

AIRLINE TWITTER SENTIMENT PROJECT

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OVERVIEW

Sentiment analysis on Twitter data is crucial for airlines in the competitive industry to gain a competitive edge and satisfy customers. By analyzing tweets, airlines can understand customer feedback and opinions, identify areas for improvement, strengthen customer satisfaction, and maintain a positive reputation. This analysis helps airlines recognize emerging trends, address negative sentiments, and proactively resolve issues, reducing potential reputation risks. Overall, sentiment analysis on Twitter provides valuable insights for shaping strategies and enhancing customer experience in the airline industry.



OUTLINE

- Data Understanding
- Data Preparation
- EDA
- Modelling
- Conclusion and Recommendations



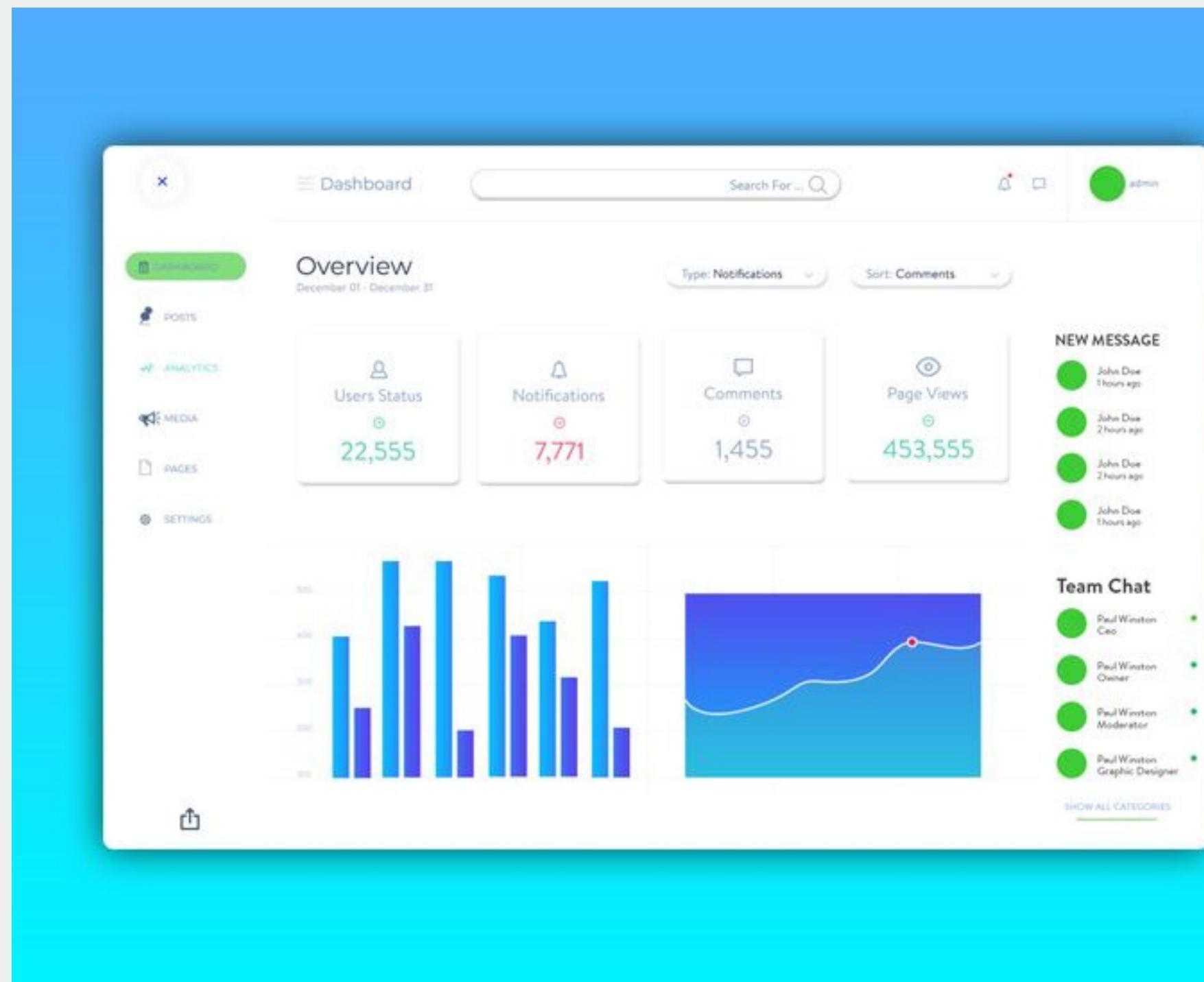
OBJECTIVES

The goal is to analyze tweets about various airlines to understand the sentiment (positive, negative, or neutral) of the general public towards those airlines. This analysis aims to offer insights and propose solutions for improvement. To achieve this, natural language processing (NLP) techniques will be used to preprocess and clean the text data, making it suitable for sentiment analysis. Multi-classification algorithms will be developed to provide a thorough sentiment analysis of the tweets. The effectiveness of these models in predicting the sentiment of airline passengers will be evaluated using recall and F1-score metrics.



DATA UNDERSTANDING

The dataset obtained from [data.world](#) contains 14,640 rows and 20 columns of Twitter data collected since February 2015. Contributors were asked to classify tweets as positive, negative, or neutral, and identify specific negative reasons. This dataset provides a rich and extensive resource for analyzing customer sentiment and identifying negative experiences in the airline industry.



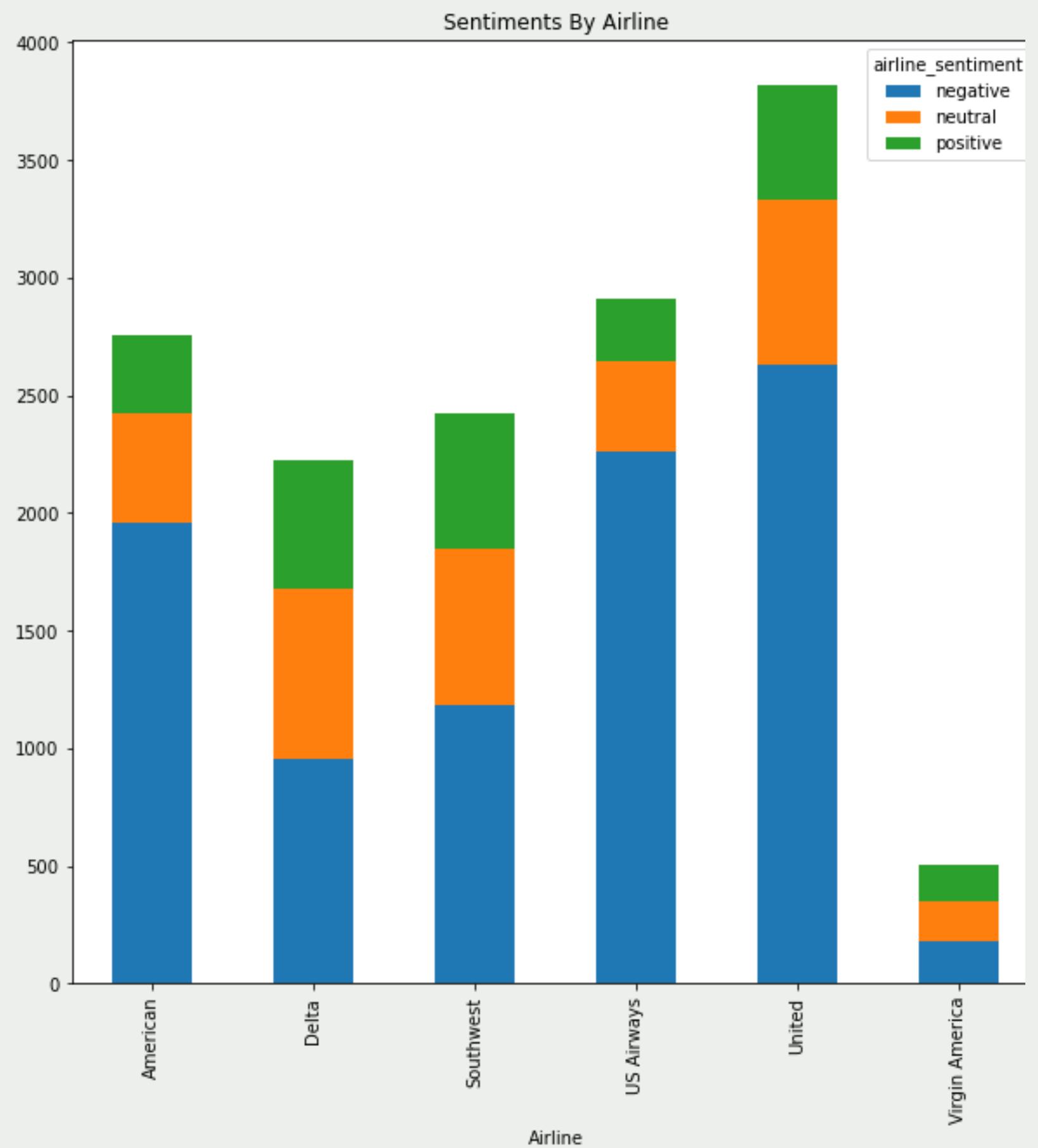
DATA PREPARATION

We started by checking for missing values and presented them in percentages, dropped some columns and checked for duplicates and dropped the columns with the missing values



EDA

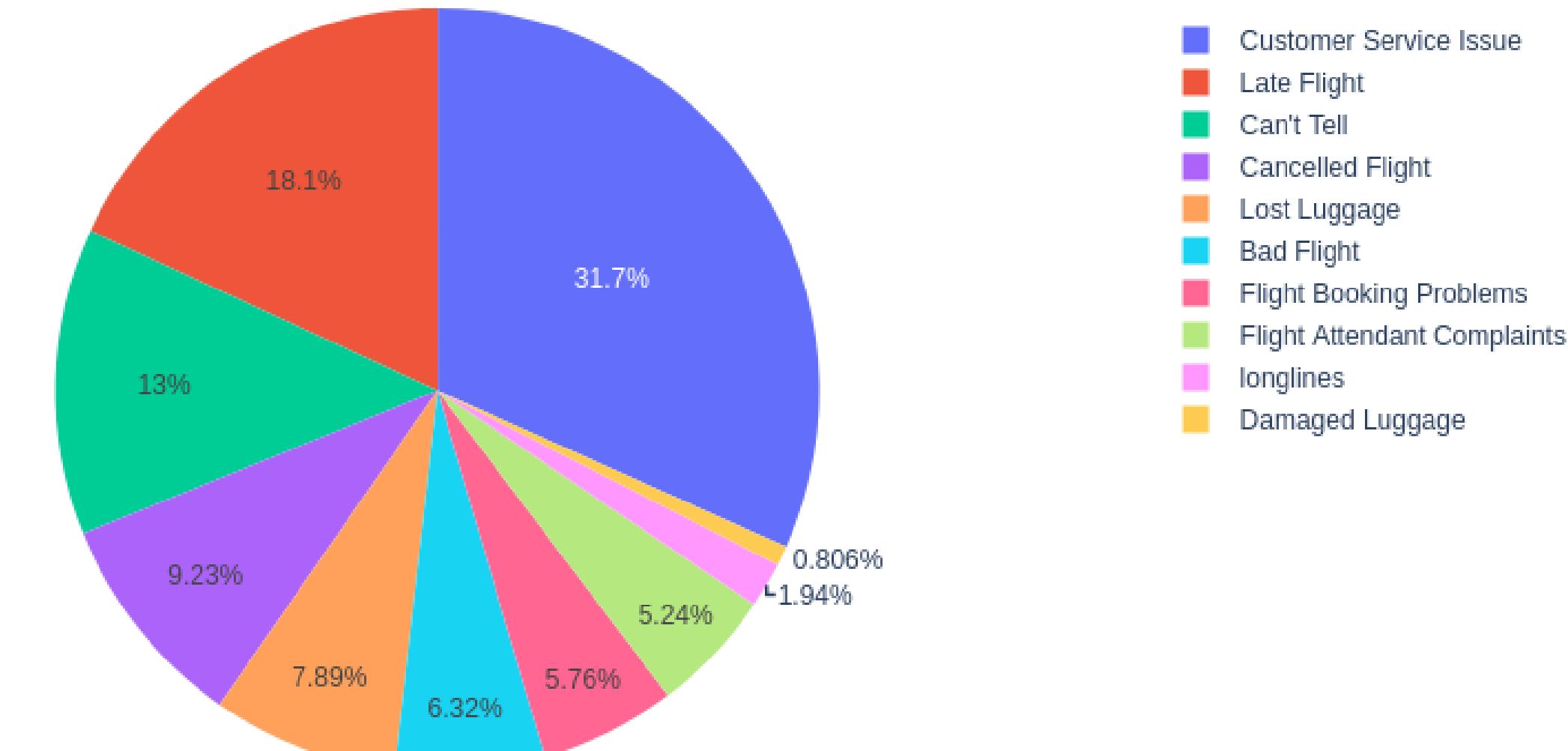
Here we sorted our data based on the type of comments per airline and we saw that the negative comments were more than the positive and the neutral comments.



EDA CONT.

Here 31.7% of tweets indicate poor customer service provided by various airlines. 18.1% indicate a bad experience with late flights and 13.0% of them indicate a dislike the services provided by the airlines without providing any solid reason. Issues concerning damaged luggage are the least.

Negative Reasons for all Airlines (Pie Chart)



MODELLING

Here we used models that could give us a goal accuracy of 80% and above and we used CNN model and XG Boost model.

The neural network model achieved an accuracy of 0.774 on the given dataset, indicating that it correctly predicted the sentiment of approximately 77.4% of the tweets. The model's performance varied across the different sentiment classes.

The XGBClassifier model achieved an accuracy of 0.80 on the given dataset, indicating that it correctly predicted the sentiment of approximately 79.8% of the tweets. The model's performance varied across the different sentiment classes.

The neural network model exhibited reasonably good accuracy on the given dataset, with better performance for negative and positive sentiments compared to neutral sentiment. Further analysis and potential improvements are recommended to enhance the model's performance for neutral sentiment classification.

CONCLUSIONS

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IMPROVE ON ONLINE SERVICES

The airline should try and make the checking-in, booking and canceling of flights user friendly for ease access of the services, this can be done by shifting these services online.

MONITOR AIRLINE SENTIMENTS IN REAL TIME.

The airline can quickly identify and address any issues that arise and deal with them swiftly before causing widespread negative sentiment among customers.

EARLIER COMMUNICATION OF ANY DELAYS

Providing advance communication about potential flight delays could receive positive feedback from customers.

FOCUS ON EMPLOYEE TRAINING

Invest in comprehensive training programs for airline staff to ensure they have the necessary skills and knowledge to deliver exceptional customer service.

Recommendations



IMPROVE CUSTOMER SERVICE

By prioritizing and enhancing customer service, punctuality, and communication with passengers



IMPROVE ON COMMUNICATION

Negative sentiment tweets indicate issues with flight schedules, cancellations, and delays, highlighting the importance of clear and prompt communication during disruptions.



IMPLEMENT A CUSTOMER LOYALTY PROGRAM

Reward loyal customers with exclusive benefits, discounts, or upgrades to incentivize repeat business and foster a positive relationship with the airline.