# Uber supply-demand gap case Study

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# Uber Case Study

Uber is a industry leader in cab aggregator, provides on demand pick up and drop to desired destination for their customers.

Uber is facing supply and demand gap which is impacting their revenue. This case study presents an approach to identify issues and provide recommendations to resolve

***Business Objectives:***

- Identify the root cause of the problem for “Cancellation” and “No cars available”
- To recommend ways of improving the situation

***Problem Statement:***

*Uber customers who travels from city to Airport and vice versa, have issue in booking cab due to supply and demand gap*

# Data and approach for analysis

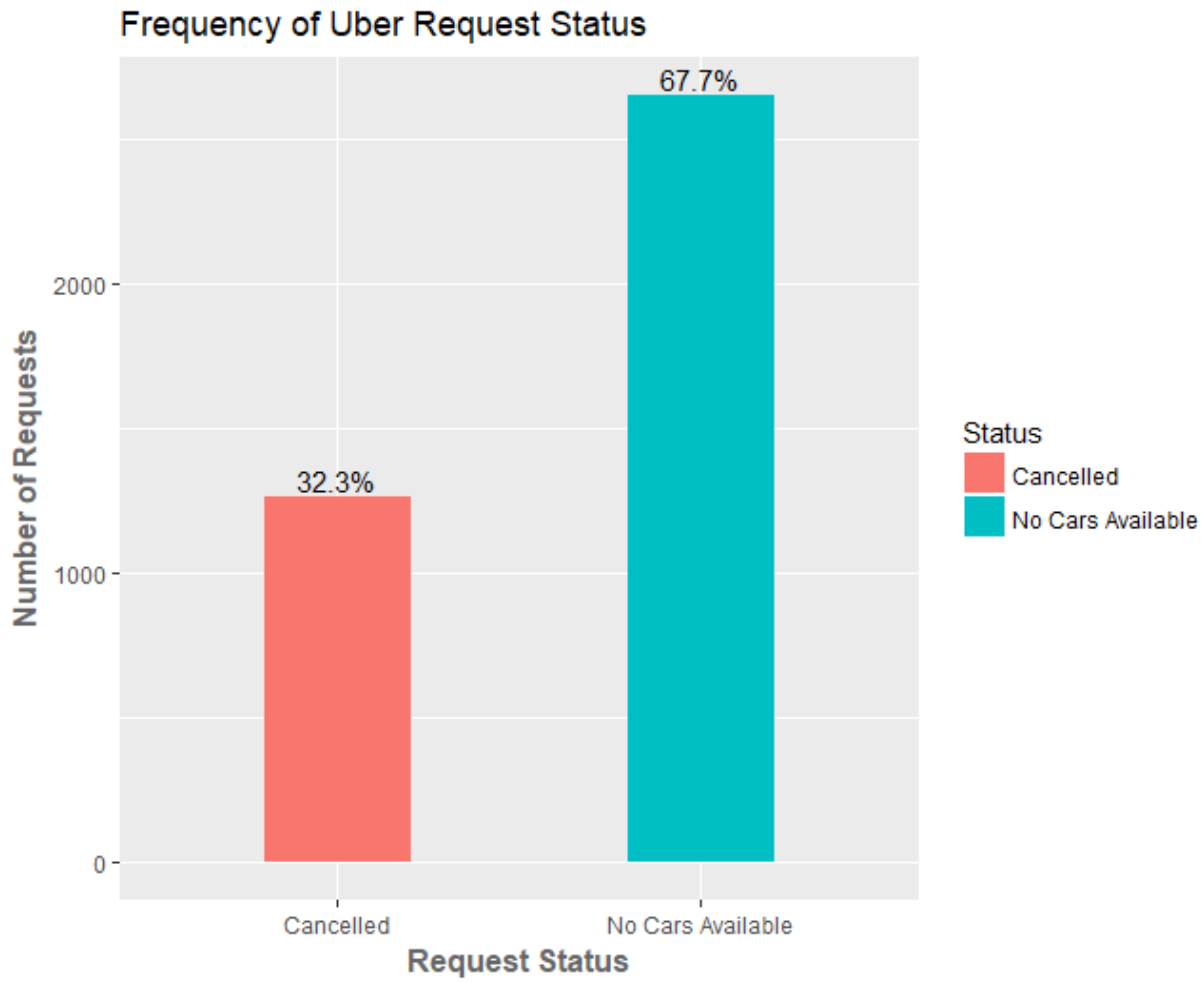
**Understanding Data**

- Data frame Contains 6745 observations
- Column Driver.id has 2650 values when customer are ended up with "No Cars available"
- Drop.timestamp has NA value, which is appropriate as there is customer drop happened.
- Drop.timestamp column has total of 3914 NA values. The reason being when driver initiated cancel of the trip and no cars available for drop

**Approach to analyze the data**

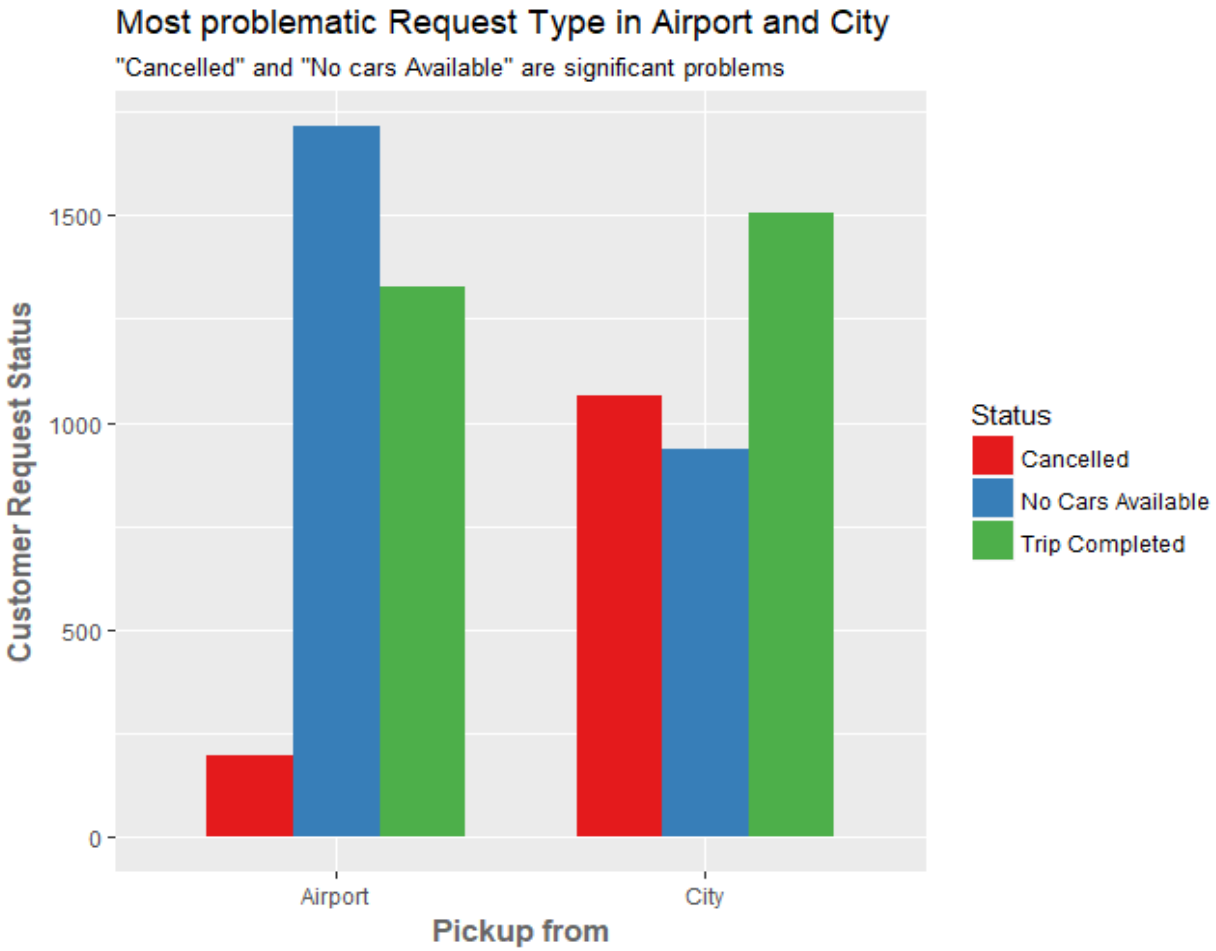
| | | |
|---|---|---|
| **1. Understand the data**<br>- Identify the number of rows, NA, blank values<br>- Identify the data which are need to be cleansed | **2. Cleansing the data**<br>- Values of columns Requests.Time and Dropoff.Time should be cleansed as datetime formatting is not correct. | **3. Visually identify the most pressing problems for Uber.**<br>- The frequency of "cancellation by drivers" and "No cars available"<br>- Identify the most problematic types of requests and time slots |
| **4. Identify demand and supply gap**<br>- Find the time slots when the highest gap exists<br>- Find the types of requests (city-airport or airport-city) for which the gap is the most severe in the identified time slots | **5. Provide reason for supply-demand gap**<br>- Providing hypothesis for the root cause of the problems “Cancellation” and “No available car” based on analysis done. | **6. Recommendation to resolve the supply-demand gap** |

# Significant issues for Uber




- The plot considers data of only “Cancelled” and "No Cars available“ status
- The Results shows 68% customers trips were affected by "No Cars available" and 32.3% were due to trip cancellation

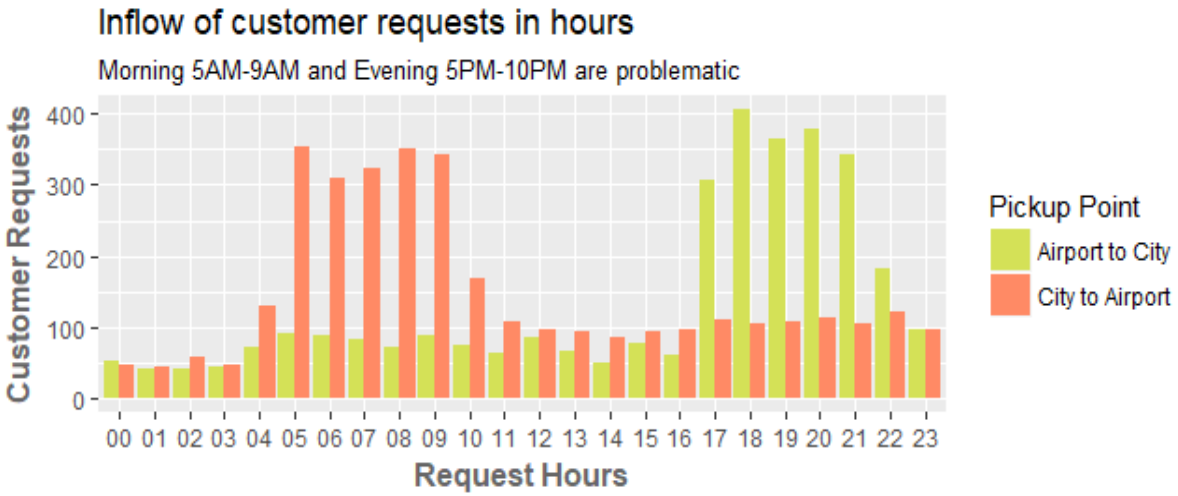
# Problematic type of requests

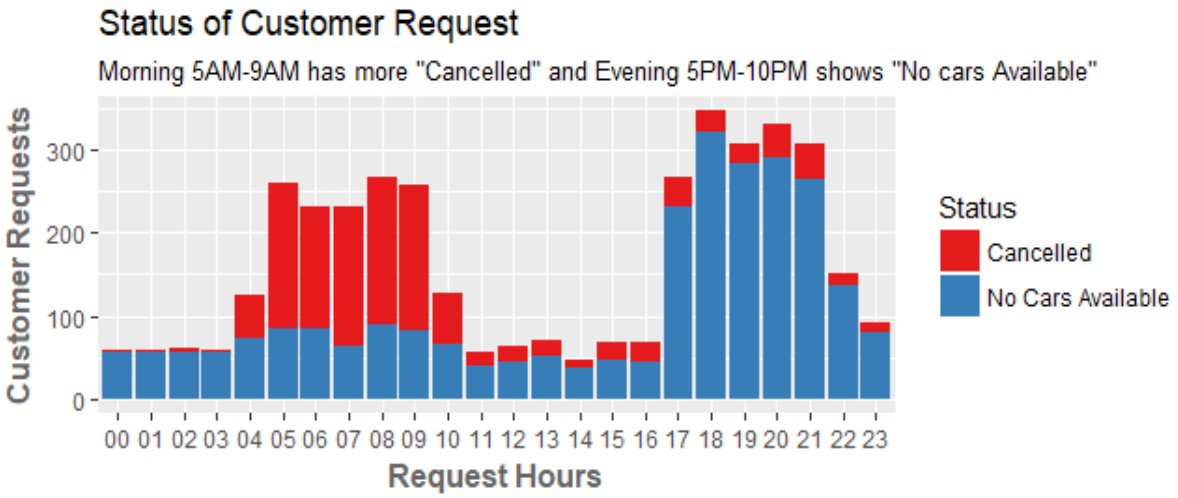



- The graph indicates, majority of customers experience “No cars available” from airport to city.
- Customers experience high number of “Cancellation” when they try to book cab from City to Airport.

**Observation:**
**No Cars Available and Cancelled request status are significant problems**

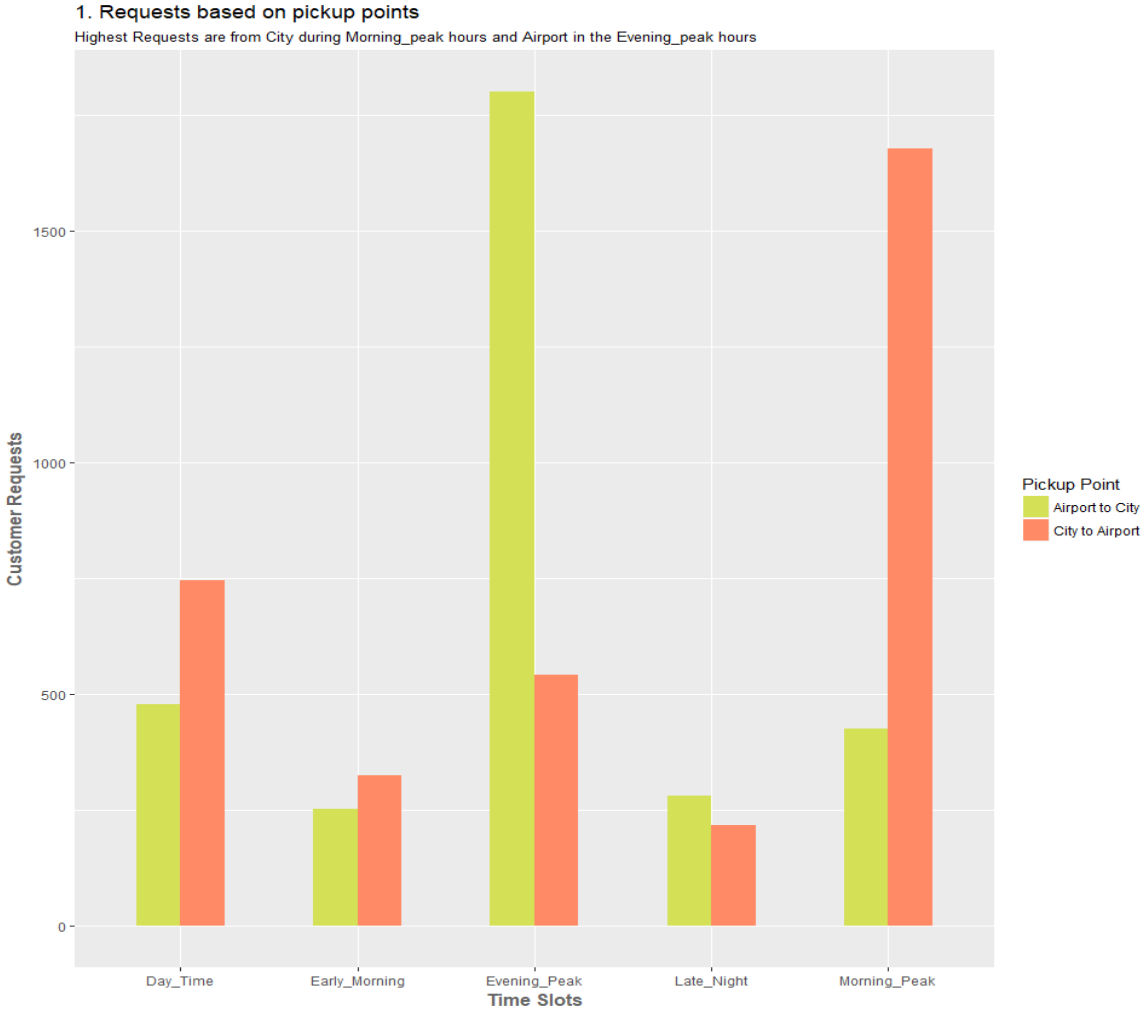
# Problematic time slots

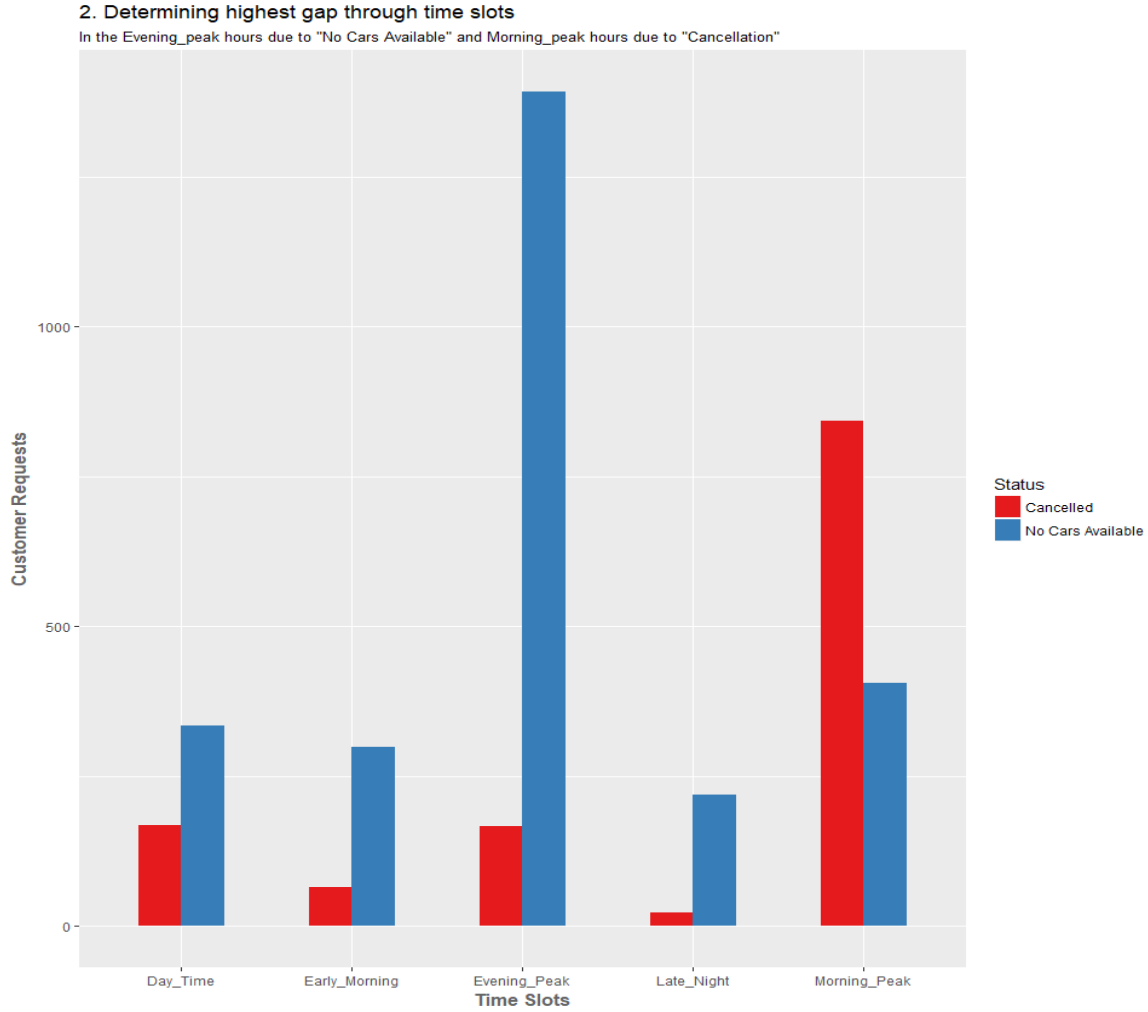



- The plot indicates, morning peak hours are between 5AM to 10 AM, from City to Airport
- Evening peaks hours are between 5PM to 10PM, from Airport to City
- During morning peak hours between 5AM-9AM, shows increased number of "cancellation" from City to Airport
- During evening peak hours between 5PM-10PM,shows "no cars available" from Airport to City

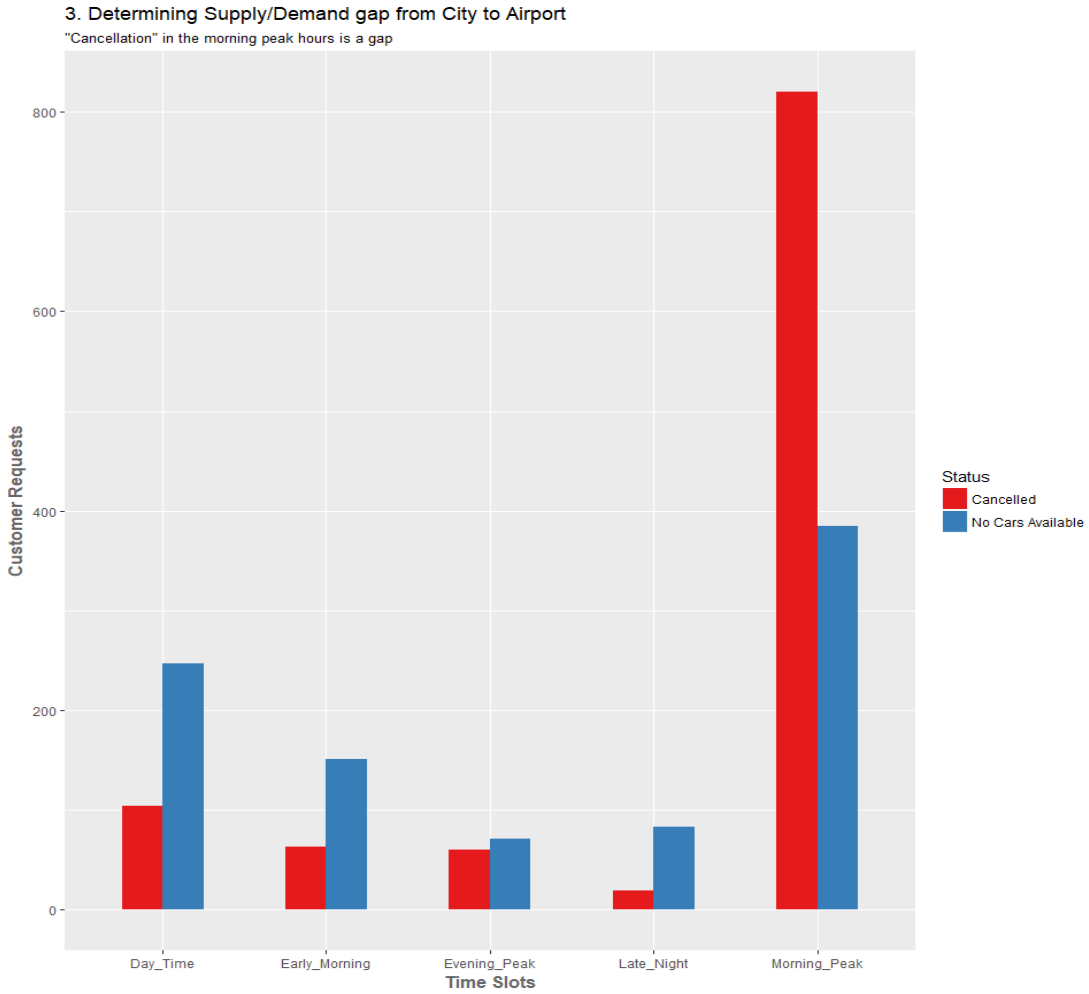
# Supply-Demand Gap analysis

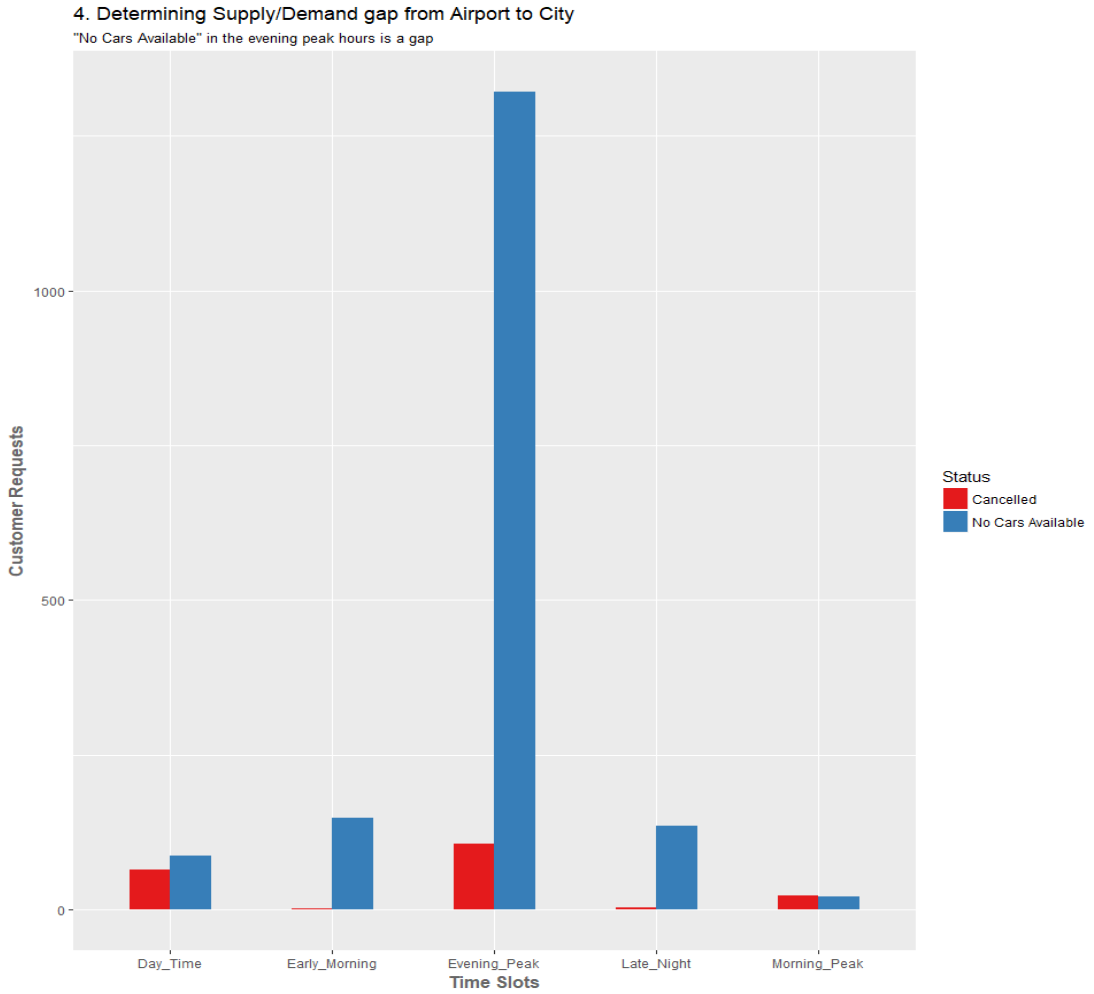



- Morning peak and evening peak hours have more booking requests (Ref: plot1)
- During morning peak hours there is a spike in “cancellation” from City to Airport (Ref: plot2)
- During evening peak hours there is a spike in “No Cars available” request status from Airport to City (Ref: plot2)

# Supply-Demand Gap analysis




- From City to Airport during morning peak hours, root cause for the supply-demand gap is “Cancellation” (Ref: plot3)
- From Airport to City during evening peak hours, root cause for the supply-demand gap is “No cars available” (Ref: plot4)

**Observation: Morning peak hours in city and Evening peak hours in Airport has supply-demand gap**

# Conclusion and Recommendations

**Reasoning for the pressing problems:**

- From analysis, trip cancellations are high in the morning peak hours between 5 AM to 10 PM from City to Airport trips
- Customer experiences “No cars available” for the trip from Airport to City during evening peak hours between 5PM-10PM
- Most likely reason for the gap is drivers has to remain idle in the airport during non peak hours and may incur loss. Hence drivers prefers to make trips within the City and cancel airport booking requests. Due to which cabs will be less in the airport during evening peak hours.

**Recommendations**:

Following are recommendations which can help Uber to address supply and demand gap

- Provide extra incentives to drivers for trips from City to Airport, to avoid the cancellation. This helps Uber and also be able to meet the demand during morning peak hours.
- Customers can be charged extra during peak hours to decrease the cost incurred on driver’s extra incentives
- With this, evening peak hours demand can be fulfilled for airport to city trips