Analysis of Ride Request Patterns in Uber

Project Summary :

This project focuses on analysing Uber ride request data to identify patterns and inefficiencies in ride fulfilment, particularly around cancellations and driver unavailability. The dataset contains 6,745 ride requests, including details such as pickup points (City or Airport), request times, driver assignment, and trip status.

The goal of this analysis is to understand the supply-demand gap and the factors contributing to trip failures—namely, requests that were either cancelled or marked as no cars available. By examining time-based trends (hour of day, day of week) and location-based behaviour, the project uncovers peak demand periods and operational weaknesses in Uber's service.

Key findings include:

High demand during morning (5–10 AM) and evening (5–9 PM) hours

Increased cancellations in the City and more 'No Cars Available' cases at the Airport

Nearly 40% of trips did not have a driver assigned

Only 42% of requests were successfully completed

The insights from this analysis can help Uber make data-driven decisions to:

Improve driver allocation strategies

Minimize customer dissatisfaction

Enhance overall operational efficiency

This project demonstrates the power of exploratory data analysis (EDA) in identifying real-world business challenges and supporting strategic decision-making in ride-sharing services.

📈 DATA VISUVALIZATION:

Data Visualization is the graphical representation of information and data using visual elements like charts, graphs, maps, etc., to help people understand patterns, trends, and insights quickly and effectively.

Column Chart
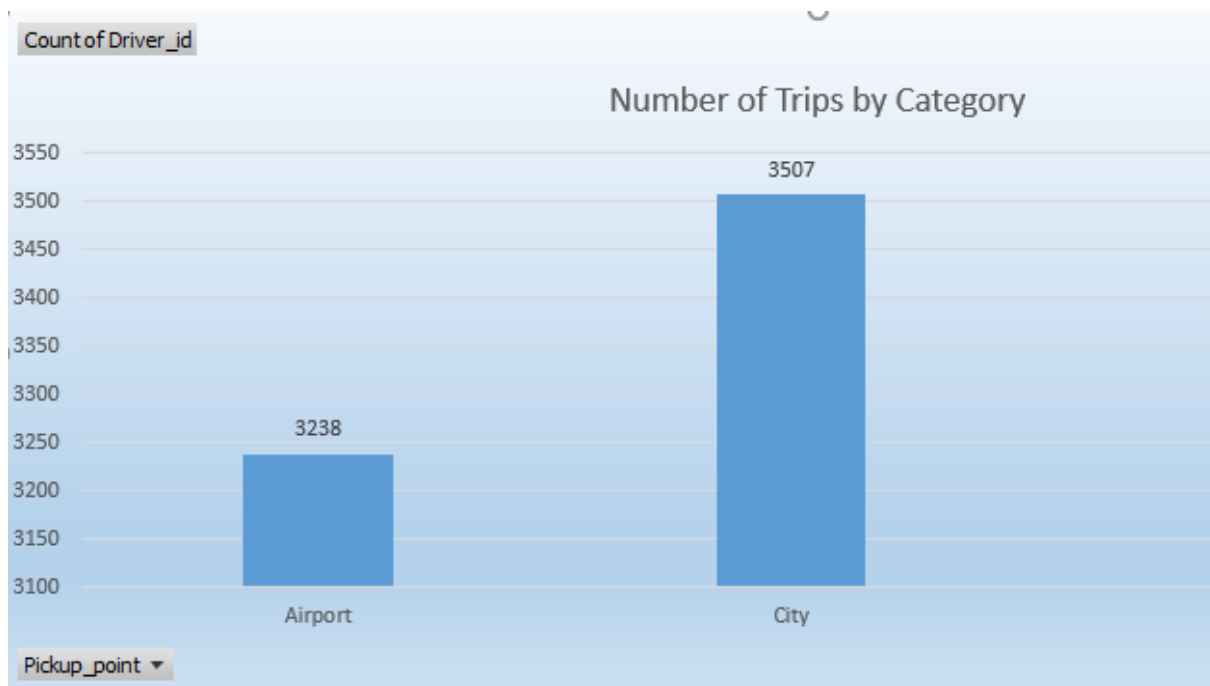
- **Insight:** The data shows how many trips originated from the **City** vs the **Airport**.
- **Values:**
    - City: 3,507
    - Airport: 3,238

Interpretation: The majority of the requests originated from the City (slightly higher than Airport). This could imply higher demand or population density in city areas.
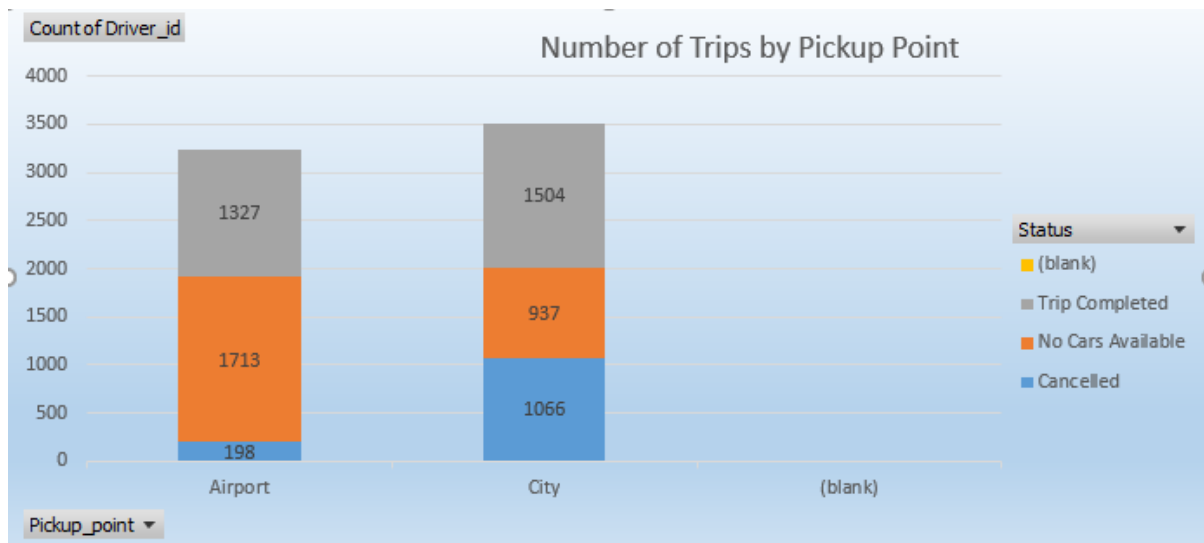
Line Chart

Number of Trips per Hour

Count of Driver_id

- **Insight:** Number of rides by hour (0 to 2 shown in snippet; complete data in file).
- **Sample:**
    - 0 Hr: 99 requests
    - 1 Hr: 85 requests
    - 2 Hr: 99 requests

Interpretation: Demand fluctuates hourly. You can use this data to identify **peak and off-peak hours**.
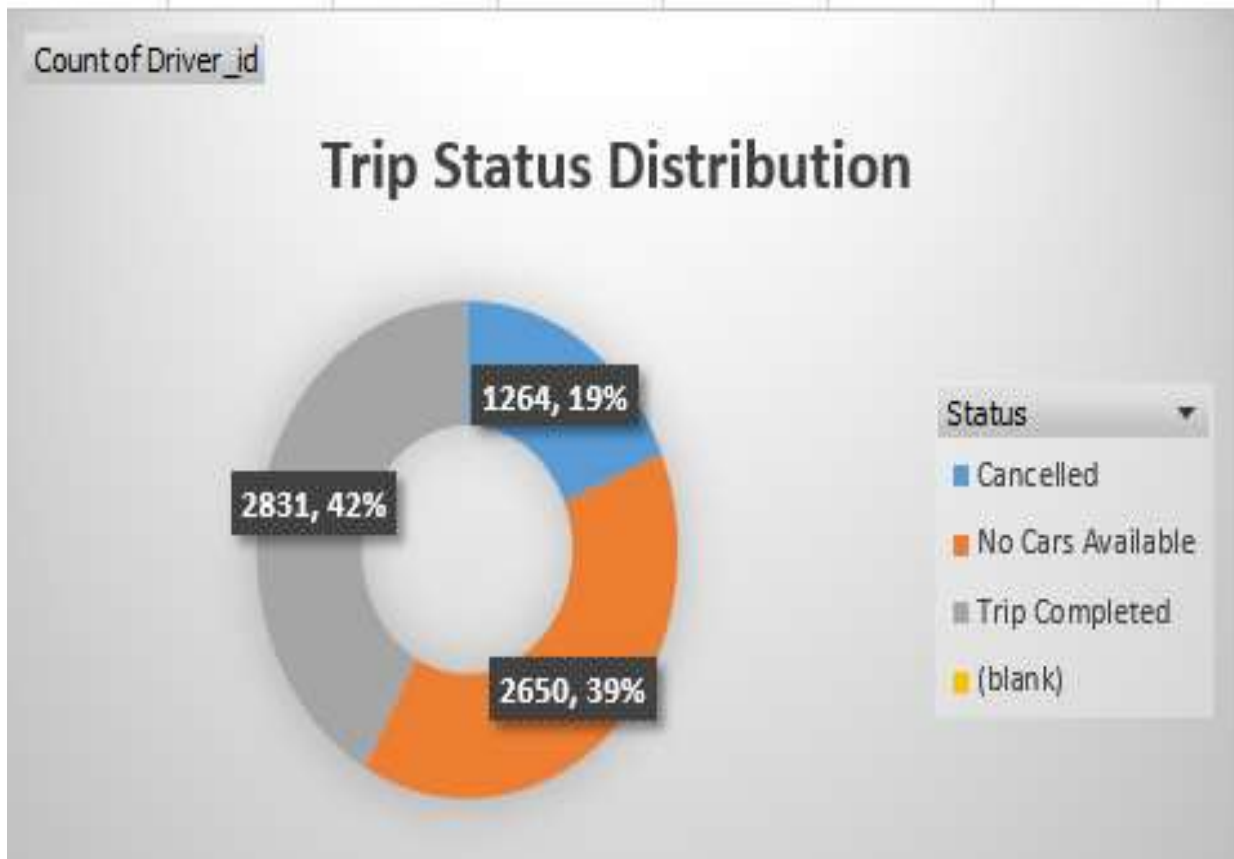
Stacked Column Chart

Location:

- **City:**
    - Trip Completed: 1,504
    - Cancelled: 1,066
    - No Cars Available: 937
- **Airport:**
    - Trip Completed: 1,327
    - Cancelled: 198
    - No Cars Available: 1,713

Insight:

- At the **City**, most requests end in successful trips, but cancellations are high.
- At the **Airport**, **"No Cars Available"** is the most frequent failure mode. Likely due to demand during peak flight hours or remote pickup issues

Donut Chart

Trip Status Distribution

Count of Driver_id

1264, 19%

2831, 42%

2650, 39%

Status

- Cancelled
- No Cars Available
- Trip Completed
- (blank)

- **Status Counts:**

    o Trip Completed: 2,831

    o Cancelled: 1,264

    o No Cars Available: 2,650

Insight: A significant portion of requests (≈ 43%) were **not completed**, either due to cancellations or unavailability of cars. This indicates supply-demand mismatch or user experience issues.

Clustered Column Chart
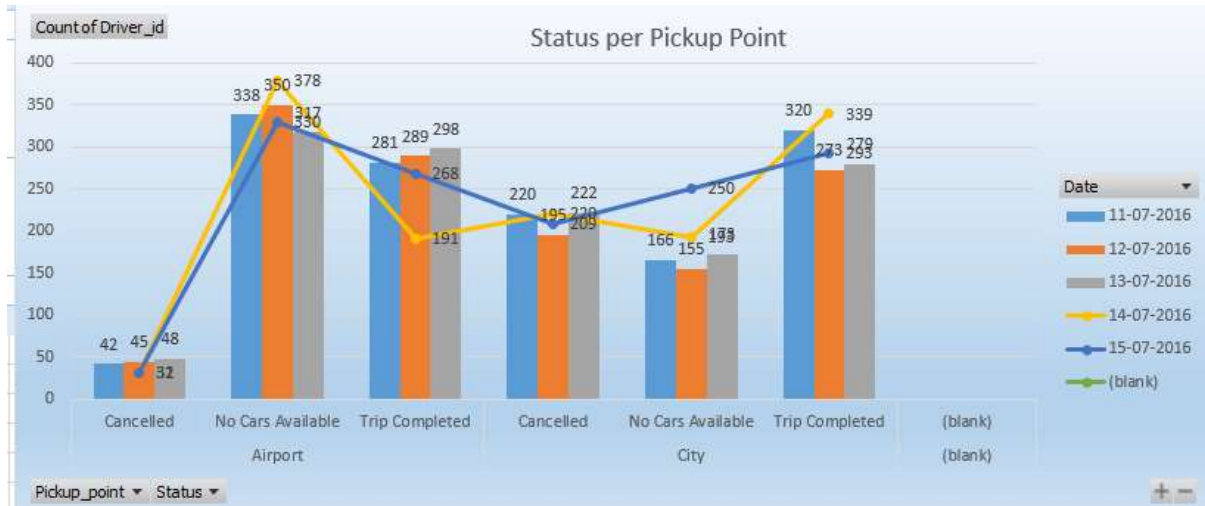

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Pie Chart

Ride Distribution by Type
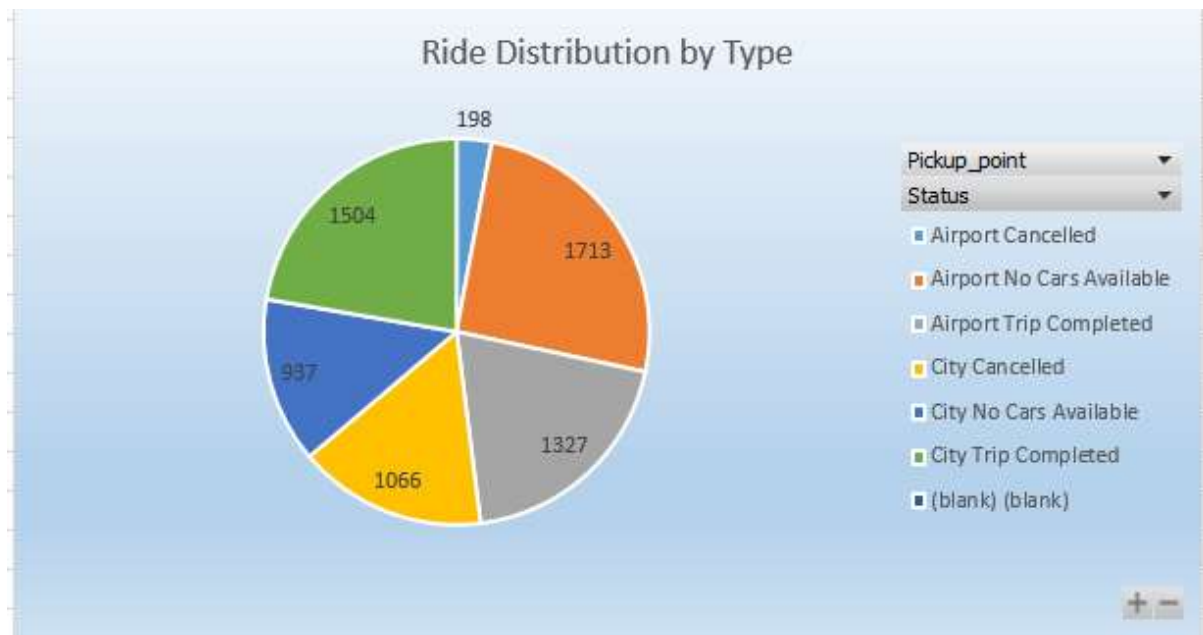
- Mixed insight showing:
    - Total Airport Requests: 3,238
    - Cancelled: 198
    - No Cars Available: 1,713

Insight: Re-emphasizes that although the Airport has a high number of requests, nearly **60% are not fulfilled**.

Recommendations (Business Objectives)

- Improve fleet availability at Airport.

- Implement driver incentive systems to reduce cancellations.

- Optimize shift scheduling based on hourly trends.

- Use historical date trends to allocate drivers better during high-demand periods.