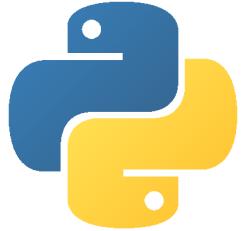
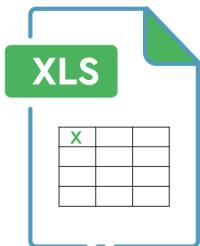


UBER SUPPLY DEMAND GAP



Analyzed Uber ride request data to uncover demand supply gaps and peak hour inefficiencies.



Used Excel, SQL, and Python for data cleaning, visualization, and insight generation to support operational improvements.



Presented by
Karthik Doguparthi



Project Objective

Uber

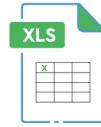
- To understand ride request patterns and operations in the Uber ride system.
- Identify the demand supply relationship at the pickup location.
- Analyse the most travelled time of the day for accuracy.
- Recommendations to improve the customer satisfaction.



About the Dataset

- The dataset contains 6,745 ride requests provided by Uber.
- Includes columns like request ID, timestamps, pickup point, driver ID, status, and distance.
- Covers various ride outcomes such as Trip Completed, Cancelled, and No Cars Available.
- The original file was cleaned in Excel, handling with missing values.
- Created new columns like Day category, Travel time for analysis and insights.

Data cleaning



- Performed data cleaning using Excel.
- Changed the mixed date type in columns to short date type.
- Split request timestamp and drop timestamp columns to date and time using a delimiter.
- Created a column to find the category of day when pickup is requested.
- New calculated column travel time is created to find how long are the rides requested for.
- New calculated column is derived from travel time to show the kind of distance (Near/Far).

Dashboards



- Fig 1 shows the supply of uber for the distance travelled.
- Fig 2 shows demand of uber at pickup points by day category.

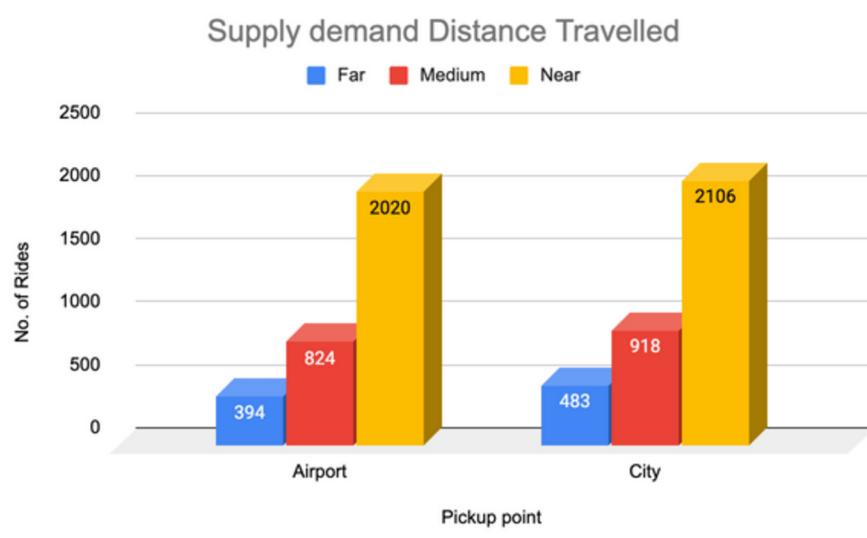


Fig 1

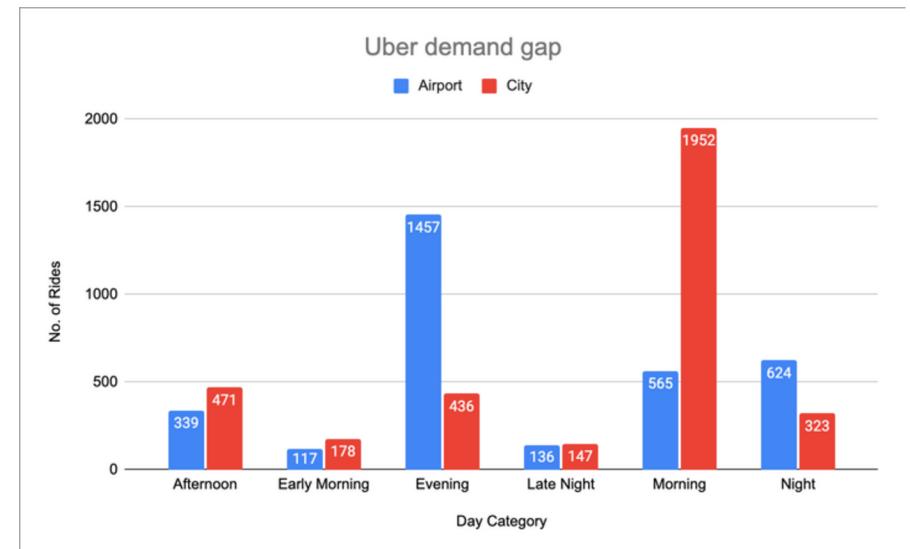


Fig 2

Dashboards



- Fig 3 shows the demand of total bookings per the type of day.

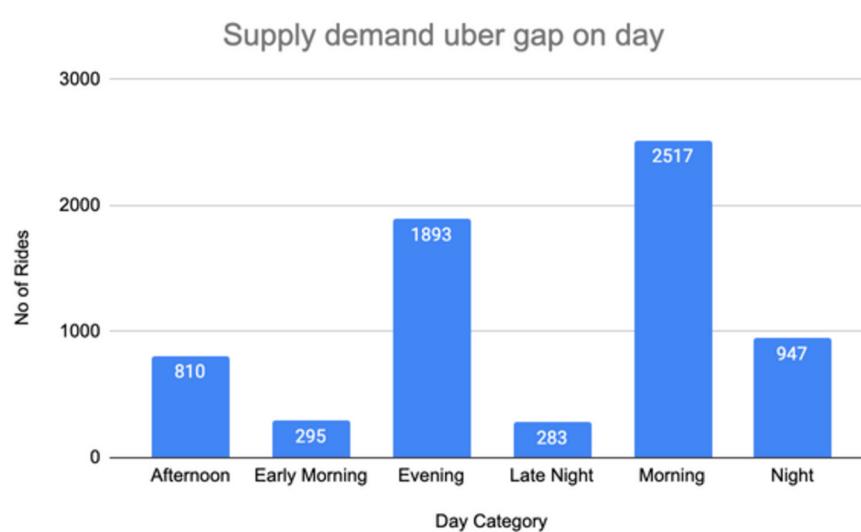


Fig 3

- Fig 4 shows supply of booking status from pickup location.

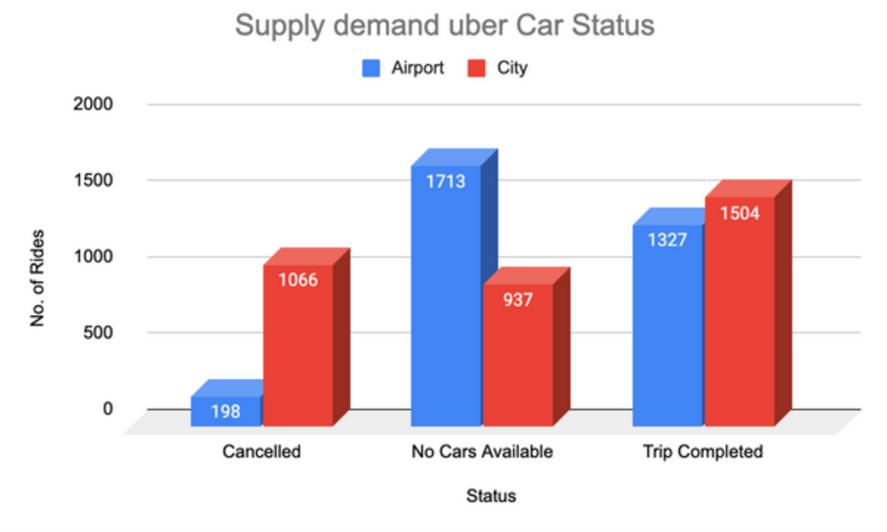


Fig 4

Dashboards



- Fig 5 shows supply percentage of drivers from pickup point.

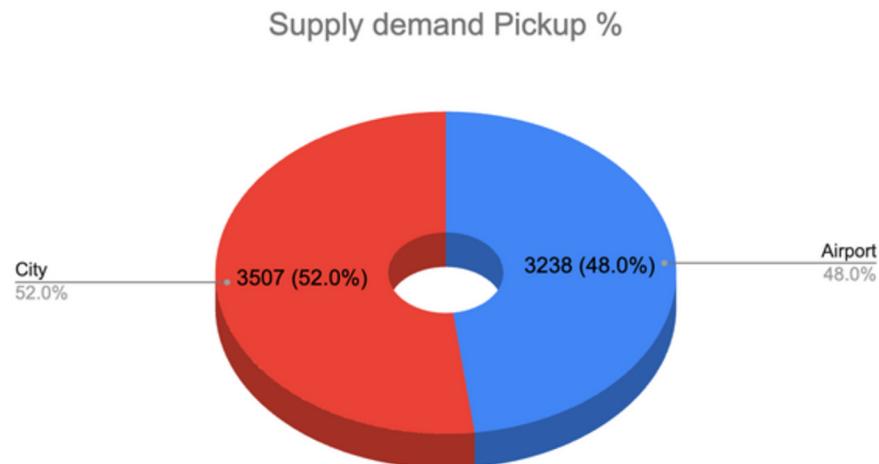


Fig 5

- Fig 6 shows count of supply of drivers from pickup point

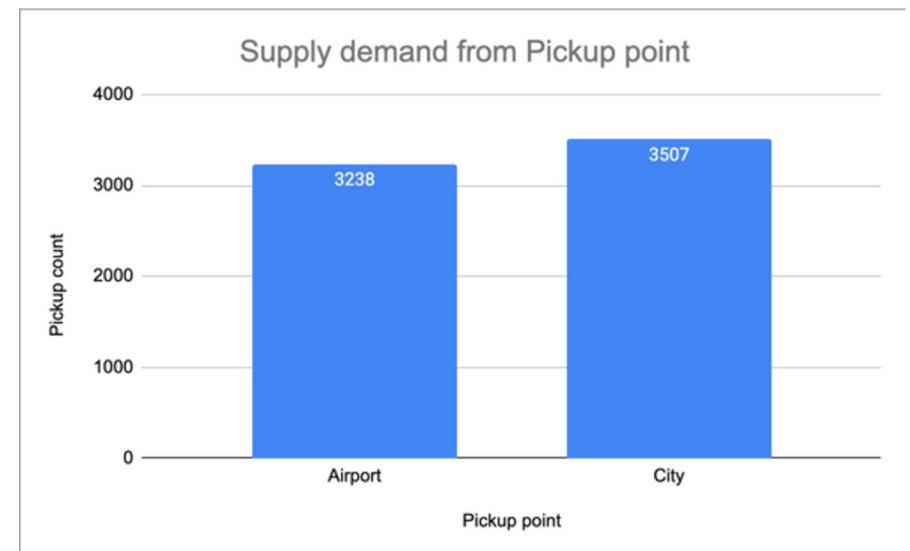


Fig 6

Dashboards



- Fig 7 shows supply of rides wrt driver id.

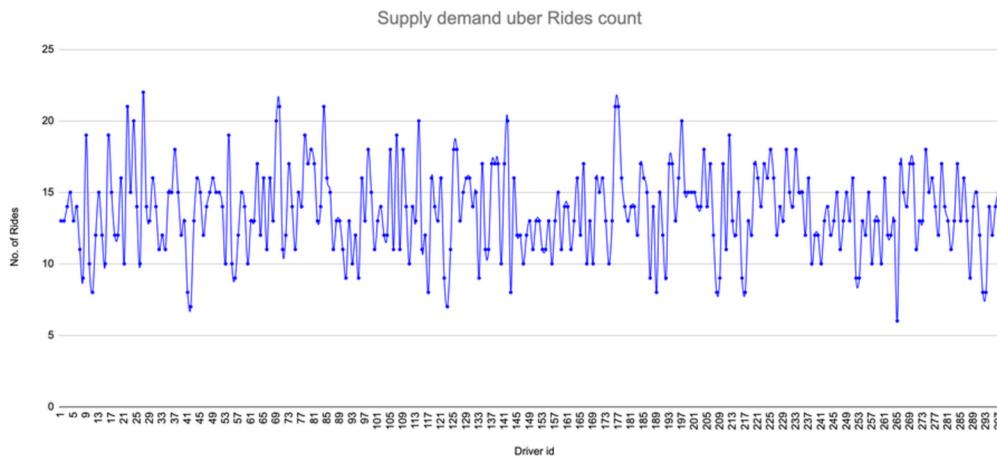


Fig 7

- Fig 8 shows supply of booking status from pickup location.

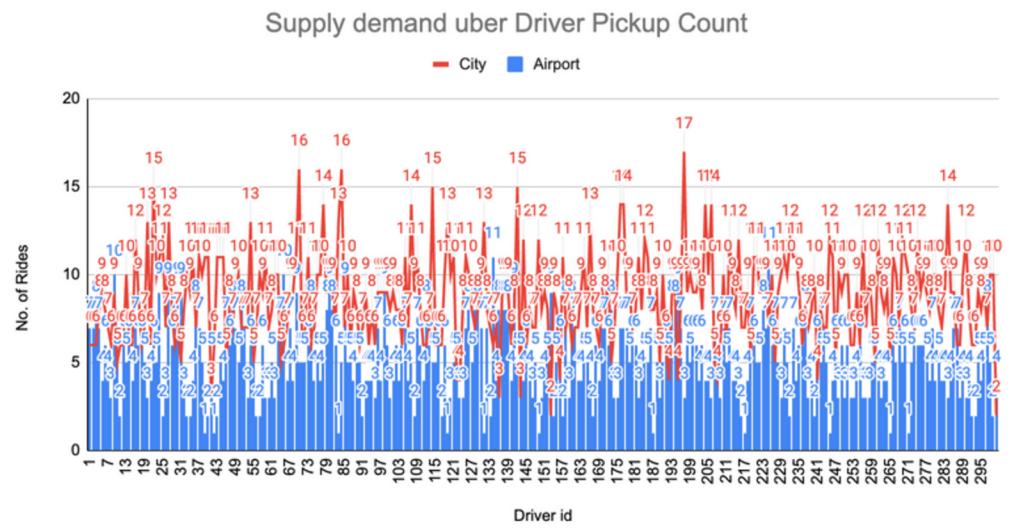
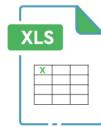


Fig 8

Dashboards



- Fig 9 shows the demand for drivers at both the airport and the city.

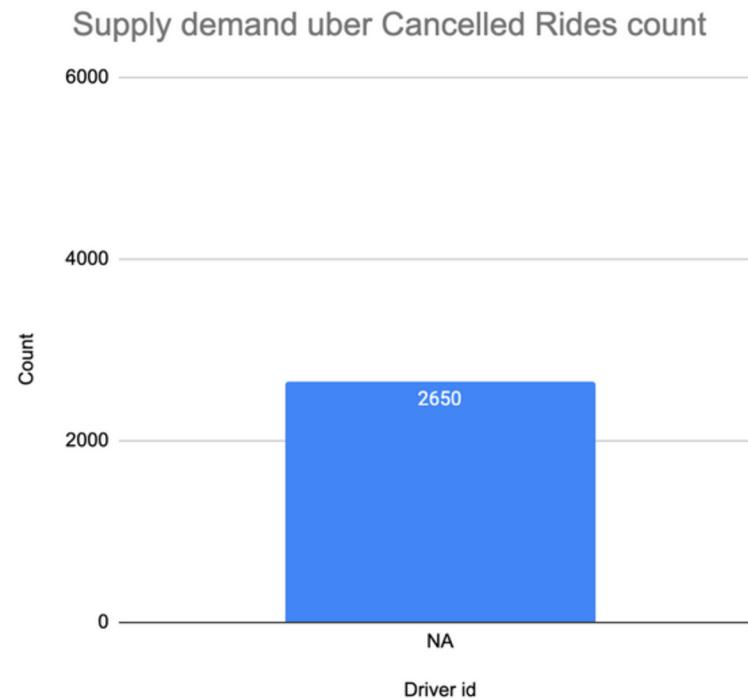


Fig 9

Exploratory Data Analysis in Colab



- Fig 10 shows supply and demand for uber drivers.
- Fig 11 show the demand of uber drivers at airport and city wrt day category.

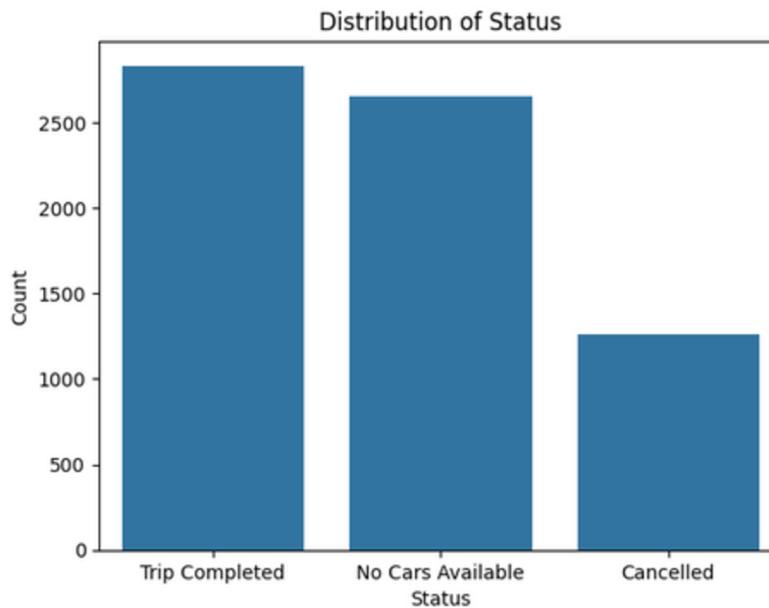


Fig 10

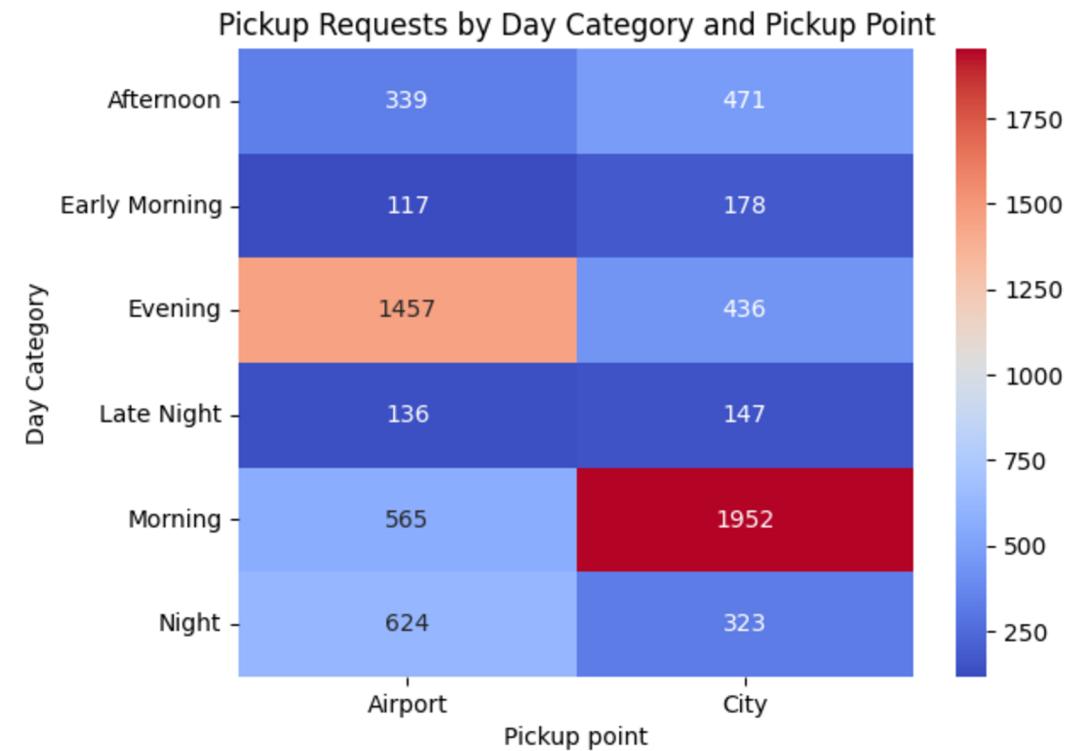


Fig 11

Exploratory Data Analysis in Colab



- Fig 12 shows the supply of uber drivers at airport and city.
- Fig 13 shows the demand of drivers wrt day category.

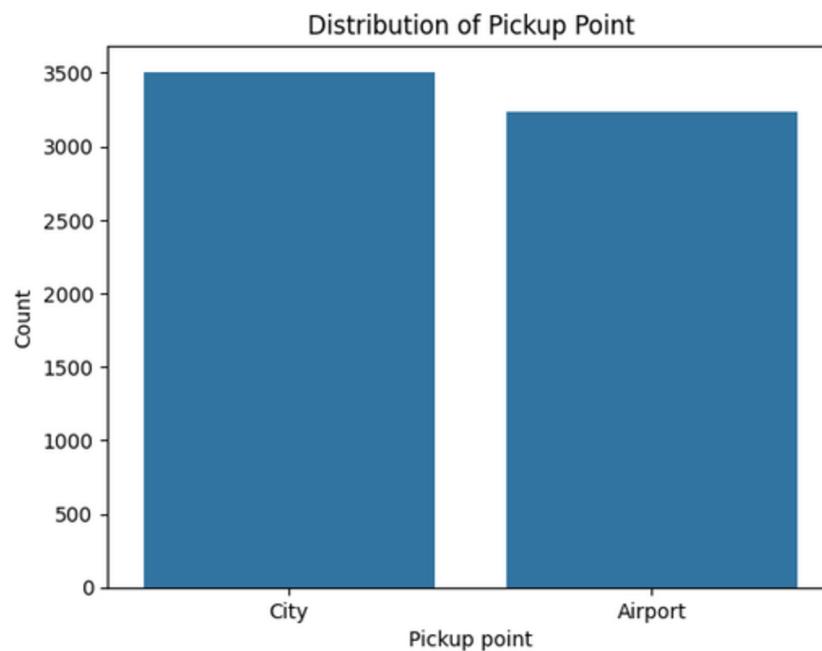


Fig 12

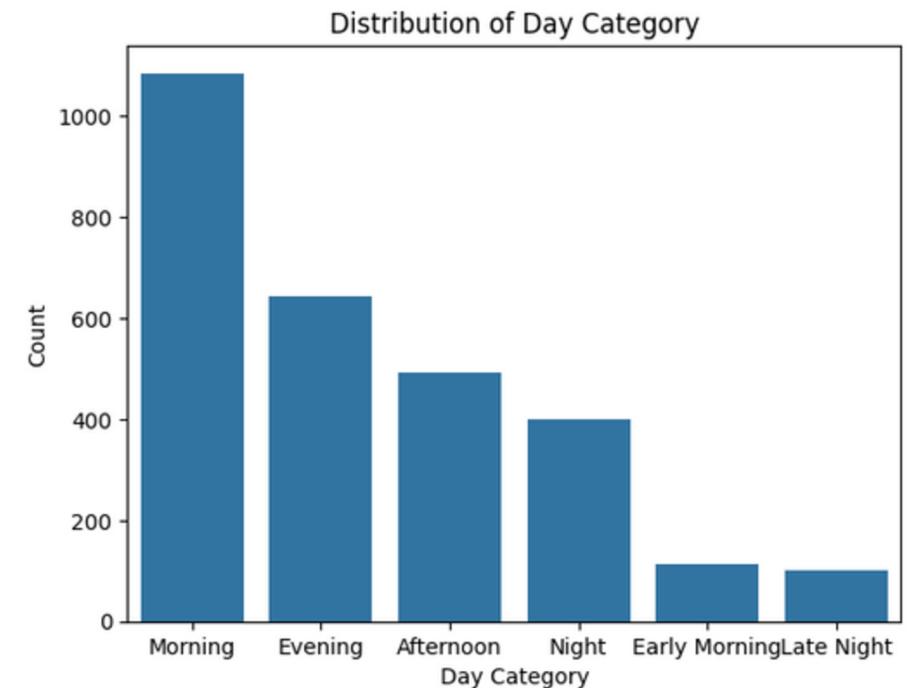


Fig 13

Exploratory Data Analysis in Colab



- Fig 14 shows the supply of uber drivers for various distances.
- Fig 15 shows the demand of uber at airport and city.

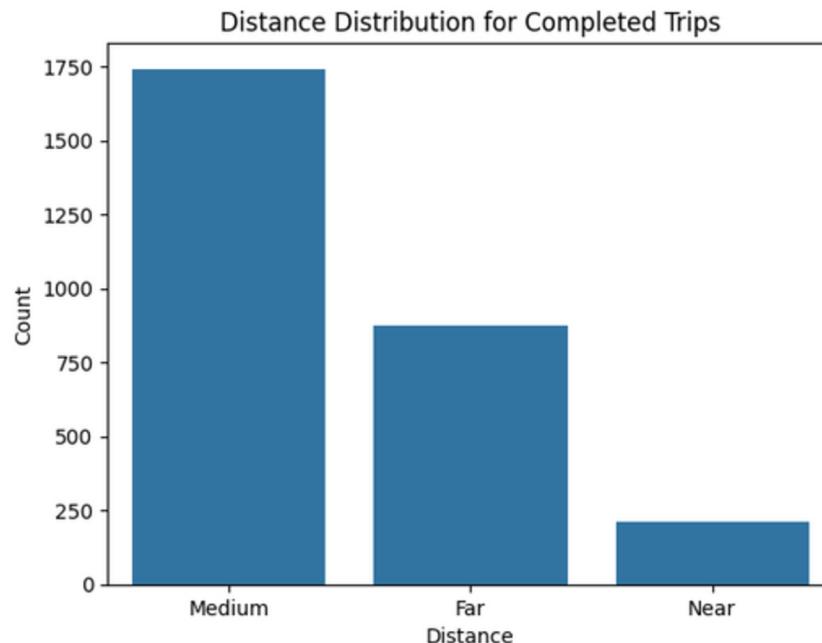


Fig 14

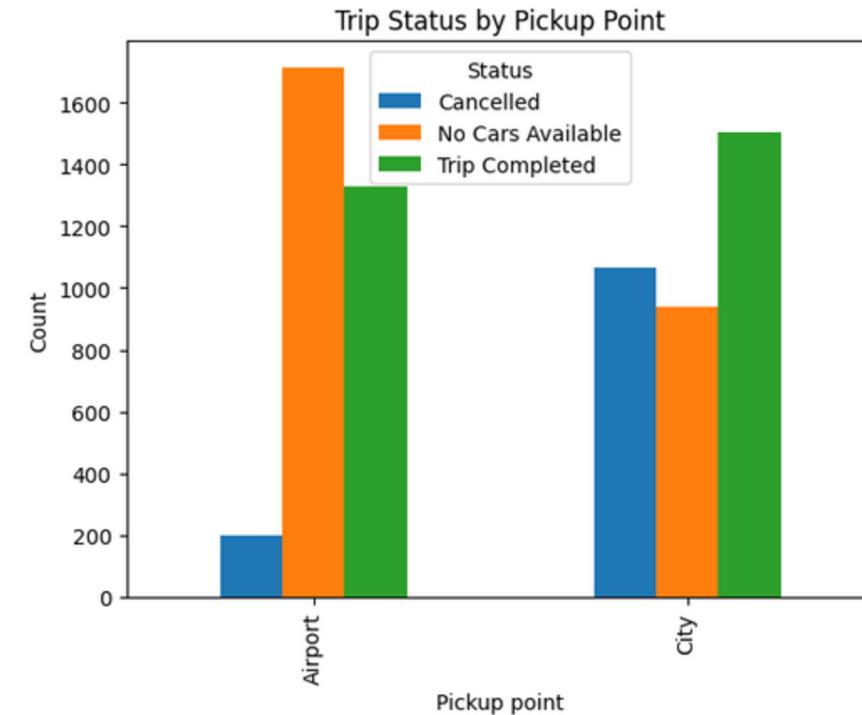


Fig 15

Exploratory Data Analysis in Colab



- Fig 16 shows demand of drivers for avg travel time wrt day category.

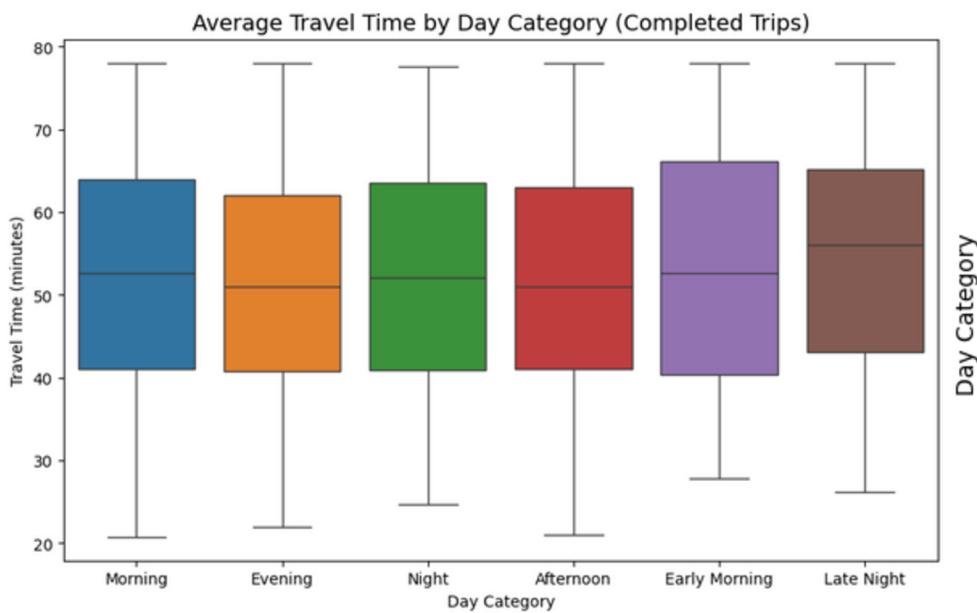


Fig 16

- Fig 17 shows demand comarison btw all day categories at pickup.

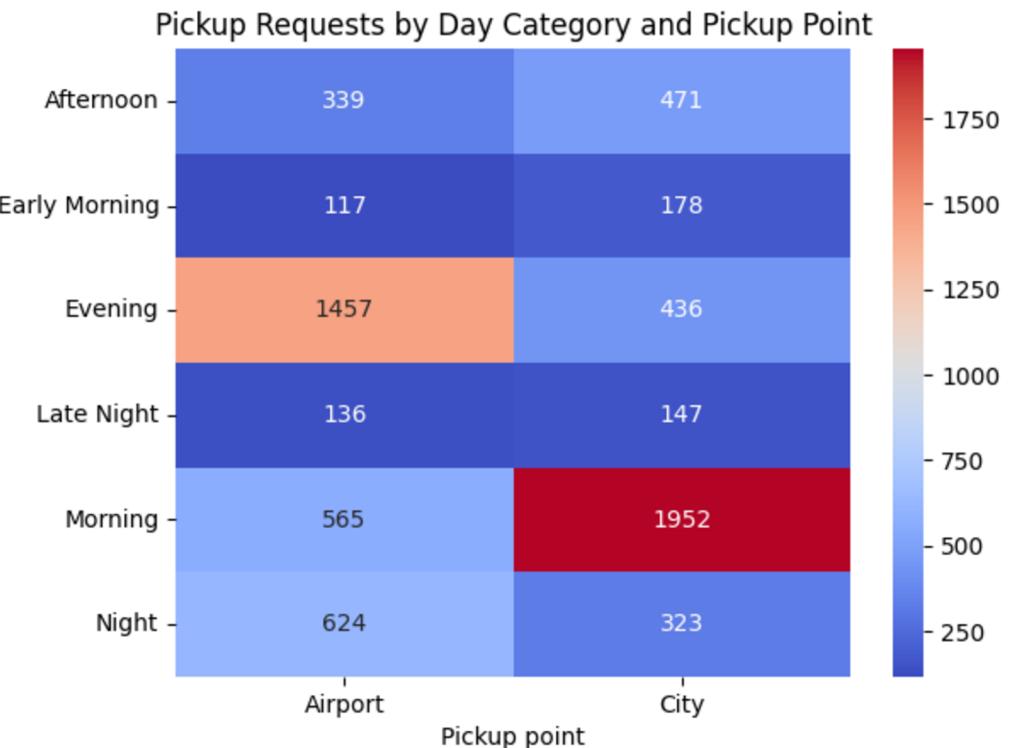


Fig 17

Exploratory Data Analysis in Colab



- Fig 18 shows demand of Uber for drivers wrt day category.

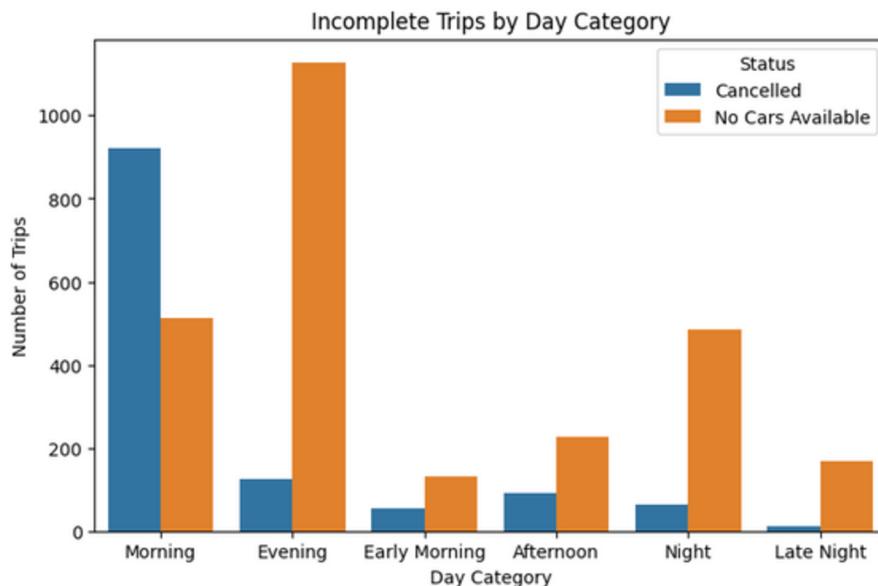


Fig 18

- Fig 19 shows demand of uber drivers at pickup wrt day category.

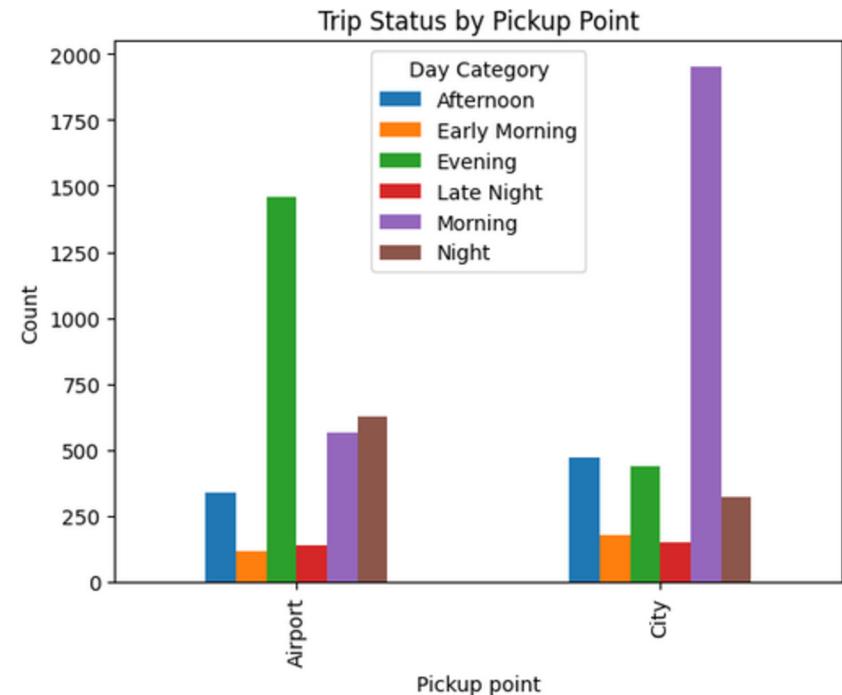


Fig 19

Exploratory Data Analysis in Colab

- Fig 18 shows demand of Uber for drivers wrt day category.
- Fig 19 shows supply and demand of uber drivers for distance wrt day category.

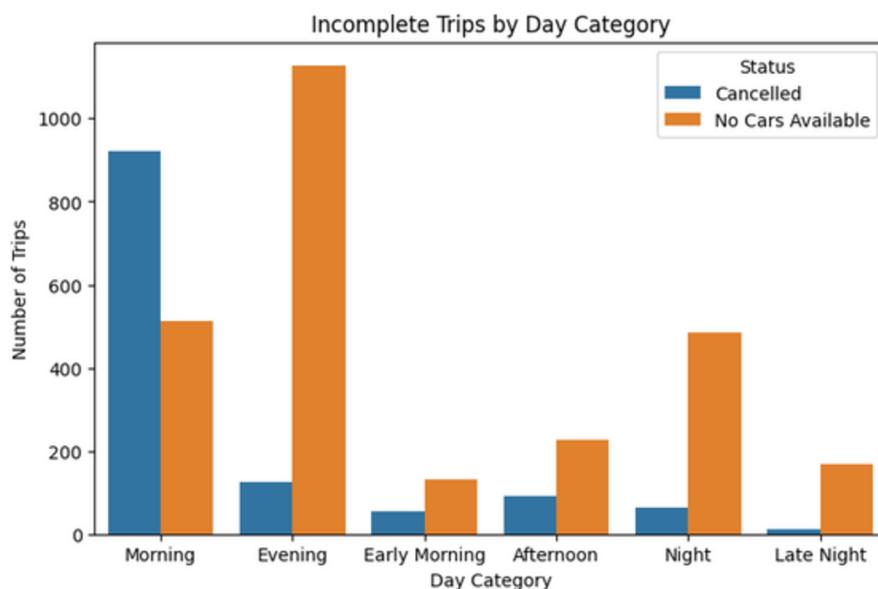


Fig 18

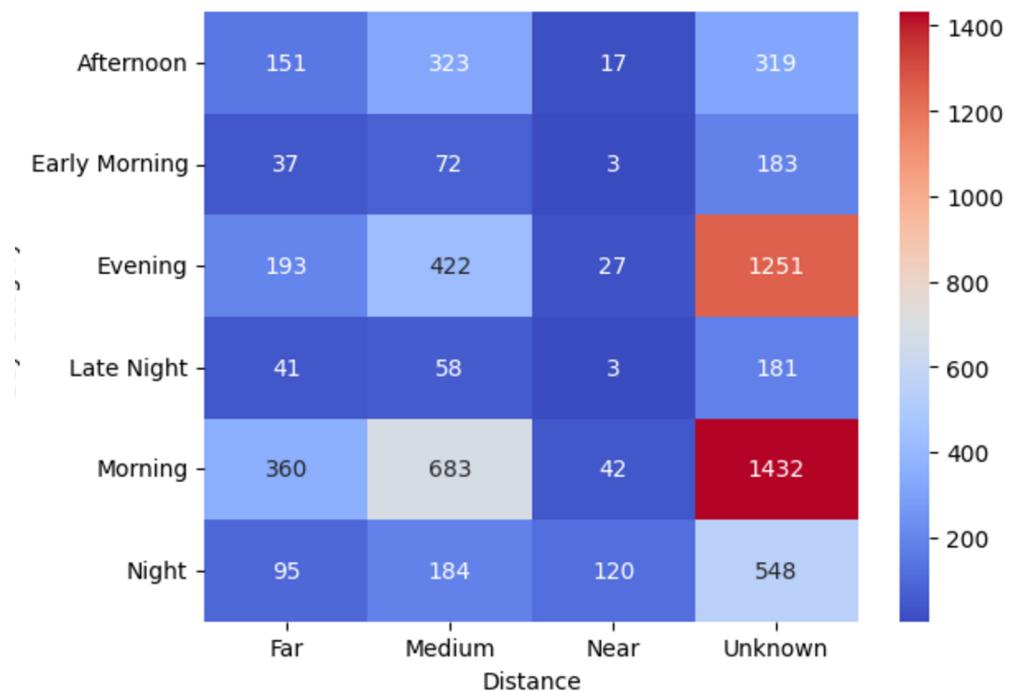


Fig 19

Exploratory Data Analysis in Colab



- Fig 20 shows demand of Uber for drivers from pickup wrt day category
- Fig 21 shows demand of uber drivers at pickup wrt day travel time.

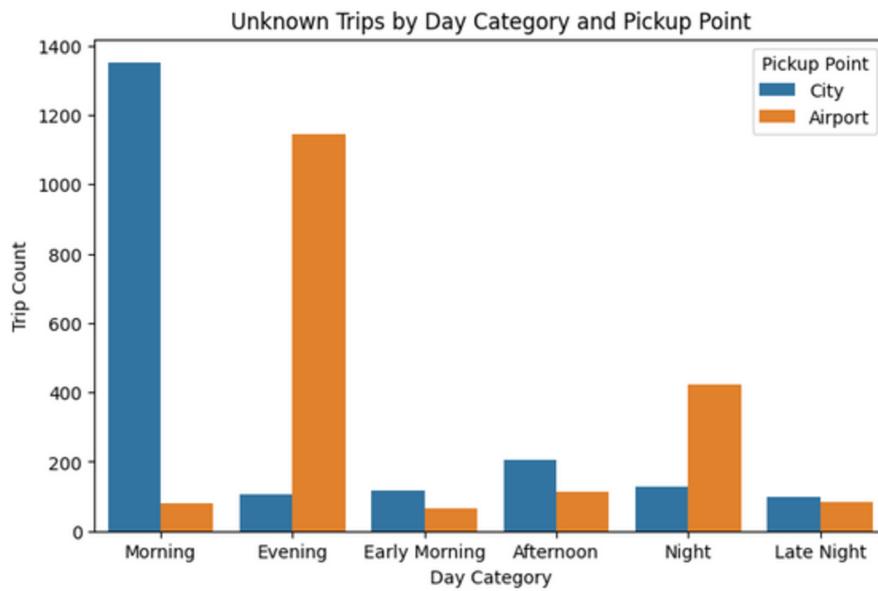


Fig 20

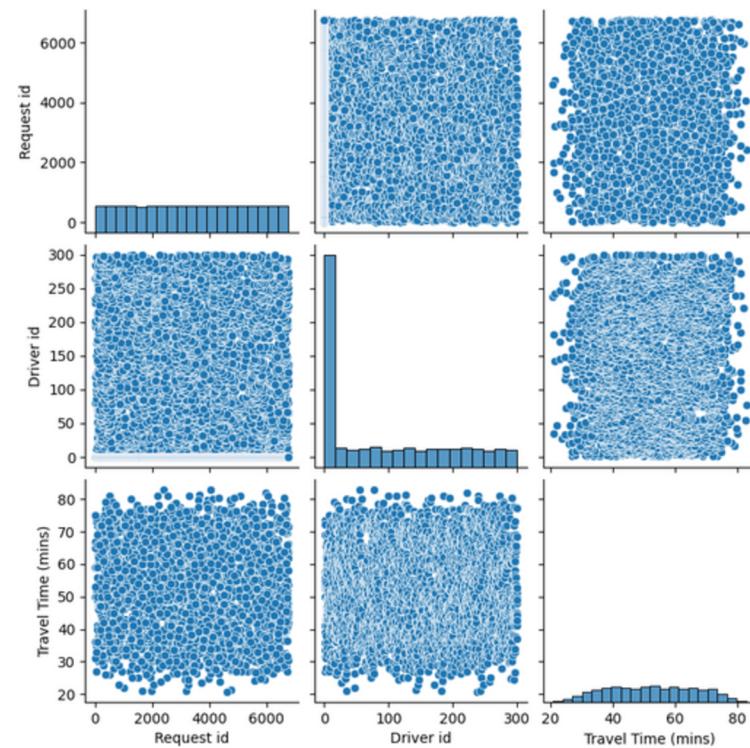


Fig 21

Exploratory Data Analysis in Colab



- Fig 22 shows the treemap of the relationships between the bookings from pickup location wrt each other.



Fig 22

SQL Insights



- Fig 22 and 23 gives insight about supply of Uber drivers to complete trips.

```
-- 2. Trips Completion and Completion Rate
SELECT
COUNT(*) AS Total_Requests,
COUNT(*) FILTER (WHERE Status = 'Trip Completed') AS Trip_Completed,
ROUND(COUNT(*) FILTER (WHERE Status = 'Trip Completed') * 100.0 / COUNT(*), 2) AS Trip_Completion_Rercent
FROM 'cleaned_data.csv';
```

Fig 22

Insight 2			
	Total_Requests	Trip_Completed	Trip_Completion_Rercent
0	6745	2831	41.97

Fig 23

- Fig 24 and 25 gives insight about the average travel time wrt categories of the day.

```
-- 10. Request to Drop Time Delay Distribution
SELECT
"Day Category",
ROUND(AVG(EXTRACT('minute' FROM CAST("Travel Time" AS TIME))), 2) AS Avg_Time_Minutes
FROM 'cleaned_data.csv'
WHERE "Travel Time" IS NOT NULL
GROUP BY "Day Category"
ORDER BY Avg_Time_Minutes DESC;
```

Fig 24

Insight 10			
	Day Category	Avg_Time_Minutes	
0	Afternoon	32.95	
1	Evening	32.83	
2	Early Morning	32.67	
3	Night	31.95	
4	Morning	31.68	
5	Late Night	29.37	

Fig 25

SQL Insights



- Fig 26 and 27 gives insight about the supply of Uber drivers from airport and city.

```
-- 1. Total Requests by Status
SELECT Status, COUNT(*) AS Total_Requests
FROM 'cleaned_data.csv'
GROUP BY Status
ORDER BY Total_Requests DESC;
```

Fig 26

Insight 1		
	Status	Total_Requests
0	Trip Completed	2831
1	No Cars Available	2650
2	Cancelled	1264

Fig 27

- Fig 28 and 29 gives insight about the demand of Uber driver from airport and city.

```
-- 3. Pickup Point Distribution by Day Category
SELECT
    "Day Category",
    COUNT(*) FILTER (WHERE "Pickup point" = 'Airport') AS Airport,
    COUNT(*) FILTER (WHERE "Pickup point" = 'City') AS City
FROM 'cleaned_data.csv'
GROUP BY "Day Category"
ORDER BY
    CASE
        WHEN "Day Category" = 'Early Morning' THEN 1
        WHEN "Day Category" = 'Morning' THEN 2
        WHEN "Day Category" = 'Afternoon' THEN 3
        WHEN "Day Category" = 'Evening' THEN 4
        WHEN "Day Category" = 'Night' THEN 5
        WHEN "Day Category" = 'Late Night' THEN 6
        ELSE 7
    END;
```

Fig 28

Insight 3			
	Day Category	Airport	City
0	Early Morning	117	178
1	Morning	565	1952
2	Afternoon	339	471
3	Evening	1457	436
4	Night	624	323
5	Late Night	136	147

Fig 29

SQL Insights



- Fig 30 and 31 gives insight about the demand of Uber drivers at airport and city.

```
-- 4. Most Common Pickup Point for Each Status
SELECT "Pickup point", Status, COUNT(*) AS Total
FROM 'cleaned_data.csv'
GROUP BY "Pickup point", Status
ORDER BY "Pickup point";
```

Fig 30

Insight 4				
	Pickup point	Status	Total	
0	Airport	Cancelled	198	
1	Airport	Trip Completed	1327	
2	Airport	No Cars Available	1713	
3	City	Cancelled	1066	
4	City	Trip Completed	1504	
5	City	No Cars Available	937	

Fig 31

- Fig 32 and 33 gives insight about the demand of Uber driver wrt day category.

```
-- 5. Time Slots with Most Supply Gaps
SELECT "Day Category",
       COUNT(*) FILTER (WHERE Status = 'No Cars Available') AS Gaps
FROM 'cleaned_data.csv'
GROUP BY "Day Category"
ORDER BY gaps DESC;
```

Fig 32

Insight 5			
	Day	Category	Gaps
0		Evening	1127
1		Morning	512
2		Night	484
3		Afternoon	228
4		Late Night	169
5		Early Morning	130

Fig 33

SQL Insights



- Fig 34 and 35 gives insight about the demand of Uber drivers wrt travelling distances.

```
-- 6. Trip Count by Pickup Point and Distance
SELECT
    "Pickup point",
    Distance,
    COUNT(*) AS Trip_Count
FROM 'cleaned_data.csv'
WHERE Status = 'Trip Completed'
GROUP BY "Pickup point", Distance
ORDER BY "Pickup point", Trip_Count DESC;
```

Fig 34

Insight 6			
	Pickup point	Distance	Trip_Count
0	Airport	Medium	824
1	Airport	Far	394
2	Airport	Near	109
3	City	Medium	918
4	City	Far	483
5	City	Near	103

Fig 35

- Fig 36 and 37 gives insight about the demand of top 10 Uber drivers at pickup points.

```
-- 7. Top 10 Drivers by Trip Completion at Pickup Points
SELECT
    "Driver id",
    COUNT(*) FILTER (WHERE "Pickup point" = 'Airport') AS Airport,
    COUNT(*) FILTER (WHERE "Pickup point" = 'City') AS City
FROM 'cleaned_data.csv'
WHERE Status = 'Trip Completed'
    AND "Driver id" IS NOT NULL
GROUP BY "Driver id"
ORDER BY "Airport" DESC, "City" DESC
LIMIT 10;
```

Fig 36

Insight 7			
	Driver id	Airport	City
0	225	10	3
1	9	10	3
2	134	9	5
3	80	9	4
4	69	8	6
5	223	8	5
6	27	8	5
7	51	8	5
8	36	8	4
9	194	8	4

Fig 37

SQL Insights



- Fig 38 and 39 gives insight about the supply and demand of Uber drivers at airport and city.

```
-- 8. Trip Completion and Completion Rate by Pickup Point
SELECT "Pickup point",
       COUNT(*) FILTER (WHERE Status = 'Trip Completed') AS Completed_Trips,
       COUNT(*) FILTER (WHERE Status != 'Trip Completed') AS Incomplete_Trips,
       ROUND(COUNT(*) FILTER (WHERE Status = 'Trip Completed') * 100.0 / COUNT(*), 2) AS Completion_Rate,
       ROUND(COUNT(*) FILTER (WHERE Status != 'Trip Completed') * 100.0 / COUNT(*), 2) AS Incompletion_Rate
FROM 'cleaned_data.csv'
GROUP BY "Pickup point";
```

Fig 38

Insight 8					
	Pickup point	Completed_Trips	Incomplete_Trips	Completion_Rate	Incompletion_Rate
0	City	1504	2003	42.89	57.11
1	Airport	1327	1911	40.98	59.02

Fig 39

- Fig 40 and 41 gives insight about the demand of Uber drivers wrt distance travelled.

```
-- 9. Distance Distribution by Pickup Point
SELECT
    "Pickup point",
    COUNT(*) FILTER (WHERE Distance = 'Far') AS Far,
    COUNT(*) FILTER (WHERE Distance = 'Medium') AS Medium,
    COUNT(*) FILTER (WHERE Distance = 'Near') AS Near
FROM 'cleaned_data.csv'
WHERE Status = 'Trip Completed'
GROUP BY "Pickup point";
```

Fig 40

Insight 9				
	Pickup point	Far	Medium	Near
0	Airport	394	824	109
1	City	483	918	103

Fig 41

Solution

- Deploying more drivers at airport can reduce trip cancellation and increase the availability of cars.
- Provide coupons for clients who travel more often and median of travel time.
- Give incentive for drivers who are working during the peak hours.
- Implement cancellation charges(during peak hours) to reduce the number of cancellations.
- Providing incentive for night rides can likely increase number of drivers.

Conclusion

- The goal was to understand Uber ride pattern using real time data.
- Cleaned and transformed data using Excel.
- Performed EDA in Colab.
- Found insights using SQL via VS Code.
- Built pivot tables, dashboards in Excel and visualizations in Colab.
- Delivered key solutions which will help Uber to increase business.