LOVELY PROFESSIONAL UNIVERSITY

Python Project - INT216

Uber Supply-Demand Gap

Case study

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Abstract

Problem statement:

Uber is facing driver cancellation and non- availability of cabs to and fro airport leading to impact on the business and loss of potential revenue.

Objective:

Toidentify the root cause of the supply-demand gap of cabs to and fro airport.

Data used for analysis:

- The data used is only to and fro airport
- The span of the data is of 5 days.

Problem solving methodology

Data collection and cleaning

- Import the data
- Identifying the data quality issues and clean the data
- Format date and time variables
- Extract new variables required for analysis

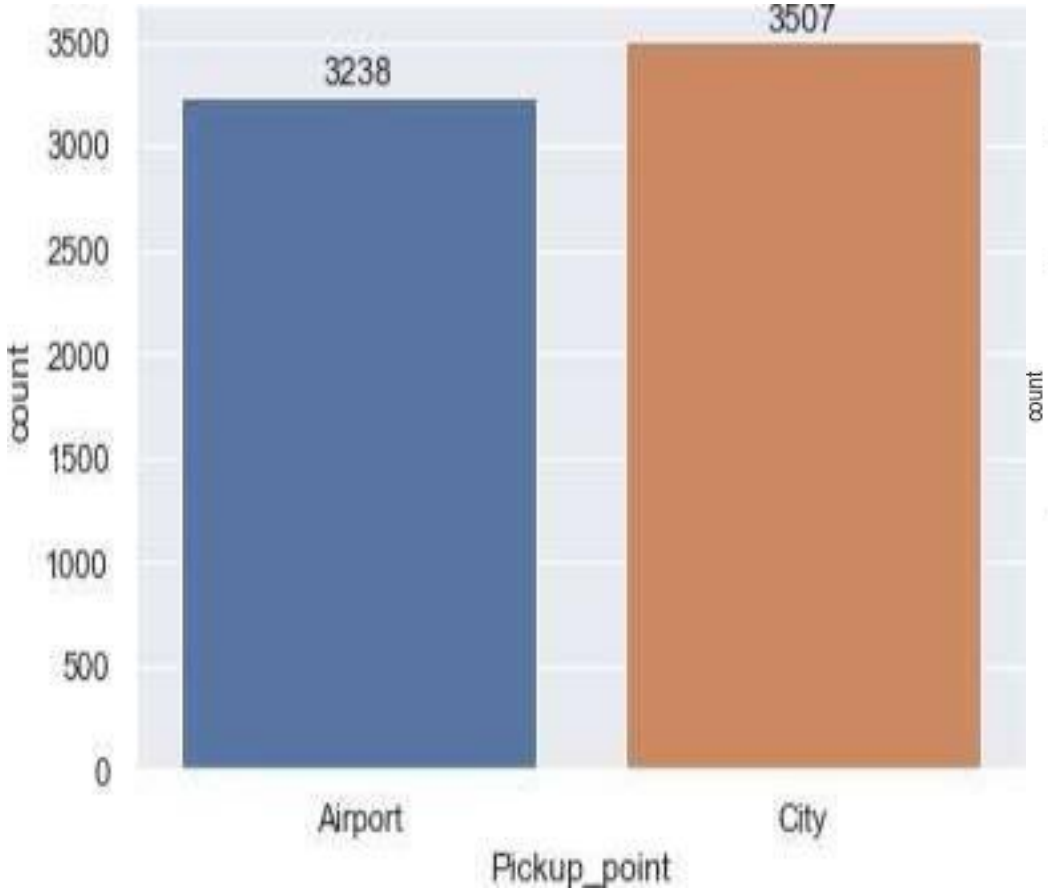
Data exploration and analysis

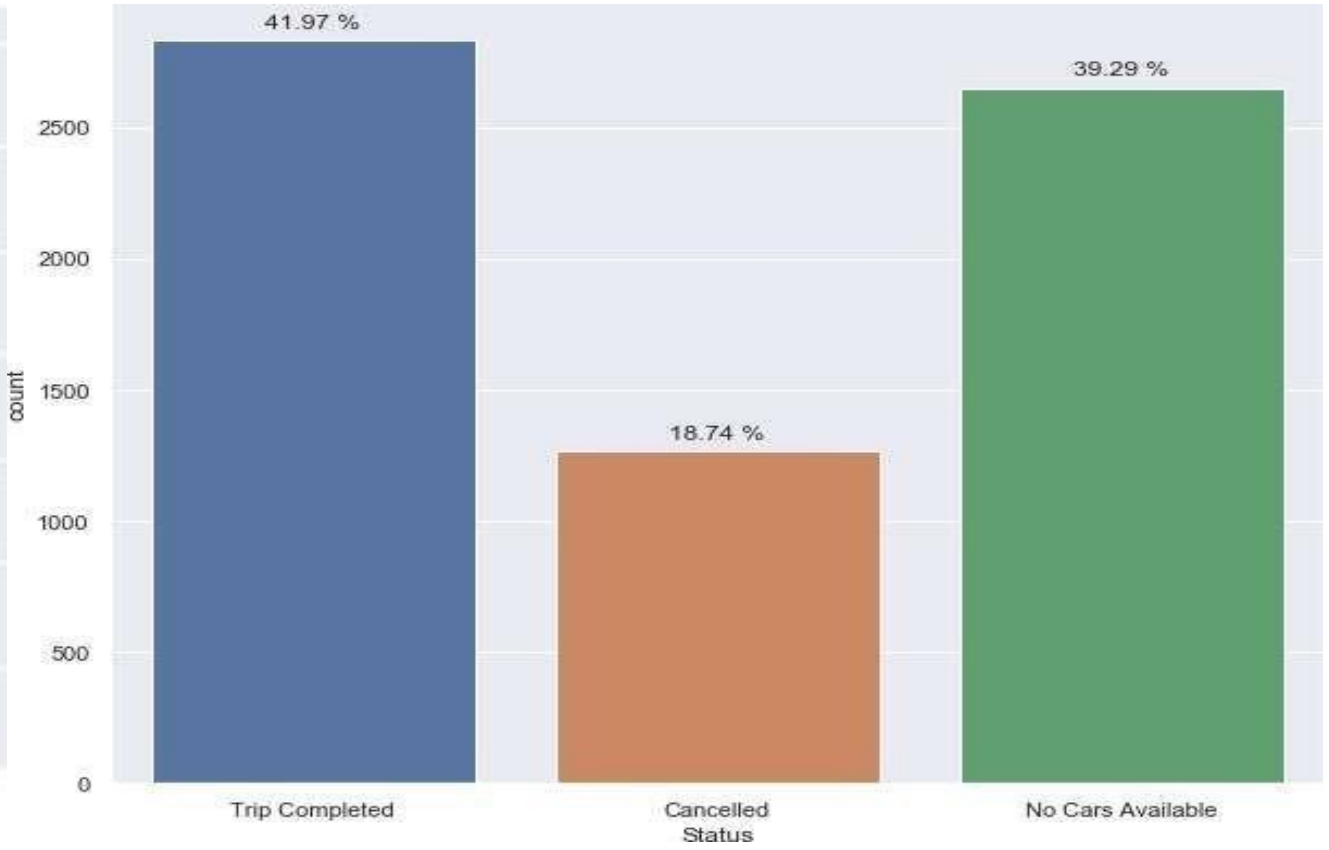
- Analyze different variables
- Analyze variables across different time slots
- Identify the types of requests, time slots and locations that constitute for the supply demand gap.

Outcome and recommendations

- Visualizing the problem
- Presenting the observations
- Recommendation to resolve the problem

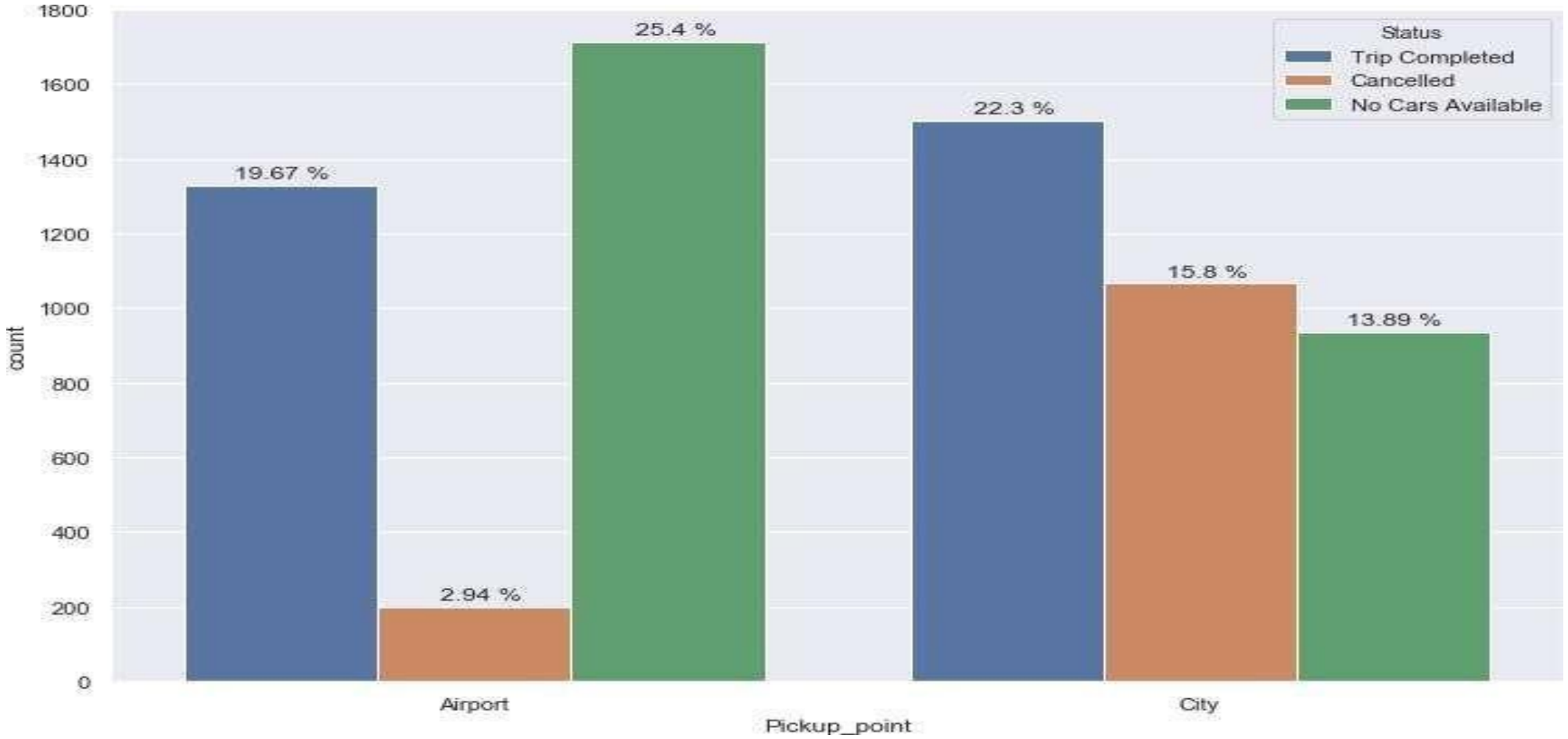
Problem





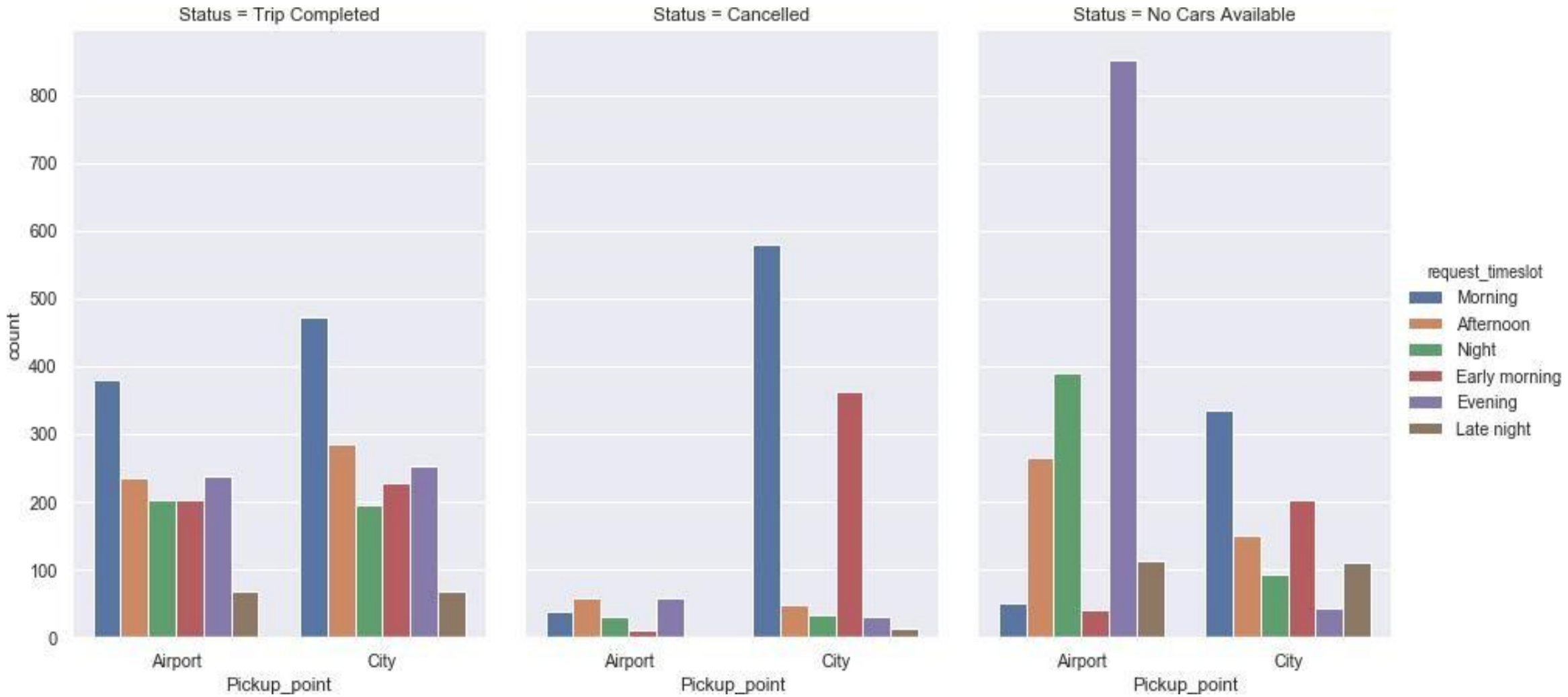
- Overall request is the same in city and airport
- From the request, around 19% of the cabs get cancelled
- From the request, around 39% of the cabs are not available.

Further analysis of the problem based on location



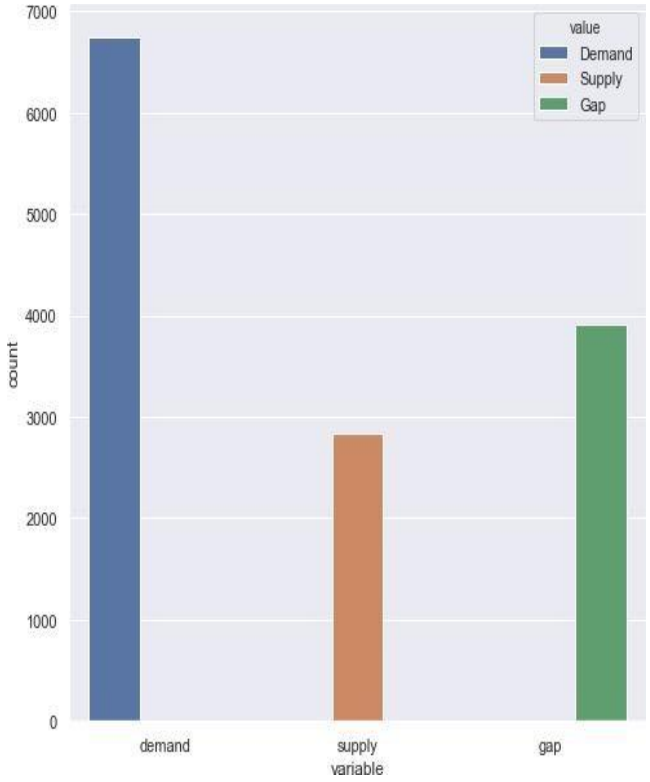
- The % of cabs that get cancelled from city is 16%
- ‘No cars available’ - is mainly at the airport – 25%

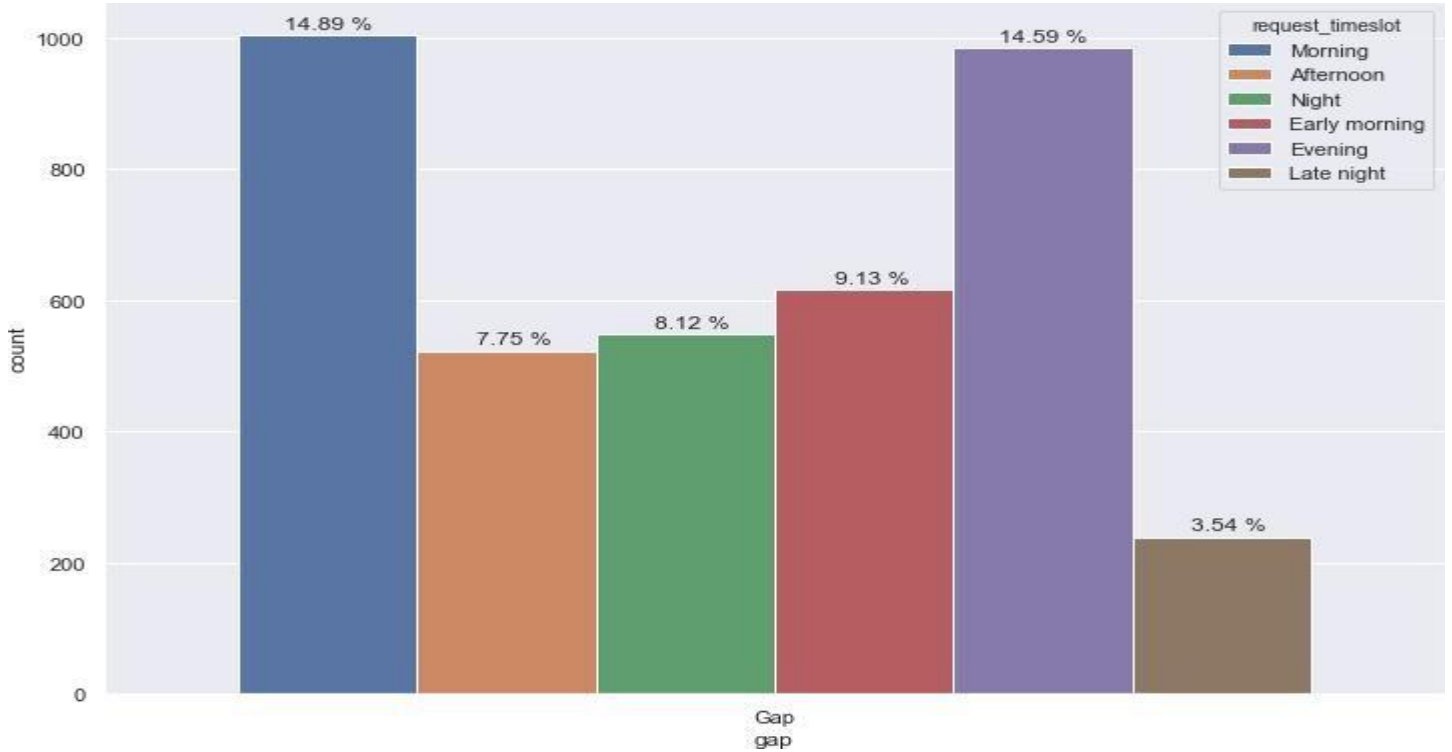
Further analysis of the problem based on time



- The cabs that get cancelled in the city are during the morning hours(5am to 9am)
- No cars are available in the airport are during evening hours (5pm to 10 pm)

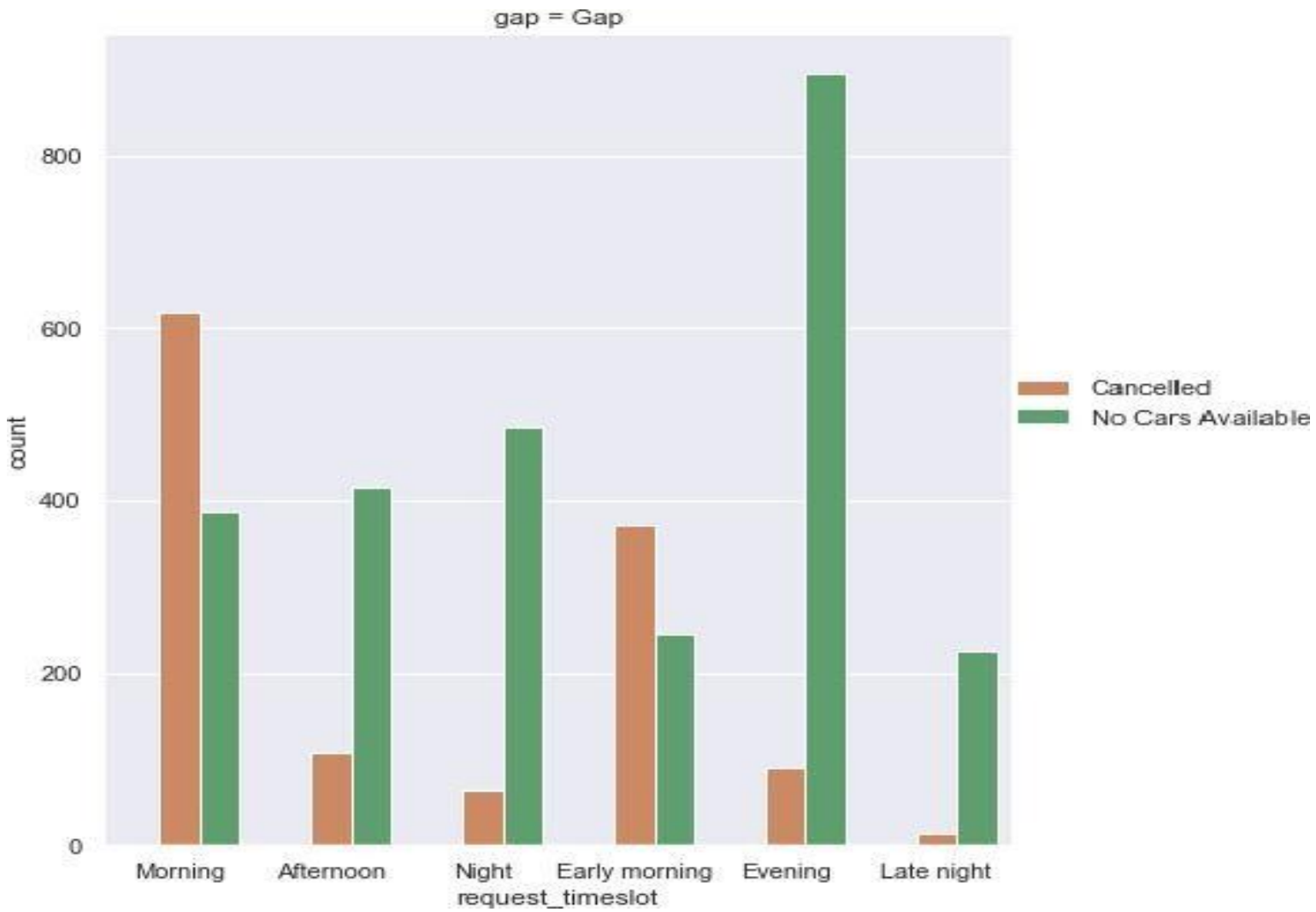
Analysis of supply-demand gap





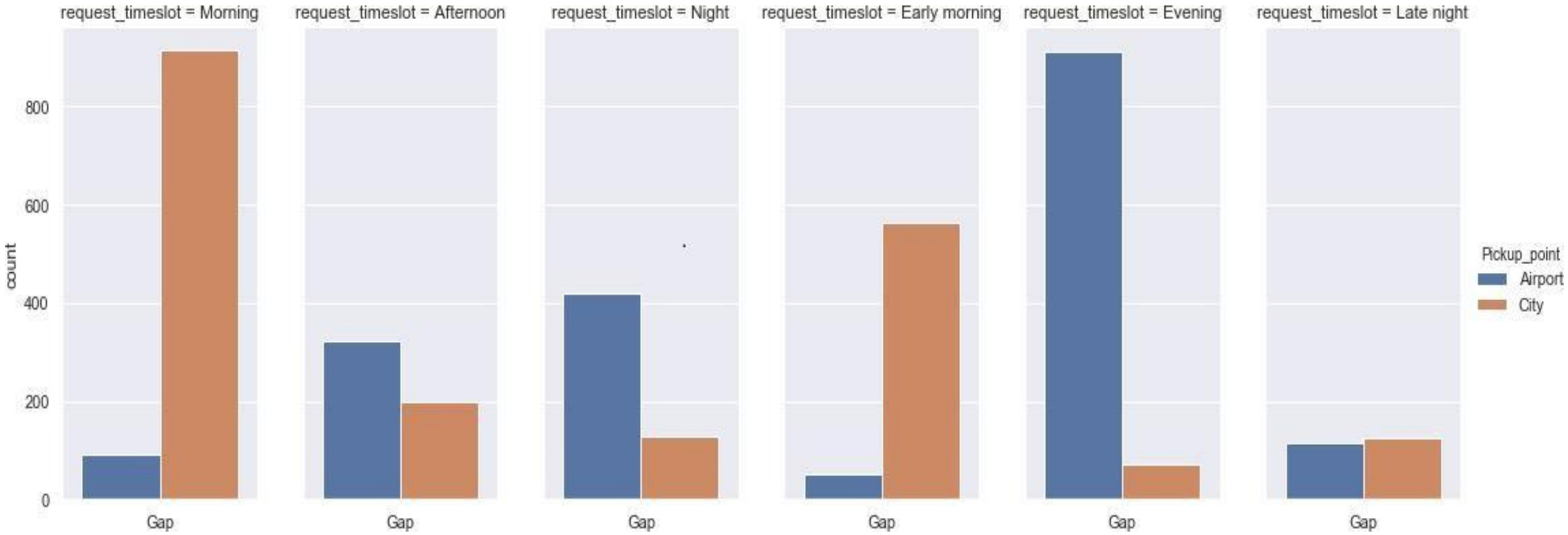
- There is gap of 58% in the supply of cabs.
- In that 58% : 15% gap happens in the morning and evening timeslot each.

Supply-demand gap based on time



- As we saw that 15% of the gap that exist in the morning is due to cancellation
- 15% of the gap that exist in the evening is due to no cars availability.

Supply-demand gap based on location



- 15% of the gap that exist in the morning due to cancellation is at City
- 15% of the gap that exist in the evening due to no cars availability is at Airport.

Possible reasons for the issue:

- In the morning hours:

Though there is a high demand for cabs from city to airport, the vice versa is not true.
Hence the driver tends to 'cancel' the request as getting a return trip from airport to city would be tough.

- In the evening hours:

Though there is high demand for cabs from airport to city, the vice versa is again not true.
Hence 'no cars available' in the airport is the highest in the evening.

This brings us to solution and recommendation to the problem!

Possible solutions and recommendations

- ✓ Provide incentives for airport trips during peak time.
- ✓ Assigning few extra cabs specially to the airport trips.
- ✓ Fixing a base price for drivers idle time in the airport or to come back to the city without any passenger.
- ✓ Impose penalty for cancellation of requests by the drivers. Set a threshold for the maximum cancellation per day.
- ✓ Promote continuous trip to airport with incentives.
- ✓ Promote advance booking to airports and at the same time keeping drivers updated with the flight schedule will help them plan their work and they can accept the request as per their work plan.