# UBER supply demand gap analysis

[UBER]

# The Problem

- Growth in supply demand gap resulting in loss of revenue
  - Lot of customer tickets mentioning trip cancellation by drivers.
  - Unavailability of UBER cabs at Airport.
  - Downfall in revenue and customer churn.
  - Diminishing brand value.

# Analysis

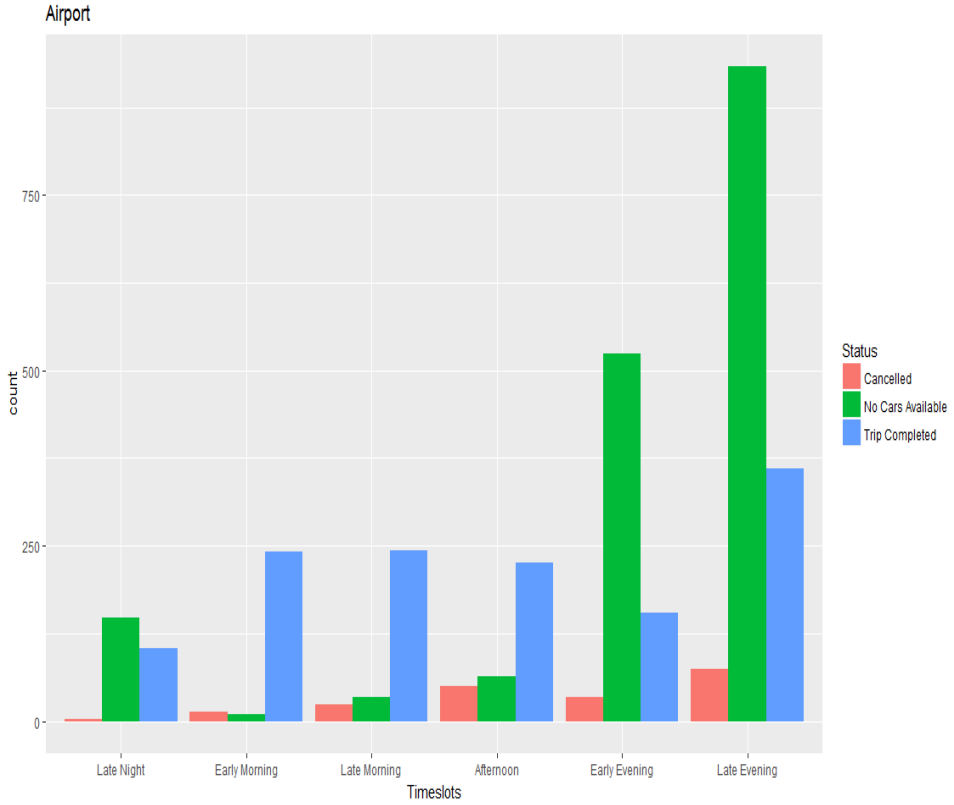
- Inputs
  - Masked data set showing the 24 hour details of requests and rides in Mumbai for 6 consecutive days.
  - City - Airport & Airport-City trips only.
  - Details : Data set attributes
    - Request id: A unique identifier of the request
    - Time of request: The date and time at which the customer made the trip request
    - Drop-off time: The drop-off date and time, in case the trip was completed
    - Pick-up point: The point from which the request was made
    - Driver id: The unique identification number of the driver
    - Status of the request: The final status of the trip, that can be either completed, cancelled by the driver or no cars available

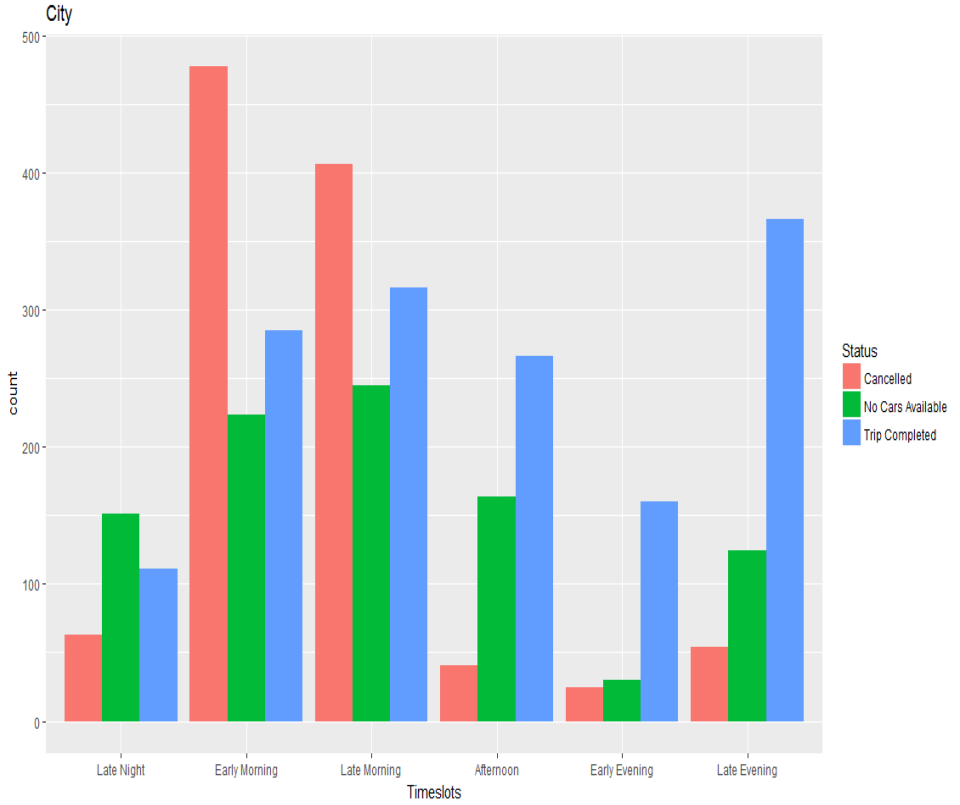
# Analysis

- After all the data cleaning and pre-processing following attributes were derived
  - Req_Time_Bin:
    - The request times are categorized into business relevant time slots to enhance the analysis.
      - Late Night : 12am – 4:59 am
      - Early Morning: 5am – 7:59 am
      - Late Morning: 8am – 11:59 am
      - Afternoon 12pm – 4: 59pm
      - Early Evening 5pm – 6:59 pm
      - Late Evening 7pm – 11:59 pm
  - Wait Time: time between 2 consecutive booking requests.
  - Travel time: interval between booking and drop timestamp

# Analysis

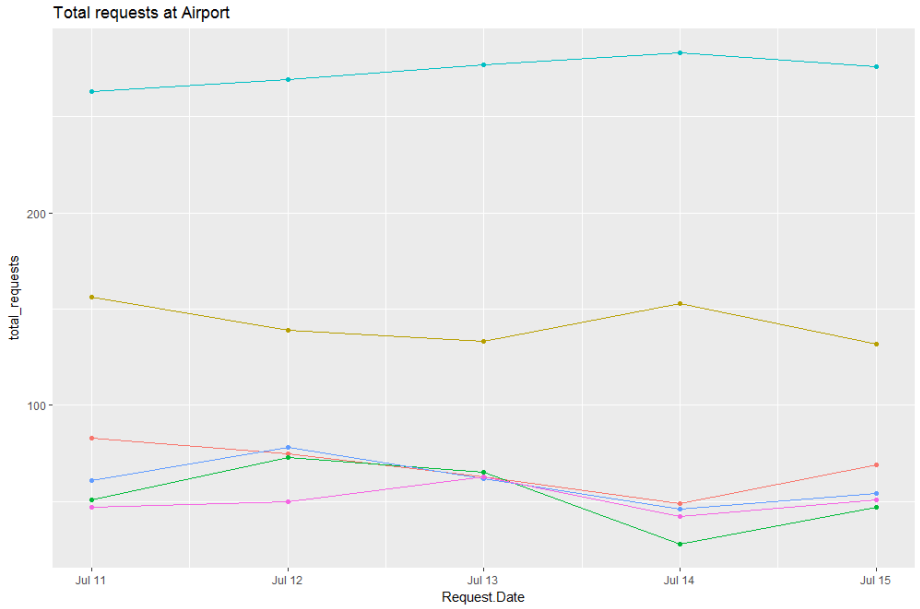
- Preliminary visualization showed differences across the timeslots. The problem is different at Airport and in the City.

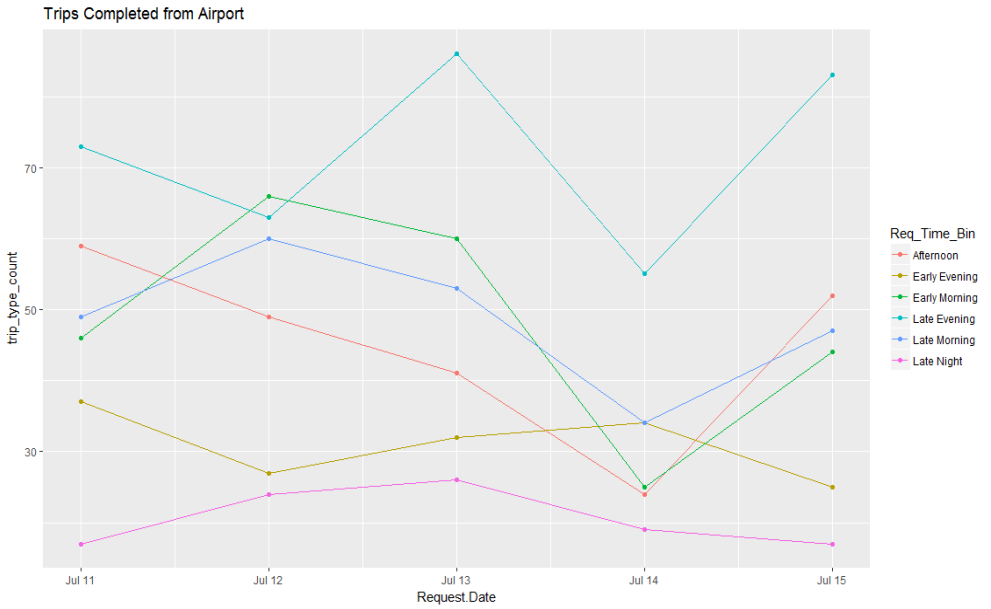


# Airport Analysis

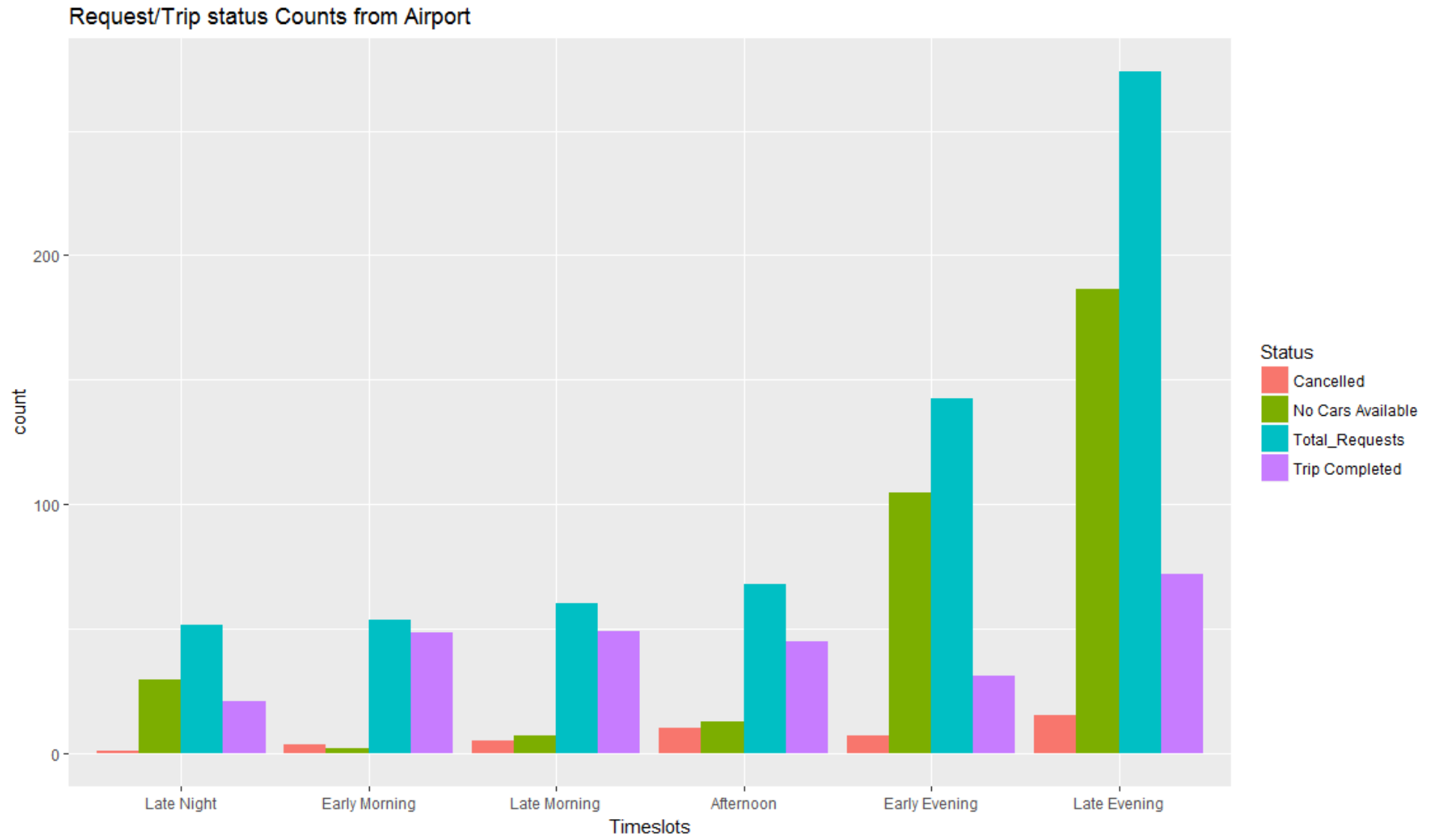
- The spread of requests and trips across the days at Airport in timeslots is not uniform.
- Hence taking average trips/requests for further analysis



# Airport Analysis

- Visualization depicting request and trip status at Airport across various timeslots.

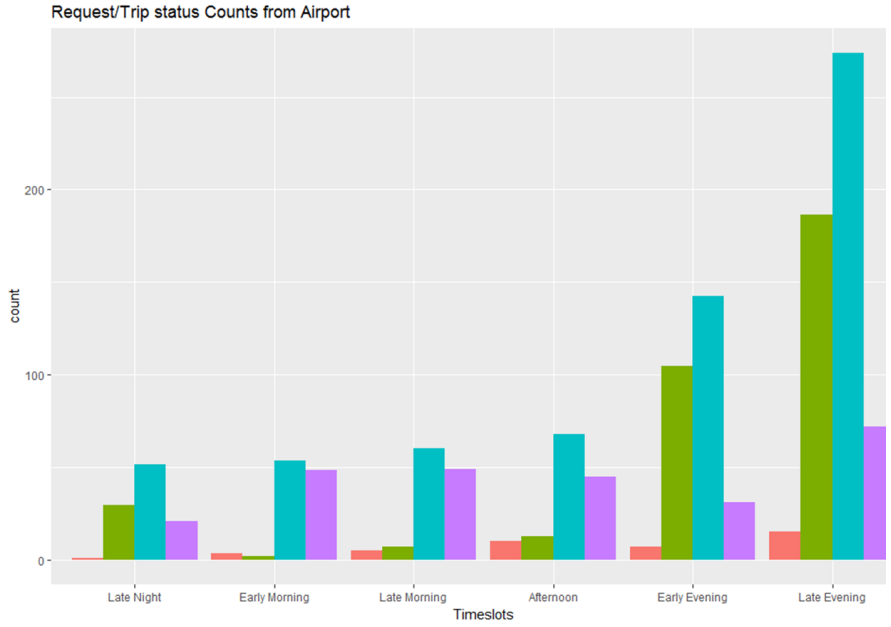


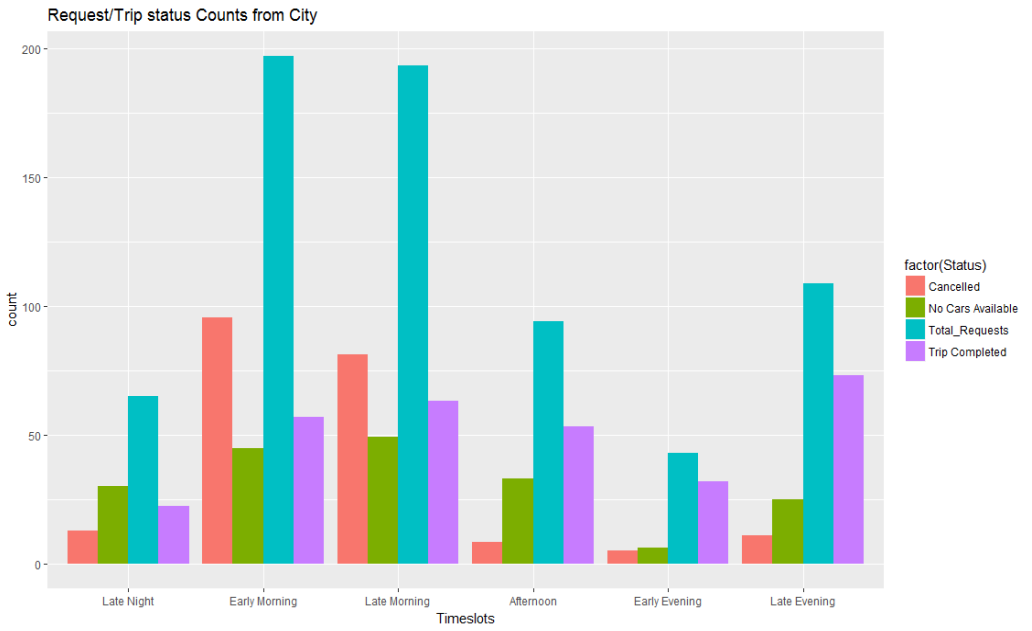
# Airport Conclusion

| Req_Time_Bin | Total_Requests | Trip Completed | Cancelled | No Cars Available | cancellation_percentage | gap_percentage |
|---|---|---|---|---|---|---|
| Late Night | 51.2 | 20.6 | 1 | 29.6 | 1.953125 | 59.765625 |
| Early Morning | 53.45 | 48.2 | 3.25 | 2 | 6.080449018 | 9.822263798 |
| Late Morning | 60.2 | 48.6 | 4.8 | 6.8 | 7.973421927 | 19.26910299 |
| Afternoon | 67.8 | 45 | 10 | 12.8 | 14.74926254 | 33.62831858 |
| Early Evening | 142.6 | 31 | 6.8 | 104.8 | 4.76858345 | 78.26086957 |
| Late Evening | 273.6 | 72 | 15 | 186.6 | 5.48245614 | 73.68421053 |

- It is observed that average travel time to airport is 50 min and doesn't vary drastically throughout the day.
- Wait time at airport is also not more than 6min.
- Hence, these factors are not causing the supply demand imbalance.
- The Highest Gap exists in the Early Evening hours (5pm – 7pm) followed by late evening hours (7pm – 11:59 pm).
- The demand rises from the early evening hours and reaches its peak before midnight and along with it the gap also rises.
- The cancellation percentage is under tolerable limit of 5% during the busy hours.

# Airport Conclusion

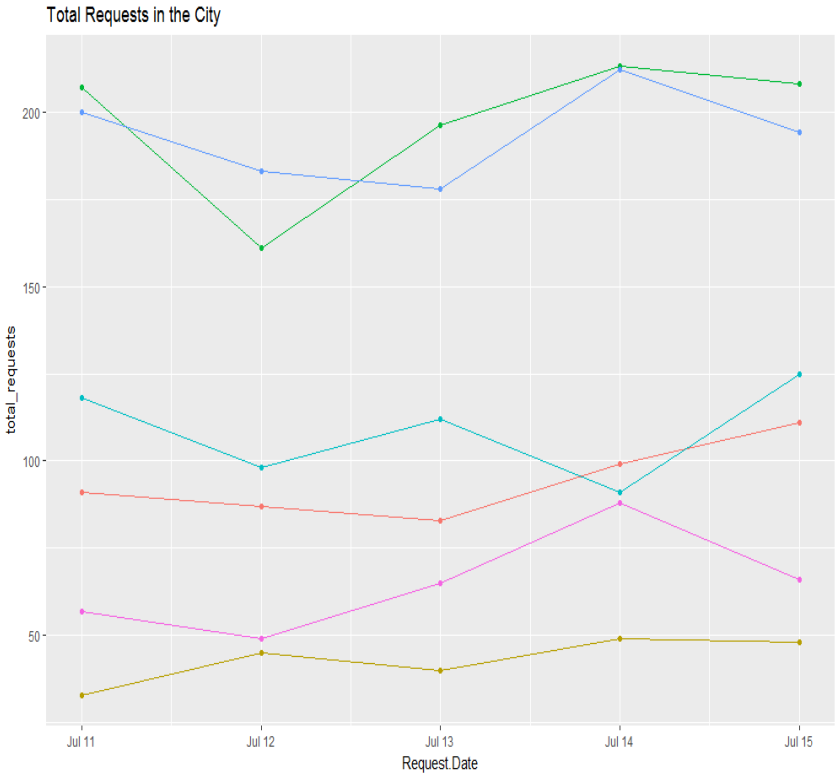


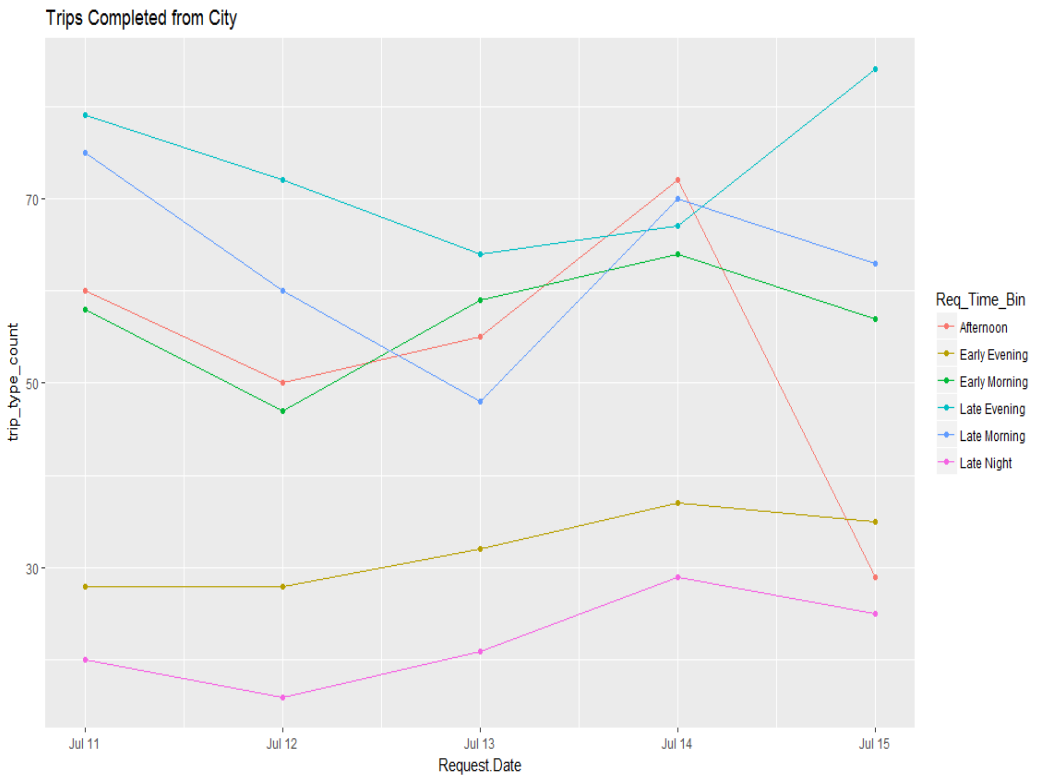




- Reason
  - The number of organic inflow to Airport from city is lowest in the Early Evening hours causing the shortage in the supply as there may be very few departure flights in midnight.
  - The inflow rises marginally in the late evening hours causing a slight decrease in gap.
  - Drivers hesitates to pick Airport trips in late evenings as for many working hours closes by 10pm and they don't want to take 50min journey to Airport.
- Solution
  - Currently earning opportunity of close to 290 trips exists in Early and Late Evening hours where Uber charges upto 2X the normal rate. If Uber provides 30% incentive on normal rates to drivers on Airport trip in these hours till the gap is closed, Uber can manage to get 70% profit along with the benefit of earning customer trust and brand value.

# City Analysis

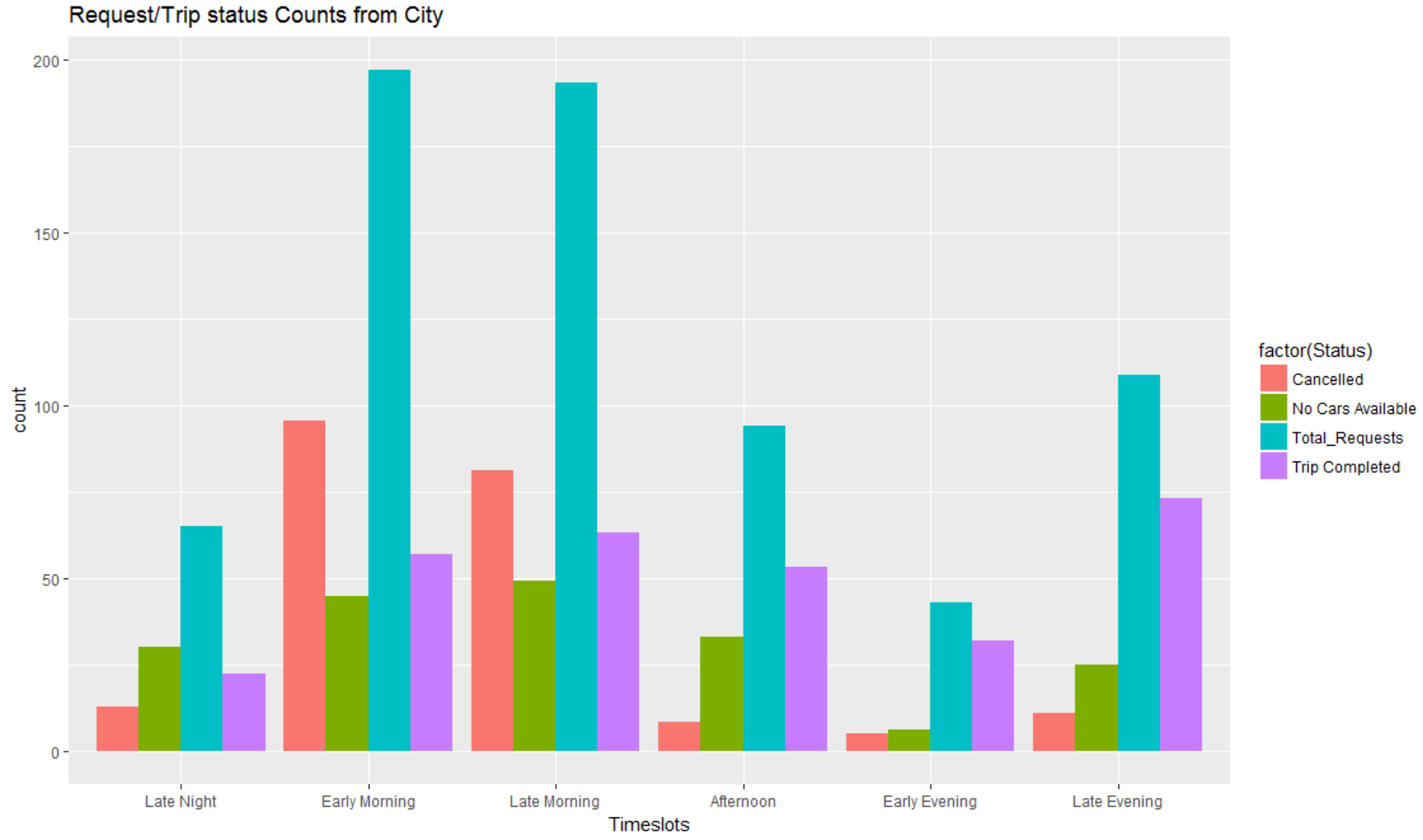
- The spread of requests and trips across the days from the City in timeslots is not uniform.
- Hence taking average trips/requests for further analysis



# City Analysis

- Visualization depicting request and trip status in City across various timeslots.

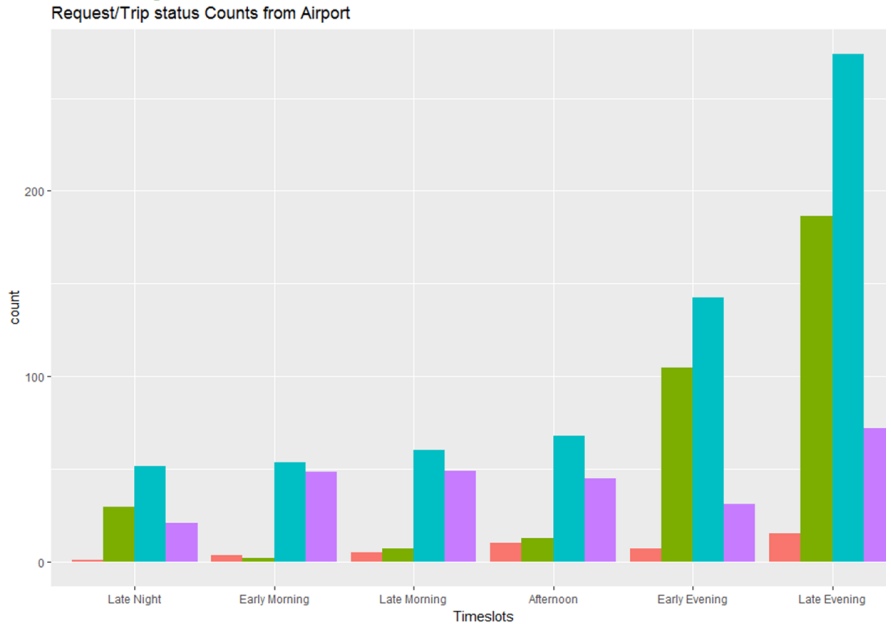


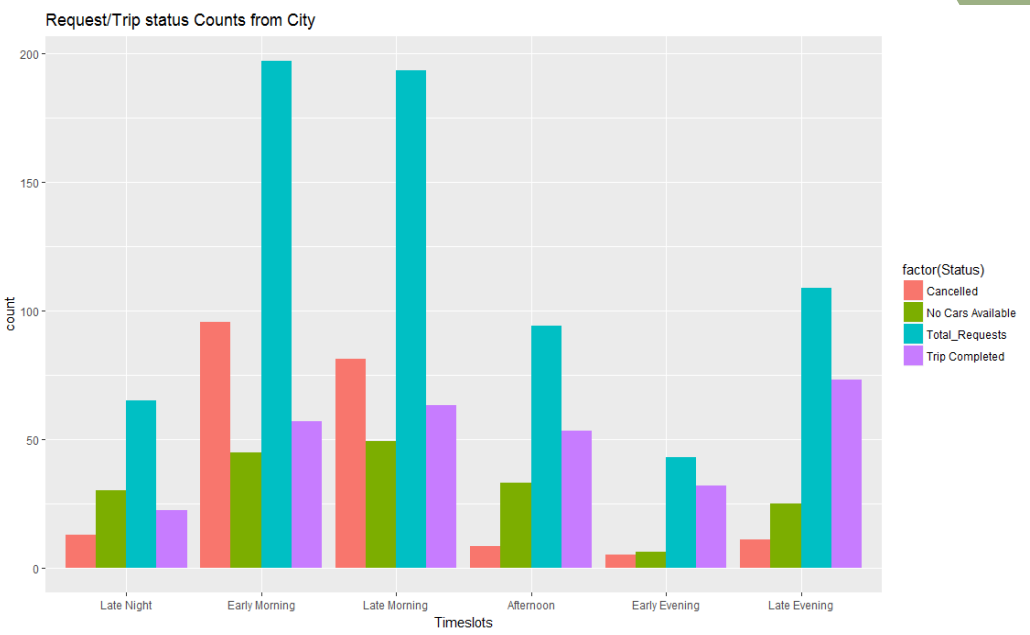
# City Conclusion

| Req_Time_Bin | Total_Requests | Trip Completed | Cancelled | No Cars Available | cancellation_percentage | gap_percentage |
|---|---|---|---|---|---|---|
| Late Night | 65 | 22.2 | 12.6 | 30.2 | 19.38461538 | 65.84615385 |
| Early Morning | 197 | 57 | 95.4 | 44.6 | 48.42639594 | 71.06598985 |
| Late Morning | 193.4 | 63.2 | 81.2 | 49 | 41.98552223 | 67.32161324 |
| Afternoon | 94.2 | 53.2 | 8.2 | 32.8 | 8.704883227 | 43.52441614 |
| Early Evening | 43 | 32 | 5 | 6 | 11.62790698 | 25.58139535 |
| Late Evening | 108.8 | 73.2 | 10.8 | 24.8 | 9.926470588 | 32.72058824 |

- It is observed that average travel time to city is 51 min and doesn't vary drastically throughout the day.
- Hence, travel time inconvenience is not causing the supply demand imbalance.
- The Highest Gap exists in the Early Morning hours (5am – 8am).
- There exists high demands in the early and late mornings as these are the preferred timings for departure flights in INDIA by passengers.
- But the problem is not only unavailability of cabs but also the number of cancellations.
- The cancellation percentage is high in the demanding hours causing the supply demand gap rise.

# City Conclusion




- Reason
  - The drivers know the situation at the airport that in the Early Morning and Late Morning hours the demand is not much at the Airport and there is very little gap of 9% and 19 % resp. If all of them takes the Airport trip that will cause excess cabs at Airport which may cause them to wait for longer hours.
  - Also these are the business time where they can manage to get lot many trips in the city as office/school trips or share rides. These trips are short and helps them to engage in multiple trips to reach their daily trips target(18) which provides incentives.
- Solution
  - Currently UBER is losing 270 trips in the early and late morning hours. But UBER can't pressurize drivers to take the trips and there is an equal chance of losing revenue as IDLE time at airport as there is hardly a gap of 17 trips from airport.
  - Uber need to raise the demand at airport in these hours. Currently only 95 requests are made from 5am - 11:59 am which is quite low. More ads, tie ups with airlines to provide UBER drop service along with ticket can help increase demand.

# Thank You