

Uber Supply Demand Gap Assignment

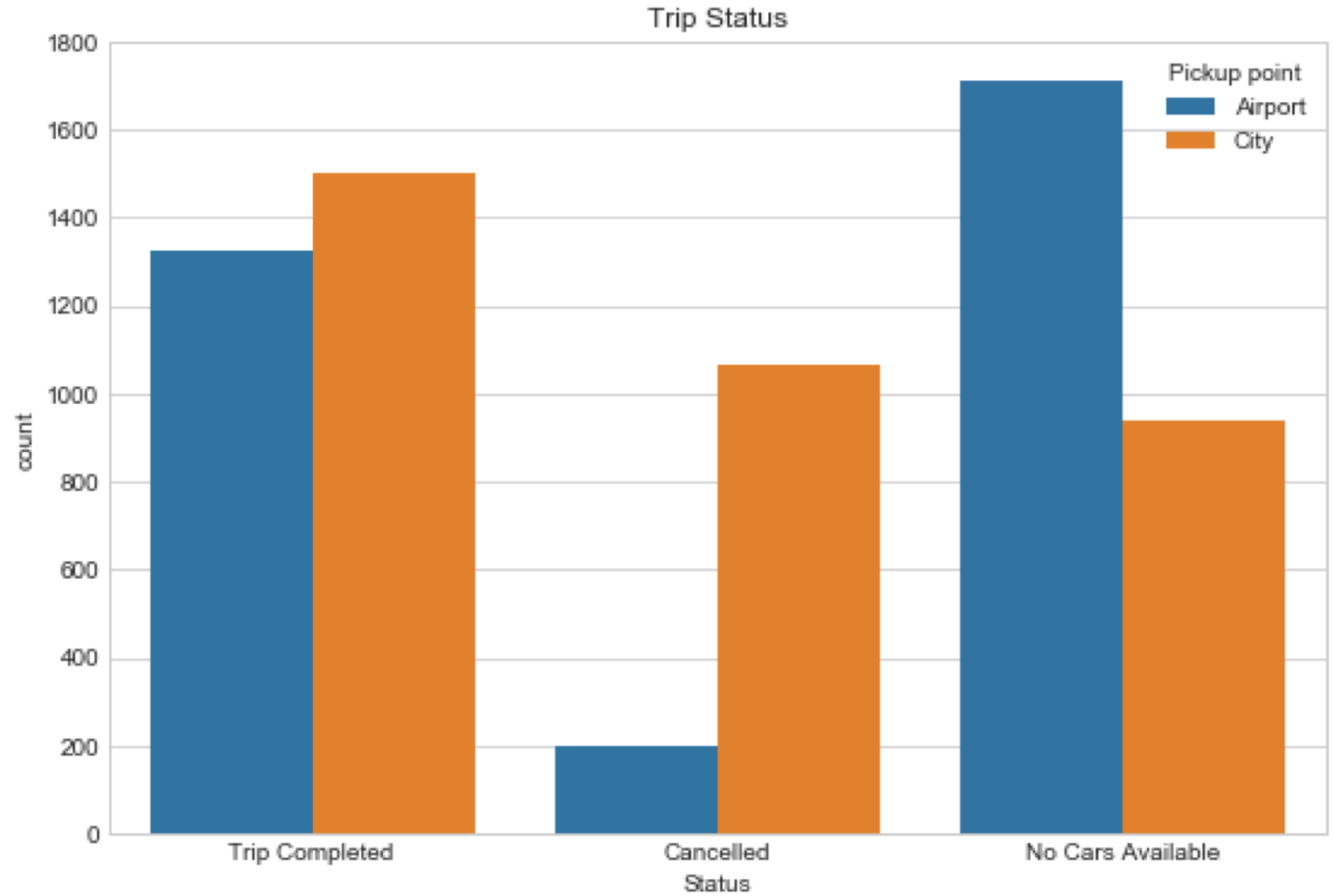
By: Vivek Jain



UpGrad

Data Exploration

1. Imported data without issues
2. Well formatted data – 6745 rows and 6 columns
3. Null values in Driver Id and Drop Timestamp columns
4. No relevant columns for mean, median, etc.
5. Data from July 13, 2016 to December 7, 2016
6. Lot of requests cancelled or not serviced
 1. ~59% Airport pickup requests
 2. ~57% City pickup requests

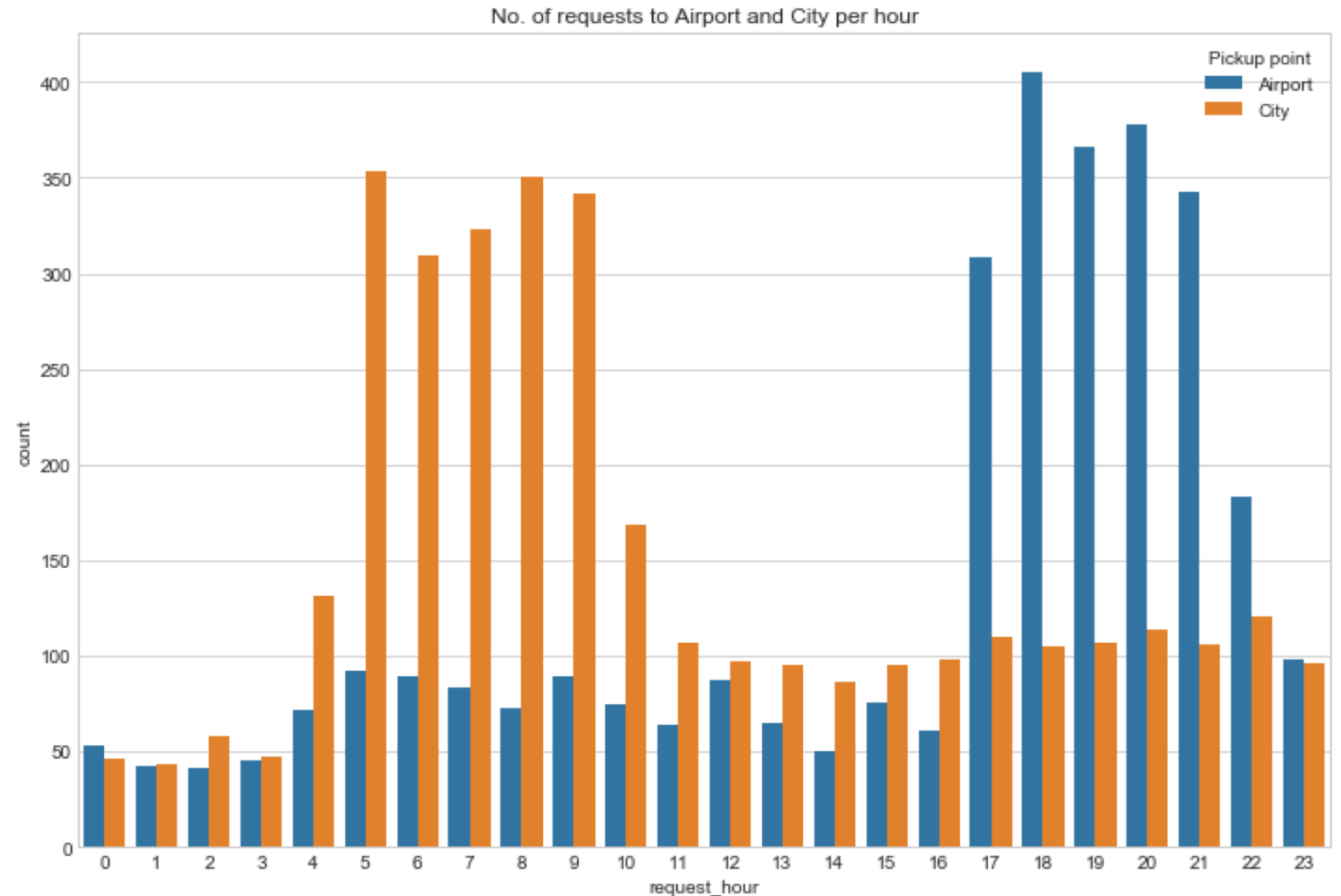


Data Cleaning and Manipulation

1. Data within suitable limits with no outliers as such
2. No composite columns, except date-time columns
3. 221 duplicate records found and removed
4. Removed rows with NA values for certain calculations, vice versa for others
5. Added two columns of data
 1. request_hour – for hour of the request
 2. request_day – for day of week
 3. Category – for binning the data in timeslots

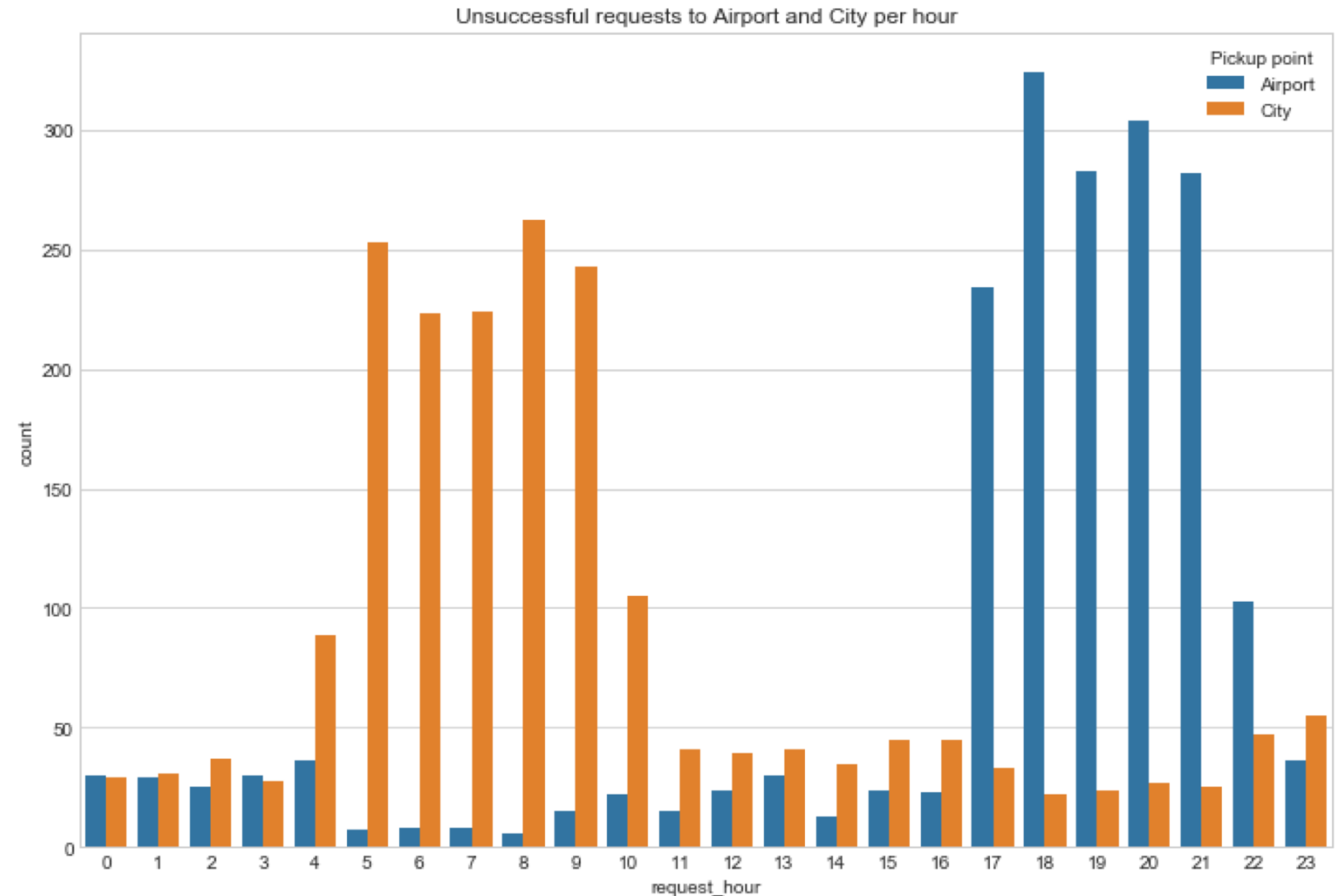
Analysing Trends For Each Day

- Relation between Frequency of requests and hour of request
- Two peak slots – one in each direction



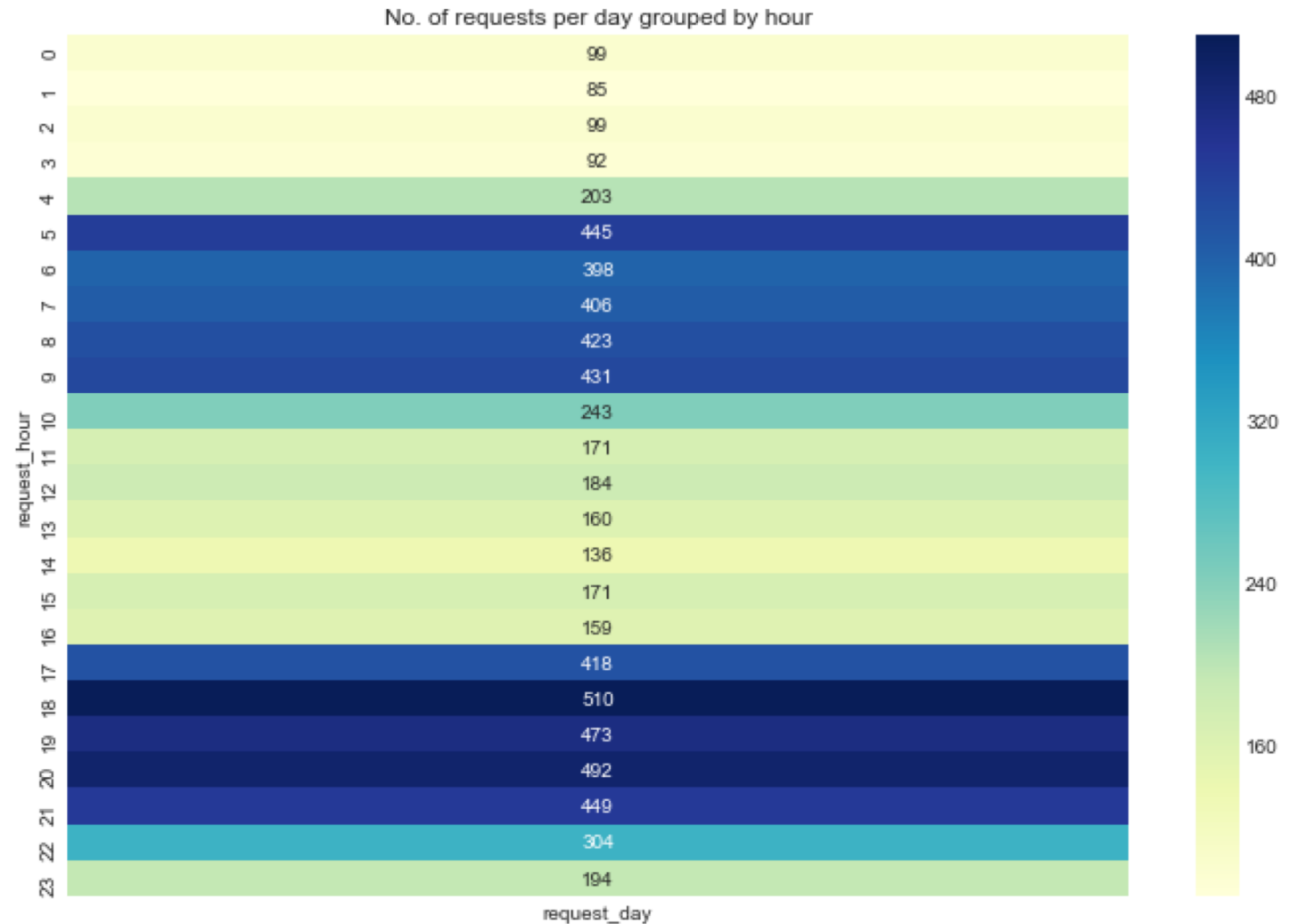
Analysing Trends For Each Day

- Lot of requests are cancelled or not serviced during peak hours



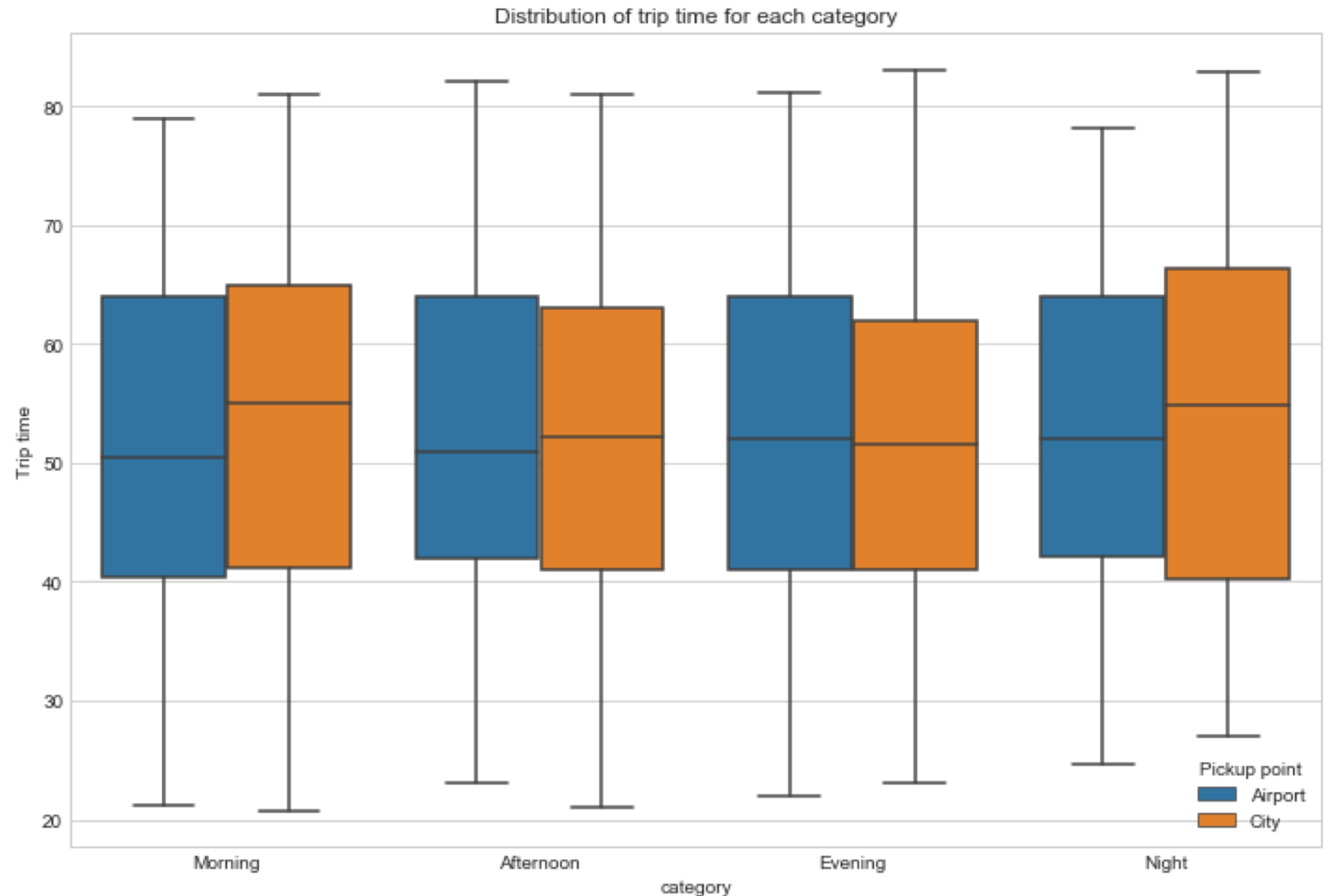
Binning Time Into 4 Categories

- 4 Bins of 6 hours each
- Morning - 05-11 hours (peak)
- Afternoon - 11-17 hours (off-peak)
- Evening - 17-23 hours (peak)
- Night - 23-05 hours (off-peak)



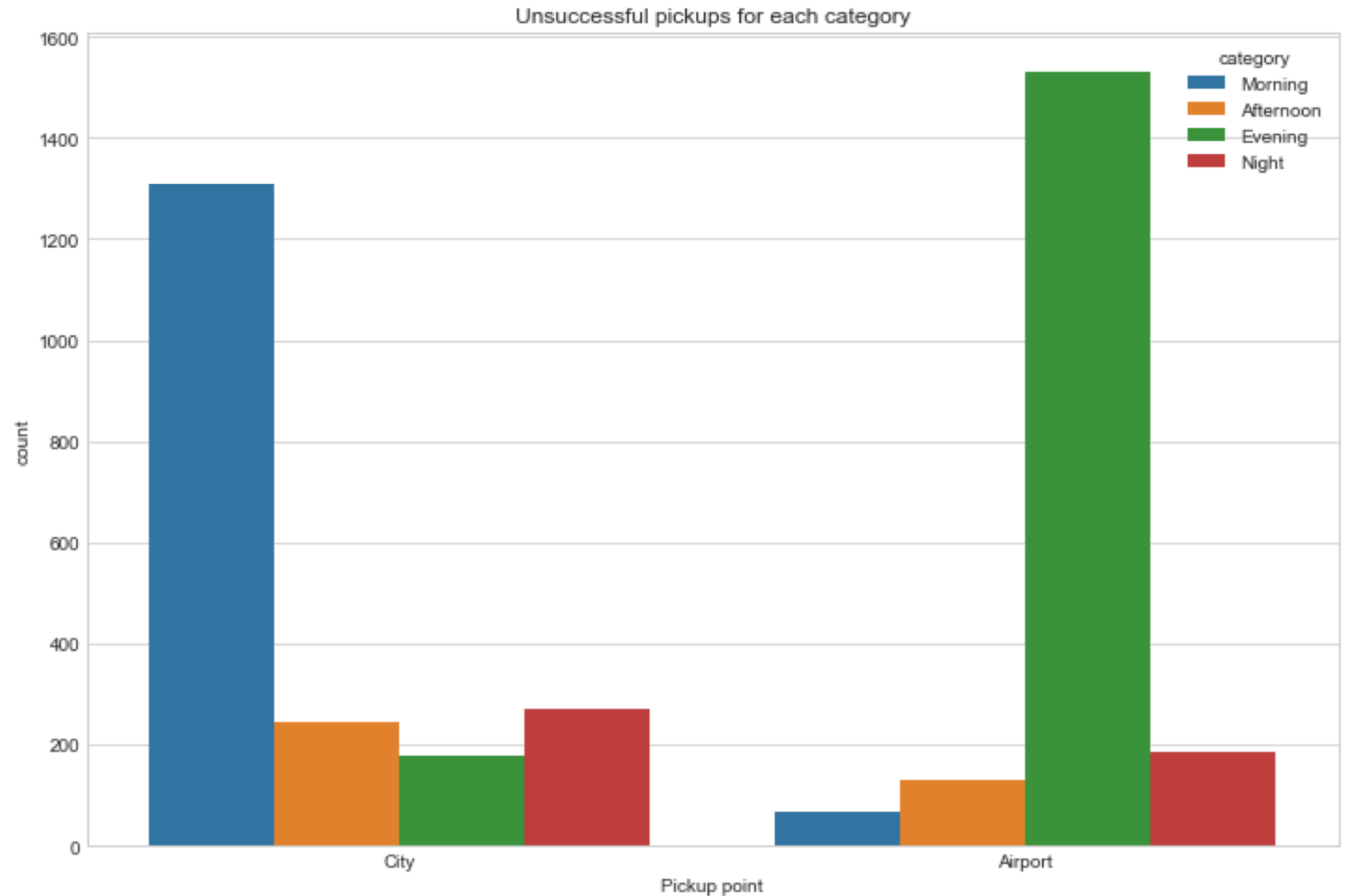
Combining Data For All Days

- Airport drops (city pickups) take longer time
- Large difference during Morning and Night
- Small difference in Afternoon
- Marginal difference in Evening where airport drops take long
- Median trip time - 50-55 mins.



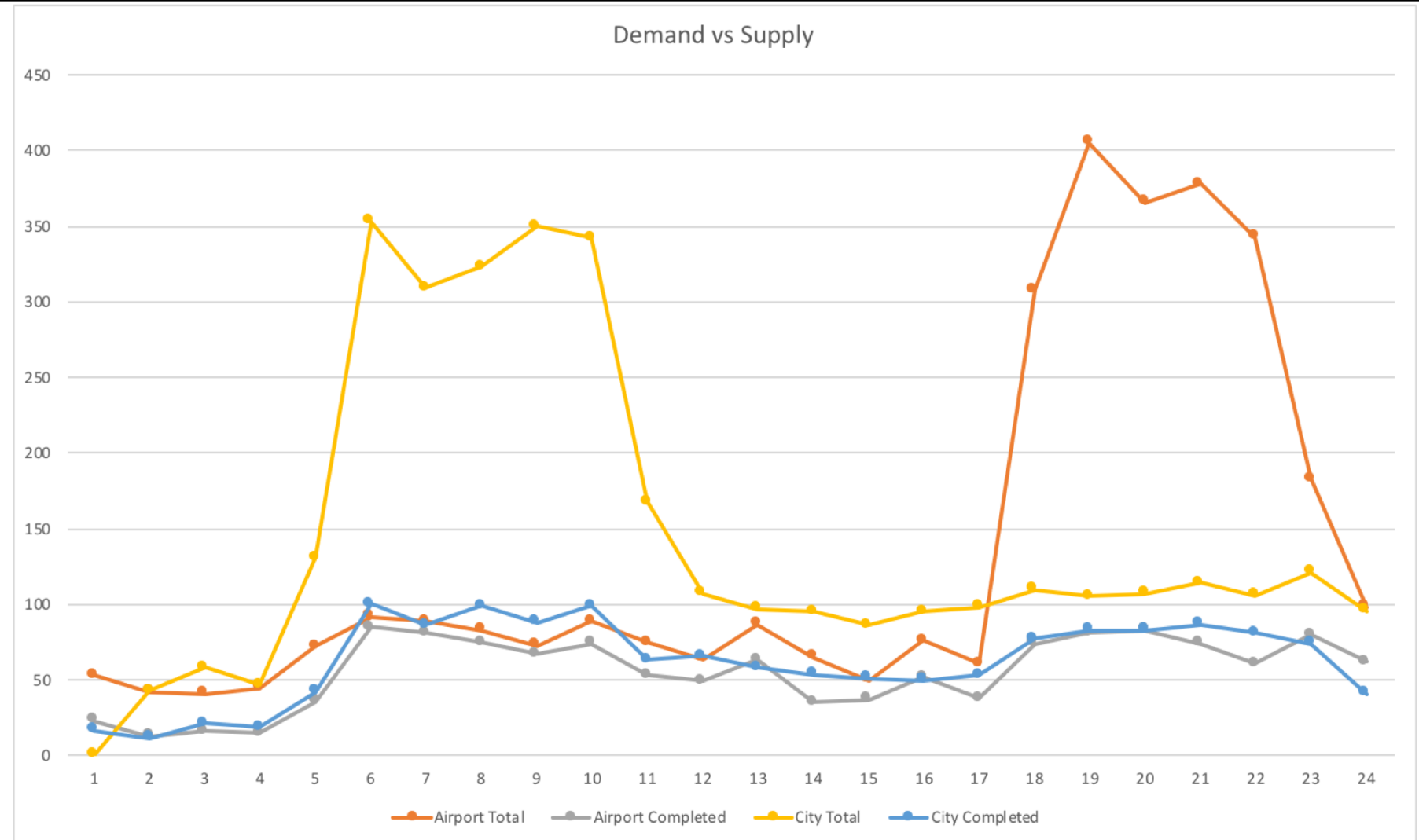
Problem Identification – Morning and Evening

- Morning and evening are pain points
- Airport Drop (City pickups) see lot of cancellations and unserved requests in morning
- Airport pickups see similar trend during evening hours
- Drivers may defer going airport
 - Low frequency of trips from Airport during Night
 - Lower probability of a return trip



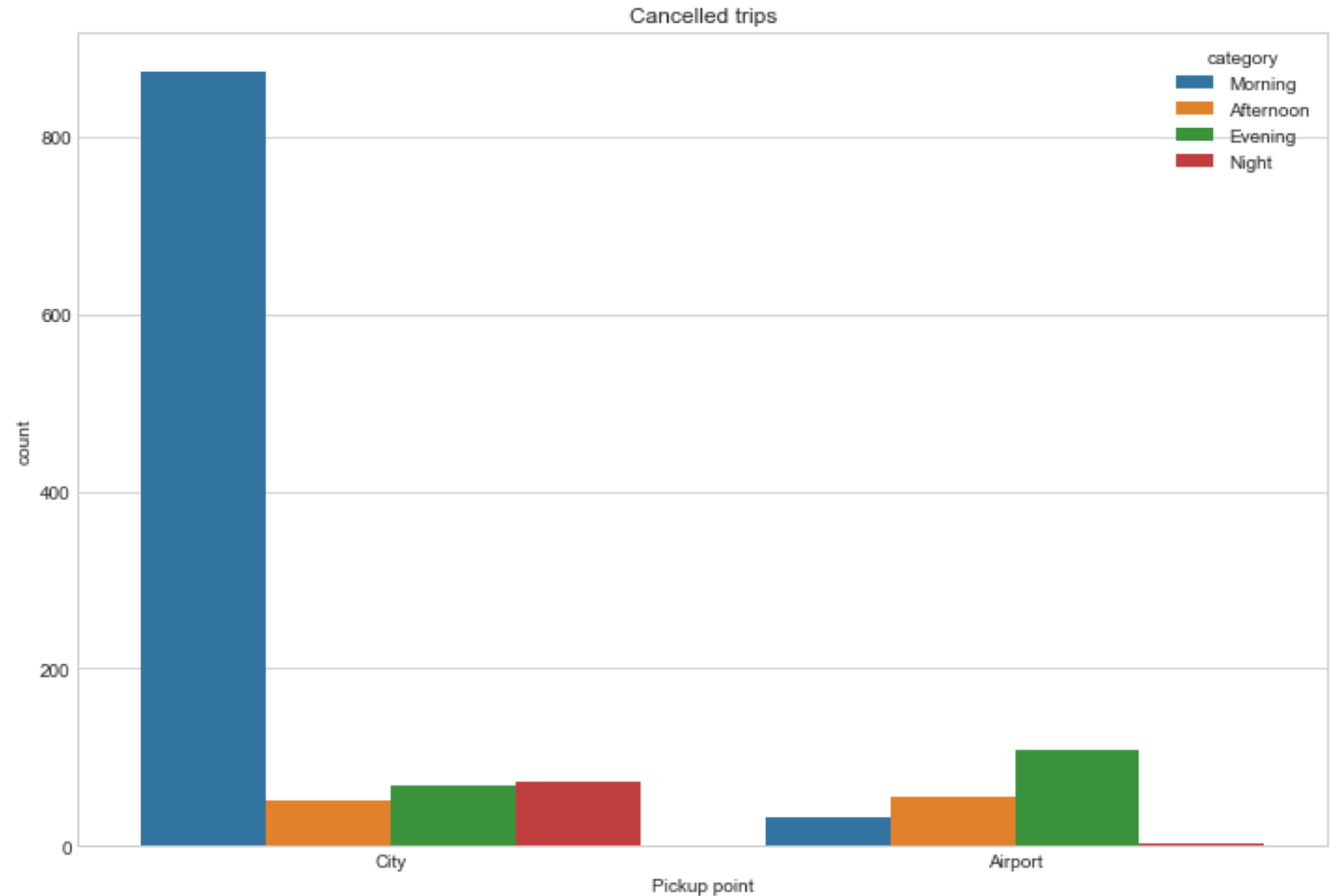
Problem Identification – Morning and Evening

- More demand, less supply
- Drastic variation during peak hours
 - Airport total vs completed
 - City total vs completed
- Less than 30% demand serviced during majority of the peak hours



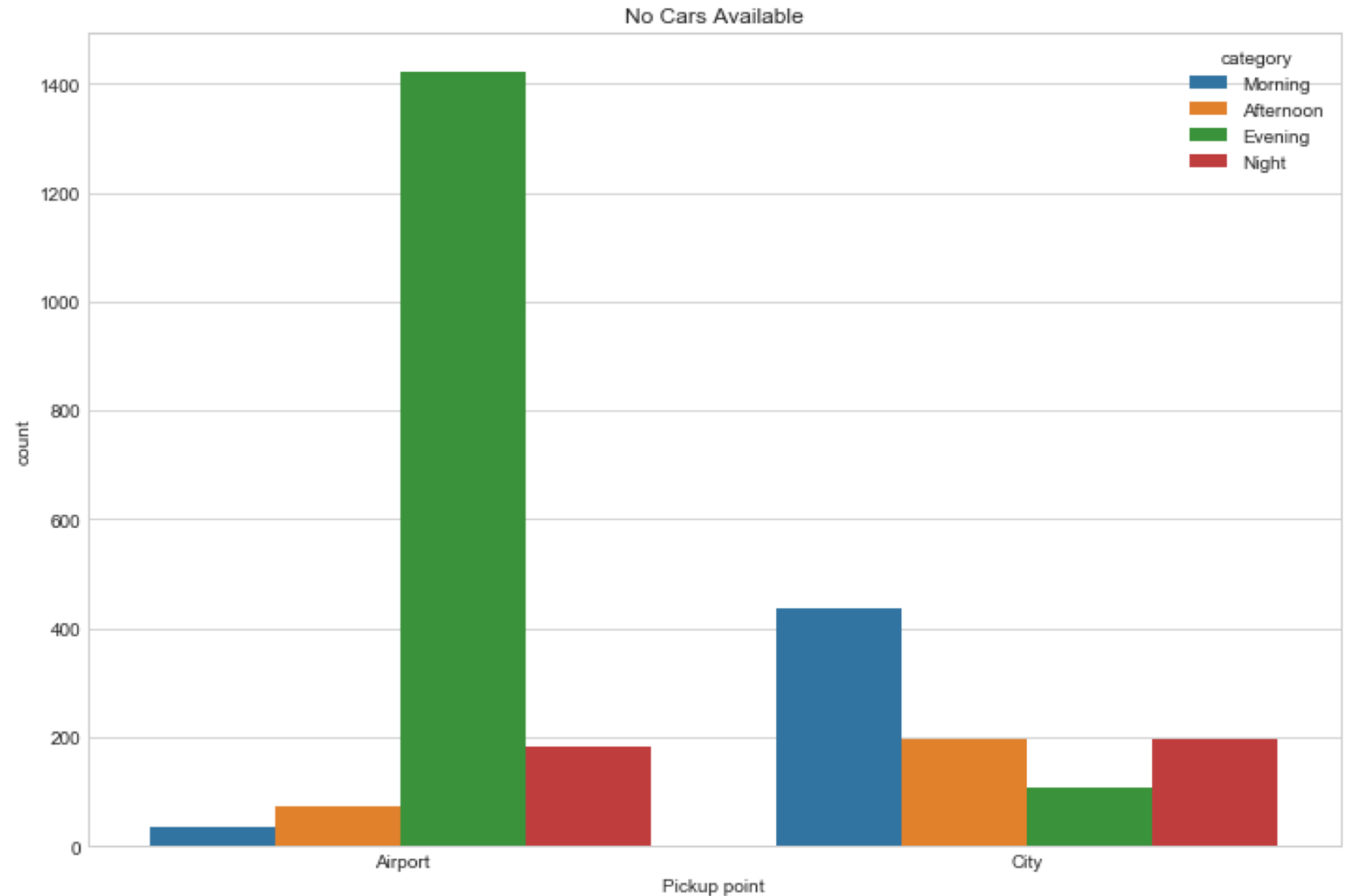
Problem 1 - Cancelled trips

- Lot of Airport Drops (City pickups) are cancelled in the morning – critical pain point
- Cancelled Airport pickups are relatively low in volume



Problem 2 - No Cars Available

- Low availability of cars for pickup at airport during evening
- Similar problem, at lower scale, for airport drops in morning
- Drivers may defer going to airport just for pickup



Recommendations

Recommendations could be picked up individually or as bunch with complimentary ones

- Increase driver penalty for cancellations during morning and evening hours
- Increase driver commission for morning airport drops (city pickups)
- Compensate driver for vacant drive to the airport / city for pickup – fuel costs, time, etc.
- Decrease airport fares for night slot – passengers will travel early reducing load during morning
- Decrease fare for shared / pool service – to reduce load on available cars
- Add more cars to the car pool and have dedicated drivers for airport pickup and drops