Airline Project

SUBMITTED BY ANKIT

Introduction

This airline Rating system project aims to Develop a comprehensive system that evaluates and rates various airline based on different criteria .The airline rating system project aims to enhance transparency and empower passengers with valuable insights for a better travel experience. This project will provide a user-friendly platform where users can access detailed ratings, reviews, and comparisons of airlines, considering factors like safety records, customer service, on-time performance, amenities, and more.

The datasets also includes ratings for factors like route network, accessibility, family friendliness.

Contents

Columns Descriptions

1.**ID**: Unique passenger identifier
2.Gender: Gender of the passenger (Female/Male)
3.Age: Age of the passenger
4.Customer_Type: Type of airline customer (First-time/Returning)
5.Travel_Type: Purpose of the flight (Business/Personal)
6.Travel Class: Travel class in the airplane for the passenger seat
7.Flight Distance: Flight distance in miles
8.Departure Delay: Flight departure delay in minutes
9.Arrival Delay: Flight arrival delay in minutes
10.Departure and Arrival Time Convenience: Satisfaction level with the convenience of the flight departure and arrival times from 1 (lowest) to 5 (highest) - 0 means "not applicable“
11.Ease of Online Booking: Satisfaction level with the online booking experience from 1 (lowest) to 5 (highest) - 0 means "not applicable"
12.Check-in Service: Satisfaction level with the check-in service from 1 (lowest) to 5 (highest) - 0 means "not applicable"
13.Online Boarding: Satisfaction level with the online boarding experience from 1 (lowest) to 5 (highest) - 0 means "not applicable"

14.Gate Location: Satisfaction level with the gate location in the airport from 1 (lowest) to 5 (highest) - 0 means "not applicable"

15.On-board Service: Satisfaction level with the on-boarding service in the airport from 1 (lowest) to 5 (highest) - 0 means "not applicable"

16.Seat Comfort: Satisfaction level with the comfort of the airplane seat from 1 (lowest) to 5 (highest) - 0 means "not applicable“
17.Leg Room Service: Satisfaction level with the leg room of the airplane seat from 1 (lowest) to 5 (highest) - 0 means "not applicable"

18.Cleanliness: Satisfaction level with the cleanliness of the airplane from 1 (lowest) to 5 (highest) - 0 means "not applicable“

19.Food and Drink: Satisfaction level with the food and drinks on the airplane from 1 (lowest) to 5 (highest) - 0 means "not applicable“

20.In-flight Service: Satisfaction level with the in-flight service from 1 (lowest) to 5 (highest) - 0 means "not applicable“

21.Wi fi Service: Satisfaction level with the in-flight Wifi service from 1 (lowest) to 5 (highest) - 0 means "not applicable“

22.In-flight Entertainment: Satisfaction level with the in-flight entertainment from 1 (lowest) to 5 (highest) - 0 means "not applicable“

23.Baggage Handling: Satisfaction level with the baggage handling from the airline from 1 (lowest) to 5 (highest) - 0 means "not applicable“

24.Satisfaction: Overall satisfaction level with the airline (Satisfied/Neutral or unsatisfied)

LIBRARIES IMPORTED

```
|: import numpy as np
   import matplotlib.pyplot as plt
   import pandas as pd
   import seaborn as sns
```

Numpy: NumPy is a powerful Python library used in scientific computing and data analysis. It provides multi-dimensional array objects, mathematical functions, linear algebra operations, random number capabilities .

Pandas: Pandas is a widely-used open-source Python library for data manipulation and analysis. It provides data structures and functions that are designed to make working with structured data fast, efficient, and easy.

Seaborn: Seaborn is a popular data visualization library built on top of Matplotlib, which makes it easier to create visually appealing and informative statistical graphics. It provides a high-level interface for creating a variety of statistical visualizations with concise and expressive syntax.

Matplotlib: Matplotlib is a popular and widely used data visualization library in Python. It provides a comprehensive set of tools for creating a wide range of static, animated, and interactive visualizations. With Matplotlib, you can generate various types of plots, charts, and graphs to explore and communicate your data effectively.

Problem Occurred

- The only major Problem I face in this Project That there were not available the Name of the Columns .Firstly I give the name to the Columns according to me.
- There were some null values in data so I remove the all null values from the data using by Python Pandas Library.

IMPORTING DATA

df

	ID	Gender	Customer Type	Age	Type of travel	Travel Class	Flight Distance	Ease of online booking	Departure/Arrival time convenient	wifi service	...	food and drink	Onboard Service	Leg room service	Check in service	Cleanliness	B h
0	70172	Male	Loyal Customer	13	Personal Travel	Eco Plus	460	3	4	3	...	5	4	3	4	4	
1	5047	Male	disloyal Customer	25	Business travel	Business	235	3	2	3	...	1	1	5	3	1	
2	110028	Female	Loyal Customer	26	Business travel	Business	1142	2	2	2	...	5	4	3	4	4	
3	24026	Female	Loyal Customer	25	Business travel	Business	562	2	5	5	...	2	2	5	3	1	
4	119299	Male	Loyal Customer	61	Business travel	Business	214	3	3	3	...	3	3	4	4	3	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
103899	94171	Female	disloyal Customer	23	Business travel	Eco	192	2	1	2	...	2	3	1	4	2	
103900	73097	Male	Loyal Customer	49	Business travel	Business	2347	4	4	4	...	5	5	5	5	5	
103901	68825	Male	disloyal Customer	30	Business travel	Business	1995	1	1	1	...	4	3	2	4	5	
103902	54173	Female	disloyal Customer	22	Business travel	Eco	1000	1	1	1	...	1	4	5	1	5	
103903	62567	Male	Loyal Customer	27	Business travel	Business	1723	1	3	3	...	1	1	1	4	4	

DATA ANALYSIS

- Get summary information about quantitative features by calling the "describe" method with default parameters:

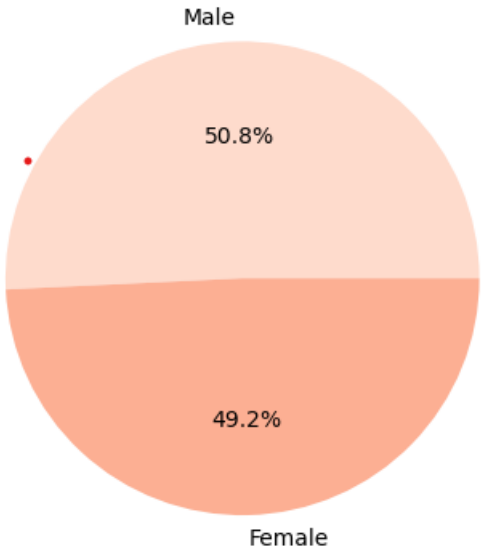
```
df.describe().T
```

	count	mean	std	min	25%	50%	75%	max
ID	103594.0	64942.428625	37460.816597	1.0	32562.25	64890.0	97370.5	129880.0
Age	103594.0	39.380466	15.113125	7.0	27.00	40.0	51.0	85.0
Flight Distance	103594.0	1189.325202	997.297235	31.0	414.00	842.0	1743.0	4983.0
Ease of online booking	103594.0	2.729753	1.327866	0.0	2.00	3.0	4.0	5.0
Departure/Arrival time convenient	103594.0	3.060081	1.525233	0.0	2.00	3.0	4.0	5.0
wifi service	103594.0	2.756984	1.398934	0.0	2.00	3.0	4.0	5.0
online boarding	103594.0	2.977026	1.277723	0.0	2.00	3.0	4.0	5.0
seat comfort	103594.0	3.202126	1.329401	0.0	2.00	3.0	4.0	5.0
Gate location	103594.0	3.250497	1.349433	0.0	2.00	3.0	4.0	5.0
Inflight entertainment	103594.0	3.439765	1.318896	0.0	2.00	4.0	5.0	5.0
food and drink	103594.0	3.358341	1.333030	0.0	2.00	4.0	4.0	5.0
Onboard Service	103594.0	3.382609	1.288284	0.0	2.00	4.0	4.0	5.0
Leg room service	103594.0	3.351401	1.315409	0.0	2.00	4.0	4.0	5.0
Check in service	103594.0	3.631687	1.181051	1.0	3.00	4.0	5.0	5.0
Cleanliness	103594.0	3.304323	1.265396	0.0	3.00	3.0	4.0	5.0
Baggage handling	103594.0	3.640761	1.175603	0.0	3.00	4.0	5.0	5.0
Inflight service	103594.0	3.286397	1.312194	0.0	2.00	3.0	4.0	5.0
Arival Delay (Min)	103594.0	14.747939	38.116737	0.0	0.00	0.0	12.0	1592.0
Departure Delay(Min)	103594.0	15.178678	38.698682	0.0	0.00	0.0	13.0	1584.0

- For each quantitative attribute, mean values, standard deviation, minimum and maximum values, median and quartile values, 25%,50%,75% are given.

Insight:1>>Total Number of gender

Female 52576
Male 51018
Name: Gender, dtype: int64

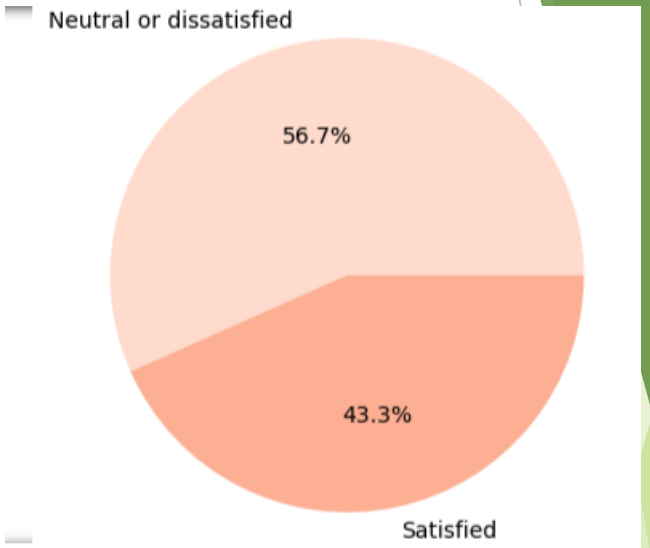


- From this insight we are able to find the total number of gender with number and percentage

❑ Insight 2. Satisfaction Value¶

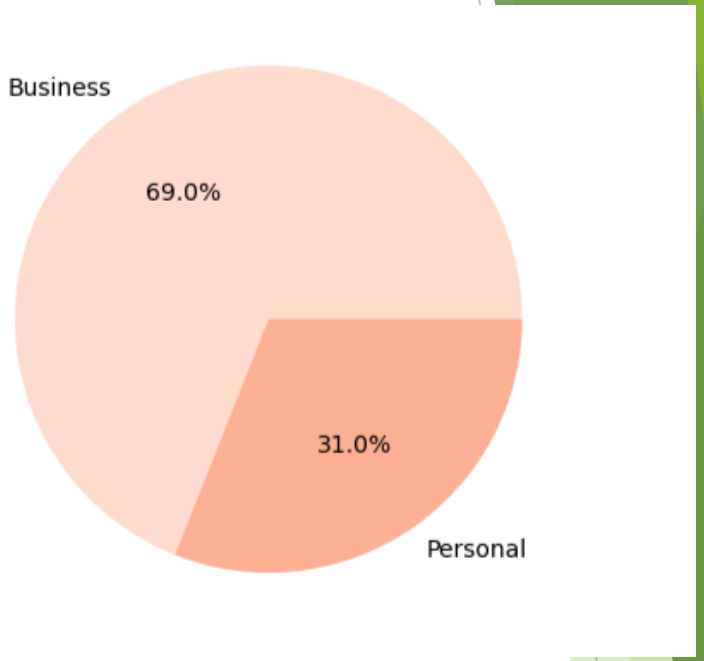
- Neutral or dissatisfied : **58697**
- satisfied : **44897**
- Name: satisfaction, dtype: int64

❖ From this insight we are able to find the Total number of satisfaction.
❖ In this data 43.3% customers are who are satisfied and 56.7% customers are who are dissatisfied.



Insight 3. Type of travels

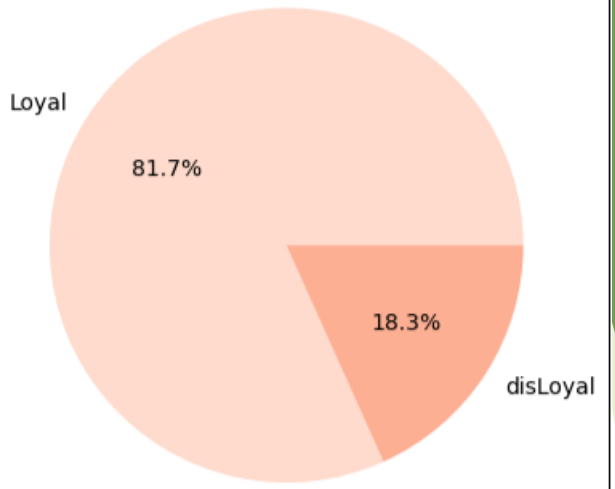
- Business travel : **71465**
- Personal Travel : **32129**
- Name: Type of travel, dtype: **int64**



- From this insight we can find the total number and percentage of customers according to Types of travel
- As if here 69% customers prefer to business travel.
- 31% customers prefer to Personal travel.

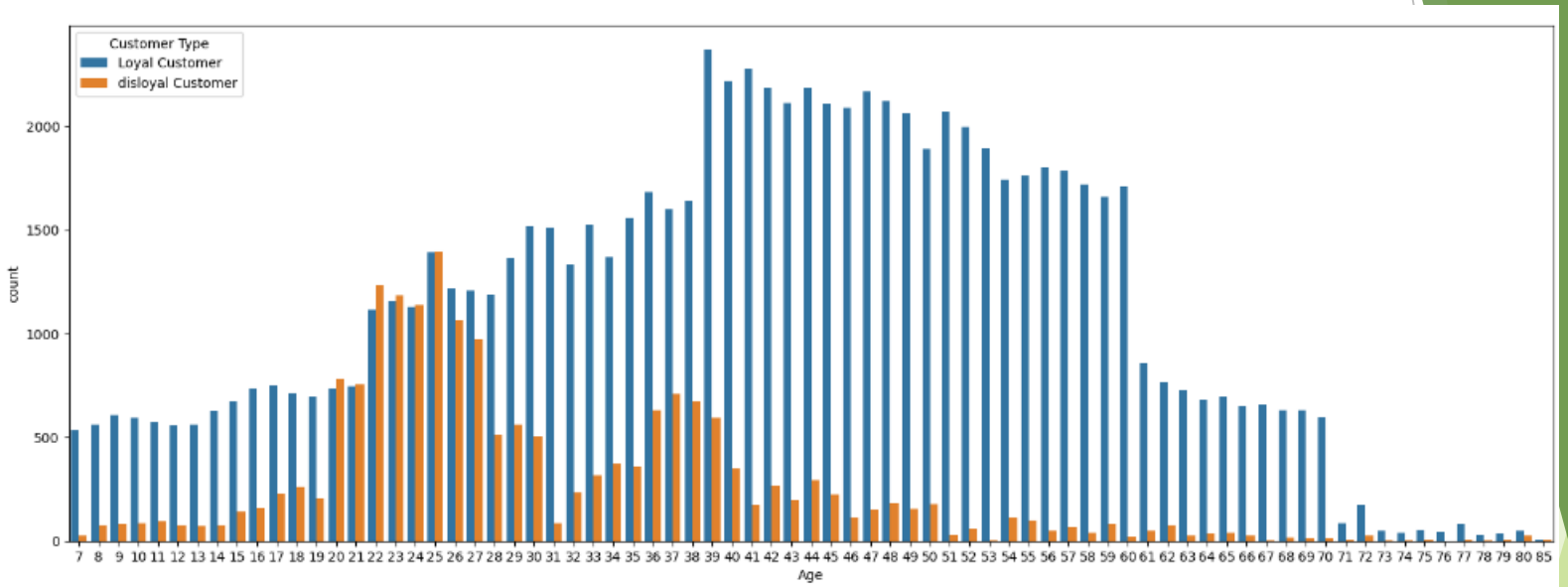
Insight 4. Type of Customers

```
In [ ]: Loyal Customer        84662
        disloyal Customer     18932
        Name: Customer Type, dtype: int64
```



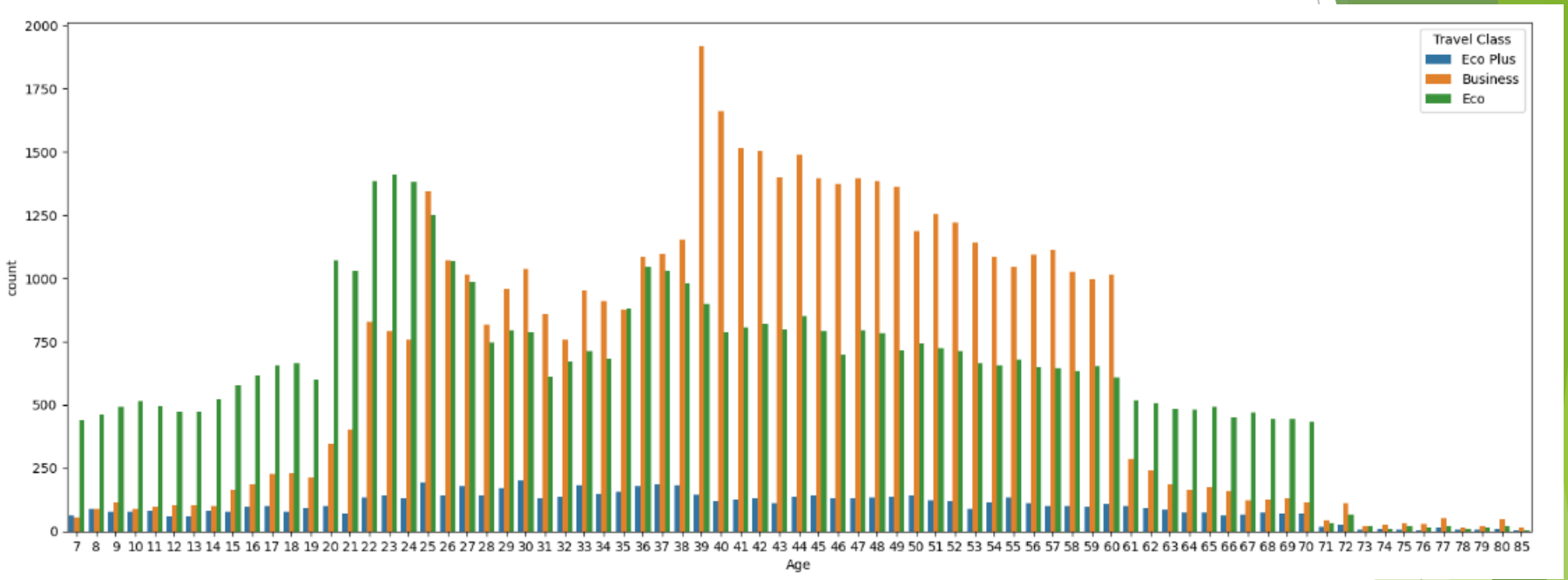
- From this insight, We can able to find Total number and percentage of type of customers.
- As if here the total number of Loyal customers is 84662 and percentage is 81.7%.
- The total number of Disloyal customers is 18932 and percentage is 18.3%.

INSIGHT 5. CUSTOMER TYPES ACCORDING TO AGE



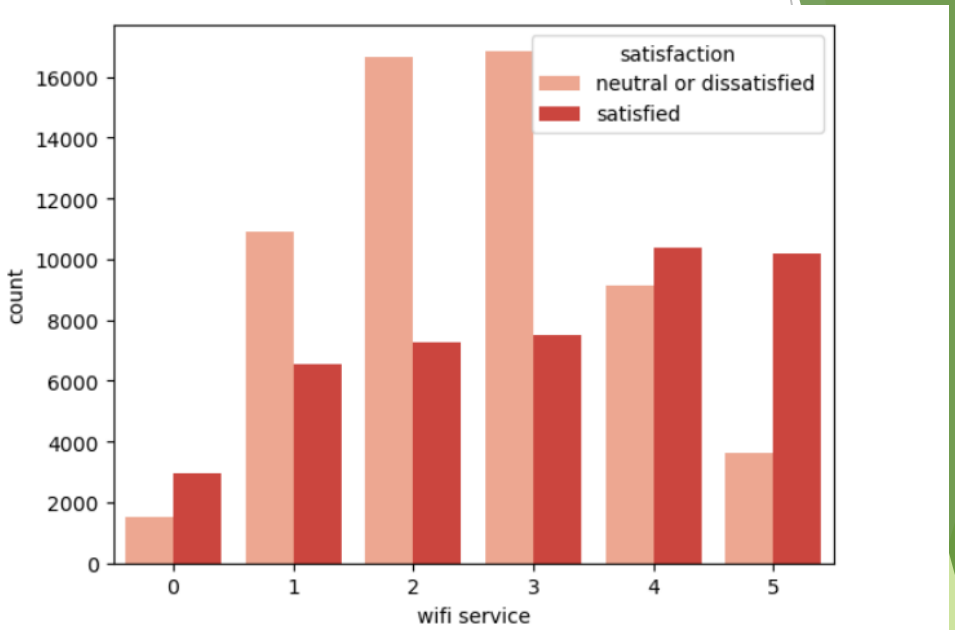
- From this insight we can able to find the count of **Passanger's Loyality According to age.**
- Most of passengers are from **22 to 60 years old.**
- Most of passengers that are **Loyal customer**, Belongs to **35 to 60 years old.**
- Most of passengers that are **Disloyal customer**, Belongs to **20 to 27 years old**

Insight 6. Travel Class counts According to age



- From this insight we can able to find the Number of customers (**Travel class**) **according to the age**.
- Most of **Young passenger** travel in **eco class**.
- Most of **Adult passenger** travel in **business class.**

Insight 7.Find Value of satisfaction according to Ratings at Wi fi service



- According to this graph, We can see that all passengers who rated the Wi fi service 5 out of 5 points were satisfied with the flight

Conclusion

- There are many reasons for customer's Dissatisfaction.
- So are Many of customers, who are loyal then they get 1 to 2 ratings from the 5 and many of customers are, who are disloyal then give the 5 to 5 ratings.
- So Many customers are who rated the Wi fi service 5 out of 5 points were satisfied with the flight . It means that they were able to use wifi service properly.
- Hence we should focus on that points which impact at the ratings and try to provide to best services at the same.


Thank You!
REGARDS,
ANKIT GANGWAR