Uber Supply–Demand Gap Analysis

Exploratory Data Analysis using Python, SQL & Excel

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Problem Statement

Supply-Demand Mismatch

Uber faces recurring mismatches between ride demand and cab availability across different time zones and locations.

Unfulfilled Demand

Certain time slots and pickup points consistently experience high volumes of unfulfilled ride requests.

Our Objective

Identify operational gaps through data analysis and propose actionable solutions to optimise driver allocation.

Dataset Overview

6,745

Total Records

Ride requests analysed

Key Data Columns

- **Request timestamp** – Date and time of each ride request
- **Pickup point** – Airport or City origin location
- **Ride status** – Completed, Cancelled, or No Cars Available

Tools Used

Each tool was strategically deployed to extract insights at different stages of analysis.

Python

Pandas, NumPy & Matplotlib for data manipulation and visualisation

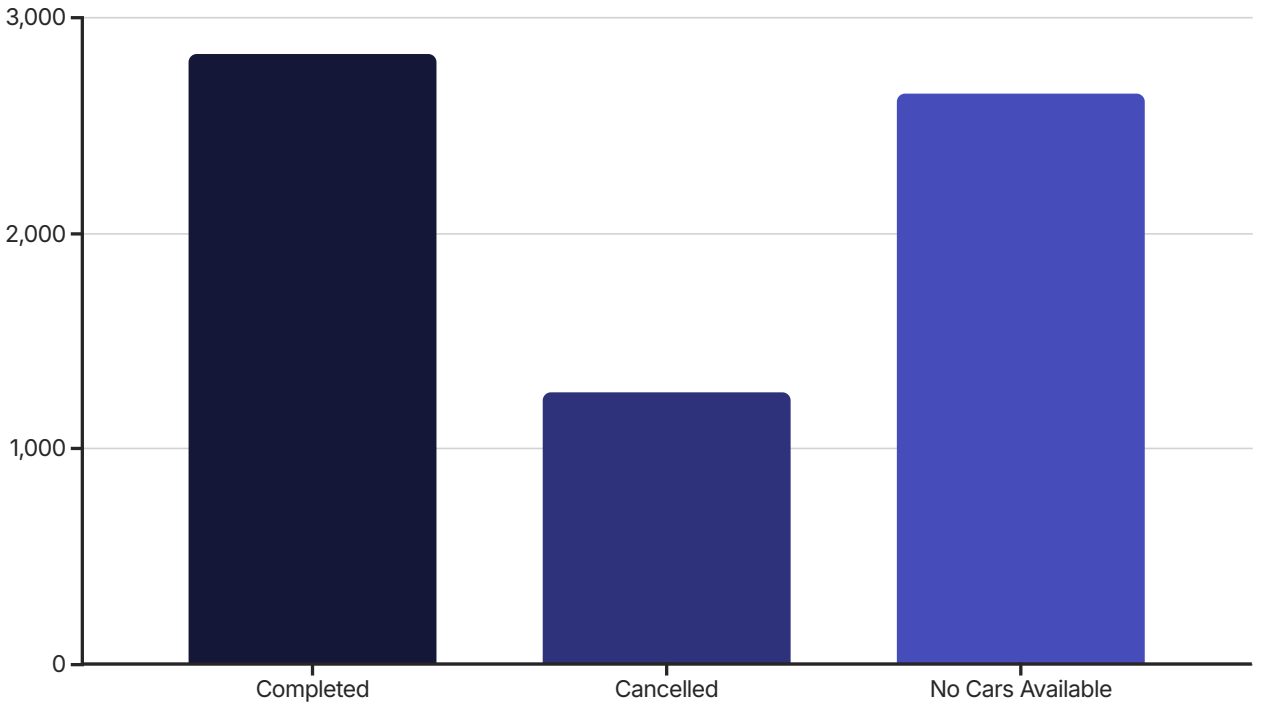
SQL

MySQL / SQLite for querying and aggregating large datasets efficiently

Excel

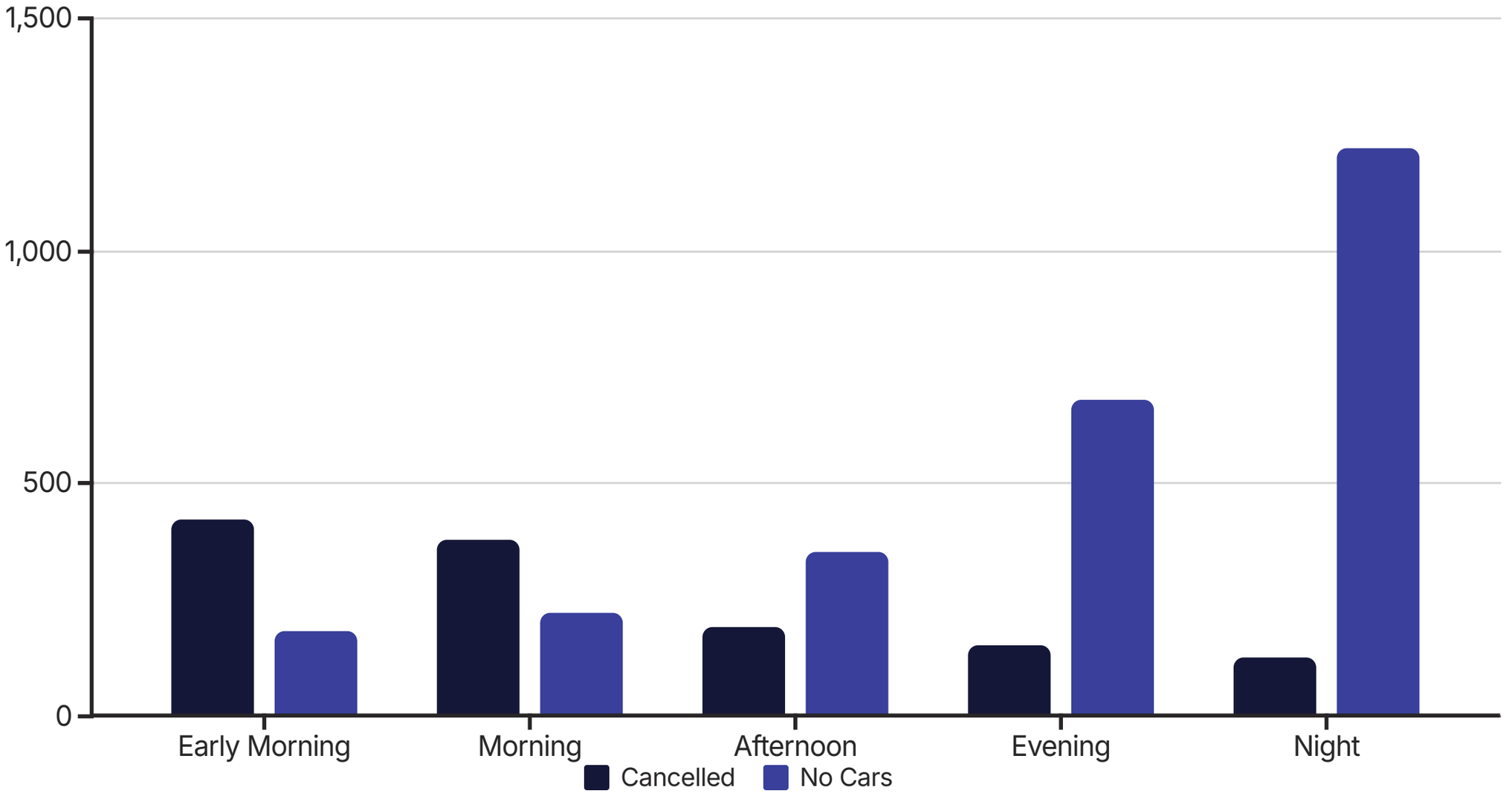
Pivot Tables & interactive dashboards for stakeholder reporting

Overall Ride Status Distribution



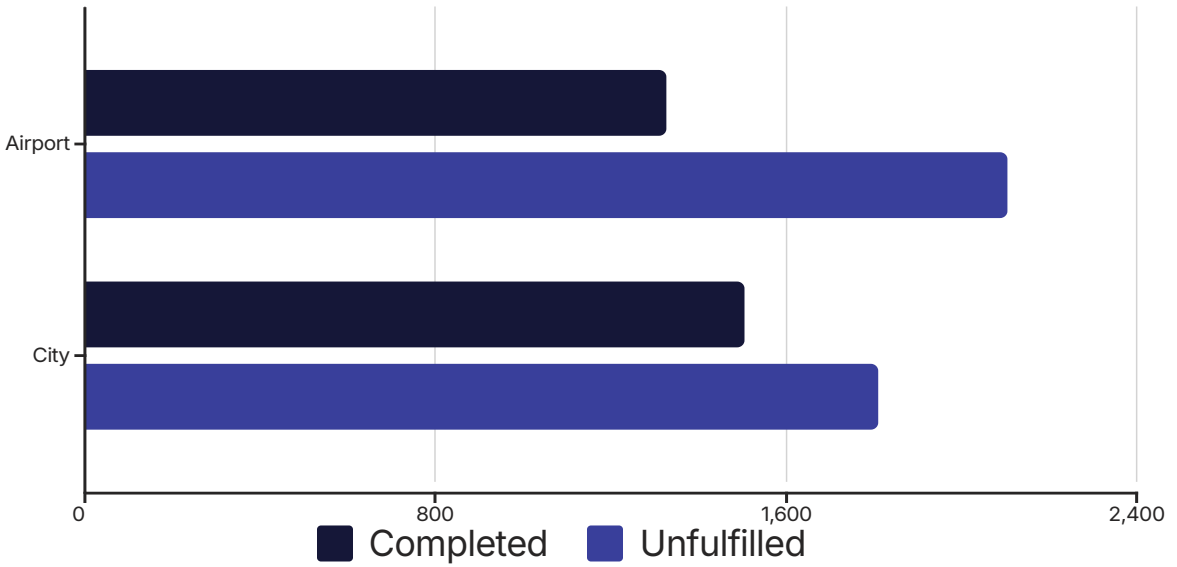
Key Insight: A significant proportion of ride requests are either cancelled or remain unfulfilled due to driver unavailability—representing a substantial revenue loss opportunity.

Time-Based Analysis



Key Insight: Early morning and morning slots show high cancellation rates, whilst night hours experience maximum cab unavailability.

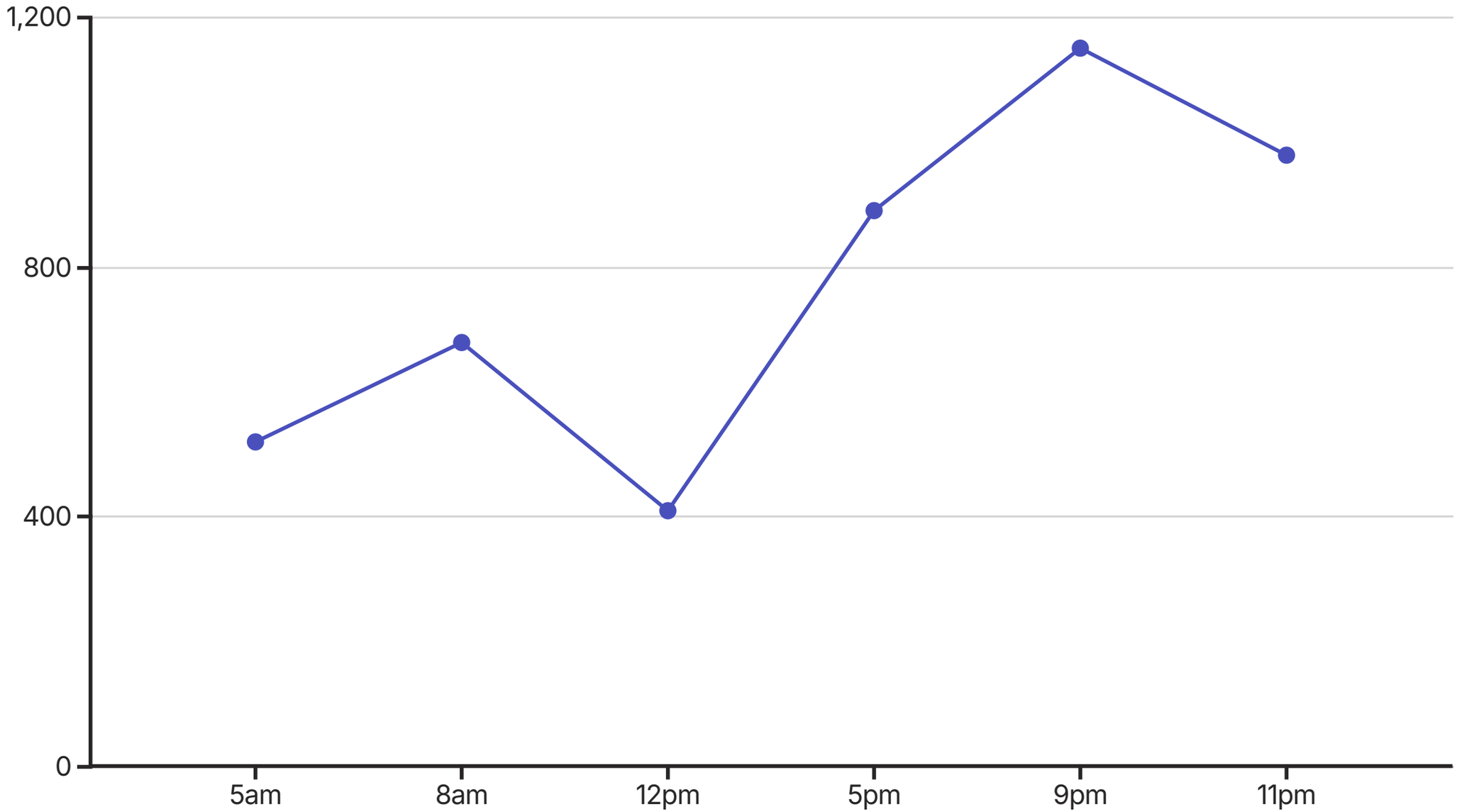
Pickup Point Analysis



Location Disparity

Airport pickups experience significantly higher unfulfilled demand compared to city pickups—indicating a critical supply shortage at airport locations.

Peak Demand Hours



Key Insight: Ride requests peak during evening and night hours, requiring strategic driver allocation to meet demand surges.

Business Recommendations

Driver Incentives

Introduce surge bonuses during night and early morning to attract more drivers

Airport Shifts

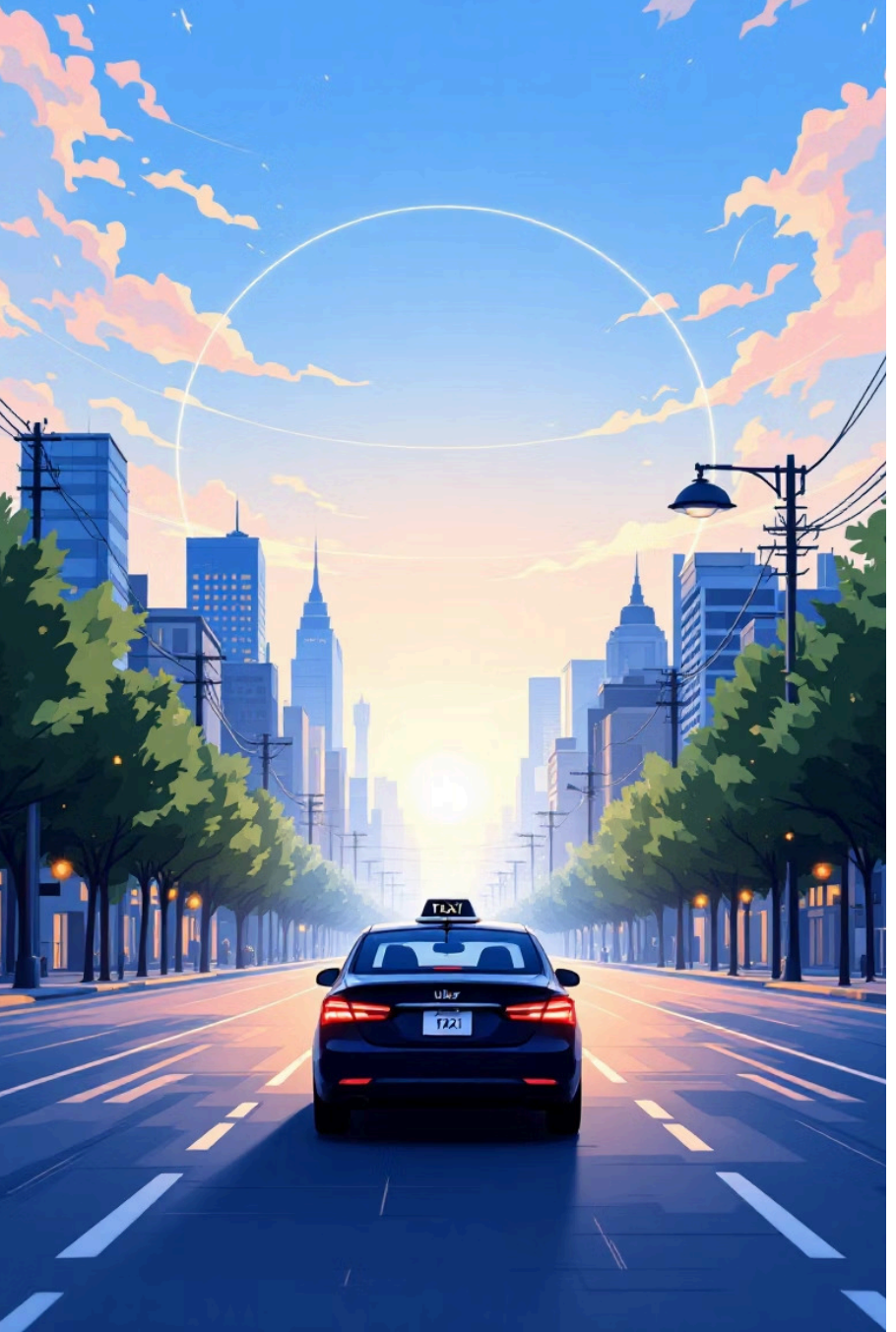
Establish dedicated night shifts for airport pickups to address critical shortages

Reduce Cancellations

Implement measures to minimise driver cancellations through better ride matching

Optimise Supply

Align driver availability with identified peak demand hours



Conclusion

1 Gaps Identified

Clear supply-demand gaps exist within Uber's operational framework, impacting customer satisfaction and revenue.

2 Critical Factors

Time of day and pickup location are the primary drivers of unfulfilled ride requests.

3 Path Forward

Data-driven decisions can significantly reduce unfulfilled requests and improve operational efficiency.