Airline Passenger Satisfaction

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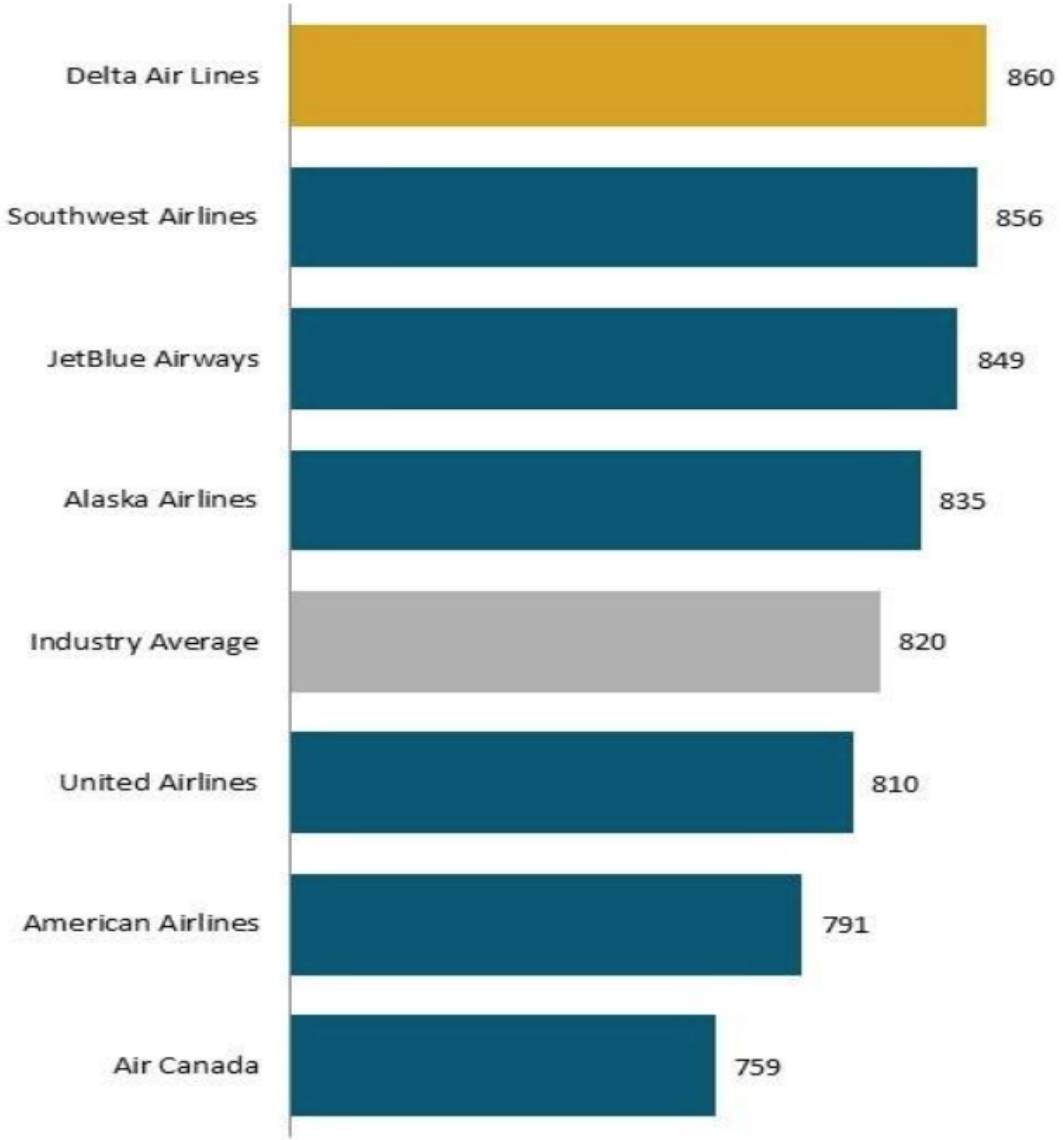
J.D. Power
2021 North America Airline Satisfaction Study℠

Overall Customer Satisfaction Index Ranking

(Based on a 1,000-point scale)



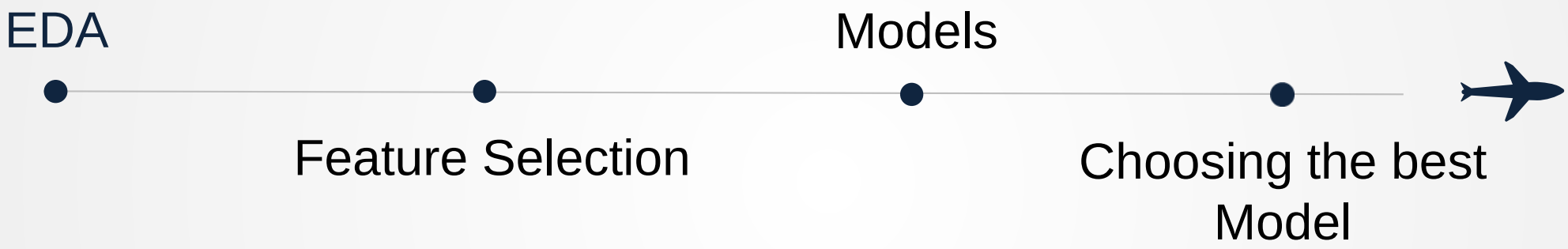
Project goal

This project aims to conduct classification models to analyze US airlines passenger satisfaction data set to have a high level understanding on the passenger satisfaction causes.

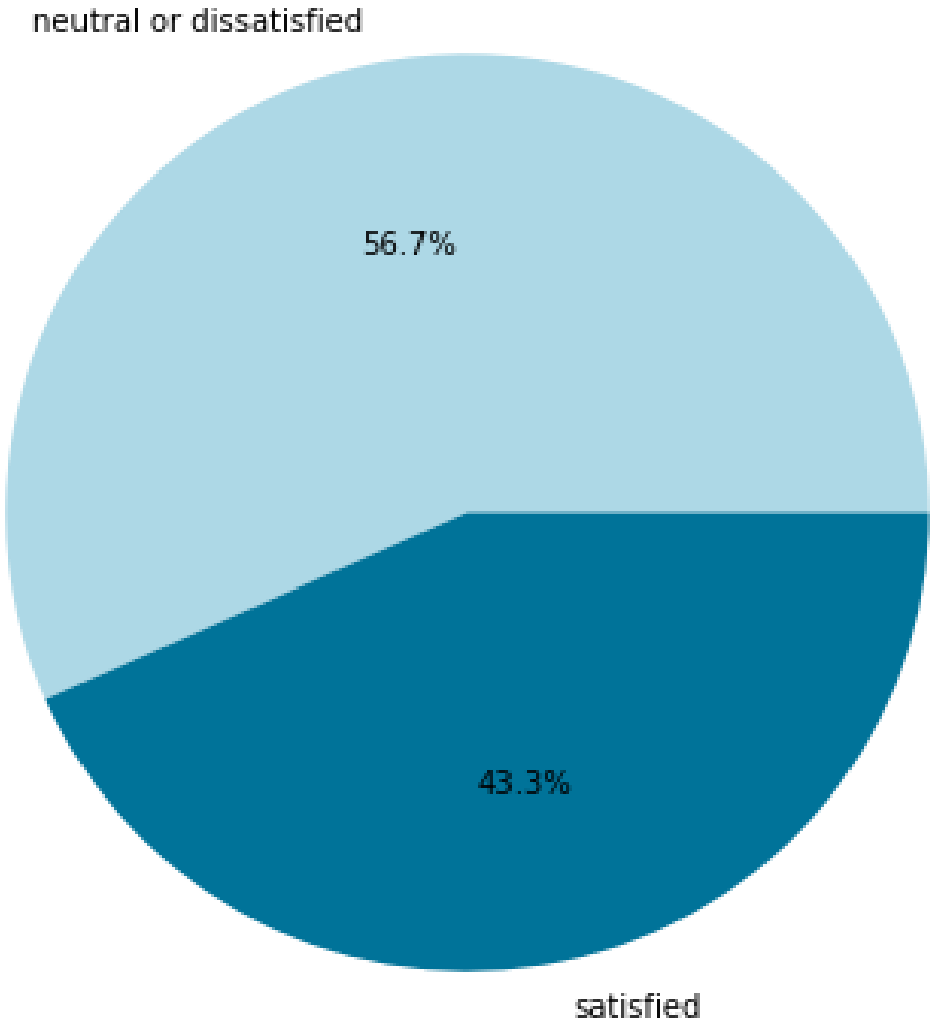
Dataset

The dataset is provided from Kaggle. It’s contains 103,000 Observations, each row has 25 features.

Work Flow



Satisfied VS Dissatisfied



Most Influencing factors

- Class
- Flight Distance
- Inflight wifi service
- Ease of Online booking
- Seat comfort
- Inflight entertainment
- On-board service
- Food and drink
- Departure Delay
- Arrival Delay
- Cleanliness
- Baggage handling

Most Influencing factors Approach

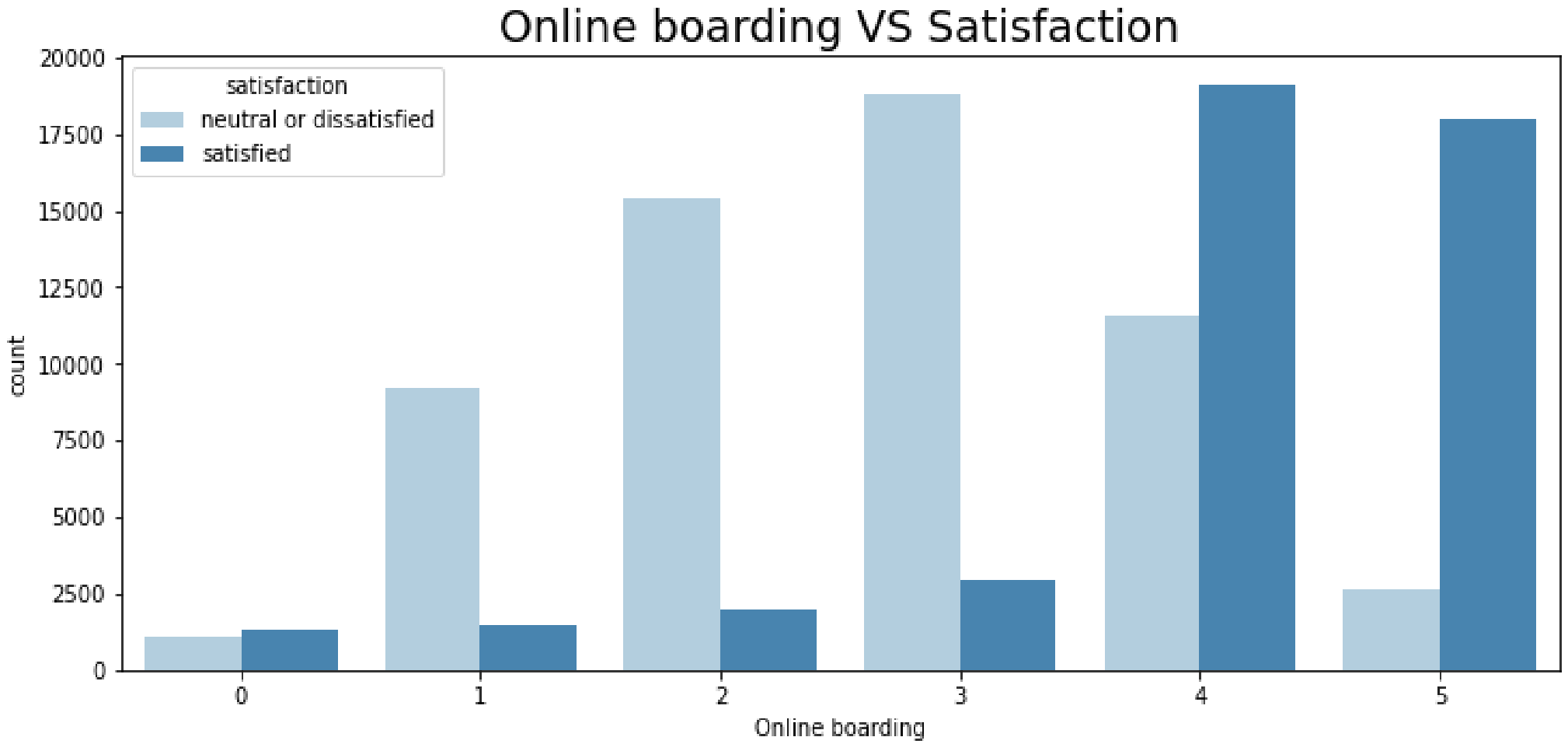
Feature Selection

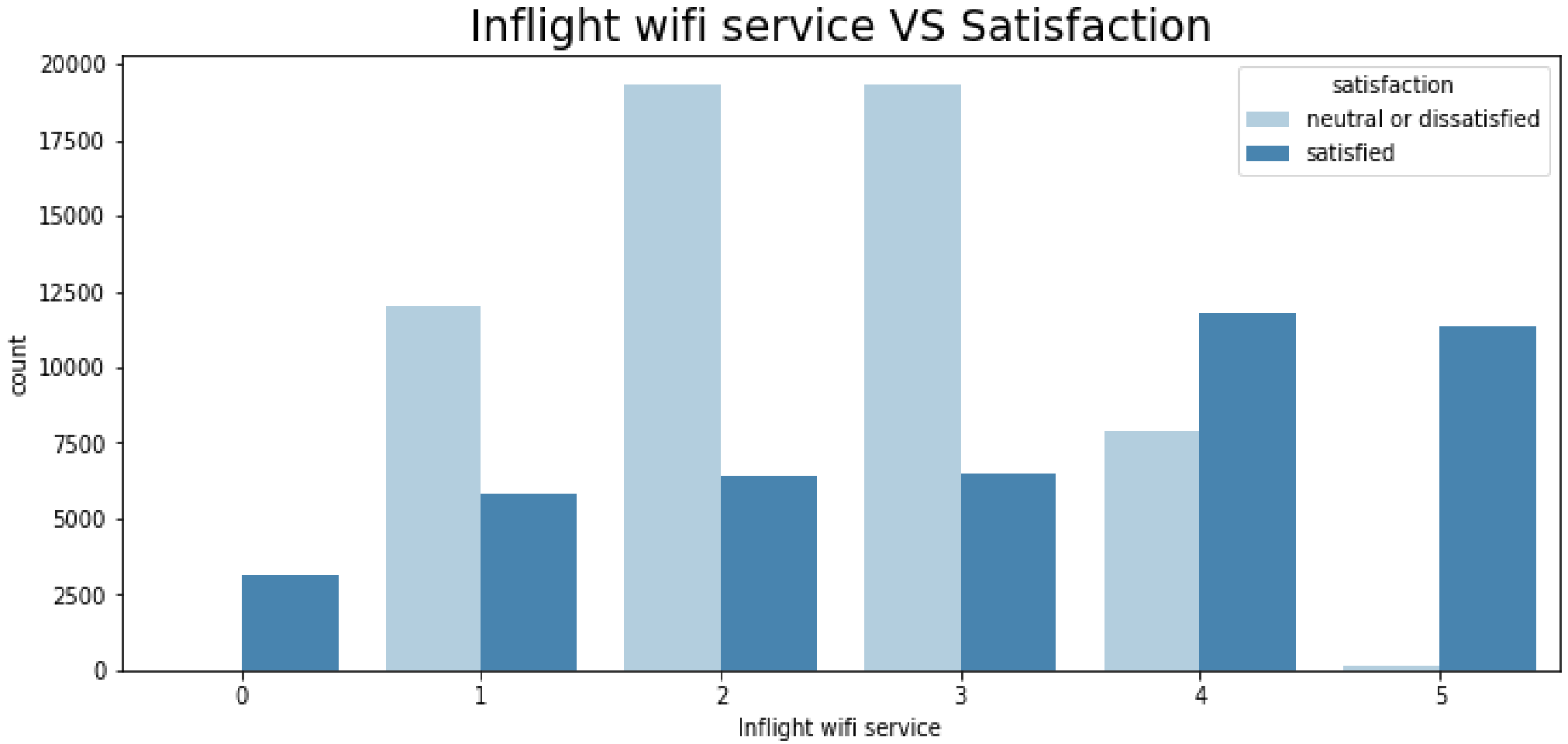
Visualization

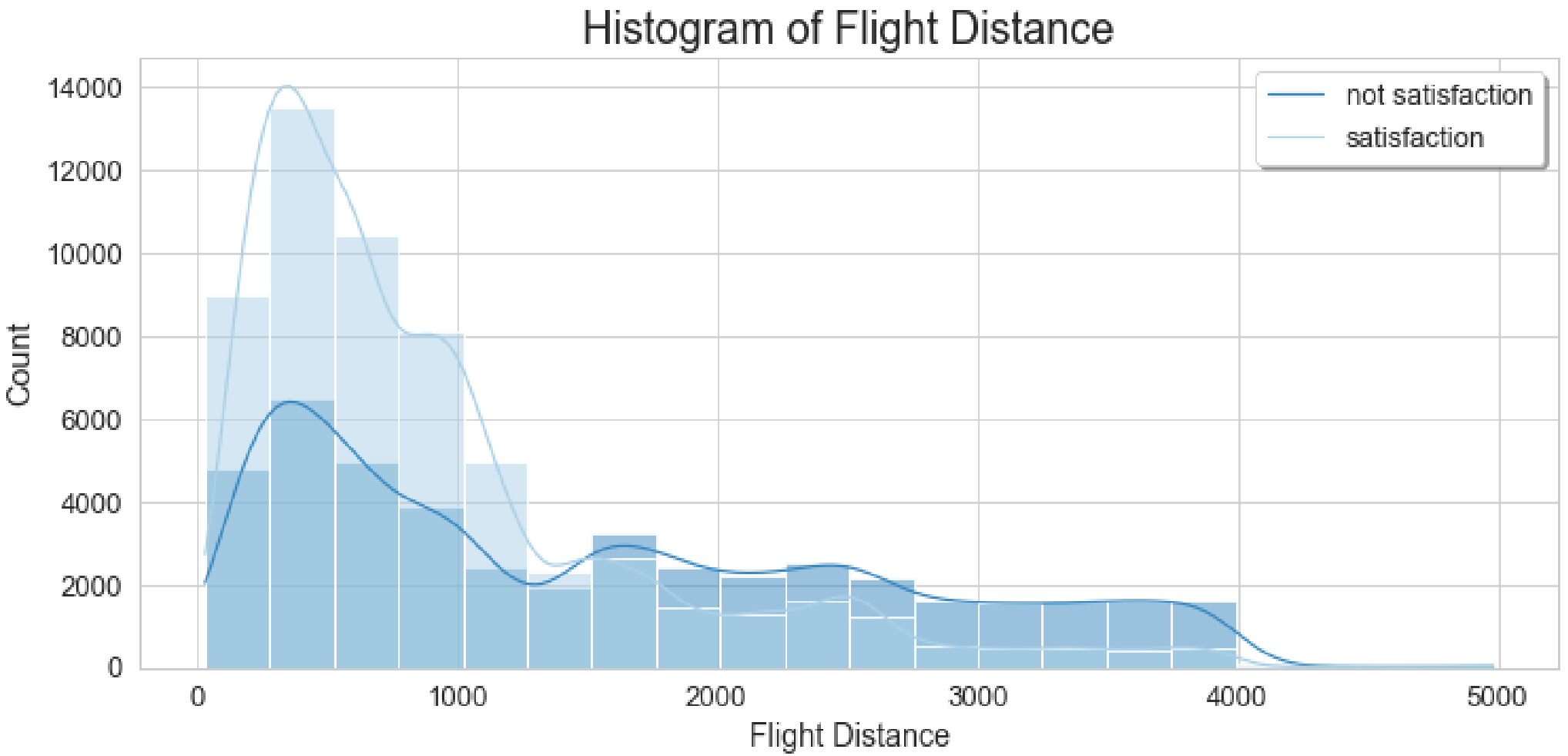
Feature Selection Method

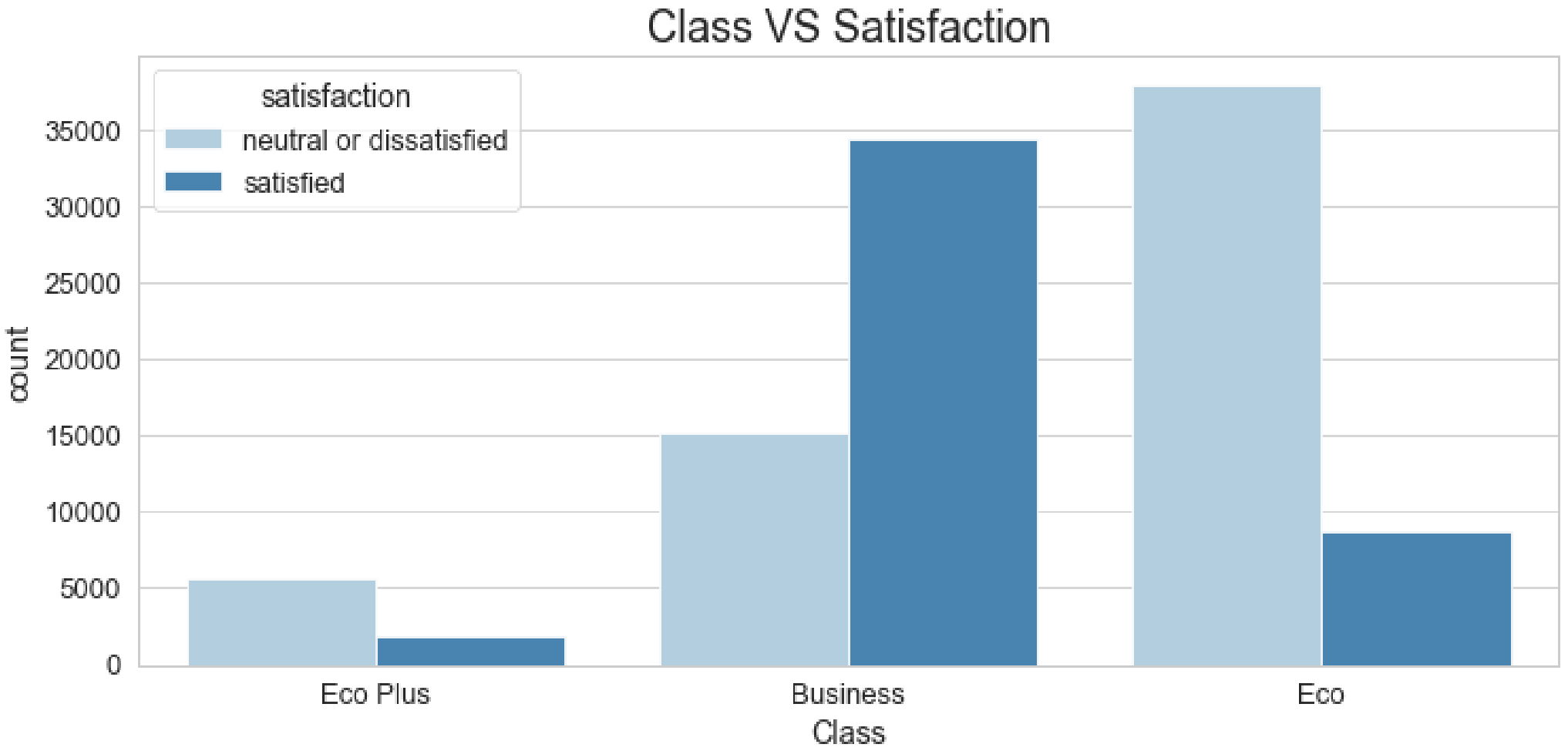
Age	Type of Travel
Class	Online boarding
Inflight wifi service	Inflight entertainment
Flight Distance	Departure Delay in Minutes
Seat comfort	Arrival Delay in Minutes

VISUALIZATION


Online boarding VS Satisfaction
satisfaction
neutral or dissatisfied
satisfied
count
20000
17500
15000
12500
10000
7500
5000
2500
0
0
1
2
3
4
5
Online boarding


Inflight wifi service VS Satisfaction
satisfaction
neutral or dissatisfied
satisfied
count
20000
17500
15000
12500
10000
7500
5000
2500
0
0
1
2
3
4
5
Inflight wifi service

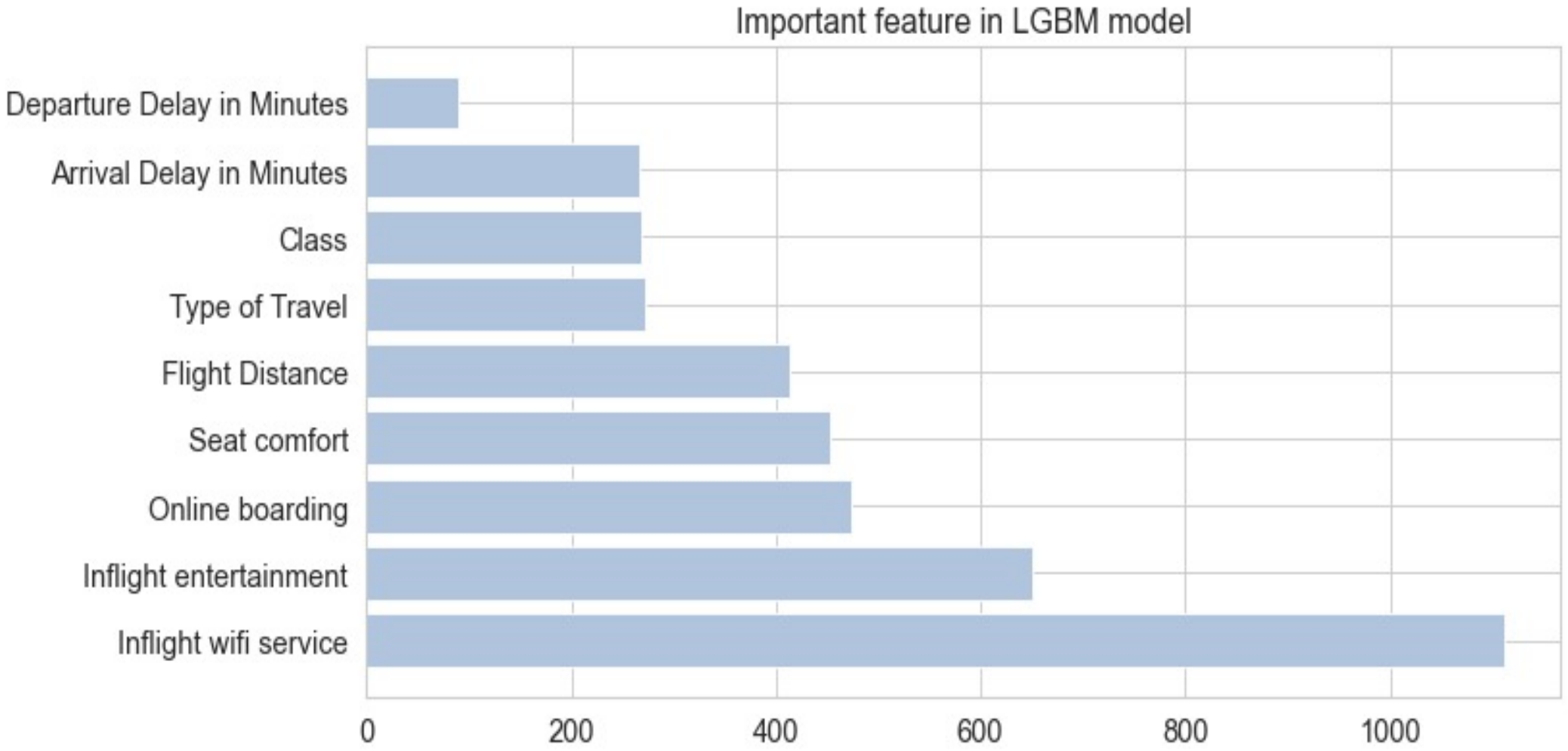

Histogram of Flight Distance
not satisfaction
satisfaction
Count
14000
12000
10000
8000
6000
4000
2000
0
0
1000
2000
3000
4000
5000
Flight Distance


Class VS Satisfaction
satisfaction
neutral or dissatisfied
satisfied
35000
30000
25000
20000
15000
10000
5000
0
count
Eco Plus
Business
Eco
Class

Predictive Models

Model	Accuracy
LogisticRegression	0.84
RandomForest	0.92
XGBoost	0.93
LGBM	0.93
DecisionTree	0.89
Stack	0.93

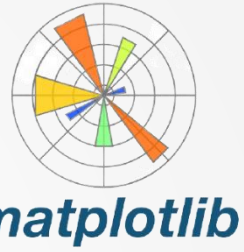
LGBM model accuracy
True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0


Important feature in LGBM model
Departure Delay in Minutes
Arrival Delay in Minutes
Class
Type of Travel
Flight Distance
Seat comfort
Online boarding
Inflight entertainment
Inflight wifi service
0
200
400
600
800
1000

Conclusion

After building different models , LGBM Model has the highest score.

Tools



Future work

- **Collect more data**
- **Explore different model**

Thank You