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TLV Coding Bootcamp

//Elevating Airline Operations & Customer Service

//student - Kuzmin Dima> // February 2024

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Elevating Airline Operations & Customer Service

I chose a demonstrative and practical topic similar to the daily duties of a Data analyst. So, imagine I am a Data analyst in the Marketing department of "X airlines" and my goal is to analyze customer satisfaction.

The higher customer satisfaction, the stronger the position and profitability of the company.

Elevating Airline Operations & Customer Service

This project aims to analyze airline operations and customer service data to improve efficiency and passenger satisfaction.

Original dataset: Airline Passenger Satisfaction (from KAGGLE.COM)

This dataset contains an airline passenger satisfaction survey.

Size - 104K rows

https://www.kaggle.com/datasets/teejmahal20/airline-passenger-satisfaction?select=test.csv

Stack

Python: Pandas / Numpy / Matplotlib / Scipy

Data preprocessing and exploration (EDA)

Machine learning : predictive models / Scikit-learn

Data visualisation: Tableau

Web scraping, SQL

Feature list

- Data cleaning and preparation
- Exploratory data analysis
- Operational efficiency analysis
- Predictive modeling for customer satisfaction and model evaluation
- Interactive dashboard
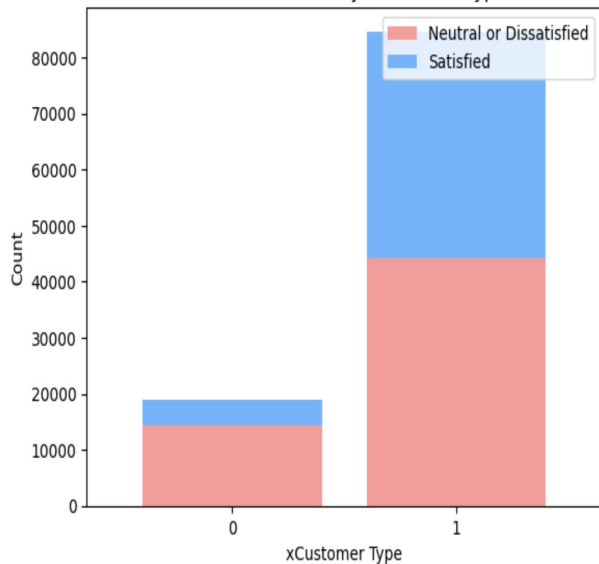- Insight extraction and recommendations

Roadmap

Data cleaning and preparation
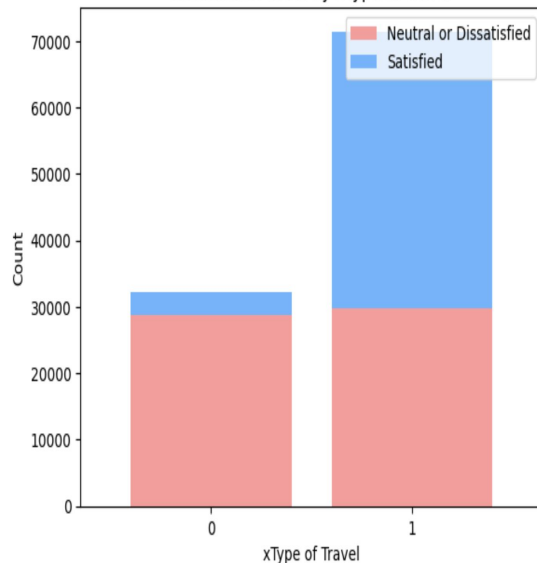
Exploratory data analysis

Operational efficiency analysis

Predictive modeling

Interactive dashboard

Recommendations and insights

Final

Week1

Week 2
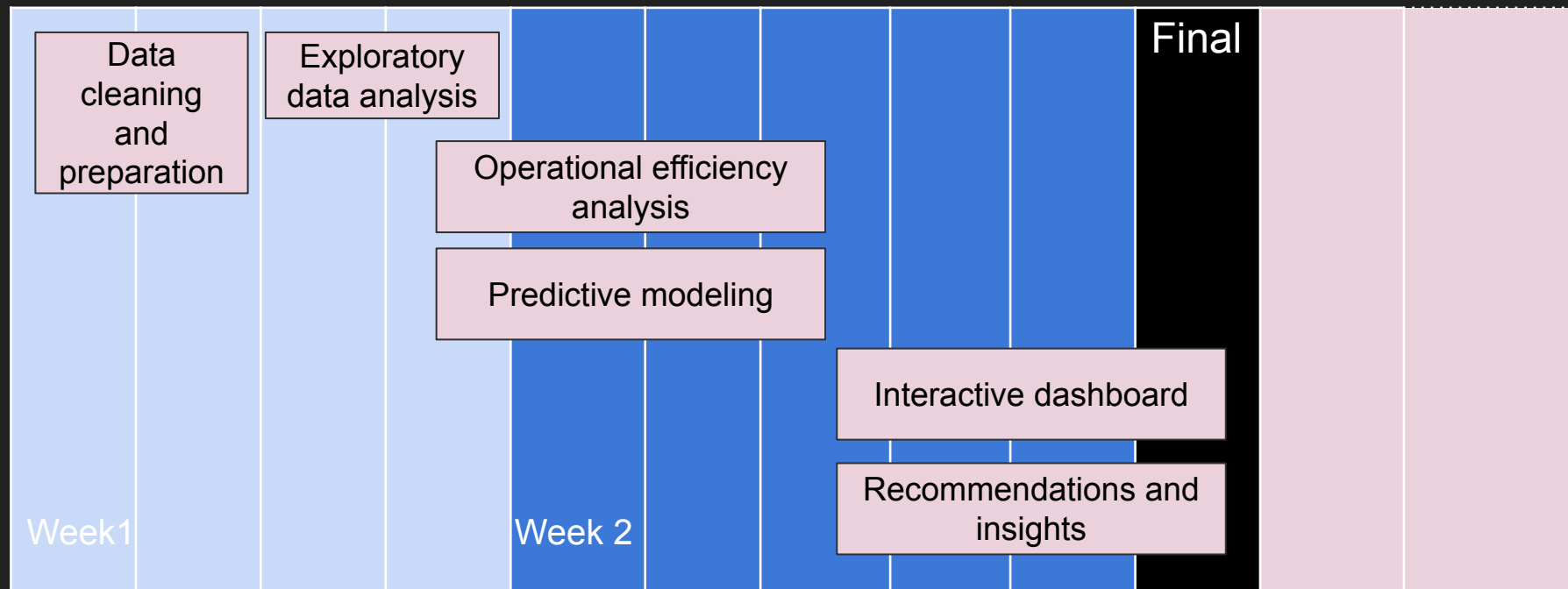
Data exploration visualization
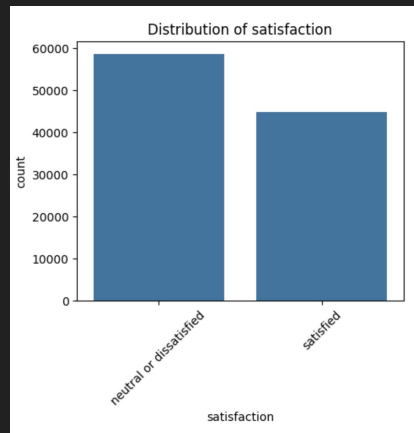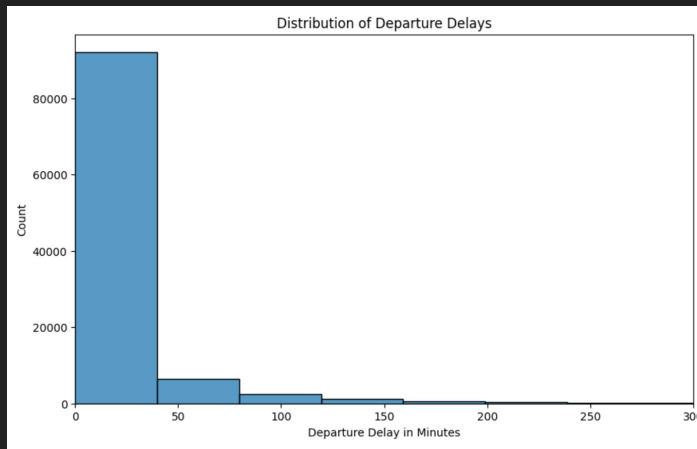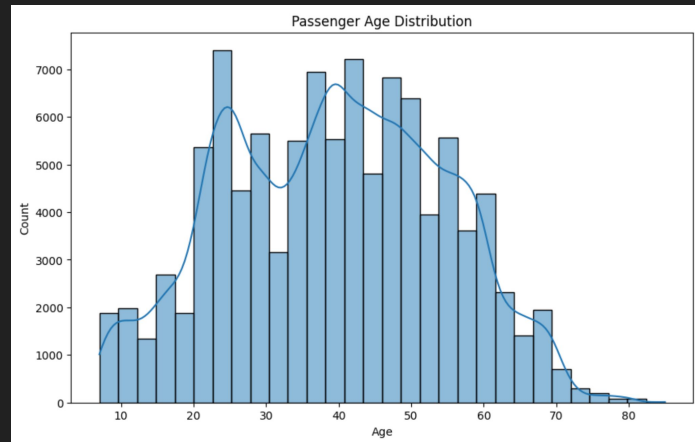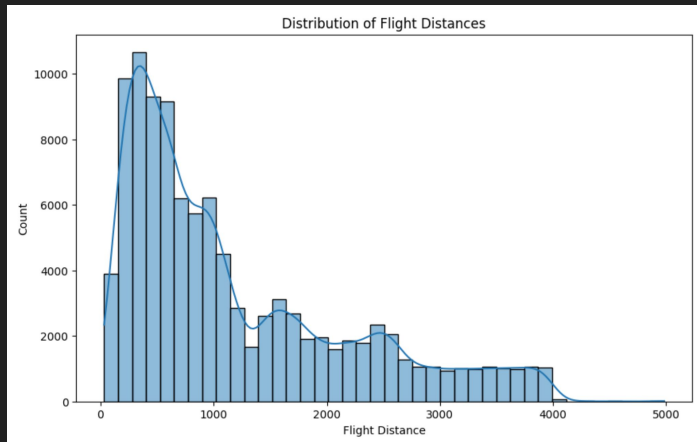
Customer's satisfaction level by segments
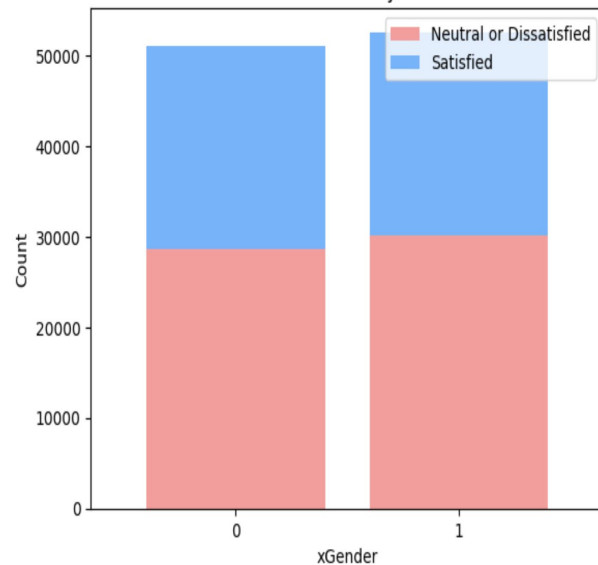
Conclusions:

- Passenger satisfaction is significantly higher in Business Class compared to Economy Classes. This may be due to better services, more comfort, and other benefits.
- Loyal Customers tend to be more satisfied compared to Disloyal Customers. This indicates that customer loyalty is a significant factor in satisfaction, with loyal customers generally experiencing higher satisfaction levels.
- Passengers traveling for business purposes are more likely to be satisfied compared to those traveling for personal reasons. This could reflect the different expectations and experiences associated with these two types of travel.

Understanding these patterns can help airlines adapt their services to better meet the needs and expectations of diverse customer groups, potentially leading to higher overall satisfaction levels

Conclusions (cont.):

- The tendency for longer flights to have a higher proportion of older passengers and a higher satisfaction rate might indicate that these flights offer features or services that cater better to this demographic's needs or expectations.
- The consistency in delay times across flight durations suggests that airlines maintain a standard operational efficiency. However, the slight increase in delays for Ultra-long flights could be an area for airlines to investigate and improve.
- These insights could help airlines improve their services and operational focus to enhance passenger experience across different flight durations, paying special attention to the unique expectations and needs of passengers in each category.
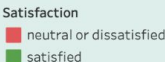
Predictive modelling results:

ML method	Accuracy score	Weighted avg (precision, recall, f-score)
RandomForestClassifier	96.1%	96%
Support Vector Machine	95.4%	95%
Logistic Regression	87.1%	87%

Dashboard in Tableau

Links

https://github.com/dkuzzmin/airlinedataanalytics

2-min video link

Portfolio - datascienceportfol.io/kuzmin

Career Prep Links

[CV](CV)

Linkedin

[Job tracker](Job%20tracker)