UBER Supply-Demand Gap

SUBMISSION

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Date: 3-MAR-2019

Overview

Data and Problem:

- The dataset at hand comprises of ride details of uber cabs between city and airport
- The problem at hand is to identify and the routes which are effected by high cancellations and Non availability of cabs

Checkpoints:

- Identify the patterns in demand across different routes and different timeslots
- Identify the routes which are most affected
- Identify the root causes for the most affected routes
- Suggesting measures for tackling the problems

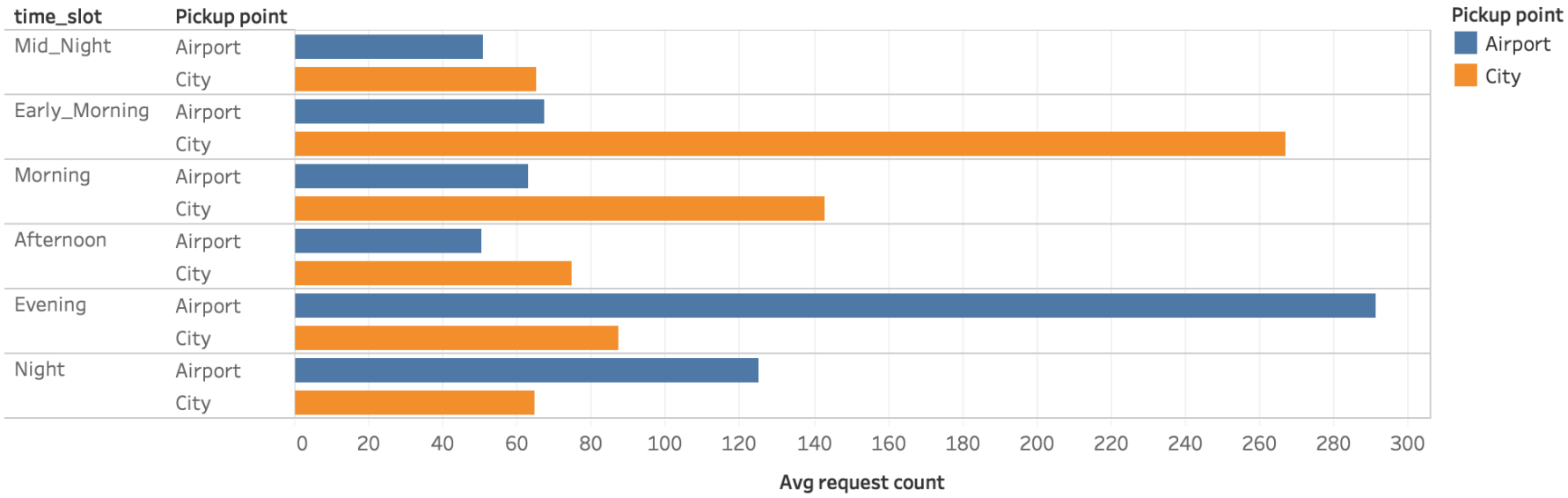
Assumptions:

- Inclusion of unsuccessful trips(Not available and cancellation) while calculating demand
- Demand = Successful Trips + Unsuccessful Trips
- Supply is equal to number of trips which are successfully completed
- Timeslots are assumed as below.
  - 12AM to 4AM – Mid night
  - 5AM to 8AM – Early Morning
  - 9AM to 12PM - Morning
  - 1PM to 4PM - Afternoon
  - 5PM to 8PM - Evening
  - 9PM to 12AM - Night

Analysis of demand across routes and timeslots

- We can see that both the routes from airport(48%) and from city(52%) have similar number of requests
- We can see that the number of requests peaks twice per day, once in the morning and once in the evening
- The peak in the morning is corresponding to the rides from city to airport and the peak in the evening corresponds to the route from airport to city
- Hence these two are the highest demanded routes in the corresponding time slots

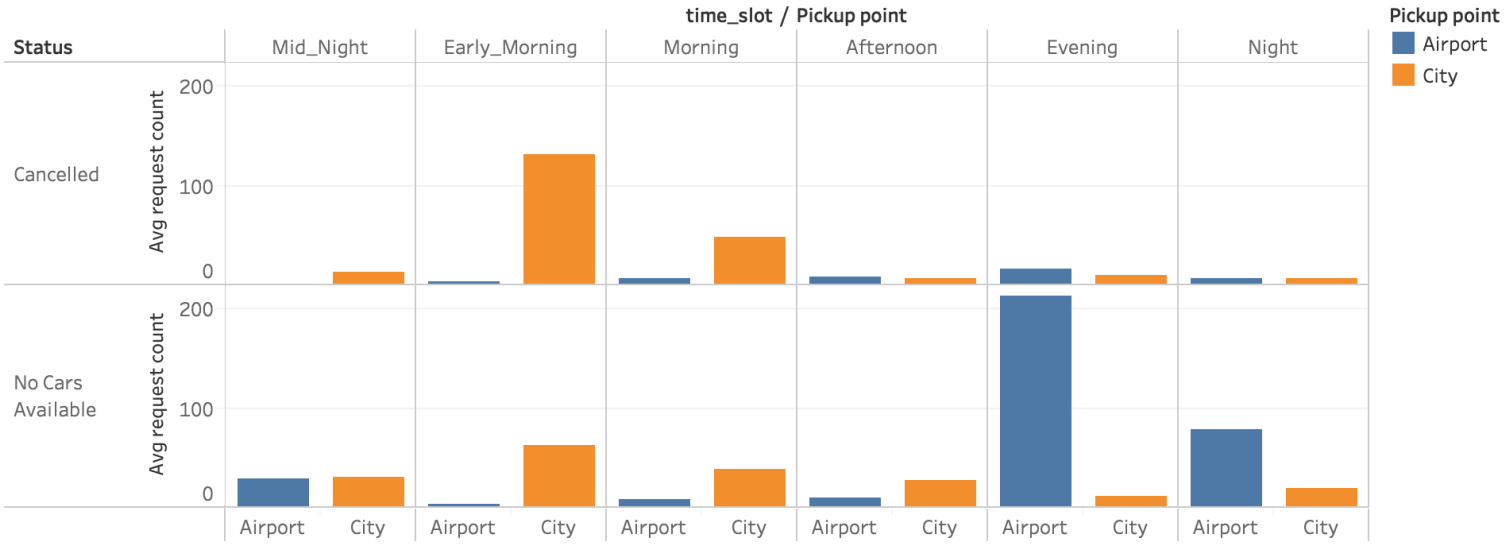
<Timeslot Vs Avg num of requests across the week>



Analysis on Trip status and timeslots

- The maximum number of cancelled requests are made in the early_morning time slot and the number of No car available requests in the evening timeslot is very high when compared to other timeslots
- The maximum number of cancellation timeslot corresponds to rides from city whereas the maximum number of No car available requests corresponds to rides from airport
- These are the most problematic type of requests

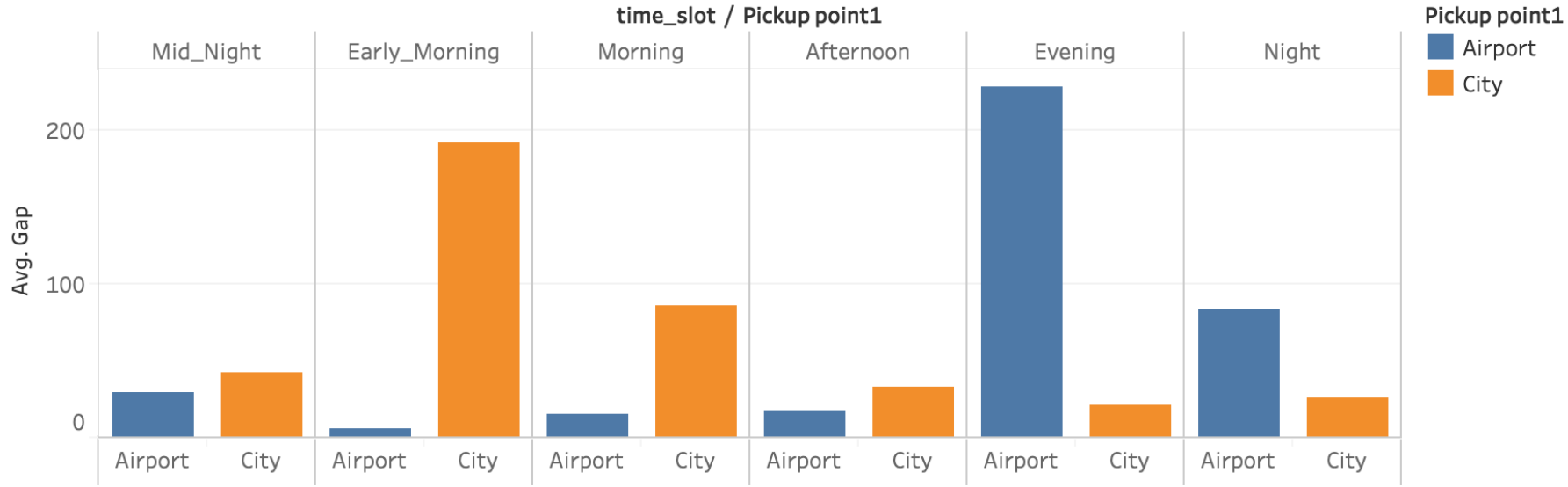
<Timeslot Vs Avg num of unsucessful requests across the week>



Analysis on Demand Supply Gap

- The Gap between Demand and Supply for Early morning and Evenings slots is much higher than the other slots.
- The Gap from early morning slot is for the rides from city to Airport and the Gap for evening slot is for the rides from airport to city

<Average Gap across all the days Vs timeslot for pickup points>



Probable Reasons

Issue: High Cancellations in Mornings in the route from City to Airport

Reasons:

- The Number of rides that are available from airport to City are much lower. This may be because of lower number of passengers travelling in the flights which are scheduled in afternoon
- The number of cabs travelling from city to airport in the same slot is much higher, therefore the chance is getting a ride from airport to city is much lower, therefore the driver has to either come back empty or stay at airport waiting for a ride
- Since average travel time from airport to city is 50mins (approx), going back empty is not profitable and same is the case with high wait times
- Hence drivers prefer to attend other routes which are more profitable to them, resulting in high cancellations

Probable Reasons

Issue: Low availability of cabs in the evenings at airport

Reasons:

- The supply of cabs to airports until evening is much lower due to less passengers travelling to airport
- Since the supply is very low when compared to the demand at the airport, the case of low availability of cabs is very prevalent at airport in the evenings

Recommendations

- Penalizing the drivers for over cancellation of rides in specific routes
- Incentivizing the drivers for accepting rides in the problematic routes by surge pricing
- Demand-Supply forecasting around the areas of airport and informing drivers about it, so that drivers from low demand high supply areas around, can come to airport. This will help in reducing the waiting time for the driver

Conclusions

Inferences:

1. The demand across the day is not constant and it peaks at mornings(6 AM – 10 AM) and Evenings(4PM – 6PM) and this trend remains similar across all weekdays
2. The problematic routes and timeslots are from city to airports in mornings where highest amount of cancellation happens and from airport to city in the evenings where the availability of cabs is very less
3. The highest gap between demand and supply is in the evenings at airport with an average value of 250 followed by mornings from city to airport with an average gap of 200. These two timeslots have more than 50% of the average total gap in a day

Recommendations:

1. Incentivizing the problematic routes by surging prices to increase supply and reduce cancellations
2. Penalizing the over cancellation in particular routes to reduce cancellations
3. Informing drivers about the high demand areas by using demand and supply forecasting