



# PYTHON PROGRAMMING

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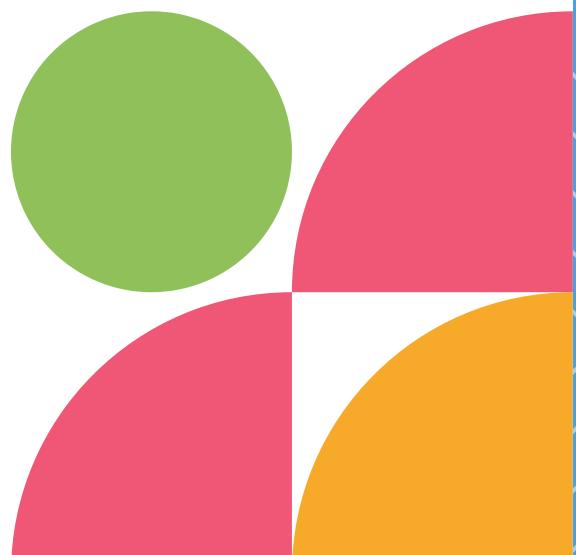
Mini Project 2

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Presented By:

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• • • • • **TABLE OF  
CONTENTS**

<b>Introduction</b>	<b>01</b>
<b>Dataset Overview</b>	<b>02</b>
<b>Existing Analysis</b>	<b>03</b>
<b>Improvement Proposed &amp; Implementation</b>	<b>04</b>
<b>Implementation</b>	<b>05</b>
<b>Conclusion</b>	<b>06</b>

# INTRODUCTION

This project provides a detailed sentiment analysis, statistical analysis, data visualization and text preprocessing of Customer Feedback Dataset.

## KEY ASPECTS OF THE ANALYSIS

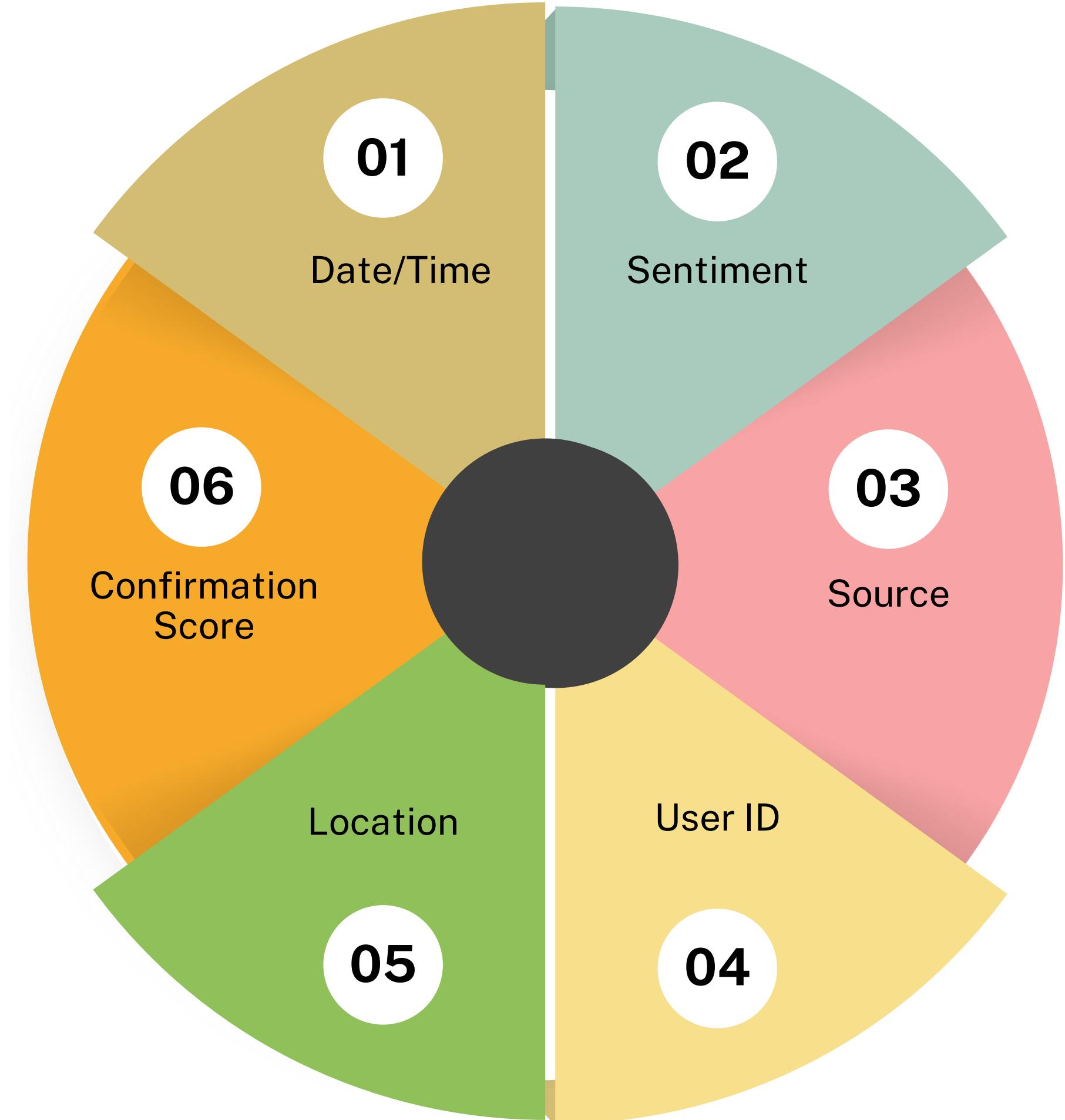
- Data cleaning
- Sentiment analysis
- Statistical analysis
- Data visualization
- Text preprocessing



# DATASET OVERVIEW

This dataset contains customer sentiments expressed in various sources such as social media, review platforms, testimonials, and more.

The sentiments reflect customers' opinions and experiences with products, services, movies, music, books, restaurants, websites, customer support, and more.



# DATA VISUALIZATION



01 Sentiment Distribution

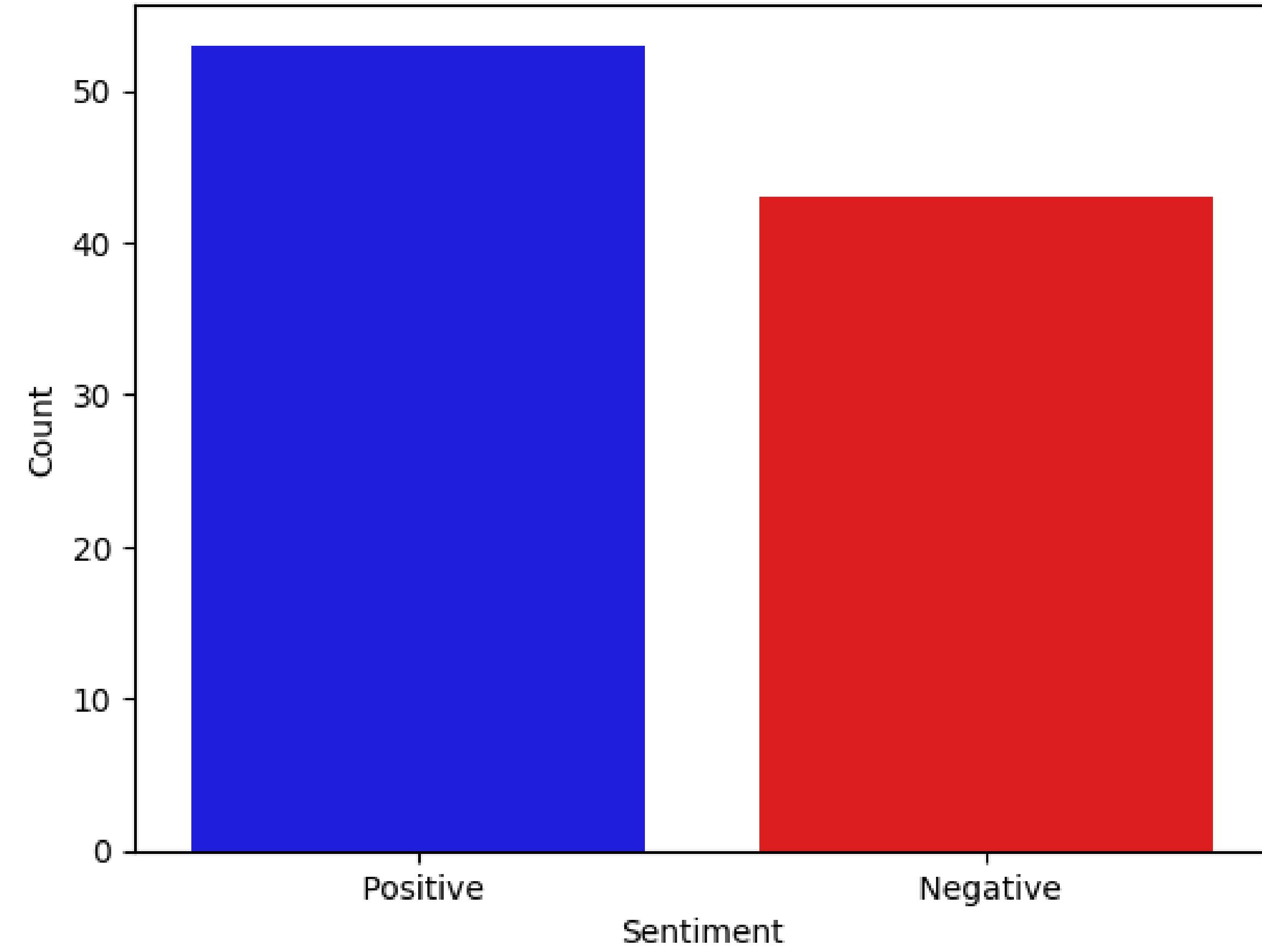
02 Positive and Negative Reviews by Source

03 Positive and Negative Reviews by Location

04 The Most Common Words

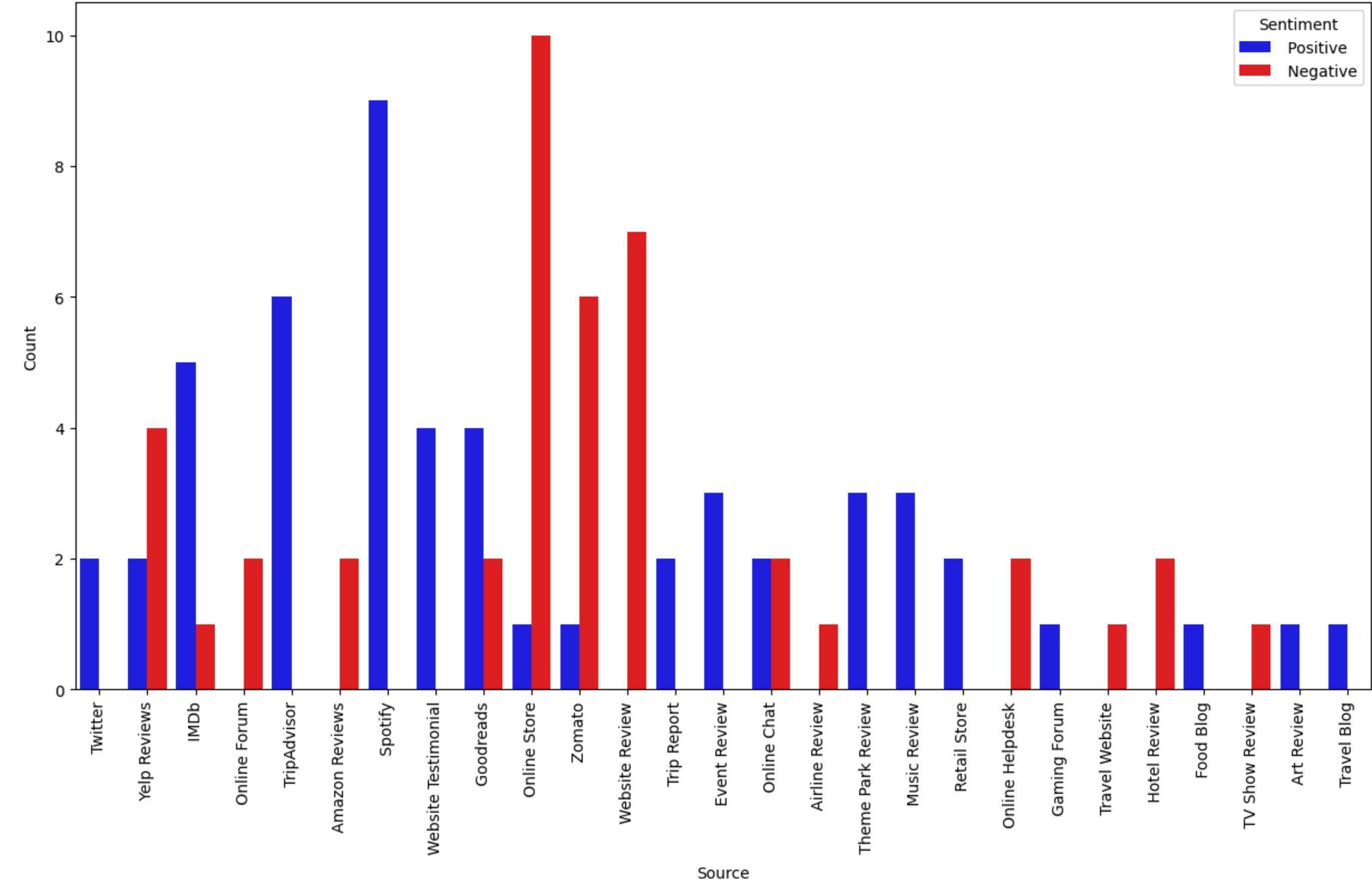
05 Word Cloud

## Sentiment Distribution



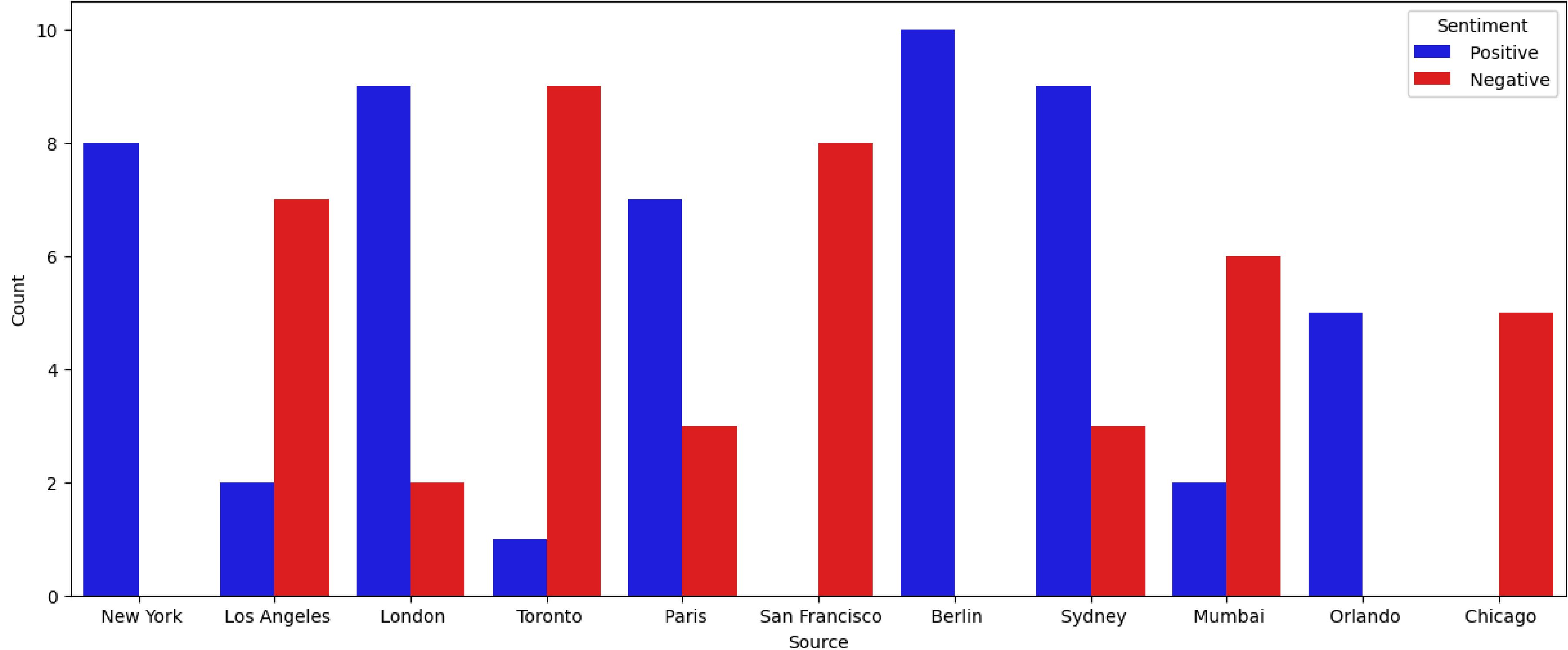
# Positive and Negative Reviews by Source

Sentiment Distribution by Source



# Positive and Negative Reviews by Location

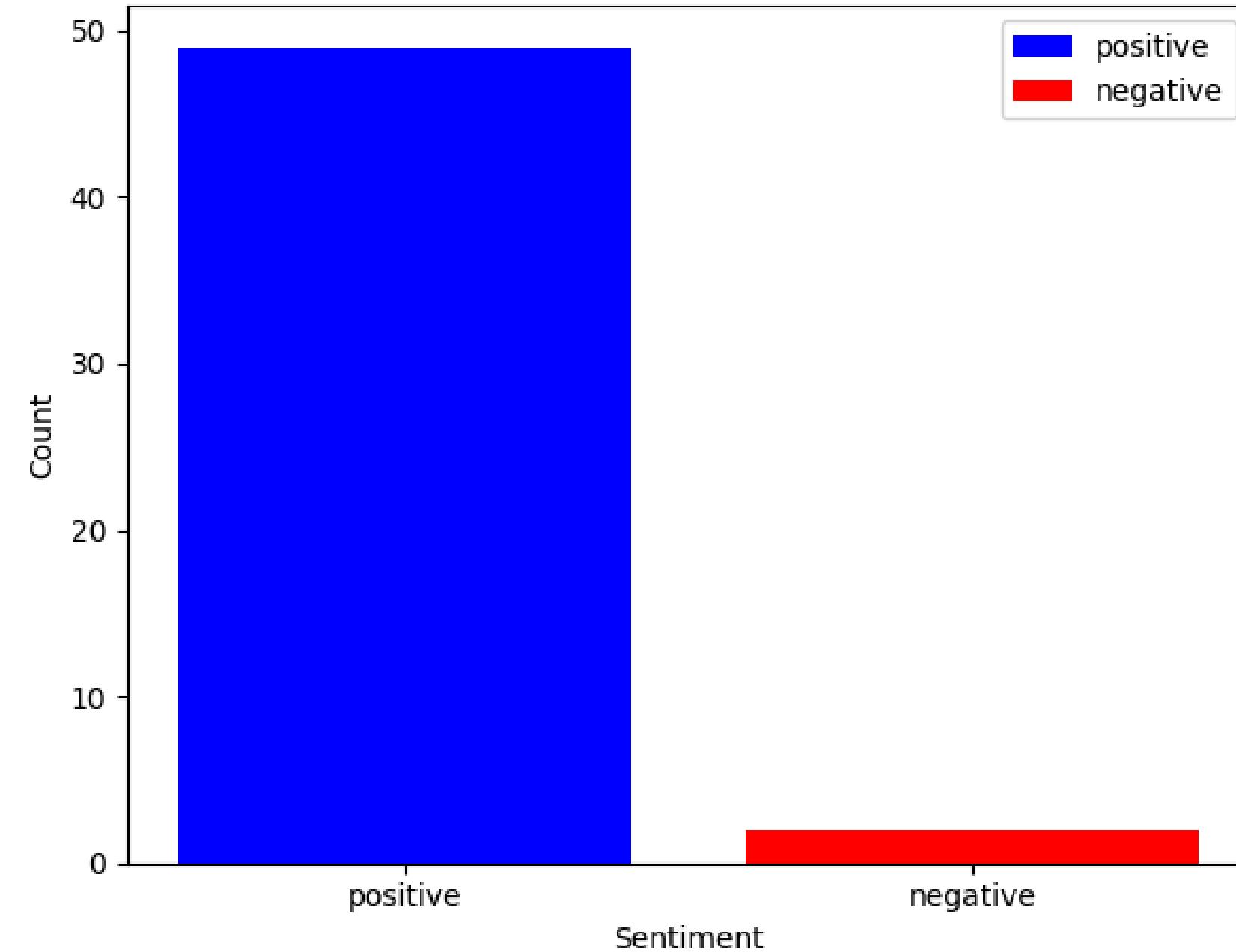
## Sentiment Distribution by Location



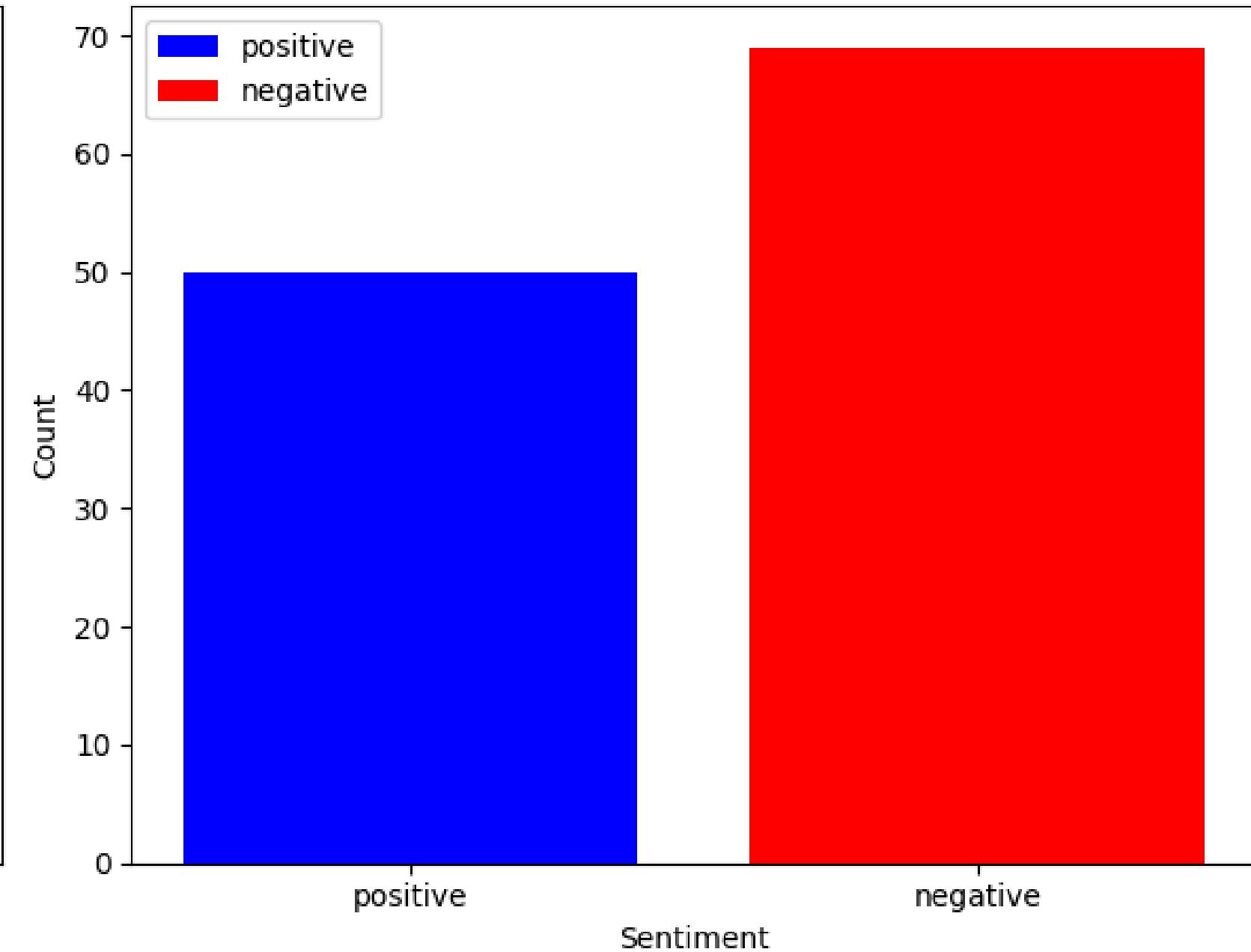
There were no positive reviews in Chicago, but Berlin and New York are cities with the most positive reviews.

## Stopwords and Punctuation

Number of "!" in reviews



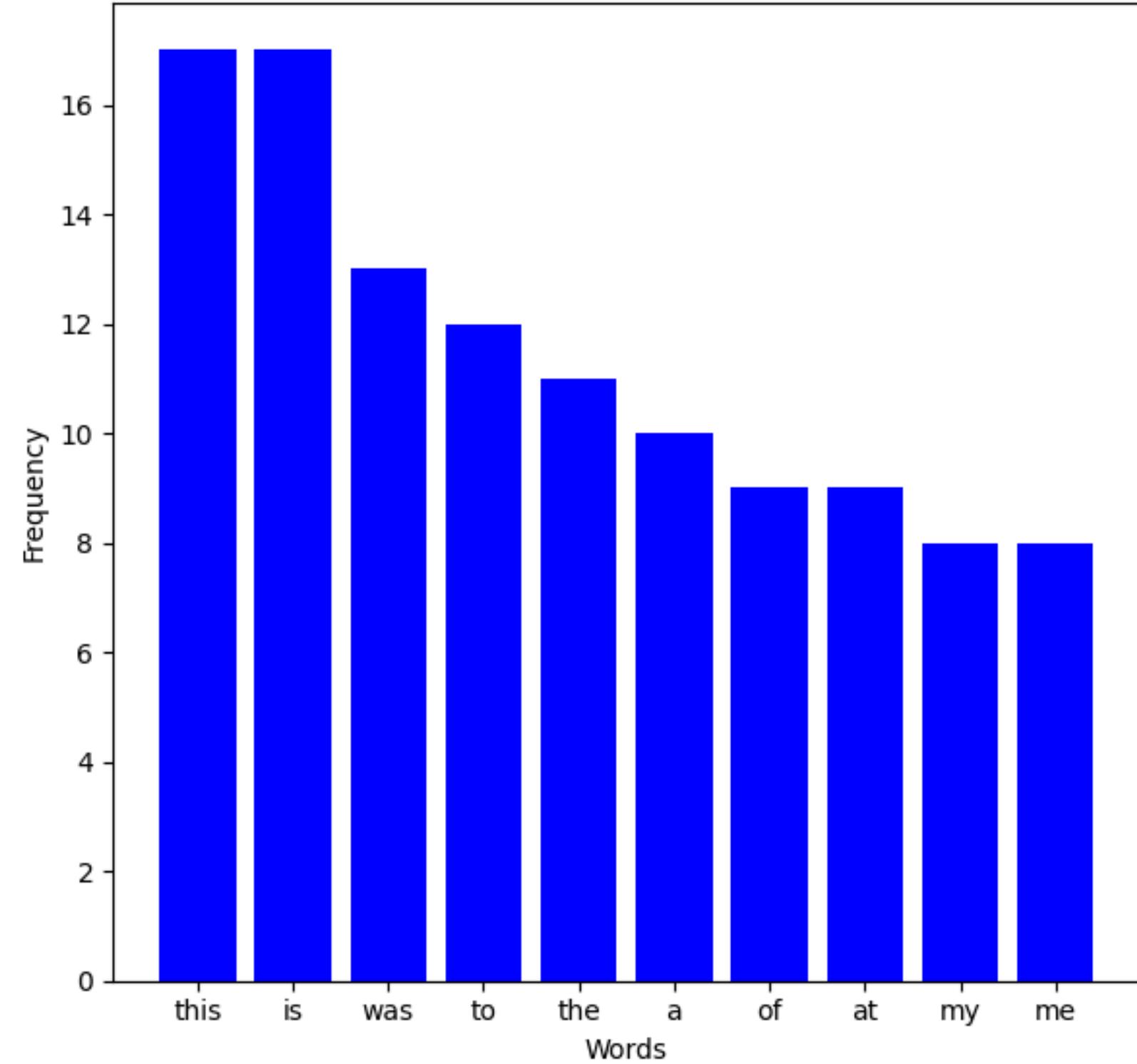
Number of "." in reviews



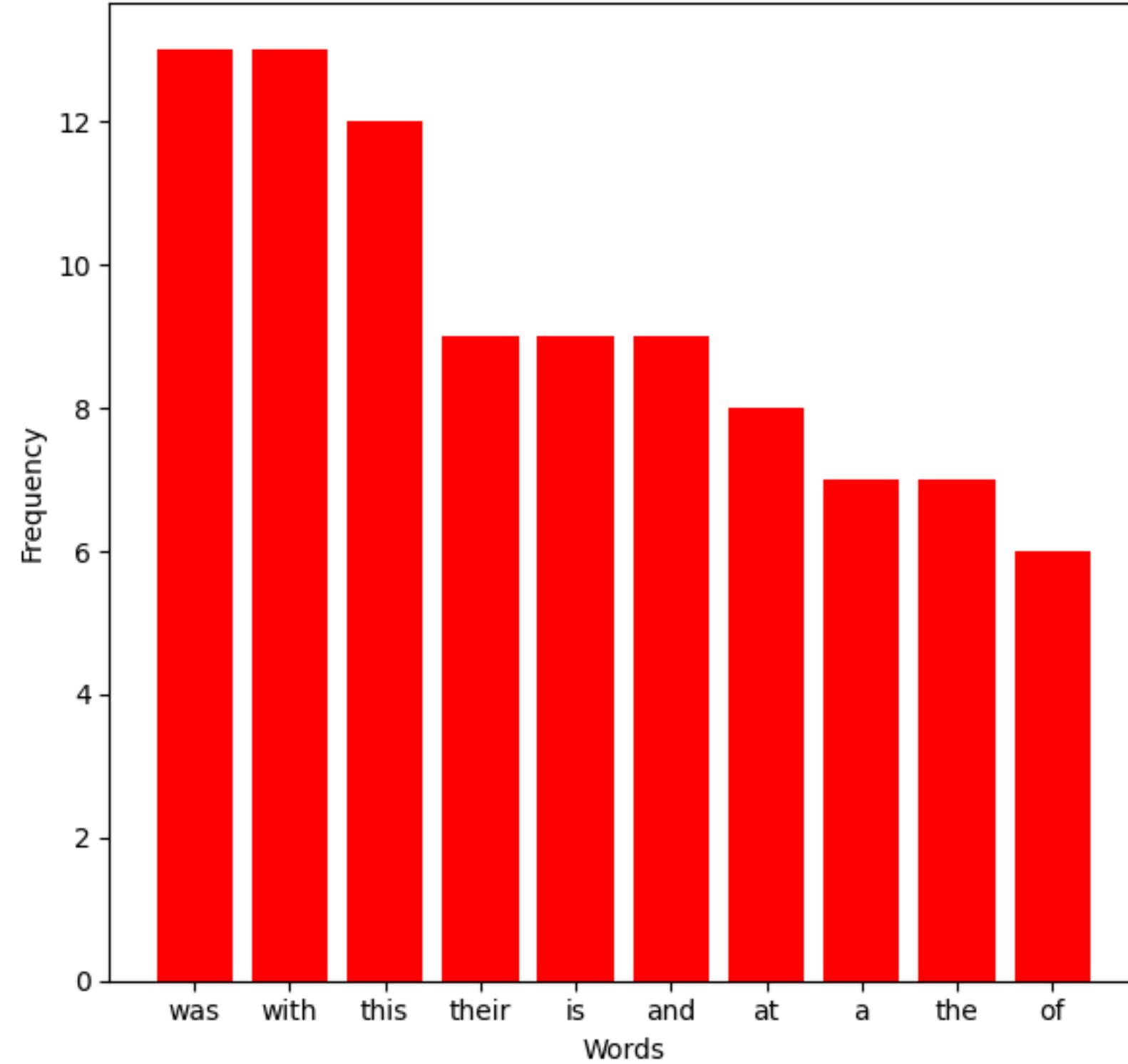
When a review ends with an exclamation mark, it is usually a positive one.

# Top 10 Most Common Stop Words

Top 10 Most Common Stop Words (Positive Sentiment)



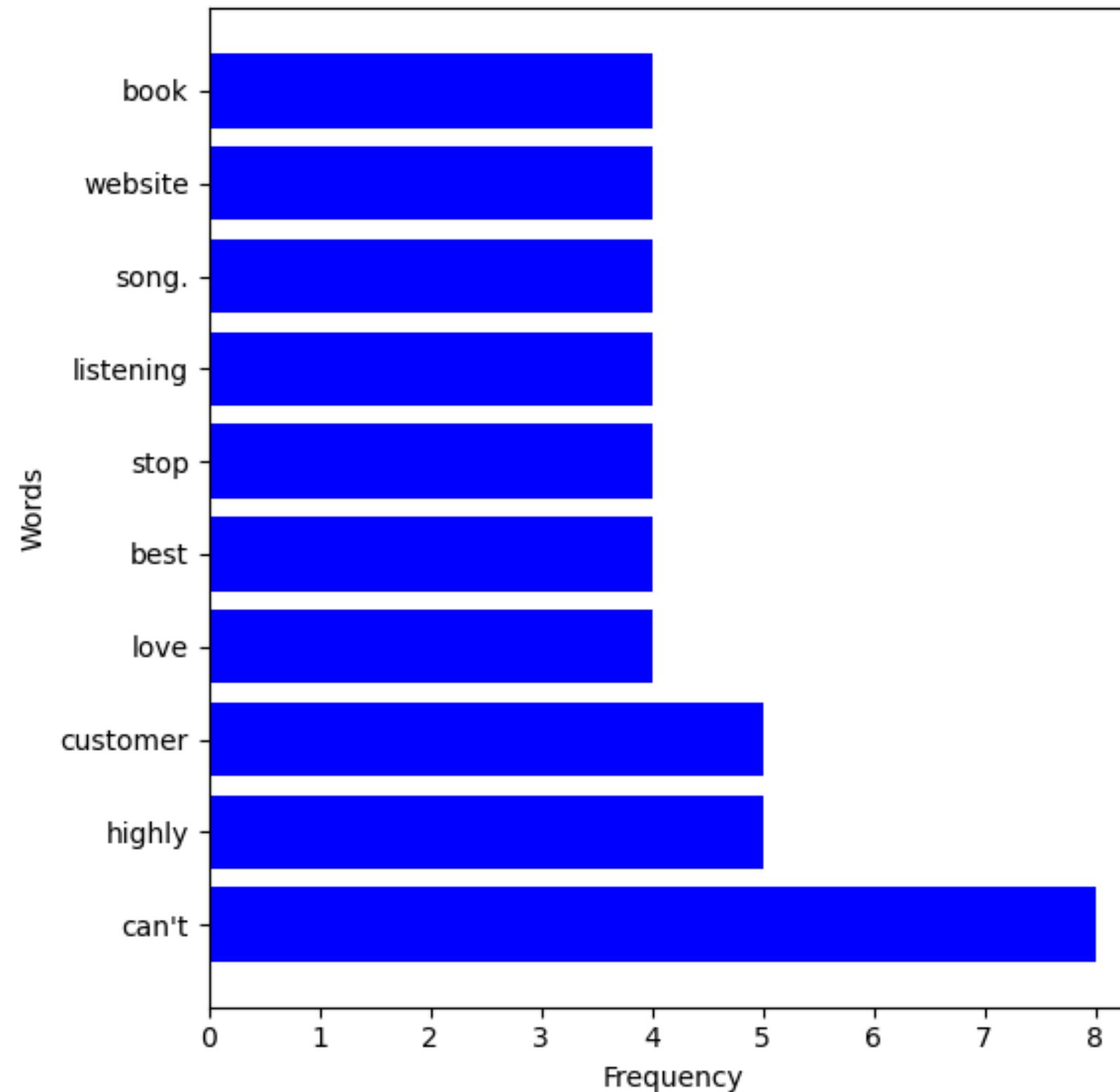
Top 10 Most Common Stop Words (Negative Sentiment)



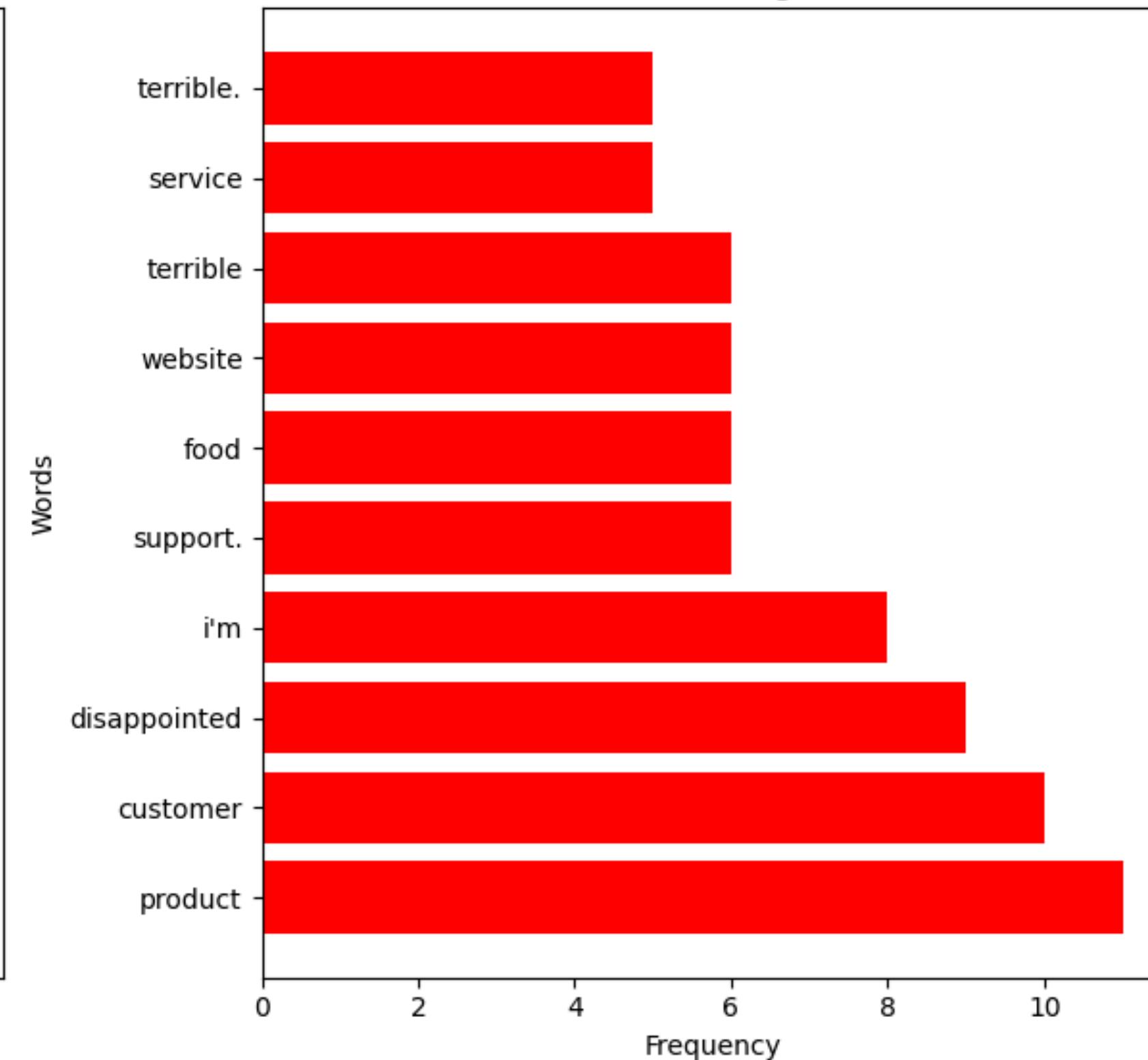
Positive reviewers often used words like 'my' and 'me,' while negative reviewers tended to use 'their' more frequently. This suggests that satisfied users focus on sharing their personal experiences, whereas dissatisfied users are more likely to discuss the service or product itself.

# The Most Common Words

Most Common Words (Positive Sentiment)

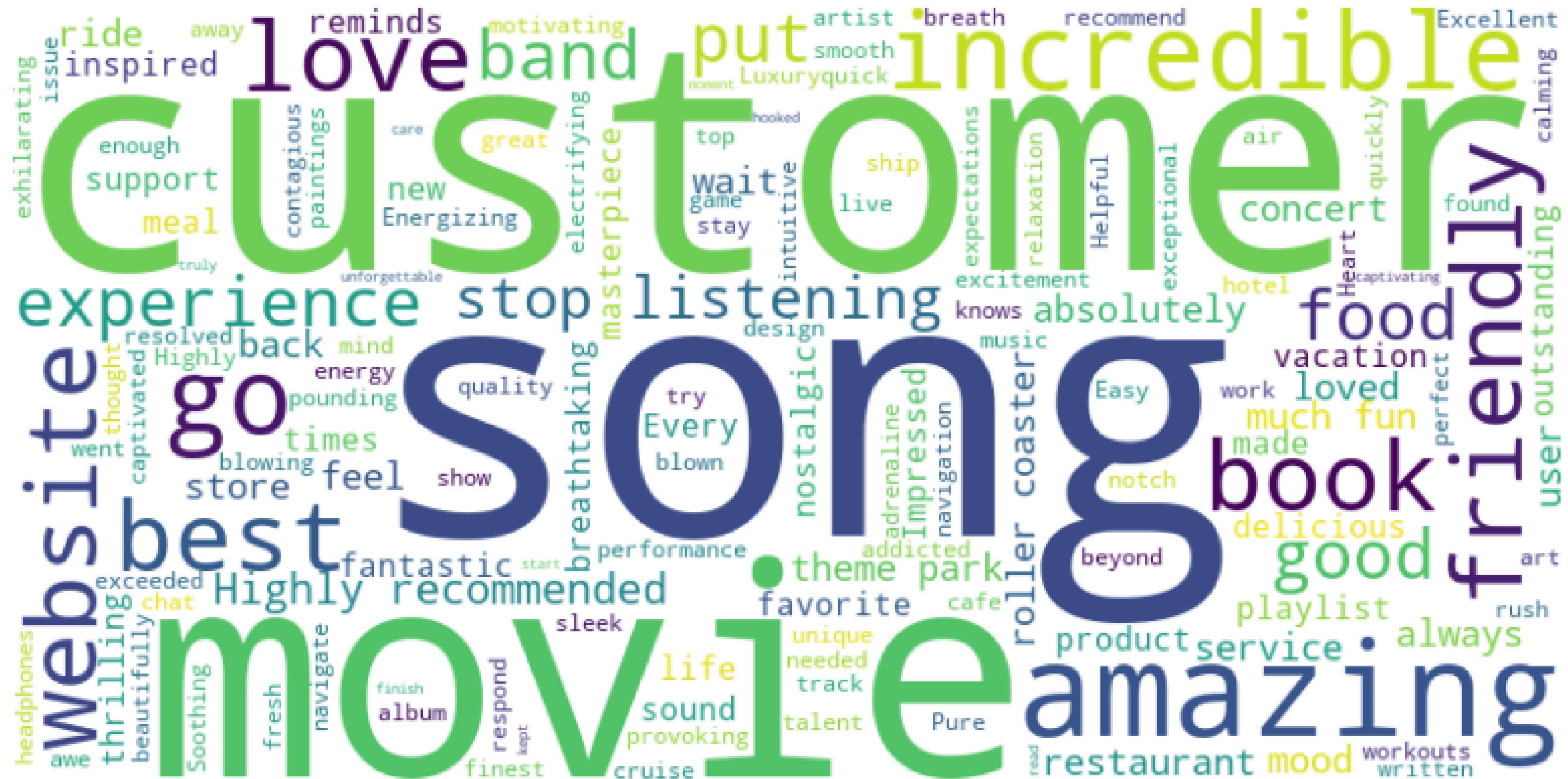


Most Common Words (Negative Sentiment)

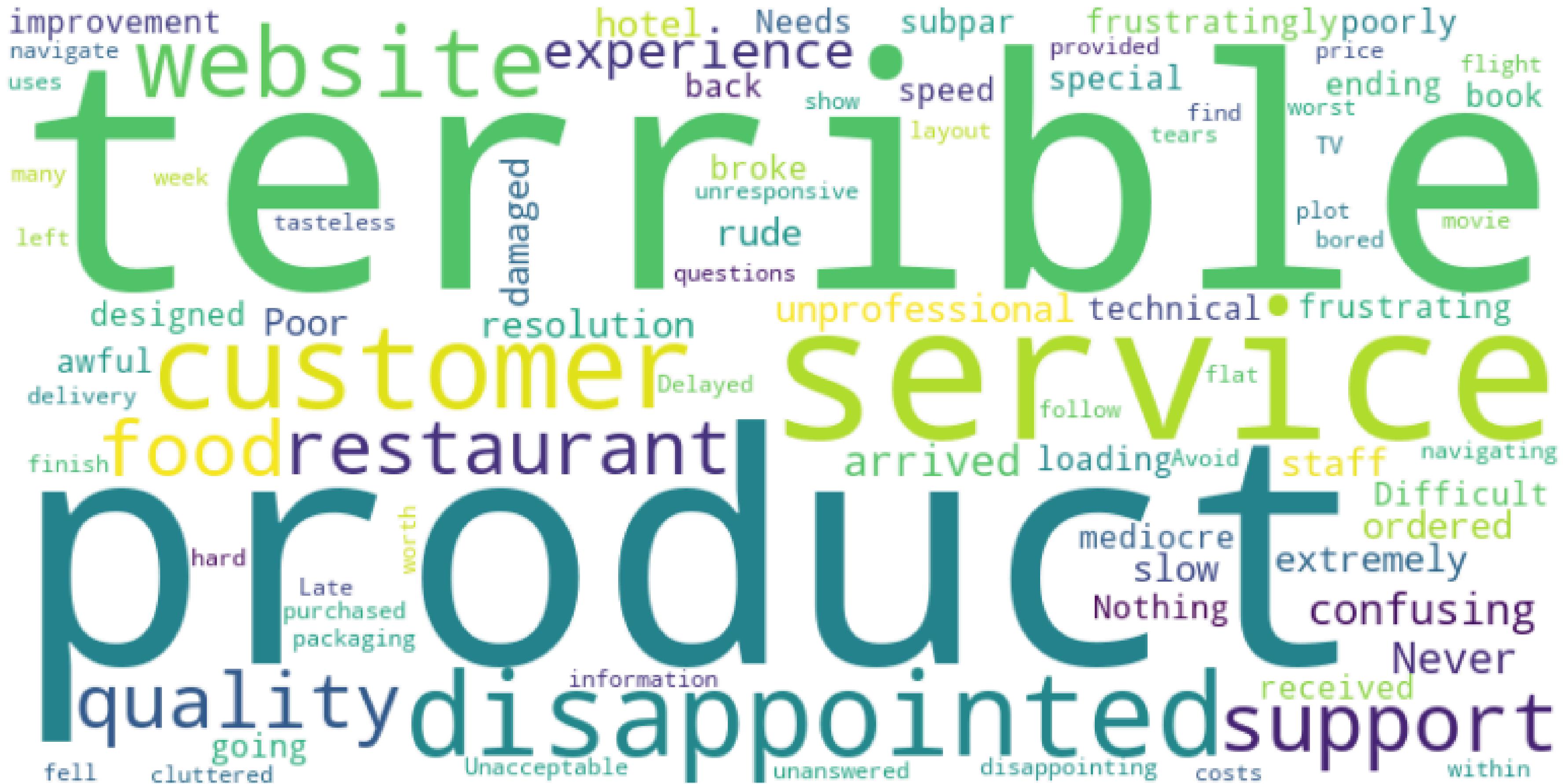


Although "customer" appears in both negative and positive reviews, its occurrence is twice as frequent in negative reviews.

# Word Cloud for Positive Sentiment



## Word Cloud for Negative Sentiment



# SENTIMENT ANALYSIS USING TEXTBLOB

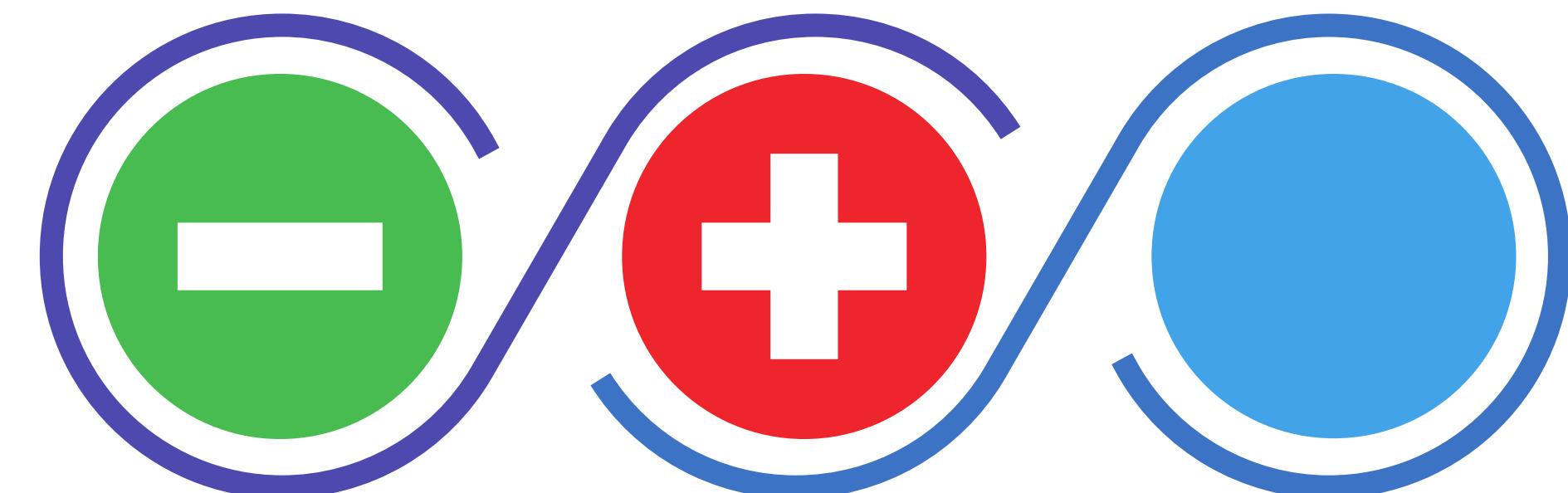
**TextBlob** is a **Python library** for processing textual data, offering a simple API for common NLP tasks.

**Built on top of** the more powerful nltk (Natural Language Toolkit) and Pattern libraries

Subjectivity and Polarity are two key metrics used in sentiment analysis, each offering insights into different aspects of the text's meaning and emotional tone.

## Polarity

Polarity indicates the emotional tone of the text, whether the sentiment is positive, negative, or neutral.



**Polarity score** ranges from -1 to +1

- -1 indicates a very negative sentiment.
- 0 represents a neutral sentiment.
- +1 suggests a very positive sentiment.

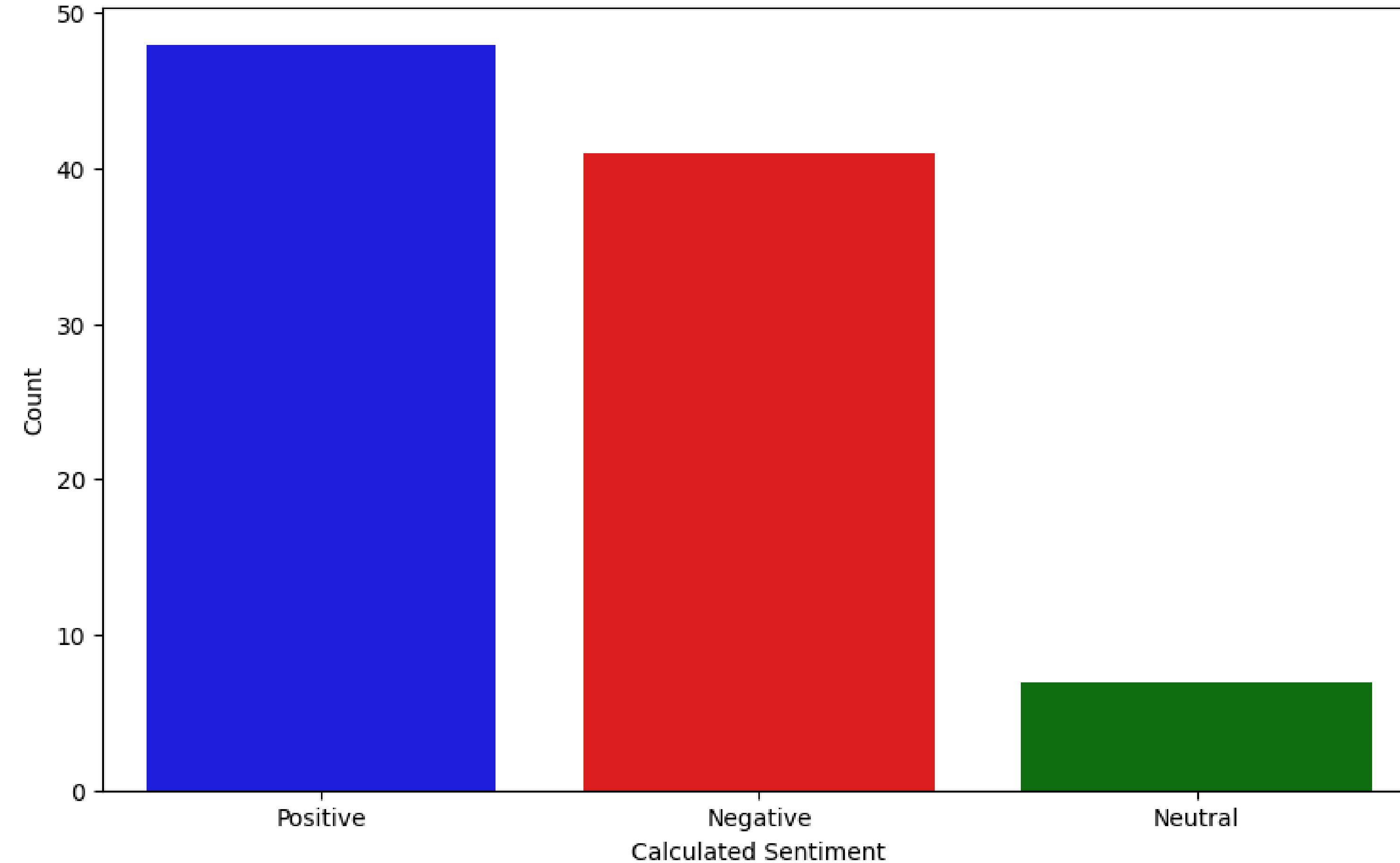
## Subjectivity

Subjectivity measures how much of the text is based on personal opinion versus factual information. It shows whether a statement expresses a subjective opinion or objective fact.

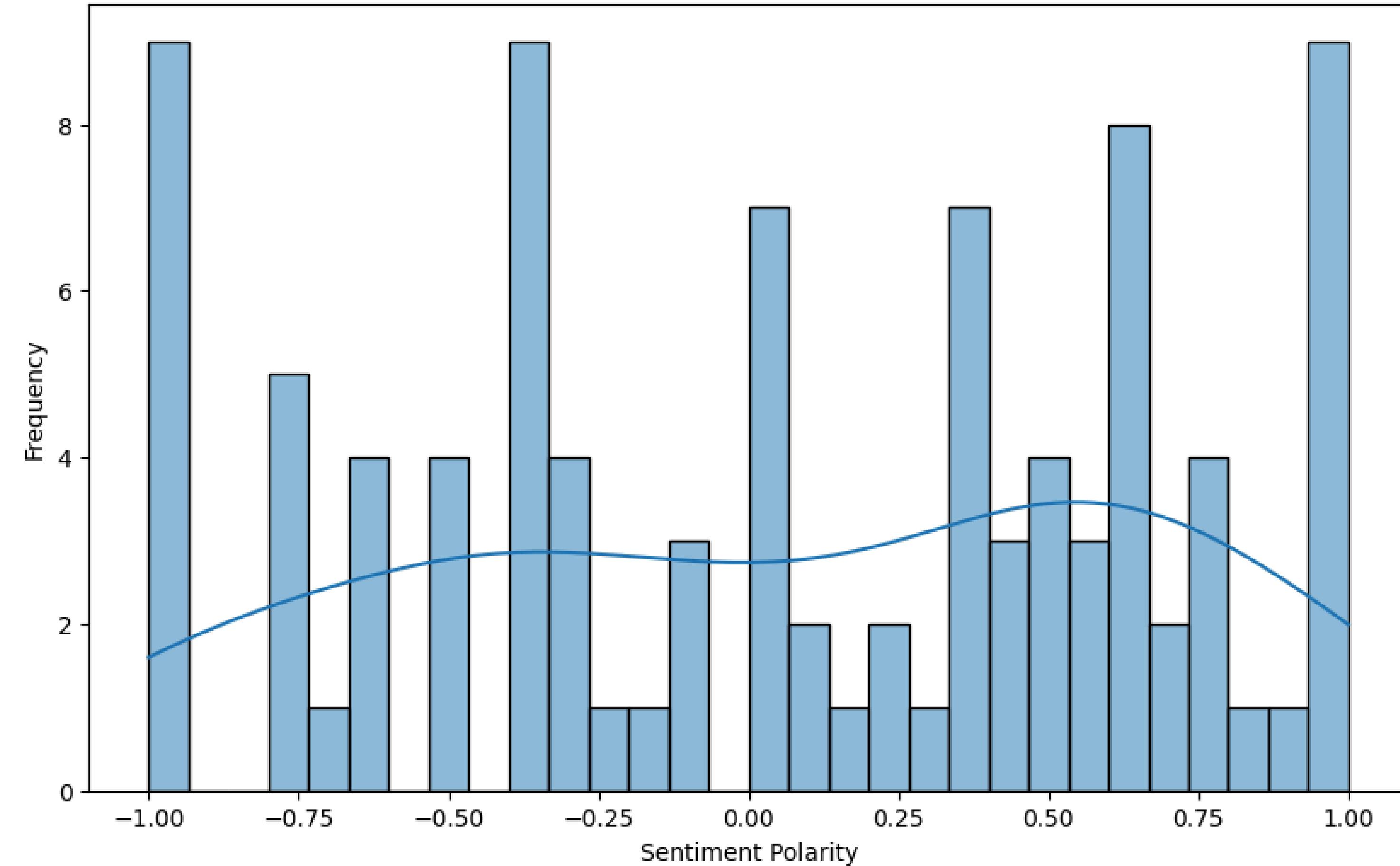
**Subjectivity scores** range from 0 to 1

- 0 represents objective language (factual information).
- 1 represents highly subjective language (personal opinions or emotions).

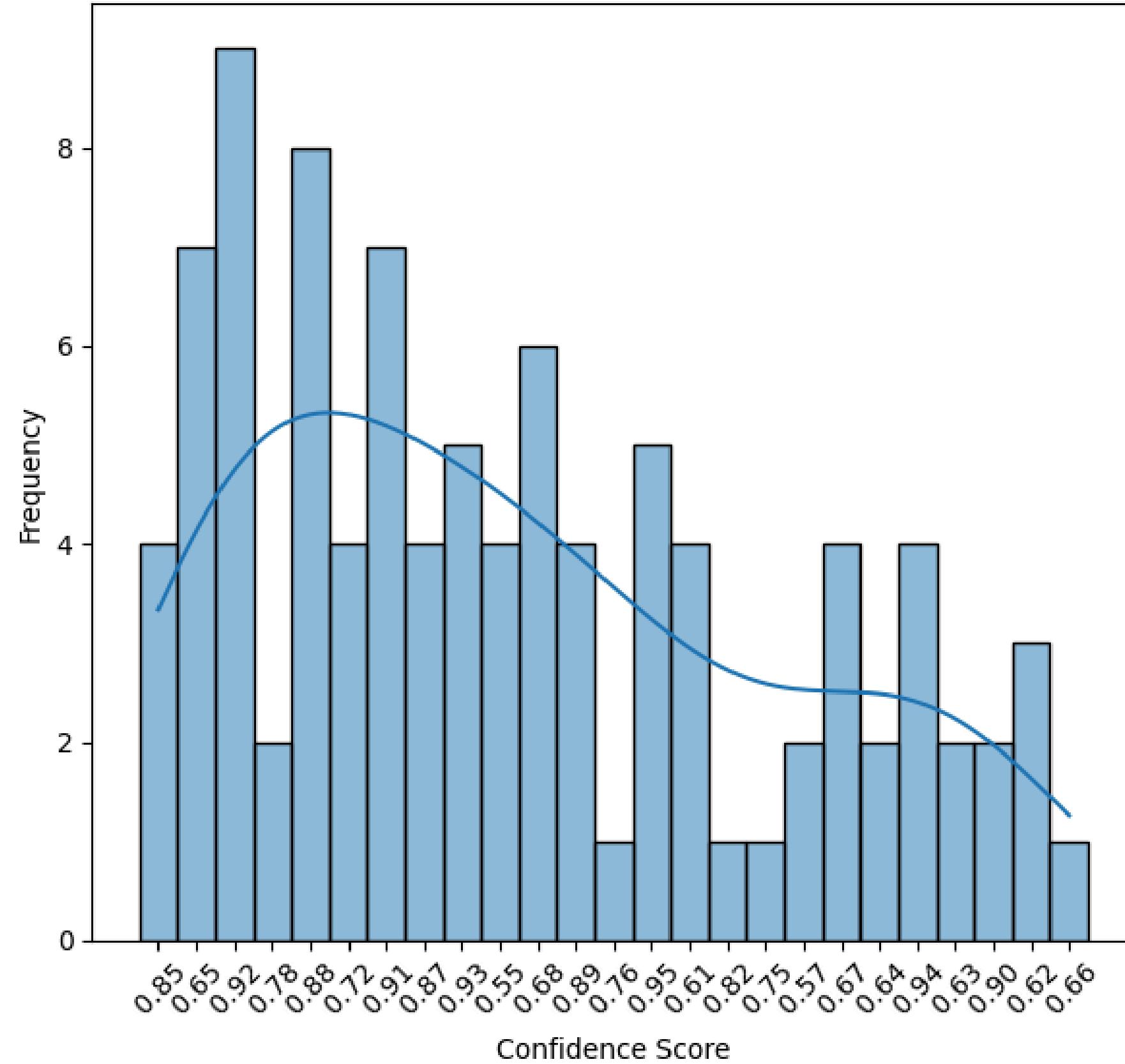
## Distribution of Calculated Sentiment



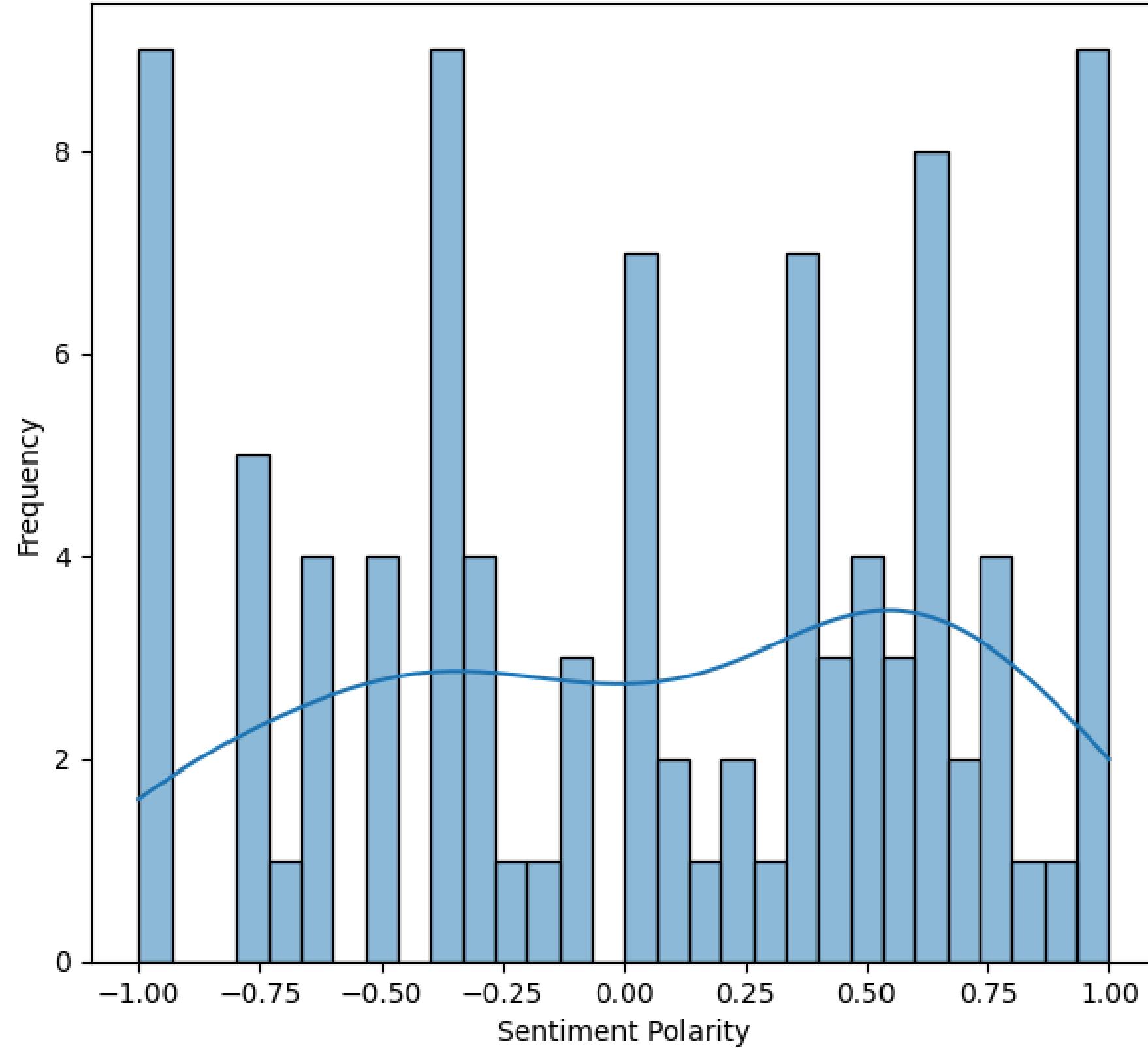
## Distribution of Sentiment Polarity



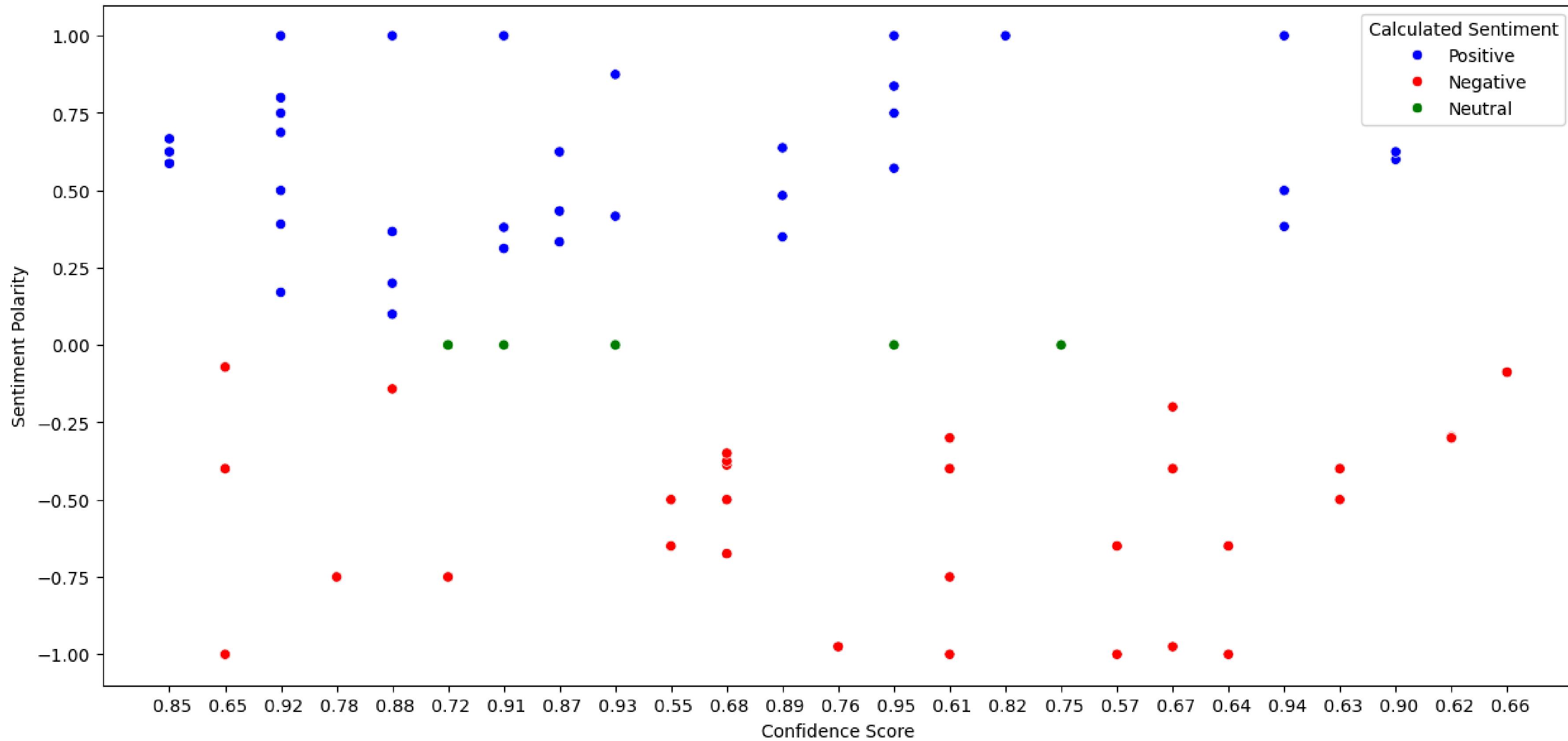
Distribution of Confidence Score



Distribution of Sentiment Polarity



### Scatter Plot of Confidence Score vs Sentiment Polarity



# KEY INSIGHTS

## 01 | Sentiment Distribution

Balanced mix of positive and negative sentiments, showing diverse customer experiences.



## 02 | Confidence Score Analysis

Higher confidence scores indicate greater reliability in sentiment classifications, useful for decision-making.



## 03 | Sentiment Polarity

Variations in sentiment polarity reveal the intensity of customer opinions, offering nuanced insight into customer feedback.

## 04 | Sentiment by Source

Sentiment trends across sources help identify where customers are more vocal, guiding platform-specific strategies for reputation management.

# CONCLUSION

- Provides a clear view of customer sentiment across various factors.
- Useful for enhancing customer support and targeting regions or platforms with specific trends.
- Insights can guide product improvements by addressing frequently mentioned concerns or praised features.

# TEAM MEMBER'S CONTRIBUTIONS

Name	Roll No.	Contribution in analysis	Details of use of web resources/ Codes/AI tools etc.	Overall contribution to the work done.
Himanshu Pegu	MB24056	Equitable and Comprehensive	<p><b>Documentation Resources</b></p> <ul style="list-style-type: none"><li>Pandas Documentation: For handling and manipulating the data efficiently. (Pandas Official Documentation)</li><li>Matplotlib Documentation: For creating static plots and visualizations. (Matplotlib Official Docs)</li><li>Seaborn Documentation: For enhanced statistical visualizations such as histograms, box plots, and heatmaps. (Seaborn Official Docs)</li><li>Plotly Documentation: For creating interactive and dynamic visualizations.</li></ul>	60%
Divesh Kumar	MB24029	Equitable and Comprehensive	<p><b>Project Environment</b></p> <ul style="list-style-type: none"><li>Google Colab: The notebook for this project was executed in it, providing access to Python libraries and computational resources.</li><li>Jupyter Notebook: Used as the primary interface for writing and running Python code in an interactive environment.</li></ul>	40%

**THANK |**

