Uber Supply-Demand Gap - Insights Report

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1. Problem Statement

Uber is facing a significant supply-demand gap during specific time slots and pickup locations. Many customer ride requests are either cancelled by drivers or returned with 'No Cars Available'. These issues are particularly frequent during Night and Early Morning hours, especially at the Airport pickup point.

2. Business Objective

The goal of this project is to analyze Uber ride request data using Excel, SQL, and Python to:

- Identify high-demand periods with low cab availability.
- Understand where and when cancellations are happening.
- Recommend data-driven solutions to improve ride fulfillment and reduce customer dissatisfaction.

3. About the Dataset

- Total Records: 6745 ride requests
- Columns Analyzed: Request ID, Pickup point, Status, Request timestamp, Drop timestamp, Time slot, Driver ID, Hour
- Tools Used: Excel, pandasql (SQL in Python), Pandas, Seaborn, Matplotlib

4. Key Insights from SQL & EDA

Time-Based Observations:

- Most ride requests peak during Morning and Evening.
- Highest cancellations occur during Early Morning (5 AM to 7 AM).

- 'No Cars Available' incidents are most frequent at Night (11 PM to 4 AM).

Location-Based Observations:

- The Airport pickup point experiences more cancellations and unavailability than the City.
- Completed trips are generally more frequent for City pickups.

Status-Wise Observations:

- Out of 6745 requests:
  - Trip Completed: ~2831
  - Cancelled: ~1264
  - No Cars Available: ~2650
- Around 58% of total ride requests are either cancelled or unfulfilled.

Chart-Based Insights (Python EDA):

- Bar charts show a clear imbalance during early time slots.
- Pie chart: About 60% of requests come from Airport.
- Heatmap reveals critical zones like Night + Airport and Early Morning + Airport are problem areas.

5. Recommendations

Based on the findings, the following steps are recommended:

1. Introduce Night Shifts: Encourage more drivers to operate during late-night hours.

2. Offer Early Morning Incentives: Introduce higher fare multipliers or bonuses to prevent driver cancellations.

3. Rebalance Airport Supply: Allocate a consistent number of drivers to the Airport zone using predictive demand models.

4. Improve Forecasting: Use machine learning to anticipate high-demand periods and proactively schedule drivers.

6. Files Submitted

- Uber Request Data - Cleaned.xlsx (Excel Dashboard)

- Uber_EDA.ipynb (Python Analysis)

- Uber_SQL_Queries.txt (SQL insights)

- Uber_Supply_Demand_Insights.pdf (This file)

- Video_Presentation.mp4 (7+ min walkthrough)