Uber Supply Demand Gap – Insights Report

1. Introduction

Uber operates in a highly dynamic environment where matching rider demand with driver supply is critical for customer satisfaction and revenue growth. This report analyzes Uber ride request data to identify supply–demand gaps, cancellation patterns, and operational inefficiencies across different time periods and pickup locations (Airport and City). The analysis leverages insights derived from Excel dashboards, SQL queries, and Python-based Exploratory Data Analysis (EDA).

2. Dataset Overview

The dataset contains ride request information including:

- Request ID
- Pickup Point (Airport / City)
- Driver ID
- Trip Status (Completed, Cancelled, No Cars Available)
- Request Timestamp
- Drop Timestamp

The data spans multiple days and captures hourly demand fluctuations and service outcomes.
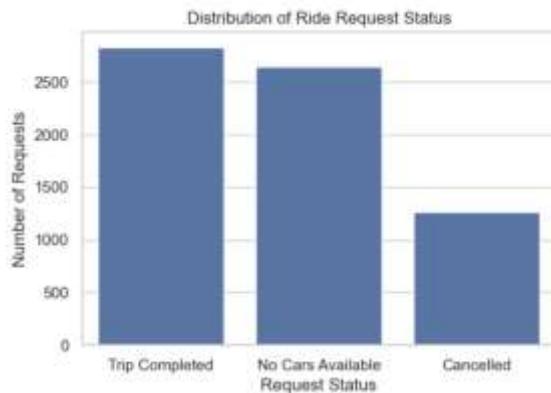
3. Overall Demand & Trip Status Analysis

Overall Trip Status Distribution

(Bar Chart – Status vs Total Requests)
This chart shows the distribution of ride requests across different trip statuses.
Insight: A significant portion of requests are either cancelled or face "No Cars Available", indicating unmet demand.

Distribution of Ride Request Status
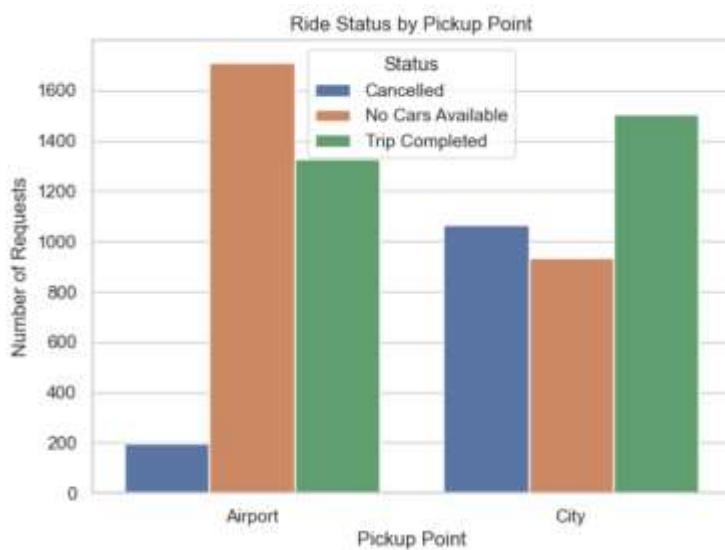
Pickup Point vs Trip Status

(Bar Chart – Pickup Point vs Status)
This chart compares trip outcomes between Airport and City locations.
**Insight:** Airports experience a higher supply–demand mismatch compared to city pickups

Ride Status by Pickup Point
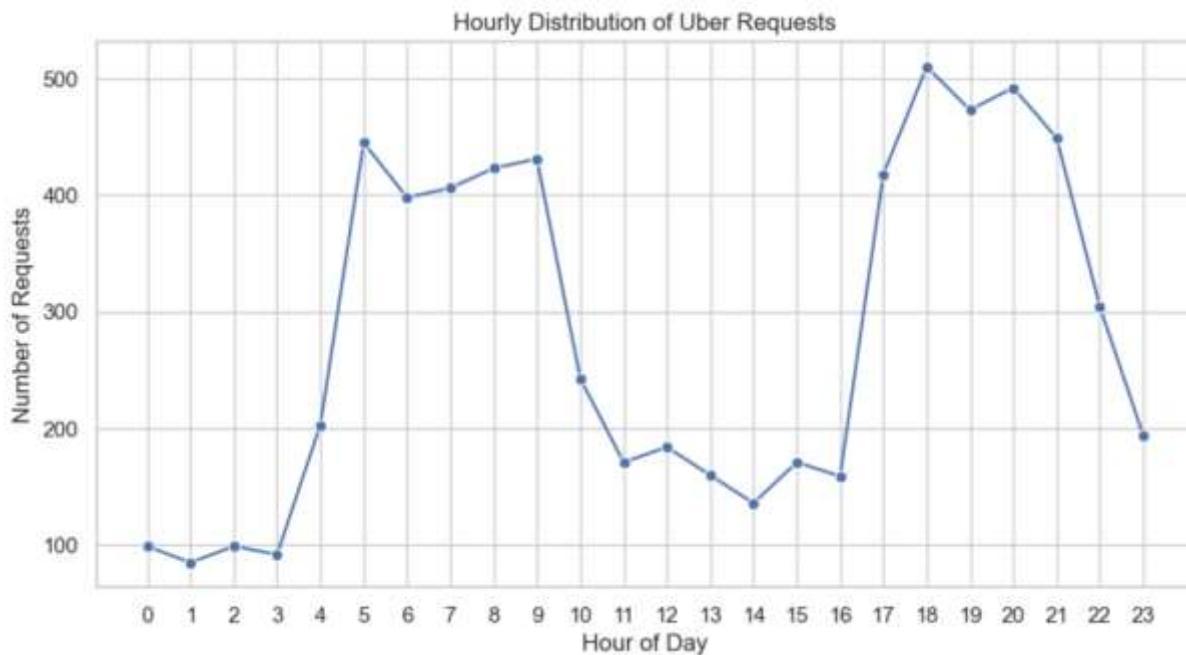
4. Time-Based Demand Patterns

Hourly Ride Requests

(Line Chart – Hour vs Total Requests)
This visualization displays ride request volume across different hours of the day.
Insight: Demand peaks during early morning and evening hours, reflecting commute and travel patterns.

Hourly Distribution of Uber Requests

Hourly Cancelled Ride Requests

(Line Chart – Hour vs Cancelled Requests)
This chart highlights when cancellations are most frequent.
Insight: Cancellation spikes align with peak demand hours, indicating supply shortages during high-demand periods.

Hourly Demand by Pickup Point
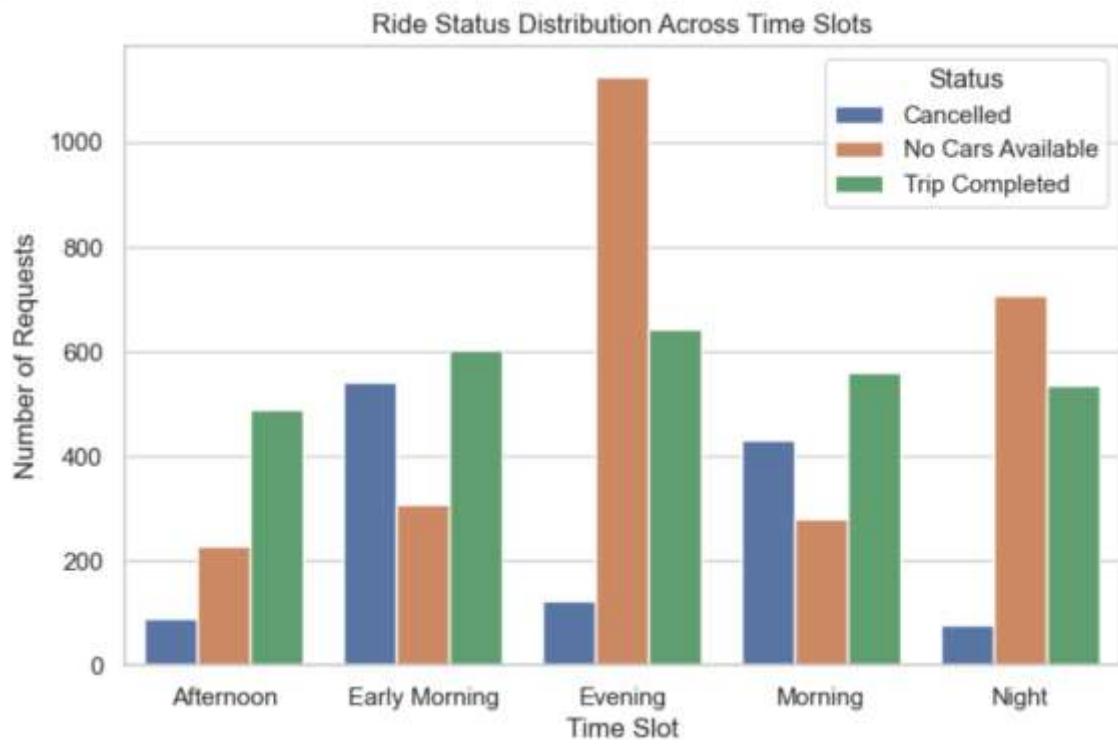
Hourly "No Cars Available" Requests

(Line Chart – Hour vs No Cars Available)
This chart focuses on requests that could not be serviced due to lack of drivers.
Insight: A sharp increase in "No Cars Available" requests occurs during early morning airport rush hours.

Ride Status Distribution Across Time Slots
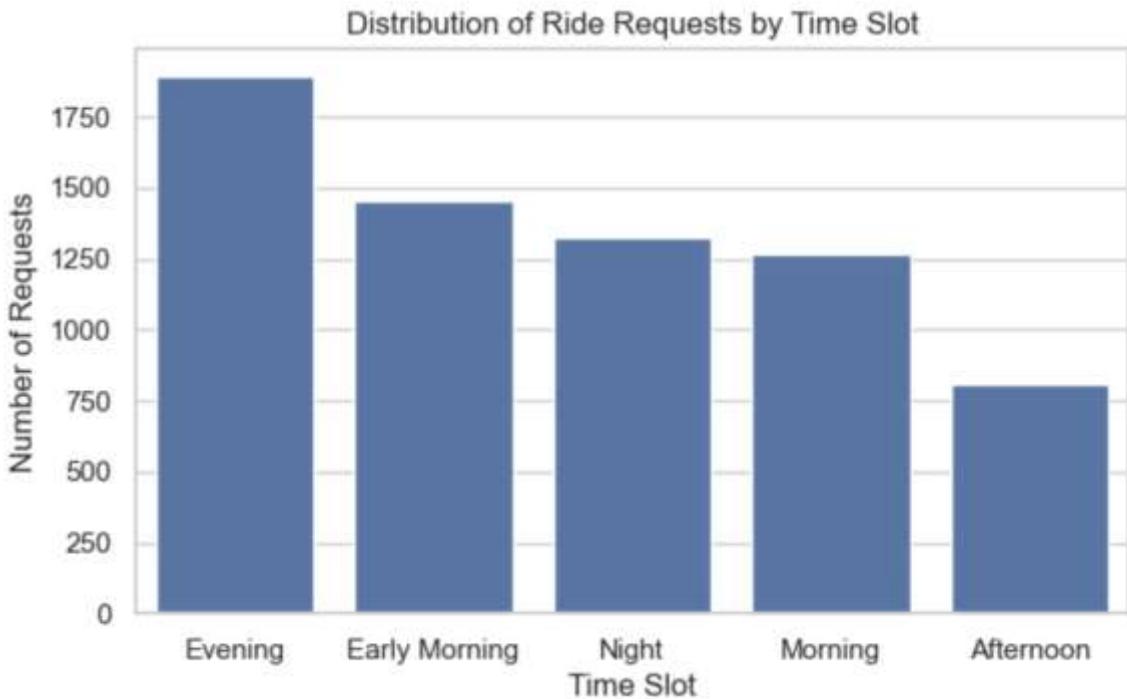
5. Location-Based Demand Gap Analysis

Total Requests by Pickup Point

(Bar Chart – Airport vs City)
This chart compares total demand between Airport and City pickups.
Insight: While city requests dominate overall volume, airport rides show higher operational challenges.

Distribution of Ride Requests by Time Slot
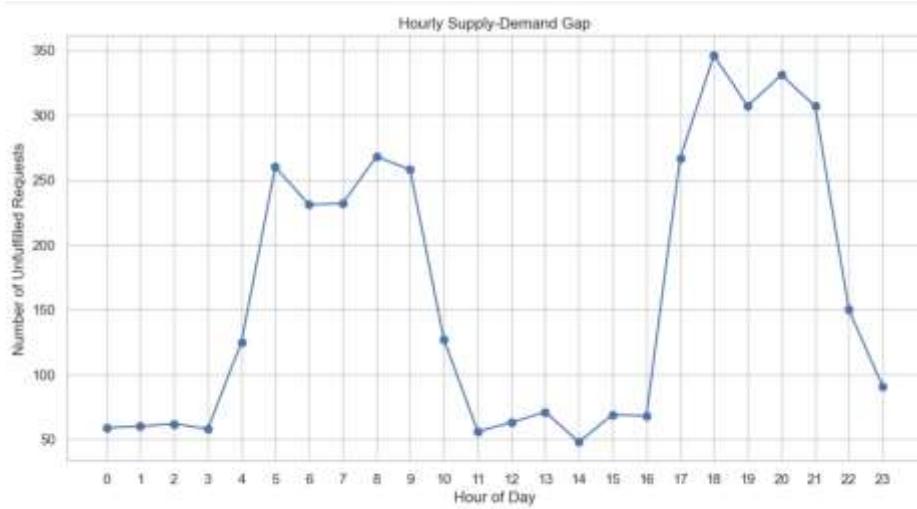
6. Time Slot Analysis

Requests by Time Slot

(Bar Chart – Time Slot vs Total Requests)
Time slots such as Early Morning, Morning, Afternoon, Evening, and Night are analyzed.
Insight: Early Morning and Evening time slots show the highest demand–supply imbalance.
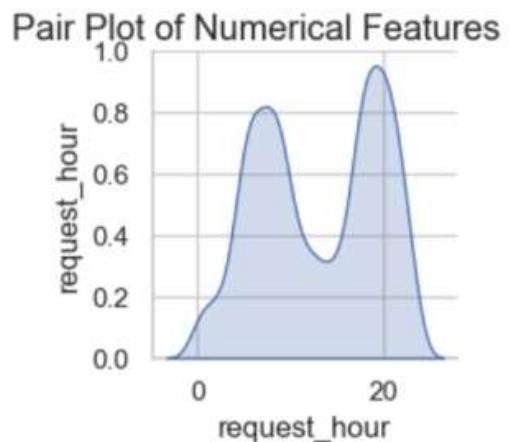
Pair Plot Analysis

(Pair Plot – Numerical Features)
Insight: Distinct clustering patterns reveal how request timing influences cancellations and trip completion.

Pair Plot of Numerical Features

9. Key Business Insights

- Airport pickups suffer from a persistent supply shortage, especially during early mornings.
- Peak-hour demand consistently exceeds driver availability.
- High cancellation rates directly correlate with peak demand periods.
- City operations are comparatively more stable than airport operations.

10. Business Recommendations

- Increase driver incentives for early morning airport trips.
- Implement dynamic driver allocation based on demand forecasting.
- Encourage pre-scheduled airport rides to manage supply proactively.
- Improve real-time driver positioning near high-demand zones.

11. Conclusion

This analysis highlights critical supply–demand gaps in Uber's operations, particularly at airport locations and during peak hours. By addressing these gaps through targeted driver incentives and improved demand forecasting, Uber can significantly enhance customer experience, reduce cancellations, and improve overall operational efficiency.