

Project 3

Data Science PGC

Initial Stage: Importing Excel Files into Power BI

Step 1: Open Power BI

1. Launch **Power BI Desktop**.
2. Click **File > New** to start a blank project.

Step 2: Import the Dataset

1. Go to the **Home** tab and click **Get Data**.
2. Select **Excel** and click **Connect**.
3. Browse and open:
 - a. **Flight_Information.xlsx** (Flight details)
 - b. **Passenger_Information.xlsx** (Passenger records)
 - c. **Ticket_Information.xlsx** (Booking data)

Step 3: Load Data

1. Select the sheets to import.
2. Click **Load** to import or **Transform Data** to clean before loading.

Step 4: Verify Data

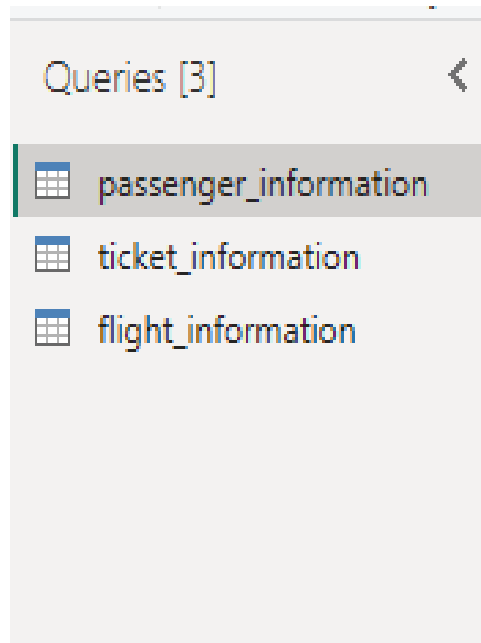
1. Check the **Fields** pane for imported tables.
2. Click the **Data** view to preview and confirm the data.

Task 1: Data Preparation & Cleaning

This task focuses on using **Power Query Editor** in Power BI to clean and transform data for analysis. Follow these steps:

Step 1: Extract and Load Data into Power Query

1. **Open Power Query Editor:**
 - o Click "**Transform Data**" after importing datasets.
2. **Select Datasets:**
 - o Choose the required datasets:
 - ✓ **Flight_Information**
 - ✓ **Passenger_Information**
 - ✓ **Ticket_Information**



Step 2: Remove Unnecessary Columns

1. **Select Dataset:**
 - a. In the **Queries** pane, choose the dataset to clean:
 - ✓ **Flight_Information**
 - ✓ **Passenger_Information**
 - ✓ **Ticket_Information**
2. **Select Required Columns:**
 - a. Hold **Ctrl** and click on the columns you want to keep.
3. **Remove Other Columns:**
 - a. Right-click on a selected column and choose **"Remove Other Columns"**, or
 - b. Go to **Home > Choose Columns > Remove Other Columns**.

The screenshot shows the Microsoft Power BI Desktop interface. The 'Queries' pane on the left lists three datasets: 'passenger_information', 'ticket_information', and 'flight_information'. The 'flight_information' dataset is selected, and its data is displayed in a table with the following columns: FlightID, FlightNumber, Airline, Destination, and Status. The table contains 24 rows of data. The 'APPLIED STEPS' pane on the right shows the steps applied to the selected dataset: 'Source', 'Navigation', 'Promoted Headers', 'Changed Type', 'Removed Columns', and 'Removed Duplicates'. The 'Removed Columns' step is highlighted, indicating that unnecessary columns have been removed from the dataset.

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 FL1390	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
22	1022 FL1308	Airline A	Houston	Delayed
23	1023 FL1769	Airline A	Chicago	On Time
24	1024 FL1343	Airline B	Chicago	Delayed

Step 3: Data Cleaning and Transformation

A. Removing Duplicates

1. **Select Relevant Columns** in Power Query.
2. Click **"Remove Duplicates"** from the **Home** tab.
3. Confirm to eliminate duplicate records.

B. Handling Missing Values

1. **Identify columns** with missing values.
2. Choose an appropriate action:
 - a. Use **"Replace Values"** to fill in missing data.
 - b. Use **"Remove Rows"** to delete incomplete records.
3. For **numerical columns**, replace nulls with default values (e.g., 0 or average).

C. Check and Update Data Types

1. **Open Power Query Editor:**
 - a. Click **"Transform Data"** in Power BI.
 - b. Select the required dataset from the **Queries** pane.
2. **Select All Columns:**
 - a. Press **Ctrl + A** to highlight all columns.
3. **Detect & Update Data Types:**
 - a. Go to the **Transform** tab.
 - b. Click **"Detect Data Type"** to let Power Query automatically update column types.

File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns 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 Text Analytics Vision Azure Machine Learning AI Insights

Queries [3]

	1 ² PassengerID	1 ² FlightID	A ⁸ 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
22		22	1146 5B
23		23	1177 28B
24		24	1011 22E

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

Query Settings

PROPERTIES

Name

passenger_information

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

Removed Duplicates

Removed Columns

PREVIEW DOWNLOADED AT 12:06

File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns 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 Text Analytics Vision Azure Machine Learning AI Insights

Queries [3]

	1 ² TicketID	1 ² FlightID	A ⁸ 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
22		5022	1035 Confirmed
23		5023	1165 Confirmed
24		5024	1005 Confirmed

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

Query Settings

PROPERTIES

Name

ticket_information

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

Removed Columns

Removed Duplicates

PREVIEW DOWNLOADED AT 12:07

Project Power BI

File

Home

Transform

Add Column

View

Tools

Help

Close & Apply

New Source

Recent Sources

Enter Data

Data source settings

Data Sources

Manage Parameters

Refresh Preview

Properties

Advanced Editor

Manage

Choose Columns

Remove Columns

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

Text Analytics

Vision

Azure Machine Learning

Close

New Query

Data Sources

Parameters

Query

Manage Columns

Reduce Rows

Transform

Combine

All Insights

Queries [3]

×

✓

fx

= Table.RenameColumns(#"Inserted Text After Delimiter",{"Flight Performance", "FlightPerformance"}, {"Text After

▼

passenger_information

ticket_information

flight_information

	FlightID	FlightNumber	Airline	Destination	Status	FlightPerfor
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 Impro
4	1004	FL1270	Airline C	Chicago	Delayed	To Be Impro
5	1005	FL1106	Airline C	New York	Delayed	To Be Impro
6	1006	FL1071	Airline A	Phoenix	On Time	Best
7	1007	FL1700	Airline C	Los Angeles	Cancelled	To Be Impro
8	1008	FL1020	Airline C	Los Angeles	Delayed	To Be Impro
9	1009	FL1614	Airline A	Los Angeles	Cancelled	To Be Impro
10	1010	FL1121	Airline D	Chicago	Cancelled	To Be Impro
11	1011	FL1466	Airline A	Phoenix	On Time	Best
12	1012	FL1214	Airline D	New York	Delayed	To Be Impro
13	1013	FL1330	Airline C	Houston	On Time	Best
14	1014	FL1458	Airline C	New York	Delayed	To Be Impro
15	1015	FL1087	Airline C	Houston	Delayed	To Be Impro
16	1016	FL1372	Airline B	New York	Delayed	To Be Impro
17	1017	FL1099	Airline D	Phoenix	Delayed	To Be Impro
18	1018	FL1871	Airline B	Houston	Delayed	To Be Impro
19	1019	FL1663	Airline B	Chicago	Cancelled	To Be Impro
20	1020	FL1130	Airline A	New York	On Time	Best
21	1021	FL1661	Airline B	New York	Cancelled	To Be Impro
22	1022	FL1308	Airline A	Houston	Delayed	To Be Impro
23	1023	FL1769	Airline A	Chicago	On Time	Best
24						

7 COLUMNS, 200 ROWS

Column profiling based on top 1000 rows

Query Settings

PROPERTIES

Name

flight_information

All Properties

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

Removed Columns

Removed Duplicates

Added Conditional Column

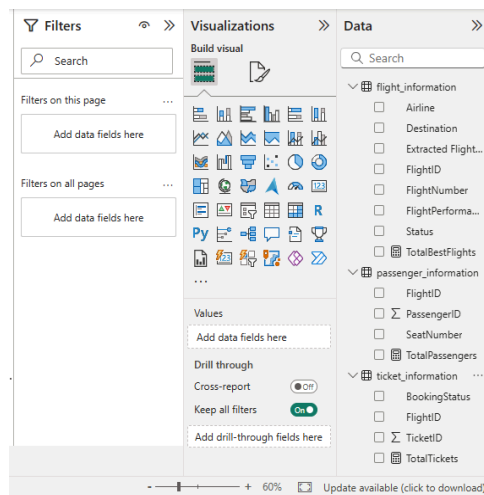
Inserted Text After Delimiter

Renamed Columns

PREVIEW DOWNLOADED ON TUESDAY

Step 4: Apply and Load Cleaned Data

1. **Apply Changes:**
 - a. Click "Close & Apply" to load the cleaned data into Power BI.
2. **Verify Data:**
 - a. Check the **Data View** pane to ensure the cleaned data is correctly reflected.



Task 2: Data Modeling

Step 1: Define Relationships

✓ Relationship 1:

- **Tables:** Flight_Information → Passenger_Information
- **Key:** FlightID
- **Cardinality:** One-to-Many (1:*)
 - o One flight has multiple passengers.
 - o Each passenger is linked to a specific flight.

✓ Relationship 2:

- **Tables:** Flight_Information → Ticket_Information
- **Key:** FlightID
- **Cardinality:** One-to-Many (1:*)
 - o One flight has multiple ticket bookings.
 - o Each ticket is associated with a flight.

Step 2: Create Relationships in Power BI

1. **Open Power BI Desktop**
 - a. Click on **Model View** (diagram icon on the left).
2. **Drag and Drop to Create Relationships**
 - a. Drag **FlightID** from **Flight_Information** to **FlightID** in **Passenger_Information**.
 - b. Drag **FlightID** from **Flight_Information** to **FlightID** in **Ticket_Information**.
3. **Set Cardinality**
 - a. Ensure **One-to-Many (1:*)** cardinality.
 - b. Set the **relationship direction to Single** for better data integrity.

Step 3: Configure and Validate Relationships

1. **Cardinality Check**
 - a. Verify relationships follow **One-to-Many (1:*)** structure.
 - b. Set **cross-filter direction to Single** for better performance.
2. **Referential Integrity**
 - a. Ensure there are no orphaned records in **Passenger_Information** and **Ticket_Information**.

Step 4: Visualizing Data Model

1. Switch to Model View

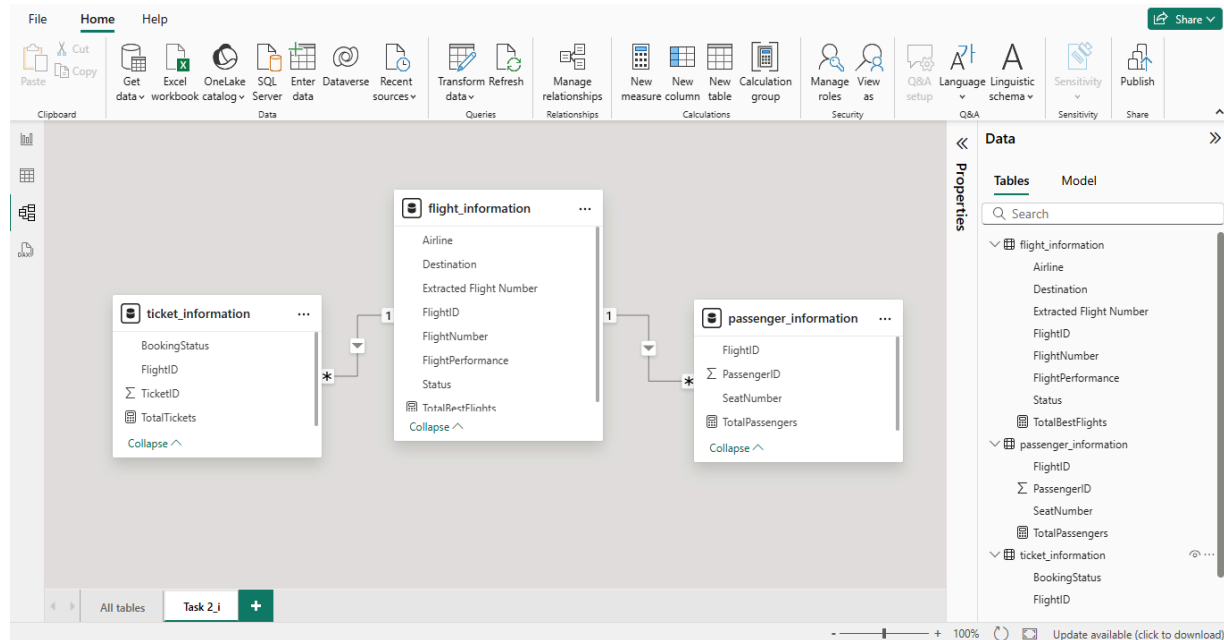
- Open **Model View** to check if relationships are correctly displayed.

2. Organize Tables

- Arrange tables for better visibility and a clean layout.

3. Add Annotations (Optional)

- Label relationships to describe the links between datasets.



Step 1: Add a Conditional Column to Classify Flights

1. Open Power Query Editor
 - a. Click "Transform Data" to access Power Query Editor.
2. Select the Flight_Information Table
 - a. Choose the **Flight_Information** dataset where the **Status** column is present.
3. Add a Conditional Column
 - a. Go to **Add Column** → **Conditional Column**.
 - b. Configure the logic:
 - i. **Column Name:** Flight_Category
 - ii. **Condition:**
 1. If **Status** = "On Time" → **Best**
 2. If **Status** = "Delayed" or "Cancelled" → **To Be Improved**
 - c. Click **OK** to apply changes.

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

	FlightNumber	Airline	Destination	Status	Flight Performance	
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 C	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

The right-hand pane shows the 'Query Settings' for 'flight_information'. The 'PROPERTIES' section shows the name 'flight_information'. The 'APPLIED STEPS' section shows the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Removed Columns
- Removed Duplicates
- Added Conditional Column

Step 2: Extract Flight Number Using “Column from Examples”

1. Select Flight_Information Table

- Choose the **Flight_Information** dataset.
- Select the **FlightNumber** column.

2. Add Column from Examples

- Go to **Add Column > Column from Examples > From Selection**.
- Type examples of the desired output:
 - For **FL1102**, enter **1102**.
 - For **FL1435**, enter **1435**.
- Power BI will detect the pattern and generate the new column.

3. Rename Column

- Rename the new column to **Flight_Number_Extracted**.

The screenshot shows the Power BI Desktop interface with the 'flight_information' table loaded. The table has columns: Airline, Destination, Status, Flight Performance, and Extracted Flight Number. The 'Extracted Flight Number' column contains the last four digits of the flight numbers. The 'APPLIED STEPS' pane on the right shows the steps taken to create this column: Source, Navigation, Promoted Headers, Changed Type, Removed Columns, Removed Duplicates, Added Conditional Column, Inserted Text After Delimiter, and Renamed Columns.

	Airline	Destination	Status	Flight Performance	Extracted Flight Number
1	Airline D	Houston	On Time	Best	1102
2	Airline B	Chicago	On Time	Best	1435
3	Airline A	New York	Cancelled	To Be Improved	1860
4	Airline C	Chicago	Delayed	To Be Improved	1270
5	Airline C	New York	Delayed	To Be Improved	1106
6	Airline A	Phoenix	On Time	Best	1071
7	Airline C	Los Angeles	Cancelled	To Be Improved	1700
8	Airline C	Los Angeles	Delayed	To Be Improved	1020
9	Airline A	Los Angeles	Cancelled	To Be Improved	1614
10	Airline D	Chicago	Cancelled	To Be Improved	1121
11	Airline A	Phoenix	On Time	Best	1466
12	Airline D	New York	Delayed	To Be Improved	1214
13	Airline C	Houston	On Time	Best	1330
14	Airline C	New York	Delayed	To Be Improved	1458
15	Airline B	Houston	Delayed	To Be Improved	1087
16	Airline B	New York	Delayed	To Be Improved	1372
17	Airline D	Phoenix	Delayed	To Be Improved	1099
18	Airline B	Houston	Delayed	To Be Improved	1871
19	Airline B	Chicago	Cancelled	To Be Improved	1663
20	Airline A	New York	On Time	Best	1130
21	Airline B	New York	Cancelled	To Be Improved	1661
22	Airline A	Houston	Delayed	To Be Improved	1308
23	Airline A	Chicago	On Time	Best	1769

Task 4: Calculations Using DAX

Perform key calculations using **DAX (Data Analysis Expressions)** to extract insights.

1. Total Passengers for a Specific Flight

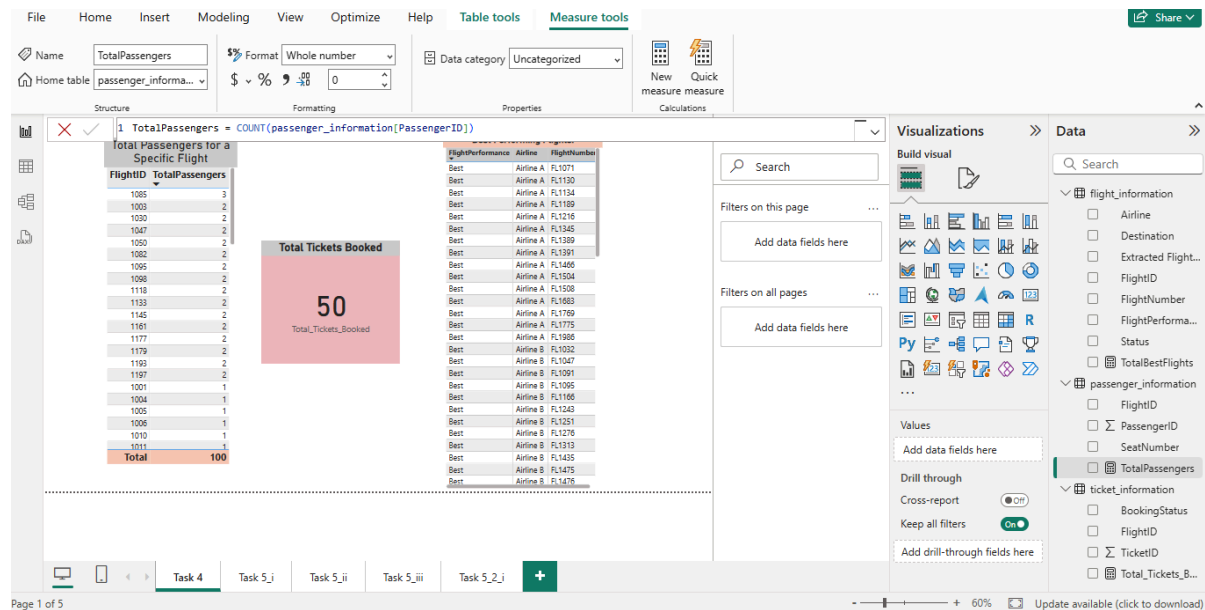
Goal:

Count the number of passengers associated with a specific **FlightID**.

DAX Formula

TotalPassengers = COUNT(passenger_information[PassengerID])

This measure calculates the total number of passengers by counting unique **PassengerID** values.



2. Total Tickets Booked

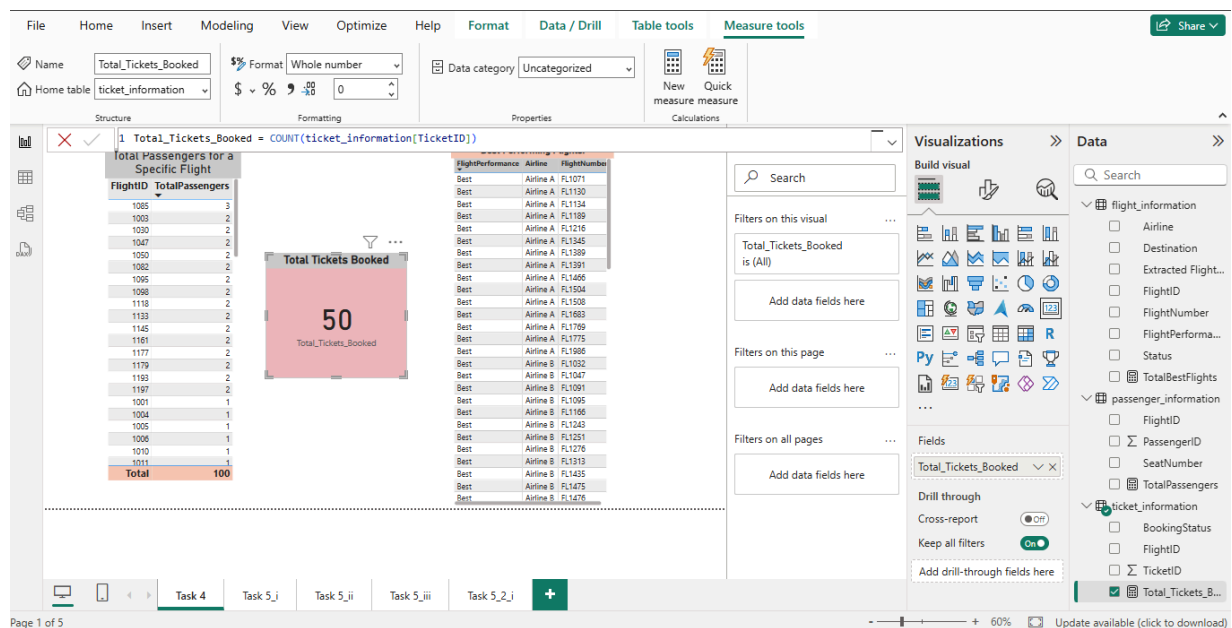
Goal:

Count the total number of tickets booked across all flights.

DAX Formula

```
Total_Tickets_Booked = COUNT(ticket_information[TicketID])
```

This measure calculates the total number of tickets by counting unique **TicketID** values.



3. Filtered Table Showing “Best” Flights Only

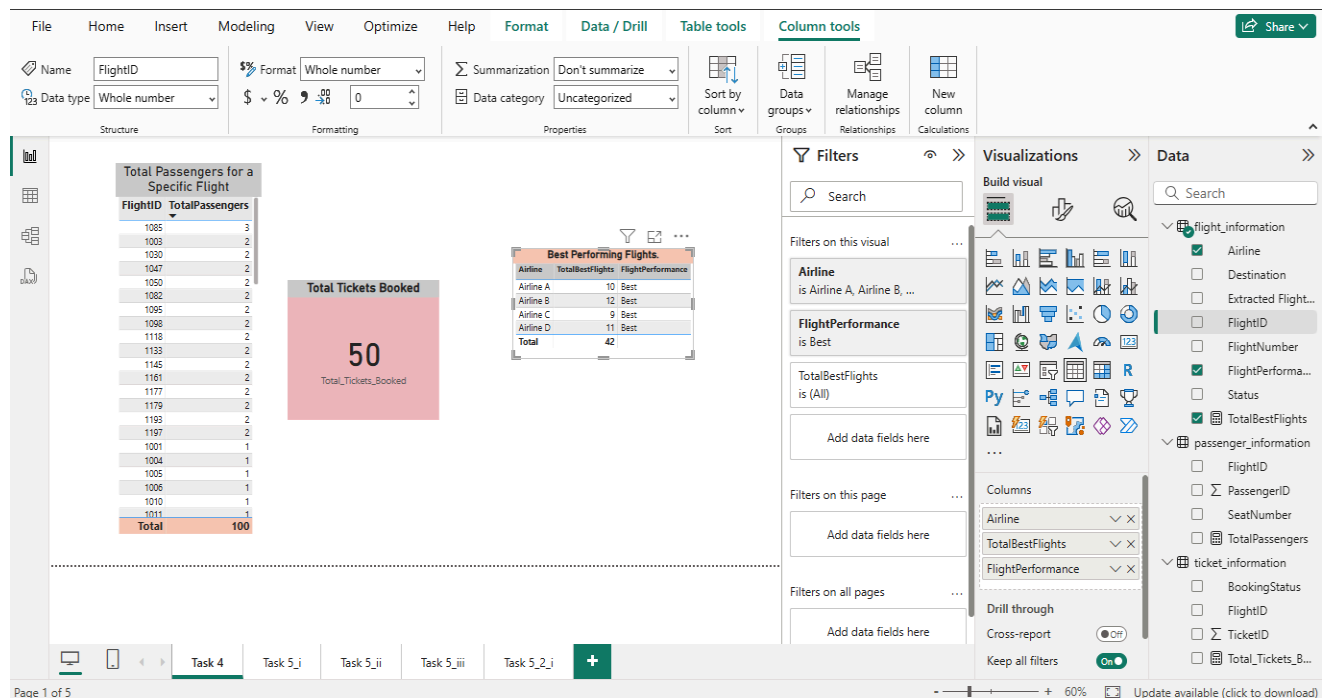
Goal

Filter the **Flight_Information** table to show only flights classified as “**Best**”.

DAX Formula

```
TotalBestFlights =  
CALCULATE( COUNT(passenger_information[FlightID]), FILTER(Flight_Information,  
flight_information[FlightPerformance] = "Best") )
```

This measure counts the number of passengers for flights categorized as “**Best**” in the **Flight_Information** table.



Task 5: Visualization and Interactive Features

Enhance the Power BI report with visualizations and interactive elements for better insights.

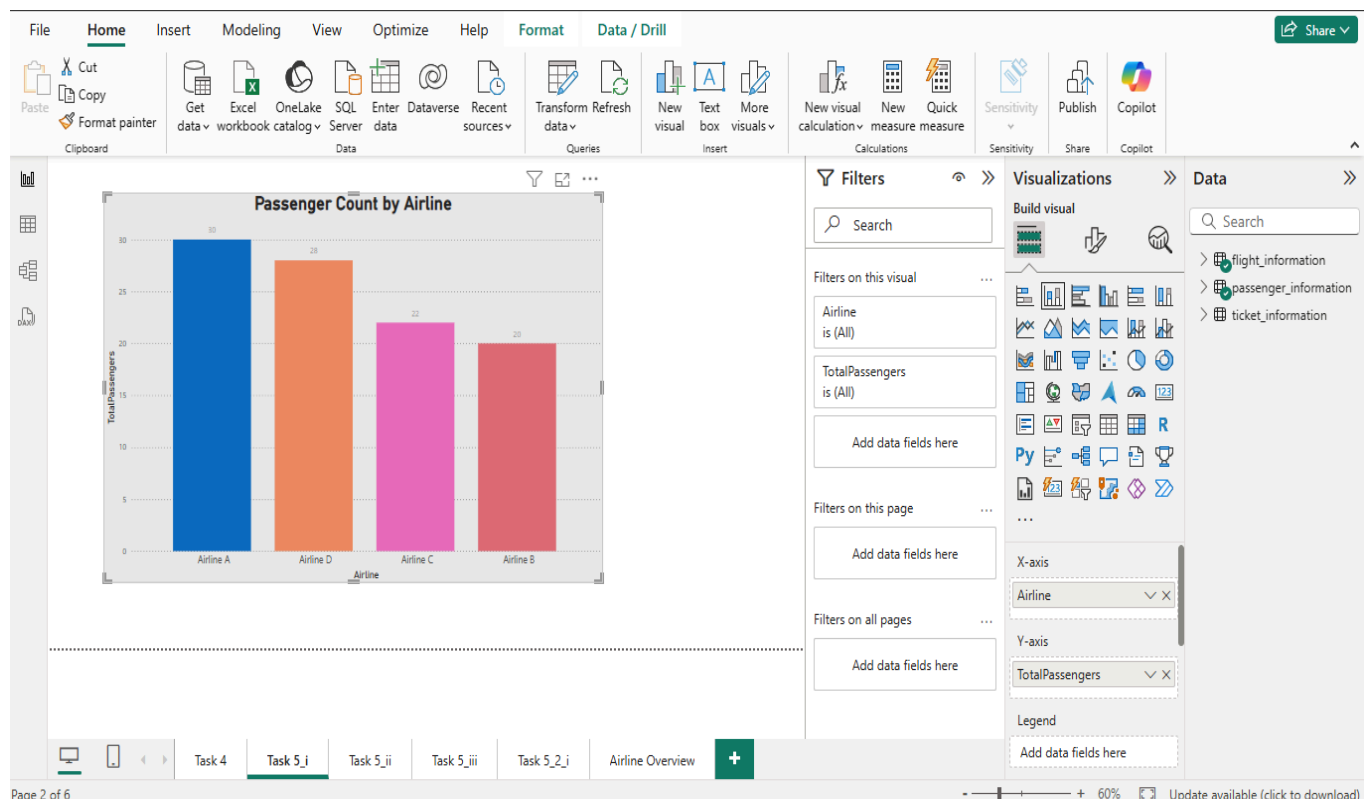
Step 1: Create Required Visuals

1. Passenger Count by Airline

- **Visual Type: Clustered Column Chart or Pie Chart**
- **Steps:**
 - Select **"Clustered Column Chart"** or **"Pie Chart"** from the **Visualizations** pane.
 - Drag **Airline** from **Flight_Information** to **Axis/Legend**.
 - Drag **TotalPassenger** from **Passenger_Information** to **Values**.
 - Change aggregation to **Count**.
- **Customization:**

✓ **Title:** "Passenger Count by Airline"

✓ **Use distinct colors** for better visibility



Step 2: Create Additional Required Visuals

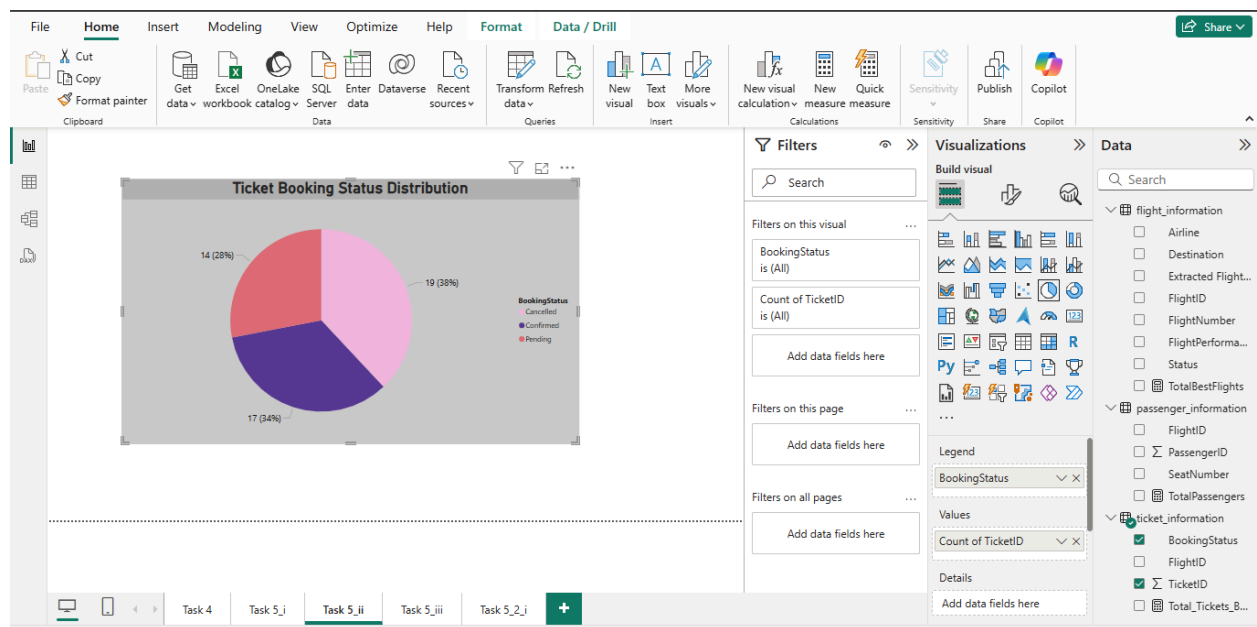
2. Ticket Booking Statuses

- **Visual Type: Pie Chart**
- **Steps:**
 - Select **"Pie Chart"** from the **Visualizations** pane.
 - Drag **BookingStatus** from **Ticket_Information** to **Legend/Axis**.
 - Drag **TicketID** from **Ticket_Information** to **Values** and set aggregation to **Count**.
- **Customization:**

✓ **Title:** "Ticket Booking Status Distribution"

✓ Apply **contrasting colors** for different statuses

✓ Enable **data labels** for quick insights



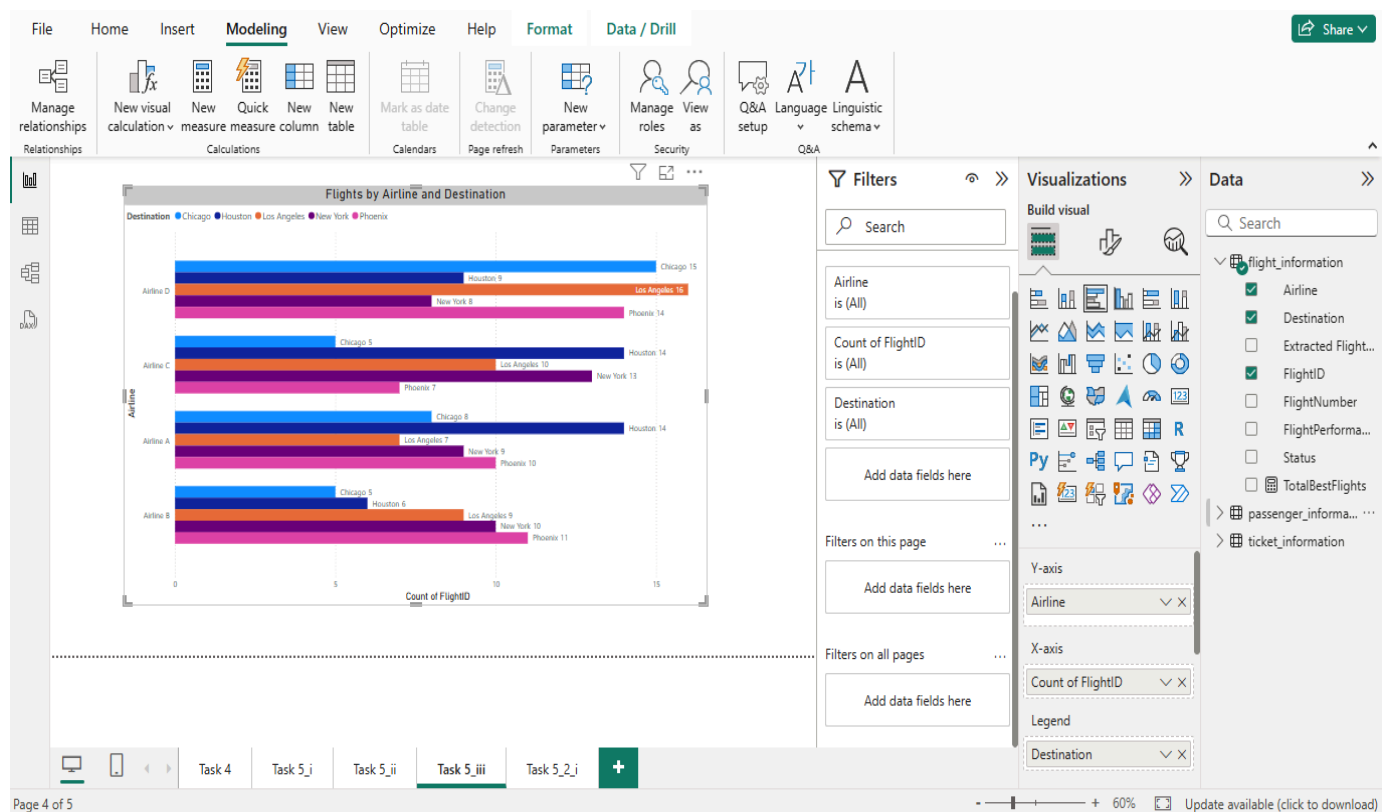
3. Flights by Airline and Destination

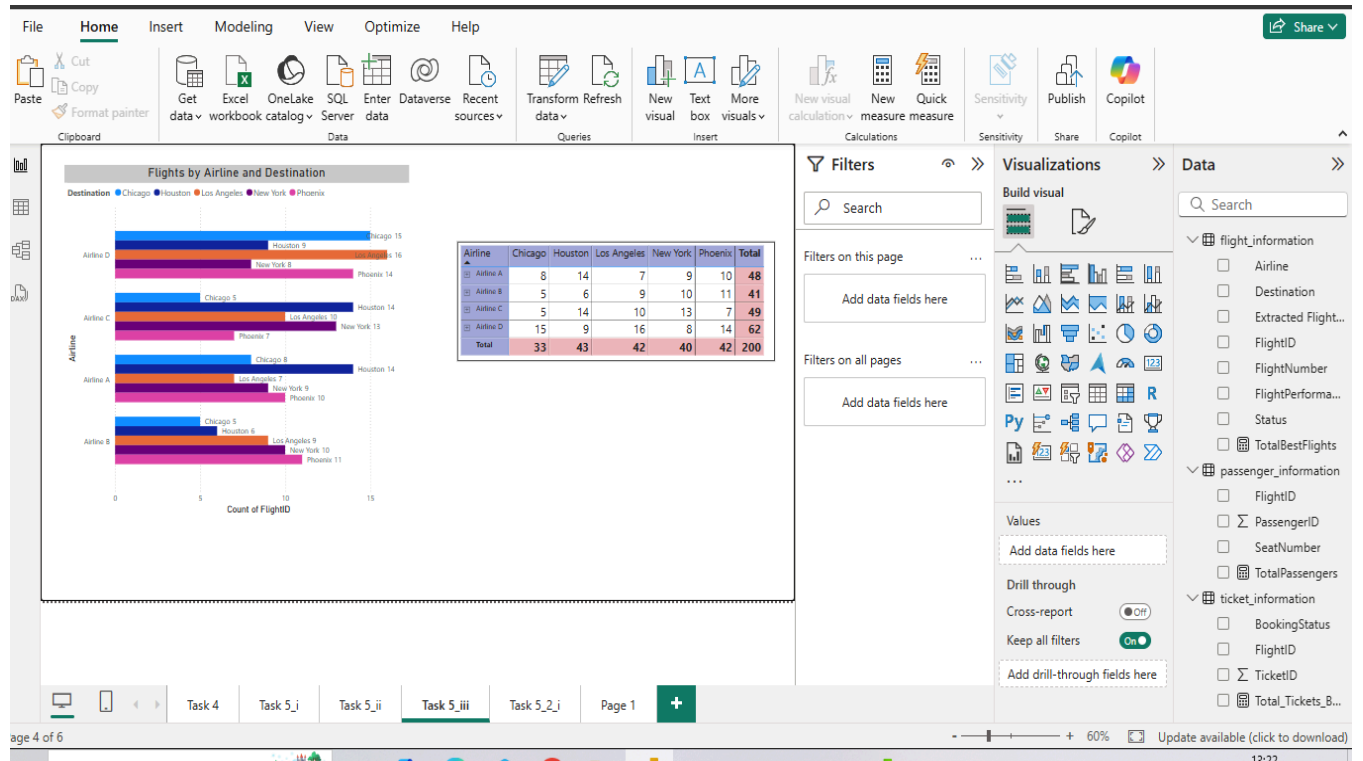
- **Visual Type: Stacked Column Chart**
- **Steps:**
 - o Select **"Stacked Column Chart"** from the **Visualizations** pane.
 - o Drag **Airline** from **Flight_Information** to **Axis**.
 - o Drag **Destination** from **Flight_Information** to **Legend**.
 - o Drag **FlightID** from **Flight_Information** to **Values** and set aggregation to **Count**.
- **Customization:**

✓ **Title:** "Flights by Airline and Destination"

✓ Use **stacked bars** for easy comparison

✓ Enable **filters** for interactive analysis





Step 3: Add Interactive Features

✓ Destination and Airline Filters:

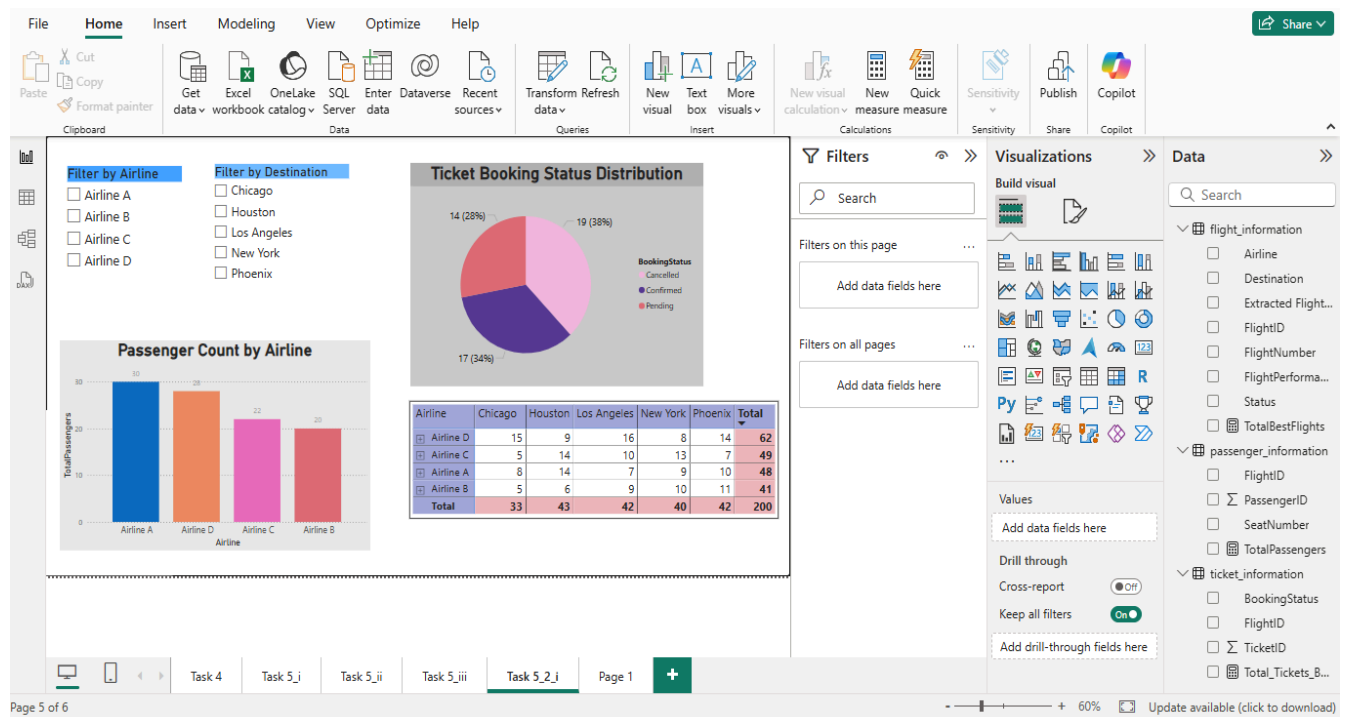
- Visual Type: Slicer

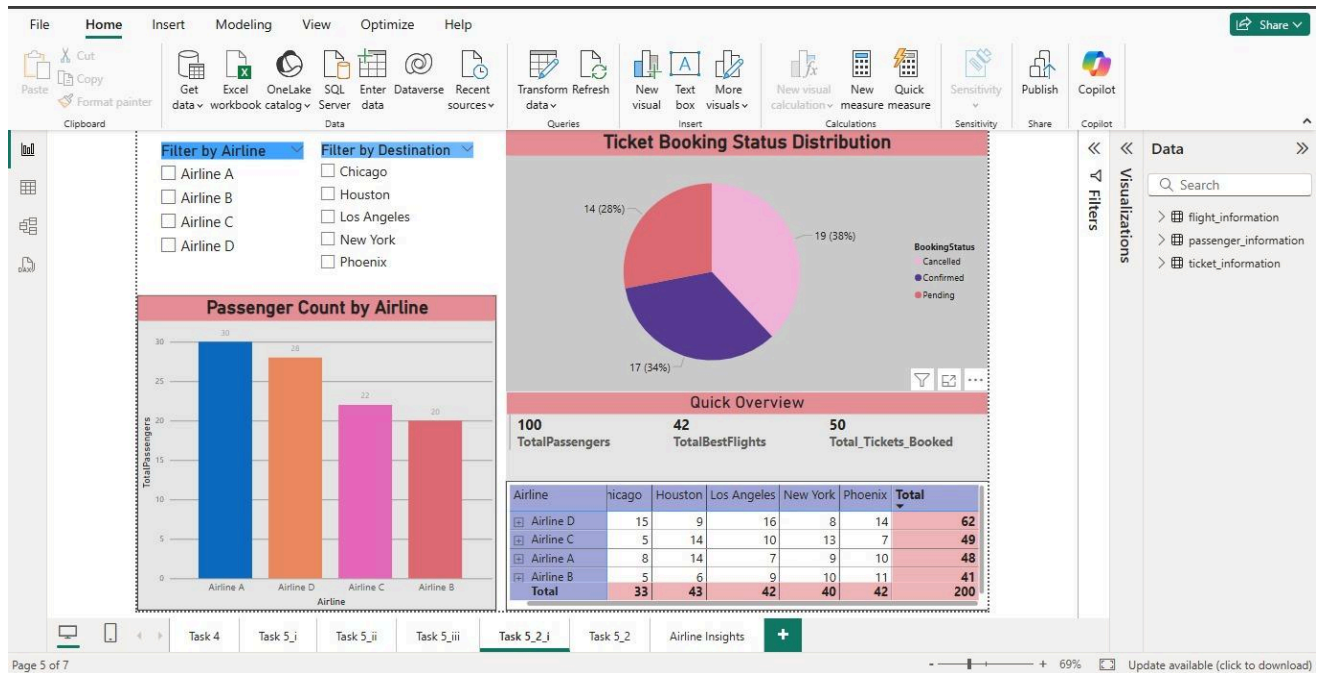
Steps:

- Select "Slicer" from the **Visualizations** pane.
- Drag **Destination** from **Flight_Information** to the slicer.
- Add another slicer and drag **Airline** into it.
- Enable **Multi-Select** to allow selecting multiple destinations or airlines.

Customization:

- ✓ Add title: "Filter by Destination" and "Filter by Airline".
- ✓ Enable **multi-selection** for better user control
- ✓ Apply **dropdown or list format** for better readability
- ✓ These filters will allow users to **dynamically explore data** based on their selected destinations and airlines.





✓ Quick Views:

- **Select Visualization**
 - Choose **"Card"** from the Visualizations pane.
- **Add Key Metrics**
 - Include **Total Passengers, Best Flights, and Total Tickets.**
- **Format Data**
 - Display **numerical values & percentages** clearly.
- **Customize for Clarity**
 - Title: **"Quick Overview"**
 - Use **colors & icons** for better presentation.

The screenshot displays the Microsoft Power BI Desktop interface. The main canvas shows a 'Quick Overview' card with the following data:

Quick Overview		
100	42	50
TotalPassengers	TotalBestFlights	Total_Tickets_Booked

The interface includes a ribbon with tabs: File, Home, Insert, Modeling, View, Optimize, and Help. The Home tab is active, showing various toolbars for data sources, queries, insertions, calculations, and sharing. On the right, the 'Visualizations' pane is open, showing the 'Build visual' section with a 'Card' visualization selected. The 'Filters' pane is also visible, showing filters on this page and all pages. The 'Data' pane on the far right lists the data model, including tables like flight_information, passenger_information, and ticket_information, with their respective fields.

Step 4: Create Airline-Specific Pages with Interactive Features

Goal:

- ✓ Create an **"Airline Insights"** page for flight details.
- ✓ Add a **back button** for easy navigation.
- ✓ Use **bookmarks & interactive buttons** for airline-specific views.

Step 4.1: Create Airline Insights Page

1. **Add a New Page:**
 - a. Click **"+"** to create a new page.
 - b. Rename it to **"Airline Insights"**.
2. **Add a Table for Flight Details:**
 - a. Select **"Table"** from the Visualizations pane.
 - b. Drag these fields into the table:
 - i. **TicketID** (from Ticket_Information)
 - ii. **Airline** (from Flight_Information)
 - iii. **Destination** (from Flight_Information)
 - iv. **BookingStatus** (from Ticket_Information)
 - v. **Status** (from Flight_Information)
 - vi. **Flight_Category** (from Flight_Information)
3. **Customize the Table:**
 - a. Enable **sorting** for columns.
 - b. Apply **conditional formatting** for key details.
 - c. Add a **title: "Airline Insights"**.

FileHomeInsertModelingViewOptimizeHelp

PasteCutCopyFormat painter

Get dataExcelOneLakeSQLEnter dataDatabasesRecent sources

Transform Refresh data

New visualText boxMore visuals

New visual calculationNew measureQuick measure

SensitivityPublishCopilot

Airline Insights

TicketID	Airline	Destination	BookingStatus	FlightPerformance
5001	Airline A	Houston	Pending	To Be Improved
5002	Airline B	Los Angeles	Confirmed	To Be Improved
5003	Airline B	Houston	Cancelled	Best
5004	Airline C	Houston	Cancelled	Best
5005	Airline B	New York	Cancelled	To Be Improved
5006	Airline C	Houston	Pending	Best
5007	Airline B	Phoenix	Pending	Best
5008	Airline C	Houston	Cancelled	To Be Improved
5009	Airline D	Houston	Cancelled	Best
5010	Airline A	New York	Cancelled	To Be Improved
5011	Airline B	Los Angeles	Pending	Best
5012	Airline B	Phoenix	Cancelled	To Be Improved
5013	Airline D	Chicago	Cancelled	Best
5014	Airline B	Los Angeles	Confirmed	Best
5015	Airline D	Los Angeles	Confirmed	To Be Improved
5016	Airline A	New York	Pending	Best
5017	Airline A	Phoenix	Cancelled	Best
5018	Airline C	Houston	Cancelled	Best
5019	Airline C	New York	Confirmed	To Be Improved
5020	Airline D	Chicago	Pending	Best
5021	Airline B	Phoenix	Confirmed	Best
5022	Airline C	Houston	Confirmed	To Be Improved
5023	Airline D	Los Angeles	Confirmed	To Be Improved
5024	Airline C	New York	Confirmed	To Be Improved
5025	Airline D	Houston	Cancelled	To Be Improved
5026	Airline D	New York	Cancelled	Best
5027	Airline B	Los Angeles	Confirmed	To Be Improved
5028	Airline D	Phoenix	Pending	Best
5029	Airline C	New York	Pending	Best
5030	Airline D	Houston	Pending	To Be Improved
5031	Airline D	New York	Pending	Best
5032	Airline A	Houston	Confirmed	To Be Improved

Filters

Search

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Visualizations

Build visual

Values

Add data fields here

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Data

Search

flight_information

Airline

Destination

Extracted Flight...

FlightID

FlightNumber

FlightPerforma...

Status

TotalBestFlights

passenger_information

FlightID

PassengerID

SeatNumber

TotalPassengers

ticket_information

BookingStatus

FlightID

TicketID

Total_Tickets_B...

Task 4Task 5_iTask 5_iiTask 5_iiiTask 5_2 iTask 5_2Airline Insights xPage 1

Page 7 of 860%Update available (click to download)

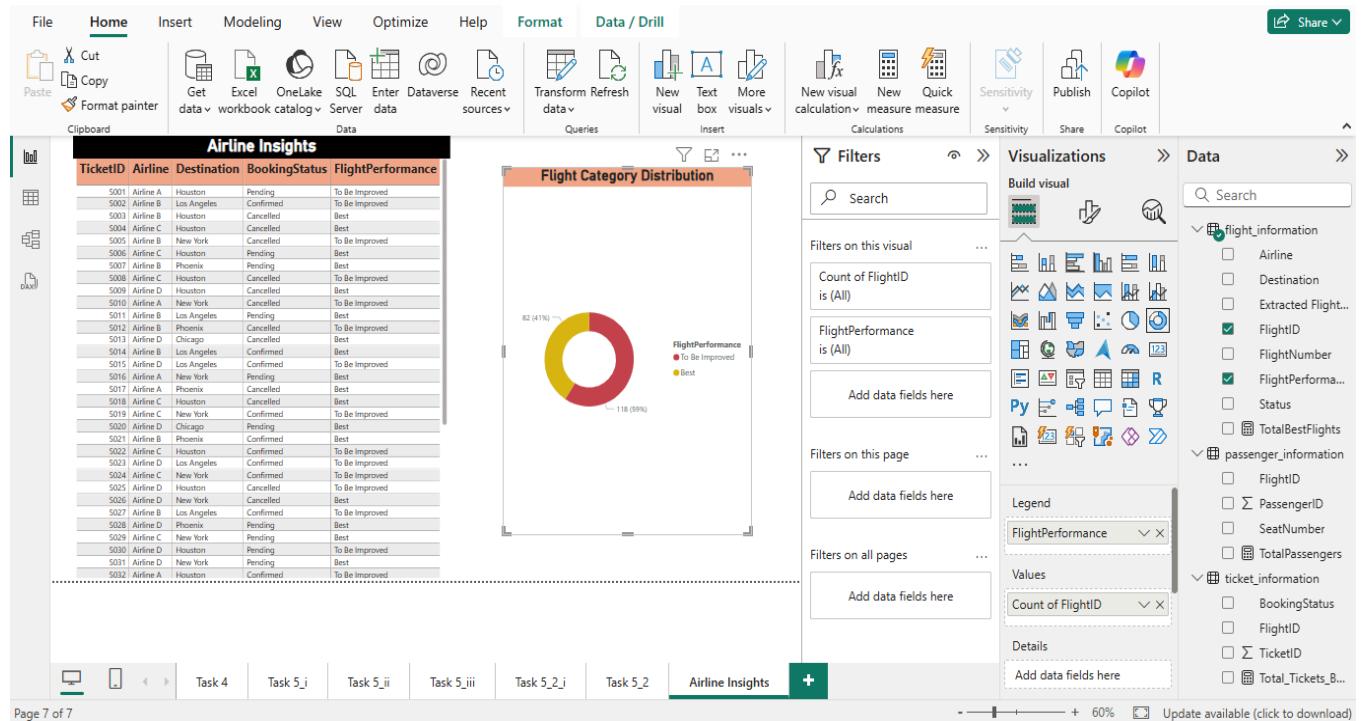
Step 4.2: Add a Pie Chart for Flight Category Distribution

1. Insert a Donut Chart:

- Select **"Donut Chart"** from the Visualizations pane.
- Drag **Flight_Category** to the **Legend**.
- Drag **TicketID** to **Values** and set aggregation to **Count**.

2. Customize the Pie Chart:

- Add title: **"Flight Category Distribution"**.
- Enable **data labels** for clarity.
- Use **distinct colors** for better visualization.



Step 4.3: Add a Back Button for Navigation

1. Insert Back Button:

- Go to **“Insert” → “Buttons” → Select “Back”**.
- Position it at the **top or bottom** of the page.

2. Set Button Action:

- Click the button and open the **“Format”** pane.
- Under **“Action”**, set it to **“Back”**.
- This allows users to return to the **main page** easily.

The screenshot displays the Microsoft Power BI Desktop interface. The main view shows a report titled "Airline Insights" with a table of flight data and a donut chart titled "Flight Category Distribution". The table has columns: TicketID, Airline, Destination, BookingStatus, and FlightPerformance. The donut chart shows two categories: "To Be Improved" (82 (41%)) and "Best" (118 (59%)). The "Format" pane is open on the right, showing the "Action" property set to "Back".

TicketID	Airline	Destination	BookingStatus	FlightPerformance
5001	Airline A	Houston	Pending	To Be Improved
5002	Airline B	Los Angeles	Confirmed	To Be Improved
5003	Airline B	Houston	Cancelled	Best
5004	Airline C	Houston	Cancelled	Best
5005	Airline B	New York	Cancelled	To Be Improved
5006	Airline C	Houston	Pending	Best
5007	Airline B	Phoenix	Pending	Best
5008	Airline C	Houston	Cancelled	To Be Improved
5009	Airline D	Houston	Cancelled	Best
5010	Airline A	New York	Cancelled	To Be Improved
5011	Airline B	Los Angeles	Pending	Best
5012	Airline B	Phoenix	Cancelled	To Be Improved
5013	Airline D	Chicago	Cancelled	Best
5014	Airline B	Los Angeles	Confirmed	Best
5015	Airline D	Los Angeles	Confirmed	To Be Improved
5016	Airline A	New York	Pending	Best
5017	Airline A	Phoenix	Cancelled	Best
5018	Airline C	Houston	Cancelled	Best
5019	Airline C	New York	Confirmed	To Be Improved
5020	Airline D	Chicago	Pending	Best
5021	Airline B	Phoenix	Confirmed	Best
5022	Airline C	Houston	Confirmed	To Be Improved
5023	Airline D	Los Angeles	Confirmed	To Be Improved
5024	Airline C	New York	Confirmed	To Be Improved
5025	Airline D	Houston	Cancelled	To Be Improved
5026	Airline D	New York	Cancelled	Best
5027	Airline B	Los Angeles	Confirmed	To Be Improved
5028	Airline D	Phoenix	Pending	Best
5029	Airline C	New York	Pending	Best
5030	Airline D	Houston	Pending	To Be Improved
5031	Airline D	New York	Pending	Best
5032	Airline A	Houston	Confirmed	To Be Improved

Step 4.4: Add Filters and Create Bookmarks for Airlines

1. Add a Filter for Airline:

- Drag **Airline** to the **Filters Pane**.
- Set the filter to **"All"** by default.

2. Create Airline-Specific Bookmarks:

- Filter the page for a specific airline.
- Create a Bookmark:**
 - Go to **"View" → Open "Bookmarks Pane"**.
 - Click **"Add"**, then rename it (e.g., **Airline A, Airline B, Airline C, Airline D**).
- Repeat** the process for each airline.

The screenshot displays the Power BI Desktop interface with the 'Airline Insights' dashboard. The dashboard features a table of flight data and a donut chart titled 'Flight Category Distribution'. The 'Filters' pane on the left shows 'Airline' selected. The 'Bookmarks' pane on the right shows four bookmarks: Airline A, Airline B, Airline C, and Airline D. The 'Data' pane on the right shows the data model with tables like flight_information, passenger_information, and ticket_information.

TicketID	Airline	Destination	BookingStatus	FlightPerformance
5001	Airline A	Houston	Pending	To Be Improved
5010	Airline A	New York	Cancelled	To Be Improved
5016	Airline A	New York	Pending	Best
5017	Airline A	Phoenix	Cancelled	Best
5042	Airline A	Houston	Confirmed	To Be Improved
5044	Airline A	Chicago	Pending	To Be Improved
5051	Airline A	New York	Confirmed	To Be Improved
5055	Airline A	New York	Pending	Best
5042	Airline A	Houston	Cancelled	To Be Improved
5045	Airline A	Chicago	Confirmed	Best
5049	Airline A	Phoenix	Cancelled	Best

Flight Category Distribution

Donut Chart Legend: FlightPerformance (To Be Improved, Best)

Bookmarks: Airline A, Airline B, Airline C, Airline D

Data Model: flight_information, passenger_information, ticket_information

Step 4.5: Add Bookmark Buttons for Navigation

1. Go to Main Page:

- Switch to the **Main Page** where you want to add airline-specific buttons.

2. Insert Buttons for Each Bookmark:

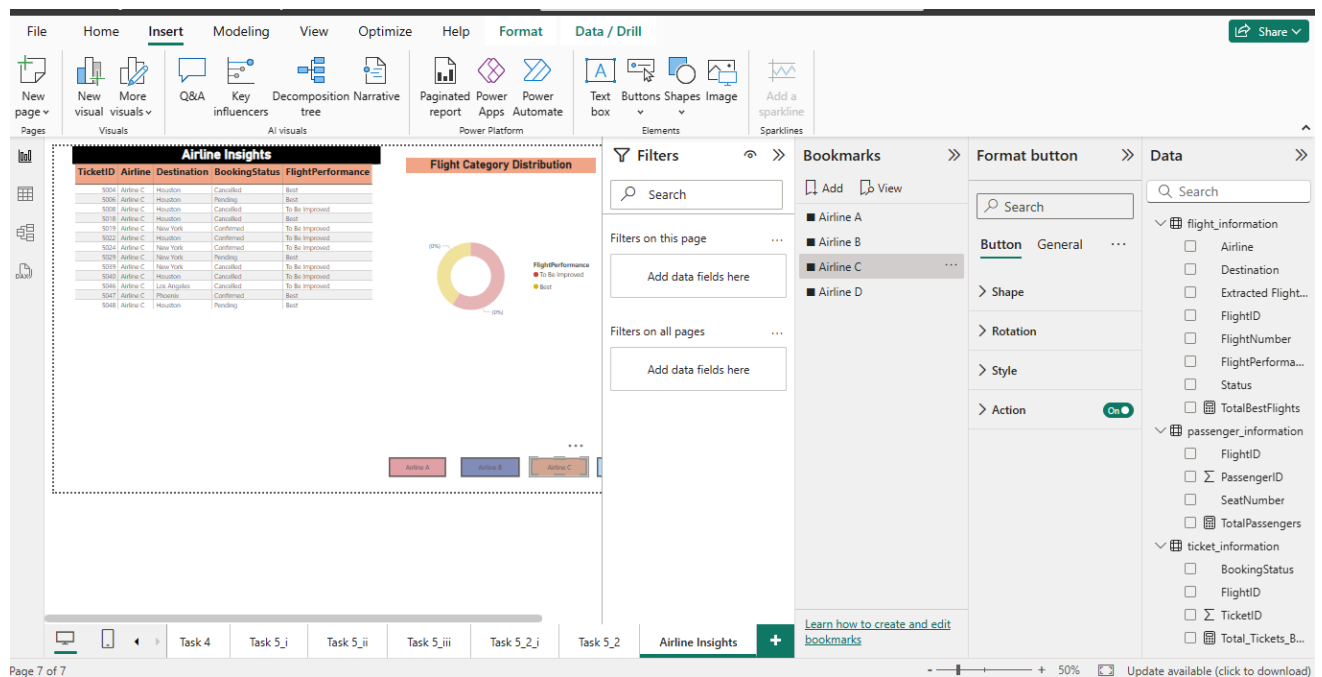
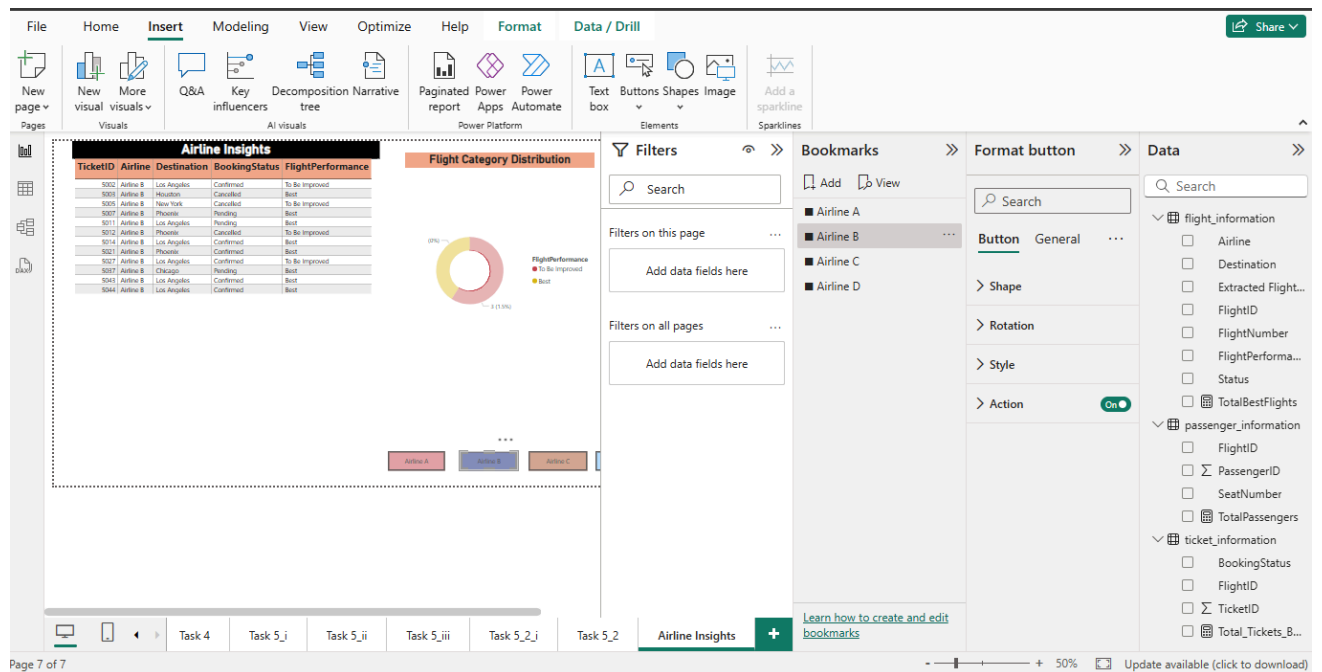
- Go to **"Insert" → "Buttons" → Select "Blank"**.
- Create **four buttons** labeled:
 - Airline A
 - Airline B
 - Airline C
 - Airline D

3. Set Button Actions:

- Select each button and open the **"Format"** pane.
- Enable **"Action"** and set the action type to **"Bookmark"**.
- Link each button to its **corresponding bookmark**.

The screenshot displays the Power BI Desktop interface. The main report area shows a table titled 'Airline Insights' with columns: TicketID, Airline, Destination, BookingStatus, and FlightPerformance. Below the table is a donut chart titled 'Flight Category Distribution' showing the distribution of flight performance categories: To Be Improved (orange), Best (green), and Pending (blue). At the bottom of the report, there are four buttons labeled 'Airline A', 'Airline B', 'Airline C', and 'Airline D'. The 'Format button' pane is open on the right, showing the 'Action' tab. The 'Action' dropdown is set to 'Bookmark'. The 'Bookmark' pane is also open, showing a list of bookmarks: 'Airline A', 'Airline B', 'Airline C', and 'Airline D'. The 'Data' pane is also visible, showing a list of data fields.

TicketID	Airline	Destination	BookingStatus	FlightPerformance
5001	Airline A	Houston	Pending	To Be Improved
5010	Airline A	New York	Cancelled	To Be Improved
5016	Airline A	New York	Pending	Best
5017	Airline A	Phoenix	Cancelled	Best
5032	Airline A	Houston	Confirmed	To Be Improved
5034	Airline A	Chicago	Pending	To Be Improved
5035	Airline A	New York	Confirmed	To Be Improved
5036	Airline A	New York	Pending	Best
5042	Airline A	Houston	Cancelled	To Be Improved
5043	Airline A	Chicago	Confirmed	Best
5049	Airline A	Phoenix	Cancelled	Best



File

Home

Insert

Modeling

View

Optimize

Help

Format

Data / Drill

New page

New visual

More visuals

Q&A

Key influencers

Decomposition tree

Narrative

Paginated report

Power Apps

Power Automate

Text box

Buttons

Shapes

Image

Add a sparkline

Visuals

AI visuals

Power Platform

Elements

Sparklines

Pages

Visuals

AI visuals

Power Platform

Elements

Sparklines

Airline Insights

TicketID	Airline	Destination	BookingStatus	FlightPerformance
5009	Airline D	Houston	Cancelled	Best
5010	Airline D	Chicago	Cancelled	Best
5015	Airline D	Los Angeles	Confirmed	To Be Improved
5020	Airline D	Chicago	Pending	Best
5023	Airline D	Los Angeles	Confirmed	To Be Improved
5025	Airline D	Houston	Cancelled	To Be Improved
5026	Airline D	New York	Cancelled	Best
5028	Airline D	Phoenix	Pending	Best
5029	Airline D	Houston	Pending	To Be Improved
5033	Airline D	New York	Pending	Best
5035	Airline D	New York	Cancelled	Best
5036	Airline D	Chicago	Confirmed	To Be Improved
5041	Airline D	Los Angeles	Confirmed	Best
5050	Airline D	Houston	Cancelled	Best

Flight Category Distribution

Airline A

Airline B

Airline C

Airline D

Filters

Search

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Bookmarks

Add

View

Airline A

Airline B

Airline C

Airline D

Learn how to create and edit bookmarks

Format button

Search

Button

General

Shape

Rotation

Style

Action

Data

Search

flight_information

Airline

Destination

Extracted Flight...

FlightID

FlightNumber

FlightPerforma...

Status

TotalBestFlights

passenger_information

FlightID

PassengerID

SeatNumber

TotalPassengers

ticket_information

BookingStatus

FlightID

TicketID

Total_Tickets_B...

Task 4

Task 5_i

Task 5_ii

Task 5_iii

Task 5_2_i

Task 5_2

Airline Insights

Page 7 of 7

50%

Update available (click to download)

Task 6: Final Dashboard and Power BI Service Configuration

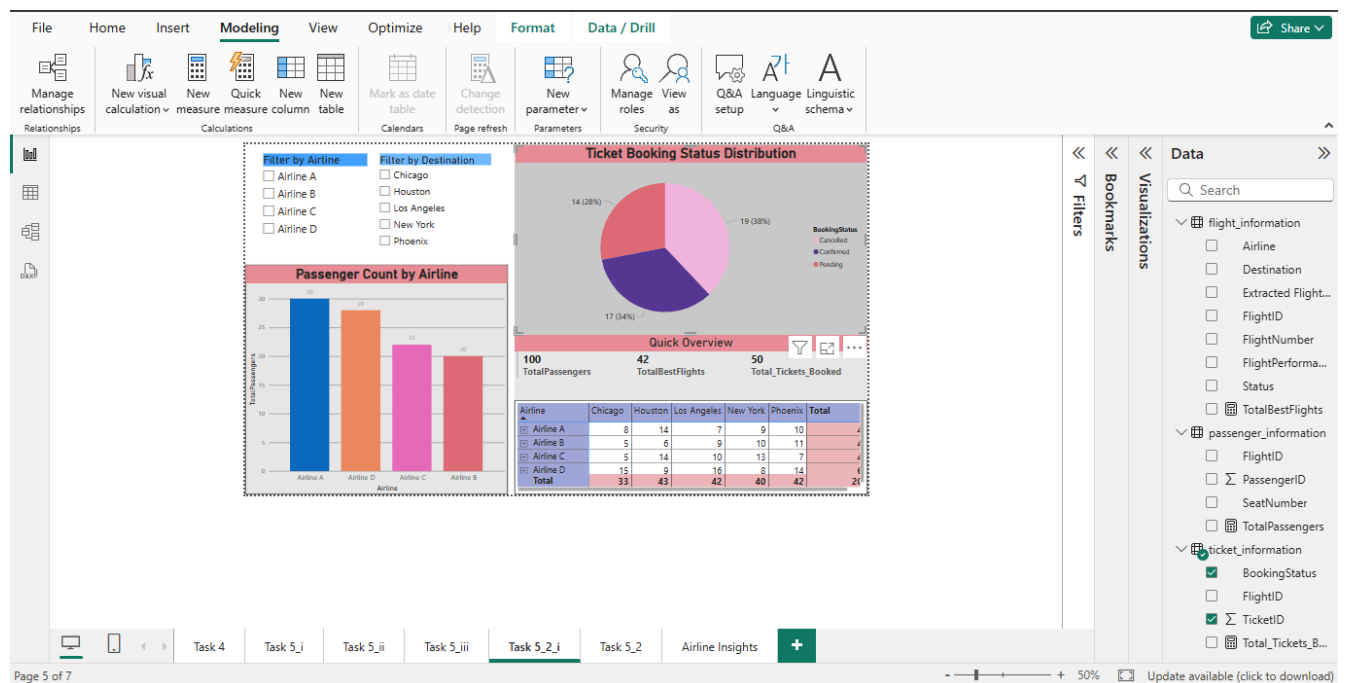
Part 1: Design a Comprehensive Dashboard

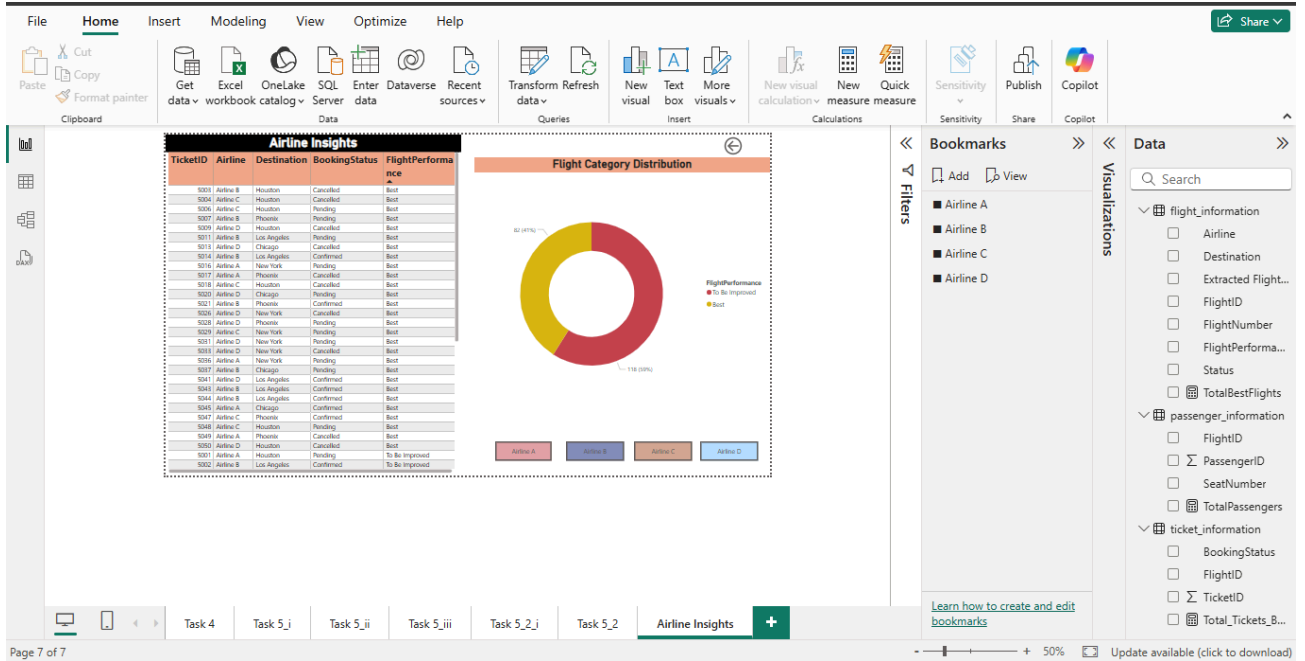
Step 1: Create a Final Dashboard

1. **Open Power BI Desktop:**
 - a. Launch **Power BI** and ensure all required visuals are added.
2. **Add Key Visuals:**
 - a. **Passenger Count by Airline:**
 - i. **Chart Type:** Bar/Column Chart
 - ii. **X-axis:** Airline
 - iii. **Y-axis:** Count of PassengerID
 - b. **Ticket Booking Statuses:**
 - i. **Chart Type:** Pie/Donut Chart
 - ii. **Legend:** BookingStatus
 - iii. **Values:** Count of TicketID
 - c. **Flights by Airline and Destination:**
 - i. **Chart Type:** Matrix/Table
 - ii. **Rows:** Airline
 - iii. **Columns:** Destination
 - iv. **Values:** Count of FlightID
 - d. **Flight Category Count:**
 - i. **Chart Type:** Pie Chart
 - ii. **Legend:** FlightPerformance
 - iii. **Values:** Count of TicketID
 - e. **Flight Insights Table:**
 - i. **Chart Type:** Table
 - ii. **Columns:** TicketID, Airline, Destination, BookingStatus, Status, Flight_Category

Step 2: Customize Dashboard Layout

1. **Set Page Size:**
 - a. Go to **Format Pane** → **Canvas Settings**.
 - b. Choose **16:9** for a **standard layout**.
2. **Add Titles & Tooltips:**
 - a. Assign **clear titles** to each visual.
 - b. Enable **tooltips** for additional insights.
3. **Apply Consistent Theme:**
 - a. Use a **uniform color scheme** that aligns with the airline's branding.





Part 2: Configure Row-Level Security (RLS) for Airline

Step 1: Create Role for Airline D

1. Open Power BI Desktop:

- Go to **Model View** (third icon on the left).

2. Define Role:

- Click **Manage Roles** from the ribbon.
- Click **Create** and name the role as **Airline_D_Role**.

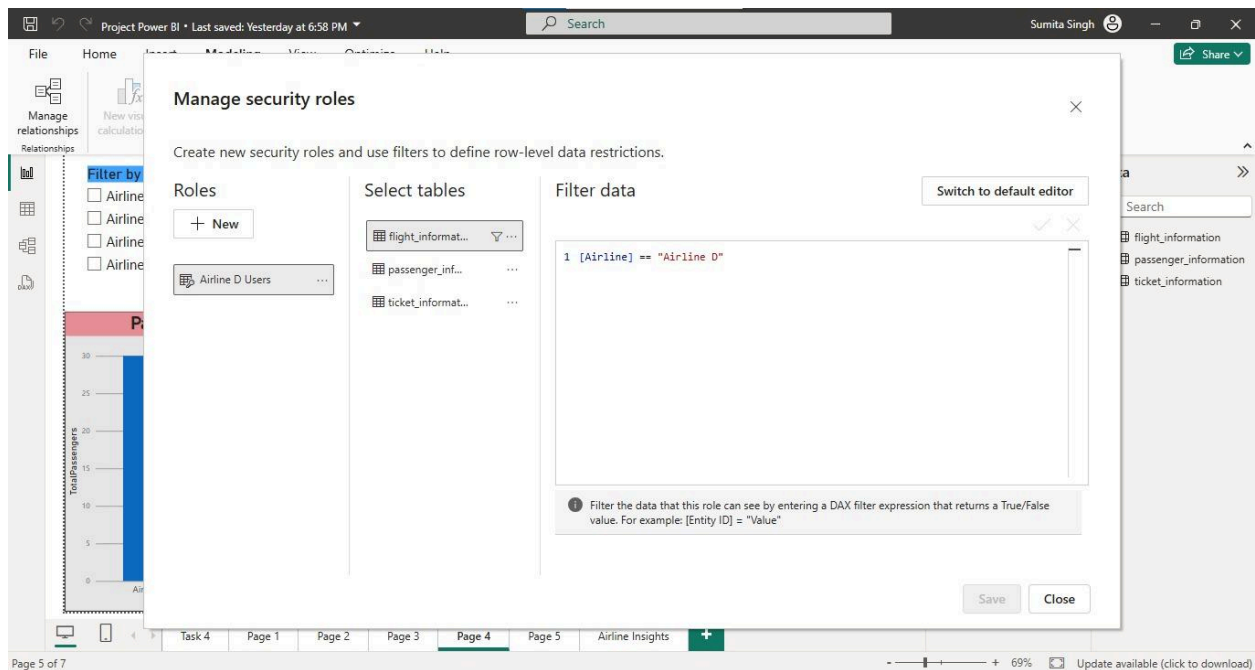
3. Set Filter Condition:

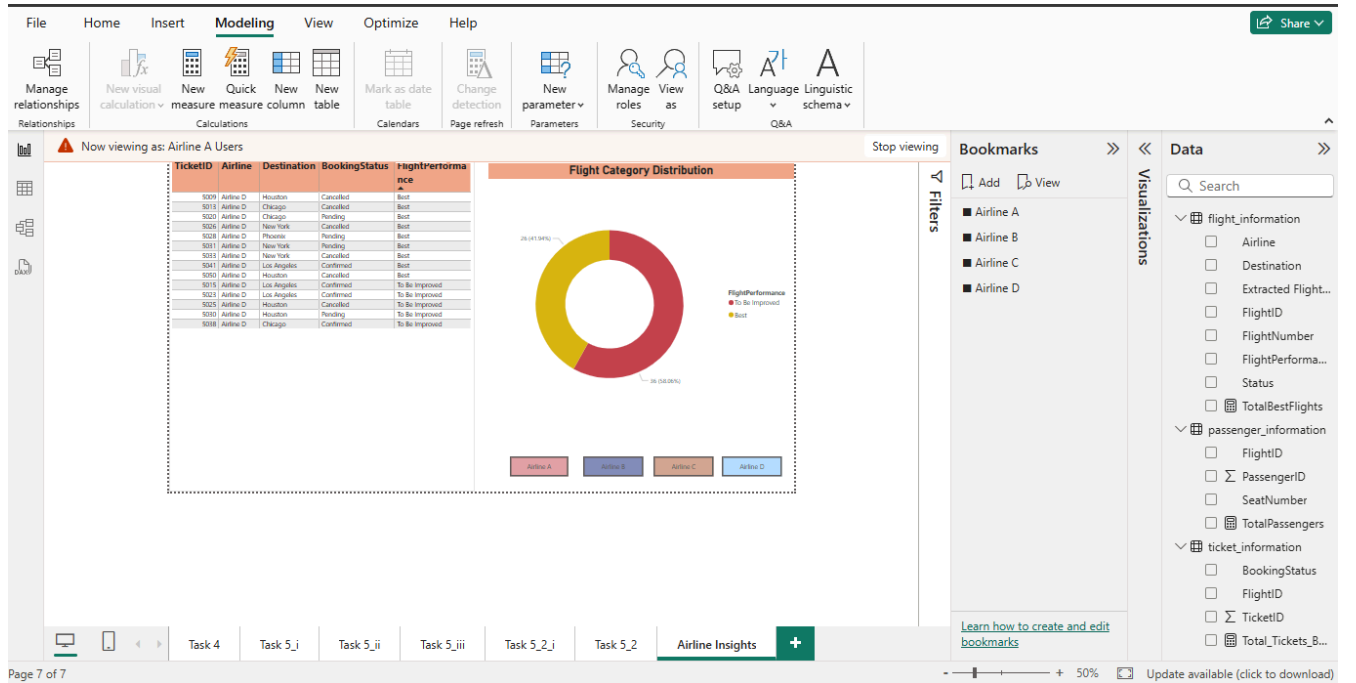
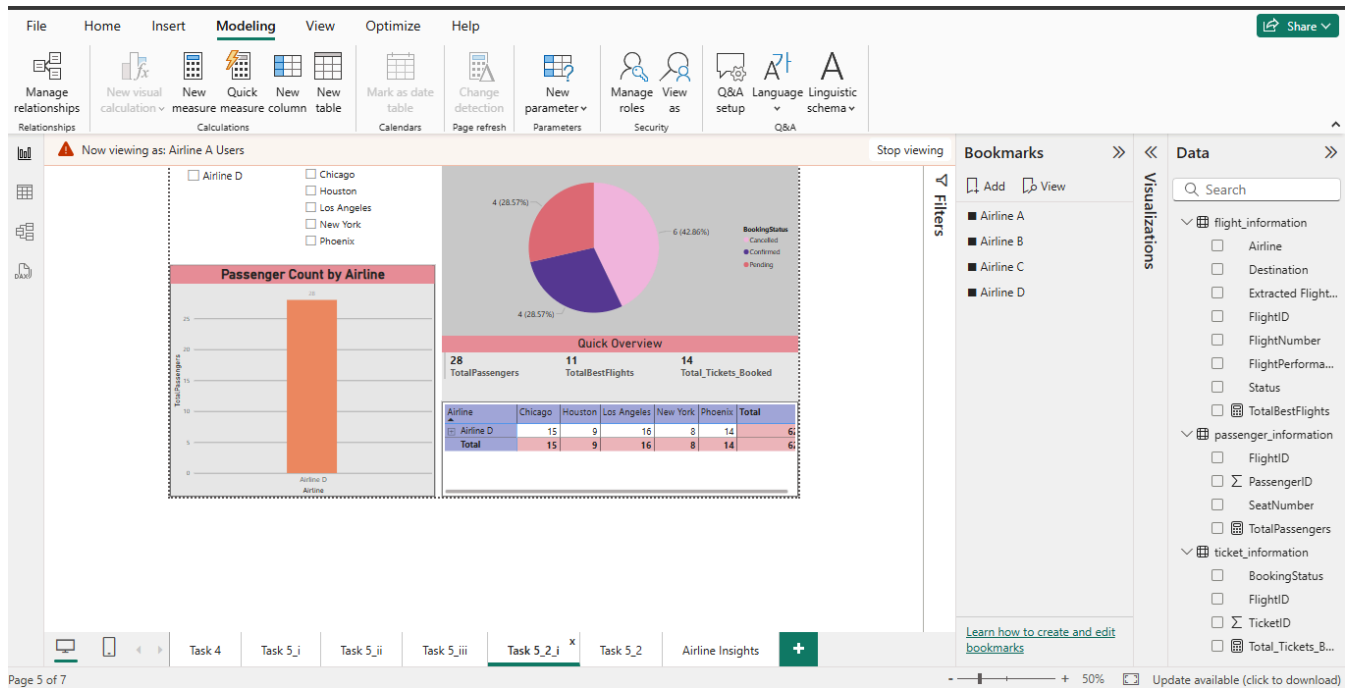
- Select the **Flight_Information** table.
- Apply this **DAX expression**:

```
[Airline] = "Airline D"
```

4. Save and Validate:

- Click **Save** after applying the condition.
- Click on **View As Role** to test and ensure only **Airline D** data is visible.





Step 2: Assign User to Role in Power BI Service

1. Publish the Report:

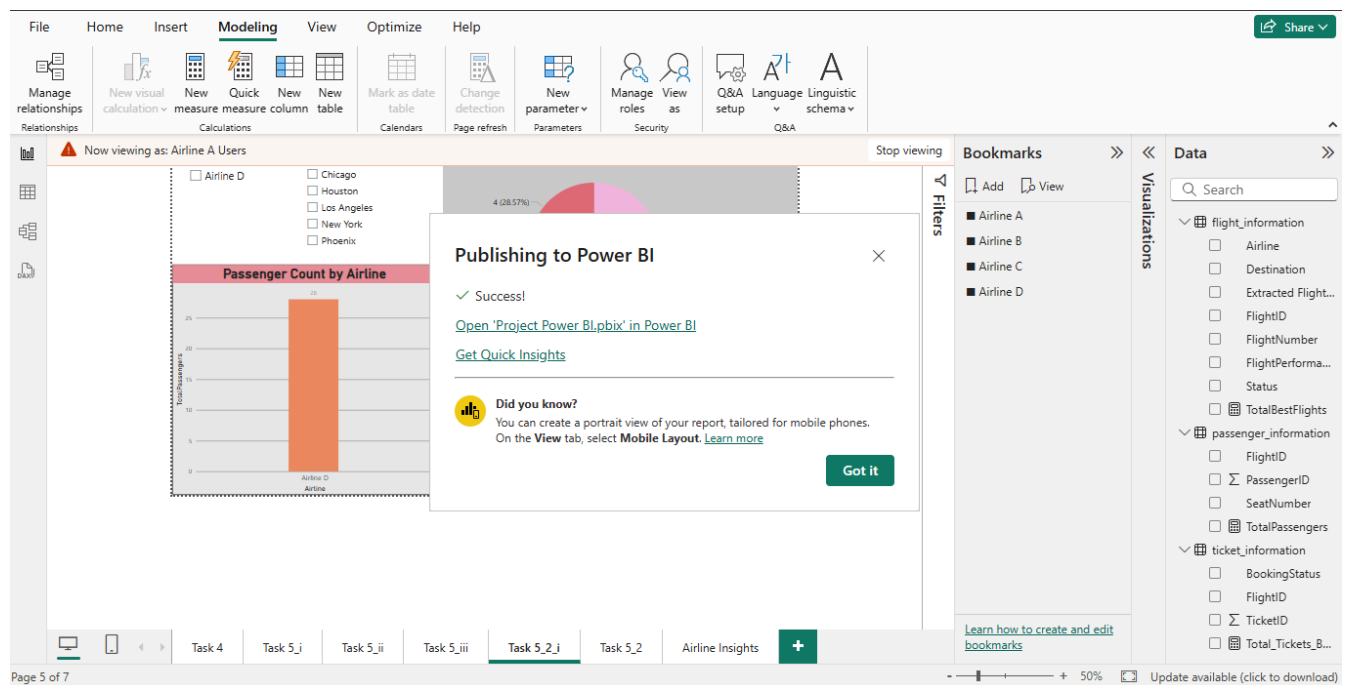
- Click **Publish** from the **Home** tab.
- Select the desired **workspace** in **Power BI Service**.

2. Open Report in Power BI Service:

- Go to **Power BI Service**.
- Open the **published dataset**.

3. Configure Security:

- Click on the **More Options (...)** beside the dataset.
- Select **Security**.
- Assign the role **Airline_A_Role** to the intended user(s).
- Add their **email IDs** and click **OK**.



← → ↺

app.powerbi.com/groups/b9066273-cb57-40e1-a740-783a9d5eeabe/list?experience=power-bi

☆ 📄 👤 ⋮

Power BI Final Project

🔍 Search

Trial: 57 days left 📢 ⚙️ ⬇️ ? 👤

Home

Create

Browse

OneLake

Apps

Metrics

Workspaces

Final Project

...

Power BI

Final Project

+ New item 📁 New folder → Import

Create app 👤 Manage access ⚙️ Workspace settings

🔍 Filter by keyword 📏 Filter ⋮ 👤

📄

Choose from predefined task flows or add a task to build one (preview)

Select from one of Microsoft's predefined task flows or add a task to start building one yourself.

Select a predefined task flow + Add a task

	Name	Type	Task	Owner	Refreshed	Next refresh	Endorsemen	Sensitivity	Included in app
📊	Project Power BI	Report	—	Final Project	02/04/2025, 1...	—	—	—	<input type="checkbox"/> No
🔍	Project Power BI	Semantic ...	—	Final Project	02/04/2025, ...	03/04/2025, ...	—	—	

← → ↺

app.powerbi.com/groups/b9066273-cb57-40e1-a740-783a9d5eeabe/rowlevelsecurity/4115528?experience=power-bi

☆ 📄 👤 ⋮

Power BI Final Project > Row-Level Security

🔍 Search

Trial: 57 days left 📢 ⚙️ ⬇️ ? 👤

Home

Create

Browse

OneLake

Apps

Workspaces

Final Project

Project Power BI

...

Power BI

Row-Level Security

Airline A Users (1)

Members (1)

People or groups who belong to this role

Enter email addresses

Add

Sumita Singh ×

Save Cancel

Part 3: Schedule Data Refresh at 5 PM Daily

Step 1: Configure Scheduled Refresh

1. **Go to Dataset Settings:**
 - a. Open **Power BI Service**.
 - b. Click on **More Options (...)** next to the dataset.
 - c. Select **Settings**.
2. **Set Data Source Credentials:**
 - a. Expand **Data Source Credentials**.
 - b. Set up the necessary **authentication** for the data connection.
3. **Schedule Refresh:**
 - a. Expand **Scheduled Refresh**.
 - b. Enable **"Keep data updated"**.
 - c. Set the refresh time to **5:00 PM**.
 - d. Select the **desired time zone**.
 - e. Click **Apply**.

app.powerbi.com/groups/b9066273-cb57-40e1-a740-783a9d5eeabe/settings/datasets/58409944-c719-4c87-b421-eb0e8e231fb4?experience=power-bi

Power BI Final Project

Search

Trial: 57 days left Account manager for Sumita Singh

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 AM

[Add another time](#)

Send refresh failure notifications to

☒ Semantic model owner

☐ These contacts:

Enter email addresses

Apply Discard

Project Explanation Video:

https://drive.google.com/file/d/1otE_gMSglTOdELs5GNagZ-egEEaLGOKV/view?usp=sharing