Uber Airport Case Study

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Abstract : Analysis of Uber rides between City & Airport

- Objective:
  - To understand the pattern of ride cancellation/non-availability between city and airport
  - To try and infer the reasons behind demand-supply gap and present a solution

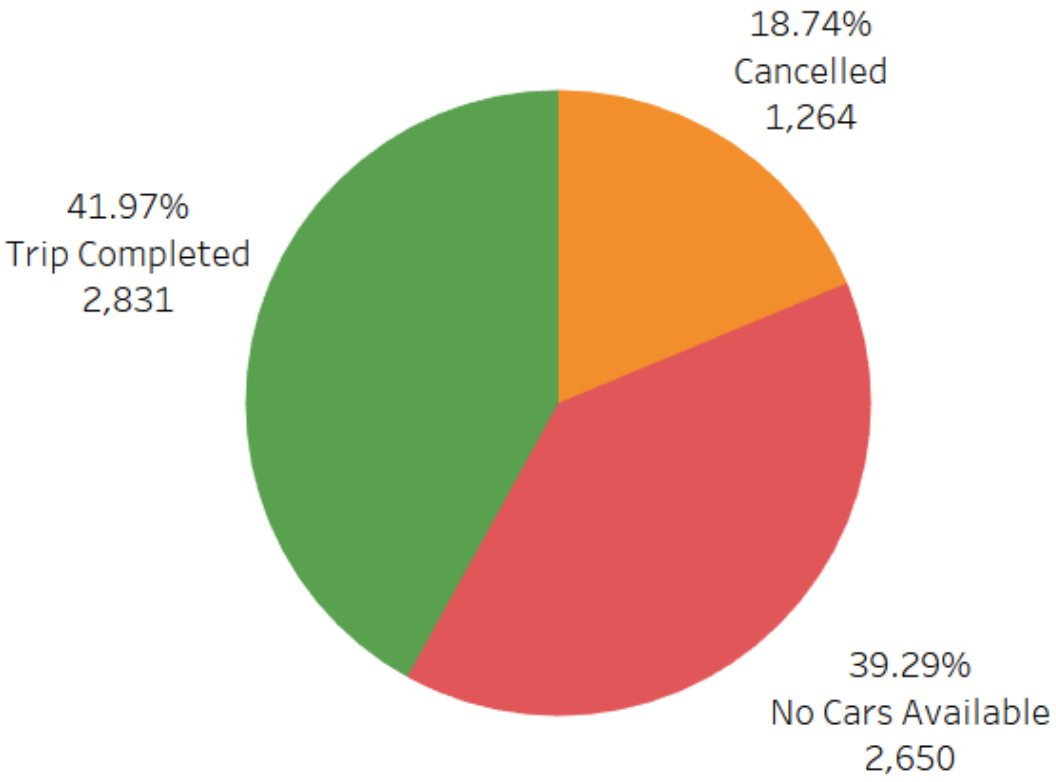
- Goals of the Data Analysis:
  - Identify the most pressing problem for Uber (Cancellation, Non-Availability). Identify the most problematic types of requests and the time slots
  - Identify the gap between demand and supply. Identify the time-slots and type of ride (Airport-City or City-Airport) when the gap is the most severe

- Data Available:
  - Uber rides' data for 5 days (11-15 July 2016) between the city and Airport

Methodology

- Understand the problem statement
- Understand the data at hand
- Clean and prepare the data
- Using data analysis, identify:
  - Frequency of requests of each type; “Trip Completed”, “Cancelled” and “No Cars Available”
  - If the cancellation/non-availability of cars is higher during certain time slots
  - If the cancellation/non-availability of cars is higher for certain kind of rides (Airport-City / City Airport)
  - Gap between demand and supply for various time-slots and ride types
- Try to infer the root cause of this problem based on the data and business understanding
- Recommend a way to resolve the demand-supply gap

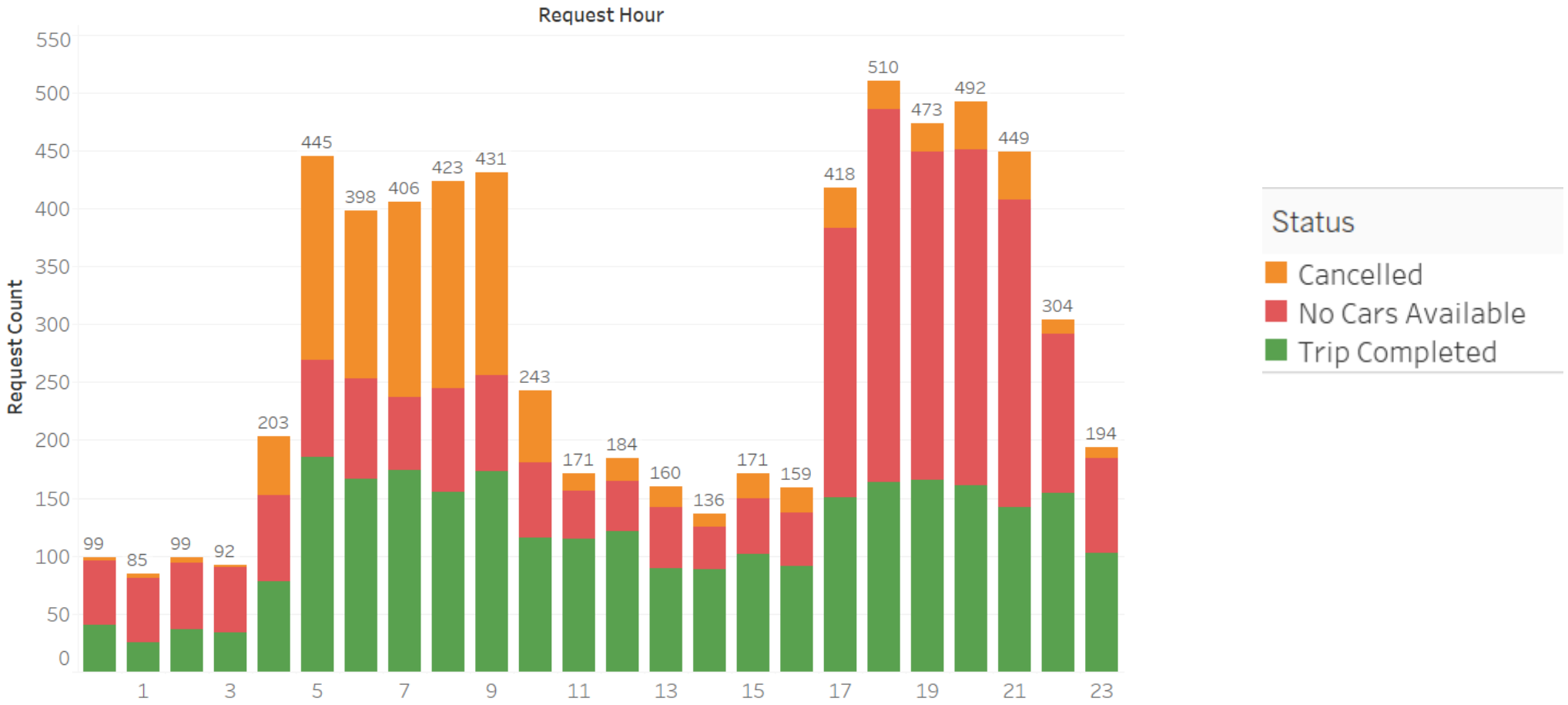
Analysis of Request Statuses



At first glance, the most glaring problem is Non-Availability of cabs. More than 39% requests resulted in “No Cars Available”.

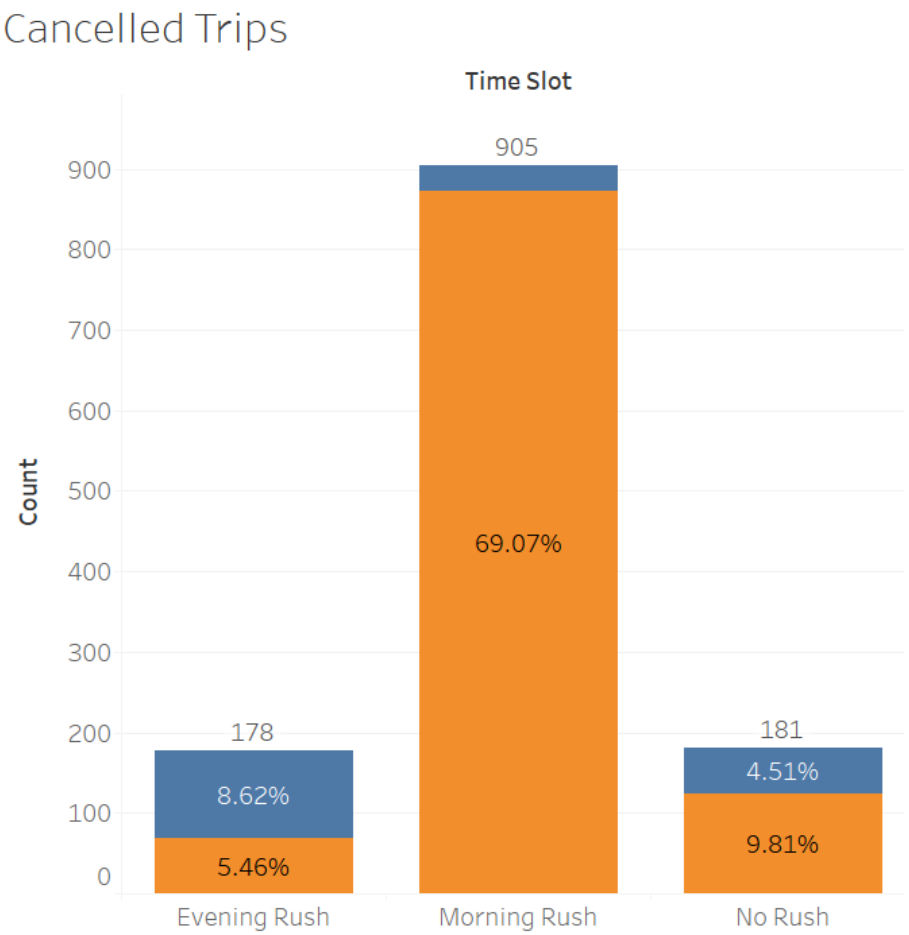
Less than 42% passengers were able to successfully complete their rides.

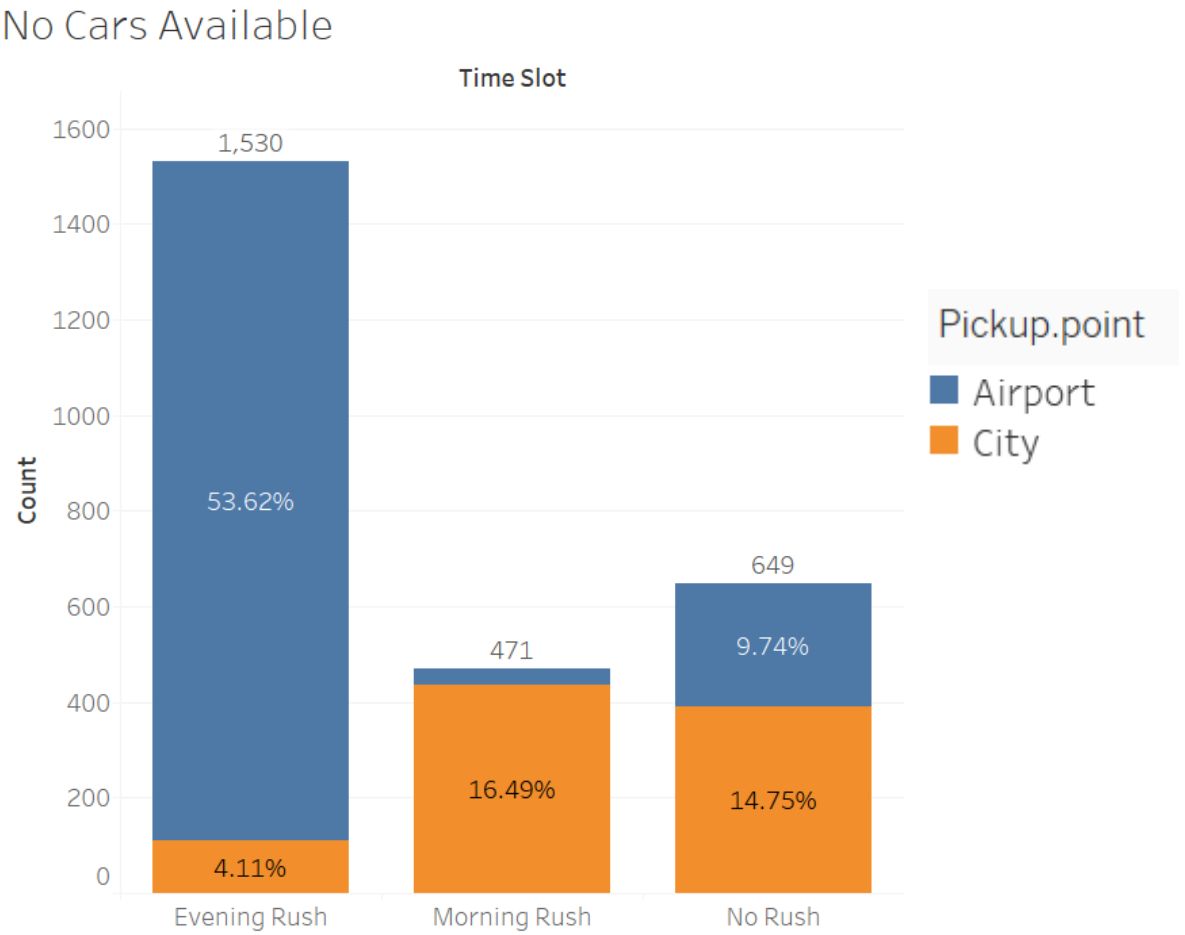
Hourly Request Statuses



- Most trips are being requested in the morning (5-10 am) and evening (5-10 pm) slots. So these time-slots can be binned in “Morning Rush” and “Evening Rush”.
- A high proportion of “Cancelled” cabs in the morning (5-10 am)
- A bad case of non-availability of cabs in the evening (5-10 pm)

The issue of Cancellation vs Non-Availability



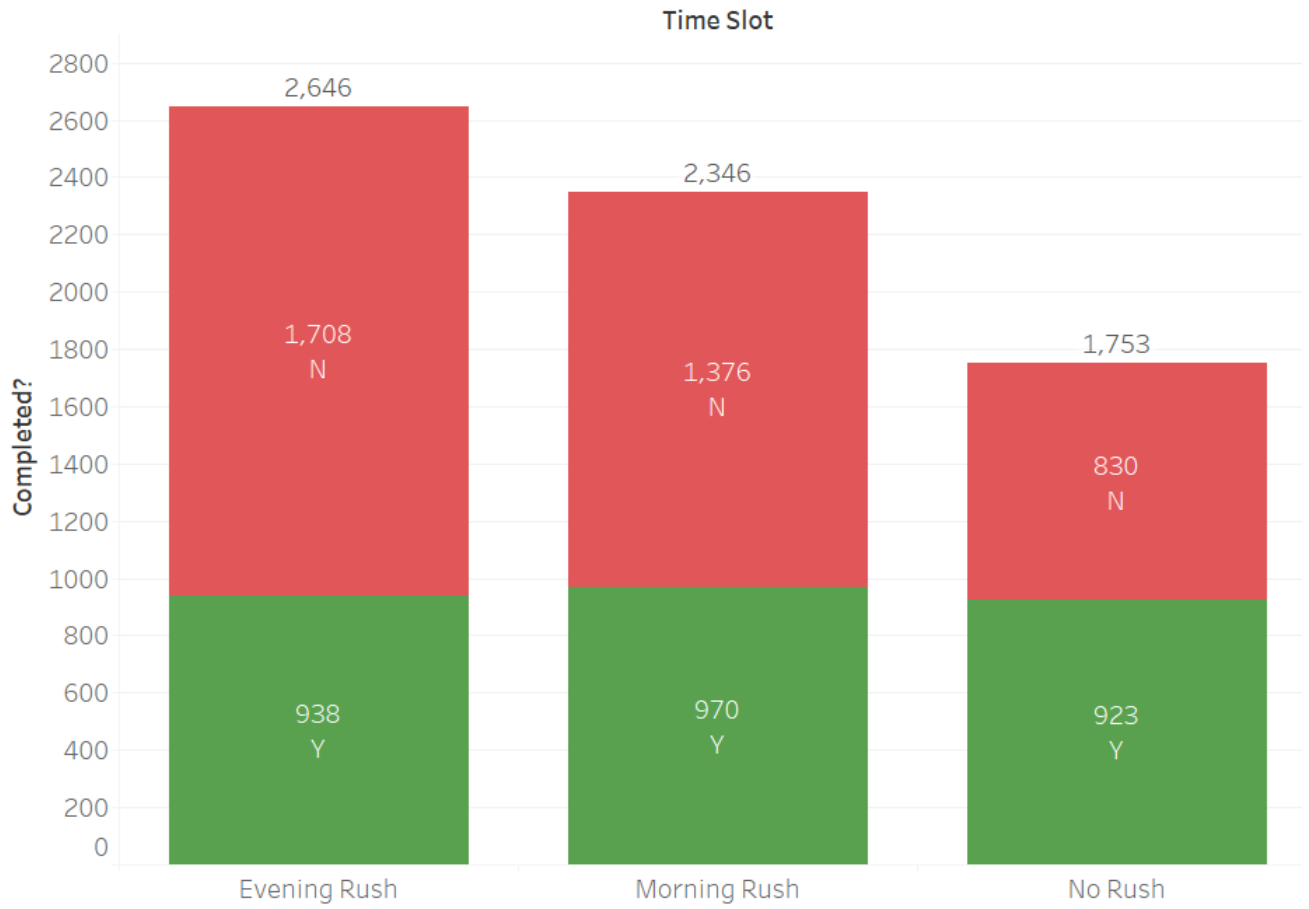


69% of total cancellations are happening when requesting a ride *to* the Airport in the morning.

54% of all non-availability when requesting a cab *from* the Airport in the evening.

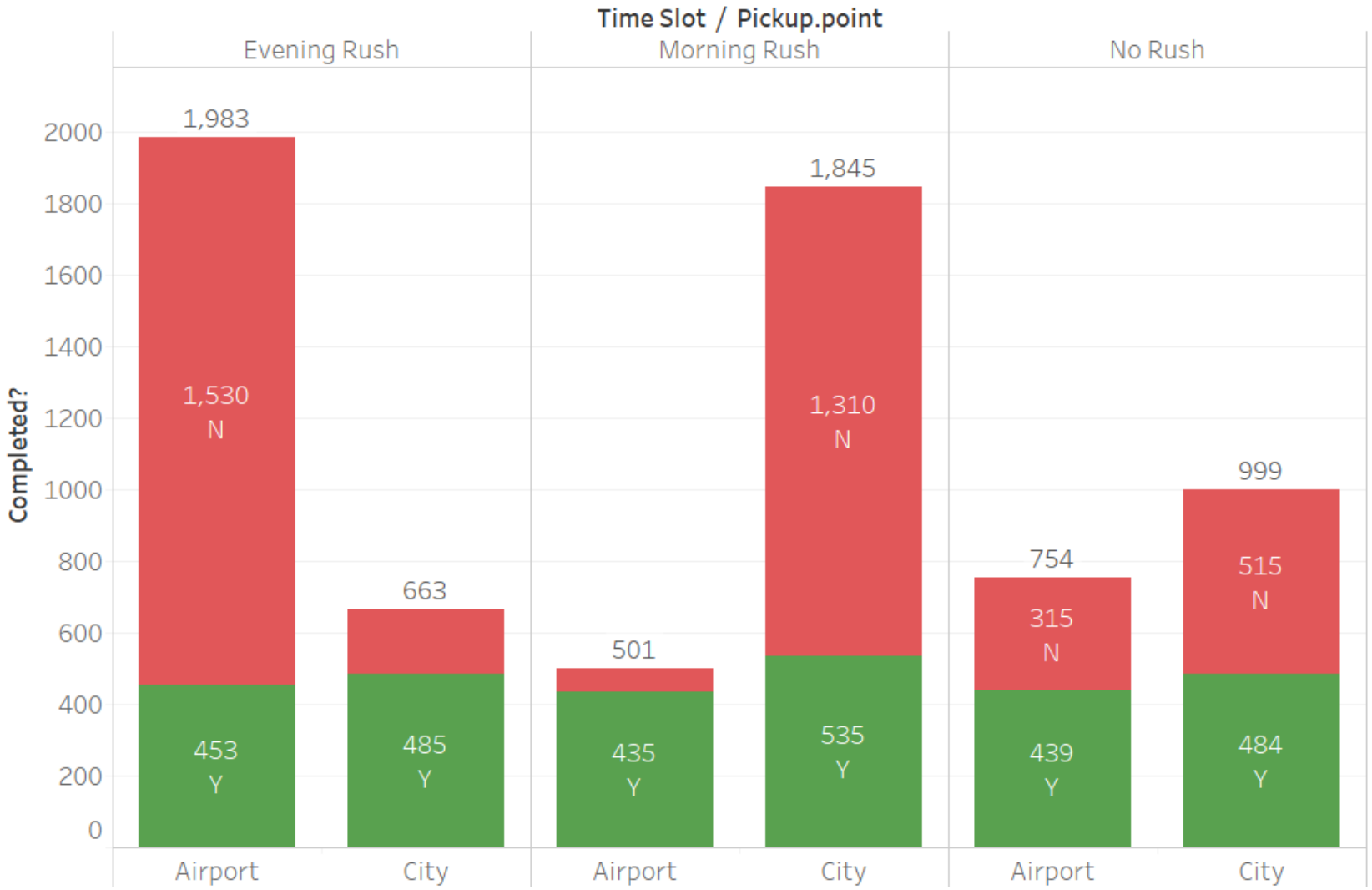
Overall, the issue of non-availability of cars (2650) is worse than cancellation (1264).

Demand vs Supply at various Time-Slots



Time Slot	Demand	Supply	Completion %
Evening Rush	2646	938	35%
Morning Rush	2346	970	41%
No Rush	1753	923	52%

Demand vs Supply According to Ride Type



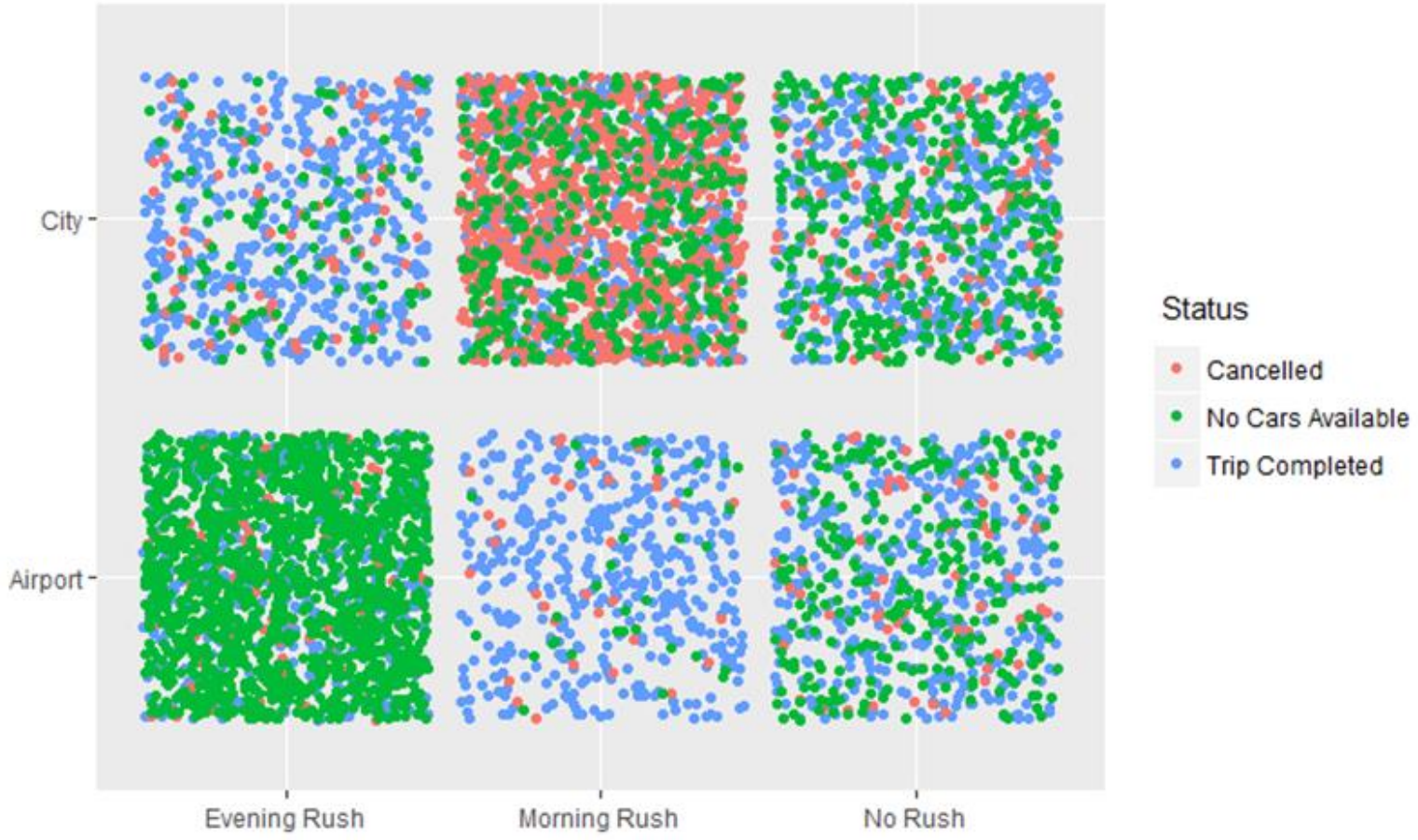
Airport-City:

- In evening, demand at the Airport is almost 3x the demand at City.
- Demand-Supply gap at Airport is worst in the evening (23% completion)

City-Airport:

- In morning, demand at City is almost 4x the demand at Airport.
- Demand-Supply gap in the city is worst in the morning (29% completion)

Frequency Scatter-Plot according to Time-slots and Pickup-Points



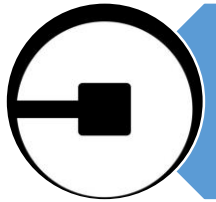
- This chart visually shows the high-demand groups (most dense – Evening at Airport, Morning at City)
- These two high-demand groups also show the lowest supply (Non-availability and Cancellation respectively)

Findings:

Out of all the rides; almost 58% resulted in an incomplete trip

- On average, drivers are reluctant to go to the airport in the morning.
- At the same time; there are insufficient number of cars at the airport at evening, when the most requests are being made.

- Demand is 4x more in the city in mornings; while supply is only 29%.
- Demand is 3x more at the airport in the evenings; while supply is a meagre 23%.



This shows a bad market health for Uber, specially in the morning in the city (many cancelled rides) and in the evening at the Airport (non-availability of cabs).

Conclusion:

Reason for Demand-Supply Gap:

- Not enough cabs available. Even during “No Rush”, 37% requests ended with no cab availability.
- High idle time or no rides back to the city if the driver goes to the airport in the morning.
- Since not enough cabs are going to the Airport during the day; this creates an even worse scarcity of cabs at the airport in evening.

Proposed Solution:

- Increase number of cabs.
- Surge pricing for going to the Airport (more so in the morning); so the idle time and empty trips back can be compensated.
- If cab supply is enough to the Airport throughout the day; it will mean fewer cases of non-availability in the evening.