UBER SUPPLY-DEMAND GAP

ASSIGNMENT SUBMISSION

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# Business Understanding

Problem Statement:

Driver cancellation and non-availability of cars are leading to loss of potential revenue

Analysis Objectives:

• Identify root causes and possible hypothesis

• Recommend ways to improve the situation

Data Understanding, Cleaning & Preparation

| #	Variable Name	Description	Data Type	Remarks
1	Request.id	Unique identifier of request	Integer	Primary key – Requests made over 5 days (11/7/16 to 15/7/16)
2	Pickup.point	Point from which request is made (Airport/City)	Factor	Basis for request route: Airport-City/ City-Airport
3	Driver.id	Unique identifying number of driver	Integer	Values are Missing for No Cars Available Status
4	Status	Trip Completed/Cancelled/No Cars Available	Factor	Requests not serviced/Problematic Requests include Cancelled and No Cars Available Status
5	Request.timestamp	Date and time of making request	Date-Time	Data has to be cleaned to get a consistent date-time format & Hour of request has to be extracted.
6	Drop.timestamp	Drop-off date and time	Date-Time	Same as that for Request.timestamp; Values are Missing for Cancelled and No Cars Available Status

Distribution of Overall Requests
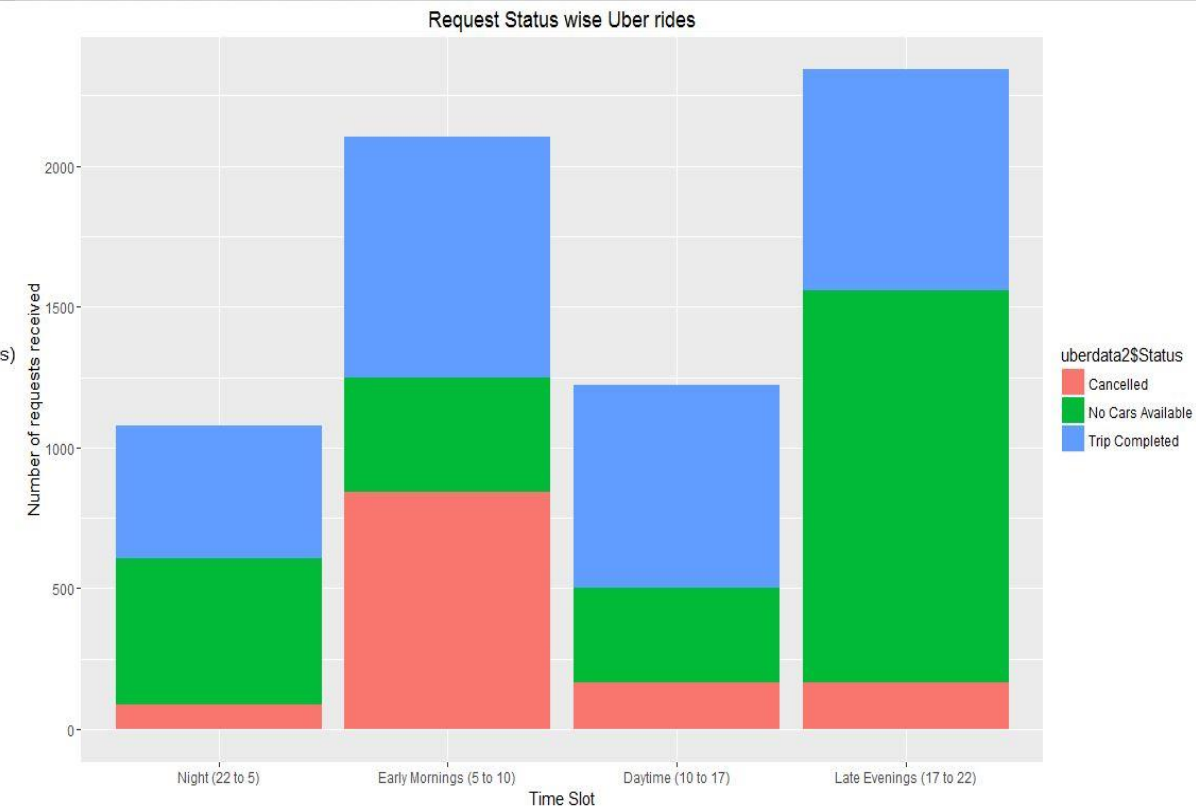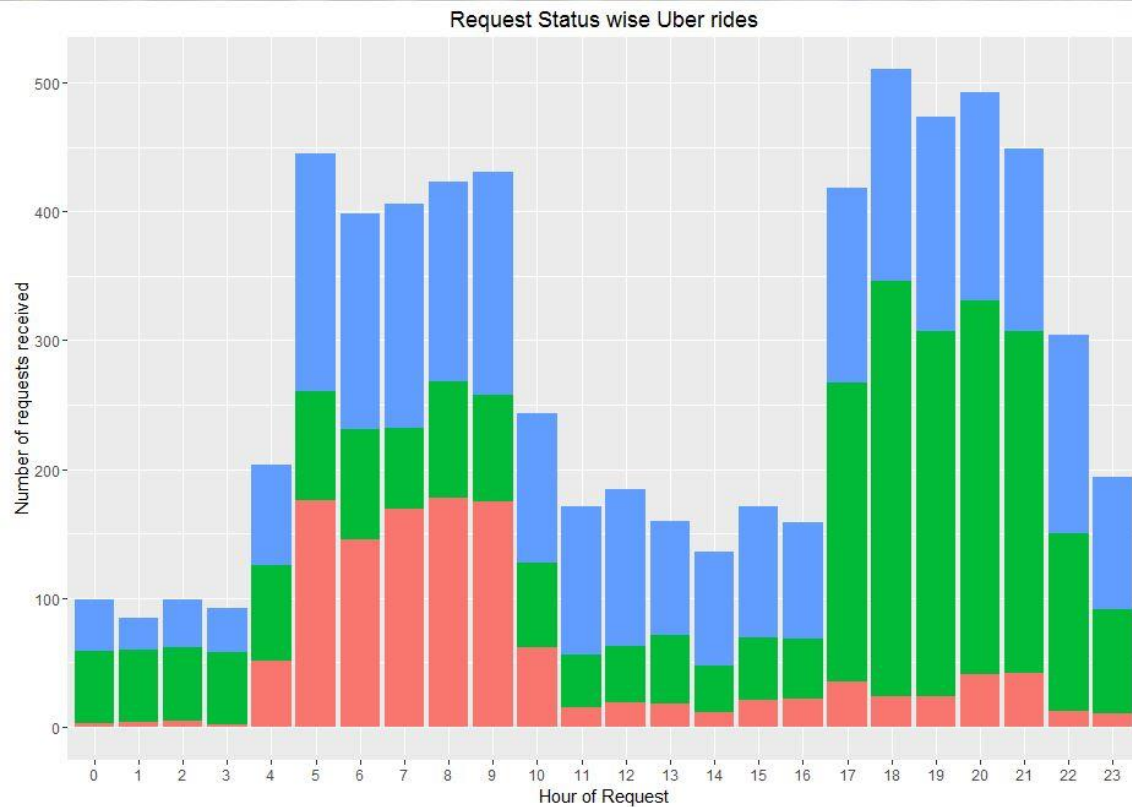
- In the left chart, we have an hourly distribution of all requests made. The total volume of requests varies in periods, with early morning hours of 5am to 10am and late evening hours of 5pm to 10pm receiving significantly higher volume of requests than those in the intermittent hours.

- Based on this pattern, the hours have been grouped in the right chart into 4 time slots: Night (10pm to 5am), Early Mornings(5am to 10am), Daytime(10am to 5pm) & Late Evenings(5pm to 10pm).

- There is no significant variation in the number of trips completed across different hours in the early morning and late evening slots.

Distribution of Problematic Requests
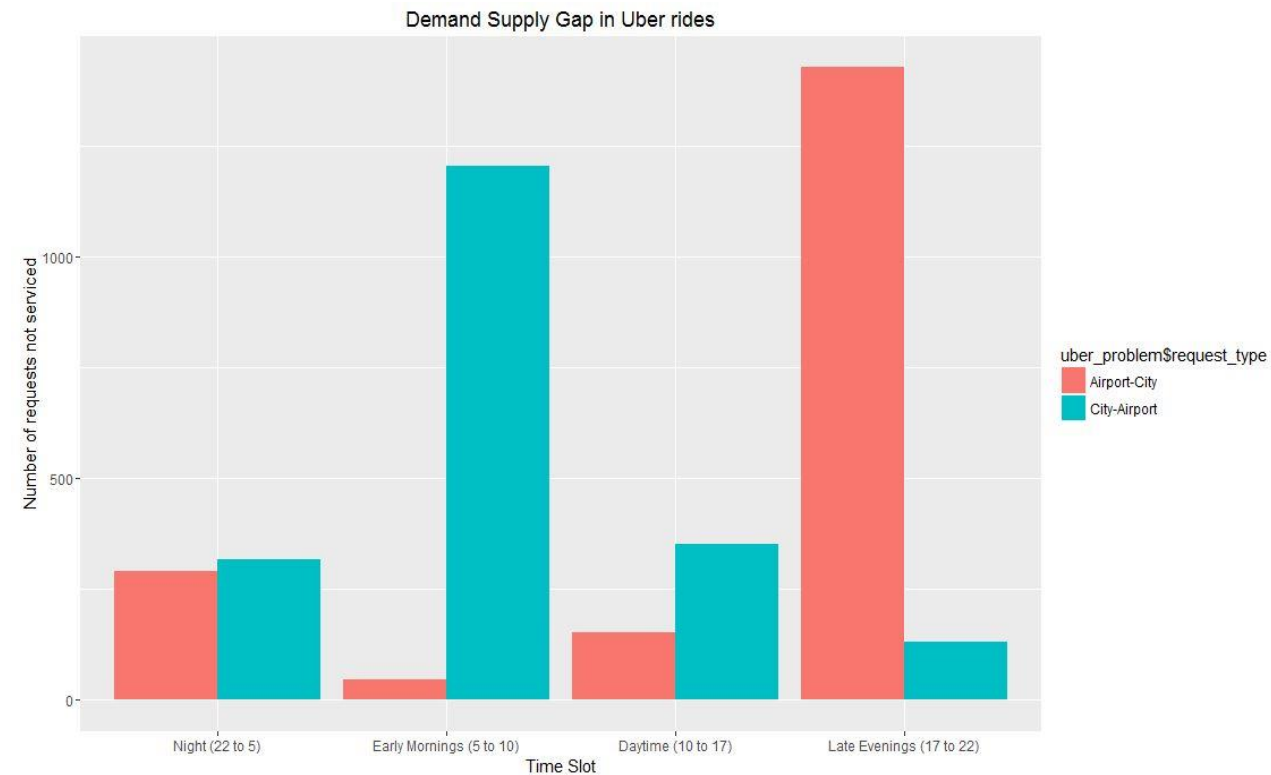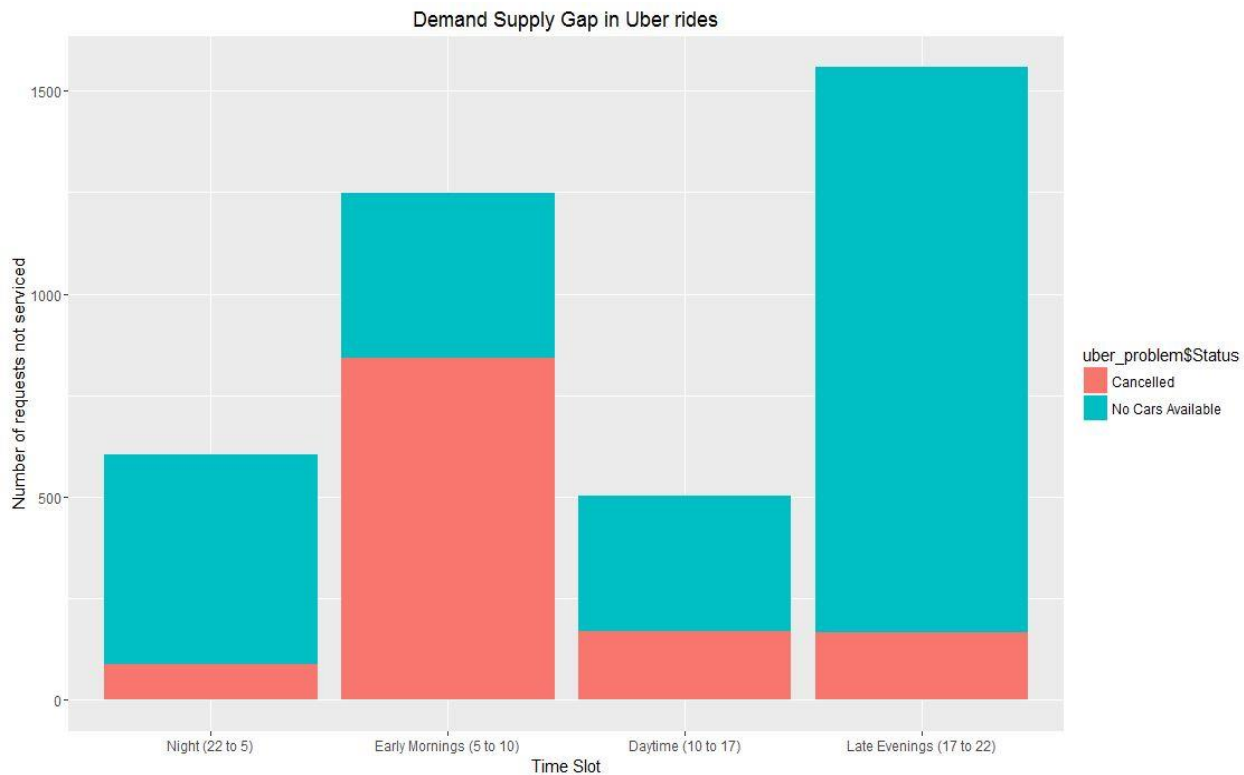
- Above charts provide visualization of only problematic requests, i.e. Request Status: Cancelled, No Cars Available. We see that Early Mornings and Late Evenings are the time slots with the highest demand supply gap.

- In the left chart, we see that in the early mornings time slot from 5am to 10am, majority of problem cases are due to rides getting cancelled. However, in the late evenings time slot from 5pm to 10pm, majority of problem cases are due to rides cars not being available.

- In the right chart, we have split the problematic requests on the basis of request type of Airport-City or City-Airport. We see that City-Airport request types account for majority of problems in the early mornings slot whereas Airport-City request types account for majority of problems in the early evenings slot.
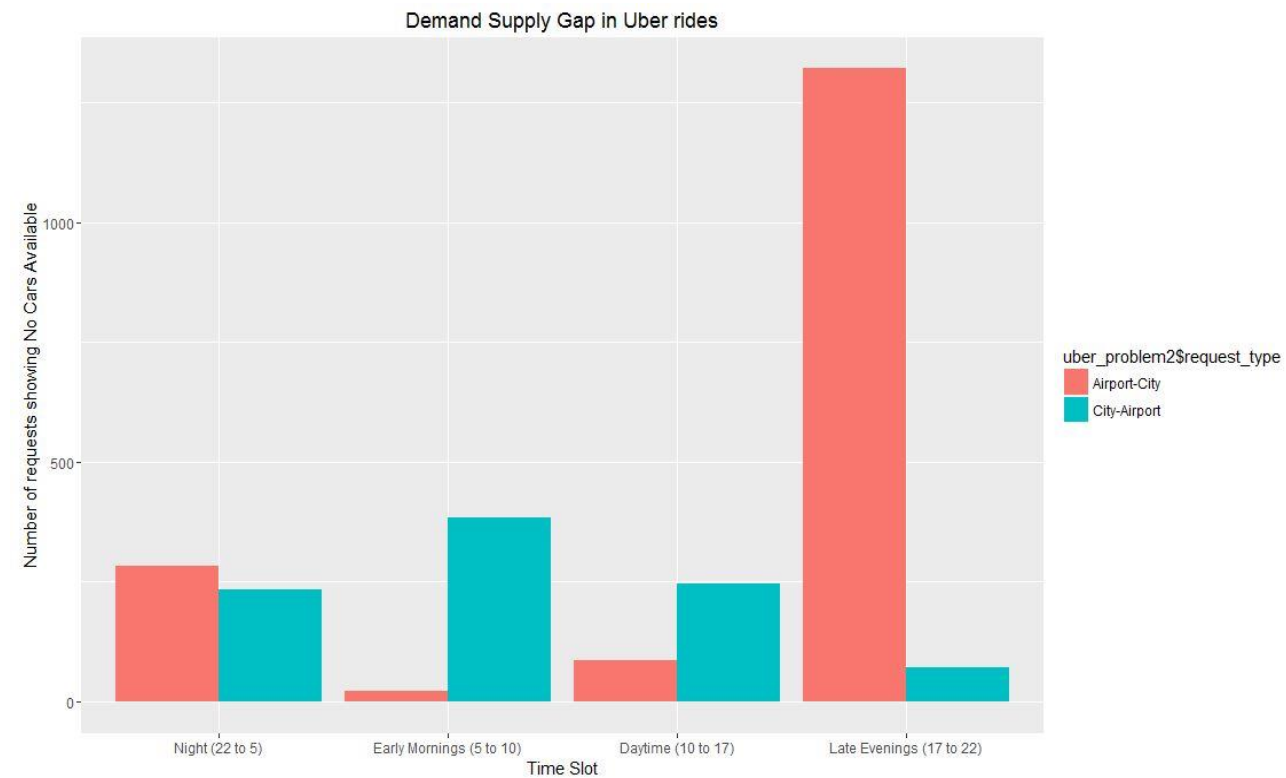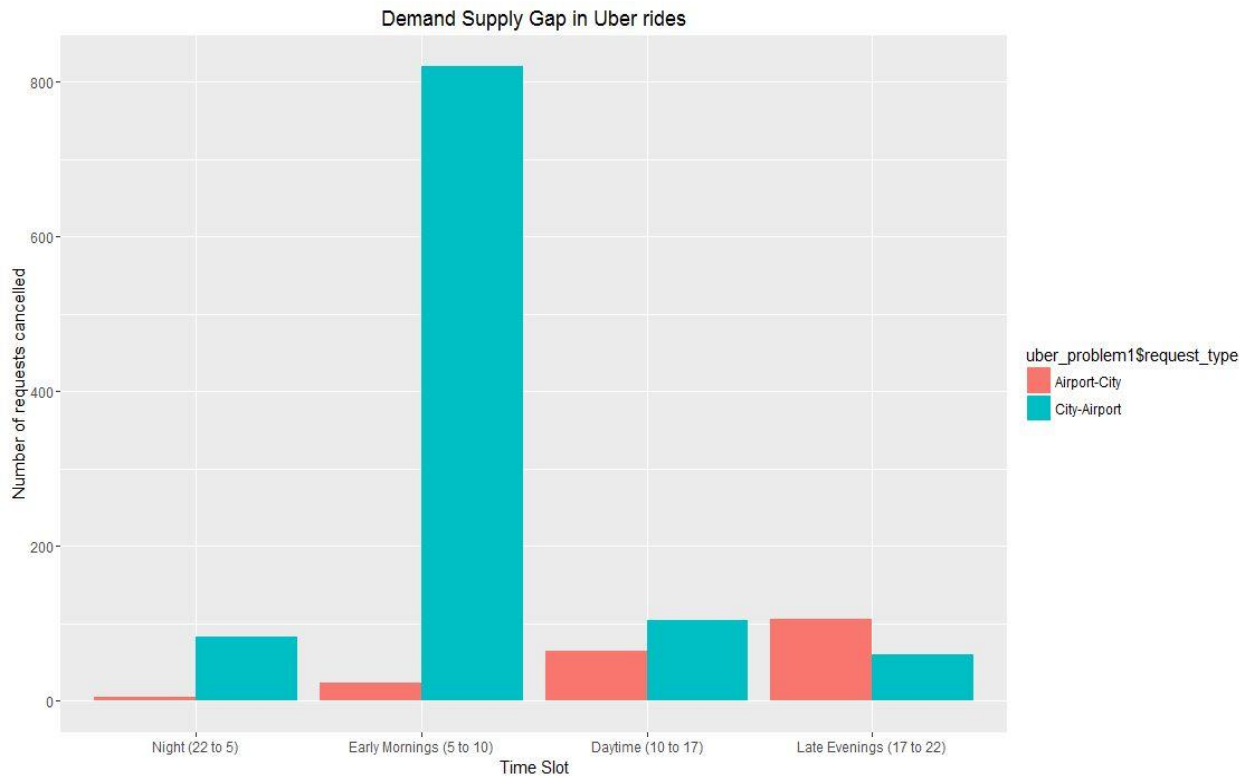
- Left Chart visualizes distribution of requests being cancelled by request type and time slot. Right Chart visualizes distribution of requests showing Cars Not Available by request type and time slot.

- Based on the most severe gap areas in the above charts, we identify 2 main issues:
  - Most rides are getting Cancelled in the City to Airport route in the Early Mornings time slot from 5am to 10am.
  - Most rides are showing No Cars Available in the Airport to City route in the Late Evenings time slot from 5pm to 10pm.

Understanding the Supply-Demand Gap

UpGrad

Summary of Key Issues identified:

	Airport to City	City to Airport
Early Mornings (5am to 10am)		**Request Cancelled**
Late Evenings (5pm to 10pm)	**Cars Not Available**	

Possible Reasons for the Supply-Demand Gap

- In the early morning slot, there would be more outbound flights than inbound flights. Consequently, the driver would not only face heavy traffic while approaching the airport (resulting in longer travel time) but would also have to wait a longer time for the next ride since inbound flights would be fewer. So, the driver could be cancelling most of the city to airport rides.

- Due to more inbound flights in the late evenings slot, there would be a surge in demand at the airport which is not being met by the existing number of cars.

Recommendations to resolve the Supply-Demand Gap

- Incentivize drivers through additional commissions/payouts for undertaking city to airport rides in the early mornings slots and airport to city rides in the late evenings slots.

- Leverage customer care services to interact more with the customer and understand if he/she is cancelling the rides due to any issue or availability of a strong competitor offering/pricing for time sensitive rides.

- Explore ways to run cars on contractual/sub-contractual basis for the airport to city routes in the late evenings slot.

THANK YOU