Uber Supply Demand Gap Analysis

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Abstract

Business Understanding :

To address the problem Uber is facing, demand and supply of cars leading to and from Airport

Business Objectives :

To identify the root cause of the problem Uber is facing.
- Cancellation
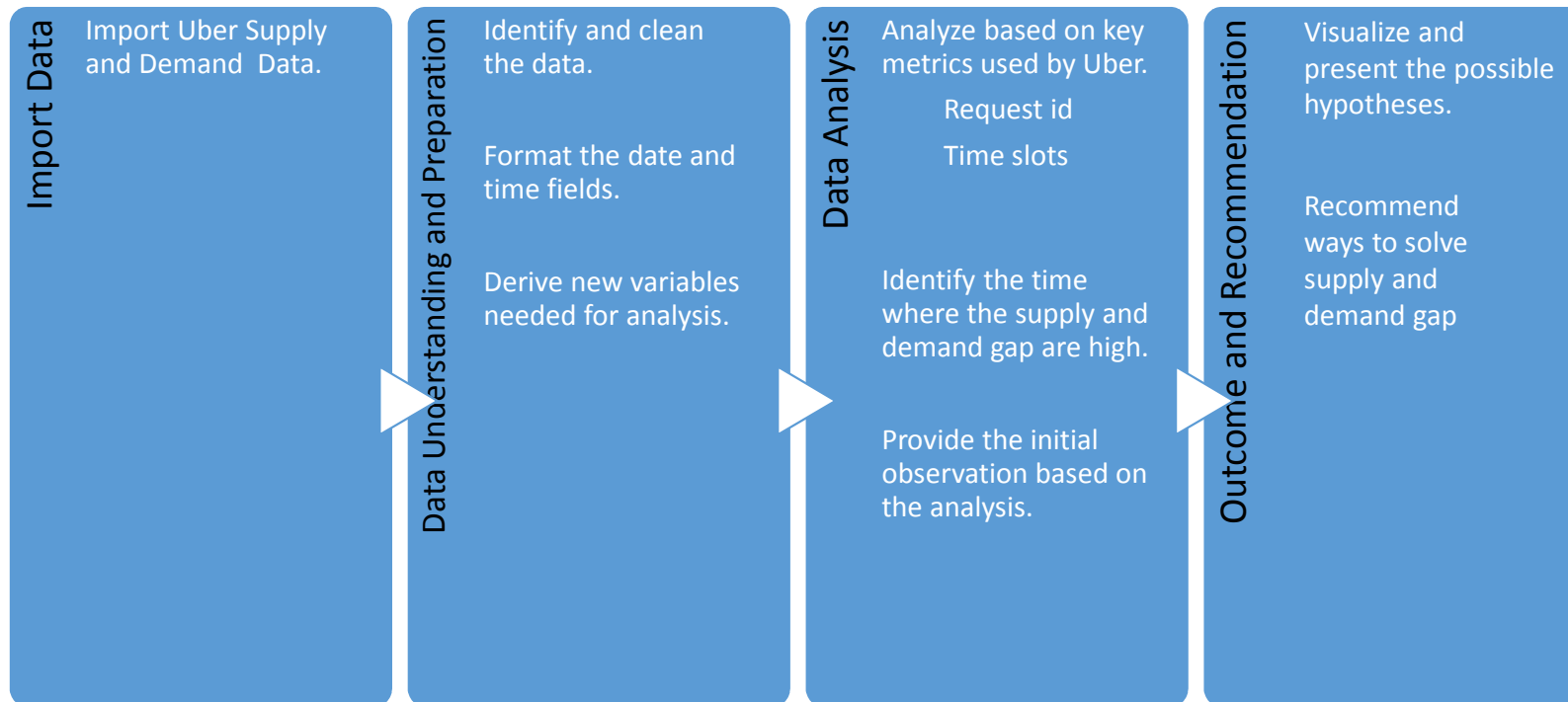- Non availability of cabs to and from airport.
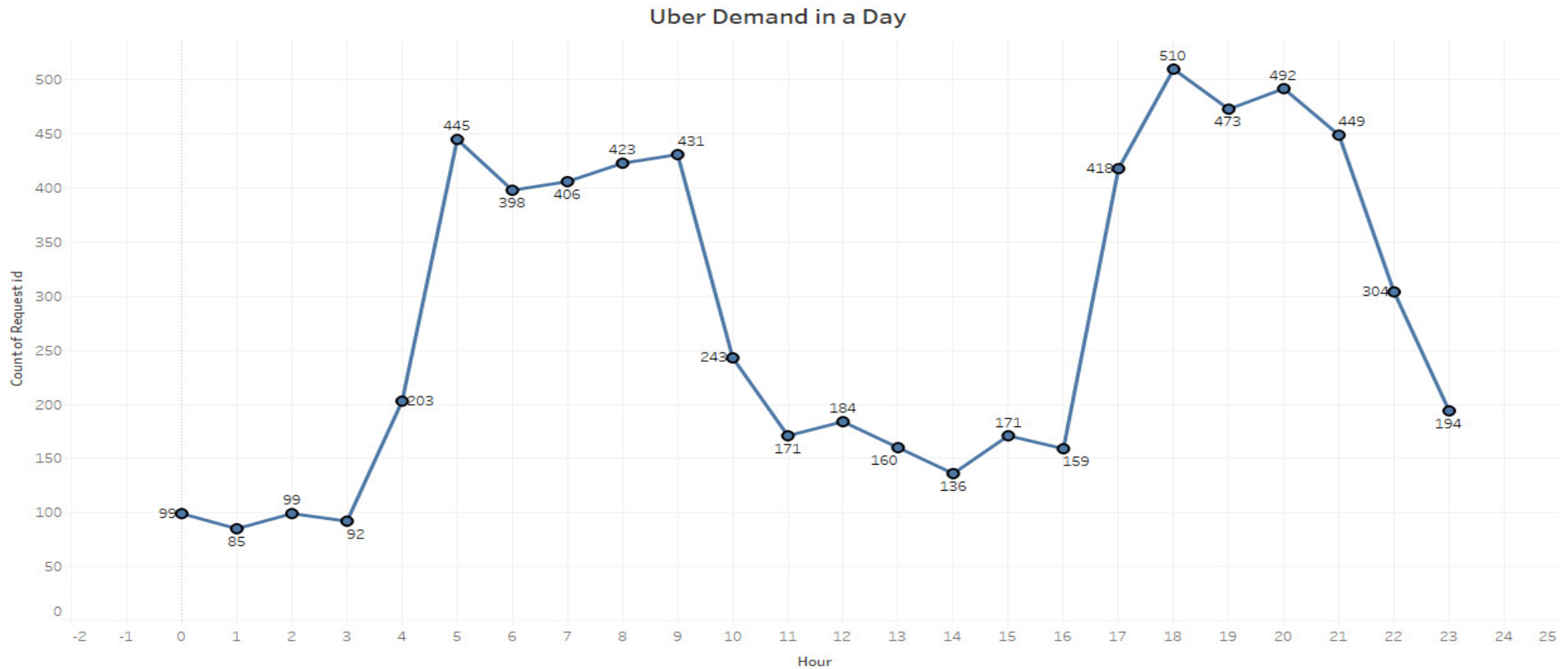
Approach

Identify the root cause of the problem.

Analyze the root cause of the problem

Provide recommendations to address the supply demand gap.

Detailed Approach

Import Data

Import Uber Supply and Demand Data.

Data Understanding and Preparation

Identify and clean the data.

Format the date and time fields.

Derive new variables needed for analysis.

Data Analysis

Analyze based on key metrics used by Uber.

Request id

Time slots

Identify the time where the supply and demand gap are high.

Provide the initial observation based on the analysis.

Outcome and Recommendation

Visualize and present the possible hypotheses.

Recommend ways to solve supply and demand gap

Uber Demand pattern in a Day

Uber Demand in a Day

The trend of count of Request id for Hour.

Analysis by Request id

## Total request by pickup location
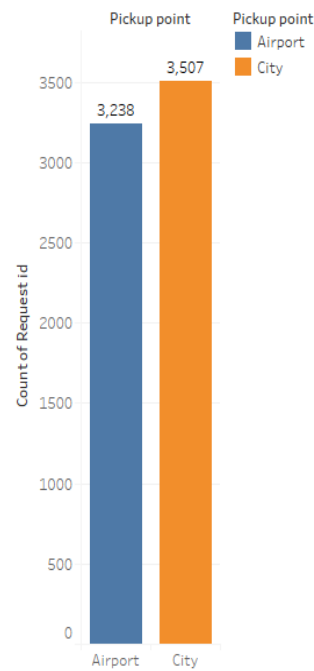
Count of Request id for each Pickup point. Color shows details about Pickup point.

The first plot on the left hand side shows the total number of request for City is more compared to the Airport pickup location.

In the second plot on the right hand side indicates that the demand (cancelled and no cars available) percentage is more than the supply percentage for both Airport and City pickup location.
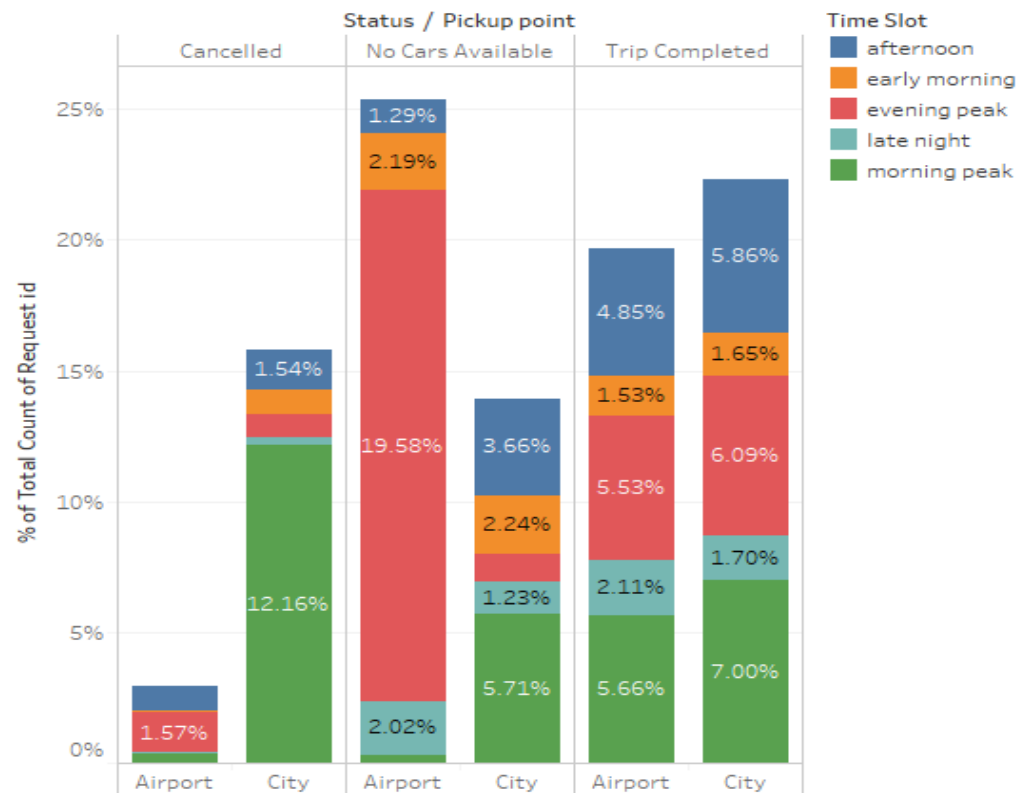
Total Request for pickup location and status
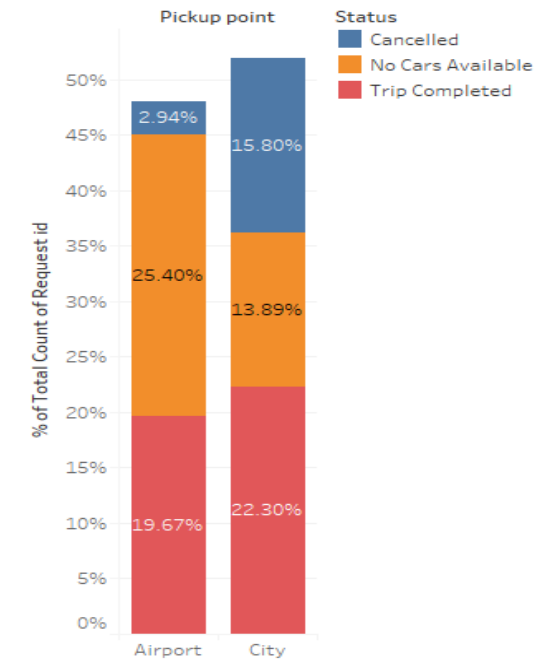
% of Total Count of Request id for each Pickup point. Color shows details about Status. Percents are based on the whole table.

Analysis by time slot

Total request time slot wise

% of Total Count of Request id for each Pickup point broken down by Status. Color shows details about Time Slot. Details are shown for Time Slot. Percents are based on the whole table.

The plot shows that cancellation percentage are more in the morning peak hours.

No cars are available during the evening peak hours.

Note : Time slots considered here are :
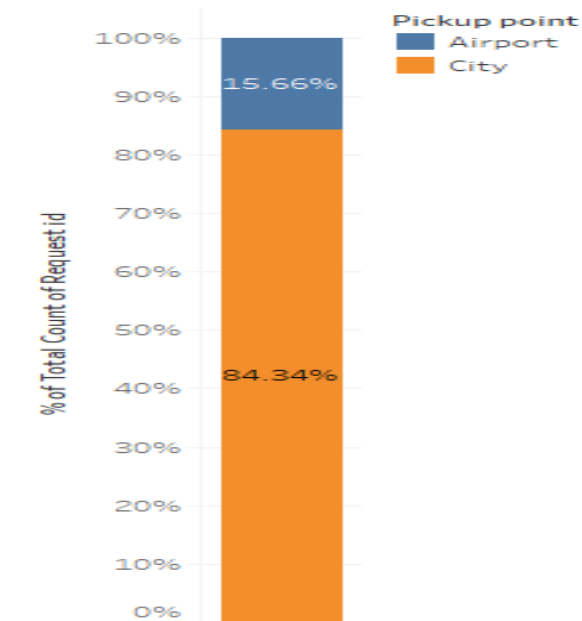Early morning : < 5
Morning peak : 5 to 10
Afternoon   : 10 to 17
Evening peak   : 17 to 22
Late night   : 23 to 24

Outcome of observations - 1

Cancelled trip – morning peak

Pickup point
- Airport
- City

15.66%

84.34%

% of Total Count of Cancelled Request id. Color shows details about Pickup point. Percents are based on the whole table.

The cabs cancelled in the morning peak hours are high.

Around 84.34% of cabs are cancelled in the morning peak hours and its high compared to the other time slots.

Reasons for cancellation :
- The duration of the trip to reach the airport and wait for the next ride and return to the city is very high.
- The trips are completed from the airport in the evening more than the other time slots.

Outcome of observations - 2

Evening time slot
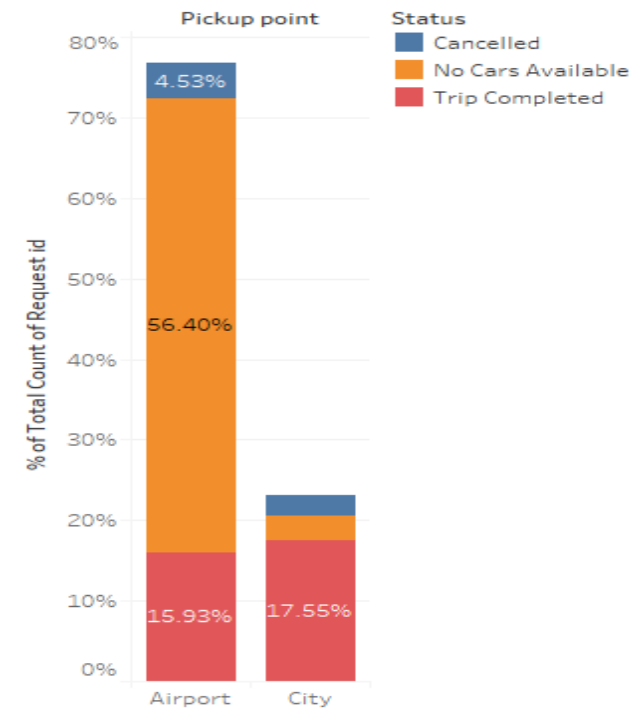
% of Total Count of Request id for each Pickup point. Color shows details about Status. No cars are available during the evening peak hours.

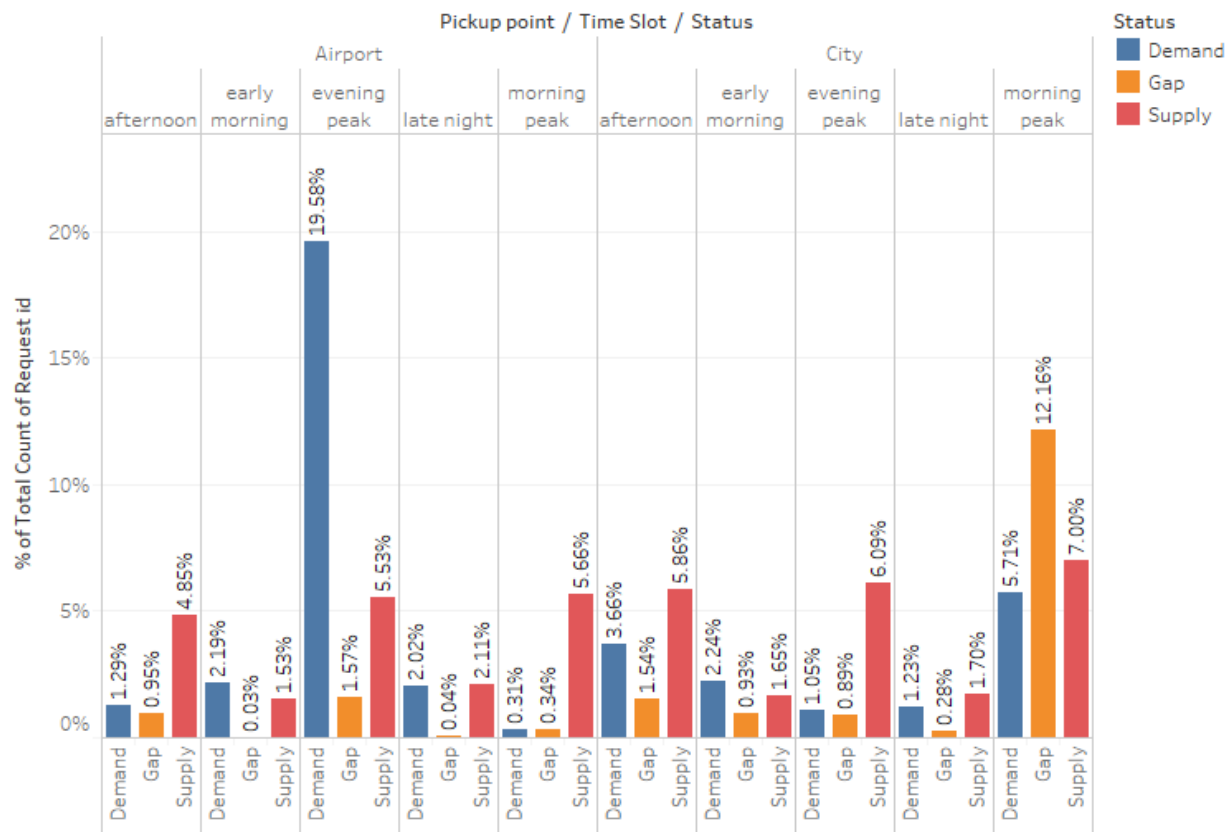The cabs are not available in the evening time.

Around 56.40% of cabs are not available in the evening peak hour at the airport.

Reasons for cancellation :
- The international flights land during the evening time and hence the number of request are more during this time.
- Since no cabs have reached the airport before this time, the supply is low compared to the demand.

Outcome of observations - 3

Demand - Supply - Gap during the time slots

% of Total Count of Request id for each Status broken down by Pickup point and Time Slot. Color shows details about Status. Percents are based on the whole table.

The demand and gap is high compared to the supply.

Huge traffic in the morning peak and evening peak results in more cancellations and no cars available.

Low airport pickup demand during the day results in the high wait time for the drives at the airport.

Recommendations

- For all the Business international trips, Uber needs to have a MOU with the companies. This will help Uber in identifying/planning the need of cabs to and from the airport well in advance. Since all the business trips are well planned in advanced, the companies should be able to provide the details to Uber as well.

- Uber can tie up with the airlines, so that while the air ticket is booked even the cabs are booked for the drop and pickup from airport.

- If above does not work, Uber can request the passengers to book the cabs to the airport in advance. So that way Uber can plan the total trip details to and from the airport.

- By the above ways if Uber knows the to and from airport trip details in advance, it can assign certain drives only for airport pickup and drop.

- Uber can provide benefits (incentives, loyalty rewards) to the drives who do pickup and drop to the airport.

- For the drivers waiting time at the airport, Uber can provide the bare minimum fare. This keeps the drives motivated to wait for next trip.

- Uber can provide Awards/Certifications/Cash Rewards for the drives who do maximum possible to and from the airport.

- With advance airport booking information Uber can reduce the cancellation of trips.

- Another recommendation is to have all the possible shortcuts routes in the cities to the airport updated, so that the time driver spends in the traffic can be reduced.