Power BI Project Report

Project Title: Airline Data Management and Analysis Using Power BI
Submitted By: Shashwat Gupta
Video Link: https://drive.google.com/file/d/1I2aMEirRwCVd6pHnbcptaMKm5wmO5Dhm/view?usp=sharing

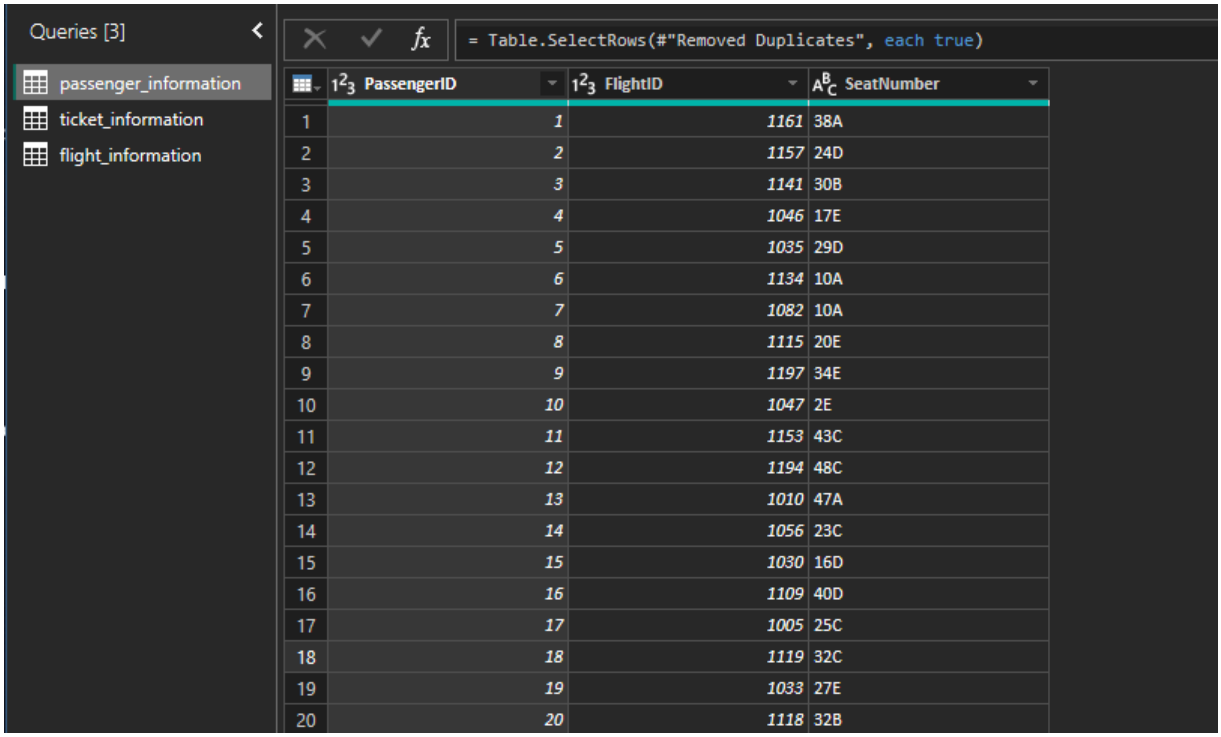
Task - 1 : Data Preparation and Cleaning

- Imported all 3 files into Power Query
- Removed Null Columns and Blank Rows
- No duplicates, errors, missing values were found

Note: Data Quality was great as no errors or missing values were found in the dataset

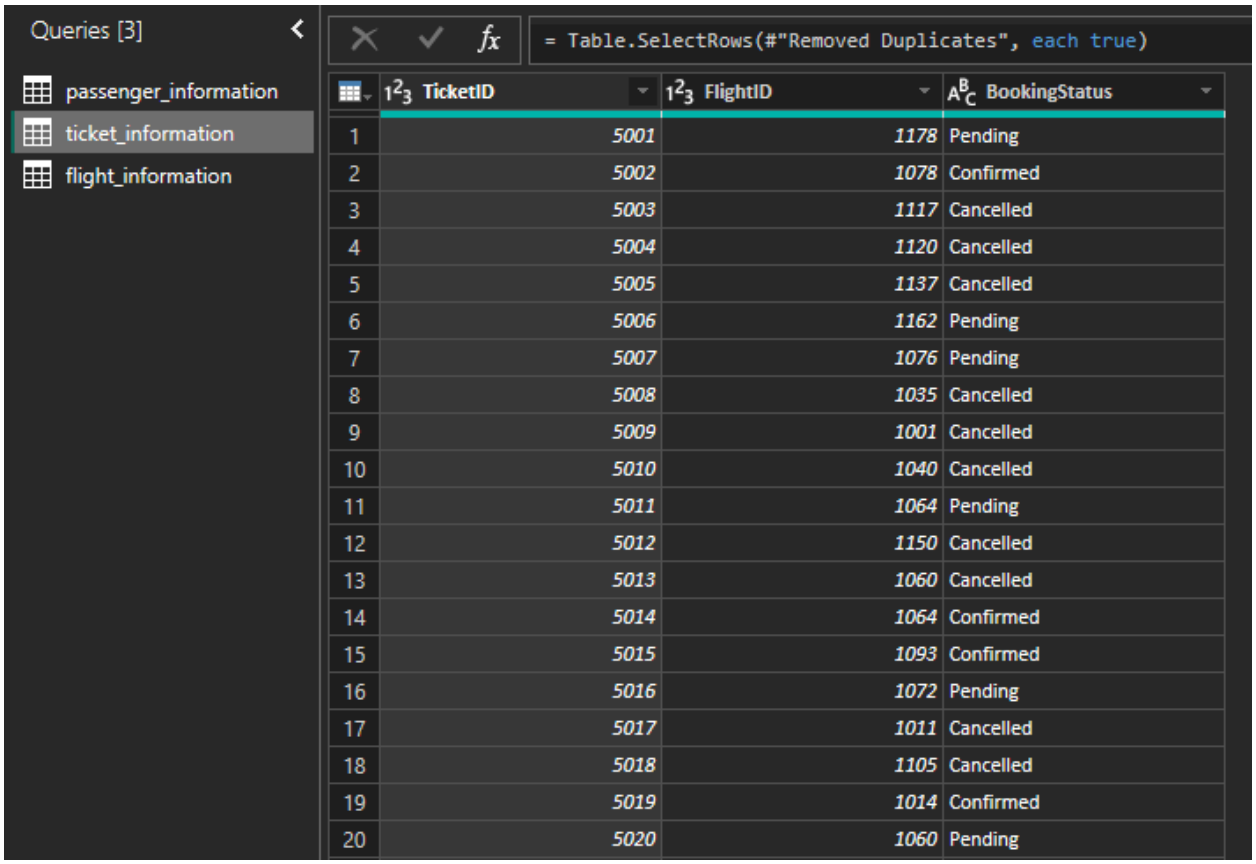
Deliverables:

1) Screenshot of Cleaned Passenger Table.



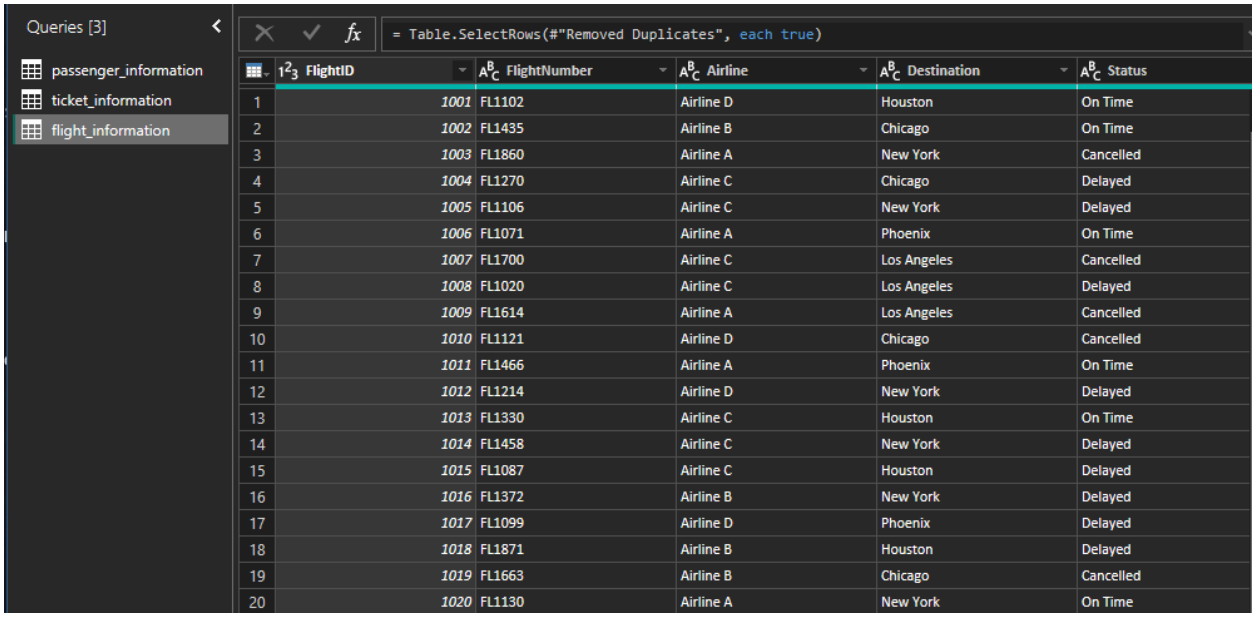
	PassengerID	FlightID	SeatNumber
1	1	1161	38A
2	2	1157	24D
3	3	1141	30B
4	4	1046	17E
5	5	1035	29D
6	6	1134	10A
7	7	1082	10A
8	8	1115	20E
9	9	1197	34E
10	10	1047	2E
11	11	1153	43C
12	12	1194	48C
13	13	1010	47A
14	14	1056	23C
15	15	1030	16D
16	16	1109	40D
17	17	1005	25C
18	18	1119	32C
19	19	1033	27E
20	20	1118	32B

2) Screenshot of Cleaned Ticket Table.



	TicketID	FlightID	BookingStatus
1	5001	1178	Pending
2	5002	1078	Confirmed
3	5003	1117	Cancelled
4	5004	1120	Cancelled
5	5005	1137	Cancelled
6	5006	1162	Pending
7	5007	1076	Pending
8	5008	1035	Cancelled
9	5009	1001	Cancelled
10	5010	1040	Cancelled
11	5011	1064	Pending
12	5012	1150	Cancelled
13	5013	1060	Cancelled
14	5014	1064	Confirmed
15	5015	1093	Confirmed
16	5016	1072	Pending
17	5017	1011	Cancelled
18	5018	1105	Cancelled
19	5019	1014	Confirmed
20	5020	1060	Pending

3) Screenshot of Cleaned Flights Table.



	FlightID	FlightNumber	Airline	Destination	Status
1	1001	FL1102	Airline D	Houston	On Time
2	1002	FL1435	Airline B	Chicago	On Time
3	1003	FL1860	Airline A	New York	Cancelled
4	1004	FL1270	Airline C	Chicago	Delayed
5	1005	FL1106	Airline C	New York	Delayed
6	1006	FL1071	Airline A	Phoenix	On Time
7	1007	FL1700	Airline C	Los Angeles	Cancelled
8	1008	FL1020	Airline C	Los Angeles	Delayed
9	1009	FL1614	Airline A	Los Angeles	Cancelled
10	1010	FL1121	Airline D	Chicago	Cancelled
11	1011	FL1466	Airline A	Phoenix	On Time
12	1012	FL1214	Airline D	New York	Delayed
13	1013	FL1330	Airline C	Houston	On Time
14	1014	FL1458	Airline C	New York	Delayed
15	1015	FL1087	Airline C	Houston	Delayed
16	1016	FL1372	Airline B	New York	Delayed
17	1017	FL1099	Airline D	Phoenix	Delayed
18	1018	FL1871	Airline B	Houston	Delayed
19	1019	FL1663	Airline B	Chicago	Cancelled
20	1020	FL1130	Airline A	New York	On Time

Task - 2 : Data Modeling

- Created 2 relationships :
    a. Flight Table and Ticket Table are being Related through key “FlightID” with a Many to One relation.
    b. Flight Table and Passenger Table are being Related through key “FlightID” with a Many to One relation.

Deliverables:

1) Screenshot of the Data Model Relations.

Task - 3 : Enhanced Data Insights

- Added a column in the Flight Table using Conditional Column feature where if the value in Status Column is “On Time” the output is “Best” else it is “ To be Improved”.
- Added a column in the Flight Table using the Column from example feature to extract just the number from the Flight Number Column.

Deliverables:

1) Screenshot of Transformed Data

FlightID	FlightNumber	Airline	Destination	Status	Flight_No. (Task 3)	Rating (Task 3)
1182	FL1502	Airline A	Chicago	Delayed	1502	To Be Improved
1020	FL1130	Airline A	New York	On Time	1130	Best
1023	FL1769	Airline A	Chicago	On Time	1769	Best
1048	FL1189	Airline A	New York	On Time	1189	Best
1057	FL1504	Airline A	Phoenix	On Time	1504	Best
1072	FL1345	Airline A	New York	On Time	1345	Best
1081	FL1508	Airline A	New York	On Time	1508	Best
1082	FL1775	Airline A	Phoenix	On Time	1775	Best
1092	FL1389	Airline A	Houston	On Time	1389	Best
1124	FL1216	Airline A	Chicago	On Time	1216	Best
1145	FL1391	Airline A	Phoenix	On Time	1391	Best
1006	FL1071	Airline A	Phoenix	On Time	1071	Best
1155	FL1134	Airline A	New York	On Time	1134	Best
1168	FL1683	Airline A	Houston	On Time	1683	Best
1171	FL1986	Airline A	Los Angeles	On Time	1986	Best
1003	FL1860	Airline A	New York	Cancelled	1860	To Be Improved
1009	FL1614	Airline A	Los Angeles	Cancelled	1614	To Be Improved
1022	FL1308	Airline A	Houston	Delayed	1308	To Be Improved
1037	FL1747	Airline A	Chicago	Cancelled	1747	To Be Improved
1040	FL1474	Airline A	New York	Cancelled	1474	To Be Improved
1041	FL1058	Airline A	New York	Cancelled	1058	To Be Improved

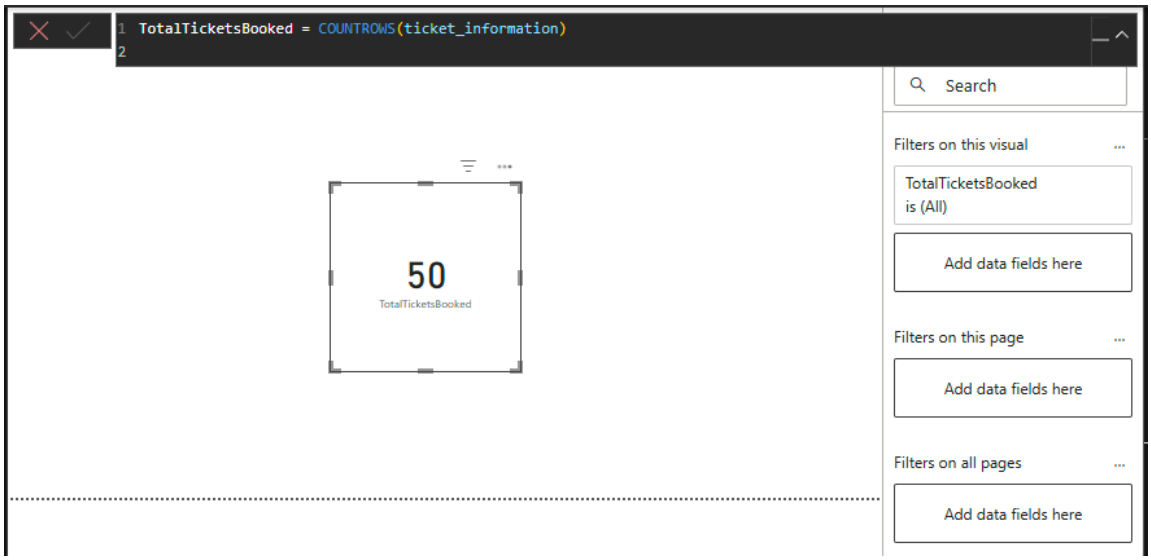
Task - 4 : Calculations Using DAX

- Calculated Total Passengers for a specific flight (1161) using Calculate + CountRows function and displayed it in a Card.
- Calculate Total Tickets Booked using CountRows function and displayed it in a Card.
- Created a new table containing only information about flights with “Best” Rating using DAX formula by using Filter function.

Deliverables:

1) Screenshot of DAX Formula and The Card for Total Passengers.

2) Screenshot of DAX Formula and The Card for Total Tickets Booked.



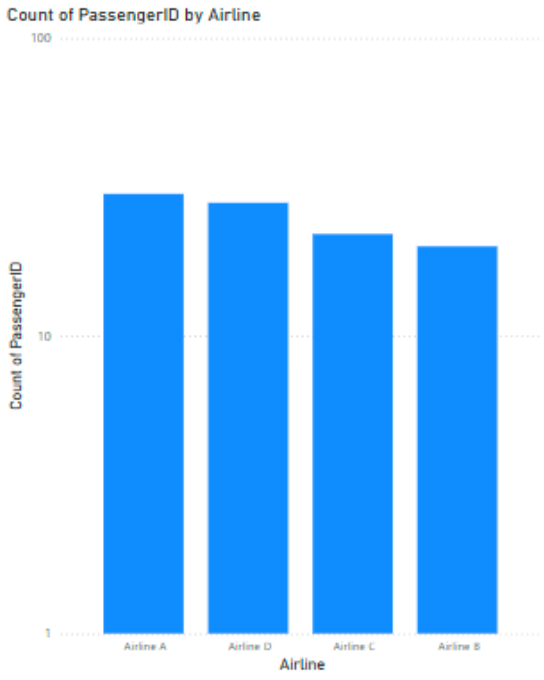
3) Screenshot of the Table “BestFlightsOnly” and the DAX formula used.

```
1 BestFlightsOnly = FILTER(flight_information,flight_information[Rating]="Best")
```

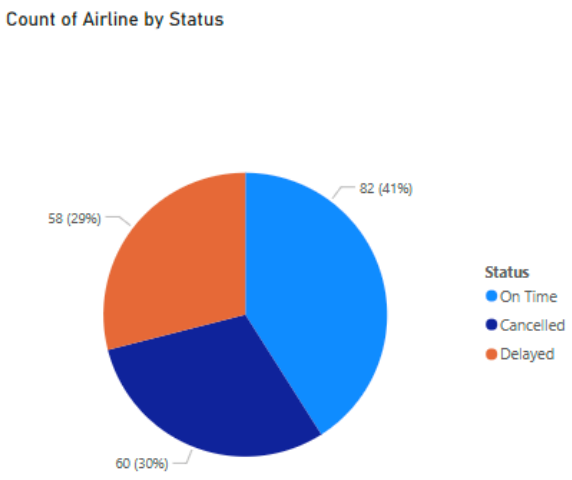
FlightID	FlightNumber	Airline	Destination	Status	Flight_No.	Rating
1001	FL1102	Airline D	Houston	On Time	1102	Best
1002	FL1435	Airline B	Chicago	On Time	1435	Best
1006	FL1071	Airline A	Phoenix	On Time	1071	Best
1011	FL1466	Airline A	Phoenix	On Time	1466	Best
1013	FL1330	Airline C	Houston	On Time	1330	Best
1020	FL1130	Airline A	New York	On Time	1130	Best
1023	FL1769	Airline A	Chicago	On Time	1769	Best
1025	FL1491	Airline D	Phoenix	On Time	1491	Best
1027	FL1805	Airline D	Chicago	On Time	1805	Best
1028	FL1385	Airline D	Chicago	On Time	1385	Best
1029	FL1191	Airline D	Los Angeles	On Time	1191	Best
1030	FL1955	Airline B	Phoenix	On Time	1955	Best
1031	FL1276	Airline B	New York	On Time	1276	Best
1033	FL1459	Airline D	New York	On Time	1459	Best
1034	FL1313	Airline B	Phoenix	On Time	1313	Best
1036	FL1252	Airline D	Phoenix	On Time	1252	Best
1039	FL1560	Airline B	Chicago	On Time	1560	Best
1043	FL1681	Airline C	Houston	On Time	1681	Best
1044	FL1475	Airline B	Phoenix	On Time	1475	Best

Task 5 : Visualization and Interactive Features

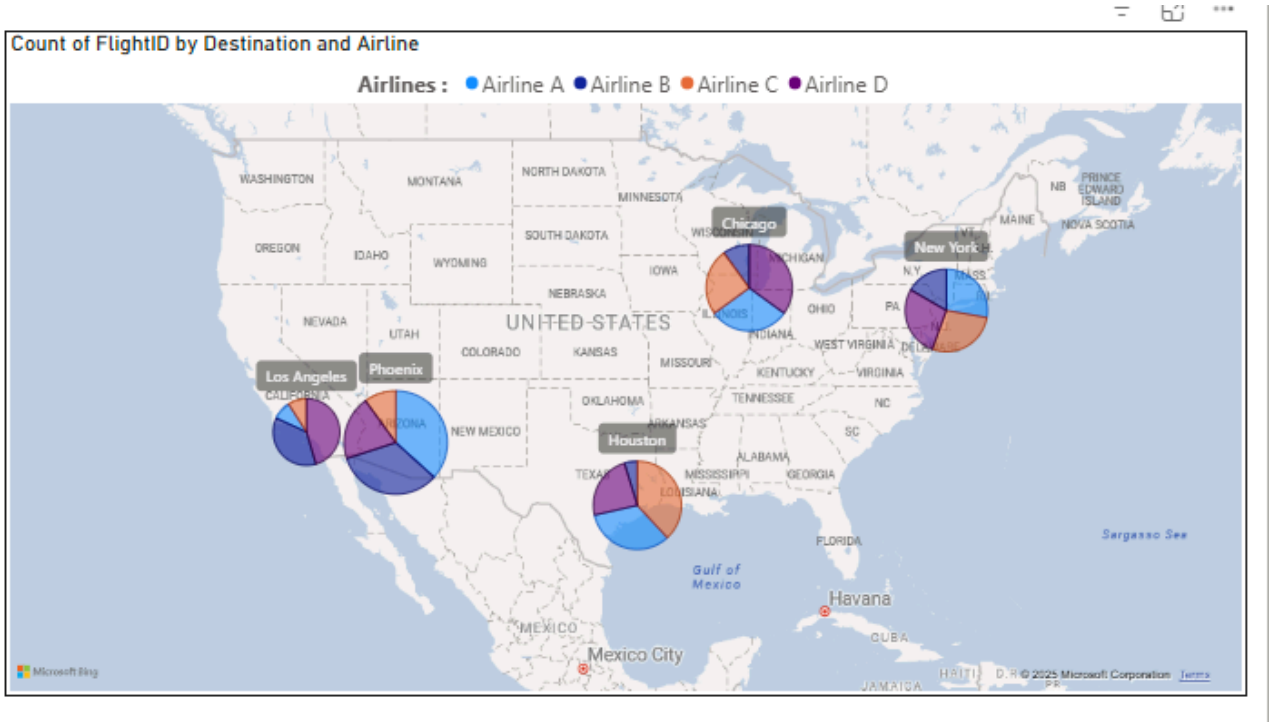
- Generated a Column Chart to display Passenger count by Airline.



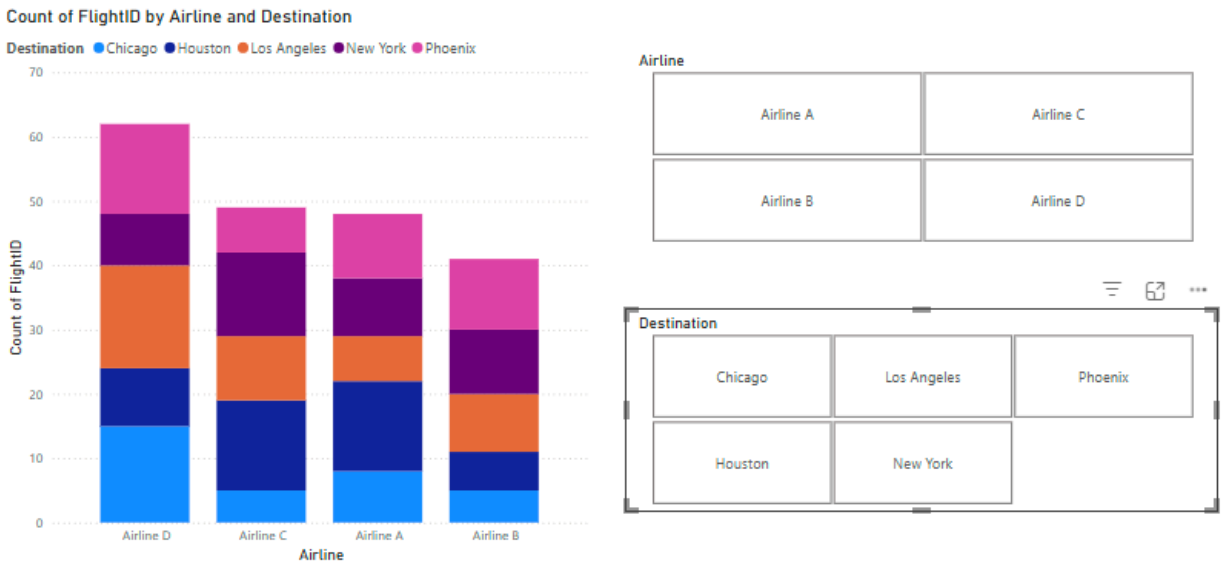
- Generated a Pie Chart to display Ticket booking statuses.



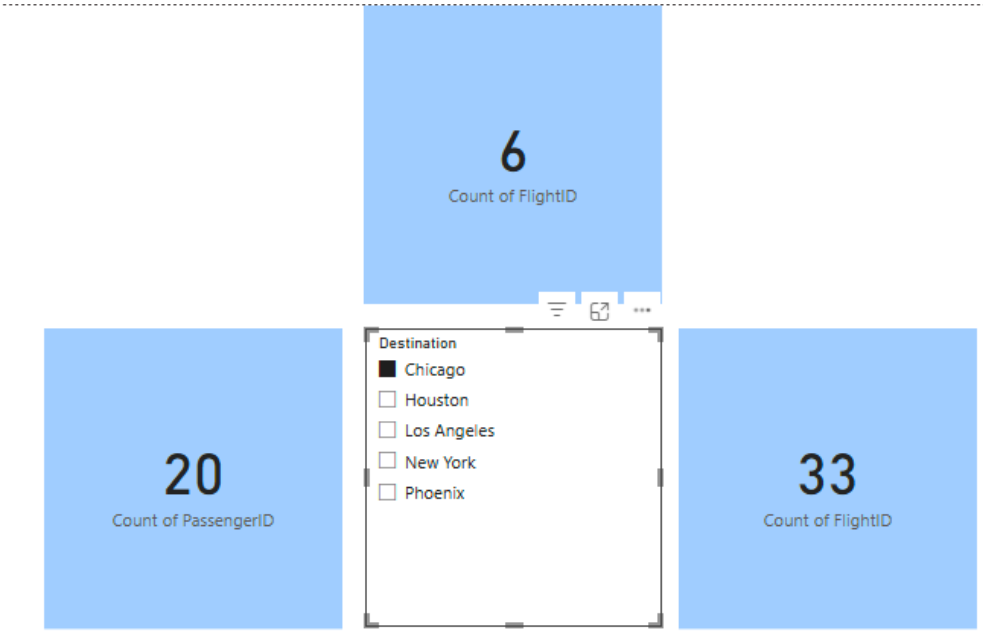
- Generated a Map to display Flights by Airline and Destination.



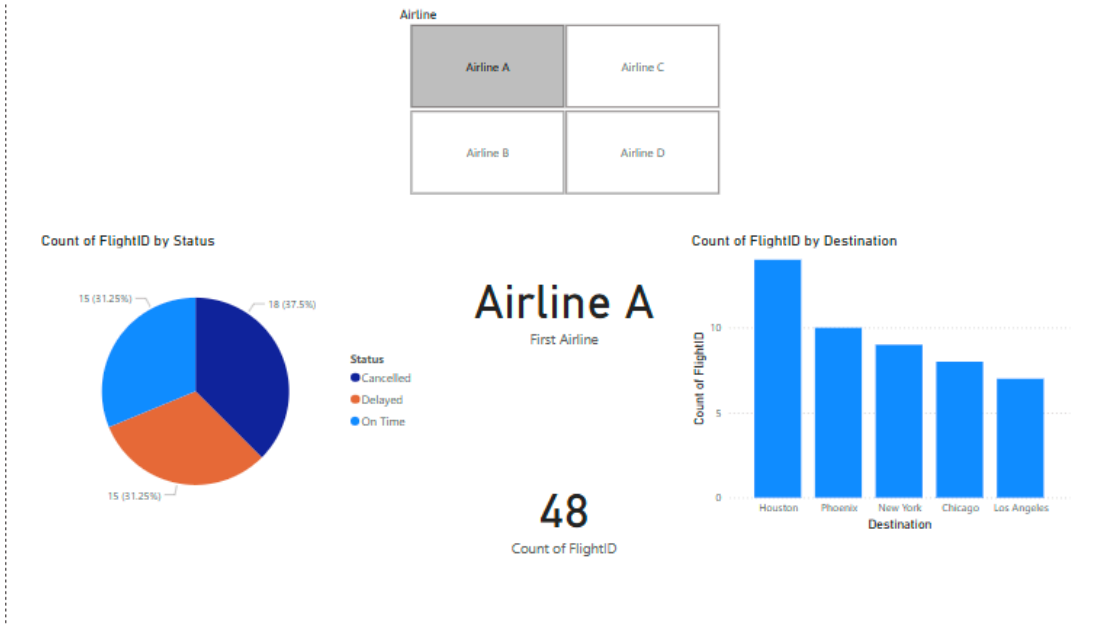
- Generated a Stacked Column Chart to display Destination and Airline and made use of 2 Intractable Slicers to Segment the data based on Destinations and Airplanes.

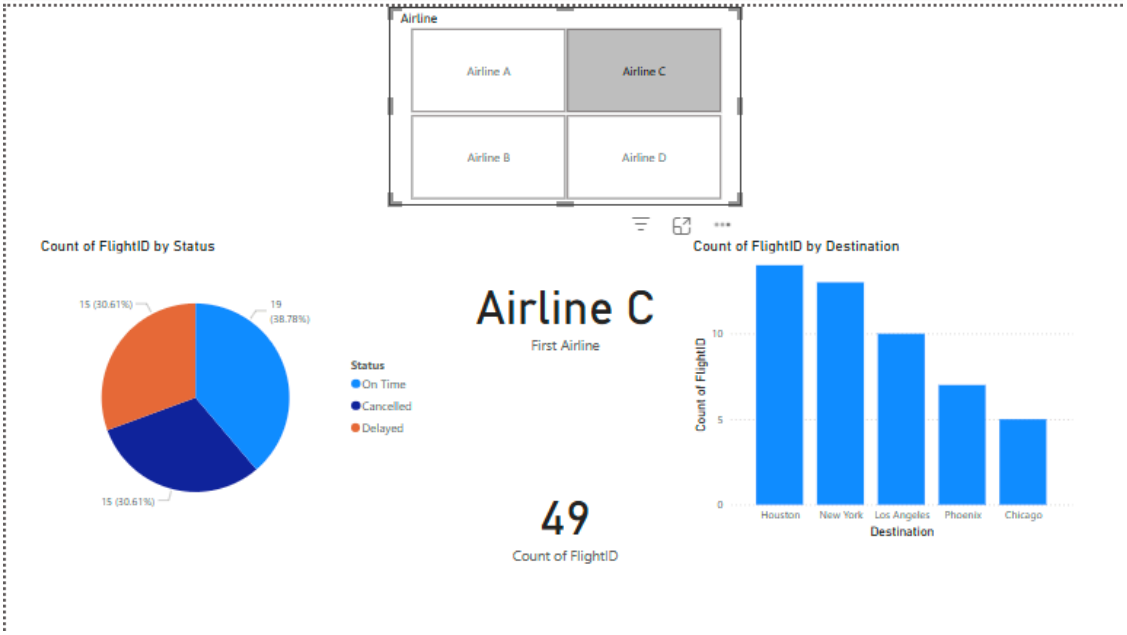


- Generated Quick View Cards to gain a quick insight into the distribution of the dataset based on Destination using a Slicer.



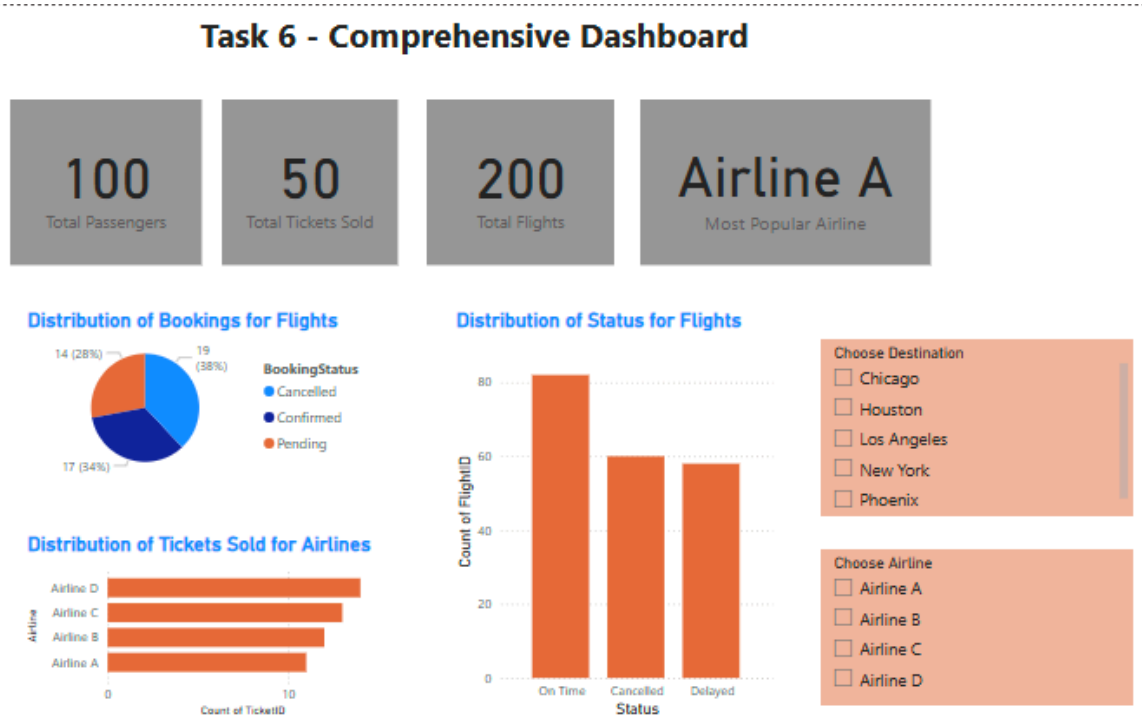
- Used various visuals like Pie Charts, Cards and Column Chart to display information about any Airlines, which can be chosen through a Tile Slicer.

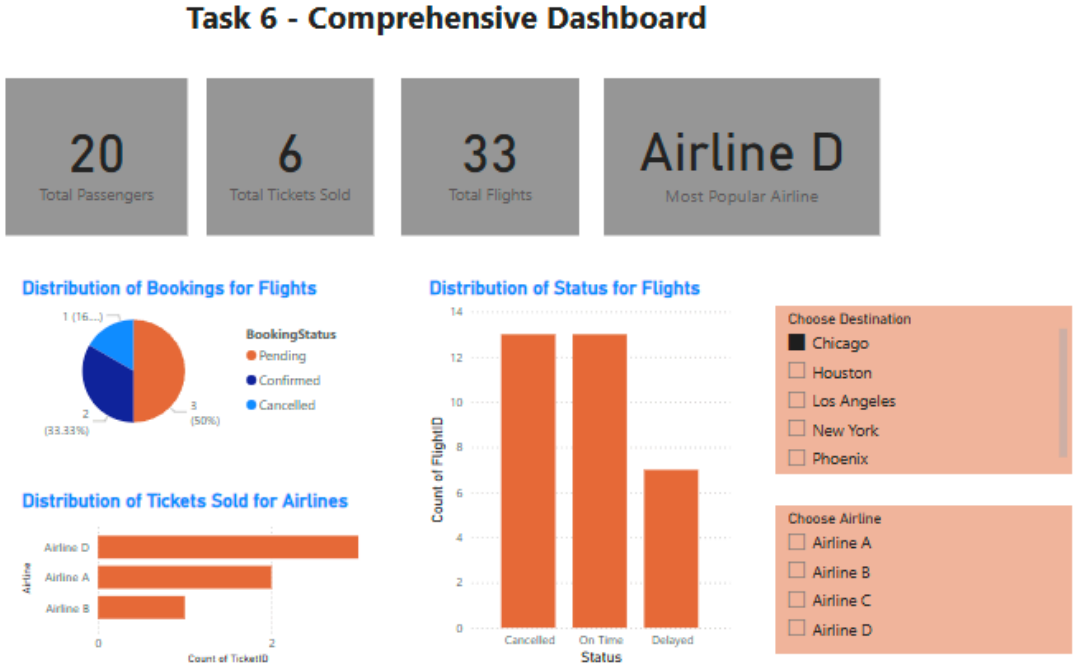




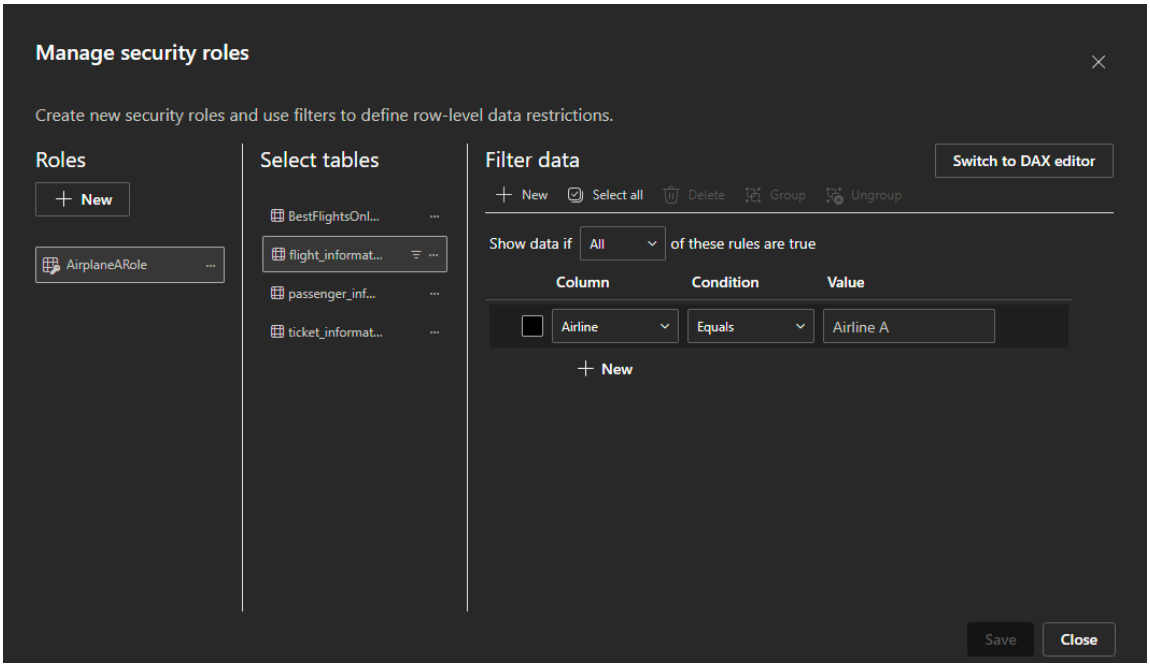
Task 6 : Final Dashboard and Power BI Service

- Designed a comprehensive dashboard using Cards, Pie Chart, Bar Chart and Column chart to display the data and made the dashboard interactive using 2 slicers for Destinations and Airlines.





- Added Row-Level Security by adding a role “AirplaneARole” which makes it so that any user with this role is unable to see the data of other Airlines accept Airline A.



- Published the Report to My Workplace using Power BI Service and Scheduled Data Refresh at 5 PM Daily.