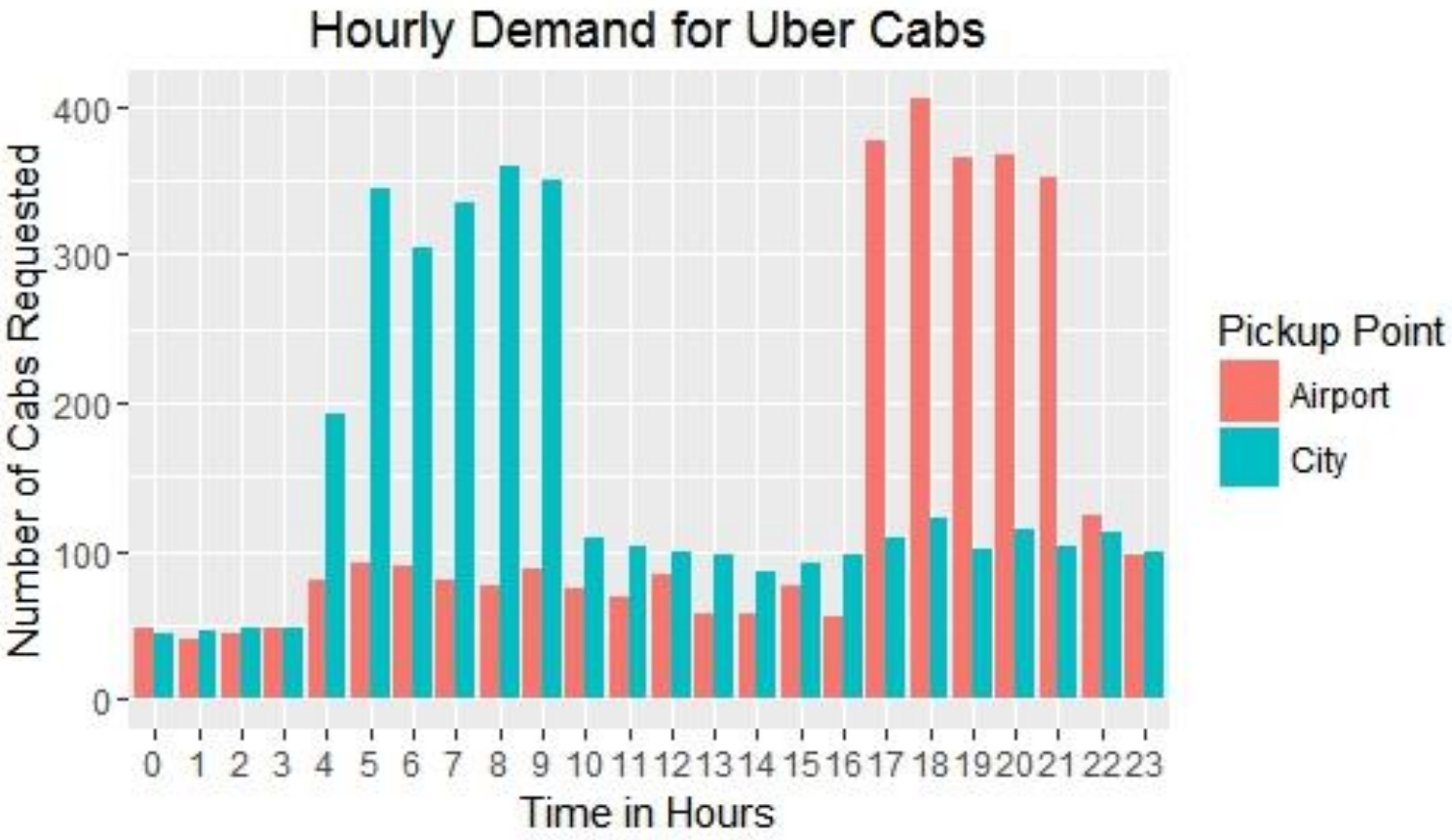
DATA PREPARATION:

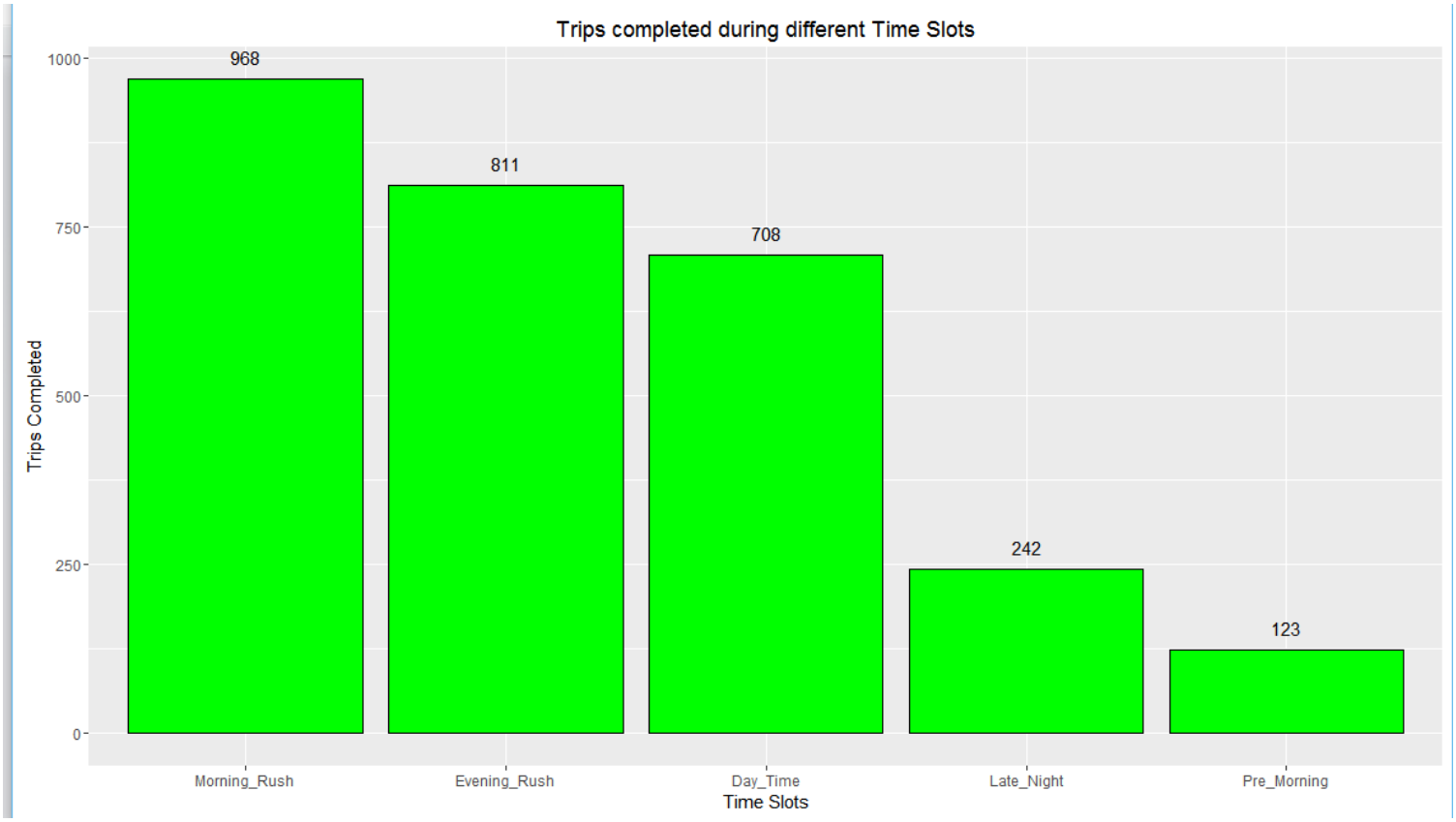
1. Make a grouped bar chart depicting the hour-wise trip request made at city and airport respectively. You can aggregate the data for all 5 days on the same axis of 24 hours. Each bar should correspond to an hour and pick-up point (city / airport) should be displayed in two colors.



2. In the bar chart (question 1), you'll be able to see 5 major time blocks based on the frequency of requests made at the city and airport. You have to now divide the request-time into 5 time-slots described below. Make an additional column "Time_Slot" which takes these 5 categorical values depending on the request time:
    - Pre_Morning
    - Morning_Rush
    - Day_Time
    - Evening_Rush
    - Late_Night

    Note: The division of time-slots may not have one right answer.

    Plot a bar chart for number of trips made during different time-slots in R and paste the image here

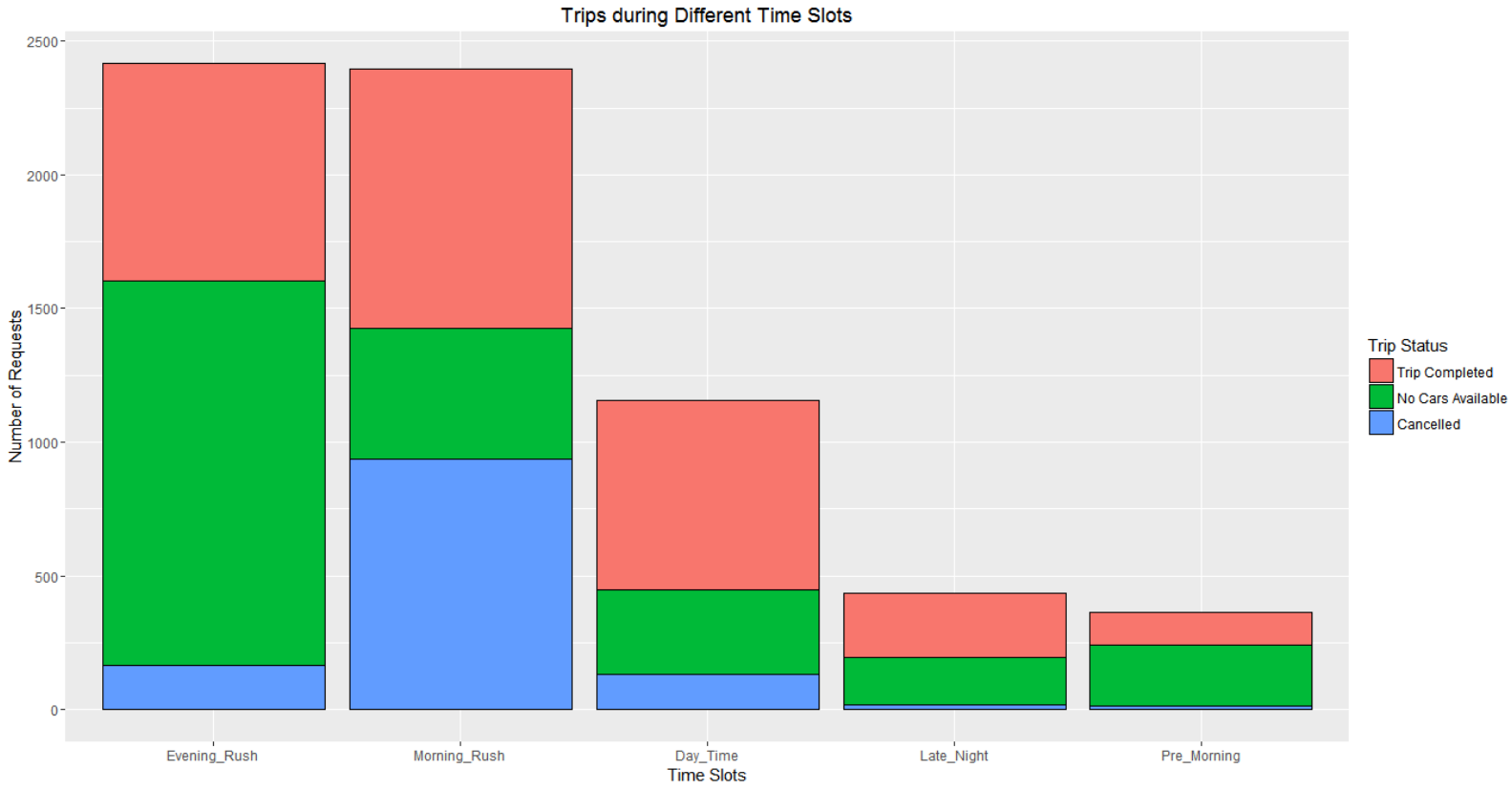


Also give the count of the number of trips made during different time slots you have decided.

- Pre_Morning: 123
- Morning_Rush: 968
- Day_Time: 708
- Evening_Rush: 811
- Late_Night: 242

PROBLEM IDENTIFICATION:

1. Make a stacked bar chart where each bar represents a time slot and y axis shows the frequency of requests. Different proportions of bars should represent the completed, cancelled and no cars available out of the total customer requests.
   Please paste a copy of your plot here.



2. Visually identify the 2 most pressing problems for Uber, out of the 15 possible scenarios (5 slots * 3 trip status).

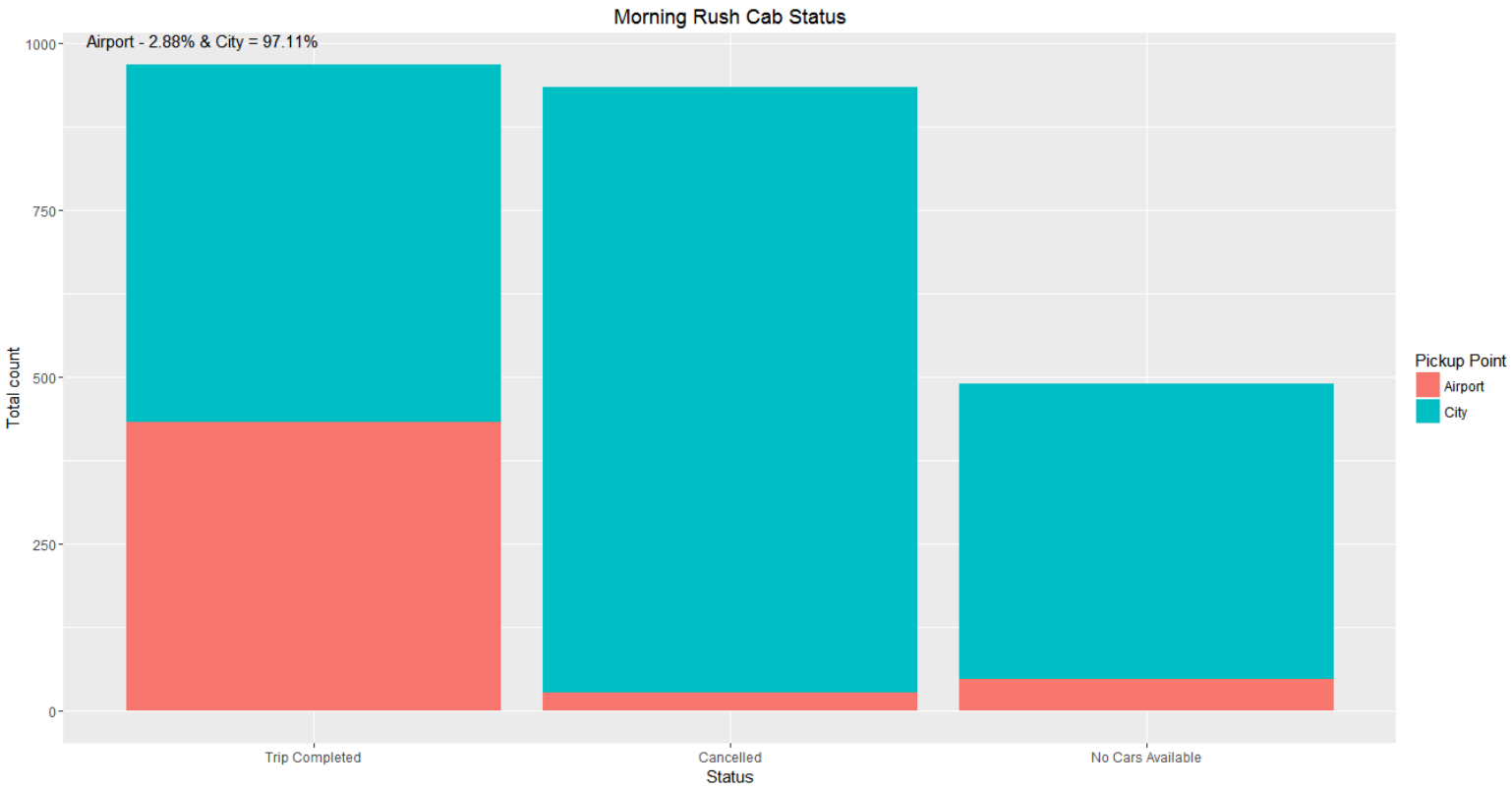
3. Enter your diagnosis results here:
   - Problem 1: A large number of trips got cancelled during the Morning_Rush time slot.
   - Problem 2: Cabs were not available for a large number of requests during the Evening_Rush time slot

Problem 1:

1. For the time slot when problem 1 exists, plot a stacked bar chart to find out if the problem is more severe for pick-up requests made at the airport or the city. As a next step, you have to determine the number of times this issue exists in that time slot.

- Find the percentage breakup for the total number of issues in this time slot based on the pick-up point.

  Please paste your plot here.



- What is the percentage of total issues at (based on pick-up point):
  - Airport : 2.88%
  - City : 97.11%

2. Now let's find out the gap between supply and demand. For this case, the demand is the number of trip requests made at the city, whereas the supply is the number of trips completed from city to the airport.

   No. of trip requests made in city: 1886
   No. of trips completed from city to airport:535

3. What do you think is the reason for this issue for the supply demand gap? (Write the answer in less than 100 words).

   A large number of flights leave the airport during Morning rush time slot. There are very less incoming flights in the Morning rush. A driver who reaches airport during that time has to spend idle time to pick a customer back to the city. The driver could utilize this idle time for other trips if he chooses not to go to the airport. Otherwise he has to return back empty seated which is a waste of gas mileage for him. Due to this a large number of service requests were cancelled in morning rush resulting in huge supply demand gap.

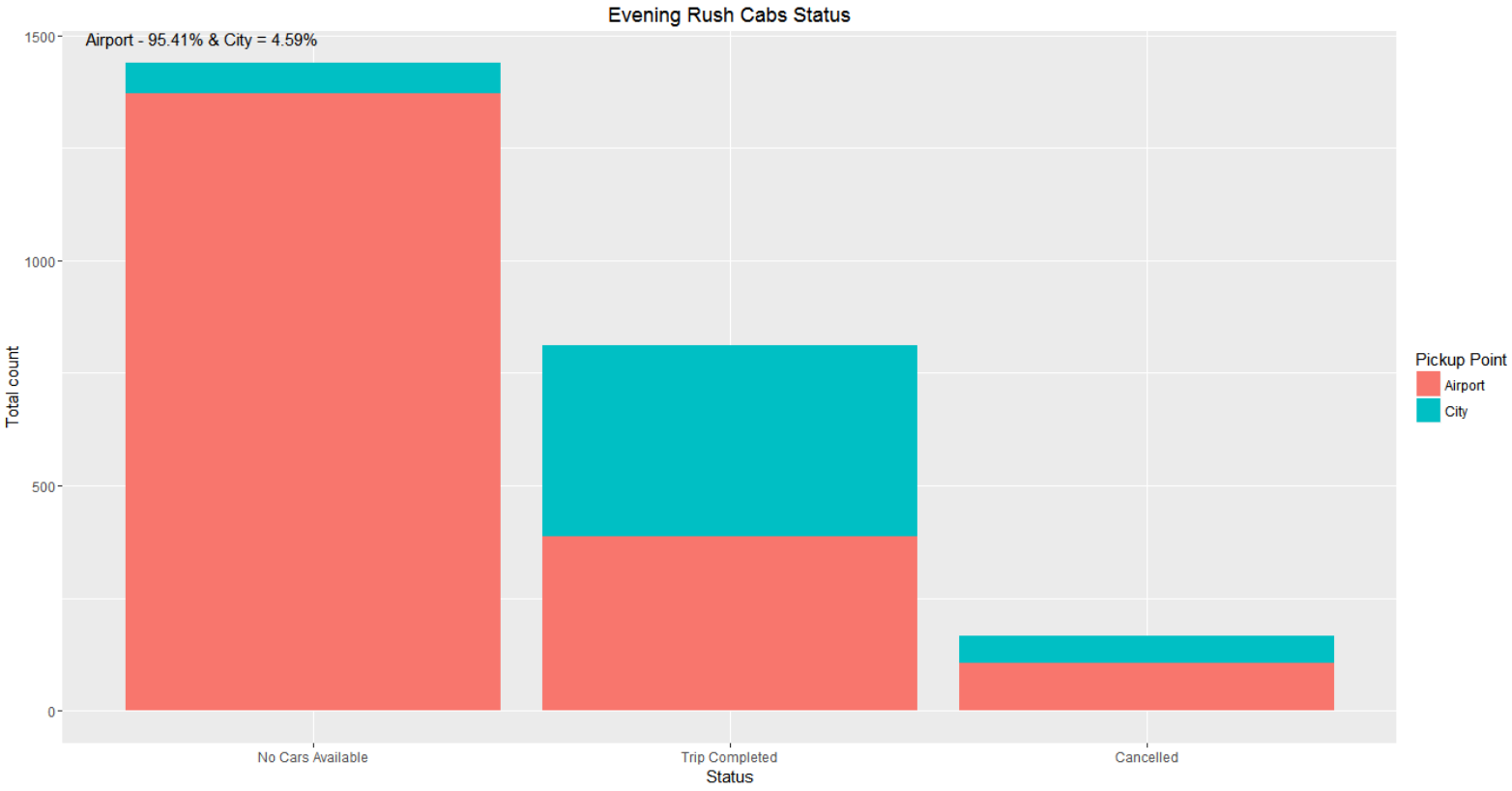
4. What is your recommendation to Uber (Not more than 50 words)?

   Recommendations for morning rush slot from city:-
   (1) Reducing the percentage charged from cab drivers for utilizing Uber services for making a trip to the airport.
   (2) Charging more money from the customers for trips
   (3) Share this data with cab drivers and customers to better understand the issue.

Problem 2:

1. For the time slot when problem 2 exists, plot the stacked bar chart to find out if the issue is for pick-up request made at the airport or the city. Just like problem 1:

- Find the percentage breakup for issue based on the pick-up point for the time slot in which problem 2 exists.



- What is the percentage of total issues at (based on pick-up point):
    - Airport : 95.41

- City : 4.59

2. Now let's find out the gap between supply and demand. For this case, the demand is the number of trip requests made at the airport, whereas the supply is the number of trips completed from airport to the city.

   No. of trip requests made at the airport:1866
   No. of trips completed from airport to the city:387

3. What do you think is the reason for this issue for this supply demand gap. (Not more than 100 words)?

   At the airport Incoming flights are more and outgoing flights are less during Evening rush slot. As the outgoing flights are less, the cabs coming to the airport are also very less during that time. This is drastically reducing the availability of cabs at airport in the evening rush time slot. As the incoming flights are more, the passengers are also more in the evening. These passengers are not getting sufficient cabs to leave the airport in the evening. This is leading to a huge supply demand gap at the airport in evening rush time slot.

4. What is your recommendation to Uber (Not more than 50 words)?

   Recommendations for evening rush slot from airport:-
   (1) Reducing the percentage charged from cab drivers for utilizing Uber services for making a trip to city.
   (2) Charging more money from the customers for trips to the city and rewarding the drivers accordingly
   (3) Share this data with cab drivers and customers to better understand the issue.