

UBER SUPPLY DEMAND GAP

OBJECTIVE

Optimize driver supply and allocation to significantly reduce rider unfulfillment (cancellations and "no cars available") during peak demand periods at key pickup points, specifically:

- Night rush hours at the Airport
- Morning rush hours in the City

SUMMARY

This project aimed to analyze and address the persistent supply-demand gaps within Uber's ride-sharing platform, specifically focusing on critical pickup points like the Airport and the City, and their respective peak demand periods (night rush at the Airport, morning rush in the City). The goal was to identify patterns of unmet demand, understand their underlying causes, and provide actionable recommendations to improve service reliability and rider satisfaction.

Data Cleaning:

Cleaned the given data set using python and saved as CSV file.

Data Preparation:

Used the cleaned data set to derive insights using PostgreSQL. Exported the insight table to Excel and done further preparation.

In Jupyter notebook connected this SQL queries to do further processing and visualization.

Data pre processing:

Checked for data types correction.

Calculated necessary fields such as trip duration, categorized trips to morning and night trips.

Extracted date and time to separate columns, extracted hour from time.

Data visualisation:

Used Excel to do dashboard creation.

INSIGHTS

Table 1: Drivers with most trips

DRIVER WITH MOST TRIPS	
driver_id	
27	
22	
70	
176	
177	
84	
197	
69	
114	
24	
142	
107	
16	
9	
78	
54	
212	
109	
105	
204	
126	
274	
225	
37	
98	
80	
230	
125	
233	

Insight 1: There are 28 drivers with most trip counts who comes under top 5 based on trip count.

Table 2: Trip with longest duration

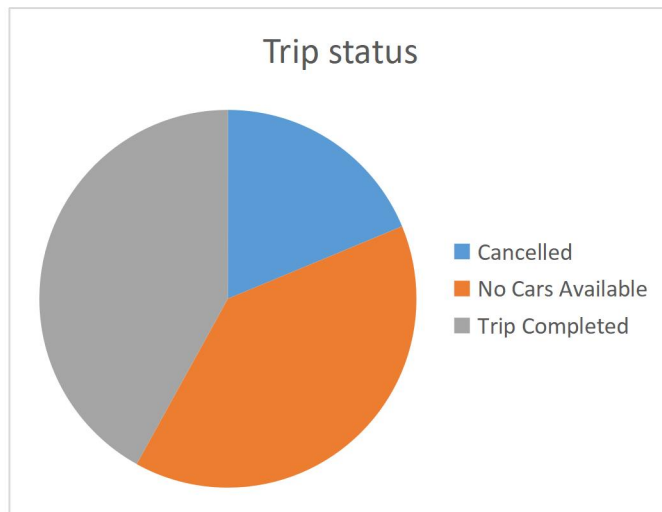
request_id	pickup_point	status	duration_min	request_date
2417	City	Trip Completed	83	2016-07-12

Table 3: Day with most trips.

request_date	drop_date	trips
2016-07-11	2016-07-11	582

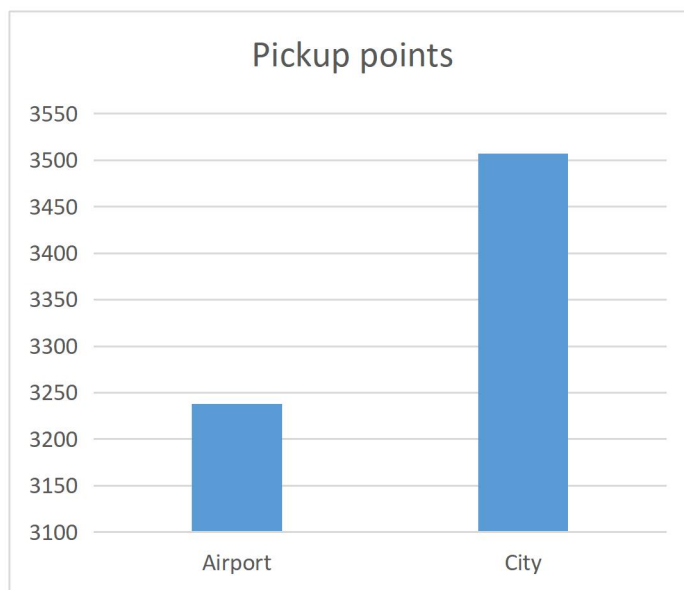
VISUALISATION:

Chart 1: Proportion of trip status



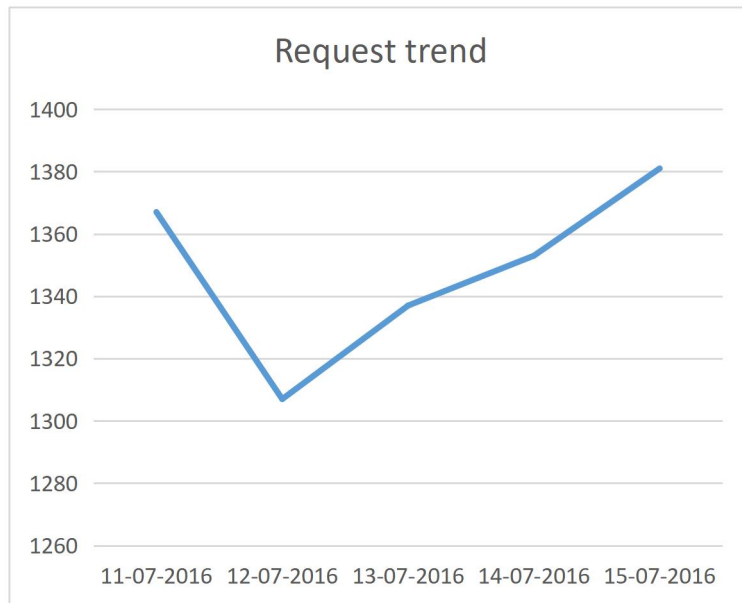
Insight: Completion of trip rate is lower than uncompleted trips due to non availability of cars and canceled one. Shortage of rides exceed cancellation rate.

Chart 2: Request per pickup points



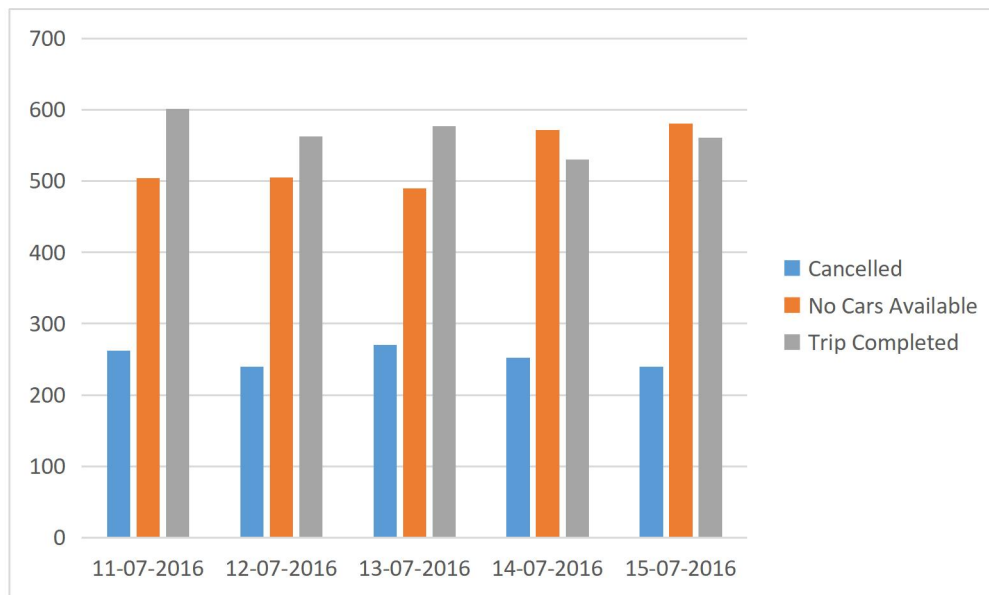
Insight: Requests from city are more than airport.

Chart 3: Requests per day



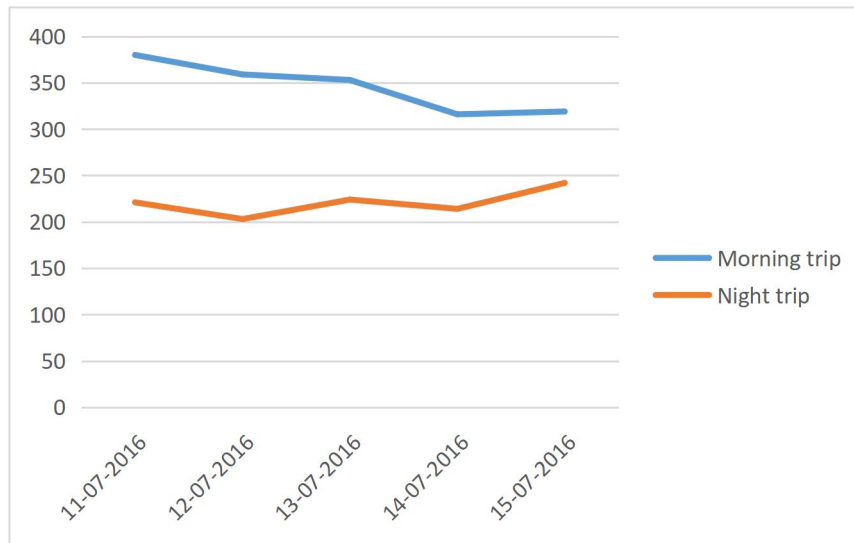
Insight: Requests for ride got a dip in 12th July but gradually increased.

Chart 4: Trip status per day



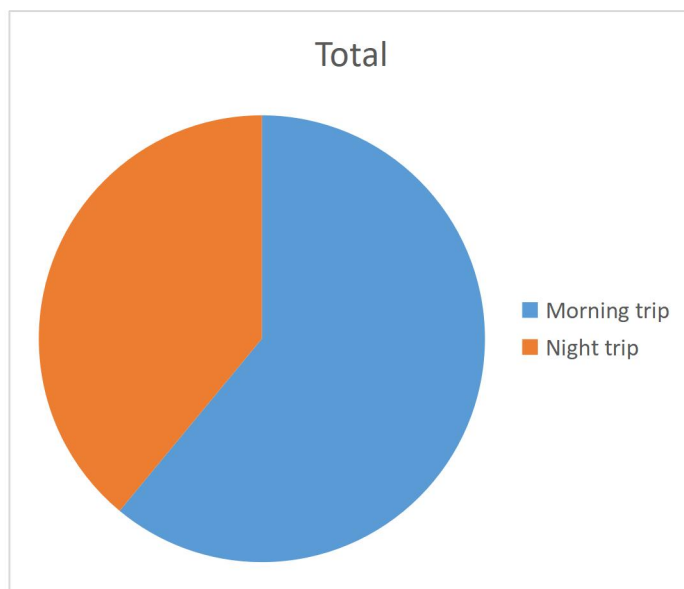
Insight: Non availability is rising day by day, Trips completed declining day by day; Cancellation rate have no change.

Chart 5: Morning and night trip trend(by day)



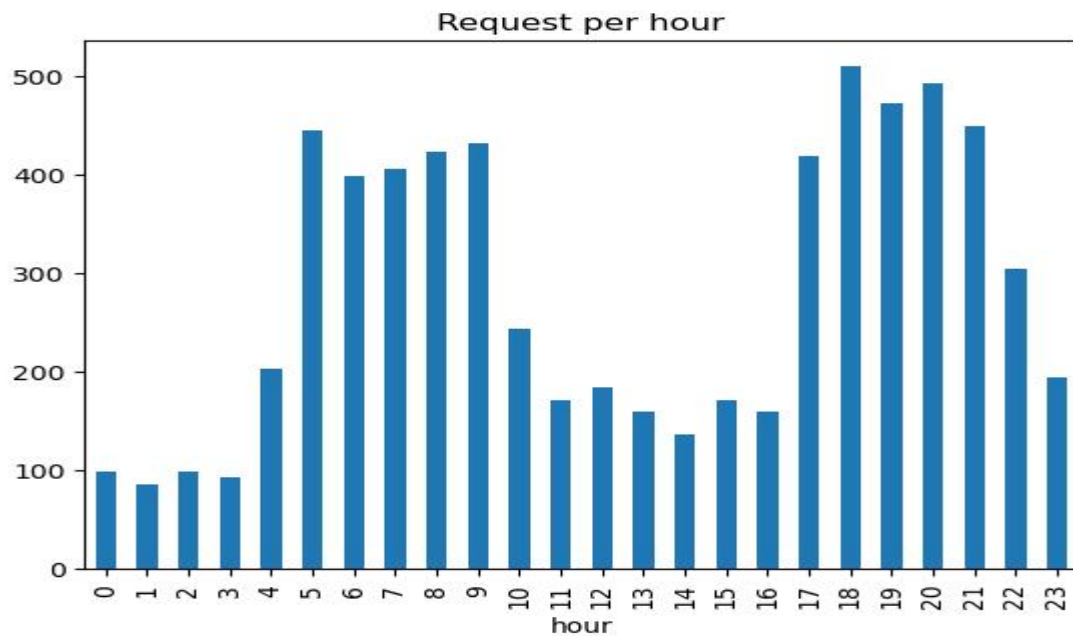
Insight: Night requests increasing and request during morning hour decreasing over period.

Chart 6: Morning and night trip proportion



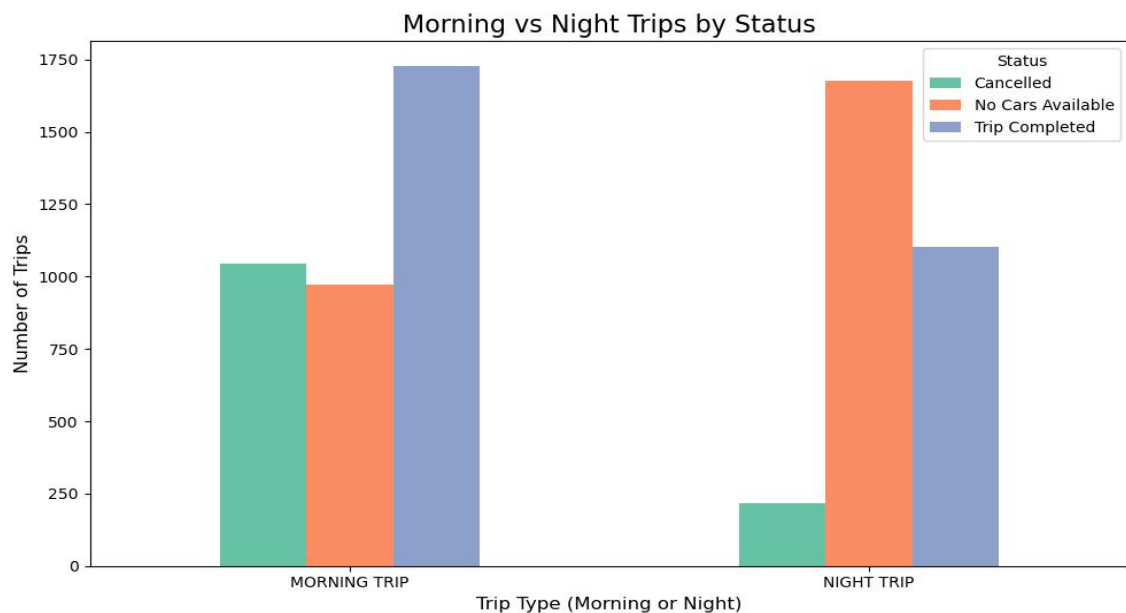
Insight: Requests for trips during morning hour are much higher than at night hour(it shows only the requests despite of status).

Chart 7: Requests made per hour



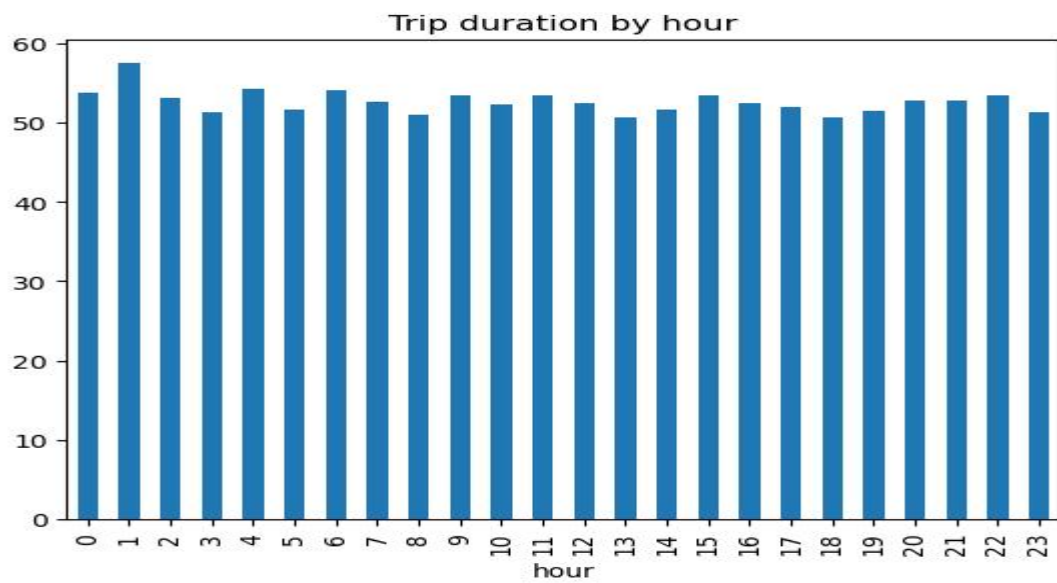
Insight: Requests for trips higher at 5pm to 10 pm and 5 am to 9 am.

Chart 8: Trip status by morning and night trips



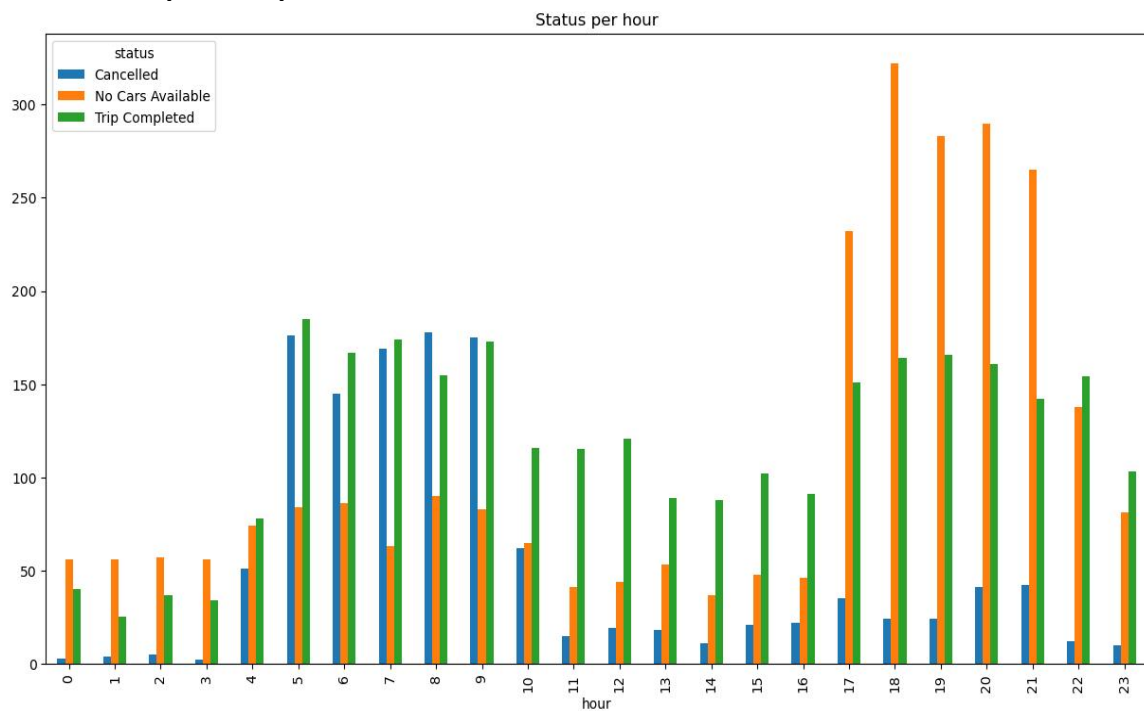
Insight: Non availability higher during night.

Chart 9: Average duration per hour



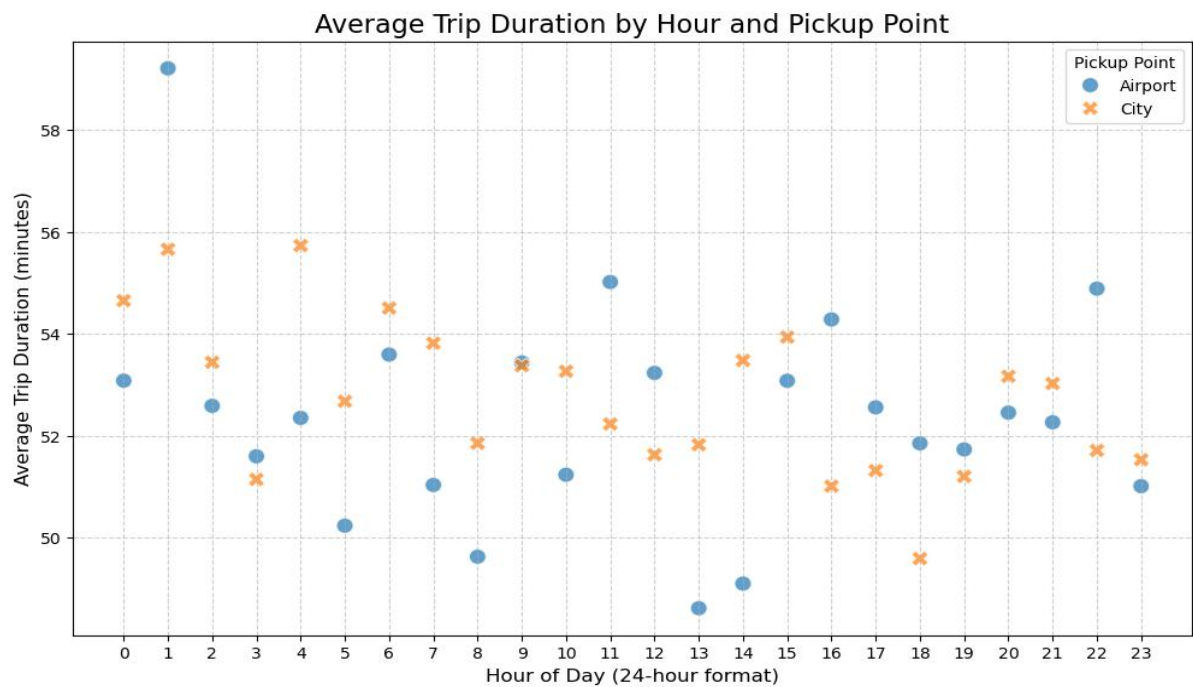
Insight: Duration taken by trips are normal.

Chart 10: Trip status per hour



Insight: Non availability rise at office closing time, comparatively cancellation high during office opening time.

Chart 11: Average duration per hour for each pick up point



Insight: Duration got a spike at 1 am mainly in airport region.

Chart 12: Trip distribution for each pickup point by time and status

Uber Trip Distribution: Pickup Point by Time and Status



Insight: “City”- more requests at morning; canceled trips high in morning trip; cancellation more than non availability.

“Airport”- more requests at night; non availability rate high during night trips; non availability severe than cancellation.

SOLUTION

Dynamic Driver Allocation: Implement real-time algorithms to direct available drivers to the Airport during night rush and key City zones during morning rush.

Targeted Driver Incentives: Introduce surge pricing or bonus incentives for drivers who operate in the Airport during night hours and in the City during morning hours, to naturally balance supply with demand.

Proactive Forecasting: Leverage historical data and external factors (e.g., flight schedules, major city events) to predict future demand spikes and pre-position drivers.

Continuous Monitoring: Establish dashboards to monitor "No Cars Available" and "Cancelled" rates at a granular level (by hour, by pickup point) to ensure ongoing optimization.

Provide night shifts for Uber drivers which would increase the number of drivers at Night time and thus would lead to less requests returning that no cabs are available.