Uber Supply-Demand Gap Analysis

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Business Objectives & Strategy

Business Objective

Identify the root cause of the Demand-Supply Gap and recommend ways to improve the situation.

Constraints

- Only the trips to and from the airport

Research Data

Uber Request Data

Research data consists of Uber cab requests made between July 11-15 2017 for pickup points Airport & City.

Each request record consists of following attributes:

- **Request id** - Unique identifier of the request
- **Request timestamp** - Date & time at which the customer made the trip request
- **Drop timestamp** - Drop-off date & time, in case the trip was completed
- **Pick-up point** - Point from which the request was made
- **Driver id** - Unique identification number of the driver
- **Status** - Final status of the trip - Completed, Cancelled by the driver, No cars available

Demand-Supply

Demand definition
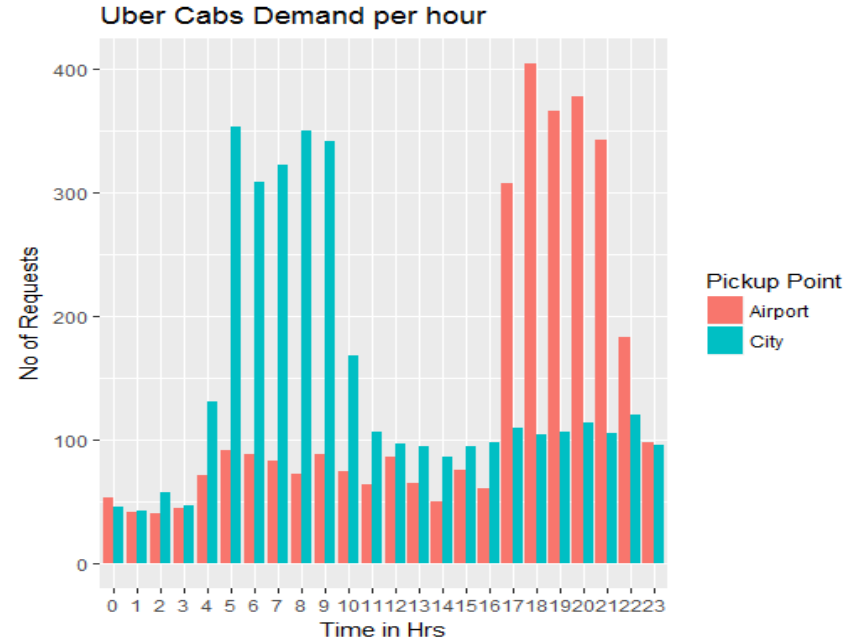
Demand of Uber cars   = Total no of Requests made

Supply definition

Supply of Uber cars   = Total no of Trips Completed

Demand over 24hrs

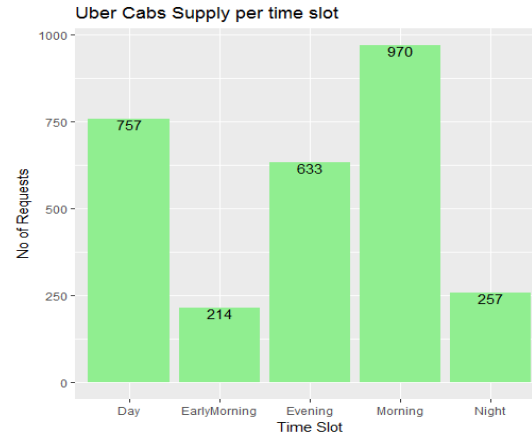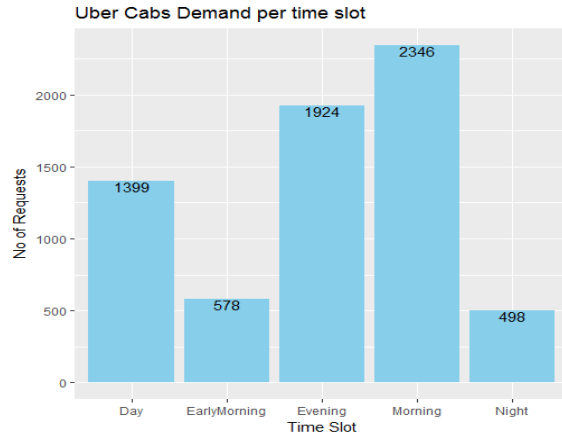## Demand Pattern Observations

- Avg demand is ~100 cars

- Demand surges seen between 4AM – 10AM for City Pickup Point

- Demand surges seen between 5PM – 9PM for Airport Pickup Point

- 5 time slots can be identified:
  - Early Morning – 12AM – 4AM
  - Morning – 4AM – 10AM
  - Day – 10AM – 5PM
  - Evening – 5PM – 9PM
  - Night – 9PM – 10PM

Uber Cabs Demand per hour

Demand per time slot
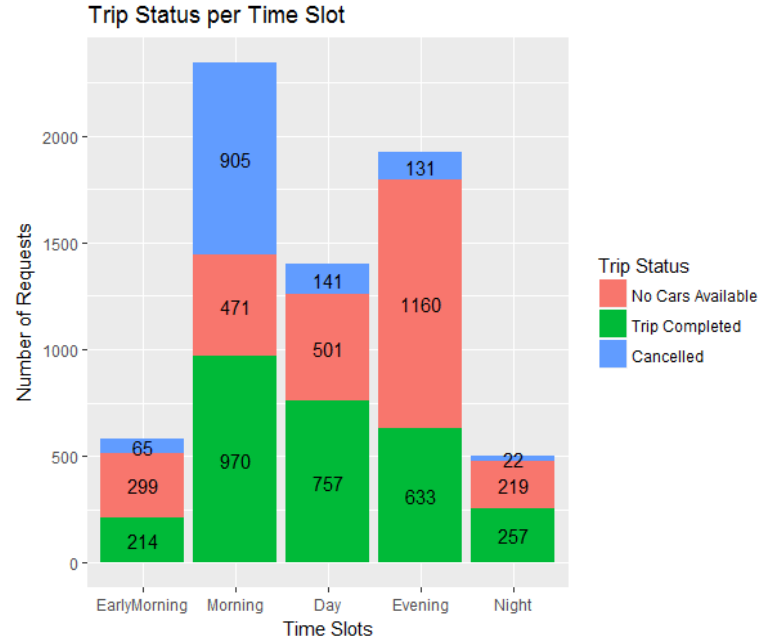
Demand-Supply Pattern Observations

- Demand is the high in Morning & Evening

- Supply to Demand ratio is less for Morning (37.02%) and Evening (32.90%) time slots thus creating a huge Gap

Demand vs Trip Status

Demand Pattern Observations Grouped by Trip Status

- Morning time slot has the maximum cancellations

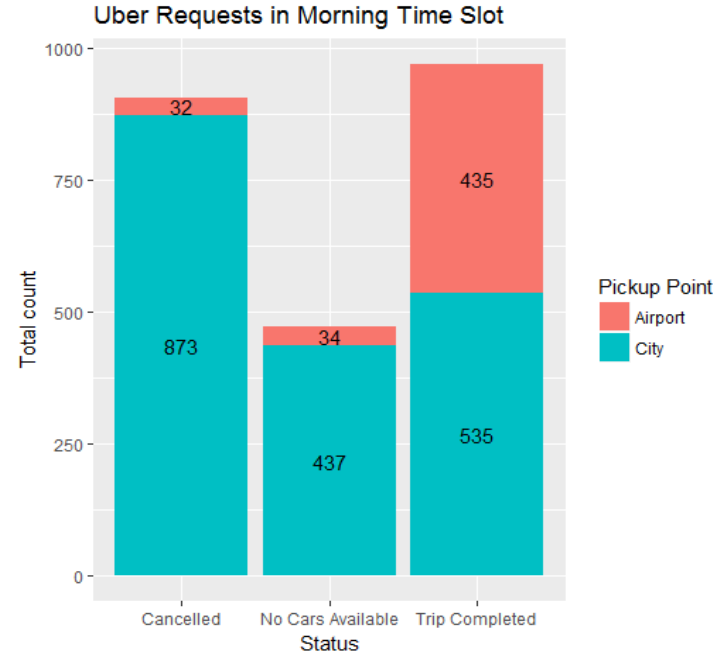- Evening time slot has high unavailability of cars

Trip Status per Time Slot

Trip Status
- No Cars Available
- Trip Completed
- Cancelled

Morning – Cancellation Issue

Observations

- Total cancelled requests = 38.60%

- Total cancelled requests
  for Airport pickup point = 03.54%

- Total cancelled requests
  for City pickup point   = **96.50%**

Demand-Supply Gap

Due to high cancellation only **29%** of
Demand is fulfilled for City to Airport
Trips in Morning Time slot

Uber Requests in Morning Time Slot

Morning – Cancellation Issue

Causes of Demand-Supply Gap

- High no of departures than arrivals in Morning time slot. Hence Demand to Airport is high
- As arrivals is less than departures, idle time at airport is high for drivers who accept Airport drop requests.
- Thus high no of cancellations creating Demand-Supply Gap

Recommendations to narrow Gap

- Drivers can be provided incentives for City to Airport trip
- Customers can be charged toll charges, parking fee charges etc.
- Co-ordinate with Airport authority to understand flight patterns and increase the supply
- Airport Car Pool to combine multiple requests to meet the demands
- Penalty to driver for cancellations
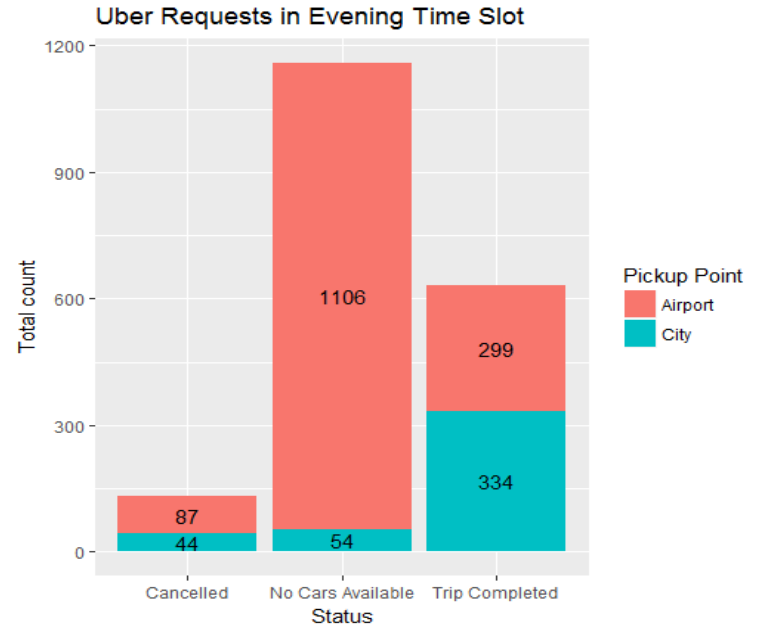- Provide base amount to drivers who return to City with no customer

Evening – Unavailability Issue

Observations

- Total unavailable cars = 60.30%

- Total unavailable cars
  for Airport pickup point = **95.30%**

- Total unavailable cars
  for City pickup point = 04.66%

Demand-Supply Gap

Due to high unavailability of cars only
20% of Demand is fulfilled for Airport to
City Trips in Evening Time slot

Uber Requests in Evening Time Slot

Evening – Unavailability Issue

Causes of Demand-Supply Gap

- High no of arrivals than departures in Evening time slot. Hence Demand to City is high

- As departures are less than arrivals, less no of cars will be travelling to Airport creating a scarcity of cars

- Thus high no of unavailability of cars creating Demand-Supply Gap

Recommendations to narrow Gap

- Drivers can be provided incentives for Airport to City trips

- Customers can be charged toll charges, parking fee charges etc.

- Co-ordinate with Airport authority to understand flight patterns and increase the supply

- Airport Car Pool to combine multiple requests to same drop locations to meet the demands

- Penalty to driver for cancellations