Uber Supply Demand Gap - EDA

Rahul Raj - 3rd, May 2022

Problem Statement

Uber - Supply - Demand Gap

The aim of the study is to identify the root cause of the problem that uber faces

And Explore data to find some possible solutions

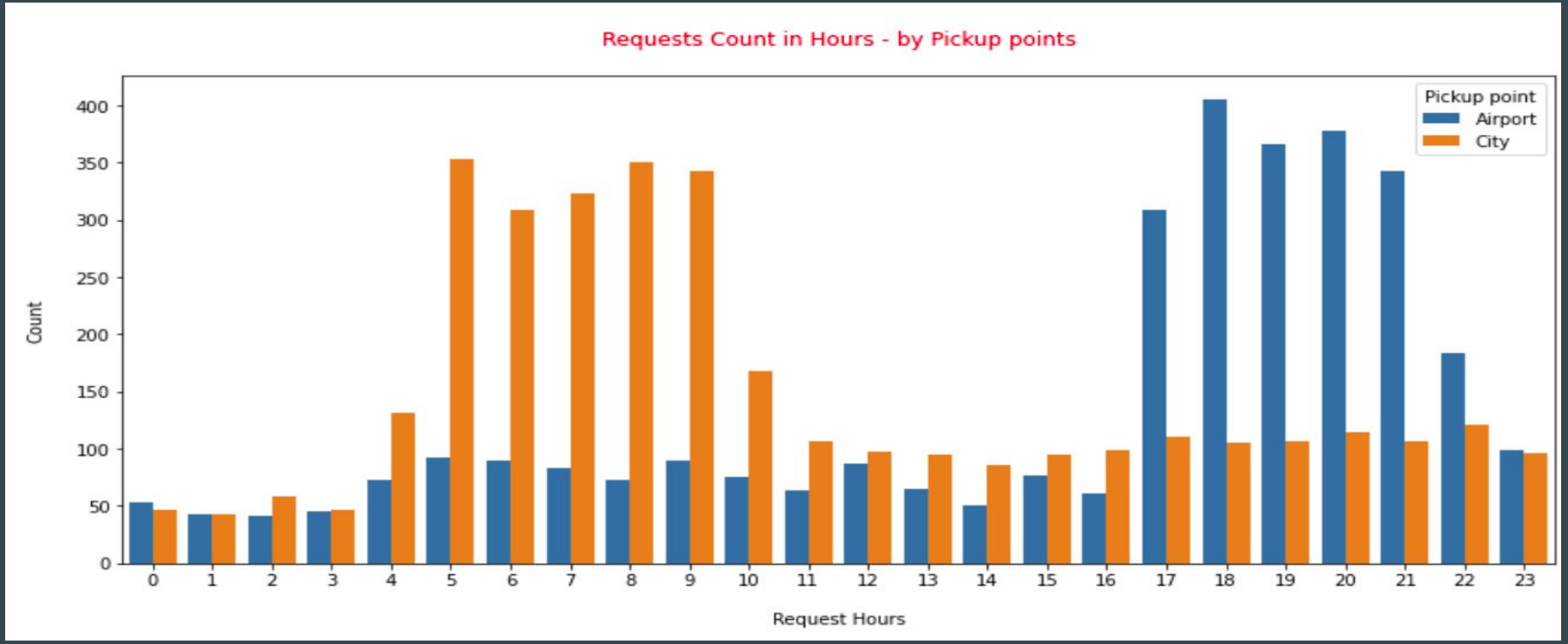
Data Available - For the Analysis

Uber Request Data.csv

	Request id	Pickup point	Driver id	Status	Request timestamp	Drop timestamp
0	619	Airport	1.0	Trip Completed	11/7/2016 11:51	11/7/2016 13:00
1	867	Airport	1.0	Trip Completed	11/7/2016 17:57	11/7/2016 18:47
2	1807	City	1.0	Trip Completed	12/7/2016 9:17	12/7/2016 9:58
3	2532	Airport	1.0	Trip Completed	12/7/2016 21:08	12/7/2016 22:03
4	3112	City	1.0	Trip Completed	13-07-2016 08:33:16	13-07-2016 09:25:47

** The data includes only the request made from and to the Airport

Request Count vs Hours of the Day



1. City receives the high numbers of request between 5.00 Hrs and 10.00 Hrs of the Day (Approx. 300 request/ hour)
2. Airport gets high number request between 17.00 Hrs and 22.00 Hrs (Approx 350 request/hour)

The timeslots - Binning

For the better understanding of the problem

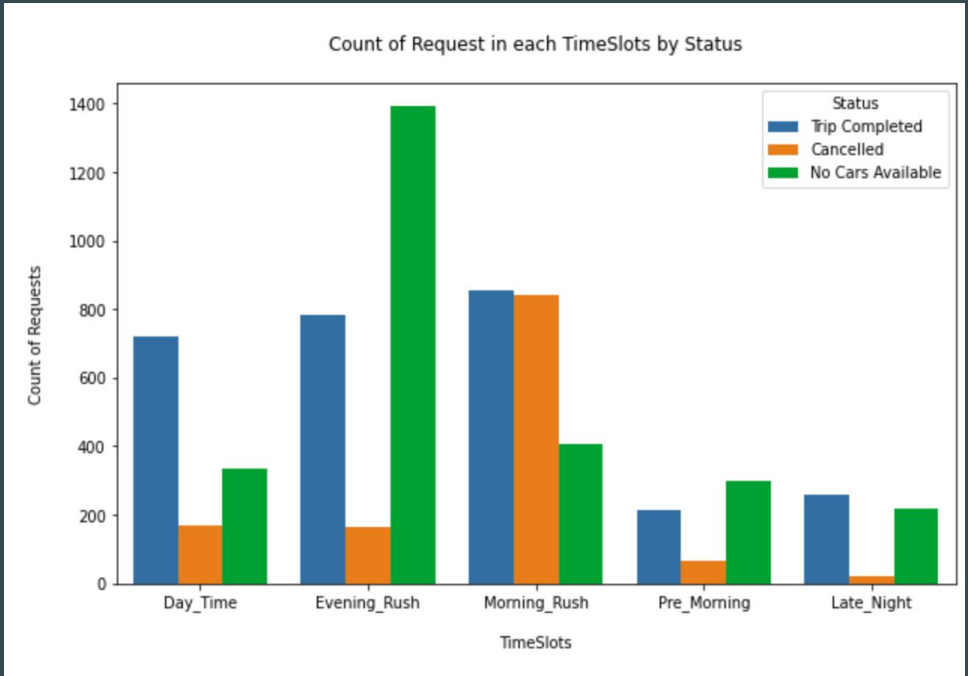
Request-timestamp variable is binned into the following.

1. Pre_Morning : 00.00 Hrs - 5.00 Hrs
2. Morning_Rush : 5.00 Hrs - 10.00 Hrs
3. Day_Time : 10.00 Hrs - 17.00 Hrs
4. Evening_Rush : 17.00 Hrs - 22.00 Hrs
5. Late_Night : 22.00 Hrs - 0.00 Hrs

```
def timeslot_func(x):

    if x < 5 :
        return ('Pre_Morning')
    elif x < 10:
        return ('Morning_Rush')
    elif x < 17:
        return ('Day_Time')
    elif x < 22 :
        return ('Evening_Rush')
    else :
        return ('Late_Night')
```

Count of Requests in Each Time Slots

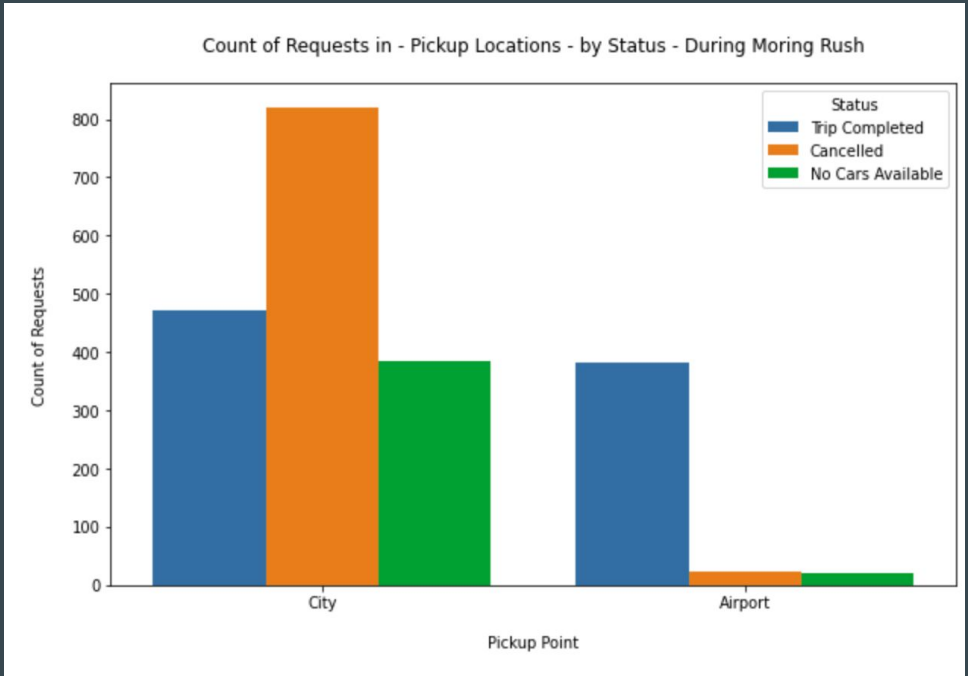


	TimeSlots	# Requests	% Distribution
0	Evening_Rush	2342	34.72
1	Morning_Rush	2103	31.18
2	Day_Time	1224	18.15
3	Pre_Morning	578	8.57
4	Late_Night	498	7.38

Almost 65% of the request are coming in,
during Evening_Rush
and Morning_Rush Time Slots put together

- The Cancellations are very high during the Morning Rush Time Slot
- The number of cancellations is as equal as the number of trips completed during the morning rush
- The availability of cars is a concern during the Evening rush - almost twice of the request are left unattended to the number of completed requests

Count of Requests by Pickup Locations - During Morning Rush

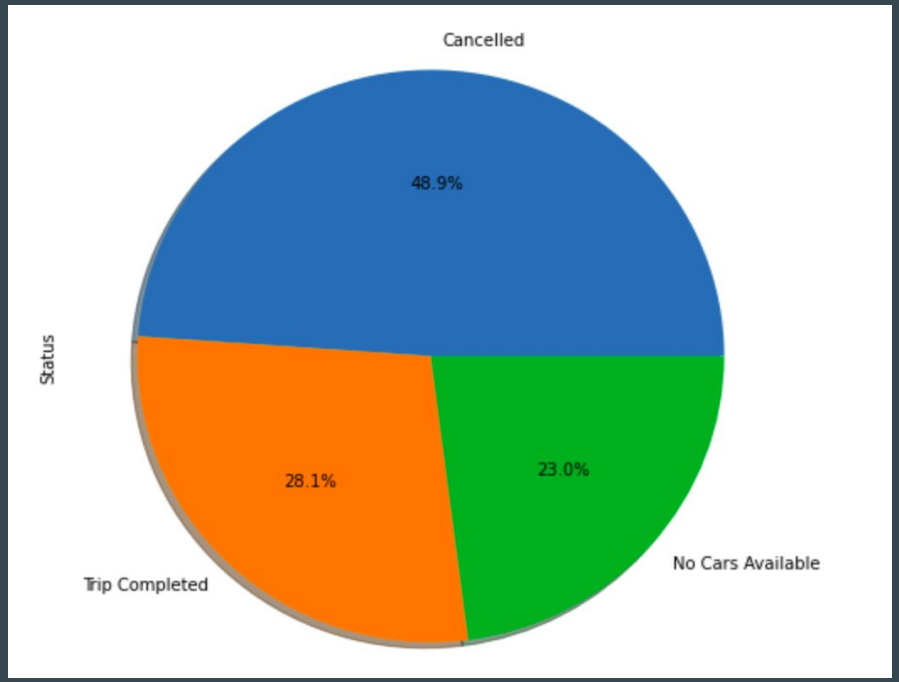


	Pickup Point	# Requests	% Distribution
0	City	1677	79.74
1	Airport	426	20.26

Near to 80 % of the request made during the Morning_Rush is happening at the City alone

- The number of cancellations is relatively very high in the morning rush from the City
- The car unavailability is also a concern , which is near to the number trips completed during the morning rush

Status of Request at City During the Morning Rush

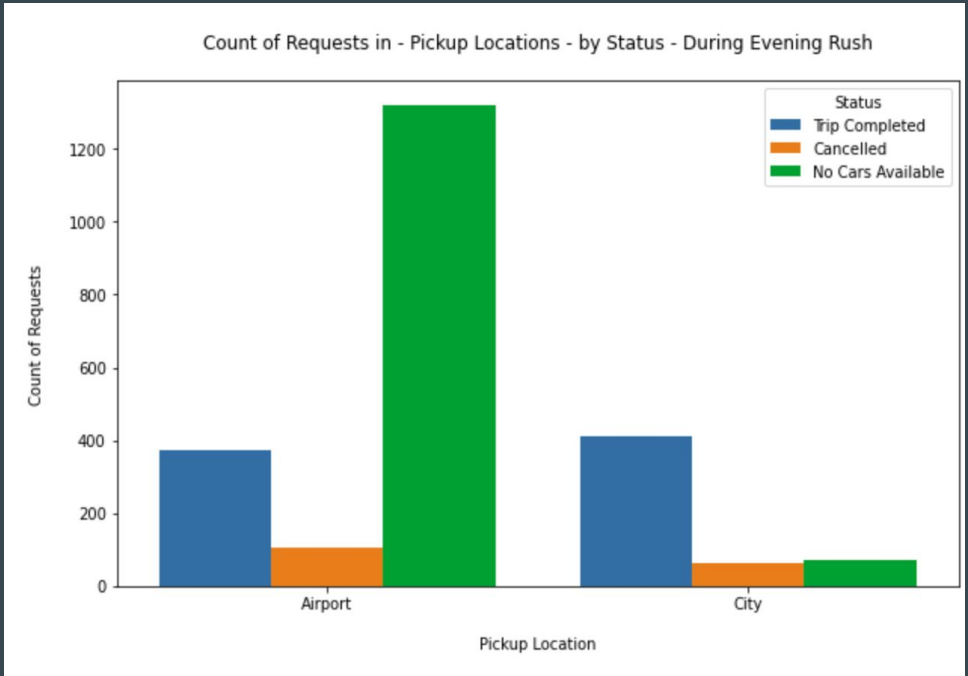


	Status	Count	% Distribution
0	Cancelled	820	48.90
1	Trip Completed	472	28.15
2	No Cars Available	385	22.96

Almost 49% of the request are getting cancelled in the morning_Rush from the City

- 23% of the request are getting un-attended, due to the non-availability of the cars in the morning hours from the City
- Only 28% of request is able to get through, is a matter of concern - from the city during the morning rush

Count of Requests by Pickup Locations - During Evening Rush

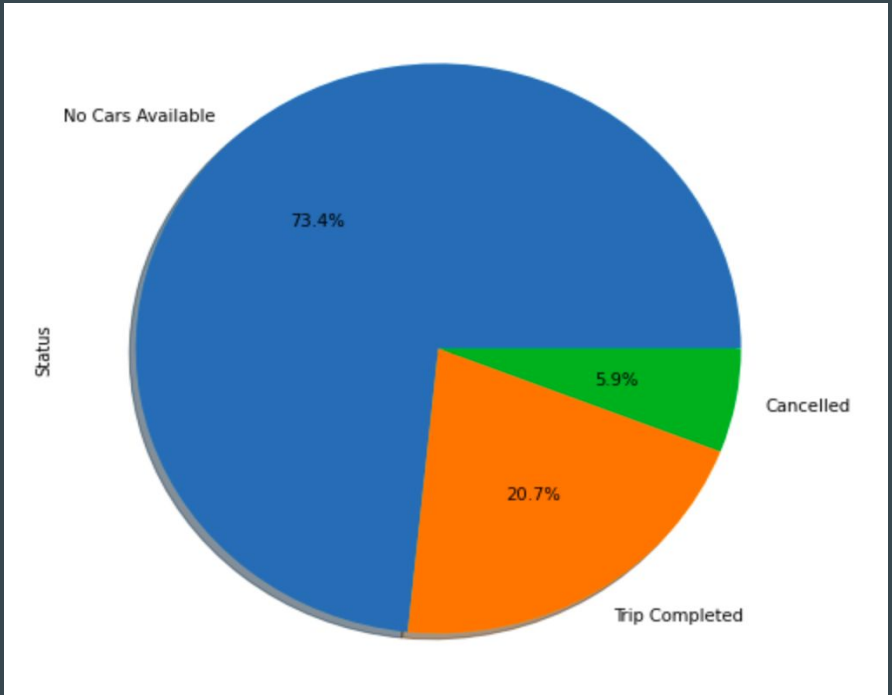


	Pickup Point	#Requests	% Distribution
0	Airport	1800	76.86
1	City	542	23.14

Near to 77 % of the request during the Evening_Rush is happening from the Airport alone.
That is a huge demand.

- During the evening hours the availability of cars at the airport is very less
- The cancellation is relative less in this scenario, as the gap between demand and the supply is very high

Request-Status at Airport During the Evening Rush



	Status	Count	% Distribution
0	No Cars Available	1321	73.39
1	Trip Completed	373	20.72
2	Cancelled	106	5.89

Almost 73% of the request are getting unattended due to the non-availability of Cars at the Airport during the Evening_Rush hours

- Only 6% of the request are getting cancelled, this is because : - the supply is very minimal to the heavy demand at that time
- Only 21% of request is able to get through, is a matter of concern during the time slot

Summary Of the Report

There are two major time slots - (Morning Rush & Evening Rush) where 65 % of the request are concentrated.

However this huge demand is not met properly either from the City or from the Airport

Following are two major two challenges that uber faces

- ➔ Cancellation of 48% of the requests at the City during the Morning Rush
- ➔ Non availability of cars for 73% of the requests during the Evening Rush at the Airport

The first challenge is due the less numbers request (only 18%) are coming in the very next time slot (Day_Time) after the morning rush, as a result of which the Drivers will have wait relatively high amount of time at the airport to get a return trip during the Day_time.

The later challenge is due to the low request rate to the airport from city during the Day_time as a result of which number of cars available for the return trip from the Airport during the Evening Rush, is relatively low.

Recommendations

1. Drivers may be given a 10% additional incentive for completing the trip to Airport during the Morning Rush Slot (5.00 Hrs to 10.00 Hrs)
2. Drivers may be given a 20 % additional incentive for being available at the Airport in the Evening_Rush time slots (17.00 Hrs to 22.00 Hrs)
3. A Driver may be capped to cancel a maximum of 3 request during the Morning_Rush to for any trip to the airport.

End of the Report