Fatodu Oluwatobiloba Follow

Jul 5 · 7 min read · ▶ Listen

Save 🐦 ⓕ 𝗂𝗇 🔗

Maven Airline Analysis

Background

In the world we live today technology has brought so much ease to human daily activity. I must admit that evolution has a significant impact on human existence and their standard of living. Technology has made transportation very easy for man with the invention of Cars, motorcycles, airplanes and the likes.

I carried out an analysis on an airline dataset provided by Maven Analytics for June data challenge. As it is well said "Data is life", data is what helps to look into the past and present to the end that we make better decisions for tomorrow. This analysis is basically to find out how passengers relate with the *Maven Airline* and their views of the airline services.

Data Collection

I scraped the dataset from Maven Analytics website.
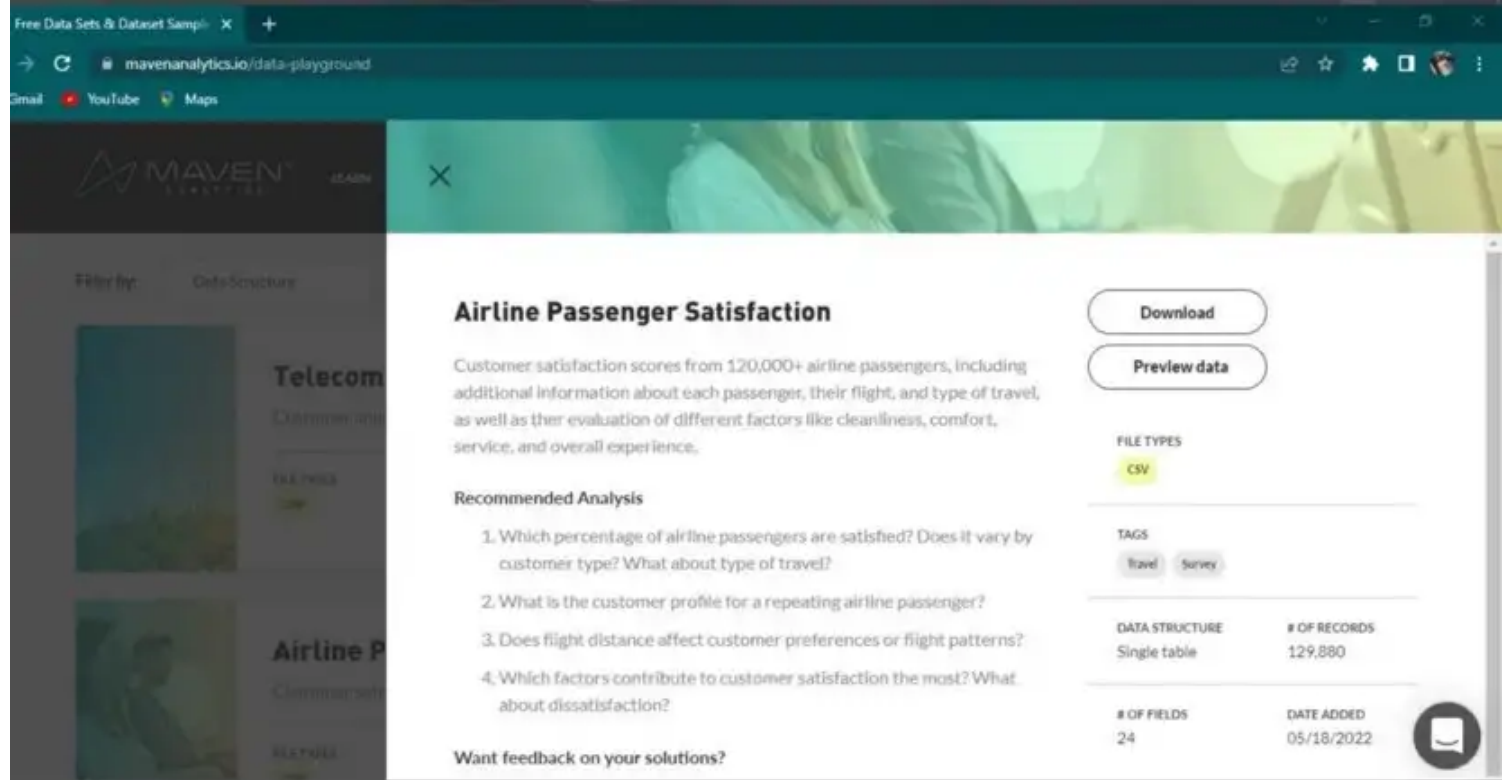
Data from Maven Analytics

Data Preparation

Below are the steps I followed to prepare the data for further analysis:

- the first thing I did was to use the Get Data function on the Power BI desktop to connect to the data which opened up the Navigator where I previewed the data.

airline_passenger_satisfaction.csv

File Origin	Delimiter	Data Type Detection
1252: Western European (Windows) ▾	Comma ▾	Based on first 200 rows ▾

ID	Gender	Age	Customer Type	Type of Travel	Class	Flight Distance	Departure Delay	Arrival Delay	Departure and Arrival
1	Male	48	First-time	Business	Business	821	2	5	
2	Female	35	Returning	Business	Business	821	26	39	
3	Male	41	Returning	Business	Business	853	0	0	
4	Male	50	Returning	Business	Business	1905	0	0	
5	Female	49	Returning	Business	Business	3470	0	1	
6	Male	43	Returning	Business	Business	3788	0	0	
7	Male	43	Returning	Business	Business	1963	0	0	
8	Female	60	Returning	Business	Business	853	0	3	
9	Male	50	Returning	Business	Business	2607	0	0	
10	Female	38	Returning	Business	Business	2822	13	0	
11	Female	28	First-time	Business	Business	821	0	5	
12	Female	27	First-time	Business	Business	421	20	21	
13	Male	24	First-time	Business	Economy	453	16	30	
14	Male	9	Returning	Personal	Business	853	68	76	
15	Male	52	Returning	Personal	Economy	853	0	0	
16	Male	70	Returning	Personal	Economy	821	0	0	
17	Female	48	Returning	Personal	Economy	821	0	0	
18	Female	61	Returning	Personal	Economy	821	0	0	
19	Female	11	Returning	Personal	Economy	853	0	0	
20	Female	42	Returning	Personal	Economy	821	4	0	

Extract Table Using Examples   Load   Transform Data   Cancel

- I clicked the Transform Data button so as to carry out some analysis in the Power Query Editor and ensure the data is ready for analysis. I also renamed the dataset to Mavens airline in the Power Query Editor

Open in app ↗
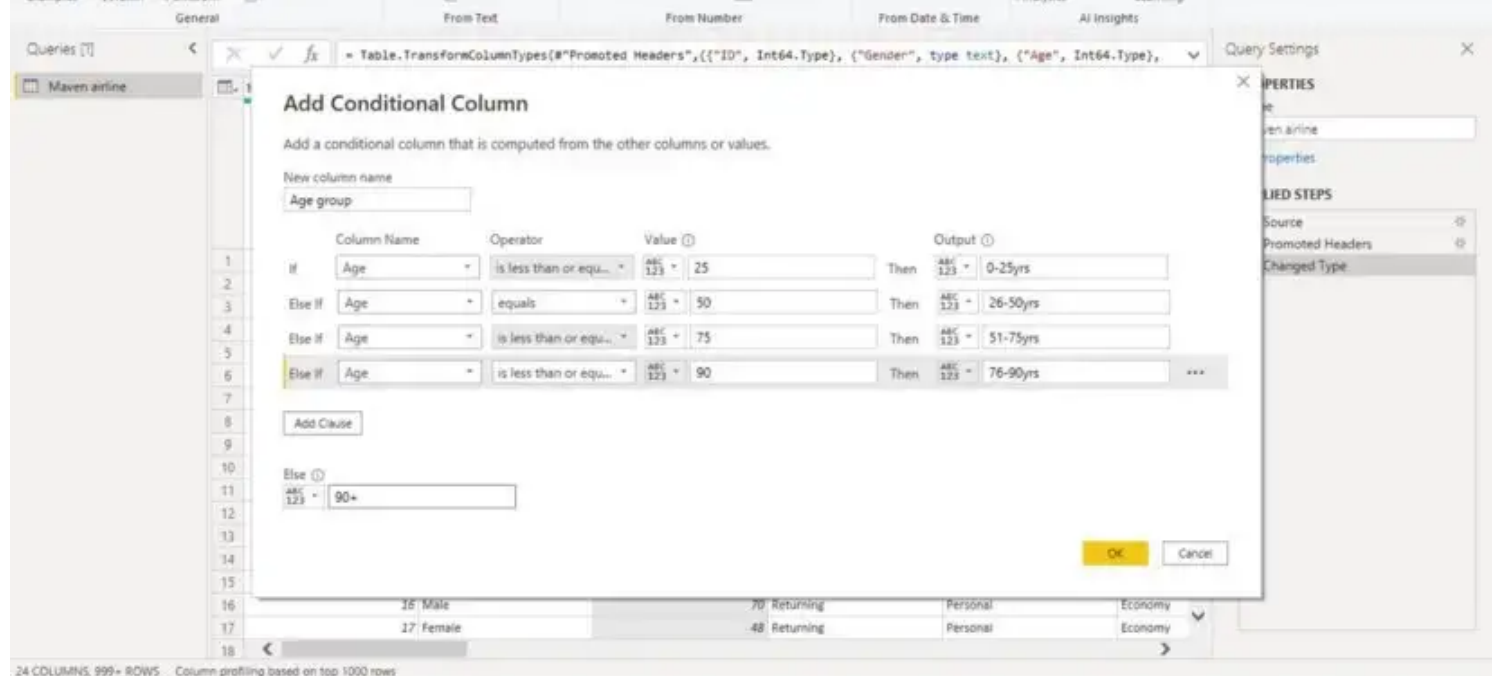
Get unlimited access

Search Medium
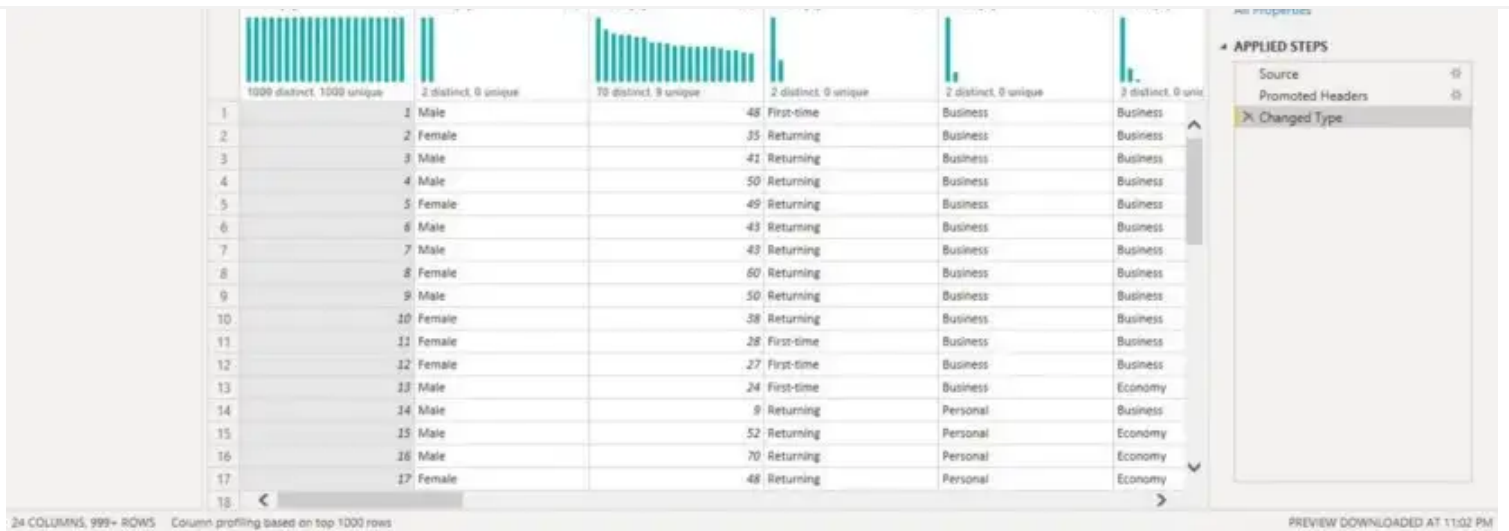
- while previewing the data in Power Query Editor I realized the age ranged from 7–85yrs which led me to create an Age group which I was able to do using the *Conditional Formatting* function on the Power Query Editor.
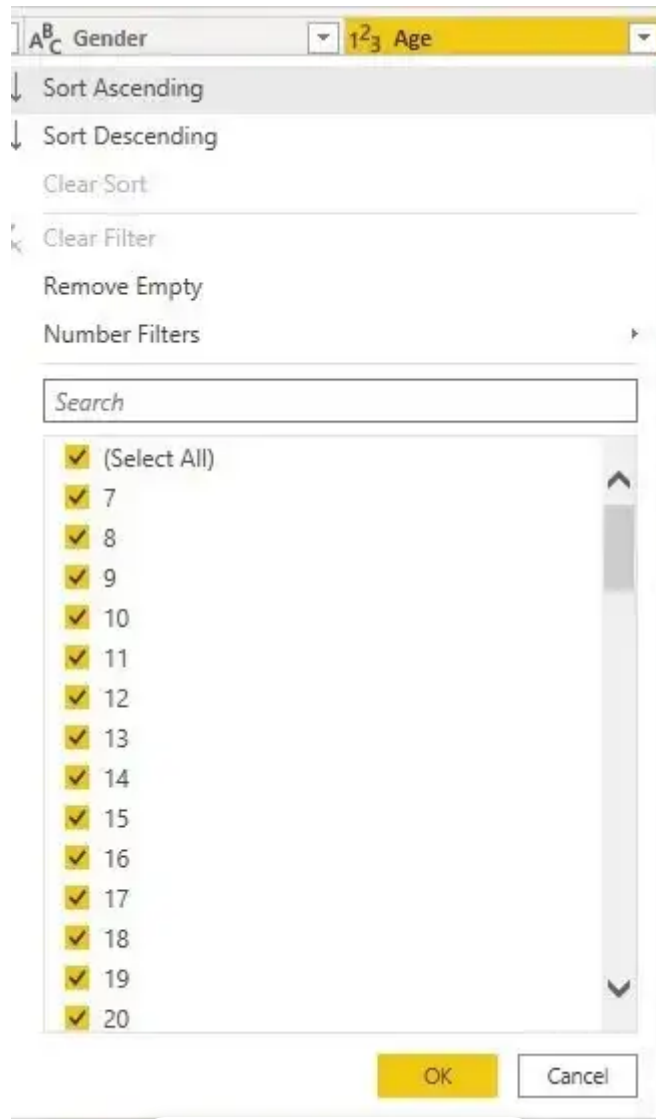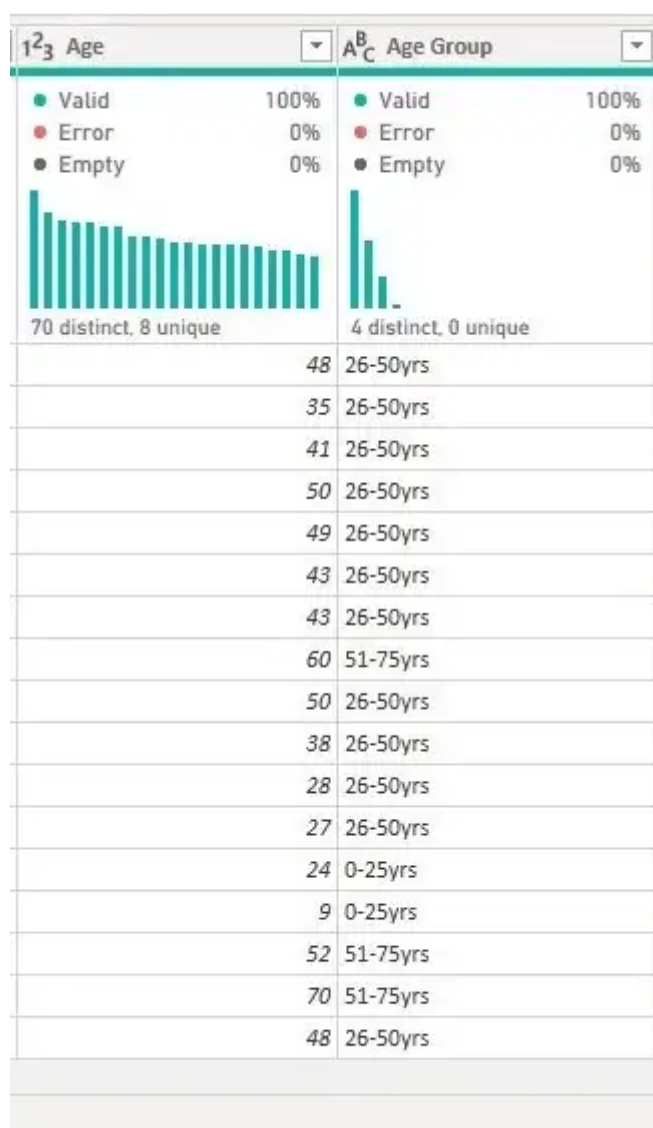

- To navigate to *Conditional Formatting* I clicked on the Add Column button on the Home Tab in Power Query Editor which opened an interface where I selected *Conditional Formatting*.
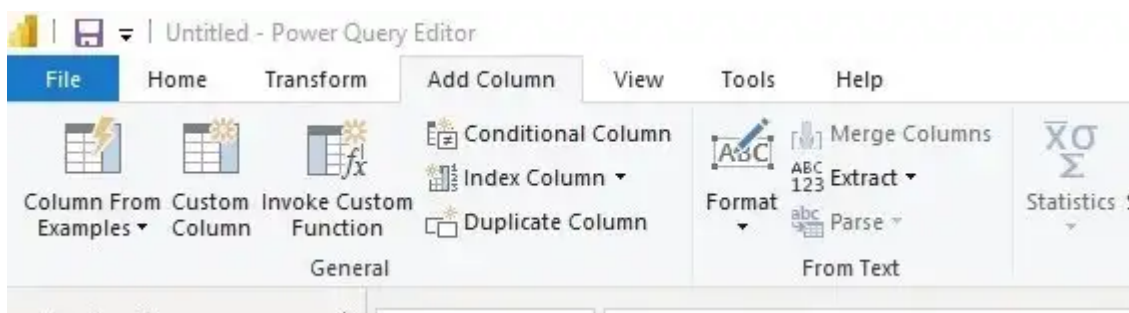

- in the *Conditional Formatting* page I stated the condition I worked with as shown in the visual below. The age group I worked with include "0–25yrs", "26–50yrs"... as seen in the visual below.

Queries 〔 〕   < X ✓ ƒx = Table.TransformColumnTypes(#"Promoted Headers",{{"ID", Int64.Type}, {"Gender", type text}, {"Age", Int64.Type},   ∨   Query Settings   X

☐ Maven airline

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name
Age group

	Column Name	Operator	Value ⓘ	Output ⓘ
1 If	Age	is less than or equ...	123 ▾ 25	Then 123 ▾ 0-25yrs
3 Else If	Age	equals	123 ▾ 50	Then 123 ▾ 26-50yrs
4 Else If	Age	is less than or equ...	123 ▾ 75	Then 123 ▾ 51-75yrs
6 Else If	Age	is less than or equ...	123 ▾ 90	Then 123 ▾ 76-90yrs

Add Clause

Else ⓘ
123 ▾ 90+

OK   Cancel

PROPERTIES
Maven airline
Properties

APPLIED STEPS
Source
Promoted Headers
Changed Type

16	16 Male	70 Returning	Personal	Economy
17	17 Female	48 Returning	Personal	Economy
18				

24 COLUMNS, 999+ ROWS   Column profiling based on top 1000 rows

- I previewed the age group to confirm there are no errors in it.

123 Age	AᴮC Age Group
● Valid 100%	● Valid 100%
● Error 0%	● Error 0%
● Empty 0%	● Empty 0%
70 distinct, 8 unique	4 distinct, 0 unique
	48 26-50yrs
	35 26-50yrs
	41 26-50yrs
	50 26-50yrs
	49 26-50yrs
	43 26-50yrs
	43 26-50yrs
	60 51-75yrs
	50 26-50yrs
	38 26-50yrs
	28 26-50yrs
	27 26-50yrs
	24 0-25yrs
	9 0-25yrs
	52 51-75yrs
	70 51-75yrs
	48 26-50yrs

- after confirming that the age group is right I went ahead to group the Flight Distance using the *Conditional Formatting* function having noticed the distance ranged from 67 Miles to 3,900 Miles.
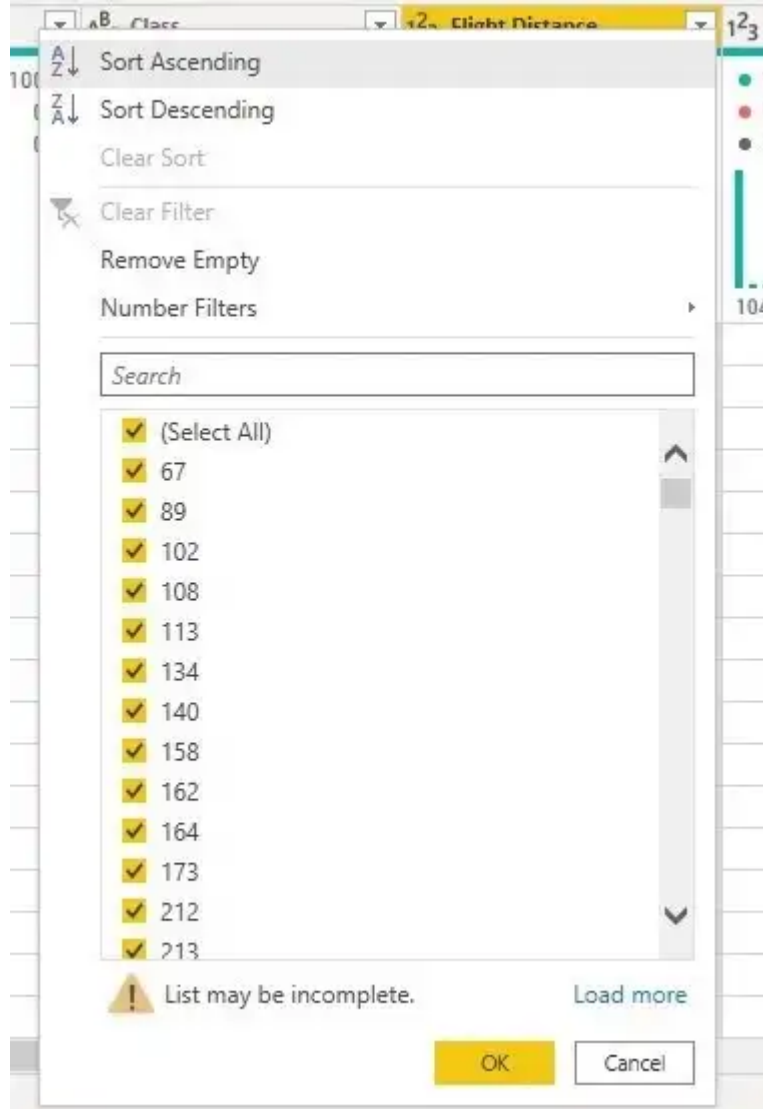
- I grouped this into "<1,000 Miles", "<2,000 Miles"… as seen in the visual below:
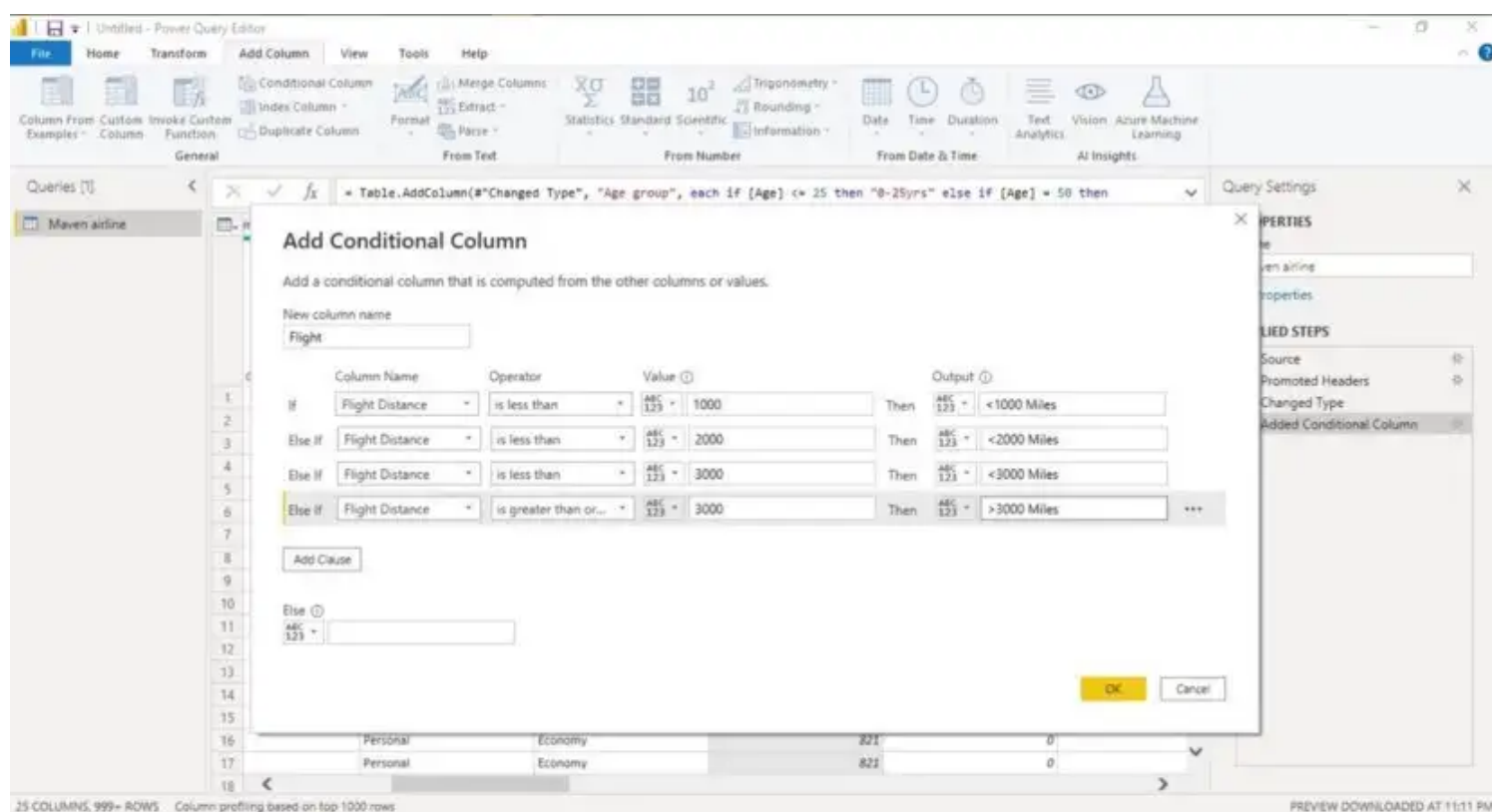
- I previewed the Flight Distance grouping in Power query Editor to ensure there are no errors in the formatting.

- After these we loaded the data into Power BI for further analysis and visualization using the Close & Apply button on the Home Tab of Power Query Editor.

Data Analysis and Visualization

On Power BI I went ahead to create some measures using DAX (Data Analysis Expressions) functions like Calculate, DistinctCountNoblanks etc.

Some of the analysis I carried out include:

- I used the DistinctCountNoblanks function to find out the total number of customers recorded.

- I used DistinctCountNoblanks because I'd like the function to return the number of passengers without adding the blanks so as to have a unique data to work with.

- after this I used the *Calculate* function to calculate the number of passengers that are satisfied with the airline services.


```
1 satisfied = CALCULATE(DISTINCTCOUNT('Airline Passenger satisfaction'[ID]), 'Airline Passenger satisfaction'[Satisfaction]= "Satisfied")
```
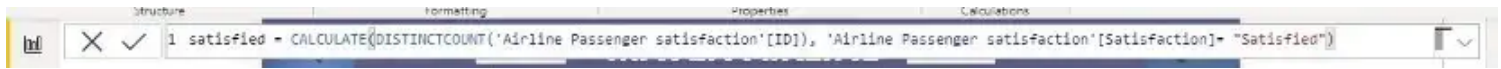
I also used the *Calculate* function because it helps to filter out the column I want to total by adding some arguments (Filter). The value I need here is the Number of passengers satisfied with the Airline services.

- I also used the *Calculate* function to calculate the number of customers that are Neutral or not Satisfied with the airline's services.


```
1 dissatisfied = CALCULATE(DISTINCTCOUNT('Airline Passenger satisfaction'[ID]), 'Airline Passenger satisfaction'[Satisfaction]= "neutral or
  disSatisfied")
```
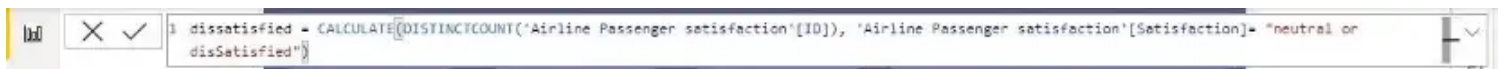
The *Calculate* function helps to return the value of a column based on the Filter used. The *Calculate* function can be used with several other DAX functions like Count, Average etc.

- I then calculated the total of each variables (the rating columns).


```
1 Arrival delay = SUM('Airline Passenger satisfaction'[Arrival Delay])
```
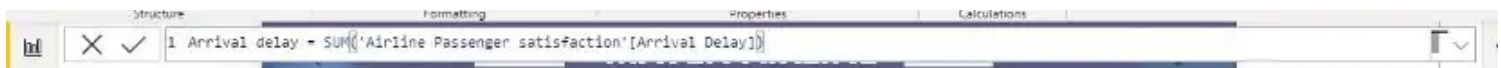
I did this to determine which of the variables has high values and which has lower values. The variables were rated on a range of 1–5. 1 is the lowest while 5 is the highest which implies that 1 is least satisfactory and 5 is satisfactory. We summed the variables to determine the level of satisfaction as shown by the passengers. The variable with high sum value shows it is satisfactory while the variable with low sum value shows it is not satisfactory.

Data Visualization

Now that I've made my data ready for visualization I visualized the variables using the charts thought appropriate.

- I used Card to visualize the No. of Passengers, Satisfied Passengers and Dissatisfied Passengers

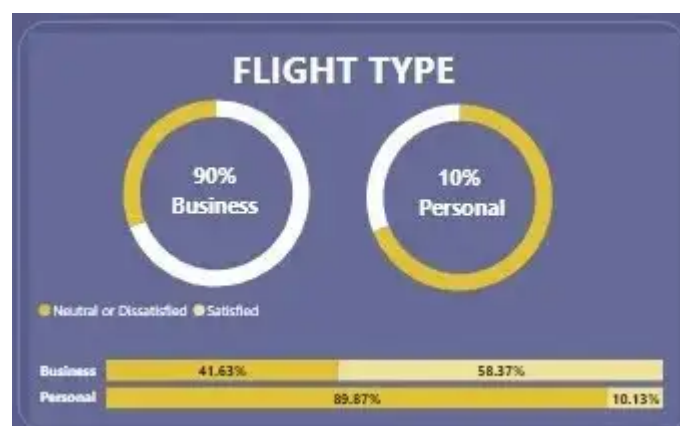| No. of Passengers	Satisfied Passengers	Dissatisfied Passengers
129,880	56,428	73,452

This Visuals can be further filtered by the filters available on the dashboard, then I visualized Passenger Type (Returning / First-time passengers).

PASSENGER TYPE

82% Returning — 18% First-Time

● Neutral or Dissatisfied ● Satisfied

| Returning | 52.19% | 47.81% |
| First-time | 76.03% | 23.97% |

The Donut chart shows of the total no of passengers 82% (106,100) are Returning passengers while 18% (23,780) are First-time passengers.

The 100% stacked column chart shows the percentage of the passenger type based on how they rate the Airline (Satisfactory or Neutral/Dissatisfied):

1. Of the Returning passengers, 52.19% (55,372) are Neutral or Dissatisfied with the Airline while 47.81% (50,728) are Satisfied with the Airline.

2. Of the First-time passengers, 76.03% (18,080) are Neutral or Dissatisfied with the Airline while 23.97% (5,700) are Satisfied with the Airline.

- after this I visualized by Flight Type (Business / Personal).

FLIGHT TYPE

90% Business — 10% Personal

● Neutral or Dissatisfied ● Satisfied

| Business | 41.63% | 58.37% |
| Personal | 89.87% | 10.13% |

The Donut chart shows of the total no of passengers 90% (89,693) are on the flight for business purposes while 10% (40,187) are on the flight for personal purposes.

The 100% stacked column chart shows the percentage of the flight type based on how they rate the Airline (Satisfactory or Neutral/Dissatisfied):

1. Of the Business type, 41.63% (37,337) are Neutral or Dissatisfied with the Airline while 58.37% (52,356) are Satisfied with the Airline.

2. Of the Personal type, 89.87% (36,115) are Neutral or Dissatisfied with the Airline while 10.13% (4,072) are Satisfied with the Airline.

- I also visualized the satisfactory rate of passengers based on their age group using a Stacked Bar chart
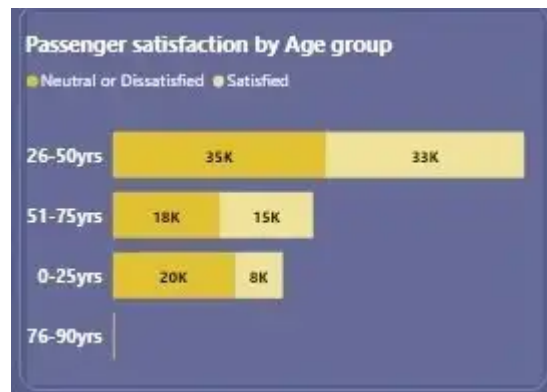
The Stacked Bar chart above shows:

1. in age group 0–25yrs, 20,168 of them are Neutral or Dissatisfied with the Airline while 8,005 are Satisfied with the Airline.

2. in age group 26–50, 35,275 of them are Neutral or Dissatisfied with the Airline while 32,830 are Satisfied with the Airline.

3. in age group 51–75, 17,722 of them are Neutral or Dissatisfied with the Airline while 15,483 are Satisfied with the Airline.

4. in age group 76–90, they are a total of 287 and all 287 are Neutral or Dissatisfied with the Airline.

- I also visualized the variables (services) with lowest satisfactory rating to show how dissatisfied or satisfied the passengers are with the Airline services.

REASONS FOR DISSATISFACTION

Time Convenience by Satisfaction

- Neutral or Di... 230K
- Satisfied 167K

Gate Location by Satisfaction

- Neutral or Di... 219K
- Satisfied 168K

Ease of Online Booking by Satisfaction

- Neutral or Di... 187K
- Satisfied 171K

In-flight Wifi Service by Satisfaction
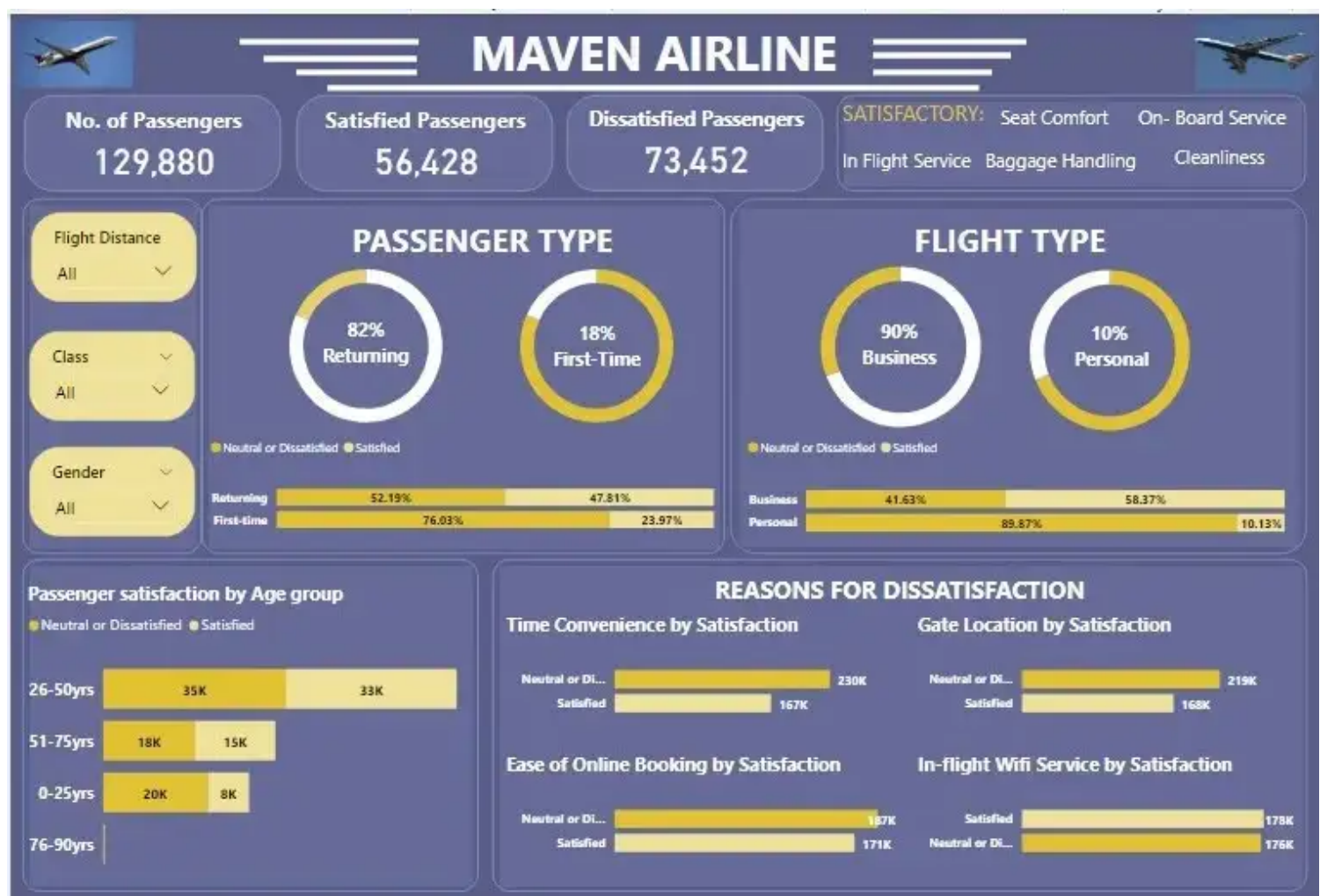
- Satisfied 178K
- Neutral or Di... 176K

The Stacked Br charts above show how satisfied the customers are with services like; Arrival and Departure time convenience, Gate Location, Ease of Online Booking and In flight Wi-Fi service.

- the services that are considered satisfactory by the passengers were listed in a text box.

SATISFACTORY: Seat Comfort   On- Board Service

In Flight Service   Baggage Handling   Cleanliness

These tiles were put together on the Canvass to make the dashboard as seen below:

MAVEN AIRLINE

| No. of Passengers | Satisfied Passengers | Dissatisfied Passengers | SATISFACTORY: Seat Comfort   On- Board Service |
| 129,880 | 56,428 | 73,452 | In Flight Service   Baggage Handling   Cleanliness |

Flight Distance — All

Class — All

Gender — All

PASSENGER TYPE

- 82% Returning
- 18% First-Time

Neutral or Dissatisfied   Satisfied

- Returning: 52.19% | 47.81%
- First-time: 76.03% | 23.97%

FLIGHT TYPE

- 90% Business
- 10% Personal

Neutral or Dissatisfied   Satisfied

- Business: 41.63% | 58.37%
- Personal: 89.87% | 10.13%

Passenger satisfaction by Age group
Neutral or Dissatisfied   Satisfied

- 26-50yrs: 35K | 33K
- 51-75yrs: 18K | 15K
- 0-25yrs: 20K | 8K
- 76-90yrs:

REASONS FOR DISSATISFACTION

Time Convenience by Satisfaction

- Neutral or Di... 230K
- Satisfied 167K

Gate Location by Satisfaction

- Neutral or Di... 219K
- Satisfied 168K

Ease of Online Booking by Satisfaction

- Neutral or Di... 187K
- Satisfied 171K

In-flight Wifi Service by Satisfaction

- Satisfied 178K
- Neutral or Di... 176K

Recommendations

The First time and Personal passengers are the most dissatisfied with the Airline Service, listed below are some recommendations to help encourage the first-time Passengers to use the Airline more:

1. The In-Flight Wi-Fi should be worked on to attend to the concern of the passengers to help them have a smooth nd interesting travel.

2. the Online booking procedures should be made easier by making the user interface more friendly to the users or adding more instructions to help the booking process.

3. The time of Arrival and Departure should be looked into so it will be convenient for the passengers.

You can further relate with the dashboard HERE.

Corrections and corrections are welcomed. You can connect with me on LinkedIn.

Analytics   Power Bi   Data