

POWER BI PROJECT

Task - 1 : Data preparation and cleaning

- Datasets of Flight information, Passenger information and Ticket information are loaded in the power query editor.
- And after transform, cleaned the data having any duplicates, error values and empty rows.
- Formatted the columns in a proper manner like Flight ID.

The screenshot displays the Power Query Editor interface. The main area shows a table with the following data:

	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
21		1021 FL1661	Airline B	New York	Cancelled

The right-hand pane shows the 'Query Settings' for 'Flight_Information - flight_information'. The 'APPLIED STEPS' list includes: Source, Promoted Headers, Removed Blank Rows, Removed Duplicates, Removed Errors, and Changed Type.

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Properties Advanced Editor Choose Remove Columns Keep Remove Rows Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning

Queries [3]

Flight_Information... Passenger_Information... Ticket_Information...

fx = Table.Distinct(#"Removed Errors", {"PassengerID"})

	123 PassengerID	123 FlightID	123 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
21	21	1065	19E

3 COLUMNS, 100 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 16:42

ENG INTL 16:44 26-01-2025

Query Settings

PROPERTIES

Name

Passenger_Information - passenger_infor

APPLIED STEPS

Source

Promoted Headers

Changed Type

Removed Blank Rows

Removed Errors

Removed Duplicates

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Properties Advanced Editor Choose Remove Columns Keep Remove Rows Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning

Queries [3]

Flight_Information... Passenger_Information... Ticket_Information...

fx = Table.Distinct(#"Removed Errors", {"TicketID"})

	123 TicketID	123 FlightID	123 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
21	5021	1030	Confirmed

3 COLUMNS, 50 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 16:44

ENG INTL 16:46 26-01-2025

Query Settings

PROPERTIES

Name

Ticket_Information - ticket_information

APPLIED STEPS

Source

Promoted Headers

Changed Type

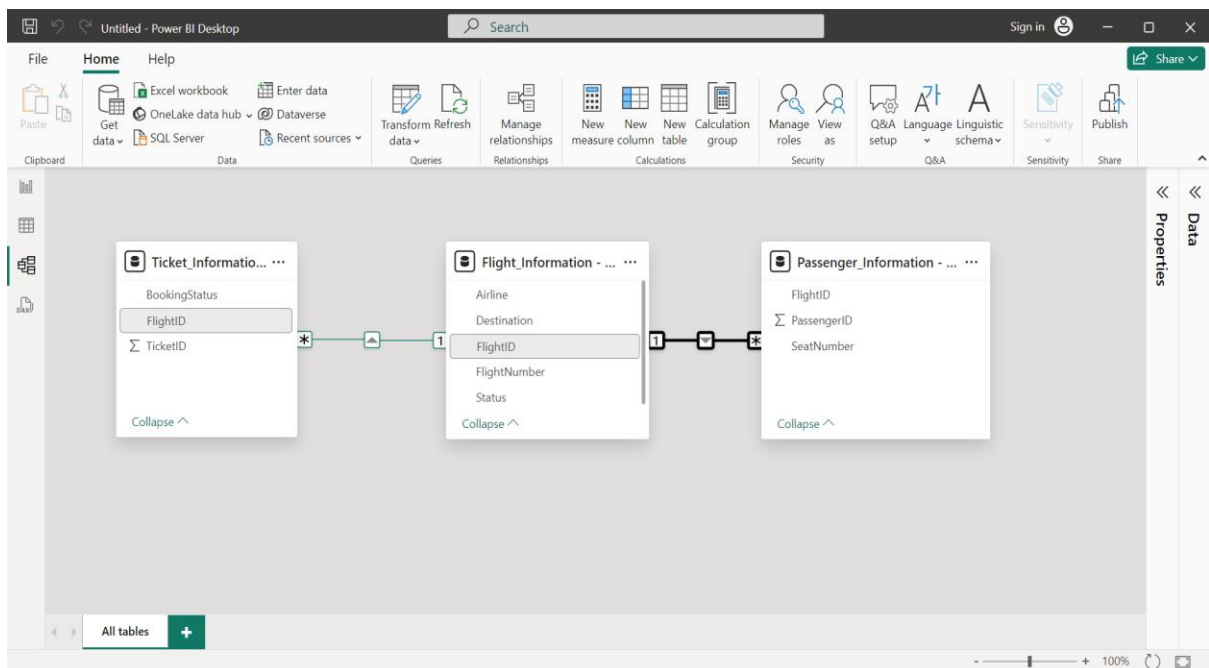
Removed Blank Rows

Removed Errors

Removed Duplicates

Task - 2 : Data Modeling

- After cleaning the data in power query editor. Close and apply it into Power BI desktop.
- Go to model view and create a relationship between them, using FlightID as the key.
- It is a one-to-many relationship model and verified the integrity of data flow in the model.



Task - 3 : Enhanced data insights

- Transform the flight information dataset into power query editor.
- Go to “Add column” section and add a column with conditional formatting as, ‘Good’ if flight is ‘On Time’ Else ‘To Be Improved’ if flight is ‘cancelled or delayed’.
- Now extract the flight number from ‘FlightNumber’ column in the dataset using the ‘Custom from Examples’ column.
- Enter the number from flight number from FlightNumber column and hit enter then it applies to all the rows in the column.

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Column From Custom Invoke Custom Examples Column Function Duplicate Column General

Conditional Column Index Column Merge Columns Extract Parse Format From Text

Statistics Standard Scientific Trigonometry Rounding Information From Number

Date Time Duration From Date & Time

Text Analytics Vision Azure Machine Learning AI Insights

Queries [4]

Flight_Information... Passenger_Informa... Ticket_Information... (Task - 3)Flight_Inf...

	APC FlightNumber	APC Airline	APC Destination	APC Status	APC Flight Review	APC Flight Number
1	FL1102	Airline D	Houston	On Time	Best	1102
2	FL1435	Airline B	Chicago	On Time	Best	1435
3	FL1860	Airline A	New York	Cancelled	To Be Improved	1860
4	FL1270	Airline C	Chicago	Delayed	To Be Improved	1270
5	FL1106	Airline C	New York	Delayed	To Be Improved	1106
6	FL1071	Airline A	Phoenix	On Time	Best	1071
7	FL1700	Airline C	Los Angeles	Cancelled	To Be Improved	1700
8	FL1020	Airline C	Los Angeles	Delayed	To Be Improved	1020
9	FL1614	Airline A	Los Angeles	Cancelled	To Be Improved	1614
10	FL1121	Airline D	Chicago	Cancelled	To Be Improved	1121
11	FL1466	Airline A	Phoenix	On Time	Best	1466
12	FL1214	Airline D	New York	Delayed	To Be Improved	1214
13	FL1330	Airline C	Houston	On Time	Best	1330
14	FL1458	Airline C	New York	Delayed	To Be Improved	1458
15	FL1087	Airline C	Houston	Delayed	To Be Improved	1087
16	FL1372	Airline B	New York	Delayed	To Be Improved	1372
17	FL1099	Airline D	Phoenix	Delayed	To Be Improved	1099
18	FL1871	Airline B	Houston	Delayed	To Be Improved	1871
19	FL1663	Airline B	Chicago	Cancelled	To Be Improved	1663
20	FL1130	Airline A	New York	On Time	Best	1130
21						

7 COLUMNS, 200 ROWS Column profiling based on top 1000 rows

Query Settings

PROPERTIES Name (Task - 3)Flight_Inf6 All Properties

APPLIED STEPS Source Promot... Change... Added ... Inserted... Rename...

PREVIEW DOWNLOADED AT 17:58

Task - 4 : Calculations using DAX

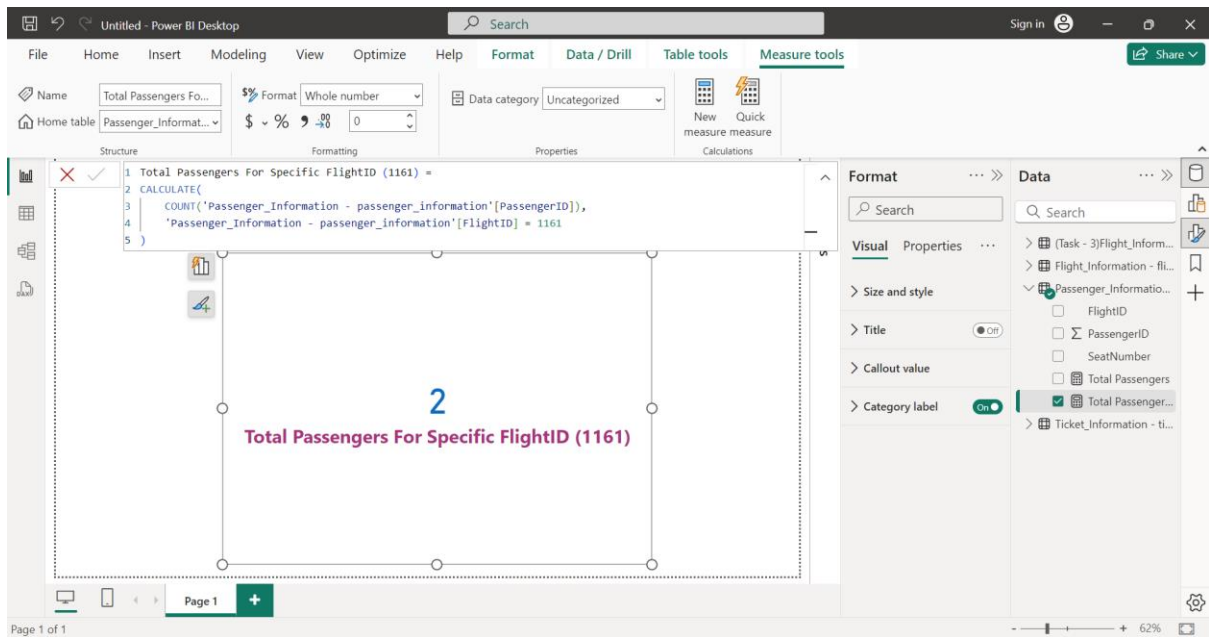
4(A)-Total passengers for a specific flight

- Create a DAX measure for Total number of passengers for a specific flight.
- I have taken FlightID 1161 as an example.
- Formula,

Total Passengers For Specific FlightID (1161) =

CALCULATE(COUNT('Passenger_Informationpassenger_information'[PassengerID]),
'Passenger_Information - passenger_information'[FlightID] = 1161
)

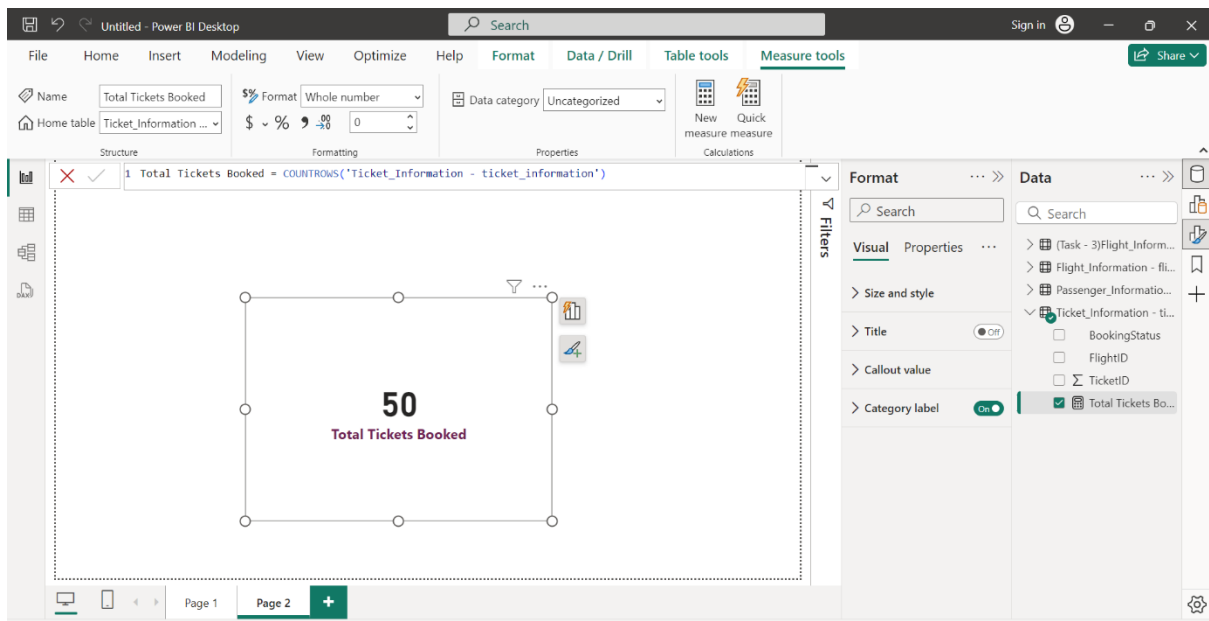
- After creating the measure select a row card to represent the total no of passengers for specific flight.
- It shows the values for DAX formula.



4(B)-Total tickets booked

- To calculate the total tickets booked in the flight information we can create the measure.
- Formula,

$$\text{Total Tickets Booked} = \text{COUNTROWS}(\text{Ticket_Information - ticket_information})$$
- It creates the measure and gives total tickets booked.



4(C)-Filtered table showing 'Best' flights only

- Open the table visual and add all data to columns section.
- Open the filter section and apply 'Best' to it.
- Then it shows all the data that is filtered in it.

The screenshot displays the Microsoft Power BI Desktop interface. The main area shows a table visual with the following columns: Flight Review, FlightID, Airline, FlightNumber, Status, and Destination. The table contains 30 rows of data, all of which are filtered to show only flights with a 'Best' status. The 'Flight Review' column is filtered to 'Best', and the 'Status' column is filtered to 'Best'. The 'FlightID' column is filtered to 'is (All)'. The 'Airline' column is filtered to 'Airline', and the 'FlightNumber' column is filtered to 'FlightNumber'. The 'Status' column is filtered to 'Status'. The 'Destination' column is filtered to 'Destination'. The table is displayed on Page 3 of 3. The status bar at the bottom indicates 62% zoom.

Flight Review	FlightID	Airline	FlightNumber	Status	Destination
Best	1001	Airline D	FL1102	On Time	Houston
Best	1002	Airline B	FL1435	On Time	Chicago
Best	1006	Airline A	FL1071	On Time	Phoenix
Best	1011	Airline A	FL1466	On Time	Phoenix
Best	1013	Airline C	FL1330	On Time	Houston
Best	1020	Airline A	FL1130	On Time	New York
Best	1023	Airline A	FL1769	On Time	Chicago
Best	1025	Airline D	FL1491	On Time	Phoenix
Best	1027	Airline D	FL1805	On Time	Chicago
Best	1028	Airline D	FL1385	On Time	Chicago
Best	1029	Airline D	FL1191	On Time	Los Angeles
Best	1030	Airline B	FL1955	On Time	Phoenix
Best	1031	Airline B	FL1276	On Time	New York
Best	1032	Airline D	FL1459	On Time	New York
Best	1034	Airline B	FL1313	On Time	Phoenix
Best	1036	Airline D	FL1252	On Time	Phoenix
Best	1039	Airline B	FL1960	On Time	Chicago
Best	1043	Airline C	FL1681	On Time	Houston
Best	1044	Airline B	FL1475	On Time	Phoenix
Best	1046	Airline D	FL1975	On Time	Chicago
Best	1048	Airline A	FL1189	On Time	New York
Best	1050	Airline C	FL1686	On Time	Phoenix
Best	1052	Airline D	FL1562	On Time	Phoenix
Best	1053	Airline C	FL1875	On Time	Chicago
Best	1055	Airline B	FL1243	On Time	New York
Best	1057	Airline A	FL1504	On Time	Phoenix
Best	1060	Airline D	FL1818	On Time	Chicago
Best	1061	Airline D	FL1646	On Time	Los Angeles
Best	1062	Airline C	FL1020	On Time	New York
Best	1064	Airline B	FL1166	On Time	Los Angeles
Best	1071	Airline B	FL1776	On Time	Los Angeles
Best	1072	Airline A	FL1345	On Time	New York

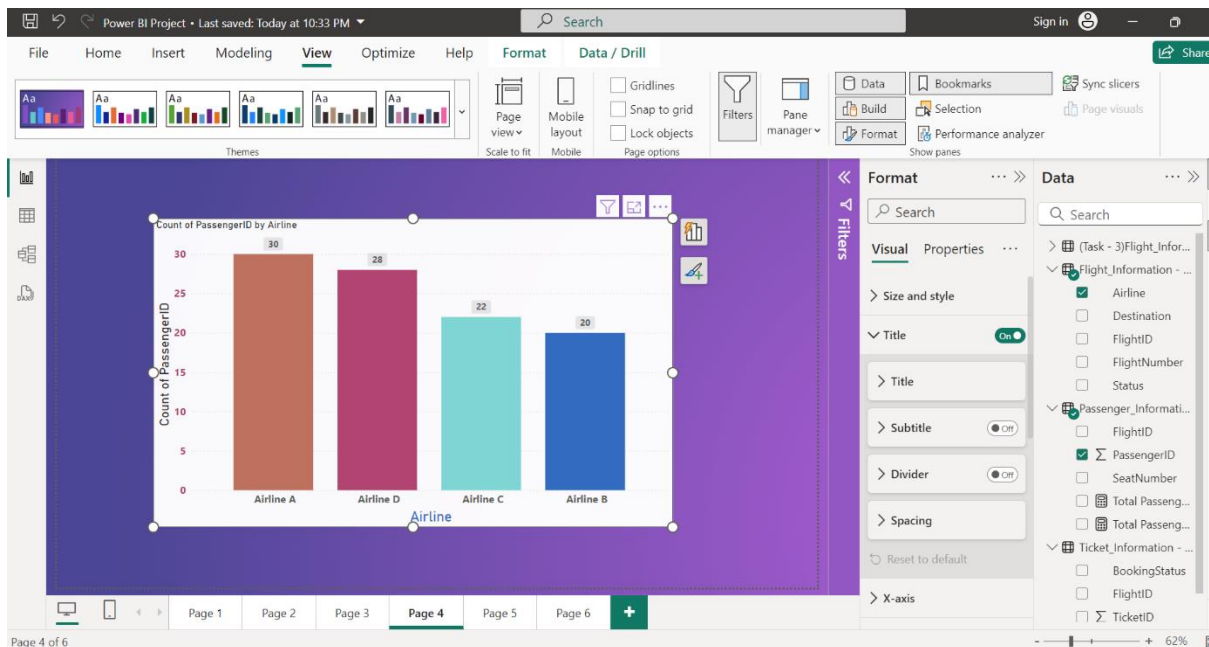
The screenshot displays the Microsoft Power BI Desktop interface. The main area shows a table visual with the following columns: Flight Review, FlightID, Airline, FlightNumber, Status, and Destination. The table contains 30 rows of data, all of which are filtered to show only flights with a 'Best' status. The 'Flight Review' column is filtered to 'Best', and the 'Status' column is filtered to 'Best'. The 'FlightID' column is filtered to 'is (All)'. The 'Airline' column is filtered to 'Airline', and the 'FlightNumber' column is filtered to 'FlightNumber'. The 'Status' column is filtered to 'Status'. The 'Destination' column is filtered to 'Destination'. The table is displayed on Page 3 of 3. The status bar at the bottom indicates 62% zoom.

Flight Review	FlightID	Airline	FlightNumber	Status	Destination
Best	1120	Airline C	FL1878	On Time	Houston
Best	1123	Airline D	FL1921	On Time	New York
Best	1124	Airline A	FL1216	On Time	Chicago
Best	1128	Airline B	FL1492	On Time	Phoenix
Best	1138	Airline C	FL1128	On Time	Los Angeles
Best	1139	Airline C	FL1647	On Time	New York
Best	1143	Airline C	FL1498	On Time	Phoenix
Best	1145	Airline A	FL1391	On Time	Phoenix
Best	1147	Airline D	FL1418	On Time	Houston
Best	1149	Airline C	FL1378	On Time	Chicago
Best	1151	Airline D	FL1489	On Time	New York
Best	1153	Airline C	FL1040	On Time	Houston
Best	1154	Airline D	FL1027	On Time	Phoenix
Best	1155	Airline A	FL1134	On Time	New York
Best	1157	Airline B	FL1839	On Time	Phoenix
Best	1160	Airline B	FL1032	On Time	Los Angeles
Best	1161	Airline B	FL1047	On Time	Phoenix
Best	1162	Airline C	FL1502	On Time	Houston
Best	1164	Airline D	FL1573	On Time	Phoenix
Best	1166	Airline B	FL1804	On Time	Los Angeles
Best	1168	Airline A	FL1683	On Time	Houston
Best	1171	Airline A	FL1986	On Time	Los Angeles
Best	1174	Airline D	FL1738	On Time	Los Angeles
Best	1175	Airline B	FL1612	On Time	New York
Best	1179	Airline D	FL1768	On Time	Los Angeles
Best	1180	Airline C	FL1004	On Time	New York
Best	1185	Airline C	FL1870	On Time	Los Angeles
Best	1189	Airline D	FL1014	On Time	New York
Best	1194	Airline D	FL1690	On Time	Houston
Best	1195	Airline D	FL1574	On Time	Chicago
Best	1199	Airline D	FL1563	On Time	Chicago
Best	1200	Airline B	FL1095	On Time	Houston

Task - 5 : Visualization and Interactive Features

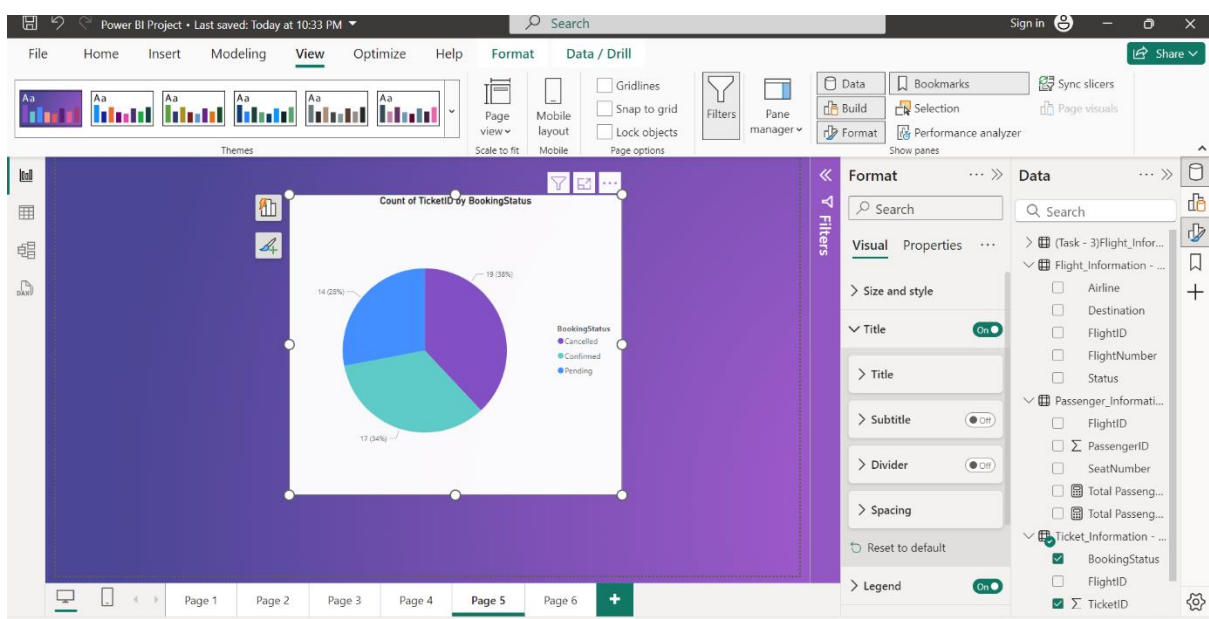
5(A)-Passenger count by airline

- Select the column chart visual and apply Passenger ID and Airline to get the visuals of Passenger count by airline.



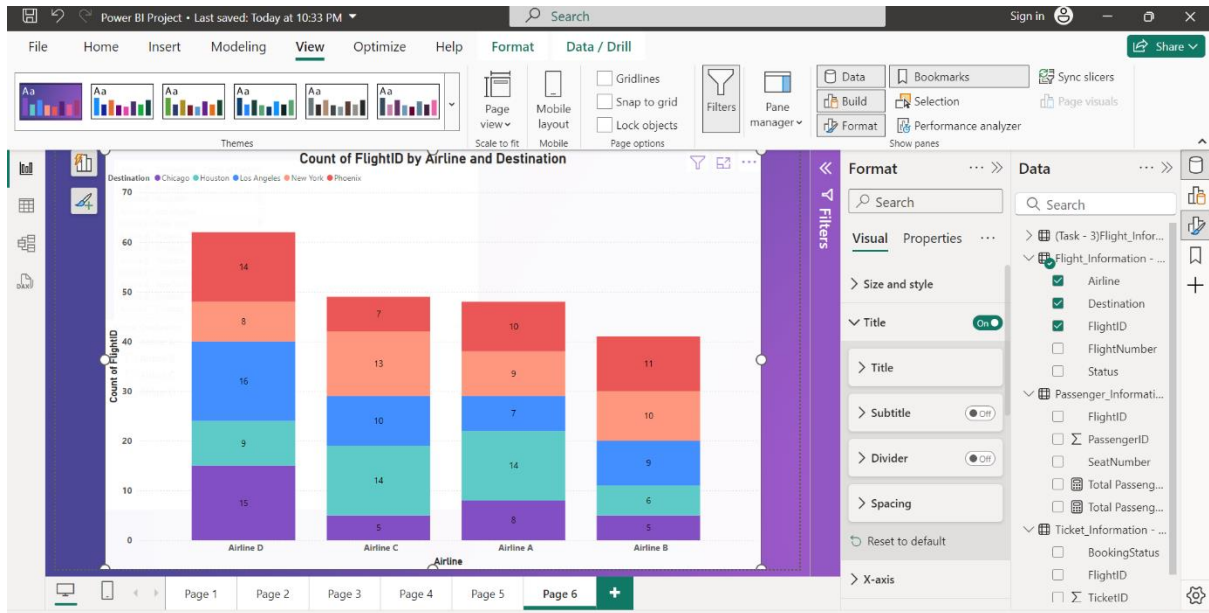
5(B)-Ticket booking status

- To get booking status of ticket information add booking status and ticket ID in the pie chart visuals.



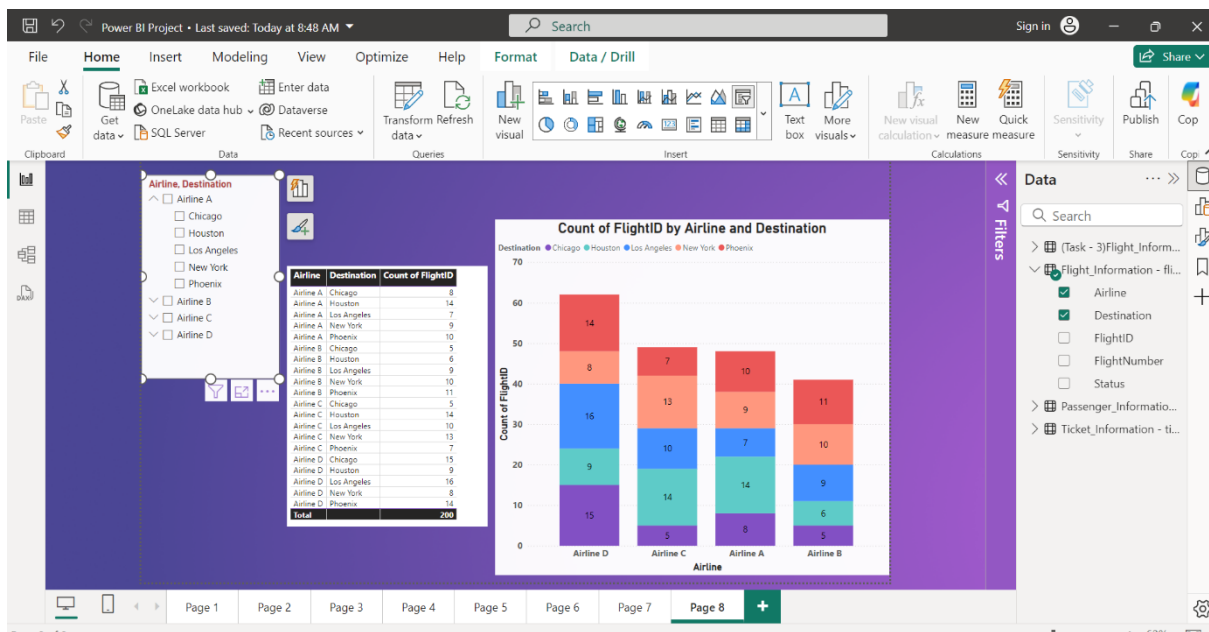
5(C)-Flights by airline and destination

- Add Airline, Destination and Flight ID to clustered column chart to get visuals of Flights by Airline and Destination.



5(D)-Interactive Features for Destination and Airline

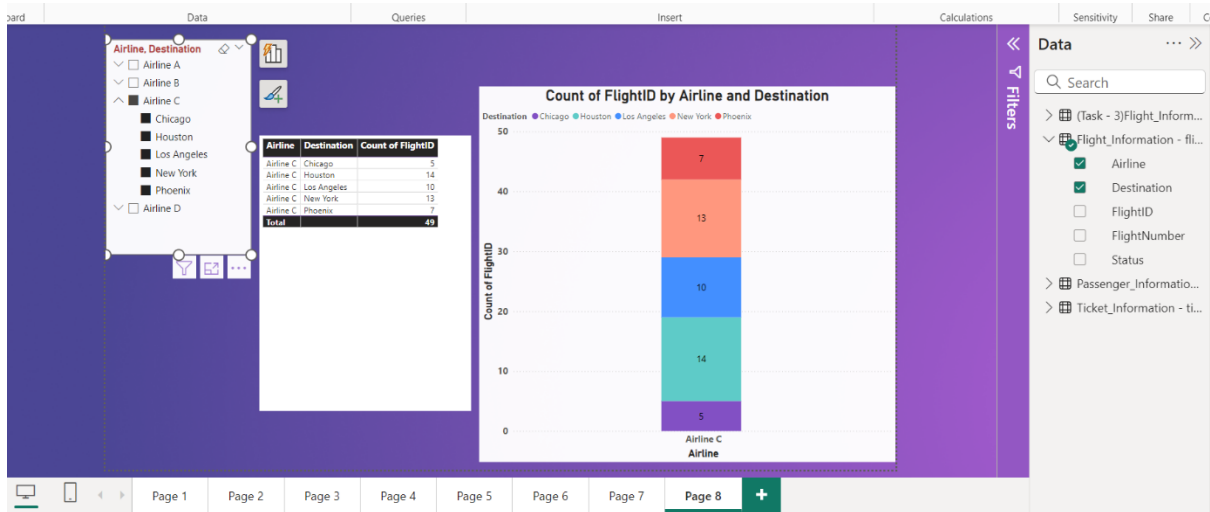
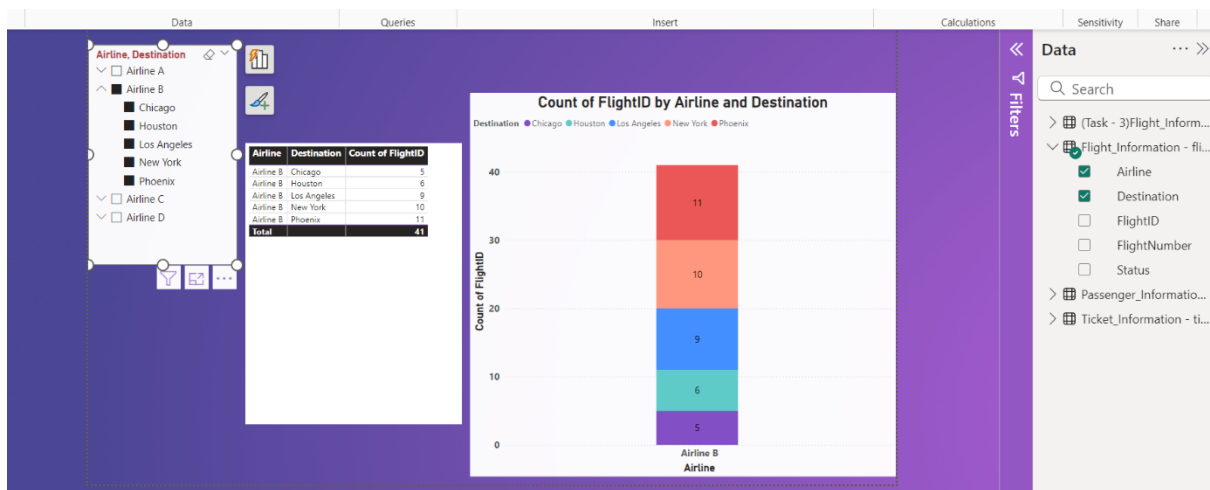
- Applying slicers for the report page gives the slicer pane and filters to get selected data and its visuals in the dashboard.

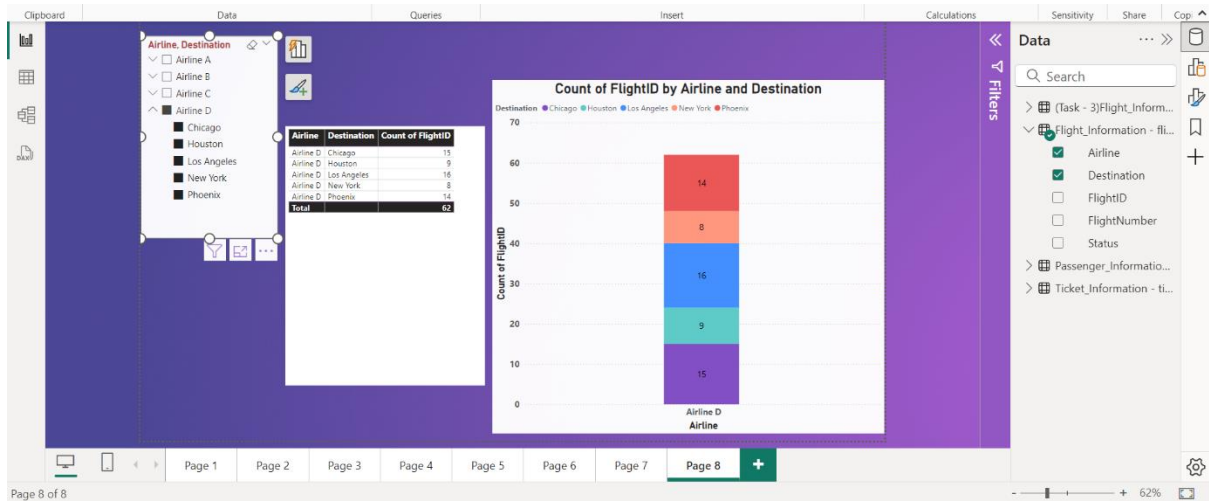


- Count of FlightID by Airline and Destination**

Destination: Chicago Houston Los Angeles New York Phoenix

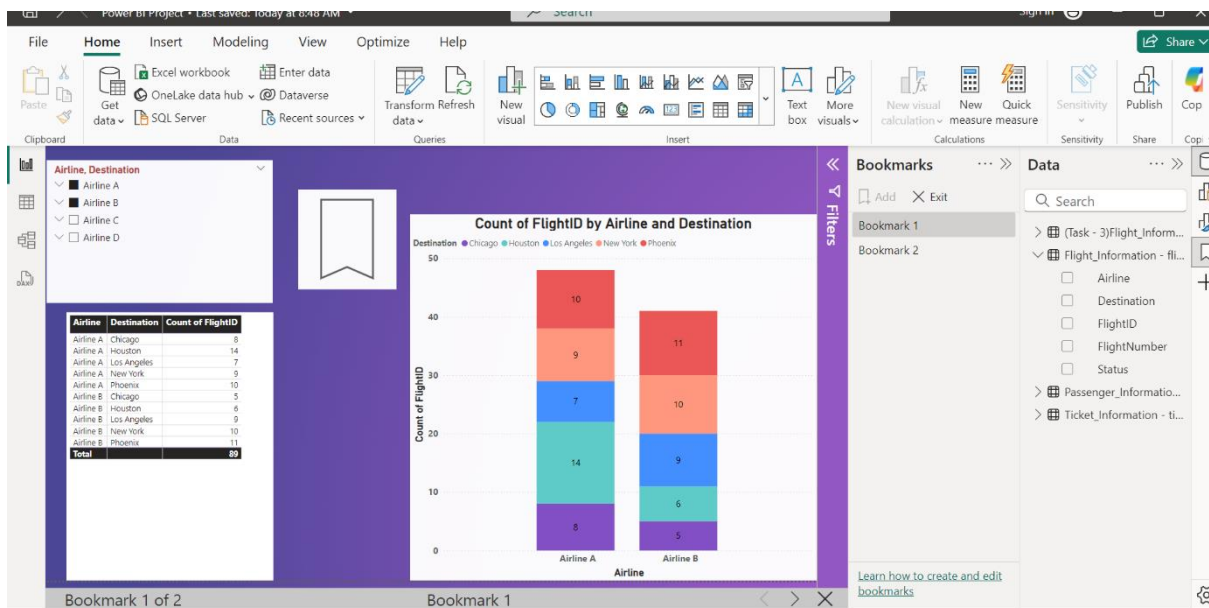
Airline	Destination	Count of FlightID
Airline A	Chicago	10
Airline A	Houston	9
Airline A	Los Angeles	7
Airline A	New York	14
Airline A	Phoenix	8
Total		48

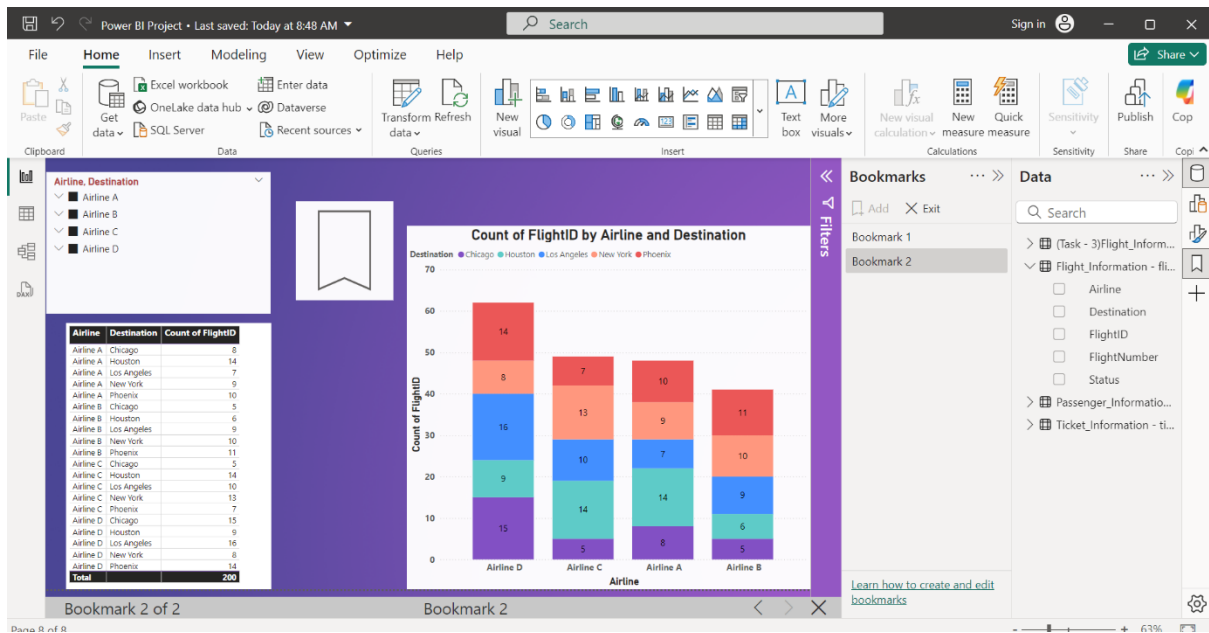




5(E)-Quick Views

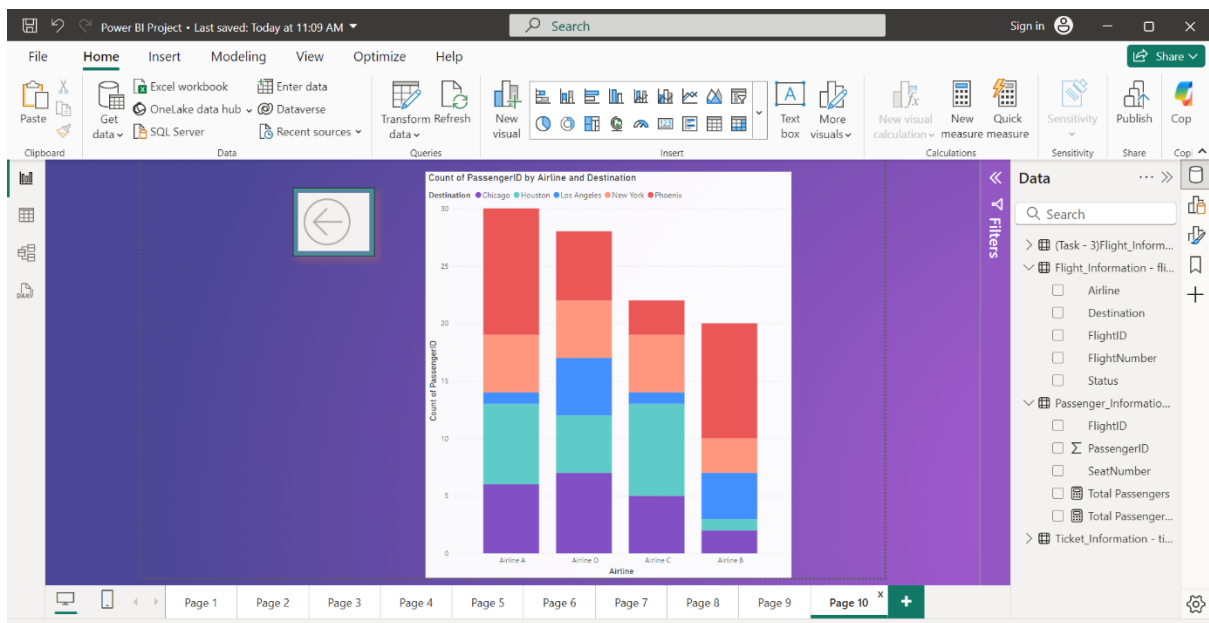
- Quick views can be either bookmarks or buttons that can be used to get back to the previous page by single click.
- By clicking on this bookmark symbol can be used to filter data and get back to it wherever we need.





5(F)-Airline specific pages

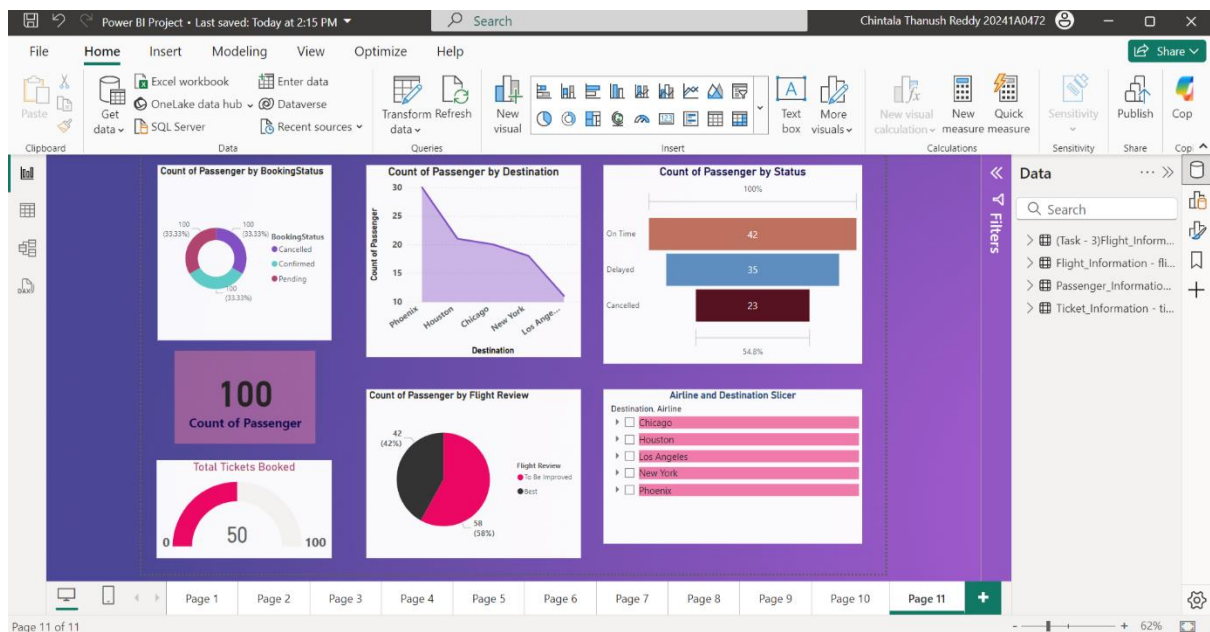
- Select a table visual in the visualization pane and add data regarding fields that exist in any previous report page.
- In the new page add another visual to drill through.
- Add data that exist in two report pages and apply drill through option to make a connection.
- When you click the drill through option it will filter to another report page view.



Task - 6 : Final Dashboard and Power BI Service

6(A)-Comprehensive dashboard

- Creating different dashboards with different datasets using visuals.
- These dashboards are used to understand the business requirements and problem statements.



6(B)-Row Level Security

- To assign a Row-level security, initially go to Modeling tab and click on Manage roles
- On the roles section name it as "Airline A". On the filters section add airline column with equals to value Airline A.
 "Add > Airline Column > Equals > Airline A".
- Save the data and go to 'view as' ribbon in modeling tab. Select the Airline A section and apply. Now we can check all the report pages whether the Airline A visuals are present or not.
- In file section 'publish' it to workspace.
- Upon publication go to Power BI Service and select workspace.
- In the workspace panel open, latest created report page and click on options. It popup few options along with security.
- In that we get Row-level Security and assign it to those who have Power BI Service account and share with them.
- It shares only the Airline A data.

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

(Task - 3)Flight...
Flight_Informa...
Passenger_Info...
Ticket_Informa...

Filter data

Switch to DAX editor

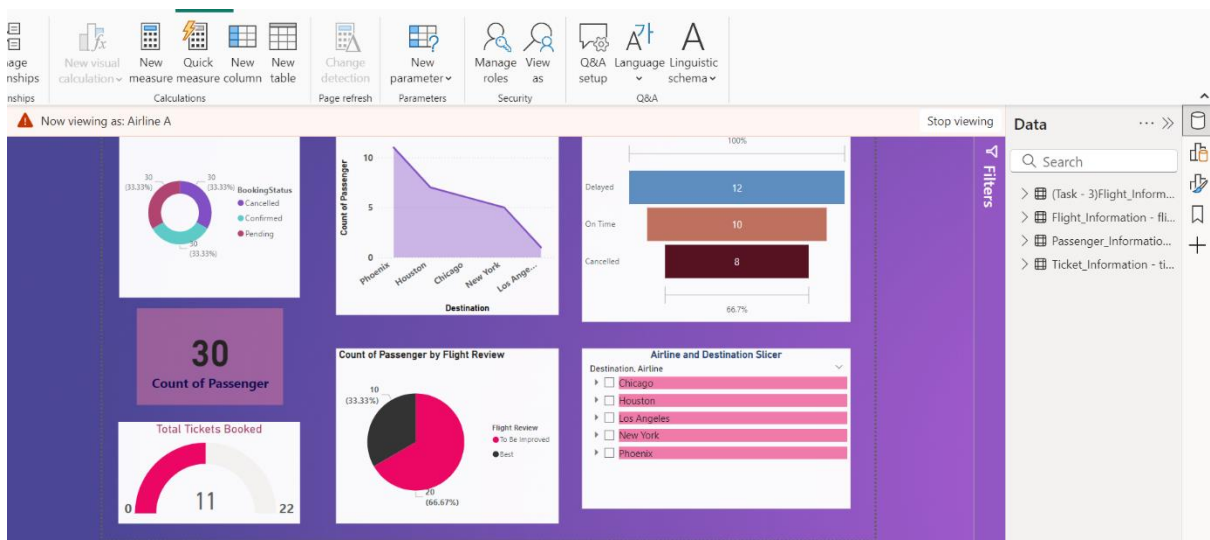
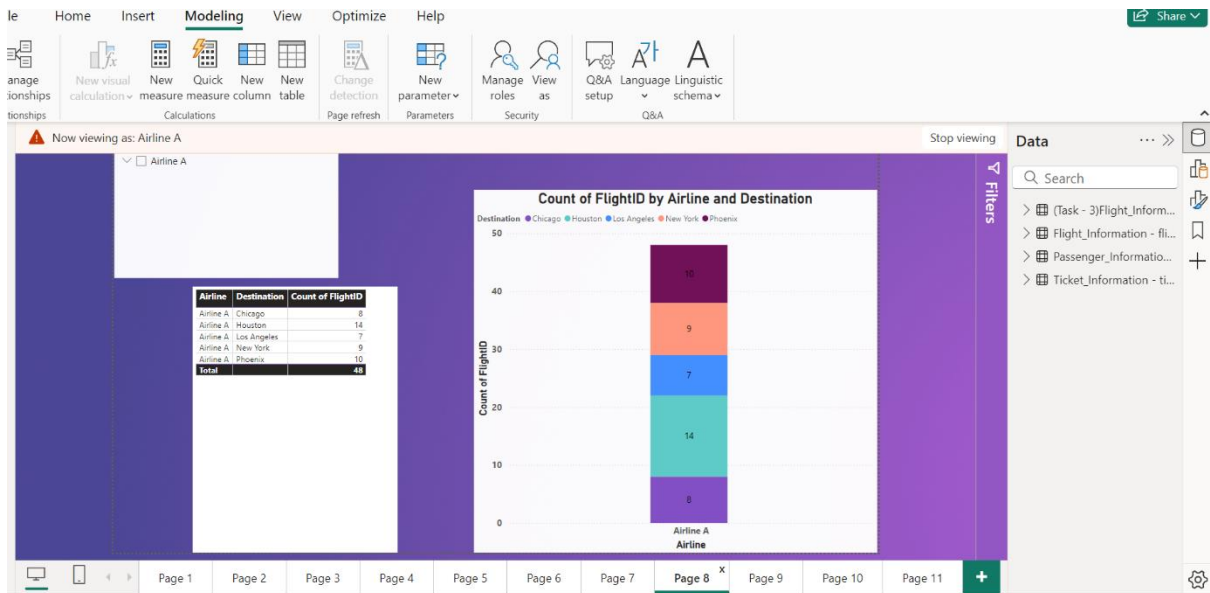
+ New Select all Delete Group Ungroup

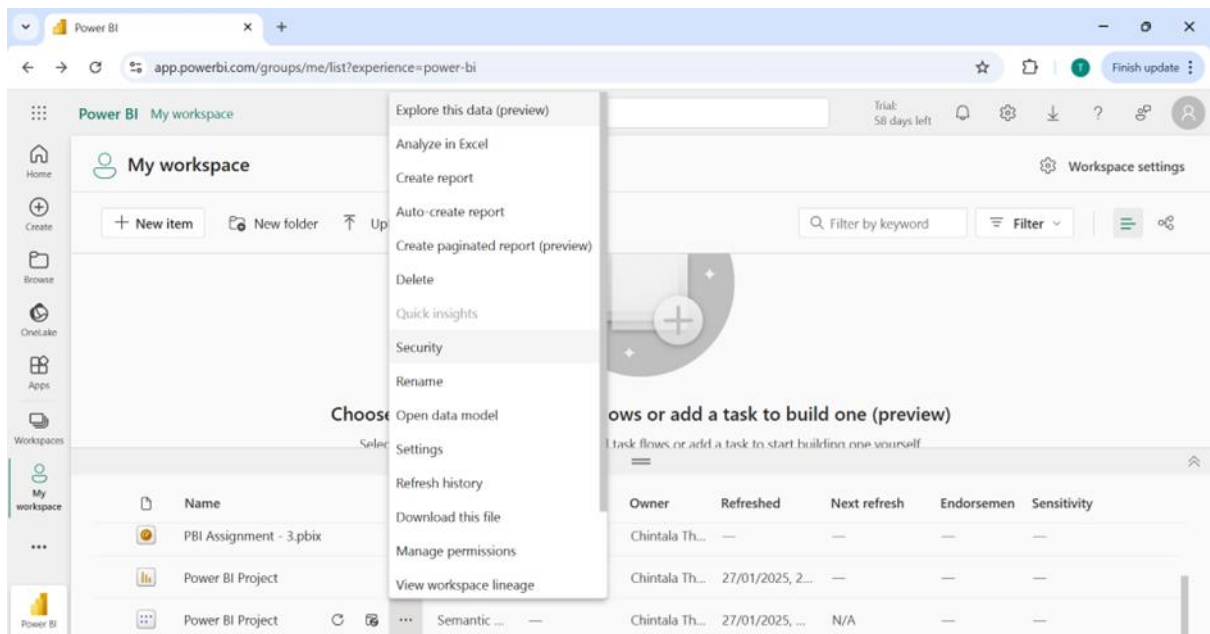
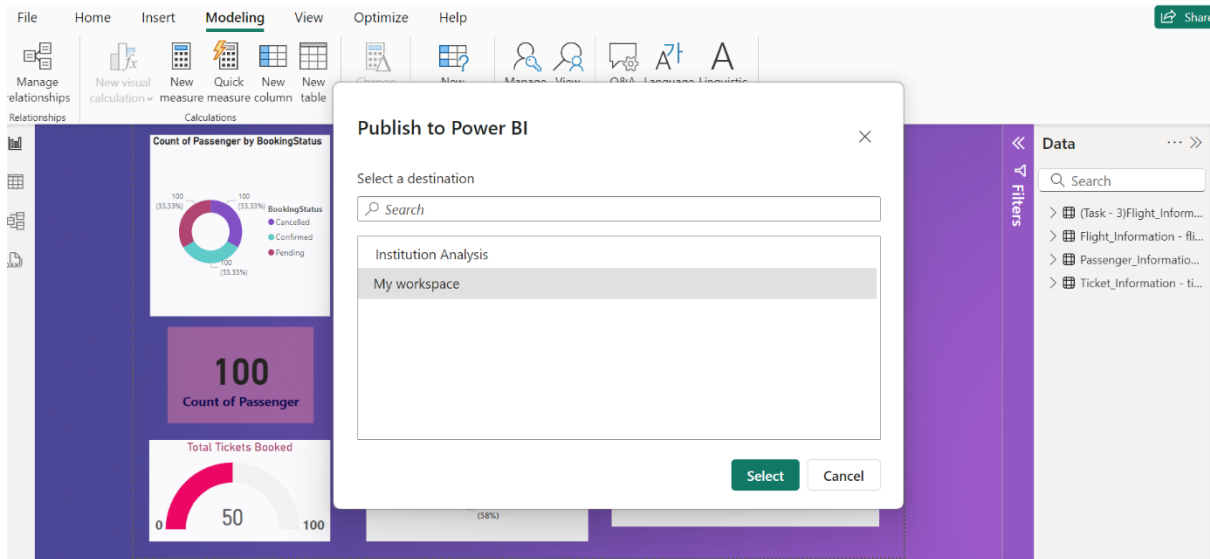
Show data if All of these rules are true

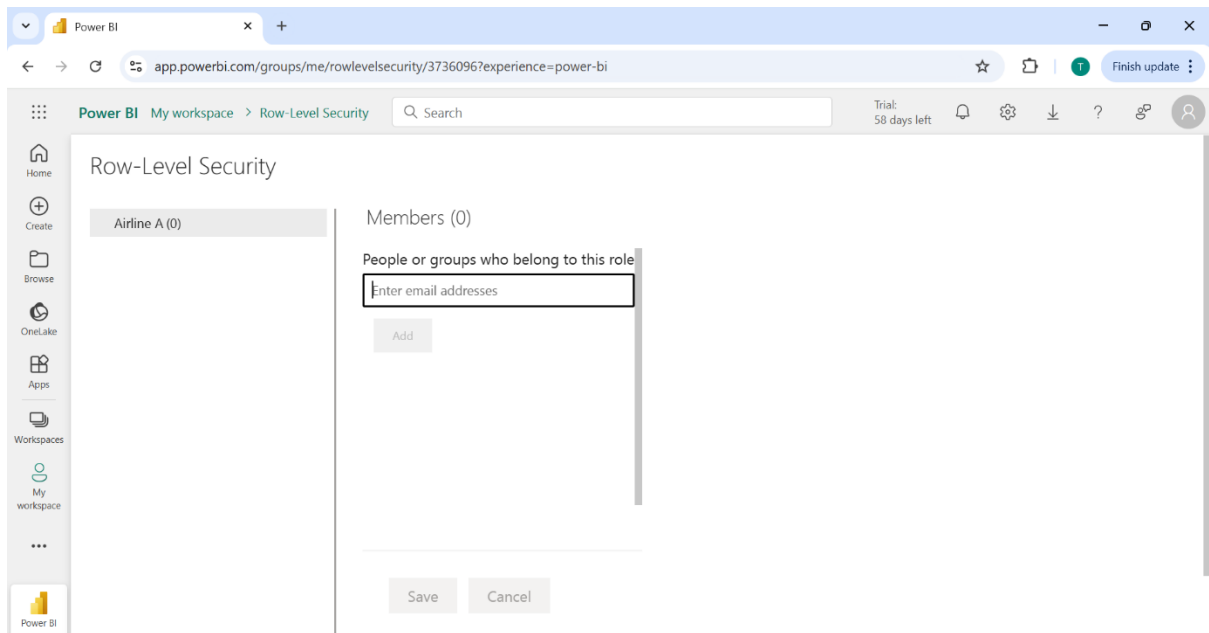
Column	Condition	Value
Airline	Equals	Airline A

+ New

Save Close







6(C)-Set up schedule refresh at 5 PM daily

- After creating the all-security levels and data gateway installation and sign in, now can schedule a refresh option.
- In the settings, go to Power BI settings and select semantic models.
- Now go to refresh option and select “Indian IST+5:30”. Select daily refresh option schedule time at 5:00 PM.

