Uber Supply-Demand Gap Analysis: Insights Report

Project Objective

This report analyzes hourly Uber ride request data from two major pickup zones - Airport and City.
The aim is to identify supply-demand mismatches, spot critical peak hours, and suggest operational strategies.

Data Interpretation

Each record contains:

- Pickup Point: Either 'City' or 'Airport'
- Hour: Hour of day (0-23) from request timestamp
- Total Requests: Total ride requests in that hour
- Completed Trips: Number of trips successfully completed
- Unmet Demand: Ride requests that were either cancelled or had no cars available

Key Observations

1. Airport Evening Peak (17:00-21:00):
   - Extremely high demand (600-800+ requests/hr)
   - Only ~20% fulfilled, up to 648 missed requests/hr

2. City Morning Rush (05:00-09:00):
   - Demand spikes (700+ requests/hr)
   - Fulfillment rate ~25-30%, up to 524 missed requests/hr

3. Low Fulfillment During Peak Hours:
   - Significant supply gaps exist in critical time windows.

Pain Points Identified

- Supply shortage during peak periods (City AM & Airport PM)
- Low fulfillment rates (as low as 20%)
- Driver allocation not aligned with hourly demand cycles

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- Possible lack of surge pricing or dynamic driver incentives

Recommendations

1. Dynamic Driver Deployment:
   - Add more drivers in City (5-9 AM) and Airport (5-9 PM)

2. Apply Surge Pricing:
   - Incentivize driver availability in high-demand hours

3. Live Demand Monitoring:
   - Real-time alerts and dashboards for driver coordination

4. Data-Driven Planning:
   - Use this hourly pattern for shift planning and supply forecasting

Conclusion

Addressing these supply-demand mismatches through real-time analytics and incentives will improve service levels, reduce lost rides, and enhance both driver and rider experience.