UBER SUPPLY DEMAND GAP

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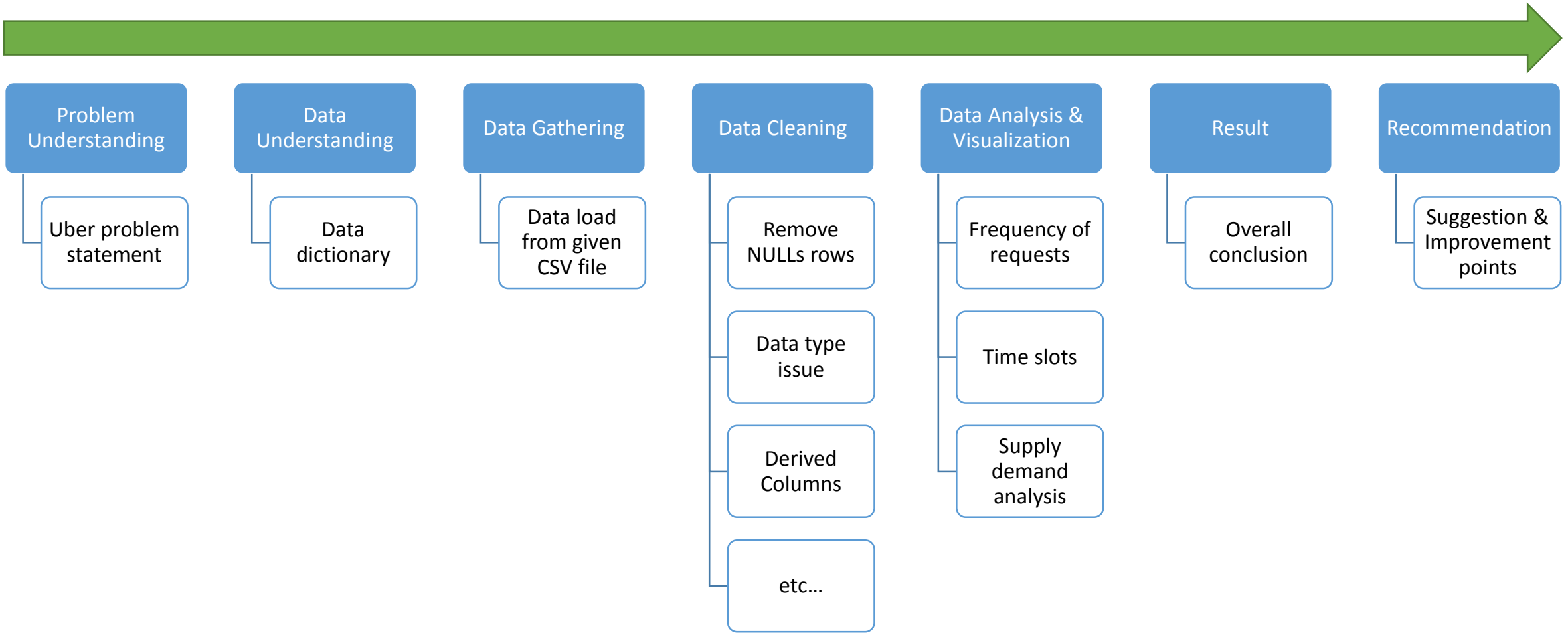
Problem Statement

Uber is facing issue some challenges with cancellation and non-availability of cars, which leading them to financial losses. The issue is mainly appearing from travelling to and from Airport & City

The aim of analysis is to identify the root cause of the problem (i.e. cancellation and non-availability of cars) and recommend ways to improve the situation. As a result of this analysis, will present the root cause(s) and possible hypotheses of the problem(s) and recommend ways to improve Uber challenges.

Problem solving methodology



Data Exploration

A masked data set with trip details is provided for analysis

- 6745 rows, 6 attributes
- 2 Character feature, 4 numeric feature

Data set contains 6 attributes associated with each request made by a customer :

1. Request id: A unique identifier of the request
2. Time of request: The date and time at which the customer made the trip request
3. Drop-off time: The drop-off date and time, in case the trip was completed
4. Pick-up point: The point from which the request was made
5. Driver id: The unique identification number of the driver
6. Status of the request: The final status of the trip, that can be either completed, cancelled by the driver or no cars available

Based on the problem statement, we should focus on pickup point, status and driver id.

Data Cleaning

Possible data inconsistencies:

- Uniqueness of Request ID
- NA values in the columns
- Data consistency
- Data type
- Etc…

1. Date fields values are not consistent, are separated by “/” and “-”, Make this consistent for ease of data analysis
2. Request time stamp is not in one single data type, converted it to date time format

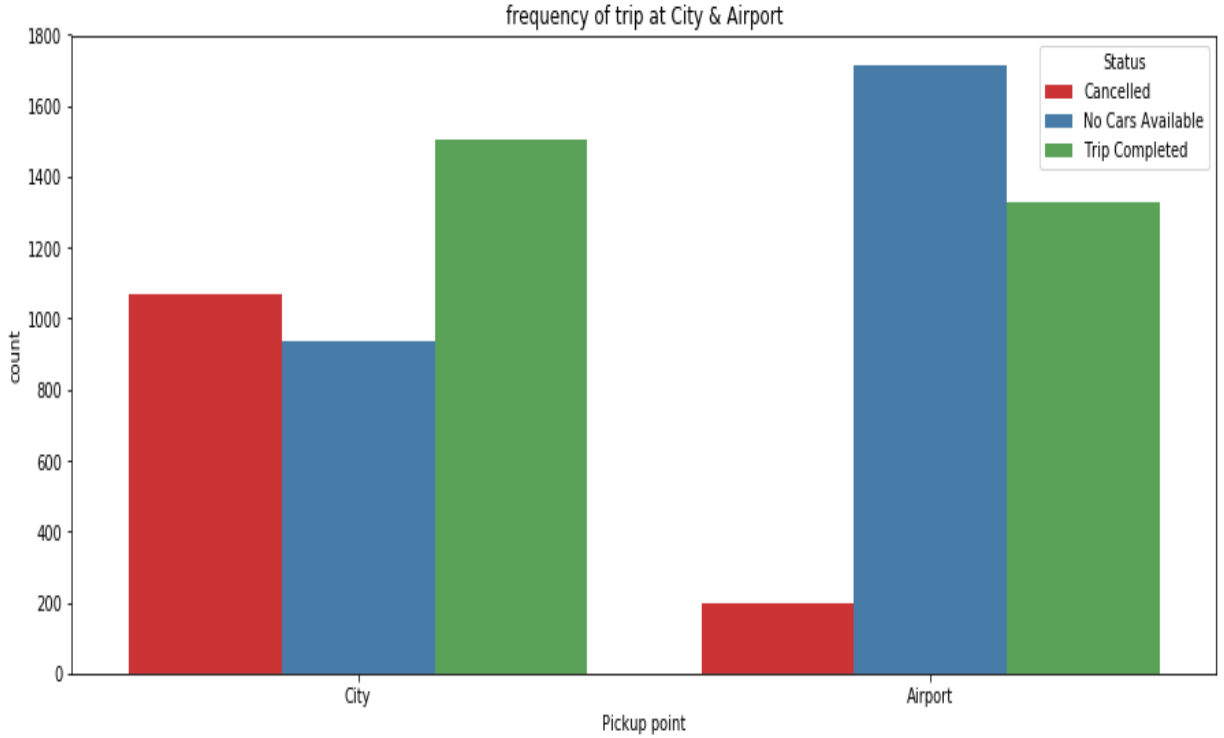
Data Preparation

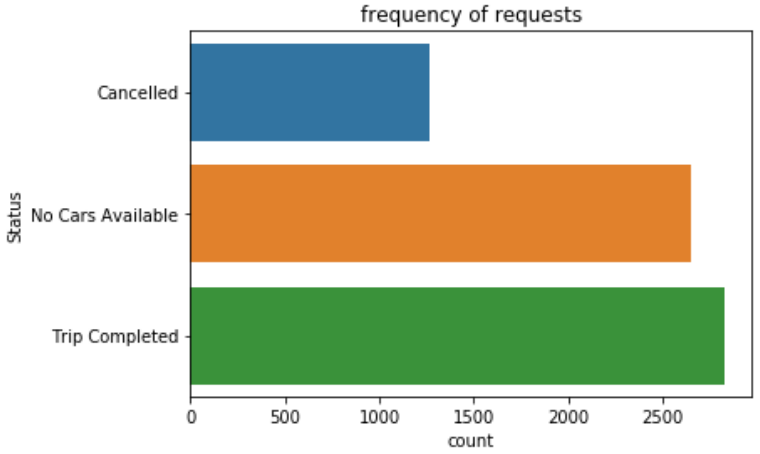
Derive new variables which will be useful for analysis

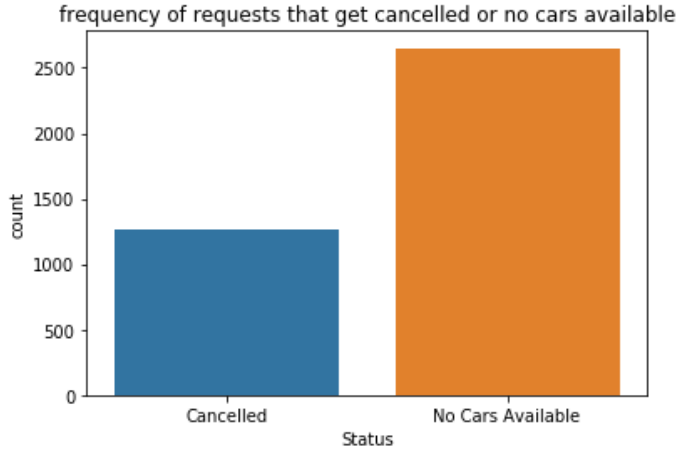
- tripDuration -- difference between drop and request time
- reqYear -- extract Year from Request timestamp
- reqMonth -- extract Month from Request timestamp
- reqDay -- extract Day from Request timestamp
- reqHour -- extract Hour from Request timestamp
- reqMinute -- extract Minute from Request timestamp

Request Analysis

Frequency of trip cancellation and no availability of cars from 'City to Airport' and 'Airport to City'



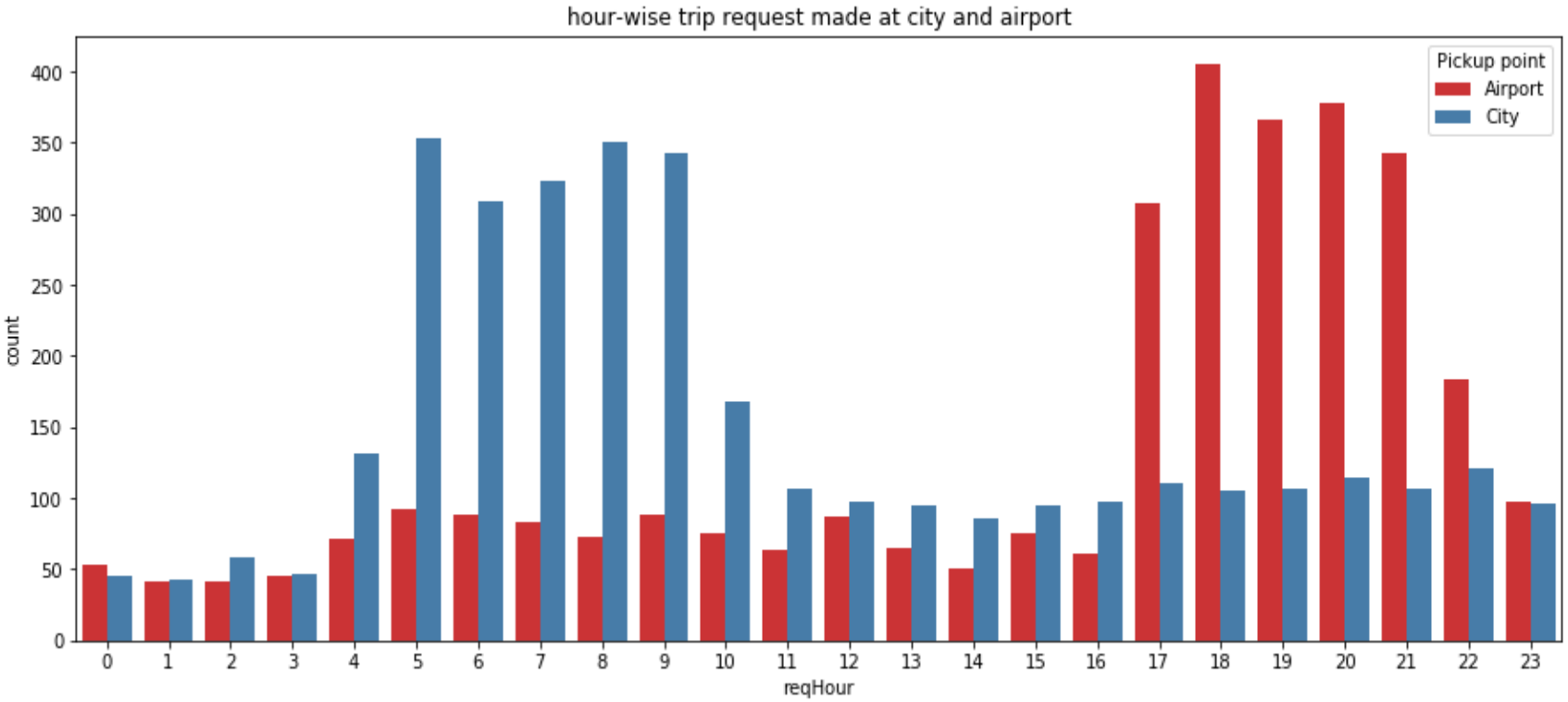


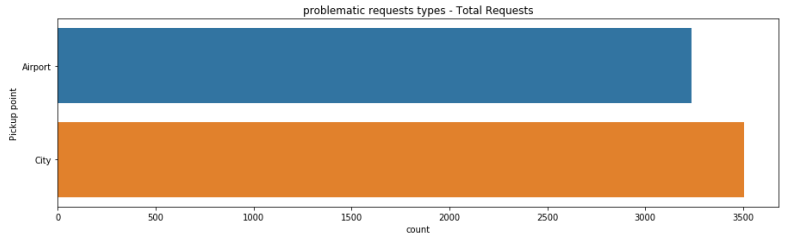


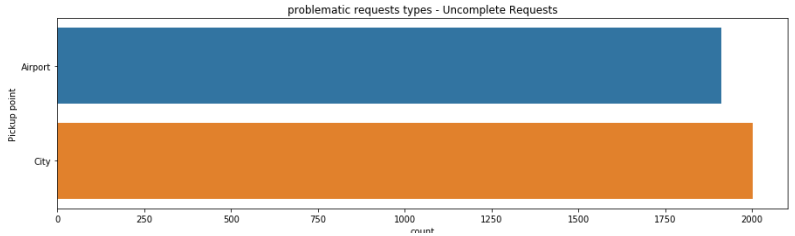
Pickup Point Analysis

The most problematic types of requests

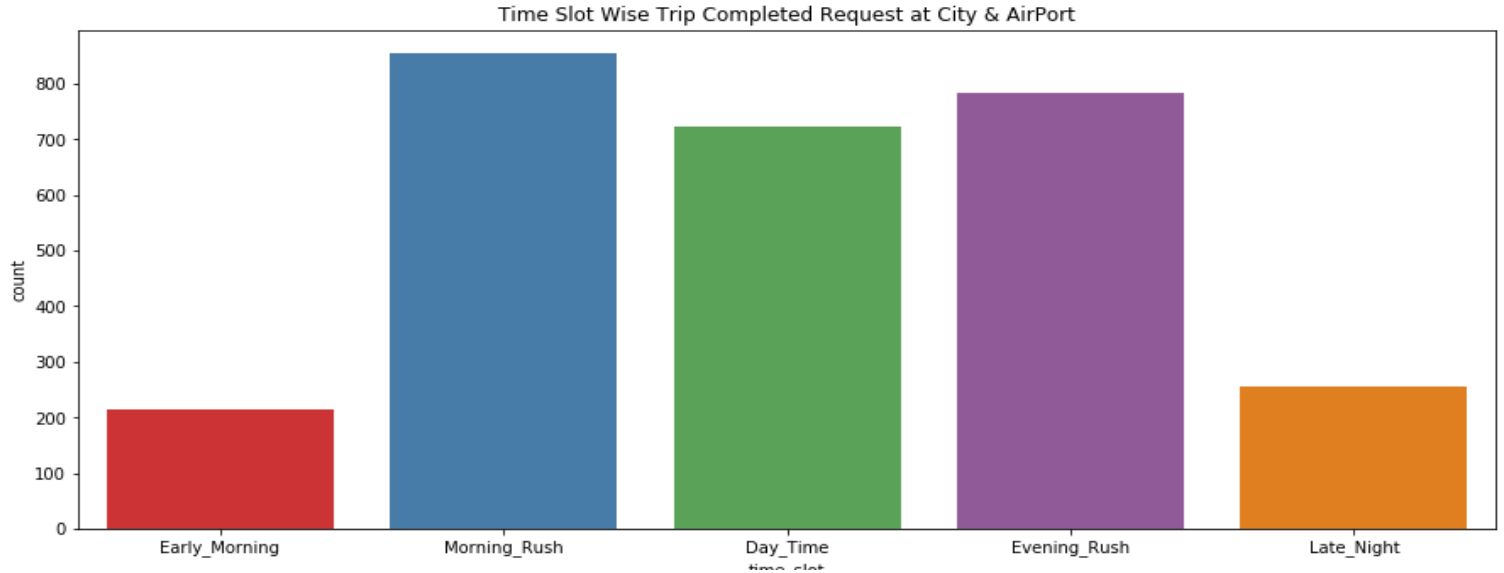
- City to Airport
- Airport to City



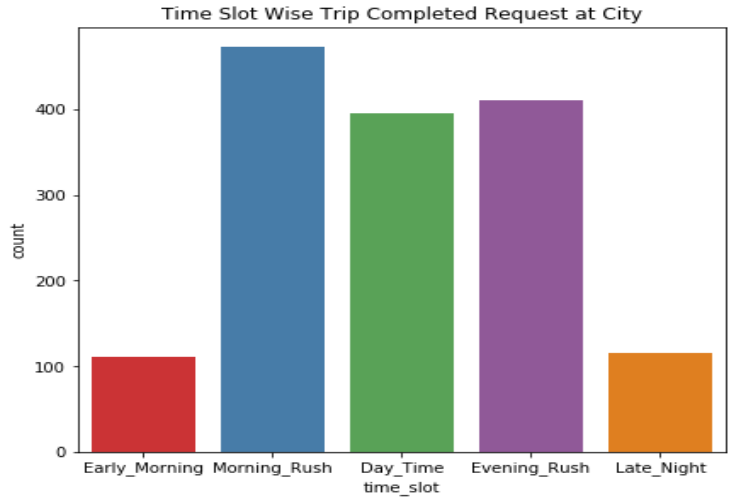


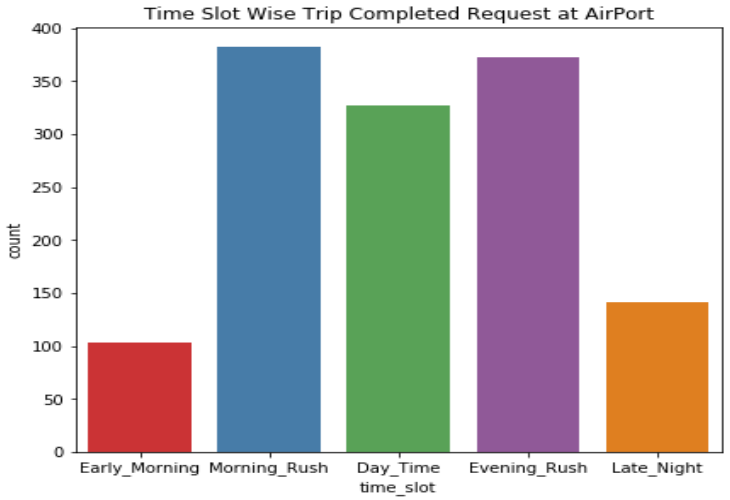


Time Slots Analysis



	SlotID	Slots	DayStage
0	1	0-4	Early_Morning
1	2	5-9	Morning_Rush
2	3	10-16	Day_Time
3	4	17-21	Evening_Rush
4	5	22-23	Late_Night

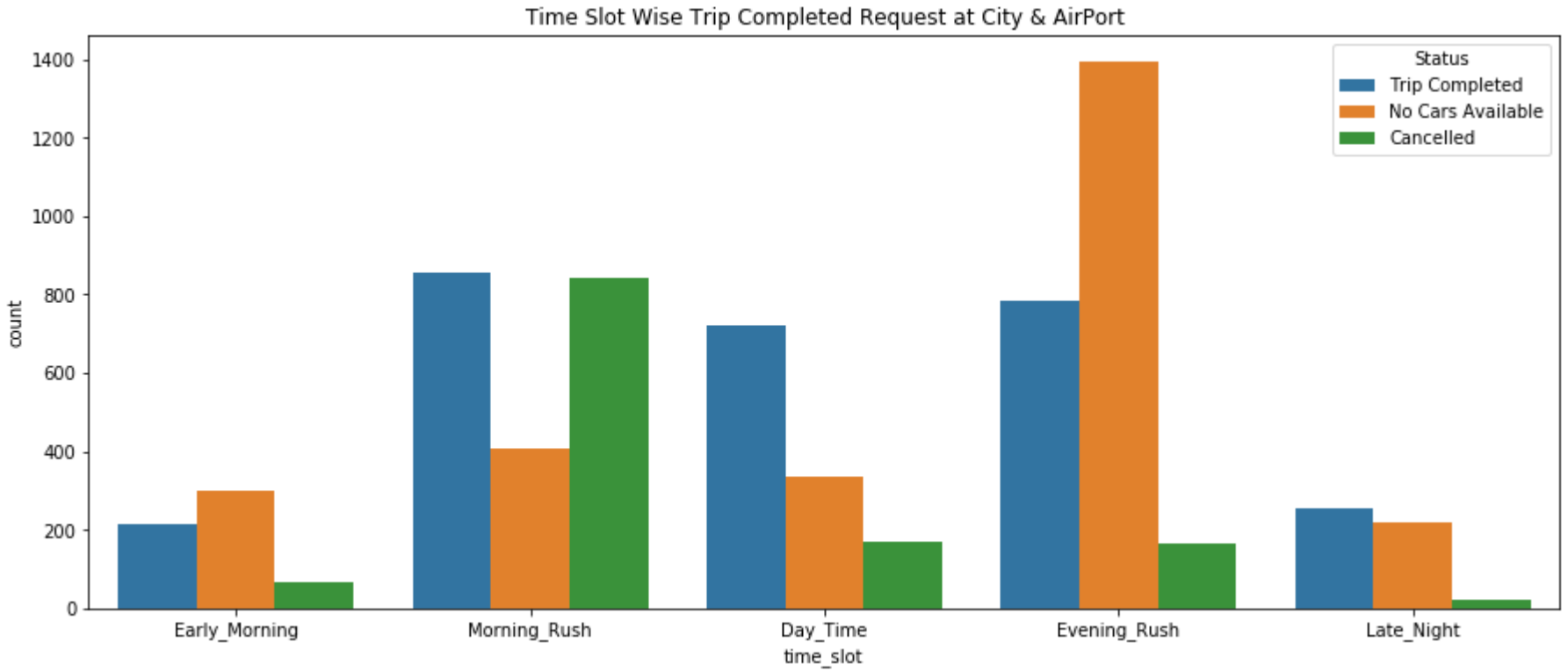




Time Slots Analysis

Time slots when the highest gap exists

- from hour 5-9 and 17-21, more deviation between supply and demand – **Morning Rush** & **Evening Rush**



Problem Analysis

Problem 1: In Morning Rush out of 2120 Request only 859 were completed, which is only 40% of the total Morning request and 39% of the request were cancelled by the Drivers in the same time slot.

Problem 2: In Evening Rush hour only 40% of the cars were available and only 33% cars made the trip

The percentage of total issues at (based on pick-up point):

- Airport :10.30%
- City : 71.88%

The percentage of total issues at (based on pick-up point):

- Airport : 79.26%
- City : 22.90%

Root Cause Analysis

- For Problem1: In City at Morning Rush time slot there is a huge demand for cabs to airport, but this demand is not fulfilled since there is less cars in the City and the drivers which are there, most of them are not willing to go to airport

- For Problem2: There is less cars in the airport area during Evening Rush hours and few drivers are not willing to go to city area

Conclusion

Based on the analysis done in the previous slides as supply demand gap calculation, the following conclusions can be drawn:

- More number of cabs/drivers need to get associated to meet demand & supply gap
- If a there is any increase or improvement in incentives is made based on time slots it may help in meeting the demands.
- The motivating factor for drivers should be brought in order to minimize the trip cancellation
- Additional incentive to trip between rush hours
- Instead long wait at airport, driver can return to City, but Uber need to pay incentive even no customer