Project 2 - Supply and Demand Gap Analysis

Aim: -

The objective is to identify and analyse the problems in Supply-Demand of Uber trips from City to Airport and vice-versa across various hours of the day and find out possible solutions to address the problem.

Introduction: -

Uber provides the 2016 data. By using this data find out the demand and supply Analysis gap of the cab.
The main objective of this project is to analyse the data on, Uber Request data. Through the analysis of data, we can find some important insights.

Problem Statement: -

Uber is an app-based transportation network and taxi company.

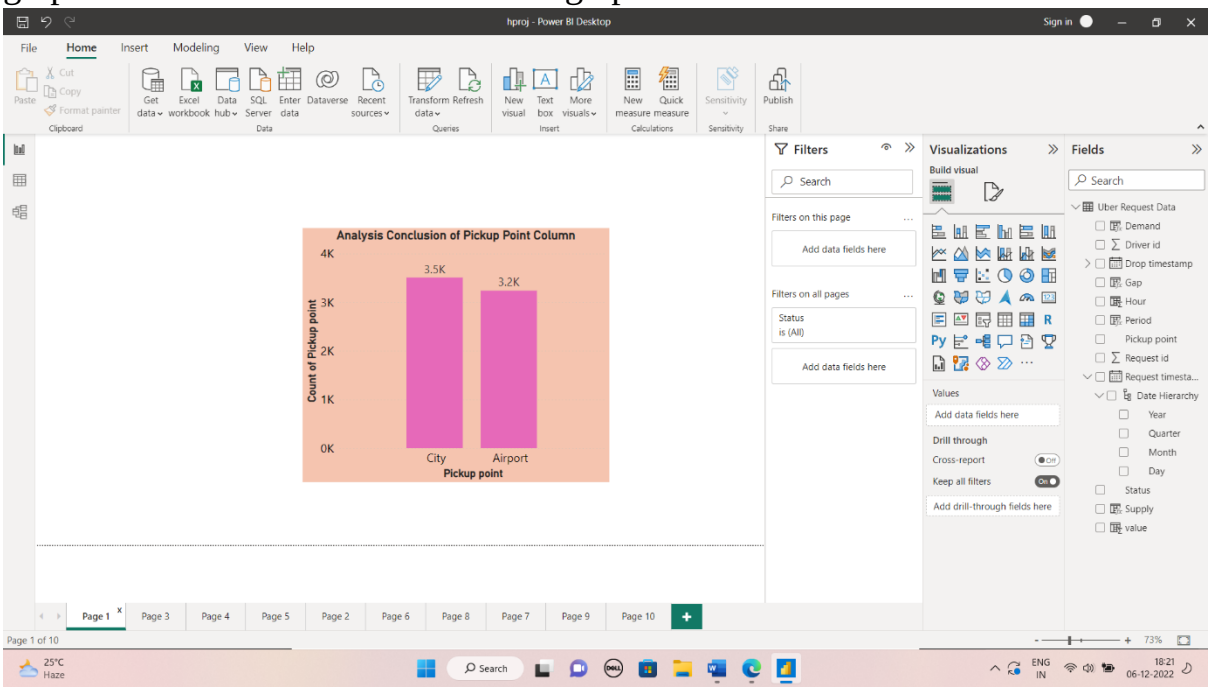
In its airport rides in a particular city, many of its users face the problem of cancellation by the driver or non-availability of cars.

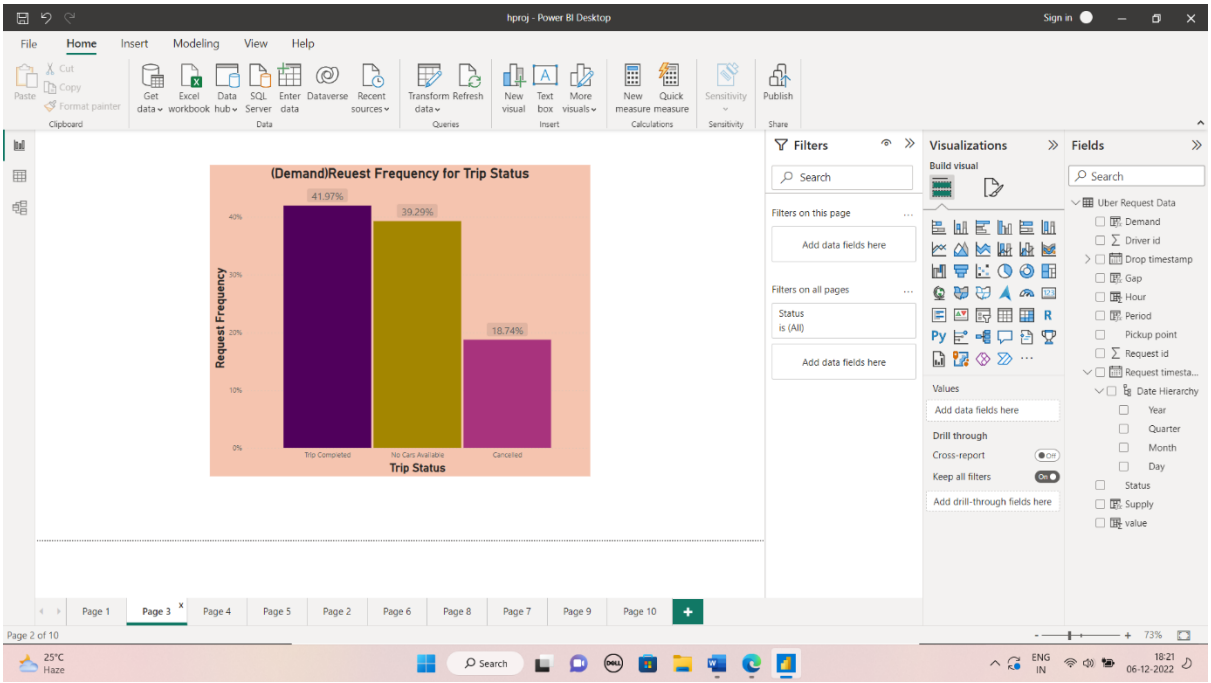
These very issues impact the business of Uber and it loses out on its revenue.

Methodology: -

1. Look out for visible data quality issues and rectify them. Check for blanks, duplicate data and convert certain columns to required datatypes.
2. Contents of the table “Uber Request Data”
    - Request id – Request id of an uber cab.
    - Pickup point – From where the cab has been booked.
    - Driver id – Driver id of an uber cab driver.
    - Status – Status of the trip if cancelled, no cars available and Trip completed.
    - Request timestamp – Time and date of requesting for a cab from a location.
    - Drop timestamp – Time and date of dropping at the Location.

3. Create a column.
    - Creating a column named “Hour”.
    - By using DAX formula “Hour = HOUR (‘Uber Request Data’ [Request timestamp])”.
    - Purpose of creating this column is to check at what hours there is more demand for uber cabs at pickup points, and status.
    - Hours from 0-5 can be considered as Late Night/Early Morning
    - Hours from 6-10 can be considered as Morning
    - Hours from 10-15 can be considered as Late morning/Noon
    - Hours from 16-20 can be considered as Noon/Evening.
    - Hours from 21-23 can be considered as Night.
4. Create Demand, Supply, Gap Columns.
    - Demand=Trip Completed, No Cars Available, Cancelled.
    - Supply=Trip Completed.
    - Gap=Demand-Supply (No Cars Available, Cancelled)
5. There are total of 6746 rows and 12 columns.
6. In Visualization, I took the help of Power BI Desktop software to make graphs and charts here some relevant graphs and charts are attached.




hproj - Power BI Desktop
(Demand)Reuest Frequency for Trip Status
41.97%
39.29%
18.74%
Request Frequency
Trip Completed
No Cars Available
Cancelled
Trip Status
Filters
Visualizations
Fields
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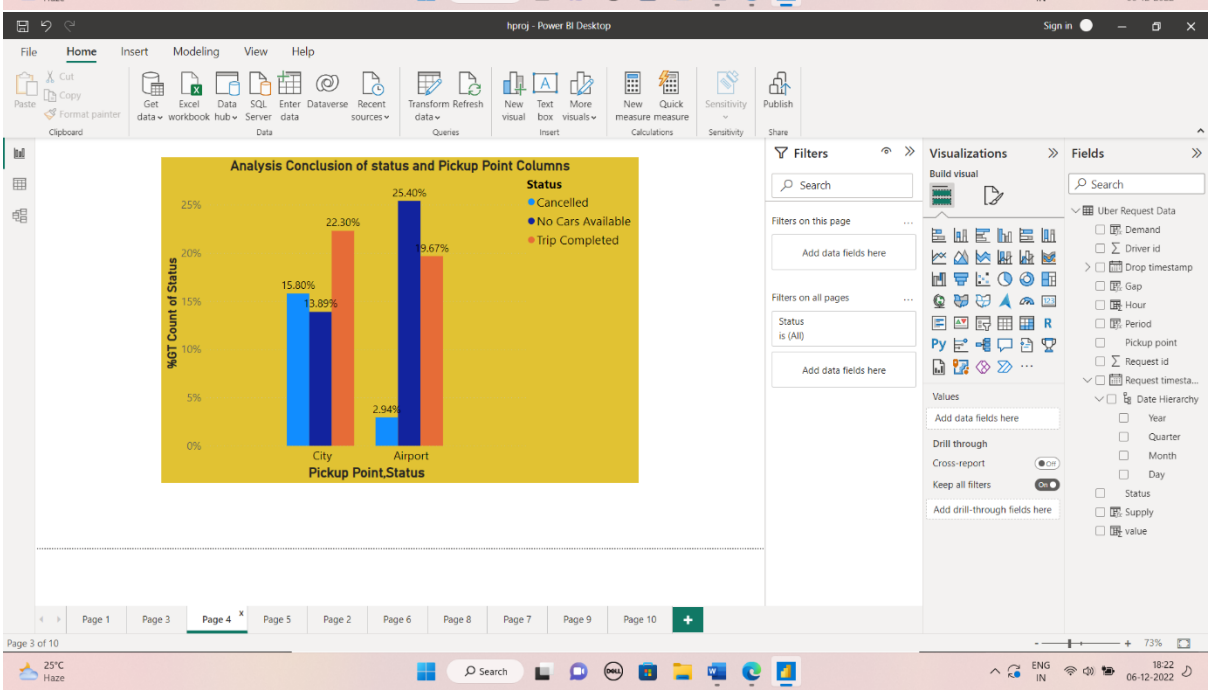
hproj - Power BI Desktop
Analysis Conclusion of status and Pickup Point Columns
Status
Cancelled
No Cars Available
Trip Completed
%GT Count of Status
15.80%
22.30%
13.89%
2.94%
25.40%
19.67%
City
Airport
Pickup Point,Status
Filters
Visualizations
Fields
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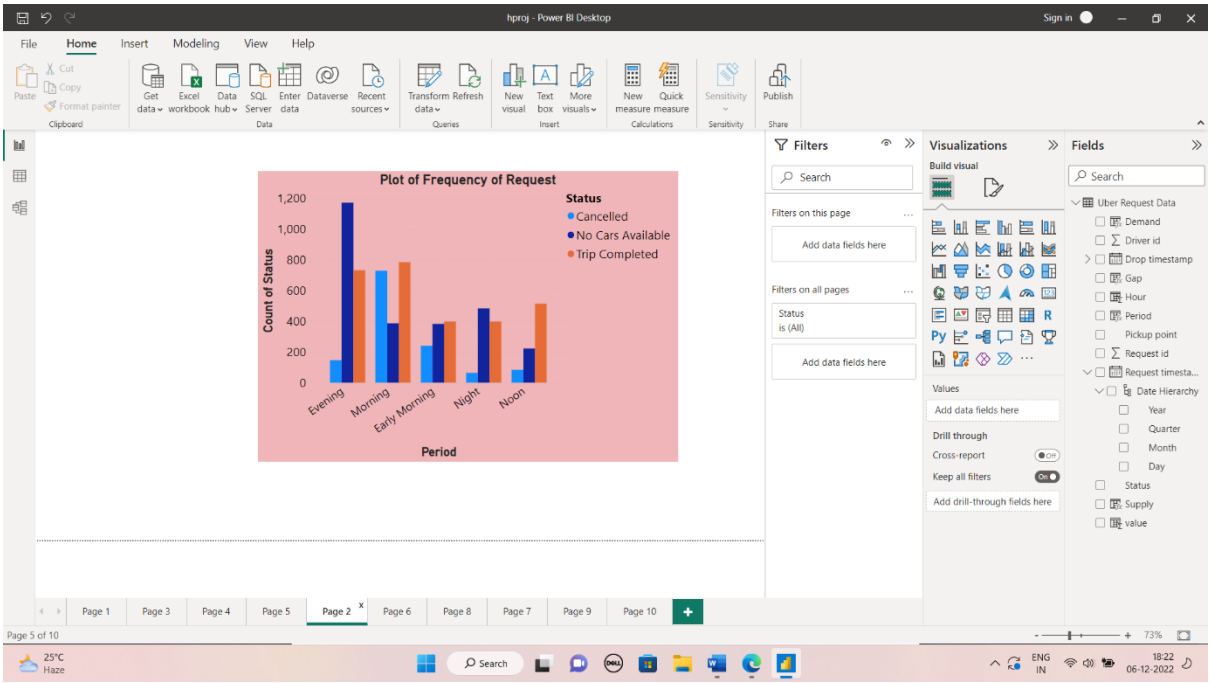
hproj - Power BI Desktop
Plot of Frequency of Request
Status
Cancelled
No Cars Available
Trip Completed
Count of Status
1,200
1,000
800
600
400
200
0
Evening
Morning
Early Morning
Night
Noon
Period
Filters
Visualizations
Fields
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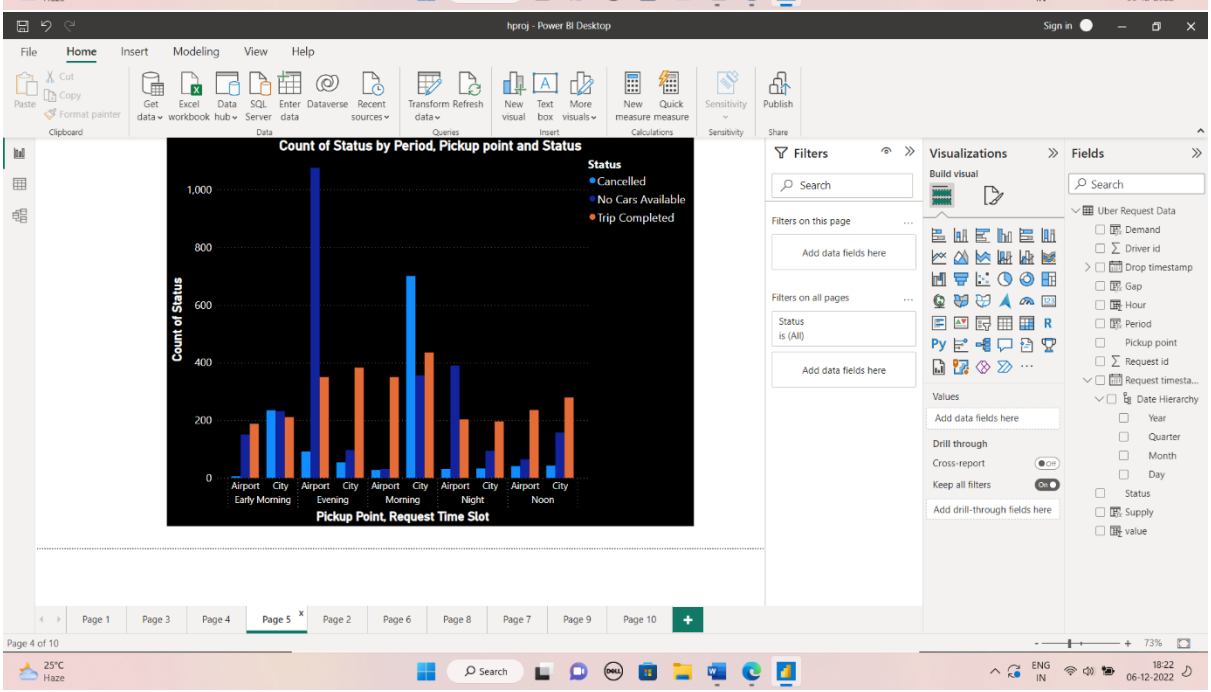
hproj - Power BI Desktop
Count of Status by Period, Pickup point and Status
Status
Cancelled
No Cars Available
Trip Completed
Count of Status
1,000
800
600
400
200
0
Airport
City
Early Morning
Evening
Morning
Night
Noon
Pickup Point, Request Time Slot
Filters
Visualizations
Fields
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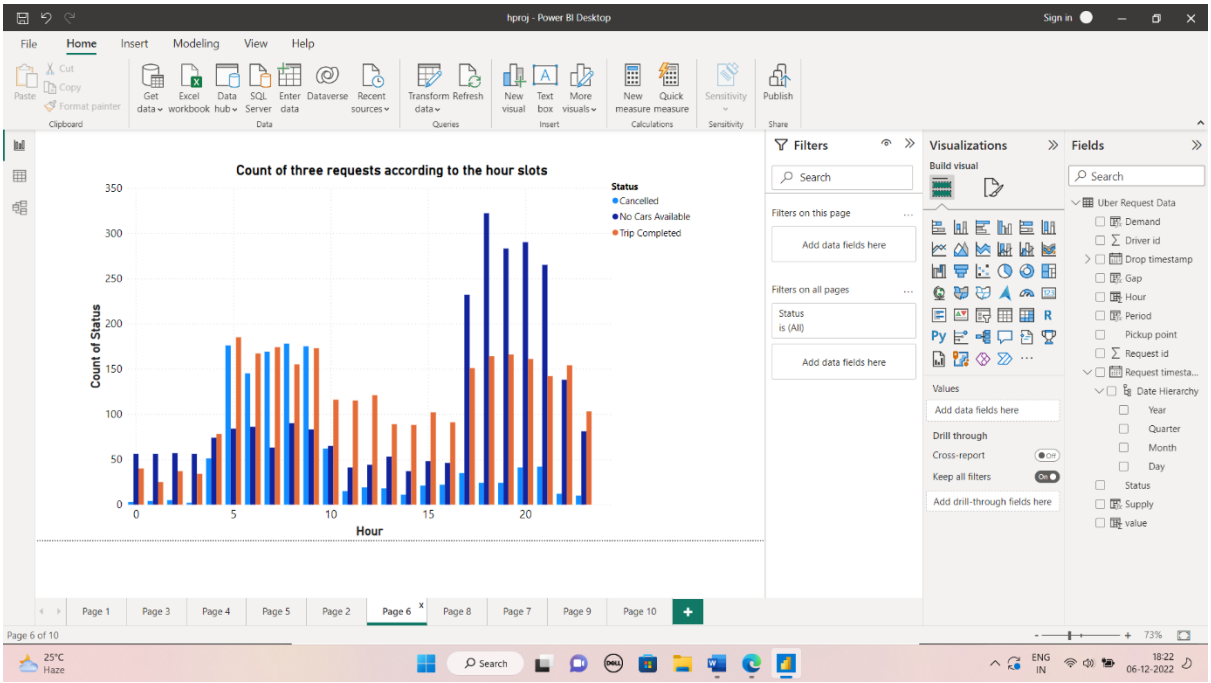
hproj - Power BI Desktop
Count of three requests according to the hour slots
Count of Status
Hour
Status
Cancelled
No Cars Available
Trip Completed
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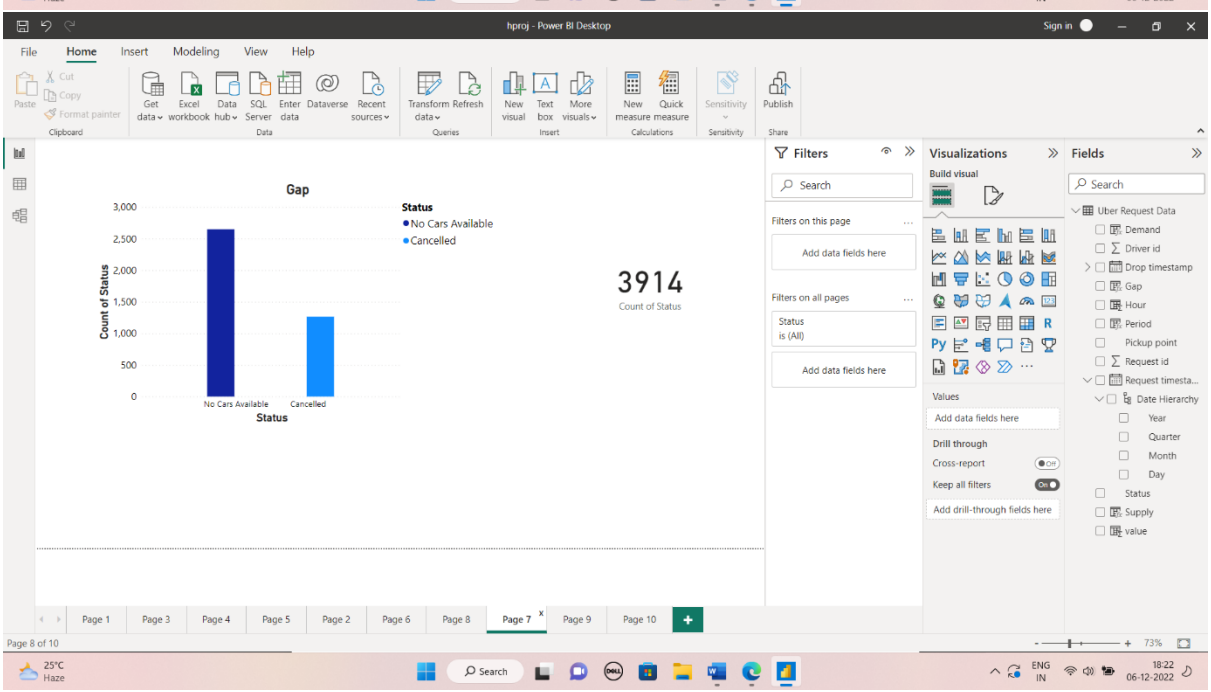
hproj - Power BI Desktop
Gap
Count of Status
Status
No Cars Available
Cancelled
3914
Count of Status
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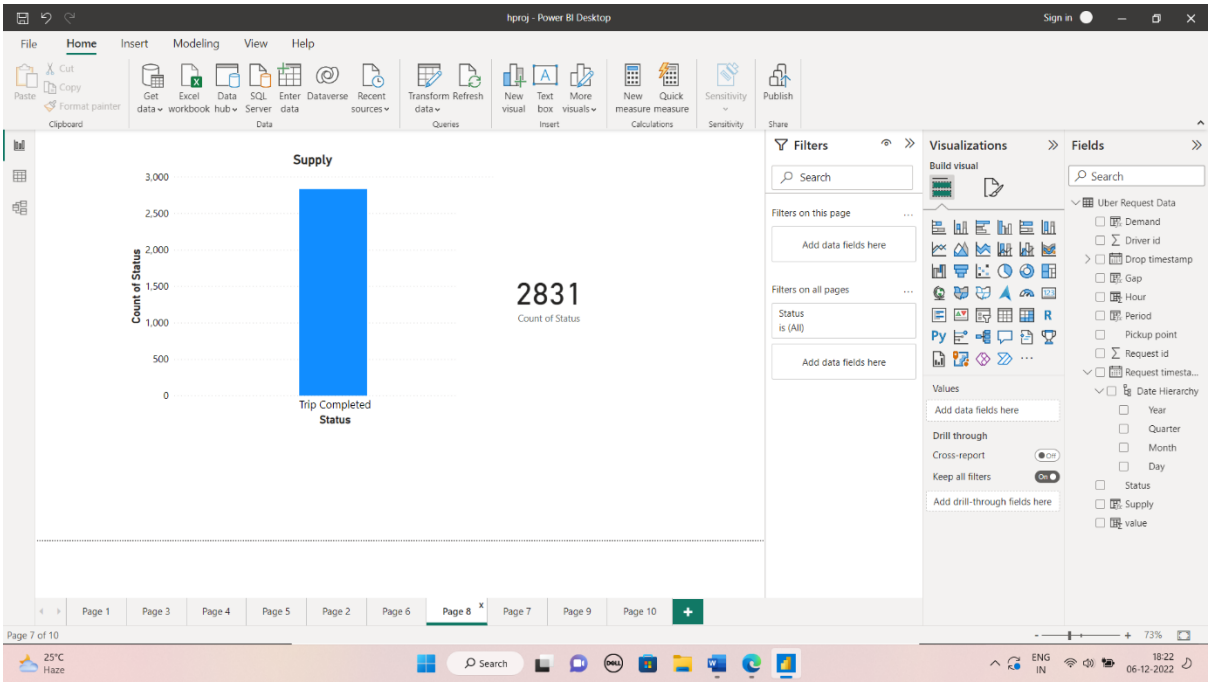
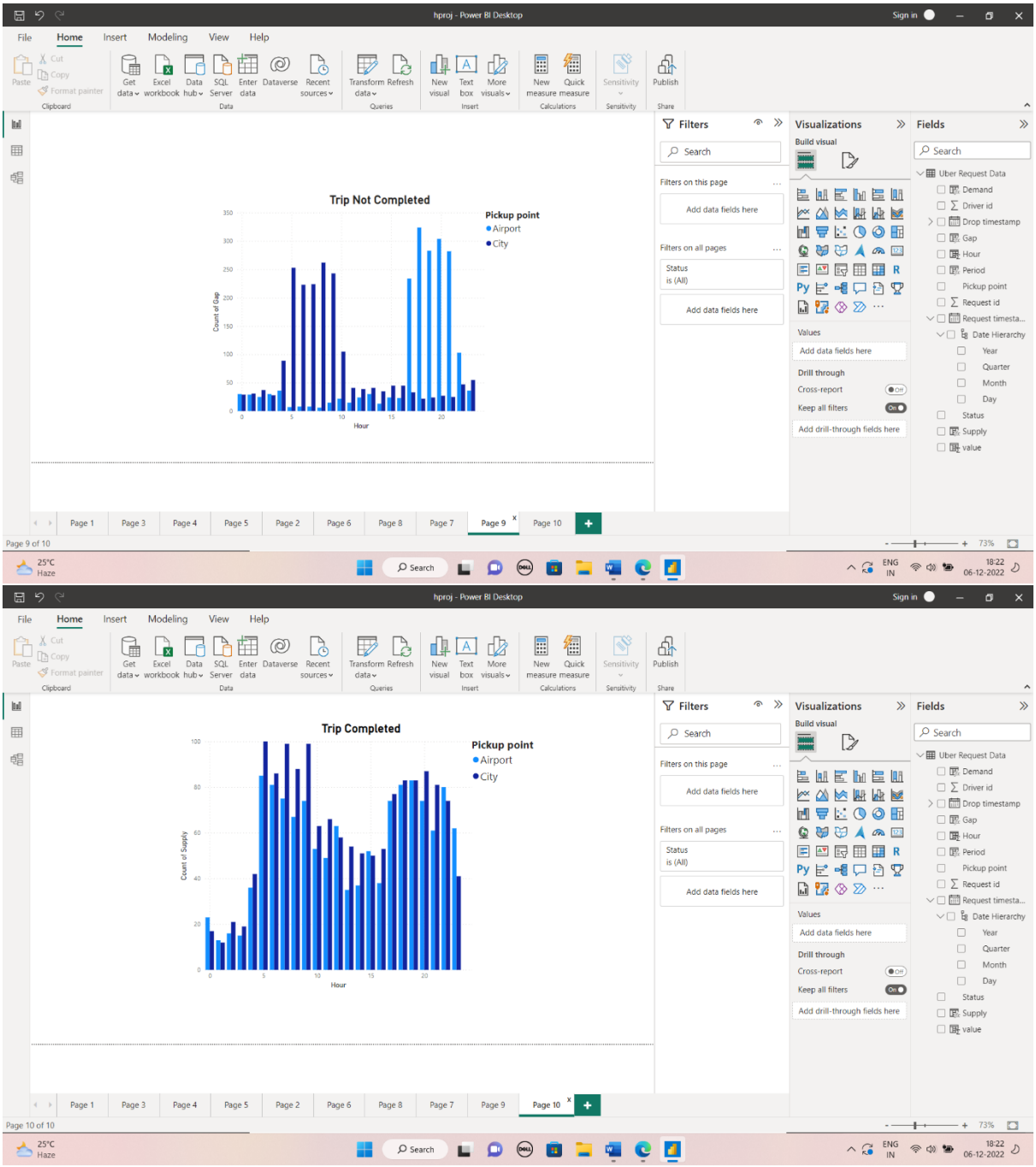

hproj - Power BI Desktop
Sign in
File
Home
Insert
Modeling
View
Help
Supply
Count of Status
3,000
2,500
2,000
1,500
1,000
500
0
Trip Completed
Status
2831
Count of Status
Filters
Search
Filters on this page
Add data fields here
Filters on all pages
Status
is (All)
Add data fields here
Visualizations
Build visual
Values
Add data fields here
Drill through
Cross-report
Keep all filters
Add drill-through fields here
Fields
Search
Uber Request Data
Demand
Driver id
Drop timestamp
Gap
Hour
Period
Pickup point
Request id
Request timesta...
Date Hierarchy
Year
Quarter
Month
Day
Status
Supply
value
Page 1
Page 3
Page 4
Page 5
Page 2
Page 6
Page 8
Page 7
Page 9
Page 10
Page 7 of 10
73%
25°C
Haze
Search
ENG
IN
18:22
06-12-2022



Analysis: -

- No cars available is more than the number of trips cancelled.
- The pickup points Airport and City are almost equal times present in the dataset.
- There are more No cars available from Airport to City.
- There are more cars Cancelled from City to Airport.

- Most No Cars Available are in the Evening.
- Most Cancelled trips are in the Morning.
- Most No Cars Available are in the Evening from Airport to City.
- Most Cancelled trips are in the Morning from City to Airport.
- The number of requests that was not completed are 3914
- The number of requests that was completed are 2831
- More Trip not completed than Trip Completed.

Hypothesis: -

Pickup Point - City:

- As per the analysis, the morning time slot is most problematic where the requests are being cancelled.

- Most probably the requests are being cancelled by the drivers due to the morning rush as it being the office hours and seeing the destination as airport which would be too far, the driver would think to earn more for the shorter trips within the city.

Pickup Point - Airport:

- Upon analysis, the evening time slot seems to be most problematic for pickup points as airport where the requests being No Cars Available.

- The reason seems to be that not enough cars are available to service the requests as cars might not be available at the airport due to the cars serving inside the city.

Conclusion: -

- **Possible suggestions to fill the supply demand gap:**

    1. Provide incentives for airport trips during peak time.

    2. Assigning few extra cabs specially to the airport trips.

    3. Fixing a base price for driver's idle time in the airport or to come back to the city without any passenger.

    4. Impose penalty for cancellation of requests by the drivers. Set a threshold for the maximum cancellation per day.

    5. Promote continuous trip to airport with incentives.

6. Promote advance booking to airports and at the same time keeping drivers updated will the flight schedule with help them plan their work and they can accept the request as per their work plan.