

UBER- SUPPLY DEMAND GAP ANALYSIS

ASSIGNMENT

Submitted By: Anoop K

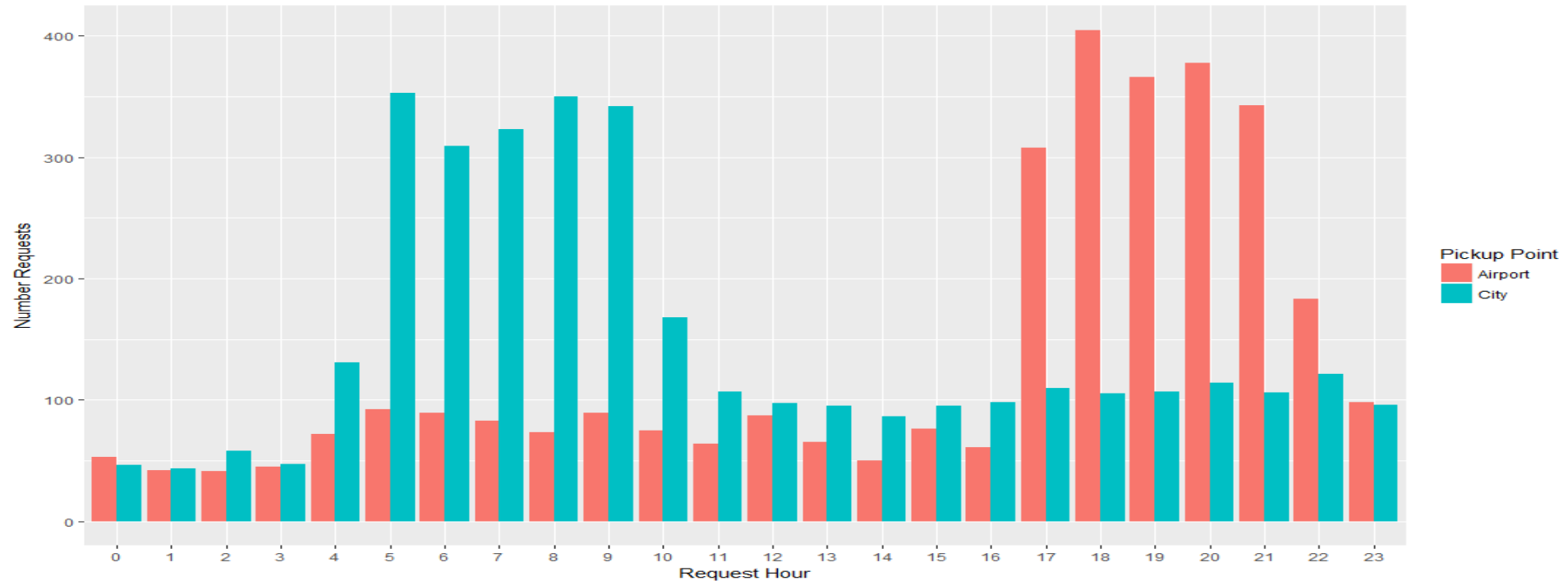
Objective

- To address the problem Uber is facing - driver cancellation and non-availability of cars leading to loss of potential revenue.
- To Identify the supply demand crisis in Uber based on the data set given.
- To Identify the root cause for the problem (i.e. cancellation and non-availability of cars)
- Hypotheses supported by data analysis for the identified problem.
- Identify the recommended ways to overcome the identified problem.

Data Preparation

- Identifying the data quality issues and to clean data:
 - Date fields have 2 different formats in the given data set.
 - Rectify the date formats for the data fields Request.timestamp and Drop.timestamp.
- Convert the data types of the data fields for analysis:
 - Request.timestamp and Drop.timestamp is converted to date time format.
- Add new metrics required for analysis:
 - New column Request hour is created based on request timestamp.

Data Preparation- Cont

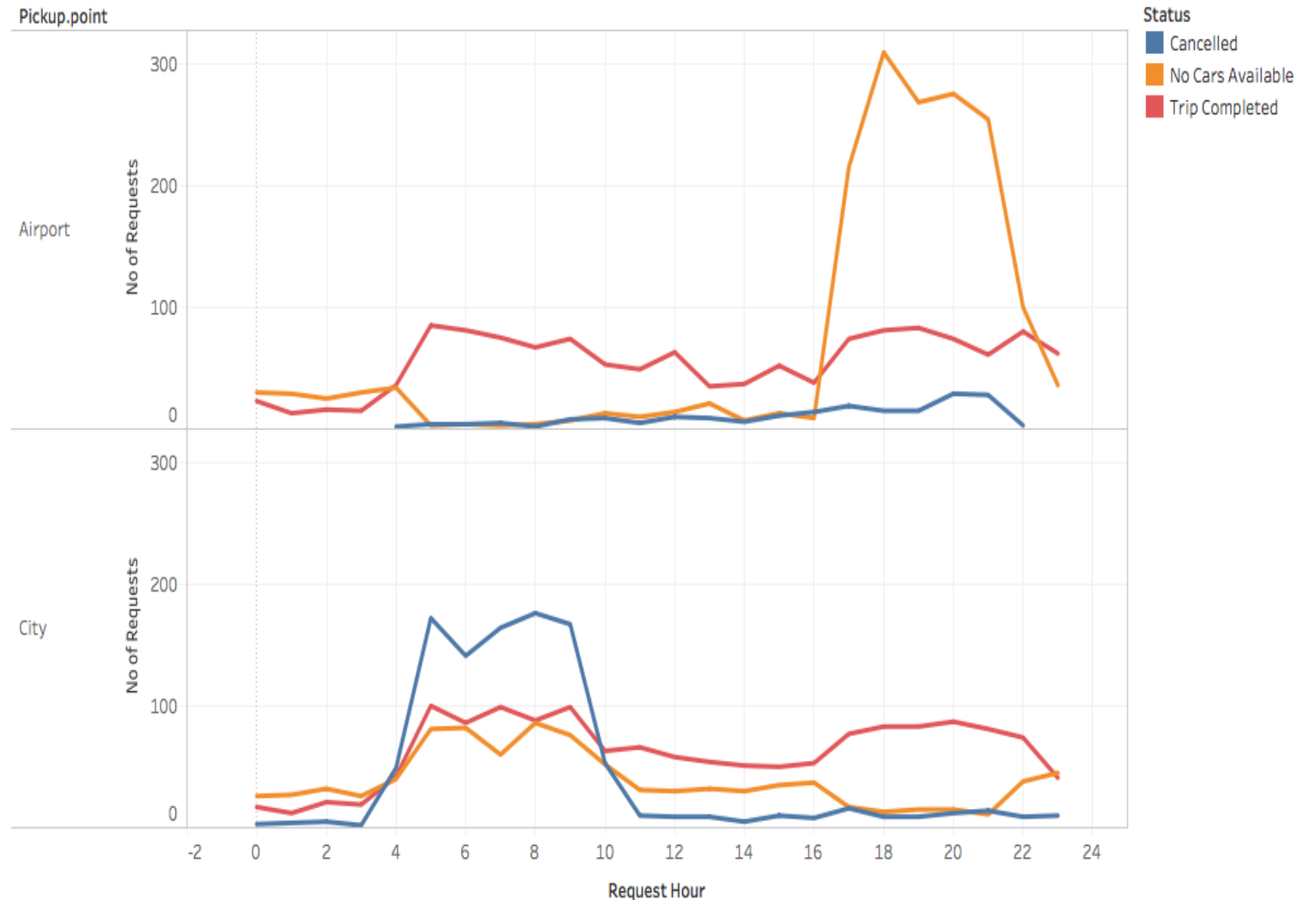


- Based on the plot above, we can segregate request time in to 5 different time slots in a day:
 - Early_Morning: Between hours 0:00 and 4:00
 - Morning_Peak: Between hours 4:00 and 10:00
 - Day_Time: Between hours 10:00 and 17:00
 - Evening_Peak: Between hours 17:00 and 22:00
 - Late_Night: Between hours 22:00 and 00:00

1. Looking at the trend line of no of requests on hourly basis, we can see in the plot, there is huge spike in demand for the cars during 4pm to 10pm for Airport pickup but the car available during the same time looks low. This results in huge demand supply gap.

2. There is also cancellation from Drivers during the morning hours between 4am to 10am resulting in less supply during the period of time from City which can be seen as spike in the plot.

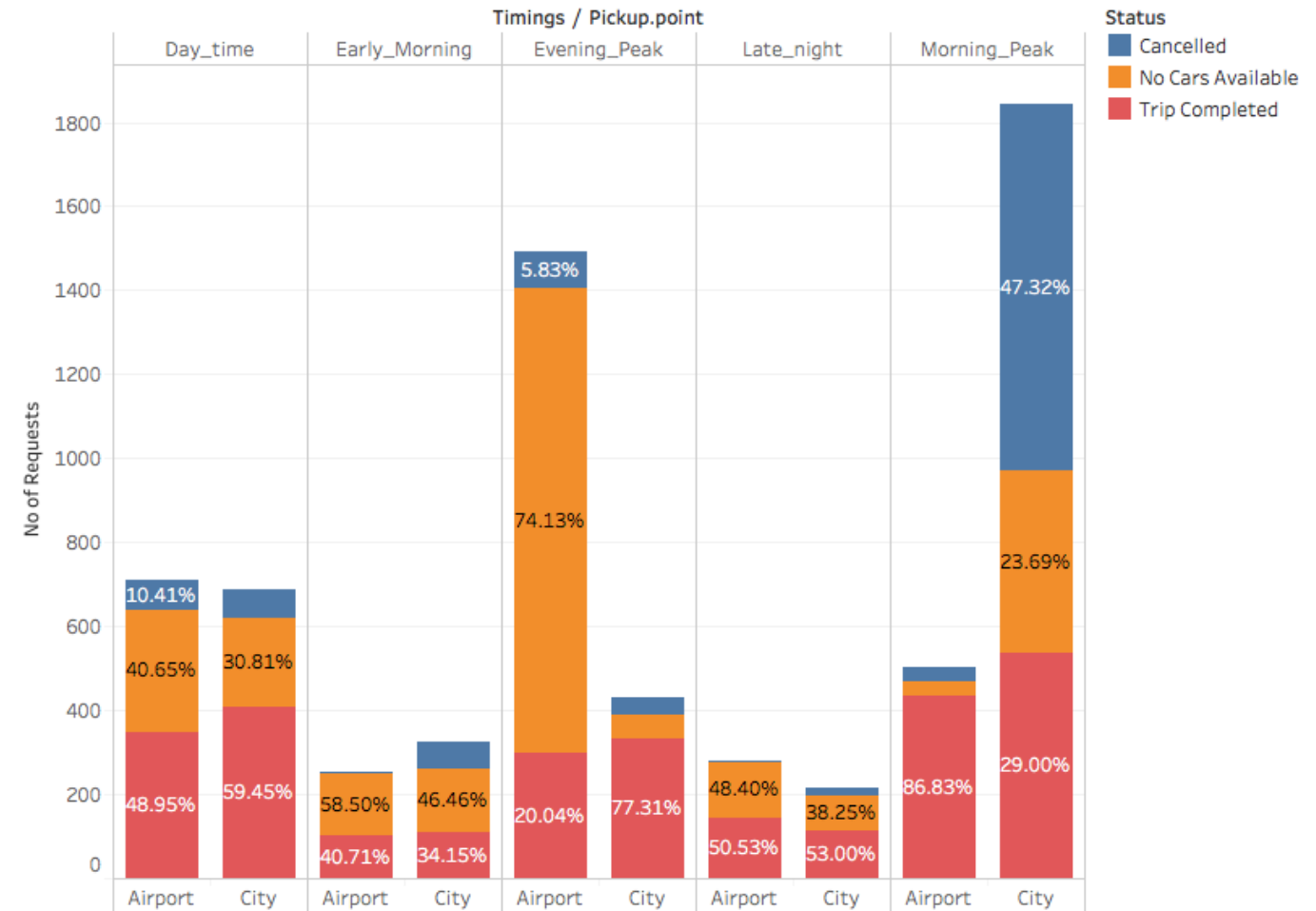
Gap for Supply and Demand



The trend of count of Number of Records for Request Hour broken down by Pickup.point. Color shows details about Status.

1. A large number of trips got cancelled during the Morning Peak hour time slot.
2. Close to 50% of the requests to airport in the morning peak hours are cancelled.
3. Cabs were not available for a large number of requests during the Evening Peak hour time slot.
4. Close to 75% of requests from airport are not met due to unavailability of cabs at the airport.

Status of Requests across time slots



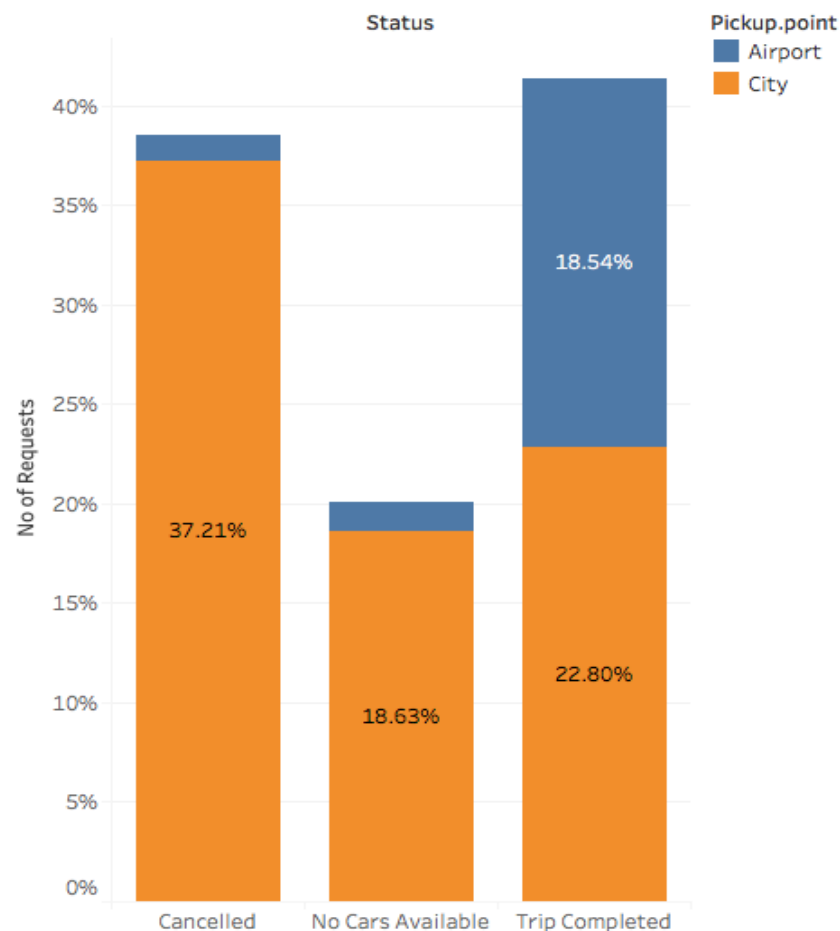
Count of Request.id for each Pickup.point broken down by Timings. Color shows details about Status. The marks are labeled by % of Total Count of Request.id.

Reason for Supply Demand Gap

- Generally, the number of flights leaving the airport during morning hours are quite high compared to incoming flights. A driver who reaches airport during that time has to spend idle time to pick a customer back to the city. The driver could utilize this idle time for other trips. Due to this a large number of service requests were cancelled in morning rush resulting in huge supply demand gap.
- Similarly in the evening the number of flights arriving at the airport are higher than departures hence there is shortage of cabs at the airport.

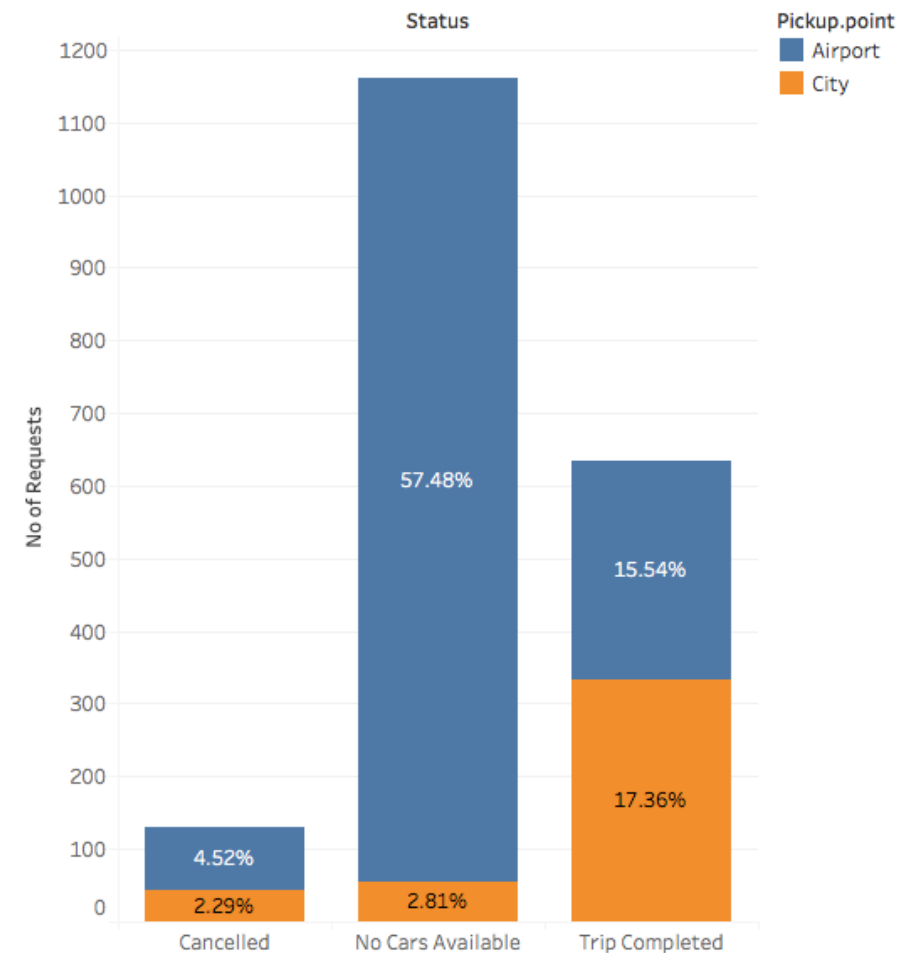
Reason for Supply Demand Gap

Morning Peak Hours Requests



% of Total Count of Request.id for each Status. Color shows details about Pickup.point. The marks are labeled by % of Total Count of Request.id. The data is filtered on Timings, which keeps Morning_Peak.

Evening Peak Hours Requests



Count of Request.id for each Status. Color shows details about Pickup.point. The marks are labeled by % of Total Count of Request.id. The data is filtered on Timings, which keeps Evening_Peak.

Resolutions:

- Introducing incentives to drivers for trips to Airport during morning peak hours.
- Surge pricing to help make for the loss of empty rides back to the city.
- Penalty charges on driver for cancelling the trip.
- Invest on parking at the airport so that the drivers can meet the excess demand in the evening peak hours.
- Reducing the percentage charged from cab drivers for utilizing Uber services for making a trip to or from airport ensuring overall profit is increased.