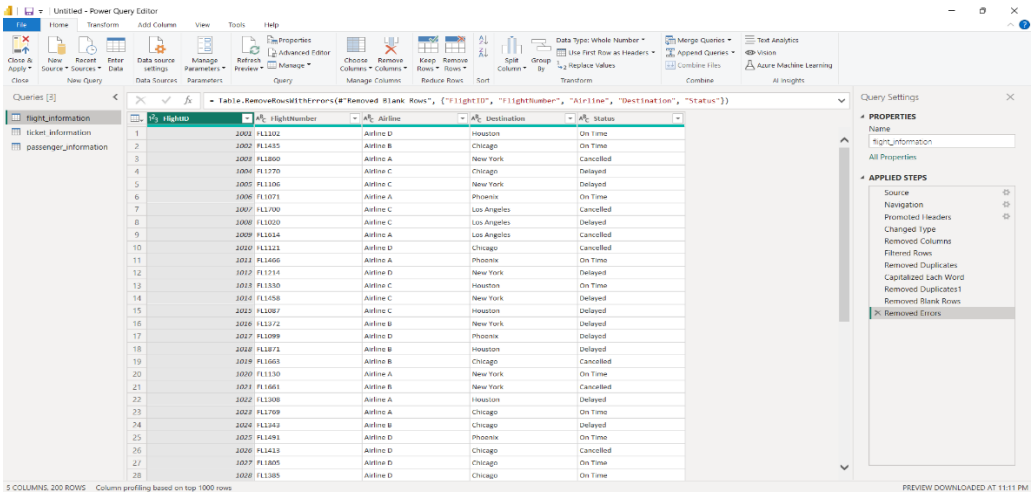
Course 3: Data Visualization with Power Bi

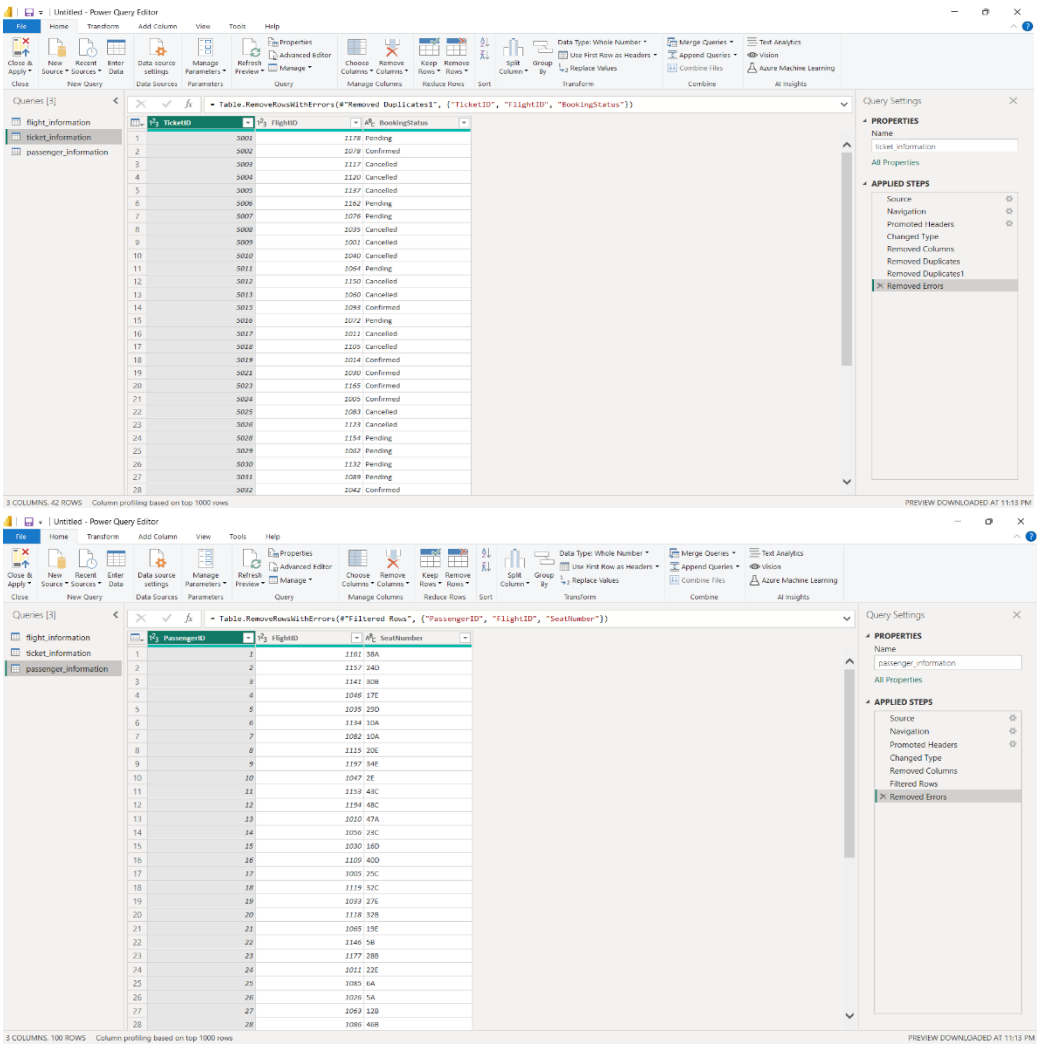
Introduction

- **Project Title:** Airline Data Management and Analysis Using Power BI
- **Problem Statement:**
  - The airline industry operates with numerous complexities, requiring effective data management and insights into flight schedules, passenger details, and ticketing systems.
  - This project aims to analyze airline operations for improving efficiency and customer satisfaction.
- **Datasets Used:**
  - Flight_Information
  - Passenger_Information
  - Ticket_Information
- **Objective:**
  - To analyze and visualize airline data for operational insights, passenger management, and ticket booking trends using Power BI.

Task 1. Data Preparation and Cleaning

- **1.1 Task Description:** I extracted and transformed the data in Power Query. I cleaned the data by removing duplicates, handling missing values, and formatting columns.
- **1.2 Steps Performed:**
  1. I opened Power BI Desktop and connected to the data sources (Flight_Information, Passenger_Information, Ticket_Information).
  2. I navigated to the Power Query Editor by clicking "Transform Data."
  3. I removed duplicate rows from each table to ensure data integrity.
  4. I formatted columns to the correct data types (e.g., date/time, text, numeric).
- **1.3 Deliverables:** Screenshot of the Power Query Editor showing the cleaned data.

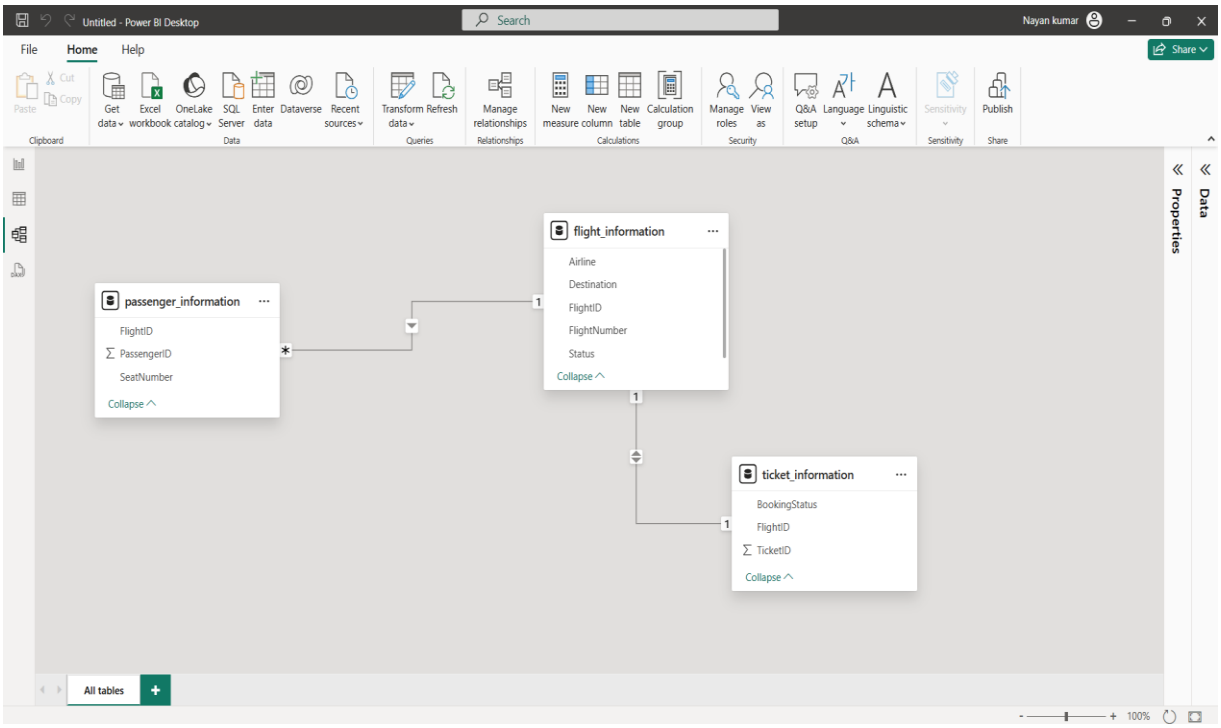




Task 2. Data Modeling

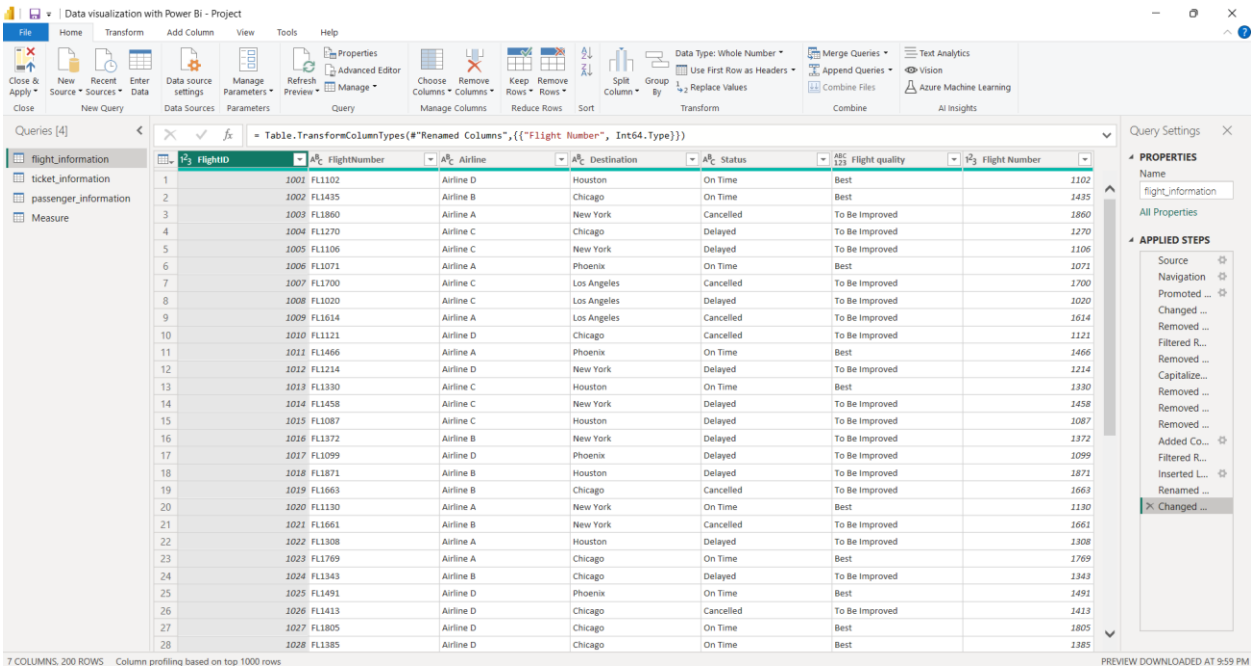
- **2.1 Task Description:** I created relationships between the datasets (FlightID as the key). I understood the cardinality and configured the model appropriately.
- **2.2 Steps Performed:**
  1. I navigated to the "Model" view in Power BI Desktop.
  2. I identified the FlightID column in each of the three tables.
  3. I created relationships by dragging the FlightID column from one table to the FlightID column in another table.
  4. I reviewed and configured the cardinality of each relationship (e.g., one-to-many from Flight_Information to Passenger_Information and Ticket_Information).
  5. I ensured that the relationships were set up correctly to allow for accurate data analysis.

- **2.3 Deliverables:** Screenshot of the data model with relationships.



Task 3. Enhanced Data Insights

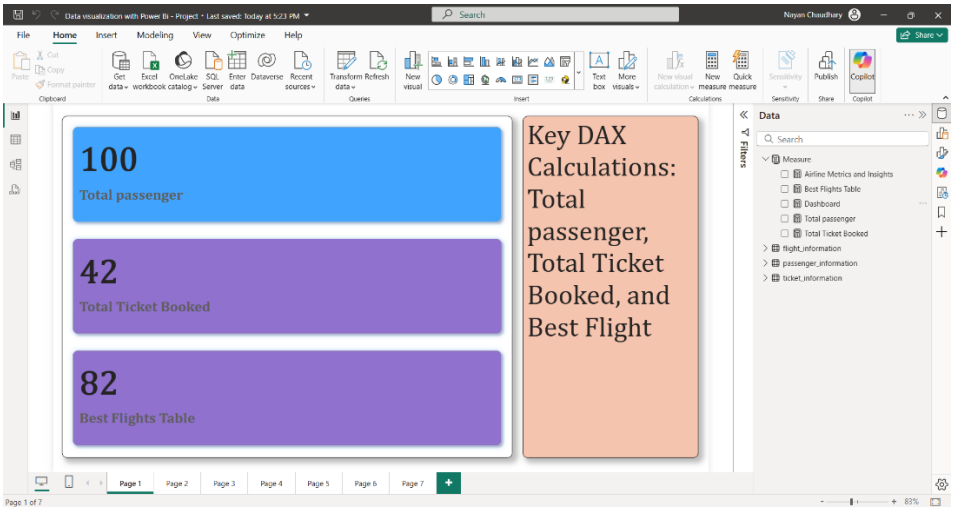
- **3.1 Task Description:** I added a conditional column to classify flights as "Best" or "To Be Improved" based on their status. I used "Column From Examples" to extract the flight number from the FlightNumber column.
- **3.2 Steps Performed:**
  1. I opened the Flight_Information table in the Power Query Editor.
  2. I added a conditional column named "Flight Category" with the following logic:
     - If Status is "On Time" or "Departed", then "Best".
     - If Status is "Delayed" or "Cancelled", then "To Be Improved".
  3. I used "Column From Examples" to create a new column called "Flight Number Extracted" from the FlightNumber column.
  4. I closed and applied the changes.
- **3.3 Deliverables:** Screenshot of the transformed data.



Task 4. Calculations Using DAX

- **4.1 Task Description:** I performed calculations using DAX:
  - Total passengers for a specific flight.
  - Total tickets booked.
  - Filtered table showing "Best" flights only.
- **4.2 Steps Performed:**
  1. I opened Power BI Desktop and navigated to the "Data" view.
  2. I created a new measure called "Total Passengers for Specific Flight":
     Total Passengers for Specific Flight =
     CALCULATE(COUNTROWS(Passenger_Information),
     FILTER(Passenger_Information, Passenger_Information[FlightID] =
     SELECTEDVALUE(Flight_Information[FlightID])))
  3. I created a new measure called "Total Tickets Booked":
     Total Tickets Booked = COUNTROWS(Ticket_Information)
  4. I created a new table using DAX to show only the "Best" flights:
     Best Flights = FILTER(Flight_Information, Flight_Information[Flight Category] =
     "Best")

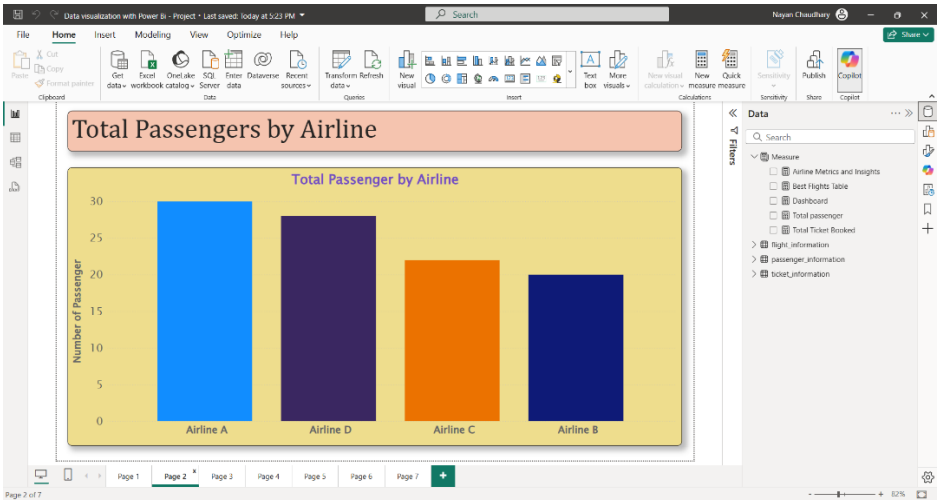
- **4.3 Deliverables:** Screenshot of DAX calculations and results.

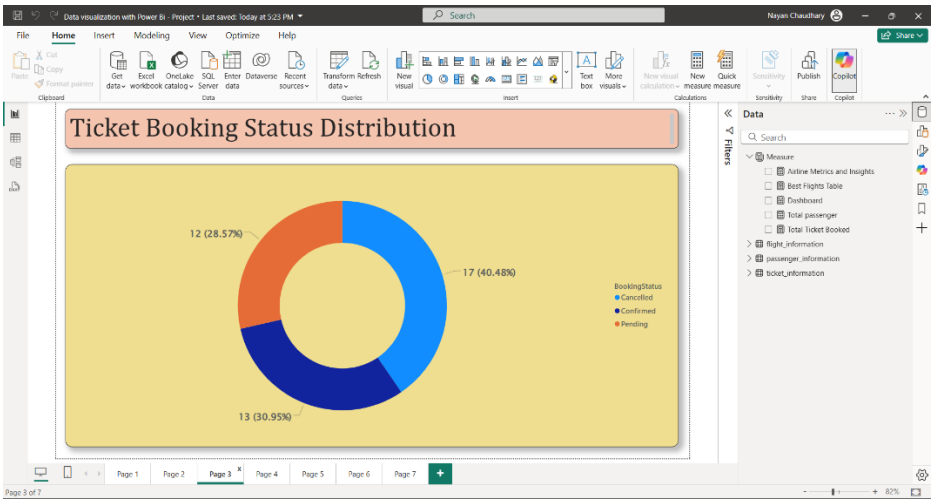


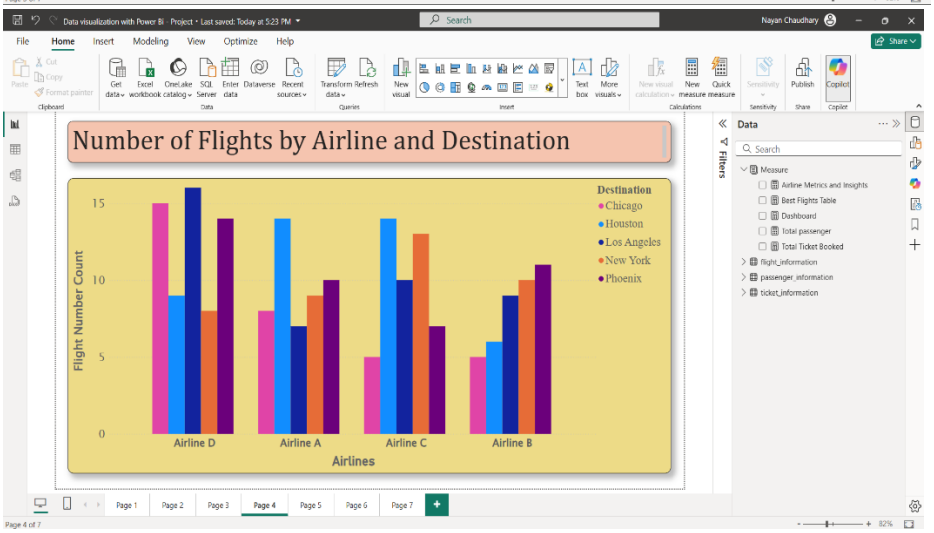
Task 5. Visualization and Interactive Features

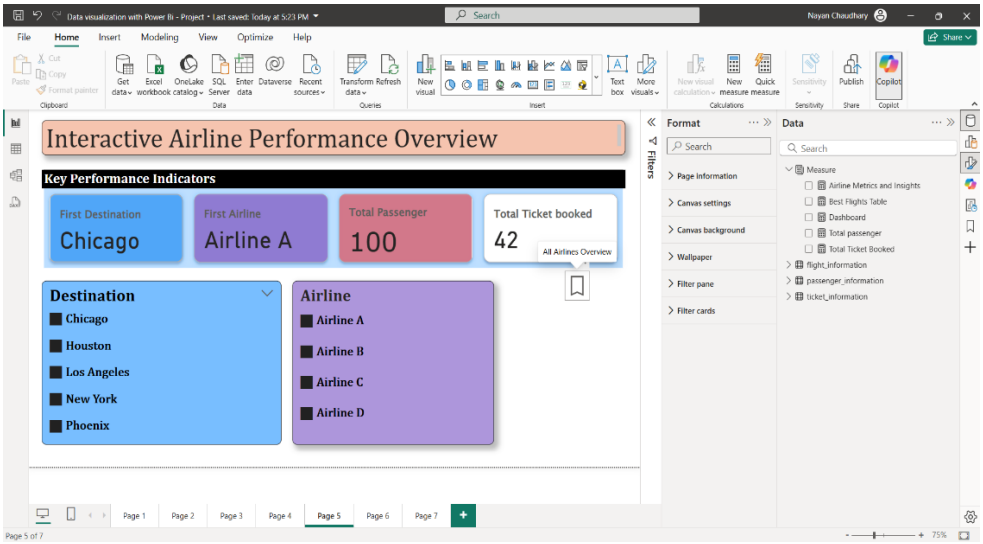
- **5.1 Task Description:** I created visuals for:
  - Passenger count by airline.
  - Ticket booking statuses.
  - Flights by airline and destination.

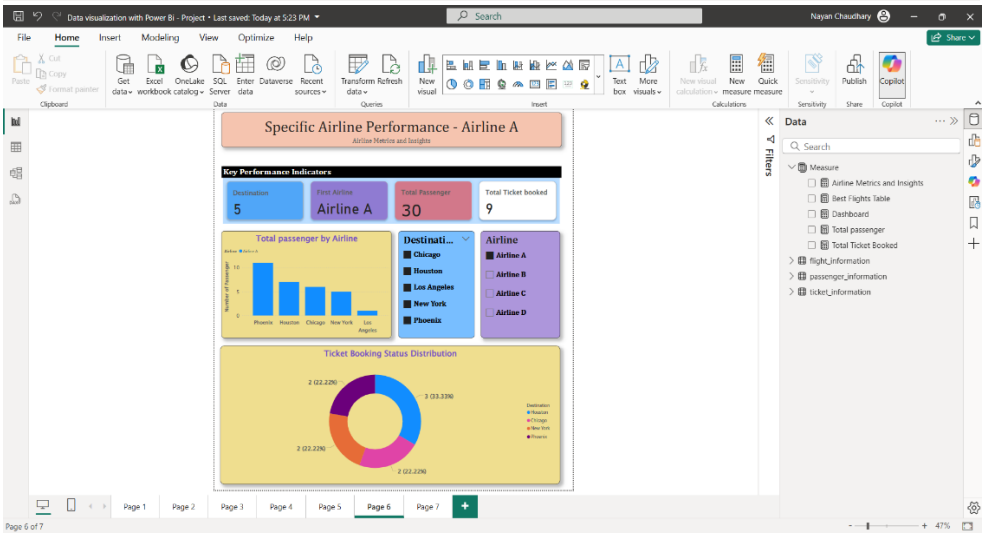
  I added interactive features for:
  - Destination and Airline filters.
  - Quick views.
  - Airline-specific pages.
- **5.2 Steps Performed:**
  1. I navigated to the "Report" view in Power BI Desktop.
  2. I created a column chart showing "Passenger count by airline."
  3. I created a pie chart showing "Ticket booking statuses."
  4. I created a cluster column chart "Flights by airline and destination."
  5. I added slicers for "Destination" and "Airline. And I added a card as “Key Performance Indicator”. And also added a bookmark which has action of all Airlines selection and show whole Airlines performance.
  6. I created pages for specific airline performance. Where I used a dynamic heading which is changed according to selection of slicer of Airline.
- **5.3 Deliverables:** Screenshots of all visuals and interactive features.

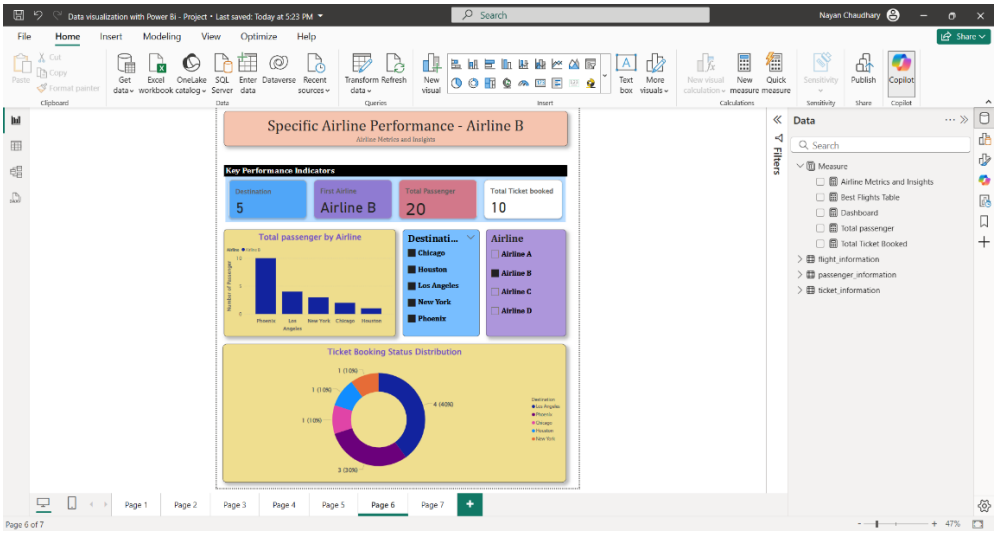

Total Passengers by Airline
Total Passenger by Airline
Number of Passenger
30
25
20
15
10
5
0
Airline A
Airline D
Airline C
Airline B


Ticket Booking Status Distribution
12 (28.57%)
17 (40.48%)
13 (30.95%)
BookingStatus
Cancelled
Confirmed
Pending


Number of Flights by Airline and Destination
Flight Number Count
15
10
5
0
Airline D
Airline A
Airline C
Airline B
Airlines
Destination
Chicago
Houston
Los Angeles
New York
Phoenix

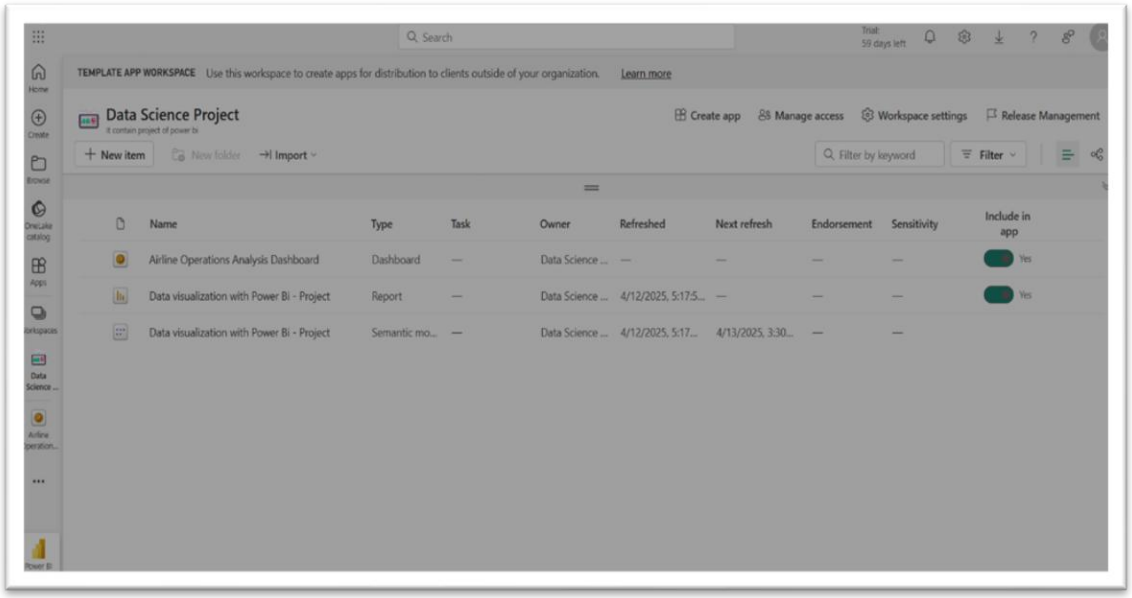

Interactive Airline Performance Overview
Key Performance Indicators
First Destination
Chicago
First Airline
Airline A
Total Passenger
100
Total Ticket booked
42
All Airlines Overview
Destination
Chicago
Houston
Los Angeles
New York
Phoenix
Airline
Airline A
Airline B
Airline C
Airline D


Specific Airline Performance - Airline A
Key Performance Indicators
Destination
5
First Airline
Airline A
Total Passenger
30
Total Ticket booked
9
Total passenger by Airline
Ticket Booking Status Distribution


Specific Airline Performance - Airline B
Key Performance Indicators
Destination
5
First Airline
Airline B
Total Passenger
20
Total Ticket booked
10
Total passenger by Airline
Ticket Booking Status Distribution

Task 6. Final Dashboard and Power BI Service

- **6.1 Task Description:** I designed a comprehensive dashboard. I configured Row-Level Security (RLS) for Airline A data and set up a schedule refresh.
- **6.2 Steps Performed:**
  1. I arranged the visuals on a single dashboard page in Power BI Desktop. And I added bookmark and blank button as "Go to specific Airline page"
  2. I published the dashboard to the Power BI Service.
  3. I configured Row-Level Security (RLS).
  4. I set up a scheduled refresh at 5:00 PM daily.
- **6.3 Deliverables:** Screenshot of the published dashboard and RLS configuration.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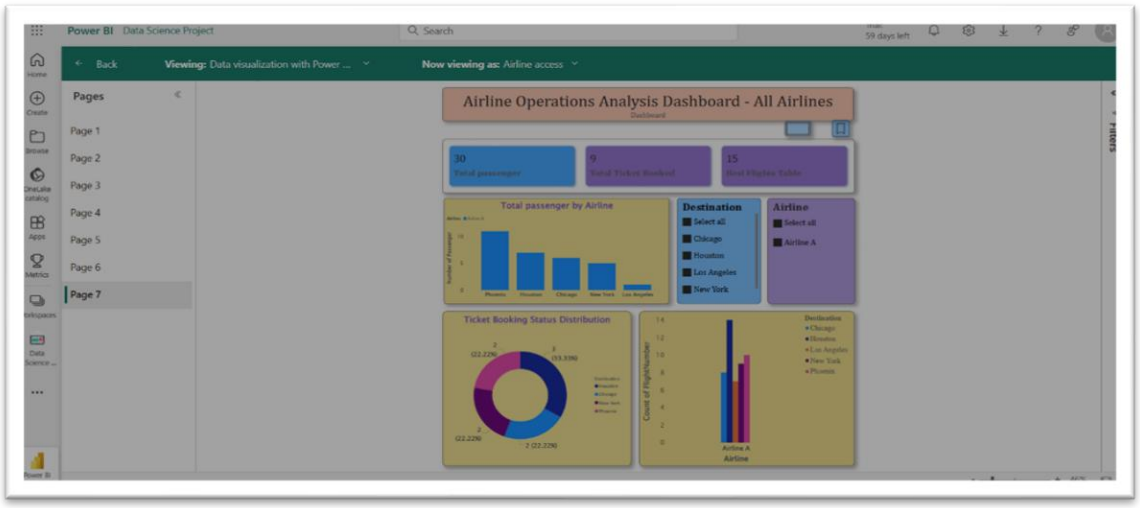
Data Science Project
it contain project of power bi
Create app
Manage access
Workspace settings
Release Management
New item
New folder
Import
Filter by keyword
Filter
Name
Type
Task
Owner
Refreshed
Next refresh
Endorsement
Sensitivity
Include in app
Airline Operations Analysis Dashboard
Dashboard
Data Science ...
Yes
Data visualization with Power Bi - Project
Report
4/12/2025, 5:17:5...
Yes
Data visualization with Power Bi - Project
Semantic mo...
4/12/2025, 5:17...
4/13/2025, 3:30...


Power BI Data Science Project
Search
Back
Viewing: Data visualization with Power ...
Now viewing as: Airline access
Pages
Page 1
Page 2
Page 3
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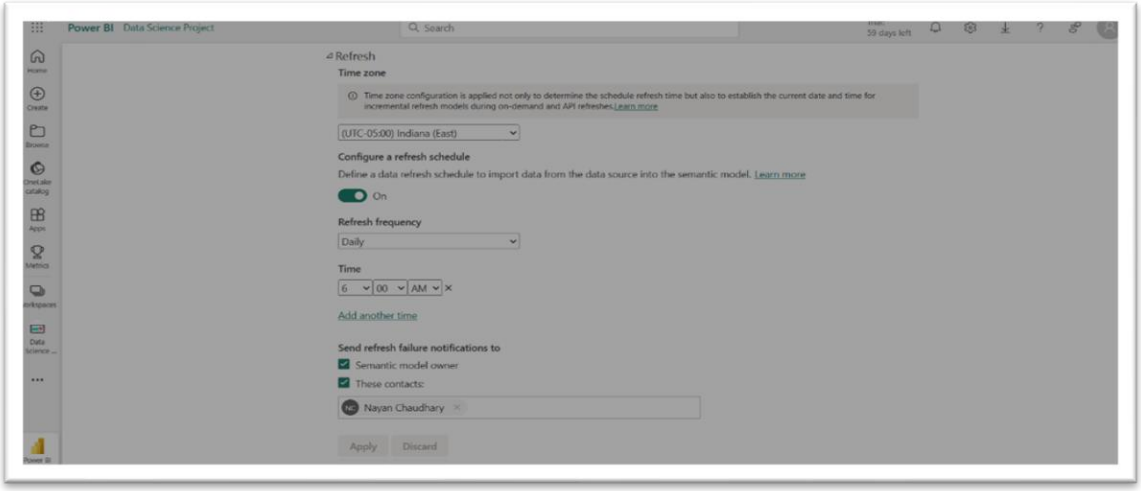
Page 6
Page 7
Airline Operations Analysis Dashboard - All Airlines
Dashboard
30
Total passenger
9
Total Tickets Booked
15
Most Flights Table
Total passenger by Airline
Destination
Select all
Chicago
Houston
Los Angeles
New York
Airline
Select all
Airline A
Ticket Booking Status Distribution
Count of FlightNumber
Airline A
Airline
FILTERS


Power BI Data Science Project
Search
Refresh
Time zone
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-05:00) Indiana (East)
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
6
00
AM
Add another time
Send refresh failure notifications to
Semantic model owner
These contacts:
Nayan Chaudhary
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Discard

Video Link.

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