

UBER SUPPLY-DEMAND GAP ASSIGNMENT

SUBMISSION

Business objectives and Data Exploration

Business Objectives

- The aim of analysis is to identify the root cause of the problem
- Providing root cause for the problems
- Recommend ways to improve the situation

Data Exploration

Data set contains only 6 attributes which only includes the trips to and from the airport

- Request id: A unique identifier of the request
- 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

Date Cleaning and preparation

1. Total number of records in dataset : 6745
2. Check Duplicates and NaN values in dataframes
3. Converting Date columns to supported date timestamp format (i.e Request timestamp, Drop timestamp)

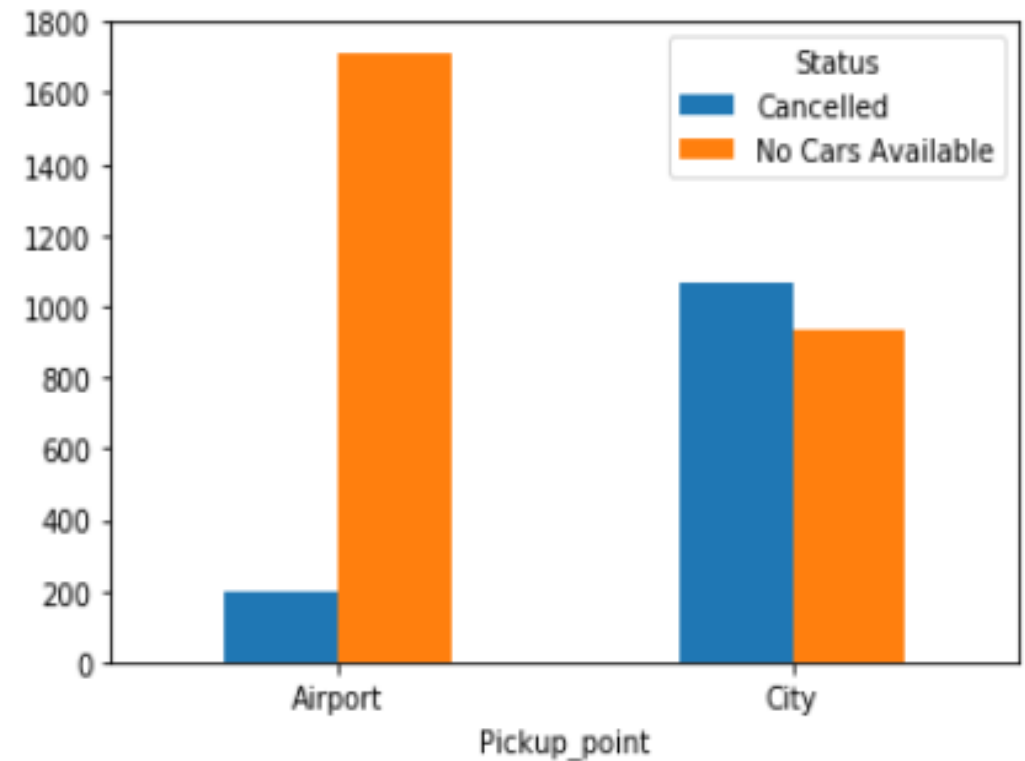
Ex: Original date format 15-07-2016 23:55:00

Converted date format 2016-07-15 23:55:00

4. Deriving the Derived metrics from Request timestamp and Drop timestamp (i.e Request_Date, Request_Hour, Drop_Date, Drop_Hour) for further analysis.
5. NaN values in Drop_Hour derived metric changed to None type to easy and convenient analysis.

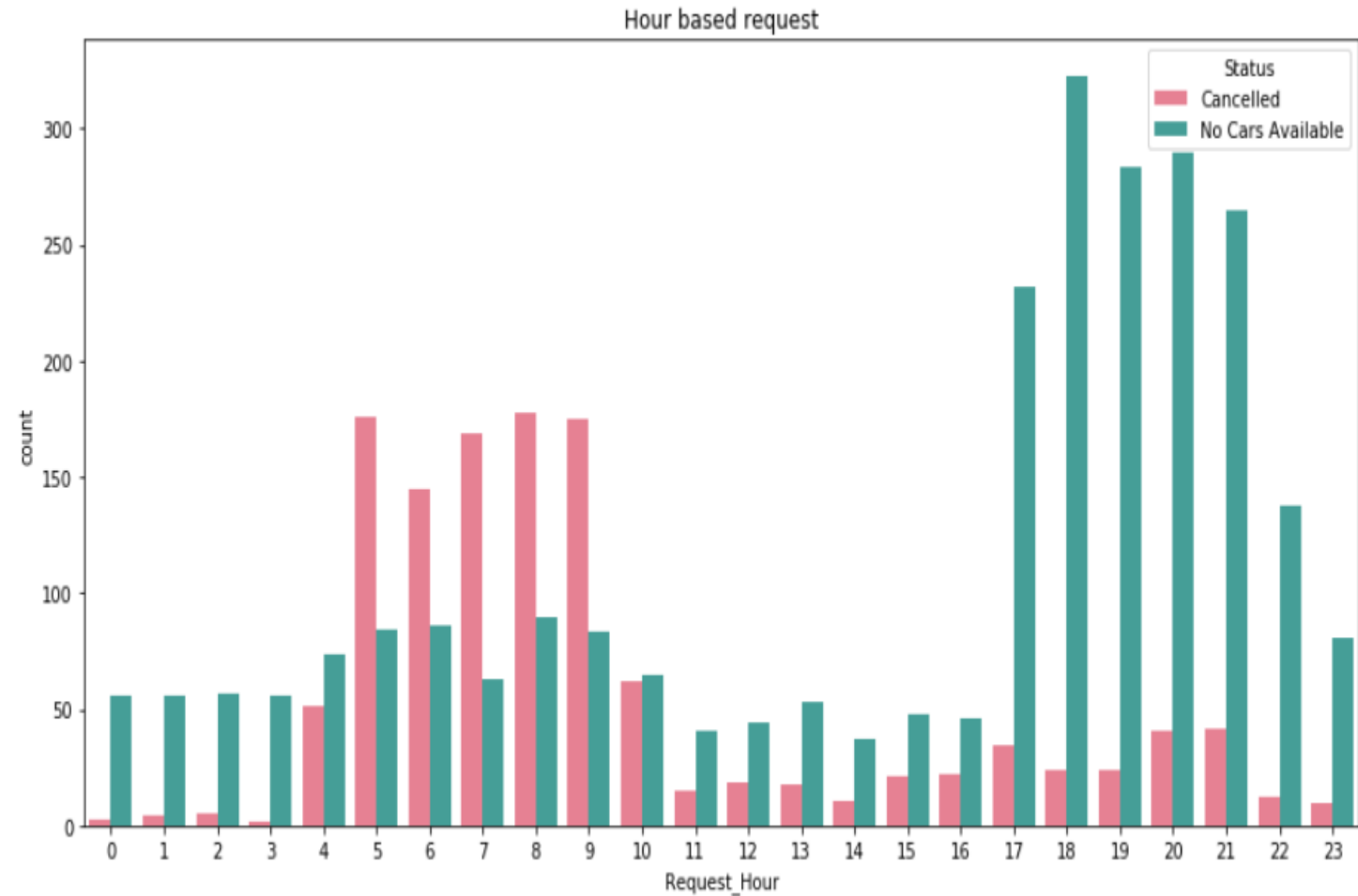
Identify the most problematic types of requests

- Identify the most problematic type of request whether airport-city or city-airport getting cancelled and no cars available.
- ‘No cars available’ Status is more in Airport-city route, and ‘Cancelled’ status is more in City-airport route.



Hour based request status

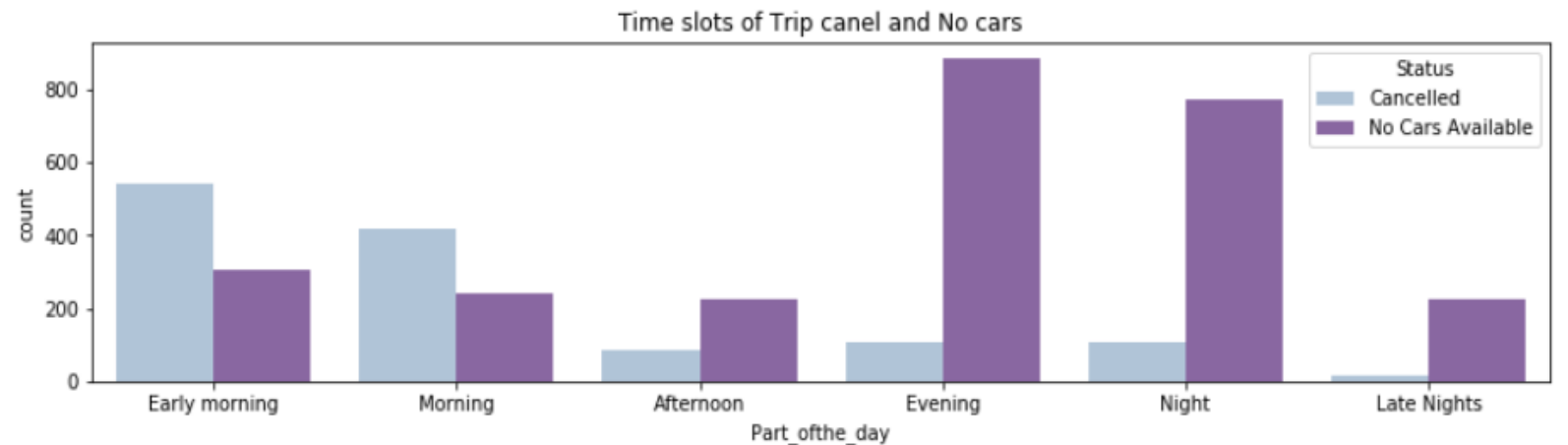
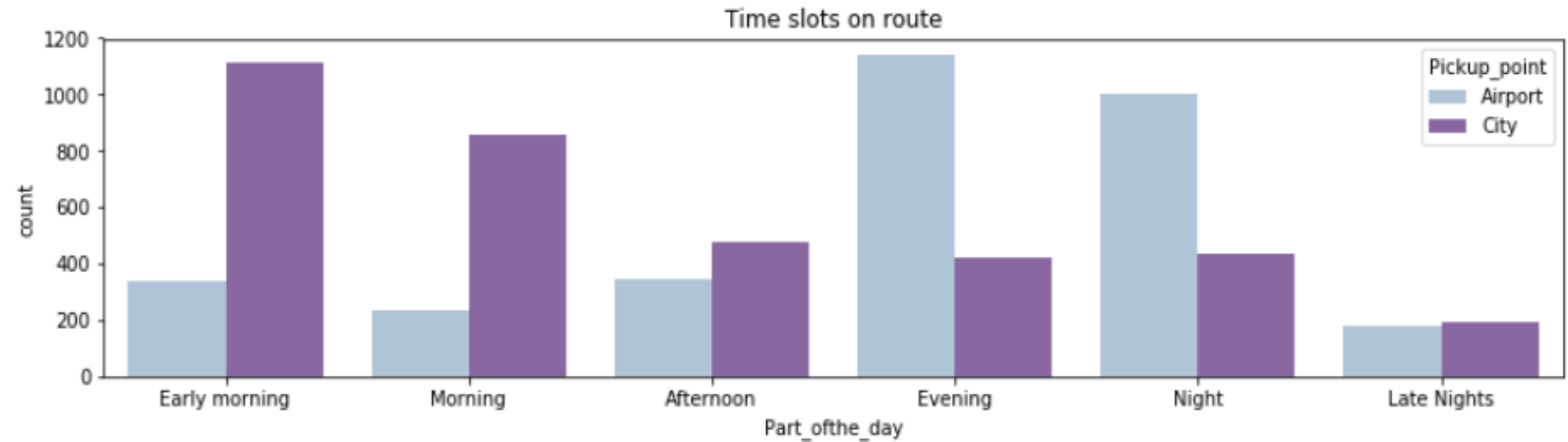
➤ Identifying in detailed request status whether 'cancelled' and 'no car available' on hourly basis with over all request_id's



Identifying the Timeslot of problematic request

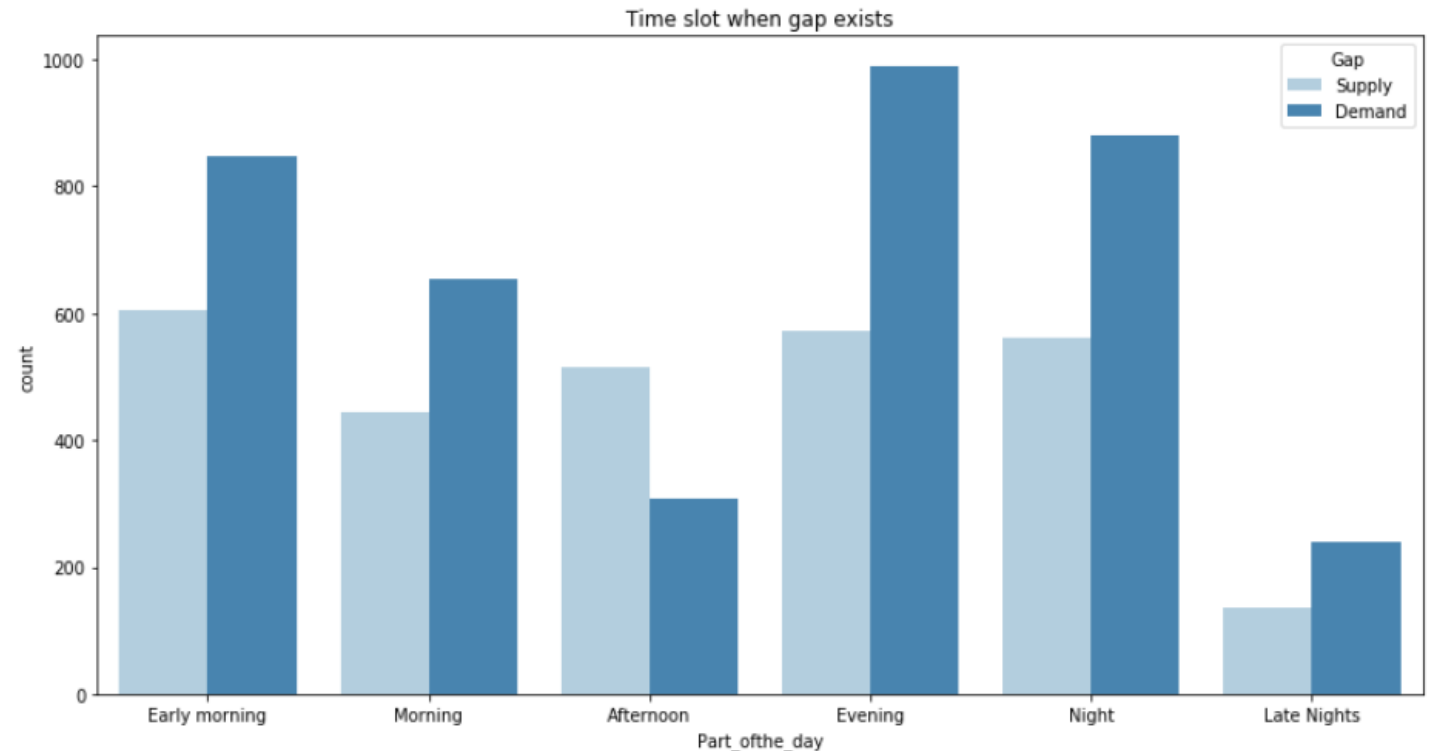
Divide the day into parts of the day

- Early morning : 4-7
- Morning : 7-11
- Afternoon : 12-15
- Evening : 16-19
- Night : 20-23
- Late Nights : 0-4



Identifying Supply-Demand on Time slot

- Identifying Supply-Demand on timeslot (i.e Parts of the day), here
 $\text{Supply} = \text{Trips Completed}$
 $\text{Demand} = \text{Cancelled} + \text{No cars available}$
- It clearly shows in all Time slots expect Afternoon times there are more demand Comparative with supply

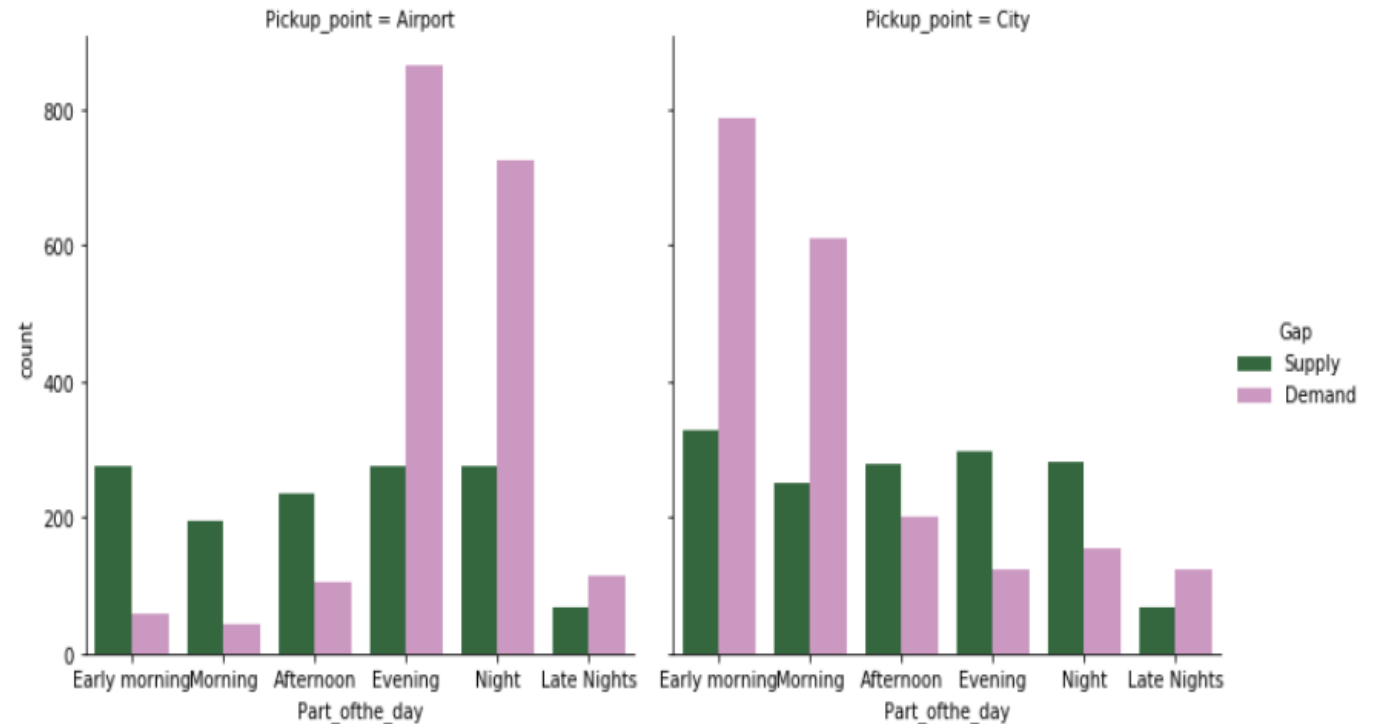


Drilling more on supply-demand

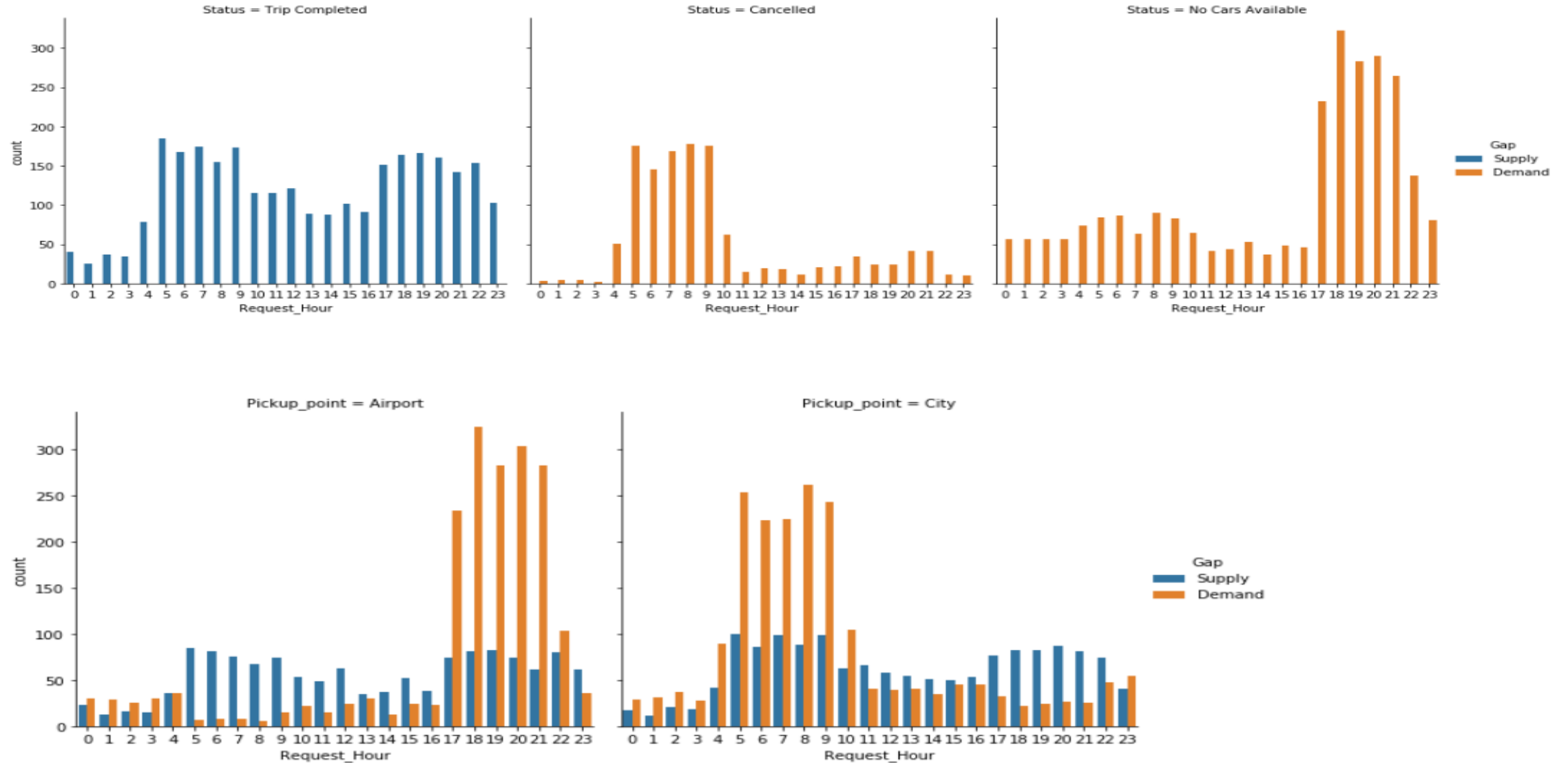
When we drill down more on supply-demand towards on the routes, it clearly shows us

Airport-city : Huge demand in Evening and Nights (75%) and little less on Late night time.

City-Airport : Huge demand (50% - 60%) in Early mornings, Mornings only.



A deep analysis with hourly basis w.r.t Route and Gap



Observations

Supply – Demand :

There is huge supply – Demand gap on the both the routes (i.e Airport-city and city-airport)

Airport-city : Huge demand in Evening and Nights (75%) and little less on Late night time.

City-Airport : Huge demand (50% - 60%) in Early mornings, Mornings only.

Reasons:

1. One of the reason for huge demand from Airport to city would be, in both evenings and nights there may be trips where pickup point and dropping point would be city to city, a near by area in the city itself and therefore the both the timeslots would be a rushing trips only in City itself or they may struck in traffic.
2. Second reason would be drivers would struck at airport because there are no return pickups from airport, so there are huge demand in Early hours and morning rushing hours to city.
3. There may less number of cabs or cab drivers.

Recommendations

1. It would be better to maintain more cabs for Airport-city at Evening and Nights and for City-Airport at Early mornings, Mornings to meet the supply target.
2. We are not sure whether Driver have target or not, if Uber implement target based trips or distance based trips there may be a less chances to cancel the trip by driver and more chances to get business to Uber.
3. Along with Targets, Uber should implement incentives for each trip and Exclusive demand route trip i.e Airport-city at Evening and Nights and for City-Airport at Early mornings, Mornings, so that Uber will get increase its business and drivers also will get benefit along with that they will have interest to drive more.
4. Uber should permit driver to leave Airport without return passenger but not so long distance.