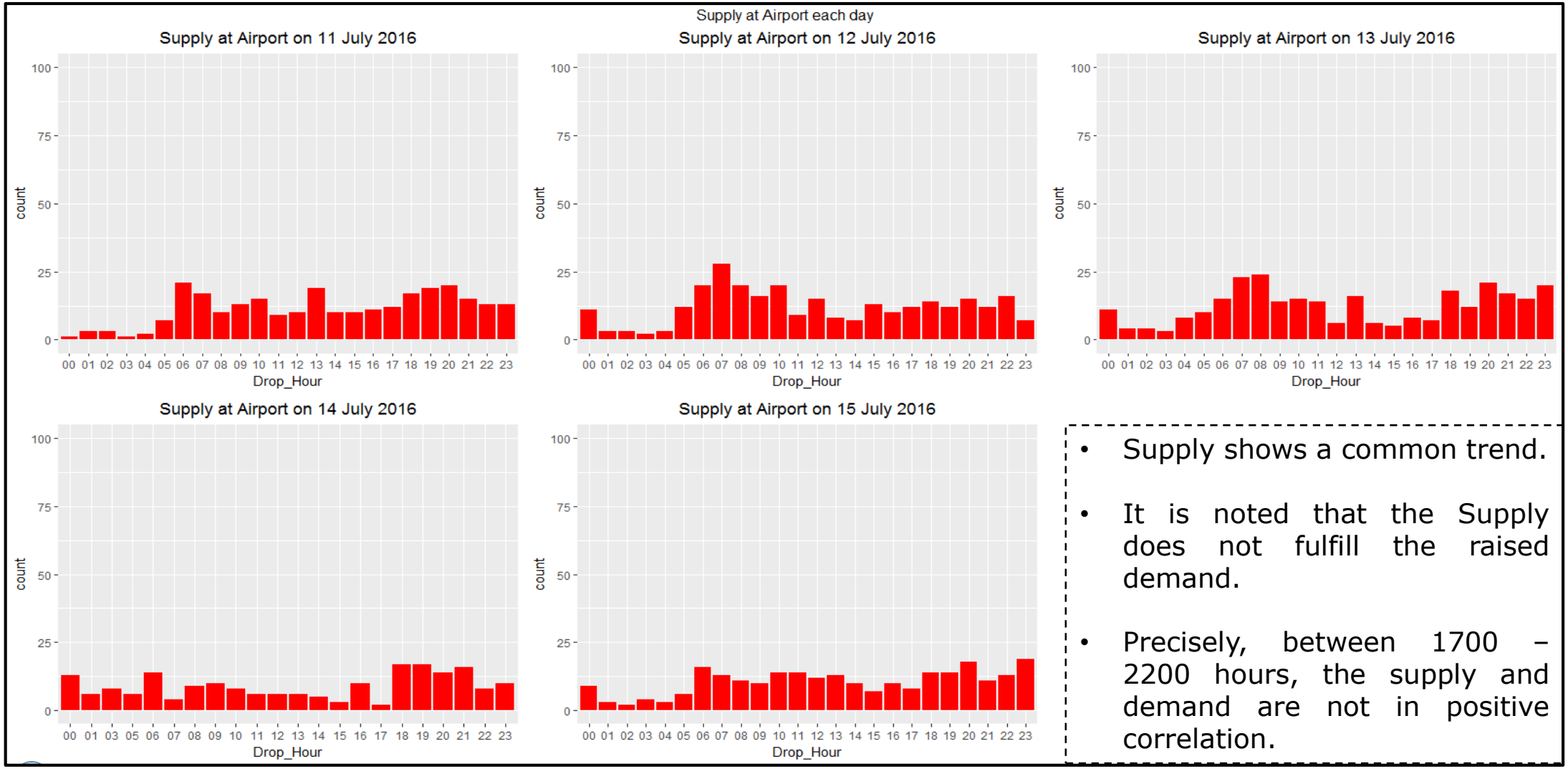
Plot No :- 3



- Demand raised every day shows a common trend.
- Majority of the demand is raised around 1700 – 2200 hours every day.
- It shows, there is no effect on demand on certain days like **Monday** or **Friday.**

Daily supply at Airport

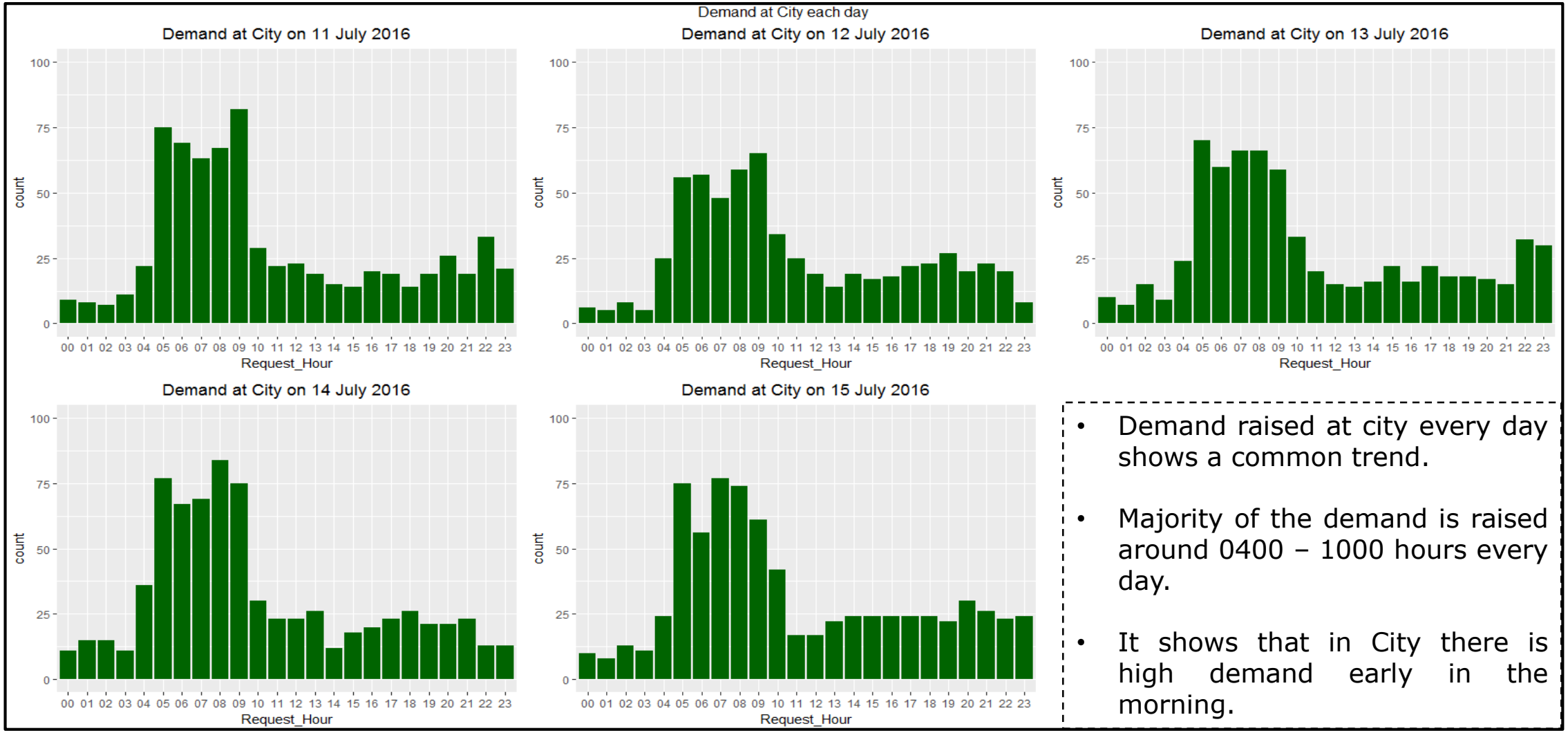
Plot No :- 4



- Supply shows a common trend.
- It is noted that the Supply does not fulfill the raised demand.
- Precisely, between 1700 – 2200 hours, the supply and demand are not in positive correlation.

Daily demand raised at City

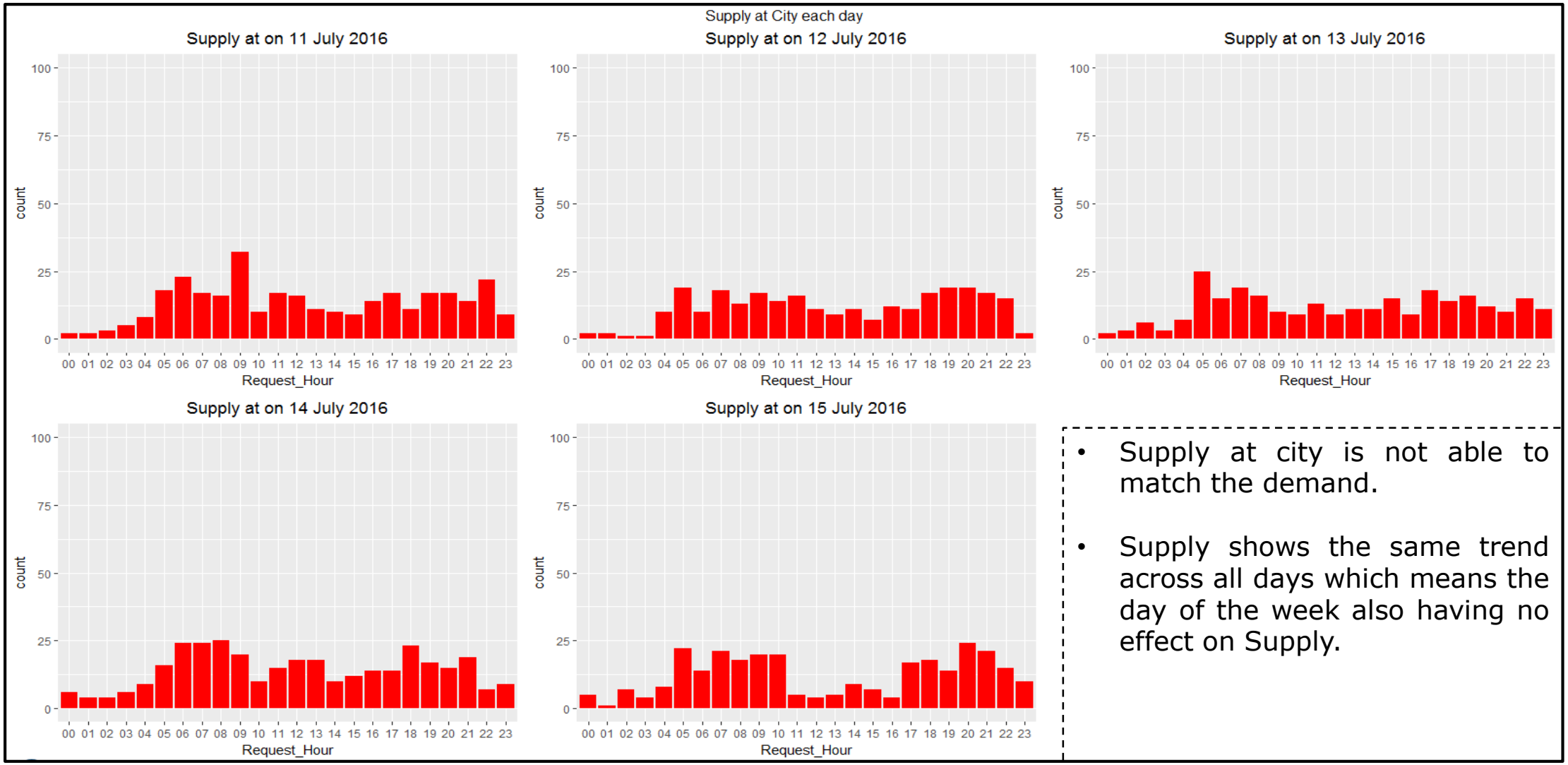
Plot No :- 5



- Demand raised at city every day shows a common trend.
- Majority of the demand is raised around 0400 – 1000 hours every day.
- It shows that in City there is high demand early in the morning.

Daily supply at City

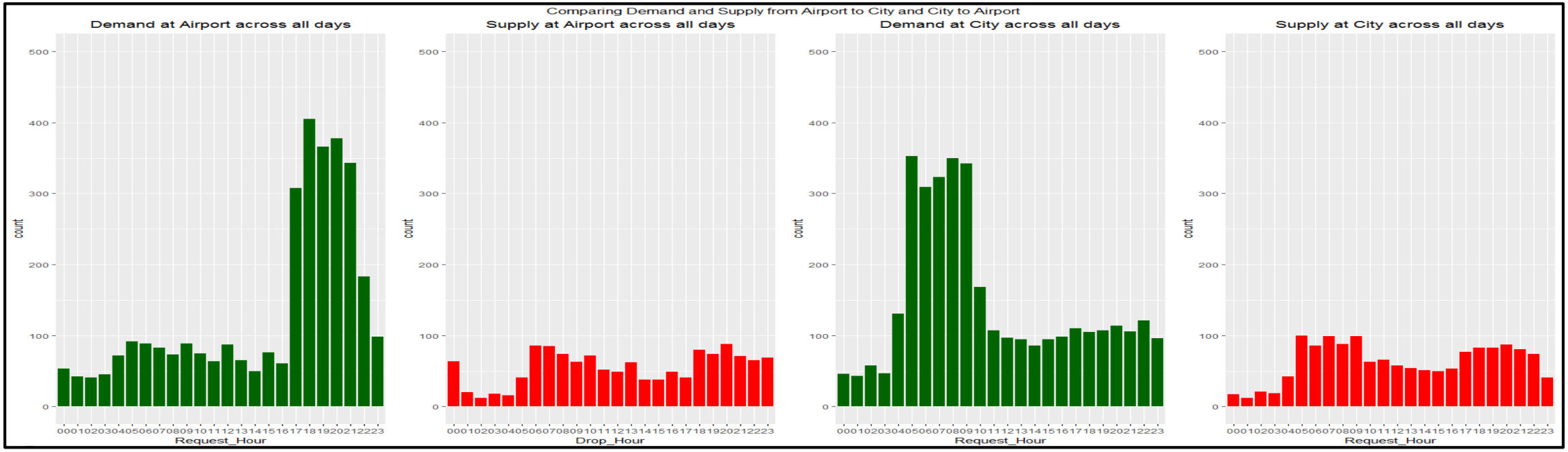
Plot No :- 6



- Supply at city is not able to match the demand.
- Supply shows the same trend across all days which means the day of the week also having no effect on Supply.

Compare Demand and Supply

Plot No :- 7



- Combining ***Demand*** and ***Supply*** for all the days into one plot for different pick up points.
- This plot shows a huge gap between the demand and supply at Airport and City during peak hours.
- As explained earlier, demand is high in the evening-till-midnight at ***airport***, and high in the early hours of the morning in the ***city***.
- Whereas, the supply remains more or less constant irrespective of the demand during the day except for post midnight hours 0100-0400 when the supply dips down significantly.

Analysis and Conclusions

1. High demand of cabs in the morning at city, may be due to high number of flights taking off in the morning (Plot no:7).
2. Similarly, high demand of cabs in the evening at airport could be due to high number of arriving flights (Plot no:7).
3. This particular high demand of trips from city to airport and back can be held responsible for ***Cancellation*** and ***No car Availability*** status.
4. It can be observed that most of the drivers start accepting trip requests by 0500 hours early morning, due to which there are high percentage of trips with ***No Cars Available*** status at city as well as at airport ***till 0500 hours*** (Plot no:2).
5. Further after 0500 hours, considerable volume of trips get ***cancelled,*** which depicts that drivers seem unwilling to take trips at start of their day from ***city to airport*** fearing non-availability of return trips from the airport at the given time (Plot no: 2).
6. It can be presumed that drivers do not prefer to wait for the trips in the areas nearby airport. In fact they prefer to make short and multiple trips within the city, leading to ***No cars availability*** at airport from 1700-2300 hours (Plot no: 2).

Recommendation

1. In order to resolve No car available issue, increasing the number of cars can be termed as the prime solution.
2. To address the Cancelled strip issue, drivers can be given more incentive for the trips between 0400 – 0900 hours from city to airport.
3. Same can be applied for the trips from airport to city between 1700 – 2300 hours.
4. Drivers can be asked to work in shifts (i.e. early morning shifts and late night shifts), obviously with higher incentives.
5. Dedicated airport transport to and fro from the city, in order to serve constant demand irrespective of any given hour of the day.