UBER SUPPLY DEMAND GAP CASE STUDY SUBMISSION

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Business Objectives

- To identify the root cause of the problem (ie. Cancellation and Non availability of cars) and recommend ways to improve the services.
- To identify the root cause and possible hypothesis of the problem and recommend ways to improve them.

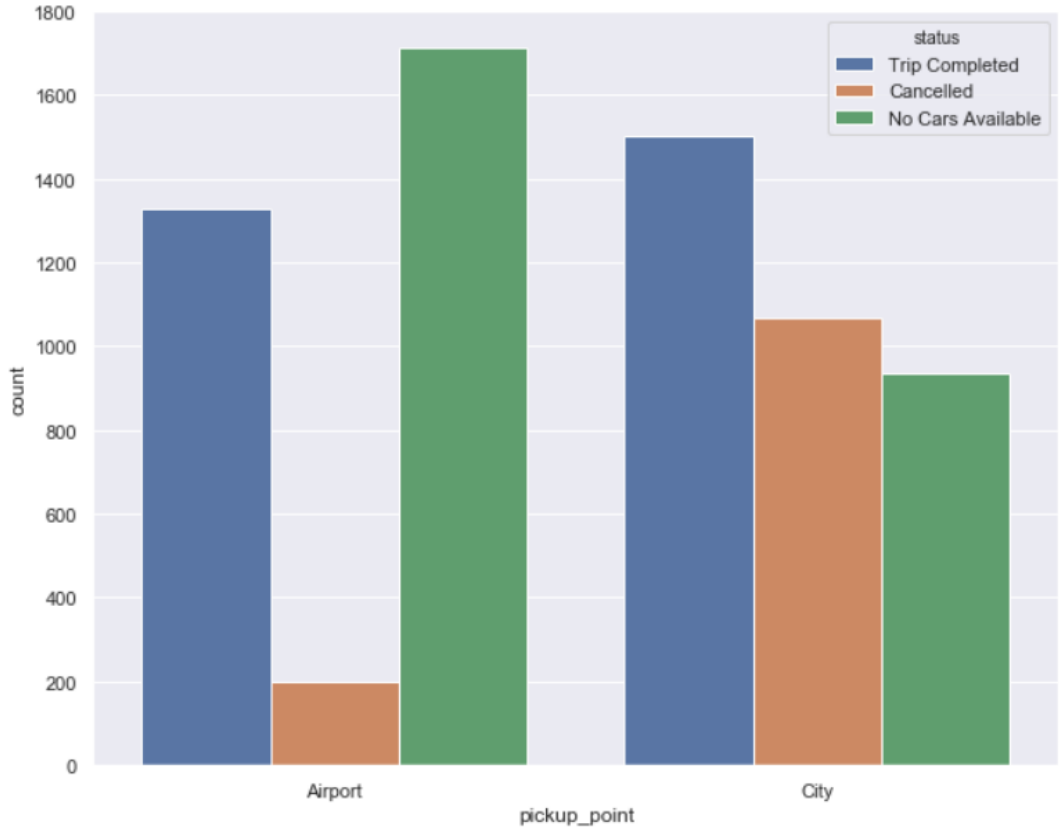
Data Cleaning and Assumptions

- Data Preparation
  - Changing the date and time fields in datetime format
  - Renaming the column names to replace inbetween spaces to underscore for eazy identification
  - Derived metrics from datetime columns

- Assumptions
  - Day has been divided into 5 timeslots:
    - 0000-0600 hrs: Late night
    - 0600-1200 hrs: Morning
    - 1200-1700 hrs: Afternoon
    - 1700-2000 hrs: Evening
    - 2000-2400 hrs: Night

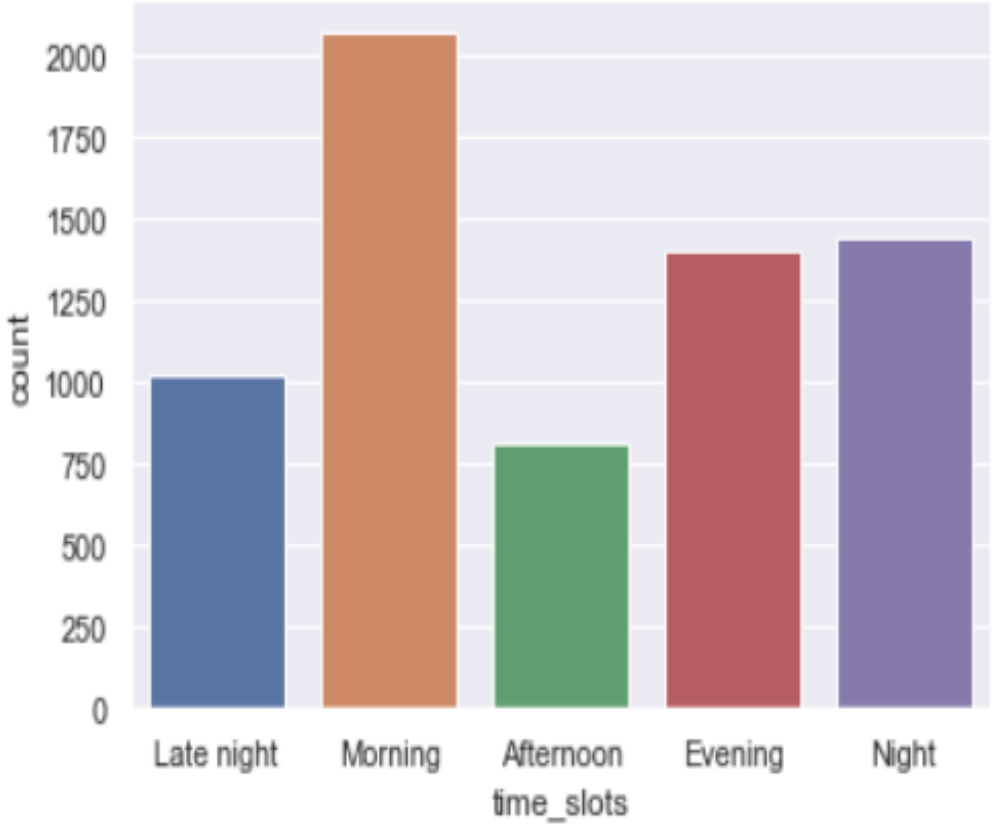
Identifying Problematic Types of Requests

- Higher proportion of completed trips originate from city
- Huge proportion of requests getting Cancelled by the drivers in the City
- High proportion of requests face No car availability issue in the Airport



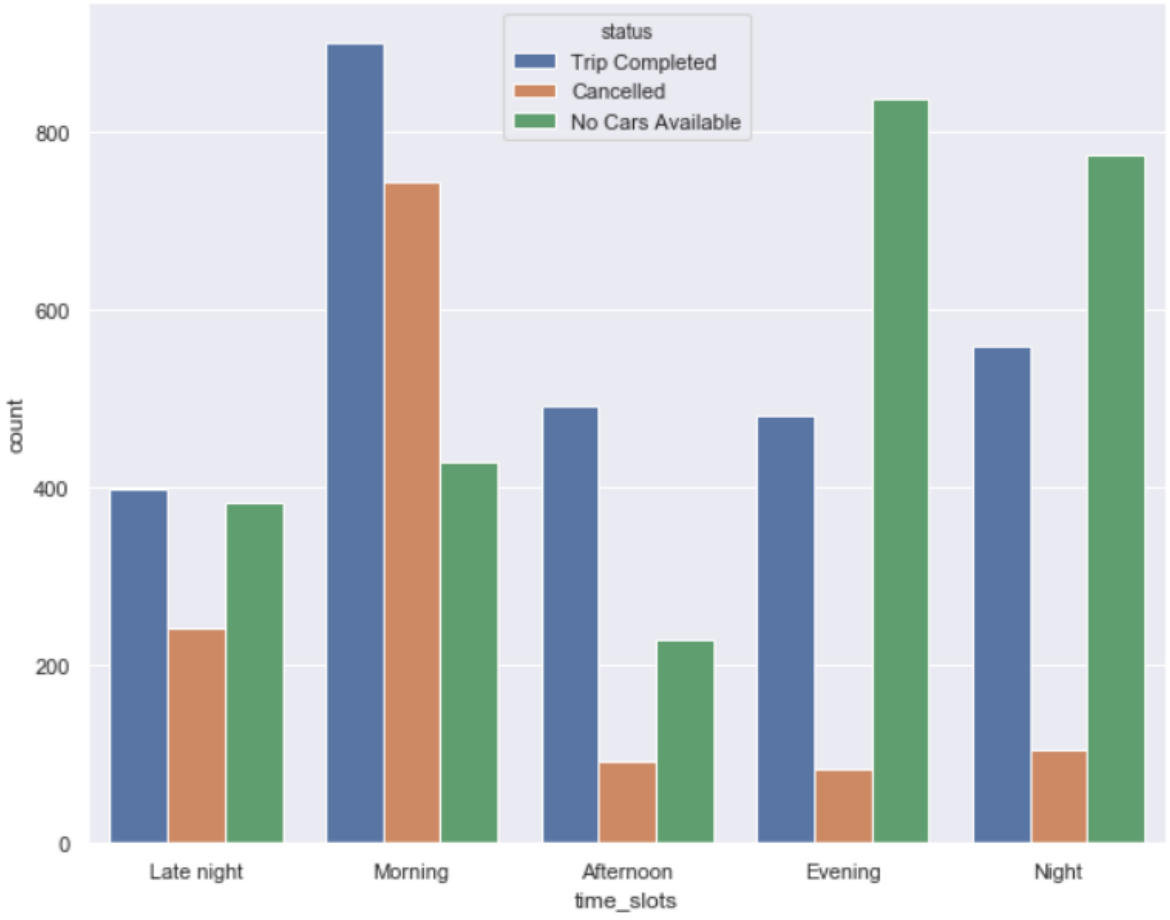
Identifying Problematic Types of Requests using Time Slots

- Plot showing the distribution of requests over all the timeslots.
- Uber receives huge amount of requests in the Morning followed by Latenight and Evening.
- Afternoon seems to be relaxing as less proportion of requests are received at Uber.



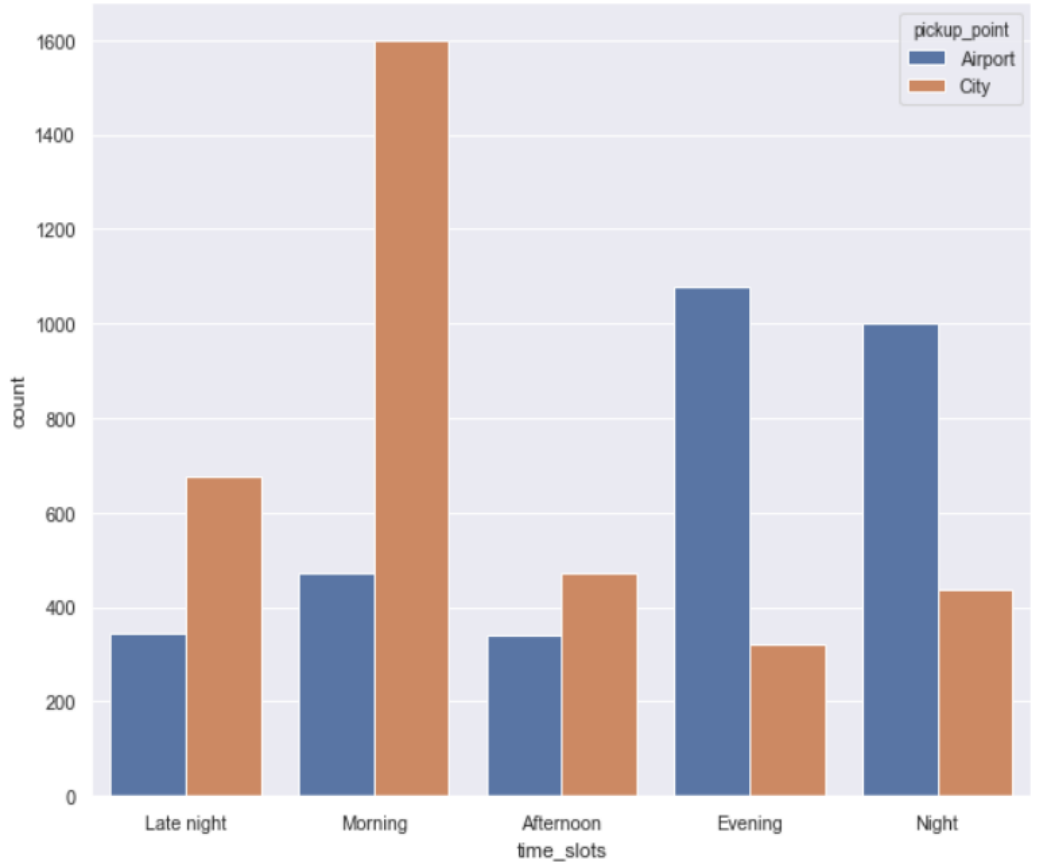
Identifying Problematic Types of Requests using Time Slots

- Morning and Latenight requests faces high cancellation by the drivers at Uber.
- In the Morning Uber receives huge proportion of requests and also serves the best as high proportion of trips are completed
- Evening and Night, high number of requests face No cars available crisis



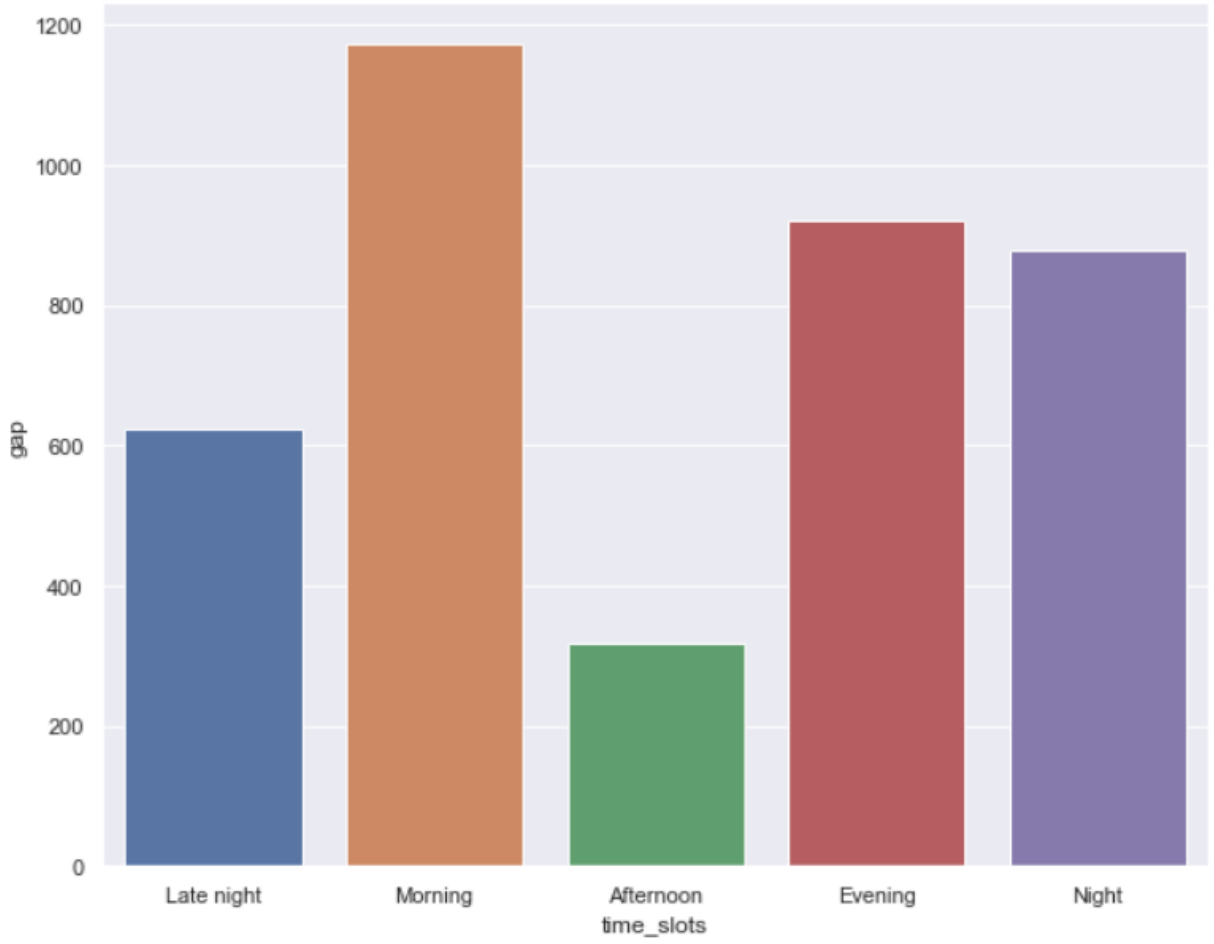
Identifying Problematic Types of Requests using Time Slots

- As we know from the previous slide, Evening and Night faces No car availability crisis. This plot shows us that the Crisis exists at Airport as most of the requests are raised at the Airport.



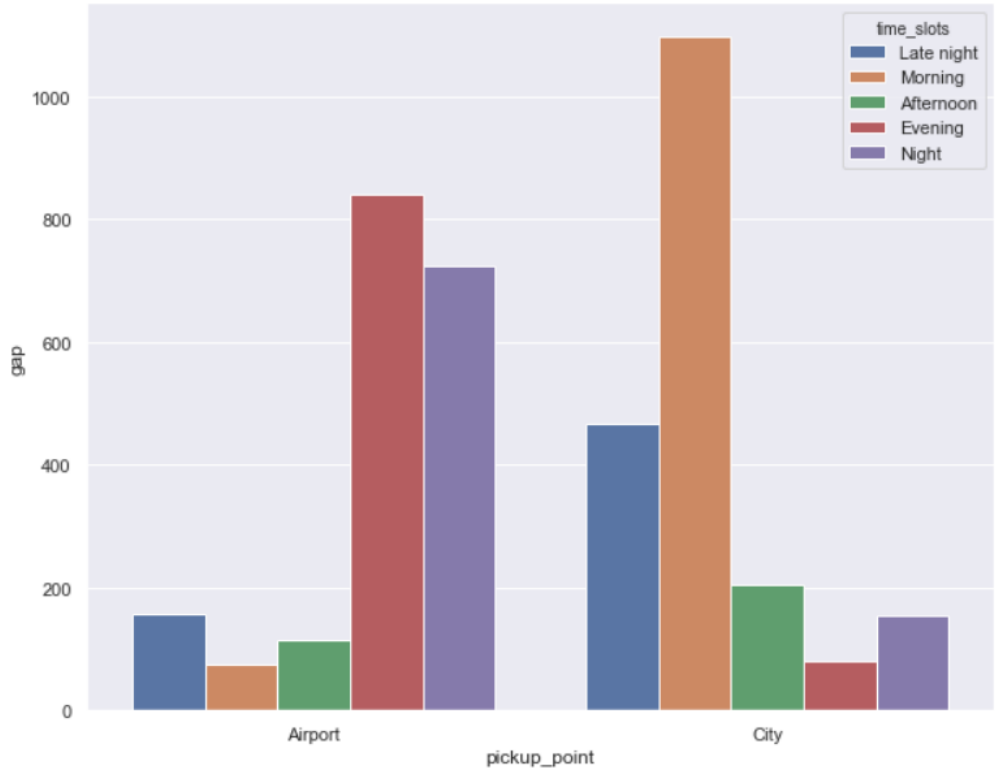
Supply Demand Gap Metric

- Gap = Total rides requested – Total rides completed
- Total rides requested = Completed + No Cars available + Cancelled
- Total rides completed = Completed rides
- Plot showing the Gap is directly proportional to the number of requests. Morning shows highest gap and Afternoon shows the lowest gap in the same trend as the volume of requests.



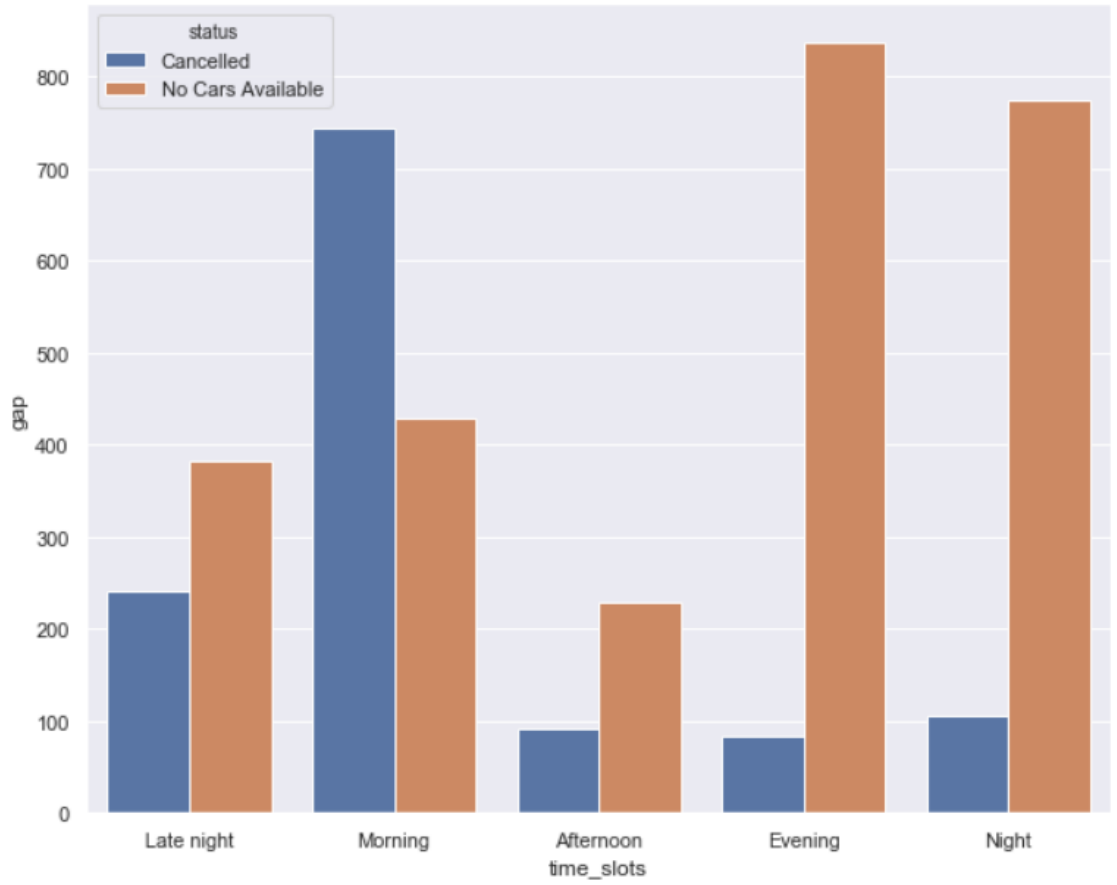
Gap Analysis based on Timeslots and Request type

- It shows the deadliest gap is during the Morning timeslots for City to airport services.
- The Gap at the Airport in the Evening and Night are due to No Car availability as we came to know now.



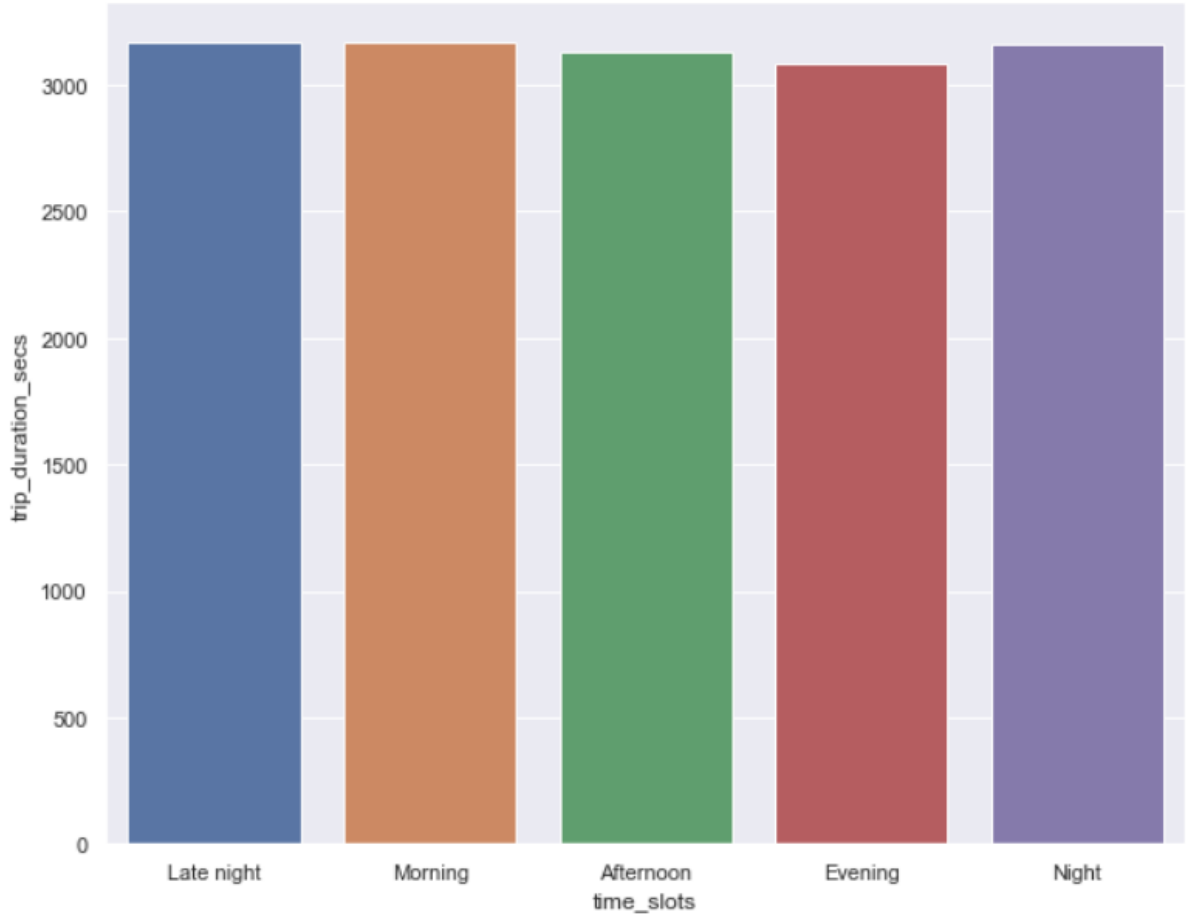
Gap Analysis based on Timeslots and Status

- Plot showing the distribution of the two major crisis over time slots.
- Evening and Night requests faces No car available crisis
- Morning requests face the cancellation by driver.



Trip Duration Analysis

- Trip duration is calculated for only completed trips.
- Trip duration = drop_time – request_time
- The trip duration is found to be uniform across all the timeslots. So there are no shows of traffic or busy hours in the trips.

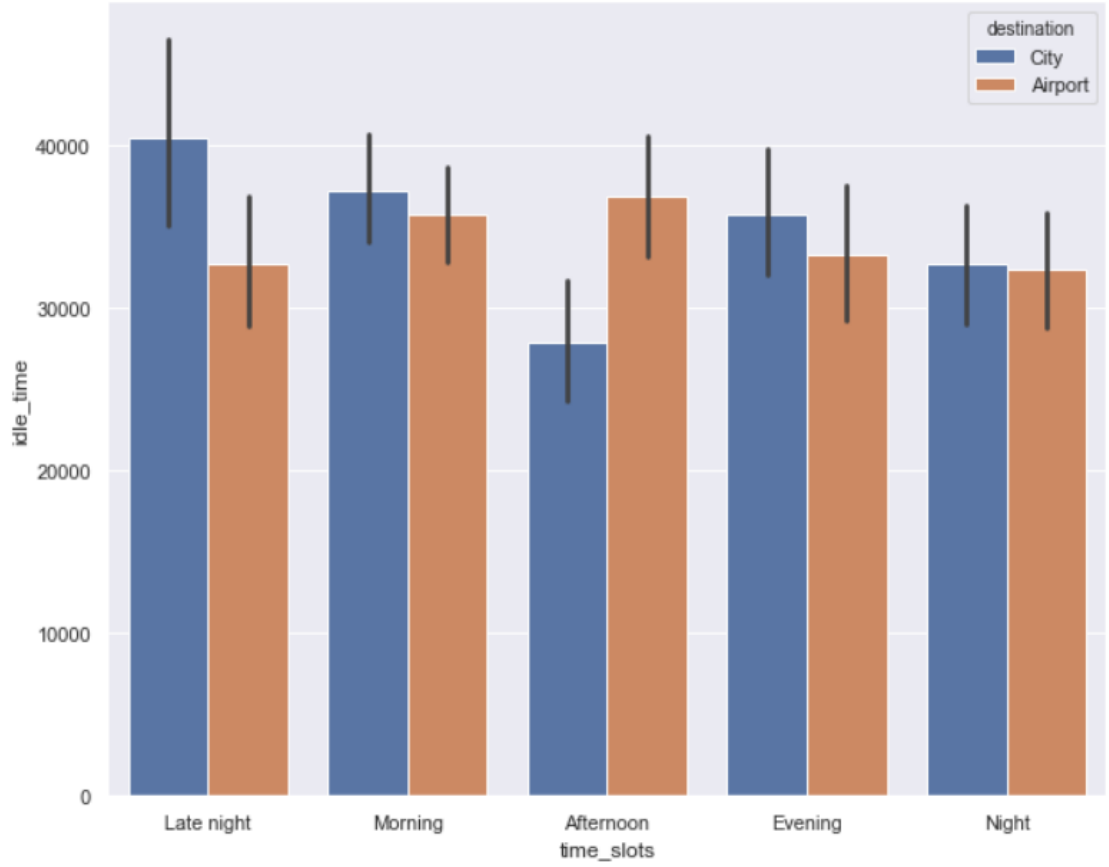


Driver Idle time analysis

- Idle time computation is done only for completed trips as it depends on drop time of each trip.
- For the Idle time computation, we are considering the current drop time of each request and next request time for the particular driver.
- Idle time = Current Drop time - next Request time

Driver Idle time analysis

- Deriving Destination column from pickup_point. It helps to know where the ideal time is spent.
- Late night has the highest idle time, driver hesitant to make trips during late night.
- There are high proportion of cabs in idle state during Evening and Night at the City which results in the No Car Available crisis at the Airport during Evening and Night.
- Afternoon has high idle time at the Airport which signifies that there are very less number of flight arrivals in the Afternoon.



Reasons for Supply Demand Gap

- For the trips originating from Airport, probably the huge Non availability of cars during Evening and Night are due to :
  - This is nearly the end of the working hours for most of the drivers which increases their Idle time in the City area resulting in crisis in Airport area.
  - There are less number of flights departures resulting in more drivers stay in the city for pickup.
- For the trips originating from Cities, probably the huge Cancellation by drivers during Morning is due to :
  - Higher waiting period (idle time) at the airport during Morning slot.

Ways to resolve Supply Demand Gap

- Incentive trips to the Airport from City during problematic time slots. Eg. Morning
- Motivating drivers by increasing Surge price of the trips during Evening and Night for trips originating from airport. This hike in the trip price will attract drivers from city rushing towards airport. It will help resolving No car availability crisis.
- Driver staying near the Airport will give significant impact to this crisis. More such drivers should be hired and operated with additional incentives to serve this crunch situations.
- Encourage drivers to leave Airport after minimum wait time, it reduces idle time and monetarily benefit the driver as he gets passengers in the city.

THANK YOU