

Power BI Final Project

Task 1. Data Preparation and Cleaning

STEPS:

1. **Imported all three datasets** into Power BI using **Get Data → Excel**
2. **Opened Power Query Editor** via **Transform Data**
3. **Removed Duplicates**
 - Selected flightID from flight_information table , ticketID from ticket_information table , passengerID from passenger_information table
 - Clicked **Remove Duplicates** from the **Home** tab
4. **Handled Missing Values**
 - Checked for null or empty values in each column
5. **Formatted Columns**
 - Ensured each column is in the correct format according to the data it contains
6. **Applied Changes** by clicking **Close & Apply**

Table: Table.Distinct(*Removed Duplicates*, {"FlightNumber"})

| | FlightID | FlightNumber | Airline | Destination | Status |
|----|----------|--------------|-----------|-------------|-----------|
| 1 | 2001 | FL1102 | Airline D | Houston | On Time |
| 2 | 2002 | FL1435 | Airline B | Chicago | On Time |
| 3 | 2003 | FL1980 | Airline A | New York | Cancelled |
| 4 | 2004 | FL1270 | Airline C | Chicago | Delayed |
| 5 | 2005 | FL1106 | Airline C | New York | Delayed |
| 6 | 2006 | FL1071 | Airline A | Phoenix | On Time |
| 7 | 2007 | FL1700 | Airline C | Los Angeles | Cancelled |
| 8 | 2008 | FL1020 | Airline C | Los Angeles | Delayed |
| 9 | 2009 | FL1614 | Airline A | Los Angeles | Cancelled |
| 10 | 2010 | FL1121 | Airline D | Chicago | Cancelled |
| 11 | 2011 | FL1466 | Airline A | Phoenix | On Time |
| 12 | 2012 | FL1214 | Airline D | New York | Delayed |
| 13 | 2013 | FL1330 | Airline C | Houston | On Time |
| 14 | 2014 | FL1458 | Airline C | New York | Delayed |
| 15 | 2015 | FL1087 | Airline C | Houston | Delayed |
| 16 | 2016 | FL1372 | Airline B | New York | Delayed |
| 17 | 2017 | FL1099 | Airline D | Phoenix | Delayed |
| 18 | 2018 | FL1871 | Airline B | Houston | Delayed |
| 19 | 2019 | FL1663 | Airline B | Chicago | Cancelled |
| 20 | 2020 | FL1130 | Airline A | New York | On Time |
| 21 | 2021 | FL1661 | Airline B | New York | Cancelled |
| 22 | 2022 | FL1308 | Airline A | Houston | Delayed |
| 23 | 2023 | FL1769 | Airline A | Chicago | On Time |
| 24 | 2024 | FL1343 | Airline B | Chicago | Delayed |

Untitled - Power Query Editor

Home

Transform

Add Column

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New Source

Recent Sources

Enter Data

Data source settings

Manage Parameters

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Keep Rows

Remove Rows

Sort

Split Column

Group By

Data Type: Whole Number

Use First Row as Headers

Replace Values

Merge Queries

Append Queries

Combine Files

Combine

Text Analytics

Vision

Azure Machine Learning

AI Insights

Queries [3]

flight_information

ticket_information

passenger_information

Table.Distinct(*Removed Other Columns", {"TicketID"})

TicketID

FlightID

BookingStatus

Valid

100%

Valid

100%

Valid

100%

Error

0%

Error

0%

Error

0%

Empty

0%

Empty

0%

Empty

0%

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

22

5022

1035

Confirmed

23

5023

1165

Confirmed

24

5024

1005

Confirmed

Query Settings

PROPERTIES

Name

ticket_information

All Properties

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

Removed Other Columns

Removed Duplicates

3 COLUMNS, 50 ROWS

Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 08:11

EN IN

08:28

11-04-2025

Untitled - Power Query Editor

Home

Transform

Add Column

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Close & Apply

New Source

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Properties Advanced Editor

Choose Columns

Remove Columns

Keep Rows

Remove Rows

Sort

Split Column

Group By

Replace Values

Data Type: Whole Number

Use First Row as Headers

Merge Queries

Append Queries

Combine Files

Text Analytics

Vision

Azure Machine Learning

AI Insights

Queries [3]

flight_information

ticket_information

passenger_information

Table.Distinct(*Removed Other Columns", ("PassengerID"))

PassengerID

FlightID

SeatNumber

Valid

100%

Valid

100%

Valid

100%

Error

0%

Error

0%

Error

0%

Empty

0%

Empty

0%

Empty

0%

1

1161

38A

2

1157

24D

3

1141

30B

4

1046

17E

5

1035

29D

6

1134

10A

7

1082

10A

8

1115

20E

9

1197

34E

10

1047

2E

11

1153

43C

12

1194

48C

13

1010

47A

14

1056

23C

15

1030

16D

16

1109

40D

17

1005

25C

18

1119

32C

19

1033

27E

20

1118

32B

21

1065

19E

22

1146

5B

23

1177

28B

24

1011

22E

Query Settings

PROPERTIES

Name

passenger_information

All Properties

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

Removed Other Columns

Removed Duplicates

3 COLUMNS, 100 ROWS

Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 08:11

08:28

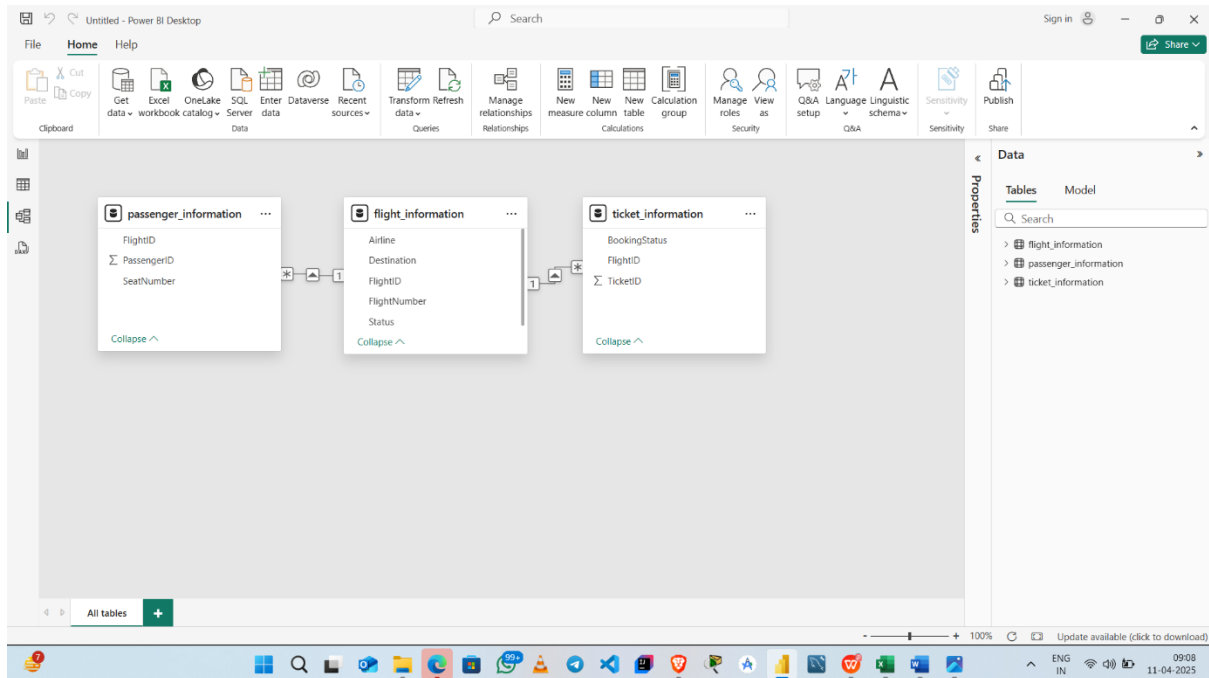
11-04-2025

Task 2. Data Modeling

STEPS:

1. **Opened Model View** in Power BI
2. **Created Relationships**
 - o Connected FlightID in Flight_Information to FlightID in Passenger_Information
 - o Connected FlightID in Flight_Information to FlightID in Ticket_Information
3. **Verified Cardinality and Cross Filter Direction**
 - o All relationships were **One-to-Many**

- One (Flight_Information) to Many (Passenger_Information, Ticket_Information)
- Ensured **Cross Filter Direction** was set to **Single** for performance and accuracy



Task 3. Enhanced Data Insights

STEPS:

- **Opened Power Query Editor** in Power BI
- **Added Conditional Column** in `Flight_Information`
 - Created a new column named `Flight Category`
 - If `Status = "On Time"`, then `"Best"`
 - Else, `"To Be Improved"`
- **Used Column From Examples**
 - Chose “Column from Examples” and extracted the flight number by entering the code for 1st and 2nd row as a sample
 - Renamed the column as “Flight Number Code”
- **Applied Changes and Closed Power Query**

Untitled - Power Query Editor

Home Transform Add Column View Tools Help

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

Queries [3] flight_information ticket_information passenger_information

Table.TransformColumnTypes(*Renamed Columns*,{"Flight Category", type text})

| | FlightNumber | Airline | Destination | Status | Flight Category | Flight Number Code |
|----|--------------|---------|-------------|-------------|-----------------|--------------------|
| 1 | 1001 | FL1102 | Airline D | Houston | On Time | Best |
| 2 | 1002 | FL1435 | Airline B | Chicago | On Time | Best |
| 3 | 1003 | FL1860 | Airline A | New York | Cancelled | To Be Improved |
| 4 | 1004 | FL1270 | Airline C | Chicago | Delayed | To Be Improved |
| 5 | 1005 | FL1106 | Airline C | New York | Delayed | To Be Improved |
| 6 | 1006 | FL1071 | Airline A | Phoenix | On Time | Best |
| 7 | 1007 | FL1700 | Airline C | Los Angeles | Cancelled | To Be Improved |
| 8 | 1008 | FL1020 | Airline C | Los Angeles | Delayed | To Be Improved |
| 9 | 1009 | FL1614 | Airline A | Los Angeles | Cancelled | To Be Improved |
| 10 | 1010 | FL1121 | Airline D | Chicago | Cancelled | To Be Improved |
| 11 | 1011 | FL1466 | Airline A | Phoenix | On Time | Best |
| 12 | 1012 | FL1214 | Airline D | New York | Delayed | To Be Improved |
| 13 | 1013 | FL1330 | Airline C | Houston | On Time | Best |
| 14 | 1014 | FL1458 | Airline C | New York | Delayed | To Be Improved |
| 15 | 1015 | FL1087 | Airline B | Houston | Delayed | To Be Improved |
| 16 | 1016 | FL1372 | Airline B | New York | Delayed | To Be Improved |
| 17 | 1017 | FL1099 | Airline D | Phoenix | Delayed | To Be Improved |
| 18 | 1018 | FL1871 | Airline B | Houston | Delayed | To Be Improved |
| 19 | 1019 | FL1663 | Airline B | Chicago | Cancelled | To Be Improved |
| 20 | 1020 | FL1130 | Airline A | New York | On Time | Best |
| 21 | 1021 | FL1661 | Airline B | New York | Cancelled | To Be Improved |
| 22 | 1022 | FL1308 | Airline A | Houston | Delayed | To Be Improved |
| 23 | 1023 | FL1769 | Airline A | Chicago | On Time | Best |

7 COLUMNS, 184 ROWS Column profiling based on top 1000 rows

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TASK 4. Calculations Using DAX

STEPS:

- Table: Passenger_Information

Formula:

Number of passengers = `COUNT(passenger_information[PassengerID])`

Untitled - Power BI Desktop

File Home Help Table tools Measure tools

Name Number of passen... Format: Whole number Data category: Uncategorized

Structure: passenger_inform... Formatting: \$ % 0 Properties: New Quick measure measure Calculations

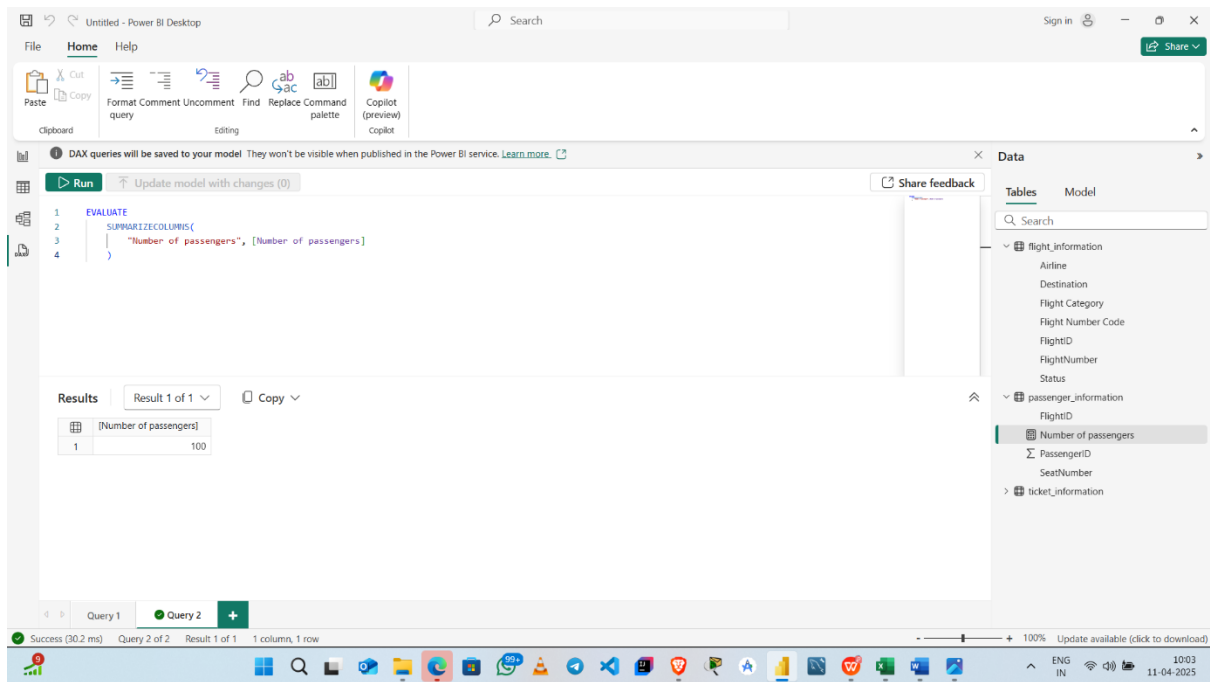
1 Number of passengers = COUNT(passenger_information[PassengerID])

| PassengerID | FlightID | SeatNumber |
|-------------|----------|------------|
| 1 | 1161 | 38A |
| 2 | 1157 | 24D |
| 3 | 1141 | 30B |
| 4 | 1046 | 17E |
| 5 | 1035 | 29D |
| 6 | 1134 | 10A |
| 7 | 1082 | 10A |
| 8 | 1115 | 20E |
| 9 | 1197 | 34E |
| 10 | 1047 | 2E |
| 11 | 1153 | 43C |
| 12 | 1194 | 48C |
| 13 | 1010 | 47A |
| 14 | 1056 | 23C |
| 15 | 1030 | 16D |
| 16 | 1109 | 40D |
| 17 | 1005 | 25C |
| 18 | 1119 | 32C |
| 19 | 1033 | 27E |
| 20 | 1118 | 32B |
| 21 | 1065 | 19E |
| 22 | 1146 | 5B |
| 23 | 1177 | 28B |
| 24 | 1011 | 22E |
| 25 | 1085 | 6A |
| 26 | 1026 | 5A |
| 27 | 1063 | 12B |

Table: passenger_information (100 rows) Column: Number of passengers (0 distinct values)

Update available (click to download)

ENG IN 10:03 11-04-2025

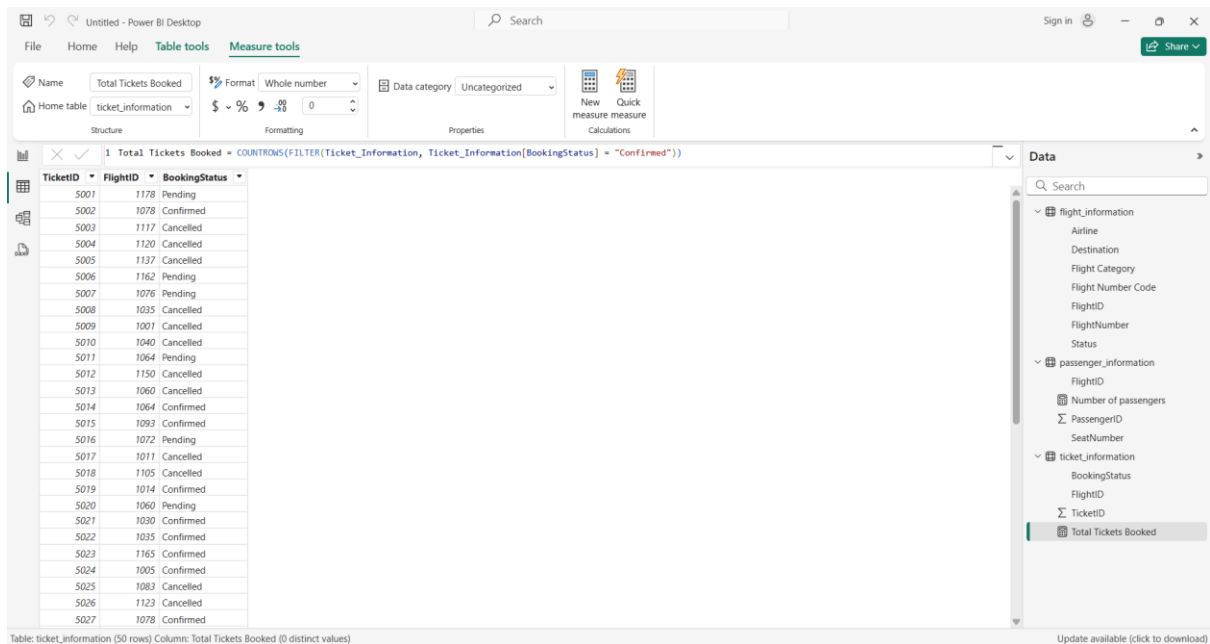


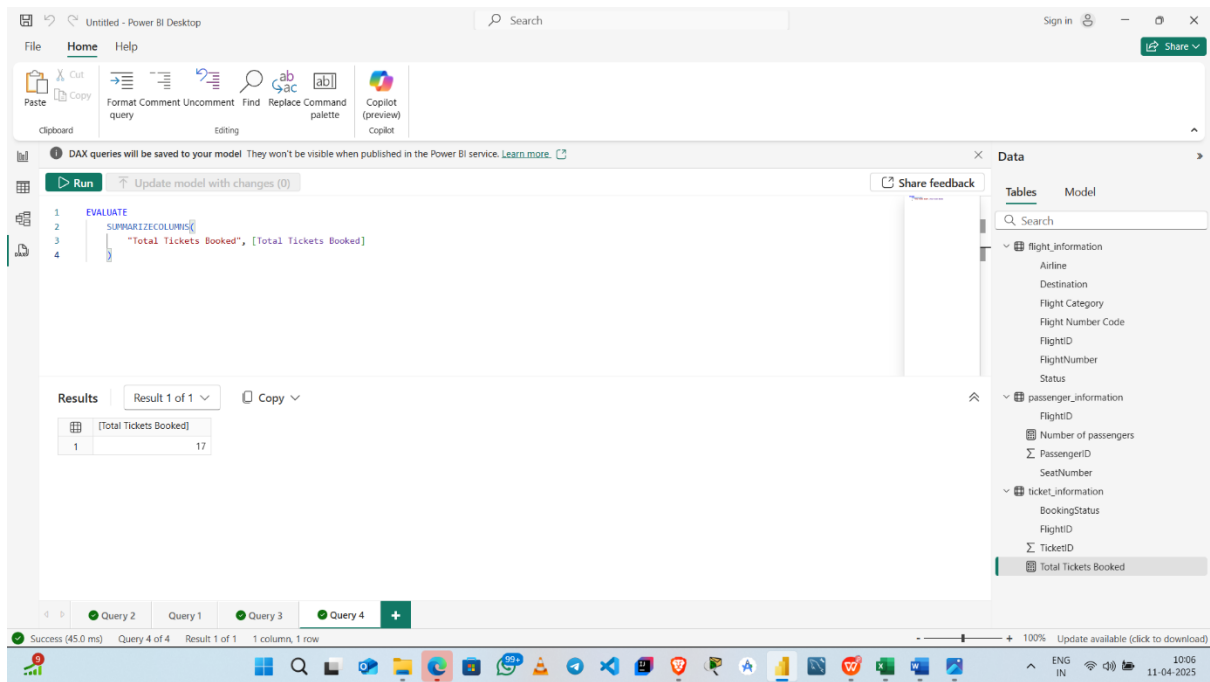
2.

- o Table: Ticket_Information

Formula:

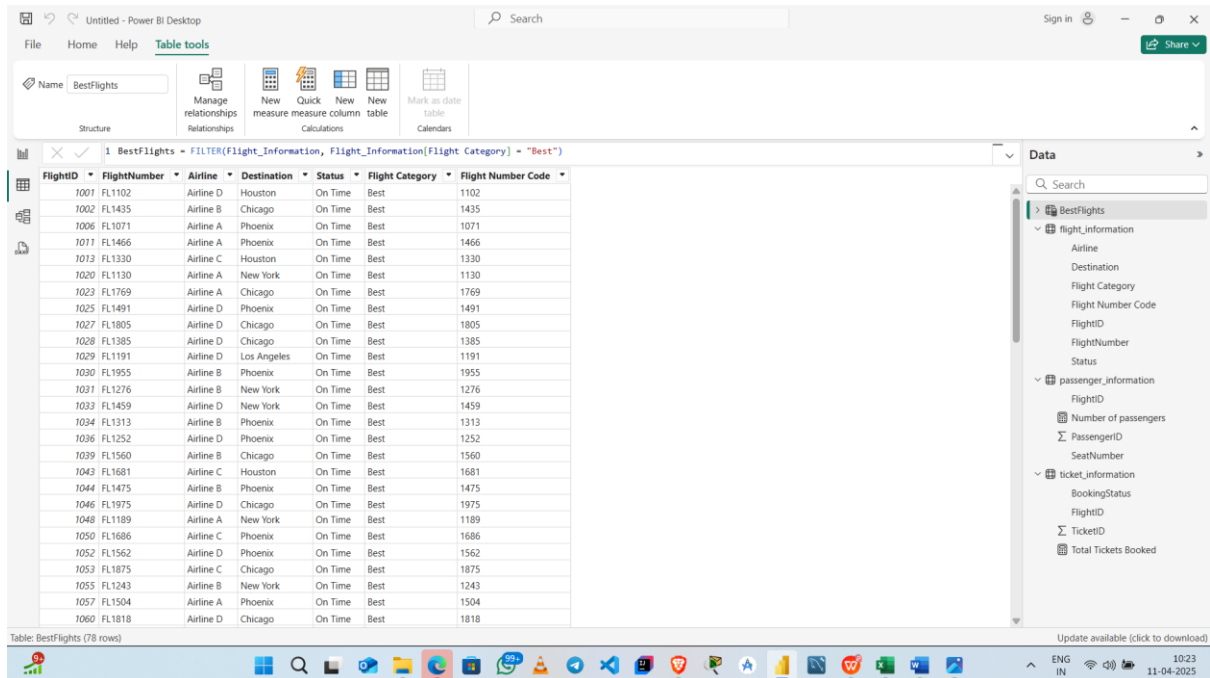
Total Tickets Booked = `COUNTROWS(FILTER(Ticket_Information, Ticket_Information[BookingStatus] = "Confirmed"))`





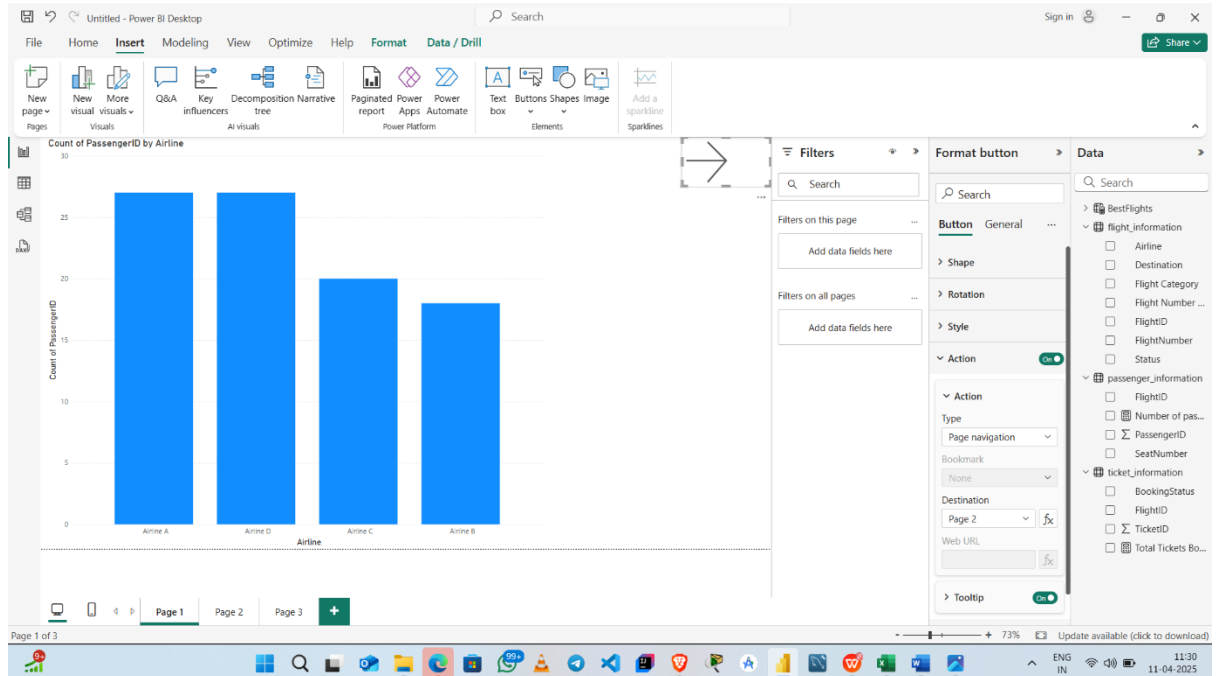
3.
 - Used DAX to create a new table:

BestFlights = `FILTER(Flight_Information, Flight_Information[Flight Category] = \"Best\")`

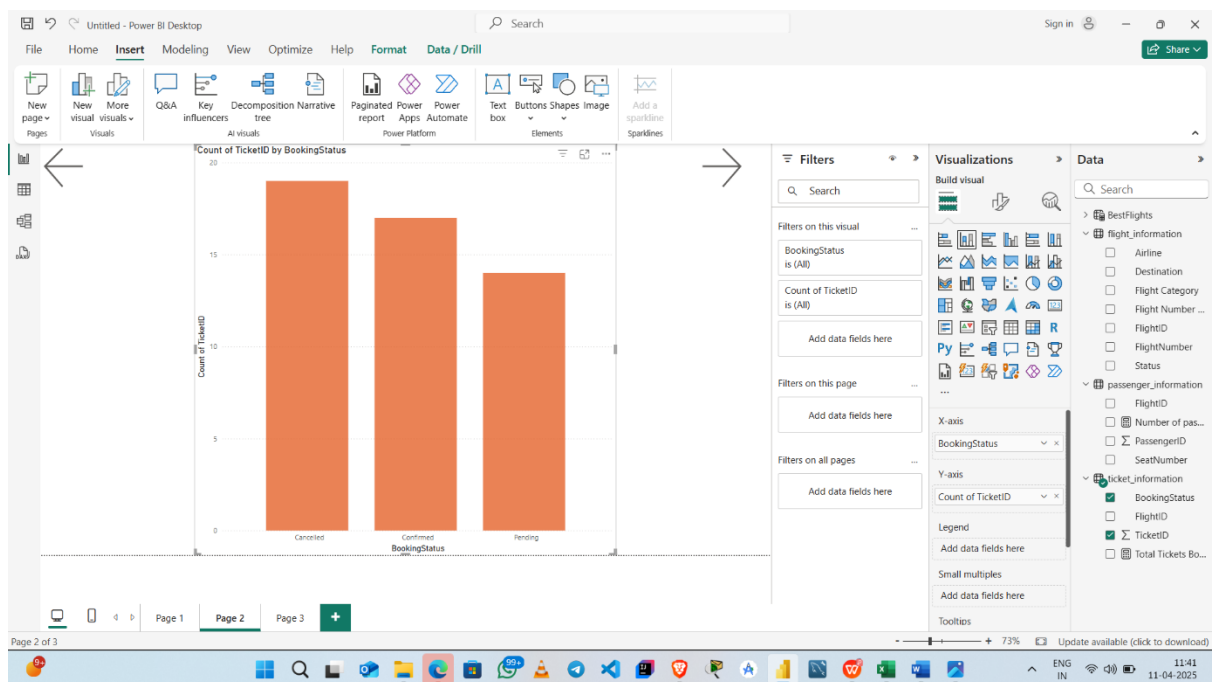


TASK 5. Visualization and Interactive Features 5. Visualization and Interactive Features

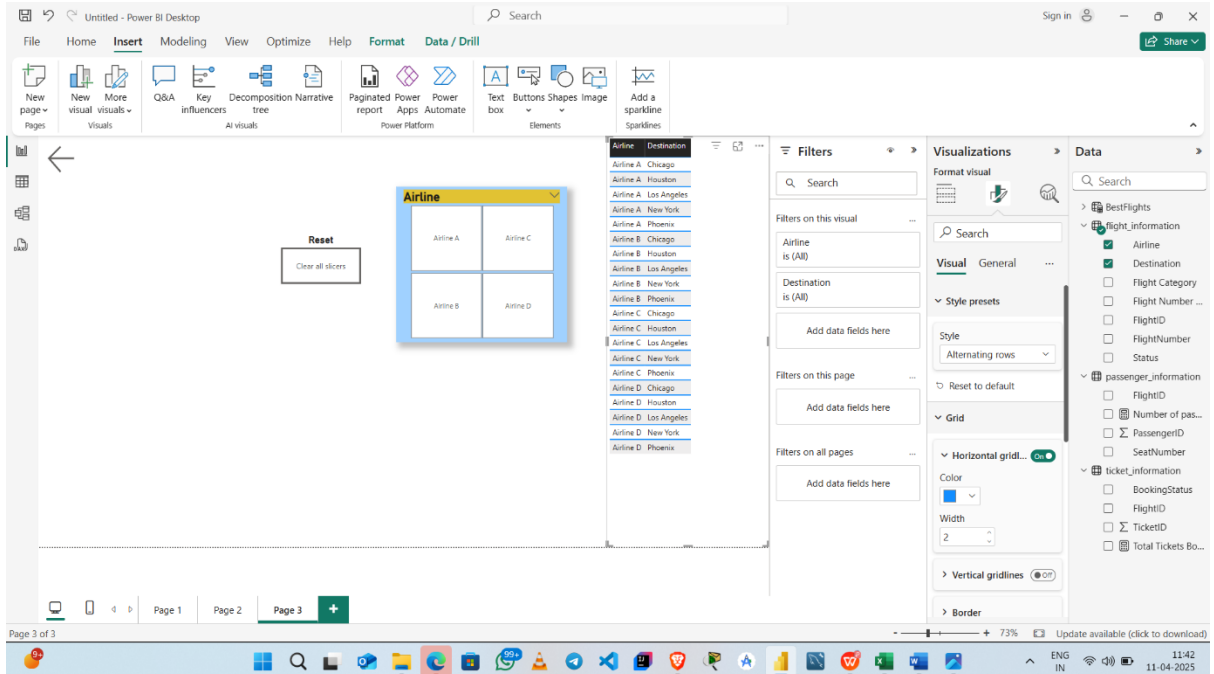
- Created a **bar chart** to show the **Passenger Count by Airline** using data from the Passenger and Flight tables



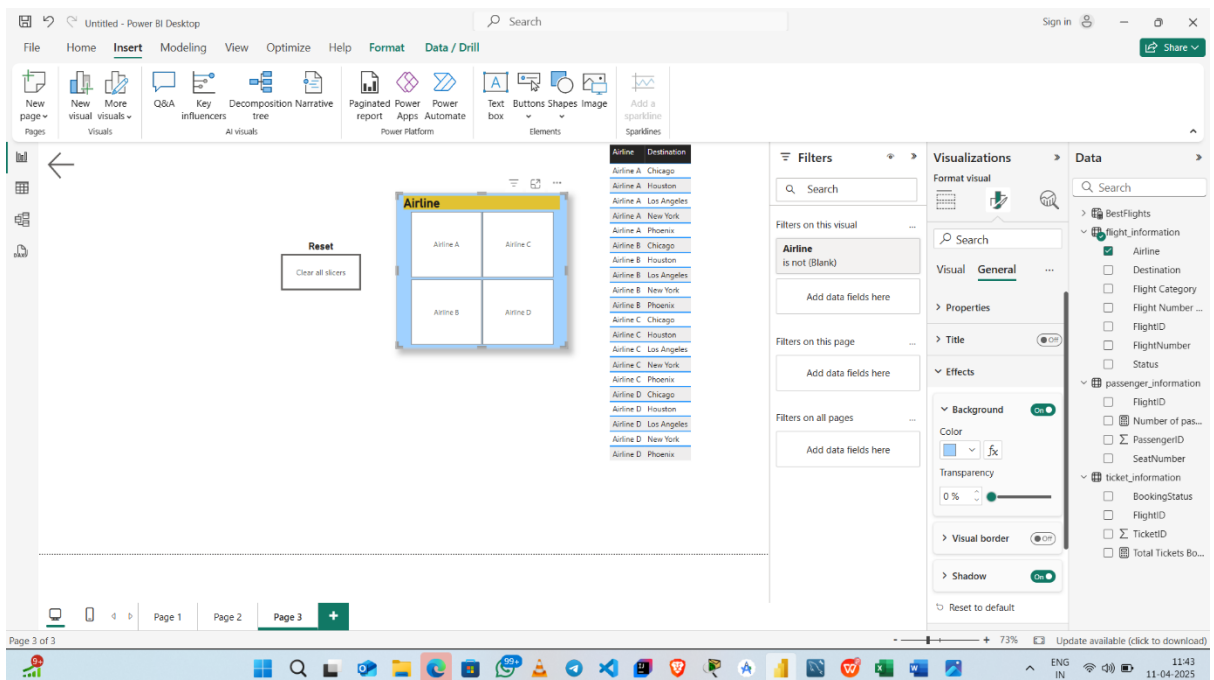
- Created a **Bar chart** to display **Ticket Booking Statuses** using data from the Ticket_Information table



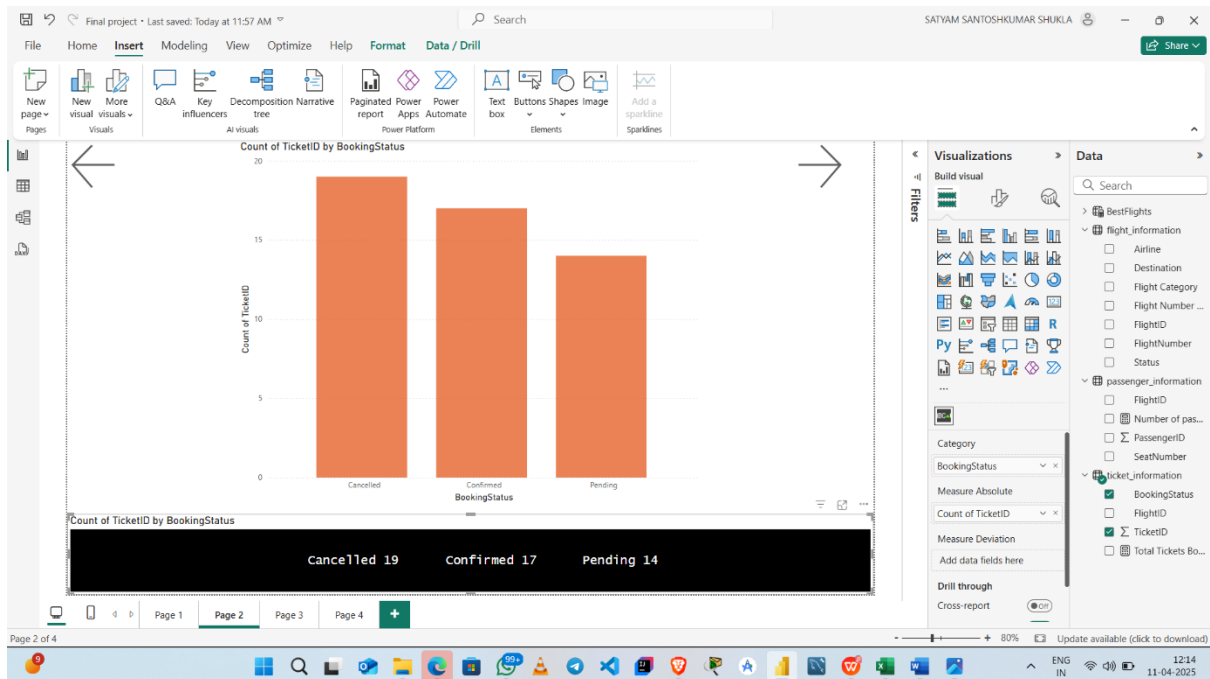
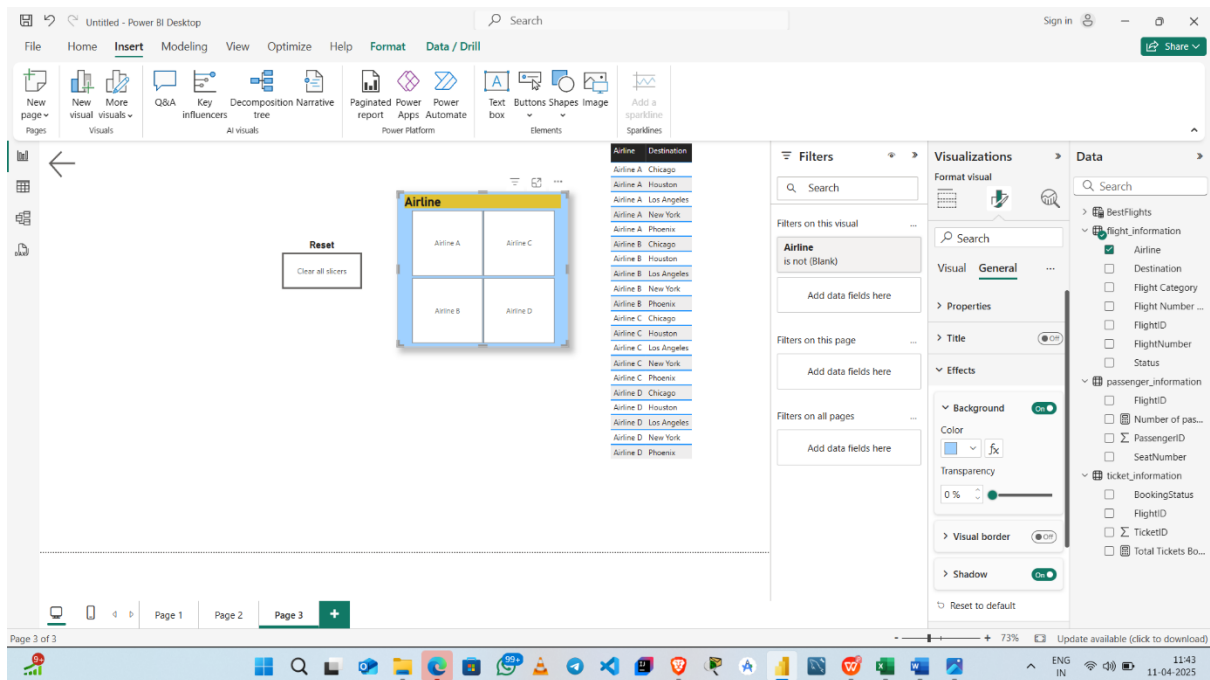
- Built a **Table visual** to show **Flights by Airline and Destination** from the **Flight_Information** table



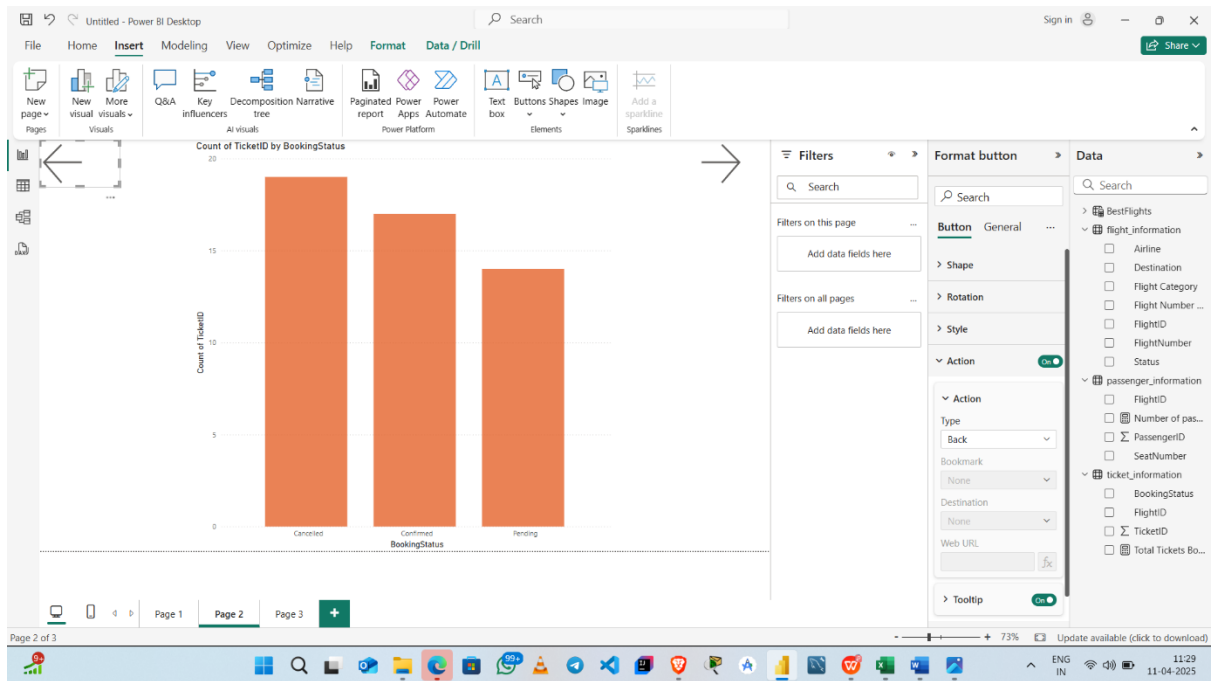
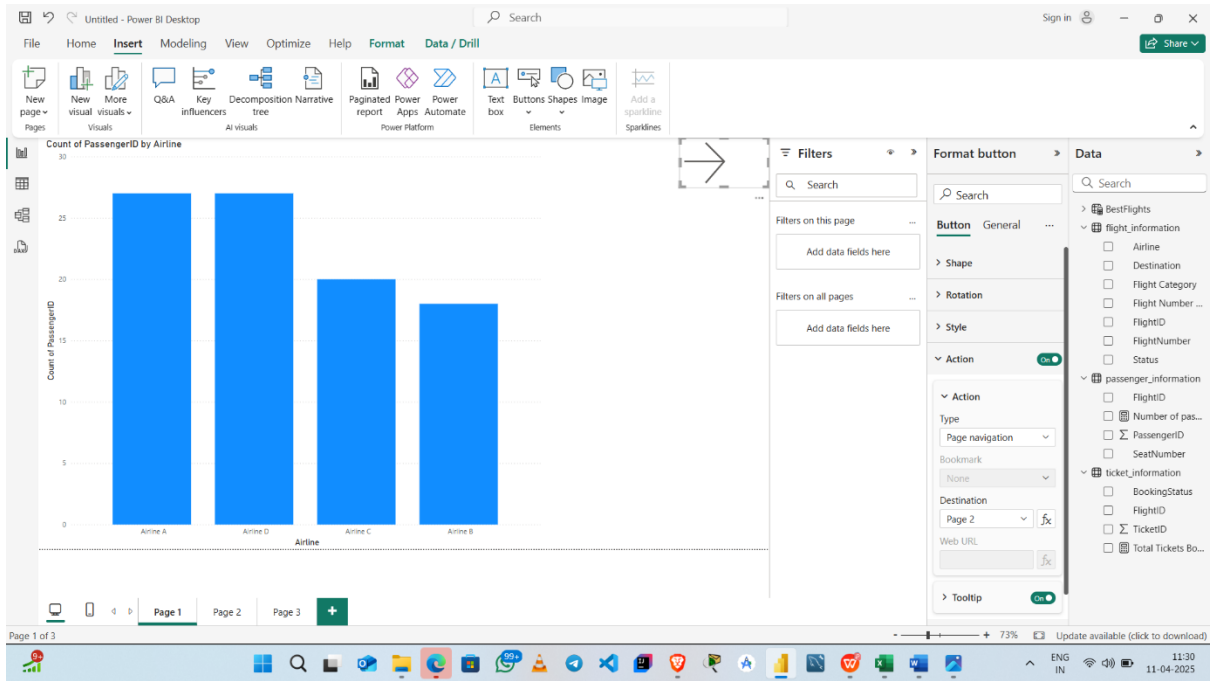
- Added **slicers for Destination and Airline** to enable users to interactively filter the visuals

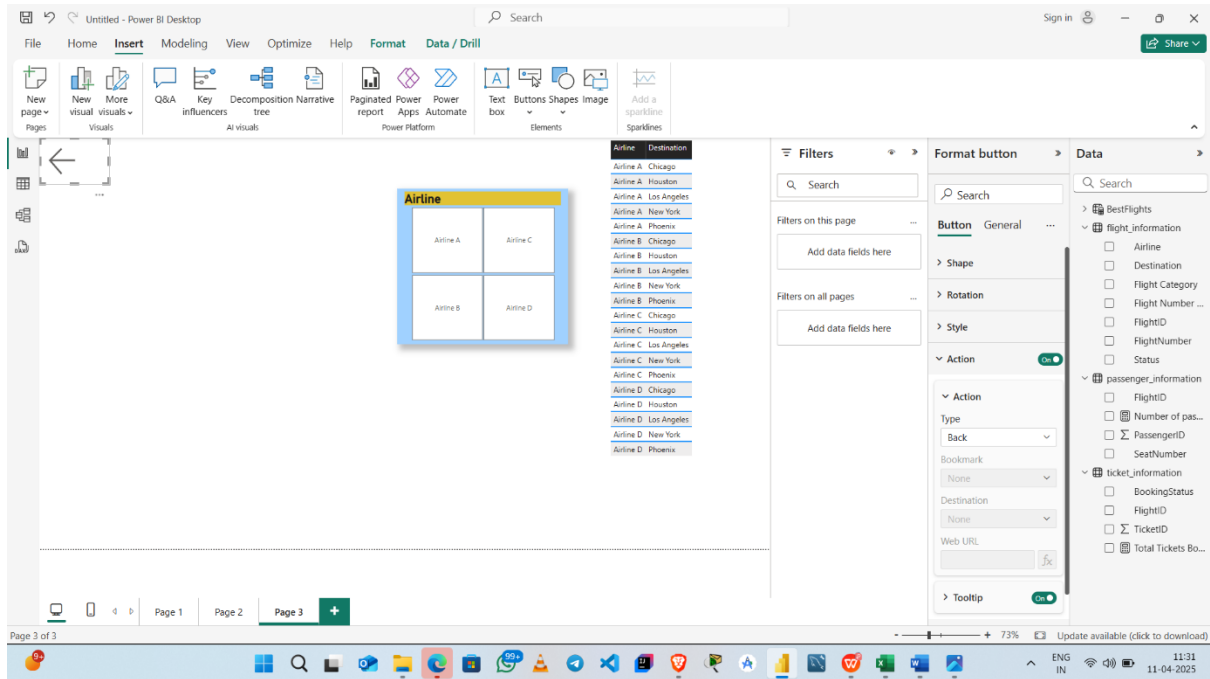


- Configured **Quick Views** using button and scroller



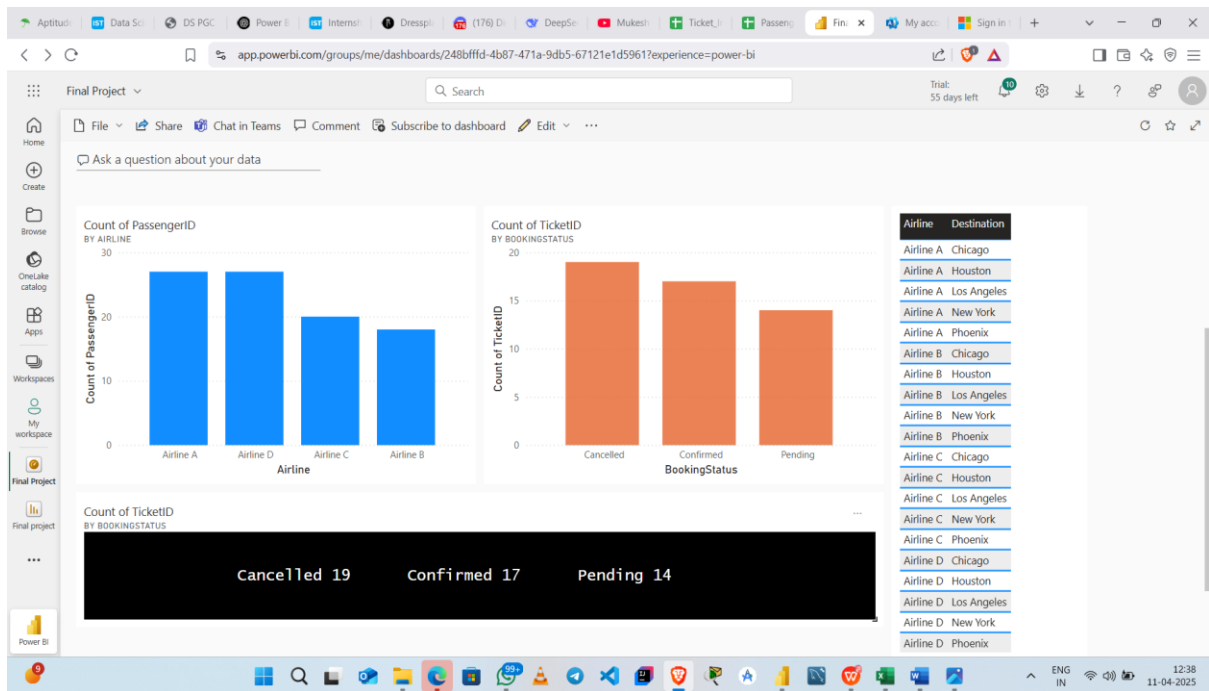
- Created **Airline-specific report pages** by applying page-level filters for individual airlines





Task 6. Final Dashboard and Power BI Service

- Published the report to **Power BI Service**
- Designed a **comprehensive dashboard** with key visuals:
 - Passenger Count by Airline
 - Ticket Booking Status Distribution
 - Flights grouped by Airline and Destination
 - Scroller
- Configured **Row-Level Security (RLS)**:
 - Created a role called Airline A
 - Assigned this role to the relevant user in Power BI Service
- Set up a **Scheduled Refresh** to run **daily at 5 PM** from the dataset settings in Power BI Service



Final Project • Last saved: Today at 12:18 PM

Manage security roles

Create new security roles and use filters to define row-level data restrictions.

Roles

- + New
- Airline A

Select tables

- BestFlights
- flight_informat...
- passenger_inf...
- ticket_informat...

Filter data

Show data if All of these rules are true

| Column | Condition | Value |
|---------|-----------|-----------|
| Airline | Equals | Airline A |

+ New

Save Close

Drill through Cross-report

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12:45 11-04-2025

