UBER SUPPLY DEMAND GAP

PROBLE STATEMENT :

Uber services are experiencing a high rate of cancellations and unavailability during late-night and early morning hours, leading to poor customer experience and potential revenue loss. This issue appears to be influenced by factors such as driver availability, demand-supply mismatch, and trip location patterns. A data-driven approach is needed to identify the root causes of these disruptions and provide actionable insights to improve service reliability during off-peak hours.

CONTRIBUTION: Individual

PROJECT SUMMARY:

Cab Unavailability and Cancellation Analysis

This data analytics project focused on identifying the root causes behind cab unavailability and frequent cancellations during nighttime and early morning hours (10 PM to 6 AM). The goal was to provide actionable insights to improve service reliability during these off-peak periods.

Tools Used

1. Excel
2. SQL
3. Python

The dataset was first cleaned and preprocessed using Excel, ensuring data accuracy and consistency. SQL was used to query and manipulate data stored in relational databases. Exploratory Data Analysis (EDA) was conducted using Python, leveraging libraries such as Pandas, Matplotlib, and Seaborn to uncover key patterns and correlations. Final

results were presented through Excel dashboards to enable easy interpretation by stakeholders.

CHARTS

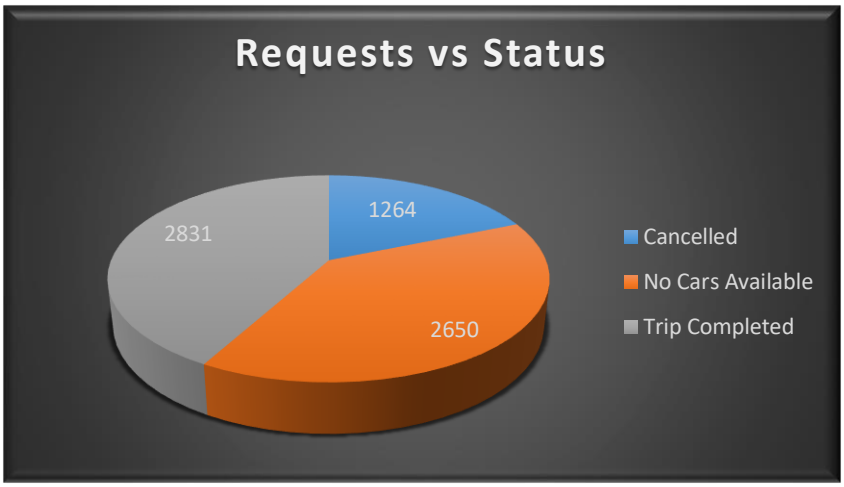


Fig 1

Fig 1 - Reason :

1. Shows proportions clearly
2. Easy to interpret

Insight: Most trips are not made due to cab unavailability

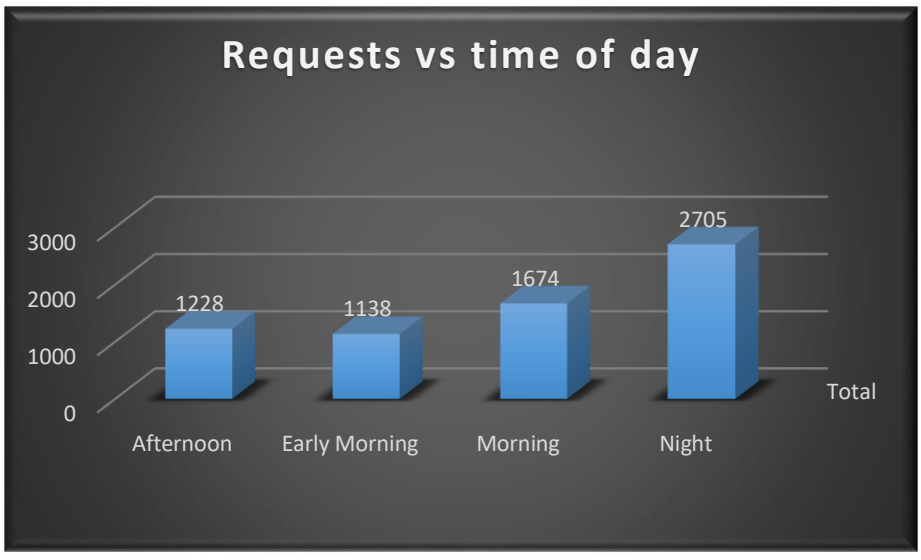


Fig 2

Fig 2 - Reason:

1. Compares request volume across time slots
2. Easy to spot peaks and lows in demand.

Insight: Many requests are made during the night time.

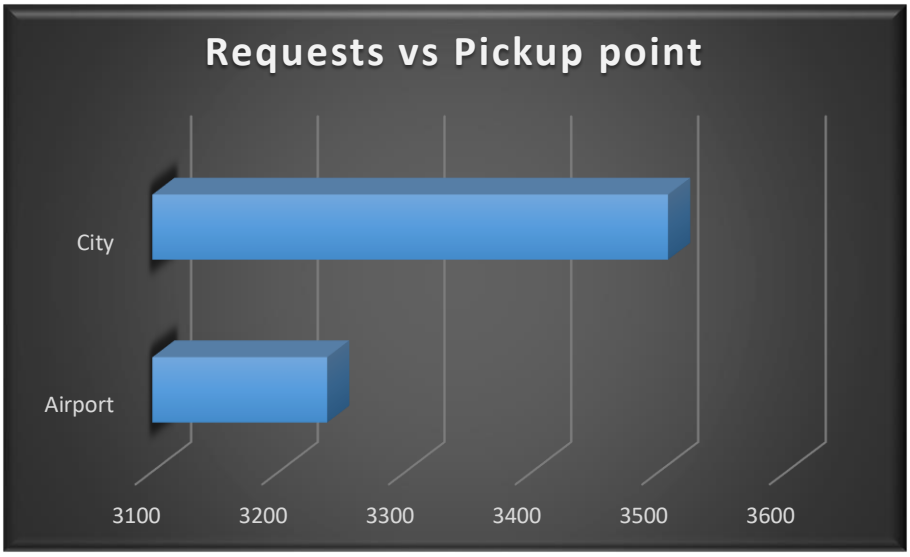


Fig 3

Fig 3 -Reason:

1. Clear Comparison
2. Highlighting variability

Insight: Most of the requests are made from “City”

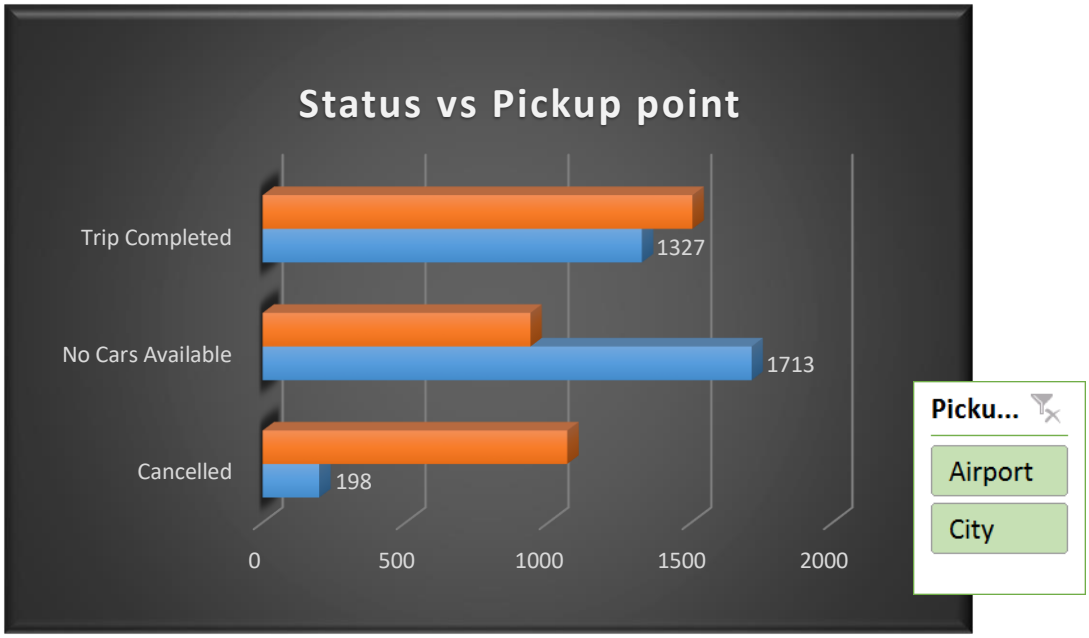


Fig 4 - Reason:

1. Easy Comparison
2. Clear Distribution

Insight:

Most of the requests are cancelled from “City”

Most Cab unavailability is from “Airport”

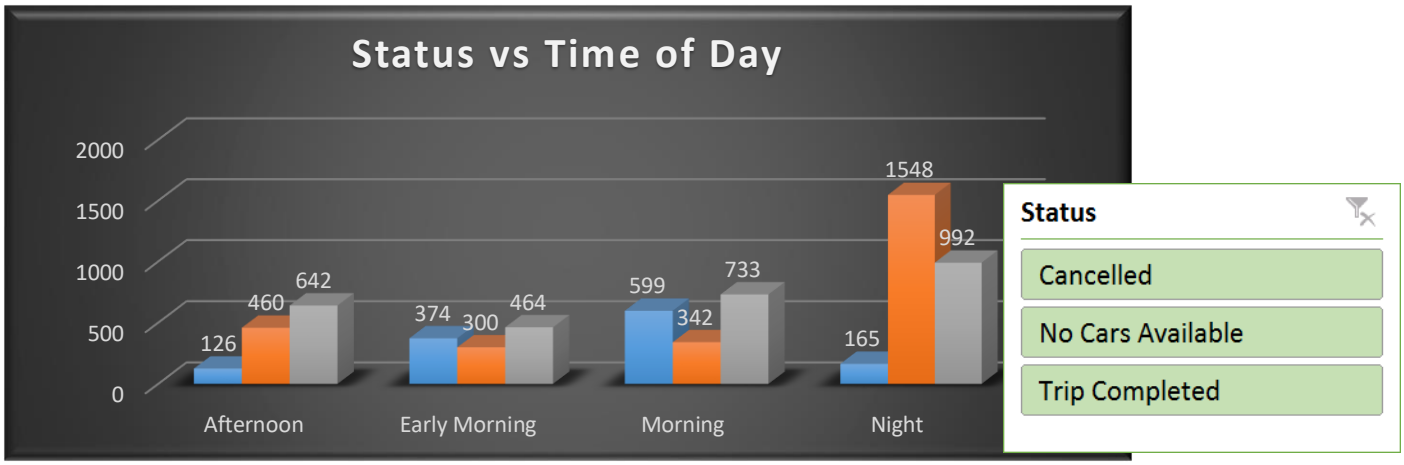


Fig 5

Fig 5 - Reason:

1. Strong Pattern Visibility
2. Empathizes Time Trend

Insight:

Cars are not available mostly during “Night

Trips are getting cancelled during “Early Morning”

Total Requests
6745

% Complete
42%

% Cancelled
19%

Most Active Time of Day
Night

Not Available
39%

Least Active Time of Day
Early Morning

FORMULAS USED FOR CLEANING:

1. **To separate date and time from timestamp column**

Method 1

=INT(A2) - Extract date part

=A2 - INT(A2) - Extract time part

Method 2

=LEFT(A2, FIND(" ", A2) - 1) - Extract date part

=RIGHT(A2, LEN(A2) - FIND(" ", A2)) - Extract time part

2. **To find trip duration**

=J2-G2

3. **To find Time of Day**

=IF(AND(G2>=TIME(0,0,0), G2<TIME(6,0,0)), "Early Morning",
IF(AND(G2>=TIME(6,0,0), G2<TIME(12,0,0)), "Morning",
IF(AND(G2>=TIME(12,0,0), G2<TIME(18,0,0)), "Afternoon",
"Night")))

KEY INSIGHTS

Nighttime Demand and Cab Unavailability: Increase cab availability during night shifts and offer driver incentives to encourage participation.

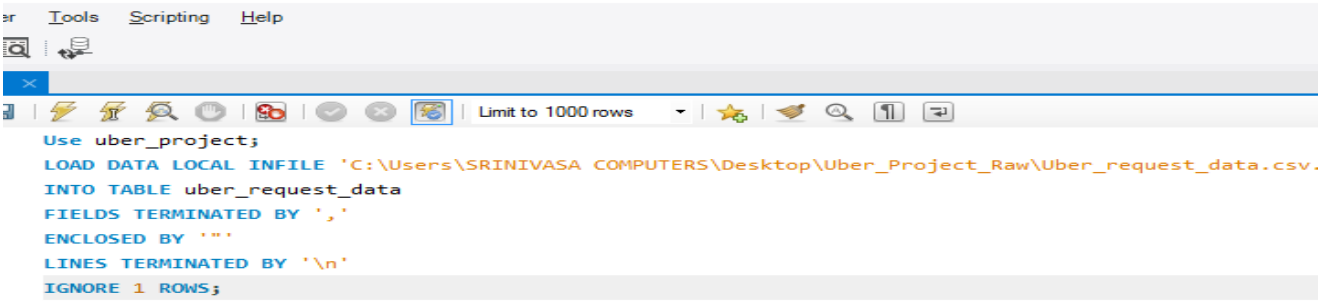
High Cancellation Rates in City Route: Recruit and retain more drivers dedicated to city routes to reduce cancellations.

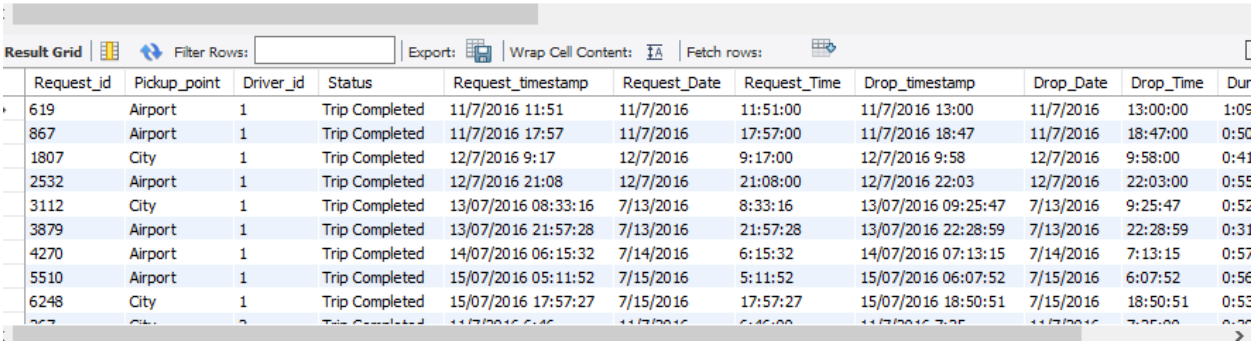
Low Cab Availability from Airport in Early Morning: Deploy additional drivers on airport routes during early morning shifts to improve service coverage.

Demand-Supply Mismatch: Peak demand during night hours contrasts with limited driver supply, highlighting an operational imbalance. Strategic workforce planning is required to address this gap.

Driver Incentive Optimization: Implement targeted incentives based on time slots and route profitability. This can motivate drivers to operate during off-peak hours and on less popular routes.

SQL Table Screenshot





Request_id	Pickup_point	Driver_id	Status	Request_timestamp	Request_Date	Request_Time	Drop_timestamp	Drop_Date	Drop_Time	Dur
619	Airport	1	Trip Completed	11/7/2016 11:51	11/7/2016	11:51:00	11/7/2016 13:00	11/7/2016	13:00:00	1:09
867	Airport	1	Trip Completed	11/7/2016 17:57	11/7/2016	17:57:00	11/7/2016 18:47	11/7/2016	18:47:00	0:50
1807	City	1	Trip Completed	12/7/2016 9:17	12/7/2016	9:17:00	12/7/2016 9:58	12/7/2016	9:58:00	0:41
2532	Airport	1	Trip Completed	12/7/2016 21:08	12/7/2016	21:08:00	12/7/2016 22:03	12/7/2016	22:03:00	0:55
3112	City	1	Trip Completed	13/07/2016 08:33:16	7/13/2016	8:33:16	13/07/2016 09:25:47	7/13/2016	9:25:47	0:52
3879	Airport	1	Trip Completed	13/07/2016 21:57:28	7/13/2016	21:57:28	13/07/2016 22:28:59	7/13/2016	22:28:59	0:31
4270	Airport	1	Trip Completed	14/07/2016 06:15:32	7/14/2016	6:15:32	14/07/2016 07:13:15	7/14/2016	7:13:15	0:57
5510	Airport	1	Trip Completed	15/07/2016 05:11:52	7/15/2016	5:11:52	15/07/2016 06:07:52	7/15/2016	6:07:52	0:56
6248	City	1	Trip Completed	15/07/2016 17:57:27	7/15/2016	17:57:27	15/07/2016 18:50:51	7/15/2016	18:50:51	0:53

```
Use uber_project;
select * from uber_request_data where Status="Trip Completed";
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

Request_id	Pickup_point	Driver_id	Status	Request_timestamp	Request_Date	Request_Time	Drop_timestamp	Drop_Date	Drop_Time	Dur
619	Airport	1	Trip Completed	11/7/2016 11:51	11/7/2016	11:51:00	11/7/2016 13:00	11/7/2016	13:00:00	1:09
867	Airport	1	Trip Completed	11/7/2016 17:57	11/7/2016	17:57:00	11/7/2016 18:47	11/7/2016	18:47:00	0:50
1807	City	1	Trip Completed	12/7/2016 9:17	12/7/2016	9:17:00	12/7/2016 9:58	12/7/2016	9:58:00	0:41
2532	Airport	1	Trip Completed	12/7/2016 21:08	12/7/2016	21:08:00	12/7/2016 22:03	12/7/2016	22:03:00	0:55
3112	City	1	Trip Completed	13/07/2016 08:33:16	7/13/2016	8:33:16	13/07/2016 09:25:47	7/13/2016	9:25:47	0:52
3879	Airport	1	Trip Completed	13/07/2016 21:57:28	7/13/2016	21:57:28	13/07/2016 22:28:59	7/13/2016	22:28:59	0:31
4270	Airport	1	Trip Completed	14/07/2016 06:15:32	7/14/2016	6:15:32	14/07/2016 07:13:15	7/14/2016	7:13:15	0:57
5510	Airport	1	Trip Completed	15/07/2016 05:11:52	7/15/2016	5:11:52	15/07/2016 06:07:52	7/15/2016	6:07:52	0:56
6248	City	1	Trip Completed	15/07/2016 17:57:27	7/15/2016	17:57:27	15/07/2016 18:50:51	7/15/2016	18:50:51	0:53

uber_request_data 3 | Read Only

Dashboard Screenshot