AIRLINE DATA MANAGEMENT AND ANALYSIS

To explore and visualize airline data in Power BI to gain insights into operations, enhance passenger handling, and understand ticket booking patterns.

By Mukul Pareek

1. Data Preparation and Cleaning Tasks Performed: ▪

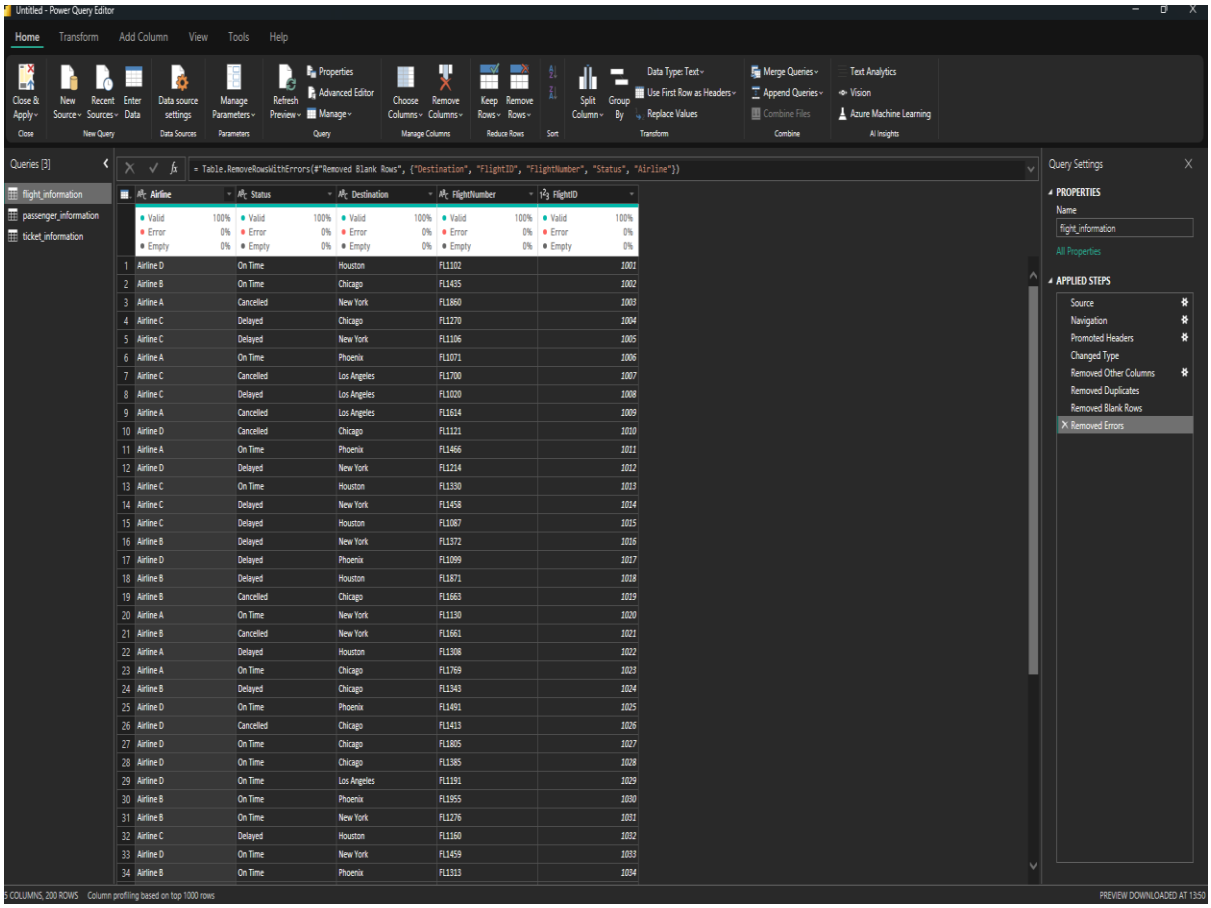
-Data was extracted and transformed using Power Query Editor. ▪

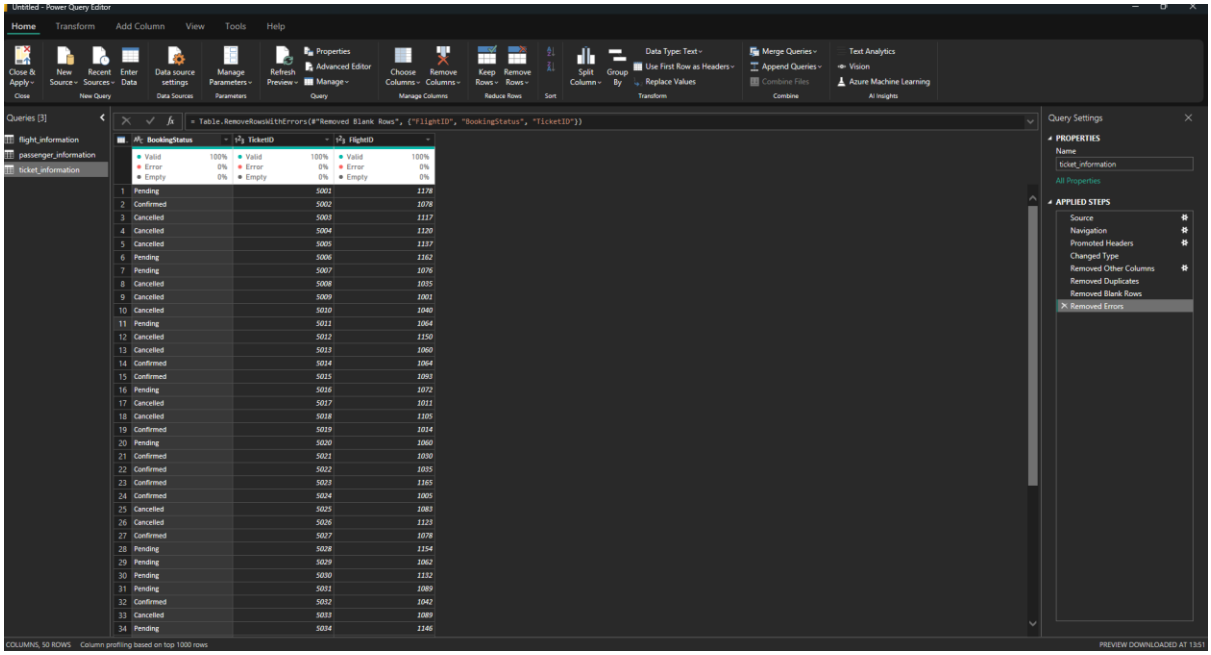
-Cleaned the data by:

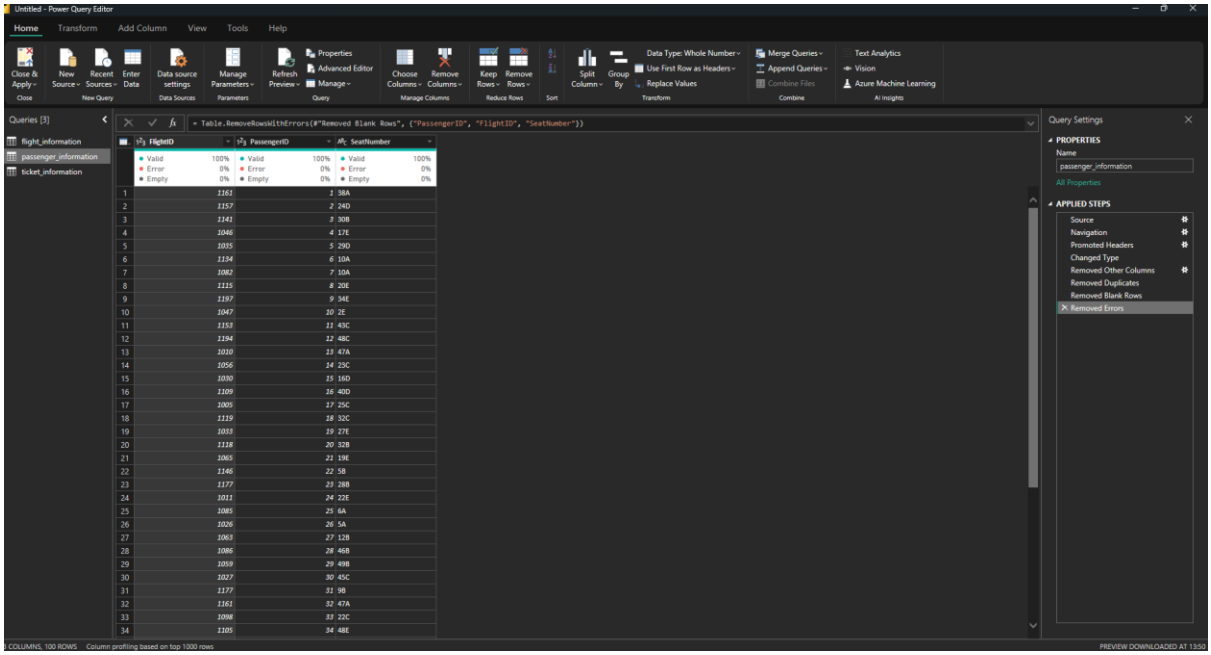
-Removing duplicate rows.

-Handling missing values.

-Formatting columns like FlightID, PassengerID, and TicketI




Untitled - Power Query Editor
Home
Transform
Add Column
View
Tools
Help
Queries [3]
flight_information
passenger_information
ticket_information
= Table.RemoveRowsWithErrors(#"Removed Blank Rows", {"FlightID", "BookingStatus", "TicketID"})
BookingStatus
TicketID
FlightID
Query Settings
PROPERTIES
Name
ticket_information
All Properties
APPLIED STEPS
Source
Navigation
Promoted Headers
Changed Type
Removed Other Columns
Removed Duplicates
Removed Blank Rows
Removed Errors
COLUMNS, 50 ROWS
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 13:51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Name
passenger_information
All Properties
APPLIED STEPS
Source
Navigation
Promoted Headers
Changed Type
Removed Other Columns
Removed Duplicates
Removed Blank Rows
Removed Errors
COLUMNS, 100 ROWS
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 13:50

2.DATA MODELING

Tasks Perfromed:

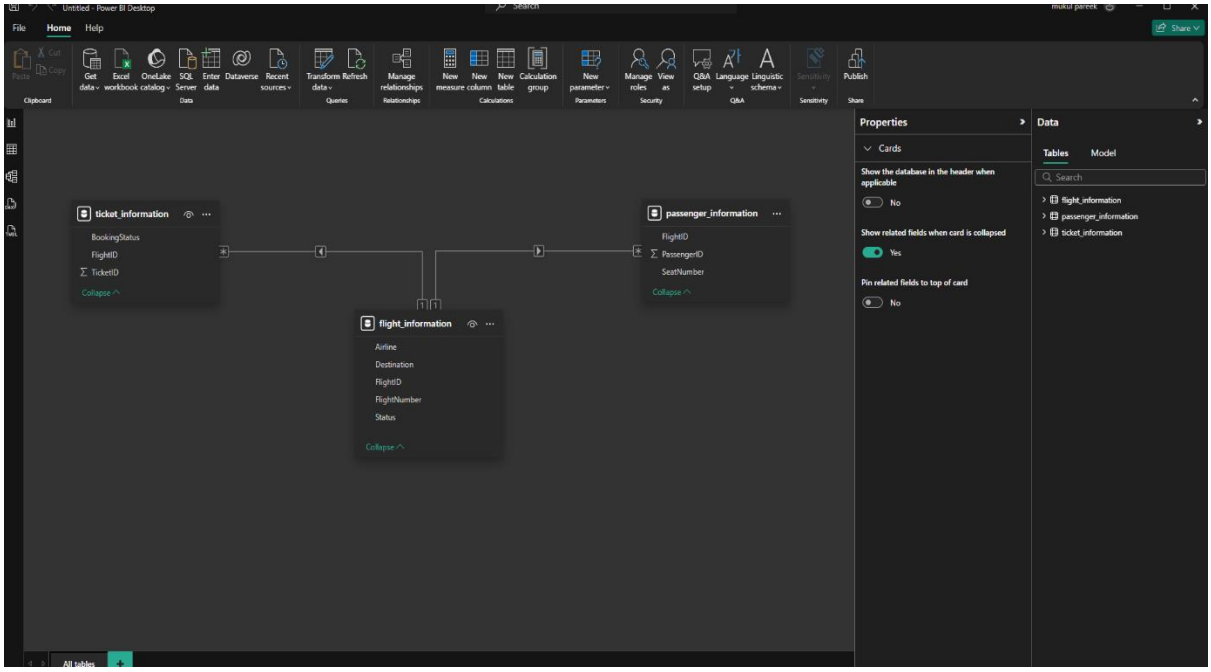
-Created data model by establishing relationships:

- FlightID is the primary key linking:

-flight_information.

-passenger_information .

-Ticket information • Configured cardinality and relationship direction correctly.



3.ENACHED DATA INSIGHT

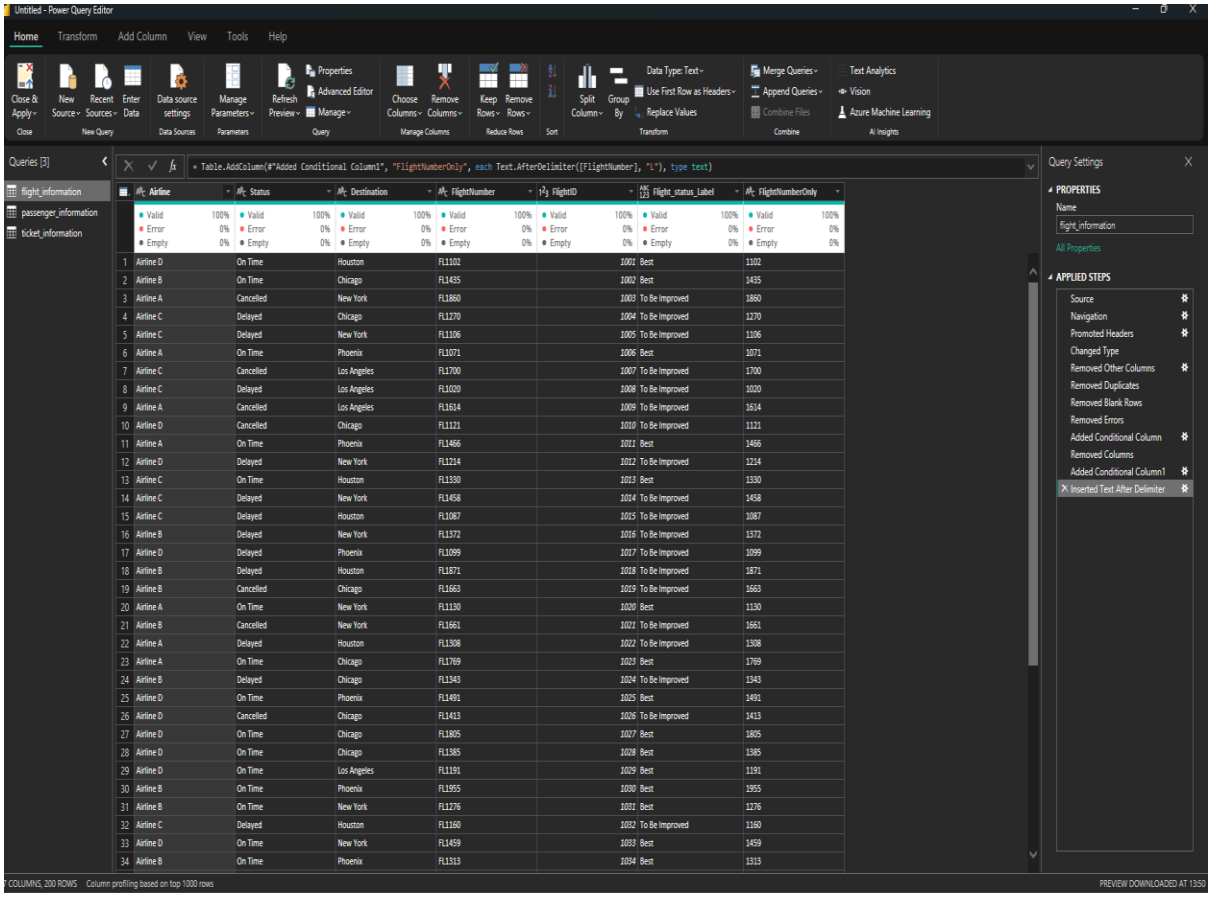
-TASK PERFORMED

Created Conditional Column to classify flights as:

"Best" or "To Be Improved" based on Status

-Used Column From Examples to extract values like:

- Flight Number from FlightNumber.



	Airline	Status	Destination	FlightNumber	FlightID	Flight_status_Label	FlightNumberOnly
1	Airline D	On Time	Houston	FL1102	1001	Best	1102
2	Airline B	On Time	Chicago	FL1435	1002	Best	1435
3	Airline A	Cancelled	New York	FL1860	1003	To Be Improved	1860
4	Airline C	Delayed	Chicago	FL1270	1004	To Be Improved	1270
5	Airline C	Delayed	New York	FL1106	1005	To Be Improved	1106
6	Airline A	On Time	Phoenix	FL1071	1006	Best	1071
7	Airline C	Cancelled	Los Angeles	FL1700	1007	To Be Improved	1700
8	Airline C	Delayed	Los Angeles	FL1020	1008	To Be Improved	1020
9	Airline A	Cancelled	Los Angeles	FL1614	1009	To Be Improved	1614
10	Airline D	Cancelled	Chicago	FL1121	1010	To Be Improved	1121
11	Airline A	On Time	Phoenix	FL1466	1011	Best	1466
12	Airline D	Delayed	New York	FL1214	1012	To Be Improved	1214
13	Airline C	On Time	Houston	FL1330	1013	Best	1330
14	Airline C	Delayed	New York	FL1458	1014	To Be Improved	1458
15	Airline C	Delayed	Houston	FL1087	1015	To Be Improved	1087
16	Airline B	Delayed	New York	FL1372	1016	To Be Improved	1372
17	Airline D	Delayed	Phoenix	FL1099	1017	To Be Improved	1099
18	Airline B	Delayed	Houston	FL1871	1018	To Be Improved	1871
19	Airline B	Cancelled	Chicago	FL1663	1019	To Be Improved	1663
20	Airline A	On Time	New York	FL1130	1020	Best	1130
21	Airline B	Cancelled	New York	FL1661	1021	To Be Improved	1661
22	Airline A	Delayed	Houston	FL1308	1022	To Be Improved	1308
23	Airline A	On Time	Chicago	FL1769	1023	Best	1769
24	Airline B	Delayed	Chicago	FL1343	1024	To Be Improved	1343
25	Airline D	On Time	Phoenix	FL1491	1025	Best	1491
26	Airline D	Cancelled	Chicago	FL1413	1026	To Be Improved	1413
27	Airline D	On Time	Chicago	FL1805	1027	Best	1805
28	Airline D	On Time	Chicago	FL1385	1028	Best	1385
29	Airline D	On Time	Los Angeles	FL1191	1029	Best	1191
30	Airline B	On Time	Phoenix	FL1955	1030	Best	1955
31	Airline B	On Time	New York	FL1276	1031	Best	1276
32	Airline C	Delayed	Houston	FL1160	1032	To Be Improved	1160
33	Airline D	On Time	New York	FL1459	1033	Best	1459
34	Airline B	On Time	Phoenix	FL1313	1034	Best	1313

4.CALCULATIONS USING DAX

-TASKS PERFORMED

1. TOTAL TICKETS BOOKED-

```
Total Tickets Booked =
CALCULATE(COUNTROWS(ticket_information),ticket_information[BookingStatus]="Confirmed"
```

2.TOTAL PASSENGERS

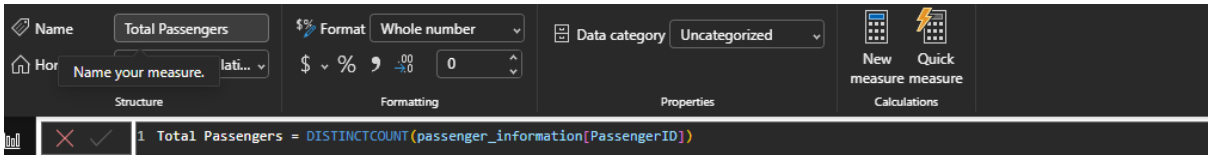
```
Total Passengers =
DISTINCTCOUNT(passenger_information[PassengerID])
```

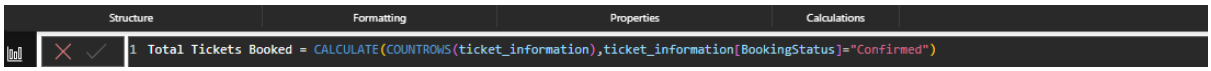
3.TOTAL FLIGHTS

Total Flights = COUNTROWS(flight_information)

4.BEST FLIGHT TABLE-

BEst flight table =
FILTER(flight_information,flight_information[Flight_status_Label]="Best")





5. VISUALIZATION AND INTERACTIVE FEATURES

VISUAL CREATED:

-Passengers count by airlines: Bar chart

-Count of ticket by booking status:pie chart

-Flights by airline and destination: stacked column chart

-Best Flights by airline and status label: Area chart.

-Passengers By Destination : Donut Chart

-CARDS: Best Flights ,Total Tickets Booked, Total passengers, Total flights.

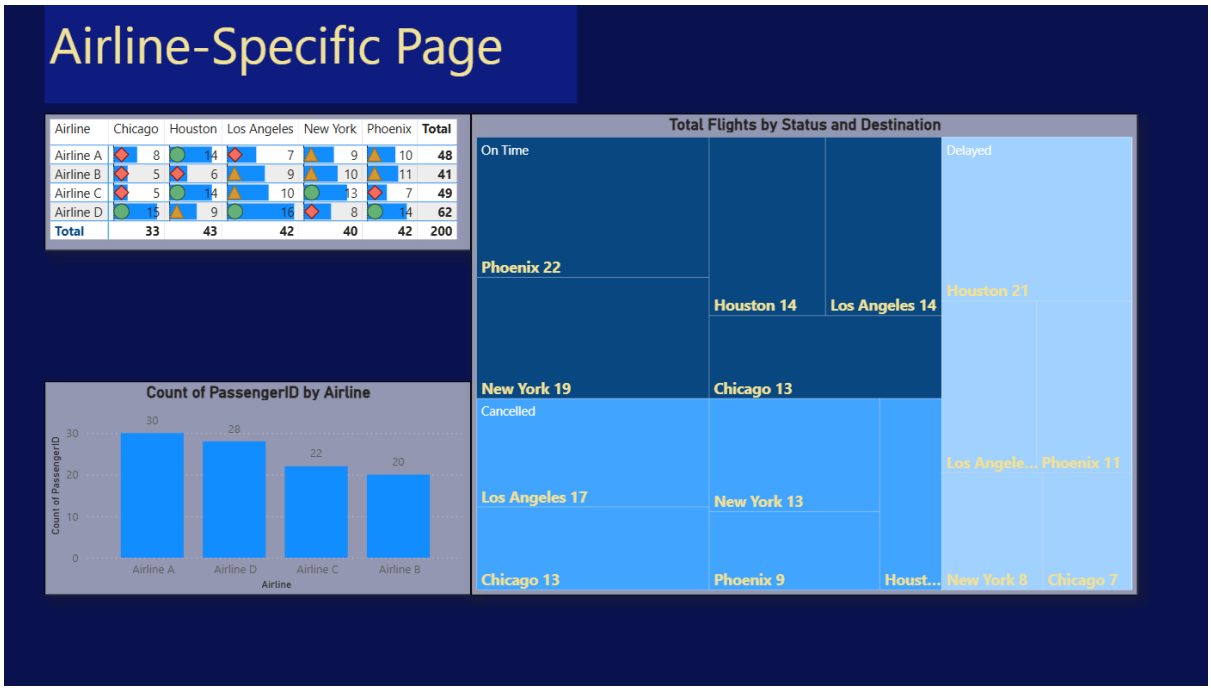
Interactive features:

-Slicers For-

-Airline

-Destination

--Airline specific page—



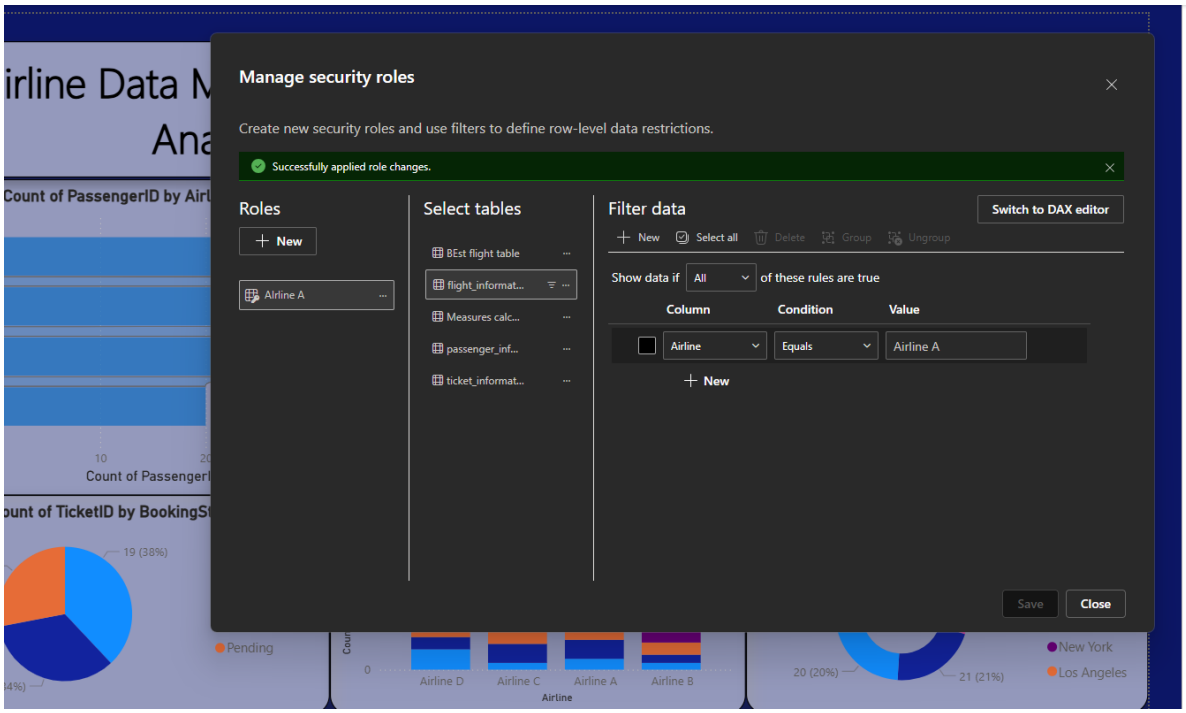
6. FINAL DASHBOARDS AND POERE BI SERVICE

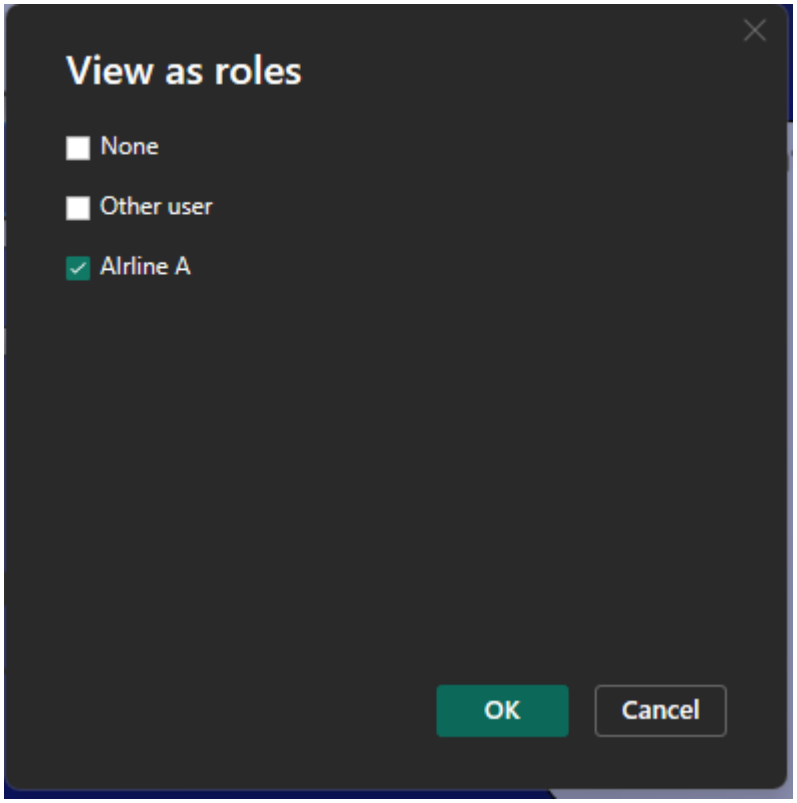
-The final dashboard was developed in Power BI Desktop with a focus on clarity and interactivity. It was then published to Power BI Service, where it now displays multi-page visualizations, key metrics, slicers, and airline-specific analytics.

-Row-Level Security (RLS) was configured to restrict data access for Airline A users, ensuring that only relevant data is visible to them. To support data accuracy and timeliness, I connected the dataset to Excel files hosted on OneDrive and scheduled automatic refreshes at 5 PM daily.

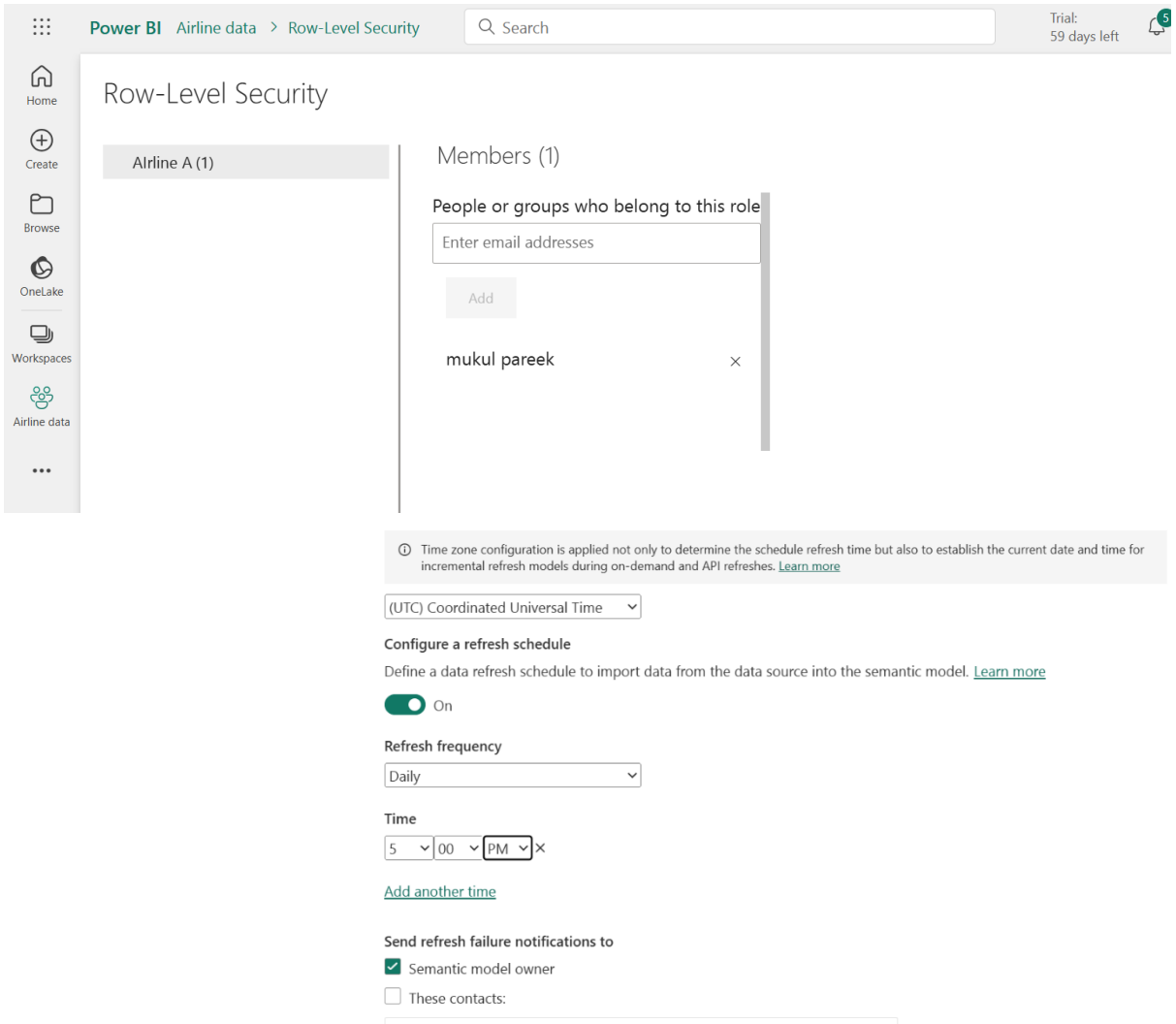
These configurations enhance the dashboard's reliability, security, and usability.


Airline Data Management & Analysis
82
Best Flight
17
Total Tickets Booked
100
Total Passengers
200
Total Flights
Count of PassengerID by Airline
Airline A
Airline D
Airline C
Airline B
Airline
Count of PassengerID
Publishing to Power BI
Success!
Open 'Airline Data Management and Analysis Using Power BI.pbix' in Power BI
Get Quick Insights
Did you know?
You can create a portrait view of your report, tailored for mobile phones.
On the View tab, select Mobile Layout. Learn more
Got it
To Be Improved
Airline
Count of TicketID by BookingStatus
BookingStatus
Cancelled
Confirmed
Pending
19 (38%)
14 (28%)
17 (34%)
Count of FlightID by Airline and Destination
Destination
Chicago
Houston
Los Angeles
New York
Phoenix
Count of FlightID
Airline
Total Passengers by Destination
Destination
Phoenix
Houston
Chicago
New York
Los Angeles
11 (11%)
18 (18%)
30 (30%)
20 (20%)
21 (21%)


Manage security roles
Create new security roles and use filters to define row-level data restrictions.
Successfully applied role changes.
Roles
New
Airline A
Select tables
BEst flight table
flight_informat...
Measures calc...
passenger_inf...
ticket_informat...
Filter data
Switch to DAX editor
New
Select all
Delete
Group
Ungroup
Show data if
All
of these rules are true
Column
Condition
Value
Airline
Equals
Airline A
New
Save
Close
Filters


View as roles
None
Other user
Airline A
OK
Cancel


Now viewing as: Airline A
Stop viewing
Airline Data Management & Analysis
15
Best Flight
3
Total Tickets Booked
30
Total Passengers
48
Total Flights
Filters
Count of PassengerID by Airline
Airline
Airline A
0
10
20
30
Count of PassengerID
Select all
Chicago
Houston
Los Angeles
New York
Select all
Airline A
Best Flight by Airline and Flight_status_Label
Flight_status_...
Best
To Be Improved
18
16
14
12
Best Flight
15
15
Airline A
Airline
Count of TicketID by BookingStatus
3 (27.27%)
4 (36.36%)
4 (36.36%)
BookingStatus
Cancelled
Pending
Confirmed
Count of FlightID by Airline and Destination
Destination
Chicago
Houston
Los Angeles
New York
Phoenix
50
0
Count of FlightID
Airline A
Airline
Total Passengers by Destination
5 (16.67%)
11 (36.67%)
6 (20%)
7 (23.33%)
Destination
Phoenix
Houston
Chicago
New York
Los Angeles
Main Dashboard
Airline Specific Page


Power BI
Airline data
Row-Level Security
Search
Trial:
59 days left
Home
Create
Browse
OneLake
Workspaces
Airline data
Row-Level Security
Airline A (1)
Members (1)
People or groups who belong to this role
Enter email addresses
Add
mukul pareek
Time zone configuration is applied not only to determine the schedule refresh time but also to establish the current date and time for incremental refresh models during on-demand and API refreshes. Learn more
(UTC) Coordinated Universal Time
Configure a refresh schedule
Define a data refresh schedule to import data from the data source into the semantic model. Learn more
On
Refresh frequency
Daily
Time
5
00
PM
Add another time
Send refresh failure notifications to
Semantic model owner
These contacts:

FINAL DASHBOARD IN POWER BI SERVICE-

CONCLUSION:

This Power BI project provided valuable hands-on experience across the full data analysis lifecycle — from data cleaning and modeling to building interactive dashboards.

I prepared and cleaned airline datasets in Power Query, established relationships using *FlightID*, and used DAX to create custom calculations like total passengers and ticket counts. These measures enabled deeper insights into airline operations.

The dashboard includes clear visuals, slicers, drillthroughs, and quick views, making it both informative and user-friendly. I also implemented Row-Level Security (RLS) for restricted access and scheduled a daily data refresh at 5 PM using OneDrive.

Overall, this project improved my skills in Power BI, enhanced my understanding of data visualization, and prepared me for real-world data reporting tasks.

VIDEO EXPLAINATION LINK:

https://drive.google.com/file/d/1zizqmf8vUdK9MdeLgyUKoYTEufBCigc3/view?usp=sharing