

NLP INSIGHTS FROM INSTAGRAM POSTS ON MPOX

Understanding Sentiment & Hate Speech/ Sentiment &
Hate Speech Detection on Social Media

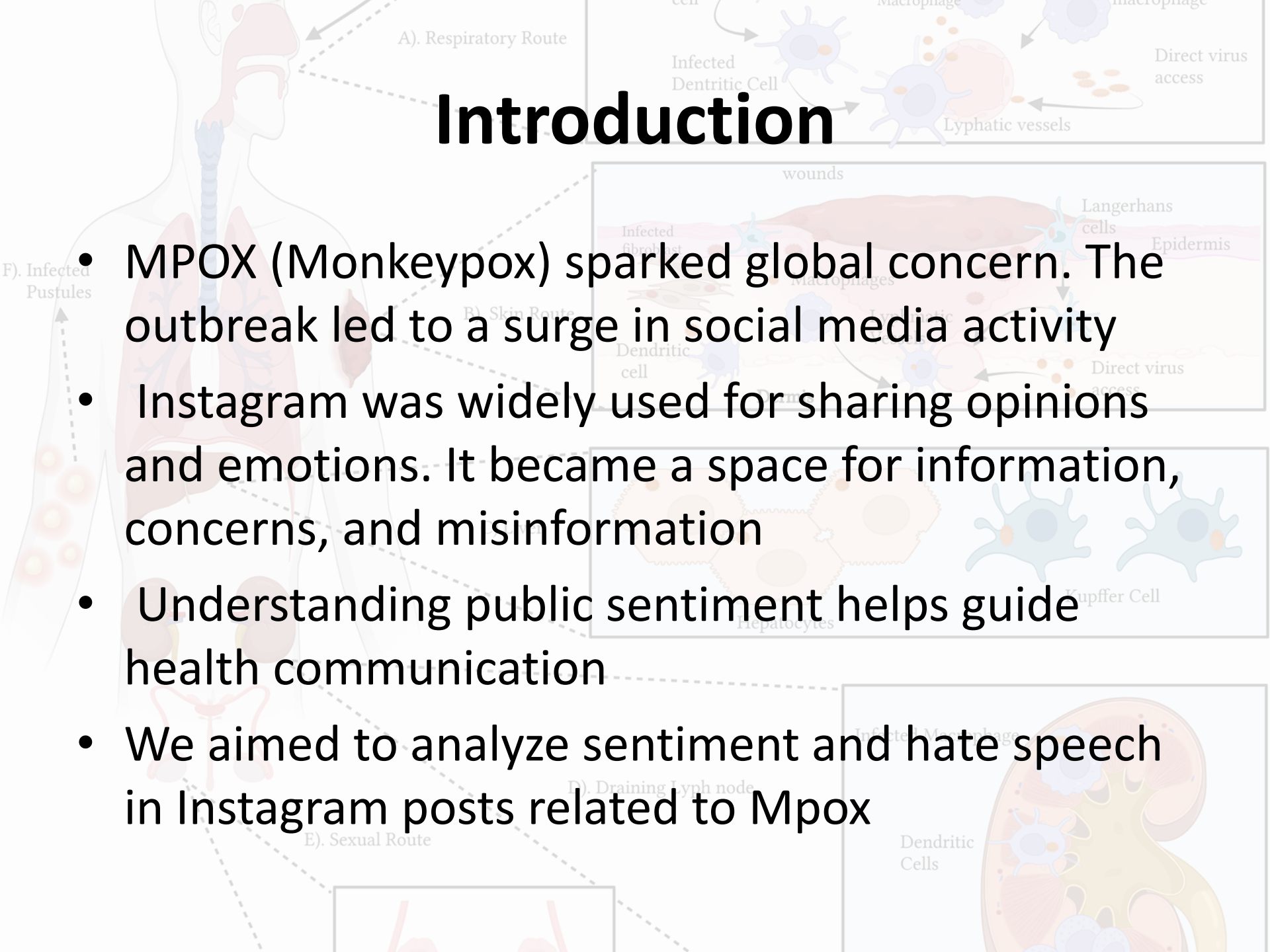
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Introduction

- MPOX (Monkeypox) sparked global concern. The outbreak led to a surge in social media activity
- Instagram was widely used for sharing opinions and emotions. It became a space for information, concerns, and misinformation
- Understanding public sentiment helps guide health communication
- We aimed to analyze sentiment and hate speech in Instagram posts related to Mpox



Project Objective

Analyze Instagram posts using NLP.

Understand public sentiment and detect online toxicity

Objective/Goals:

1. Classify sentiment: neutral, fear, joy, sadness, anger, surprise, disgust.
2. Detect hate speech: Hateful vs Non-Hateful

Main Aim: Help health authorities improve communication strategies.

Data Understanding

- **Dataset:** Mpox Instagram Dataset – Sentiment and Hate Analysis
- **Format:** Excel file with Instagram captions
- 60,127 Instagram posts(Total Records)
- **Key features:**
 - Post content (translated)
 - Sentiment labels (7 types)
 - Hate speech labels
 - Language of post

Key Data Insights

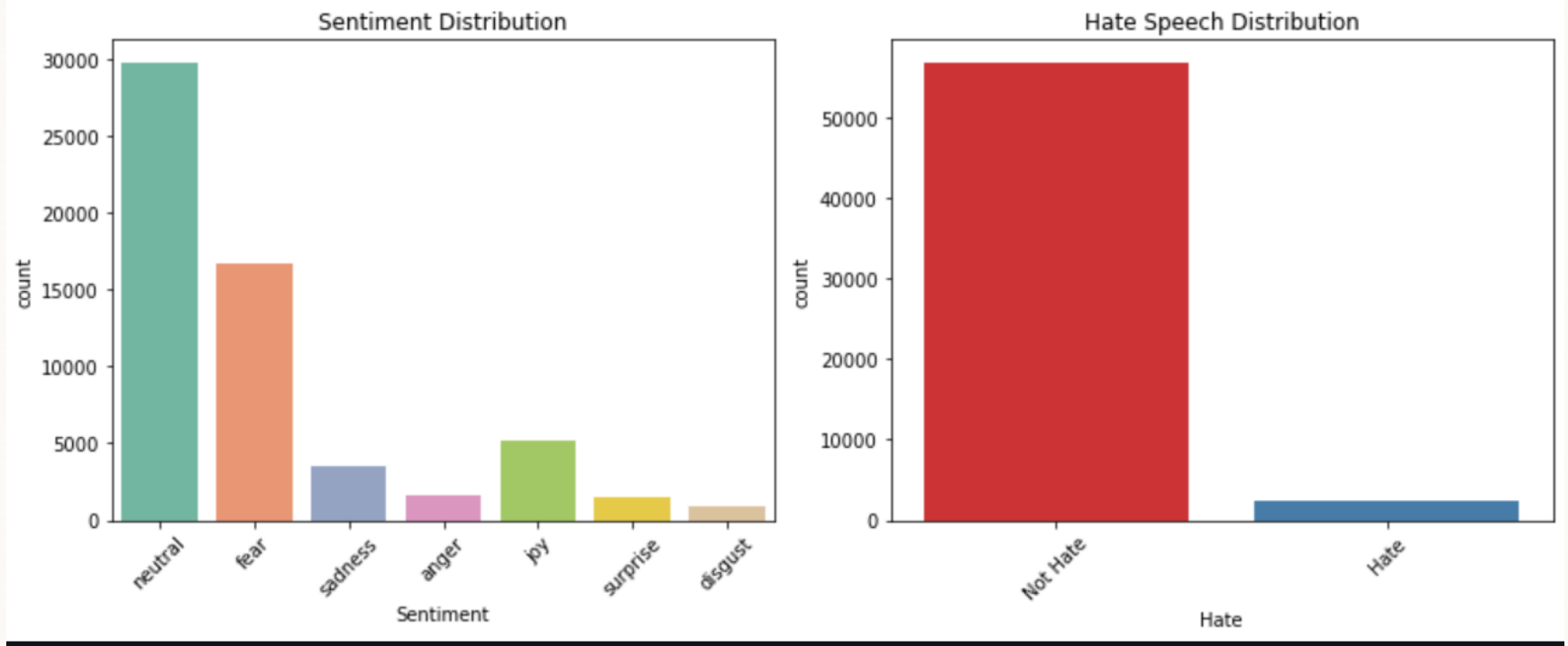
- 97% of posts in English
- 4.25% labeled as hate speech
- Avg. post length: 547 characters
- No missing values



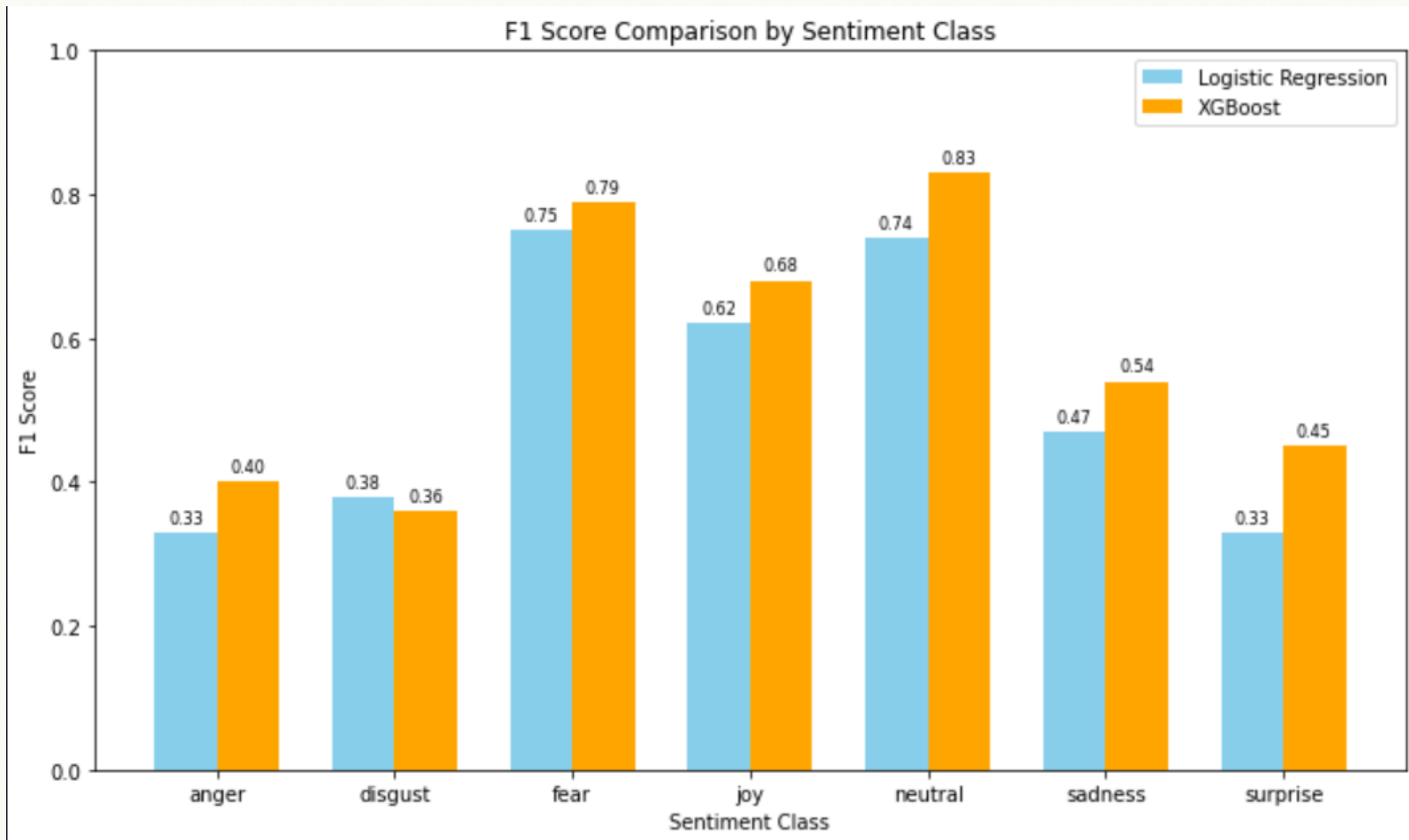
Exploratory Analysis

- Common words: monkeypox, vaccine, government, safe
- Dominant emotions: fear and neutral
- Hateful posts often linked to fear/misinformation

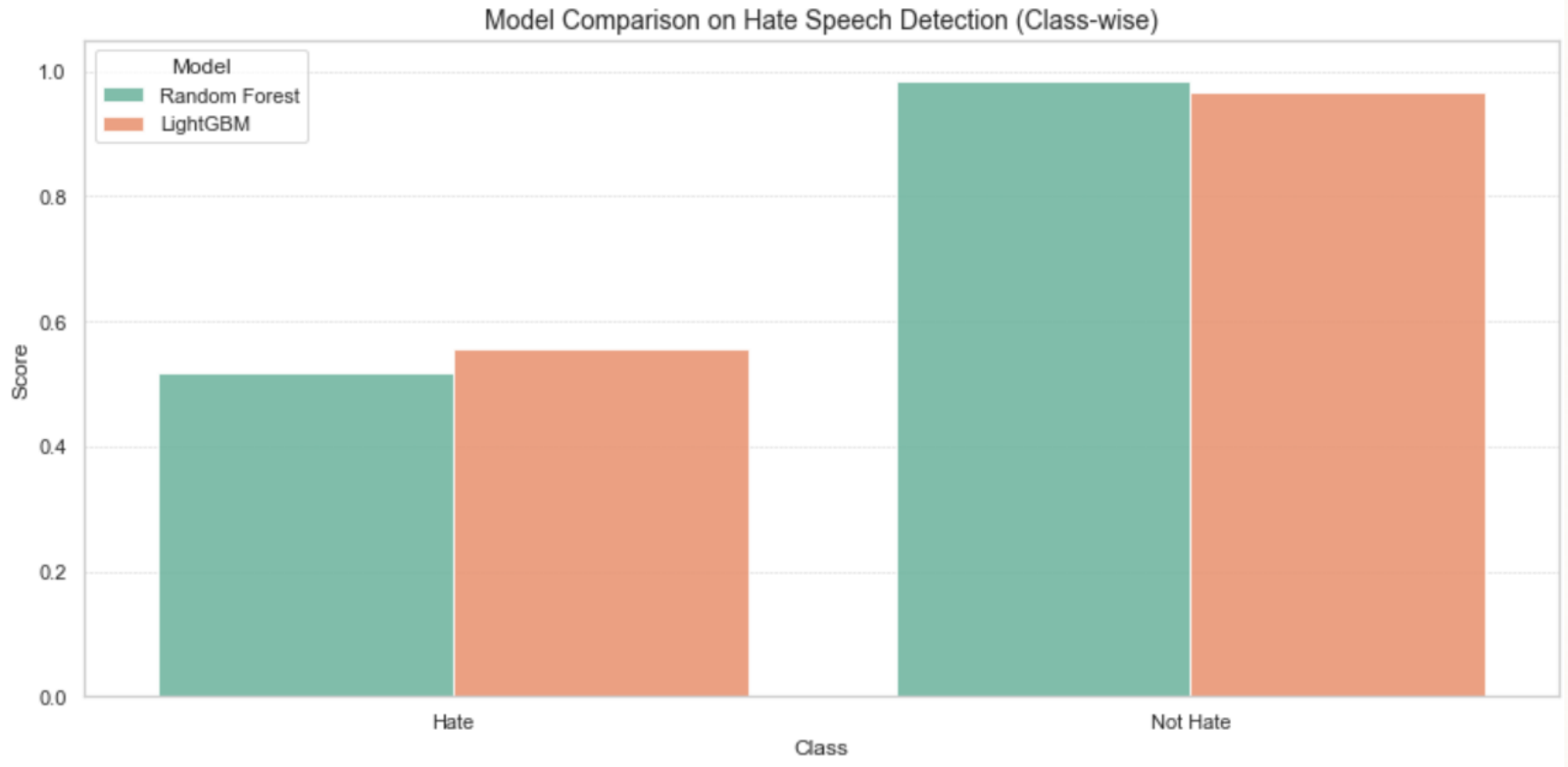
Sentiment & Hate Speech Distribution



Performance Comparison for Sentiment Classes based on F1 Score



Visual Comparison of the Models Performance on the Two Classes



NLP Techniques Used

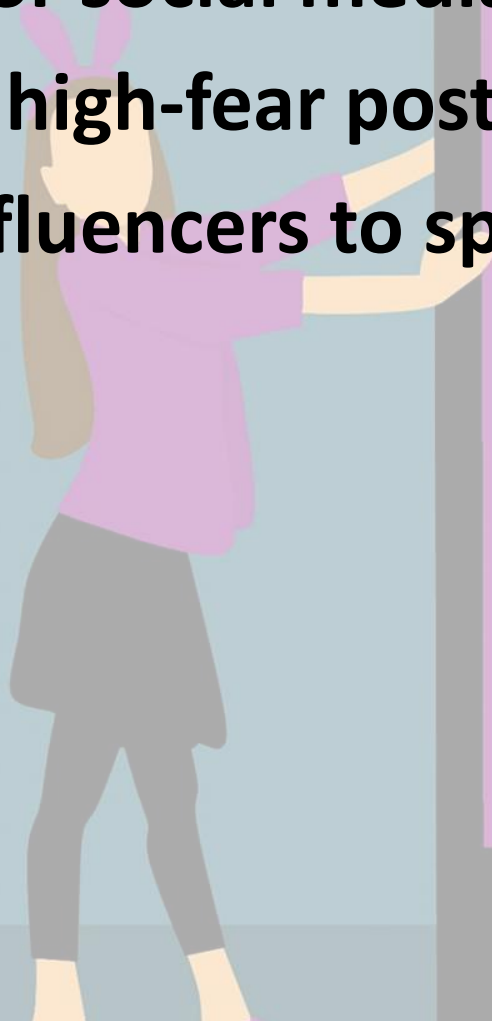
- Tokenization & Lemmatization
- Word Clouds & Frequency Analysis
- Deep learning for Sentiment Analysis
- Binary classification for Hate Speech

Key Results

- **Fear & Neutral were most common sentiments**
- **Hate speech posts clustered around fear**
- **Cleaned data enabled accurate classification**

Recommendations

- **Monitor social media regularly**
- **Target high-fear posts with info campaigns**
- **Use influencers to spread accurate messages**



Limitations

- - Instagram-only data
- - Sentiment context may vary
- - Multilingual posts were excluded

Conclusion

- **NLP provides real-time public sentiment insights**
- **Helps uncover social media dynamics during health crises**
- **Helps shape effective public health messaging**
- **Insights aid digital health communication and crisis response**
- **Vital tool in health crises**
- **Combined Sentiment & Hate Detection = more informed outreach**

Future Work

- **Expand to other social media platforms(Twitter, Tiktok)**
- **Real-time streaming and monitoring**
- **Advanced deep learning and transformer models**
- **Multilingual sentiment and hate detection**

Thank You / Q&A

- **Thank you for your attention!**
- **Questions?**