Title: Team REDWARN: Community Sentiment Analysis on Pandemic Policies

Problem Description

The community referenced in this project is the community of Austin, Texas. We are exploring methods to track community sentiment towards the policy about the pandemic by analyzing the posts on Reddit.

We are concerned about this question because it helps predict how community's might potentially react in the face of another situation similar to the Pandemic. This will help the leaders and policy makers understand how to put their community's minds at ease during these stressful situations.

Figure 1: Words used in positive and negative manner.

Project Plan

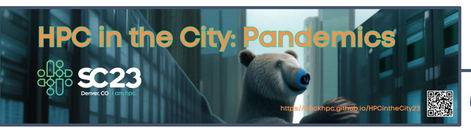
Main Goals:

1. Quantify the polarity and subjectivity of text data.
2. Estimate community opinion and accuracy based on real-world responses.
3. Track Community sentiments on Pandemic Policies.

Main Methods:

Natural Language Processing, Sentiment Analysis, Time Series Analysis (By Sentiment score) , Distribution of Posts, Temporal Analysis, and Topic Modeling.

After getting the results from these different studies our plan involves searching for a relationship between the results of our analysis and the stages of the pandemic and the policy's happening at the time.



Dataset Description

The dataset we are using is the Reddit data from posts made by the users of subreddit Austin from January 1st 2019 to August 22nd 2023.We implemented NLP to get the "Polarity" and "Subjectivity" of the posts to quantify the text data.

We refer the notable events related to the pandemic in Austin to divide the different stages Austin is under. One notable differences between stage 2 and stage 3 is that gatherings over 10 are needed to be avoided compared to stage 2 with gatherings of over 25 people, as well as avoiding non-essential travel in stage 3.

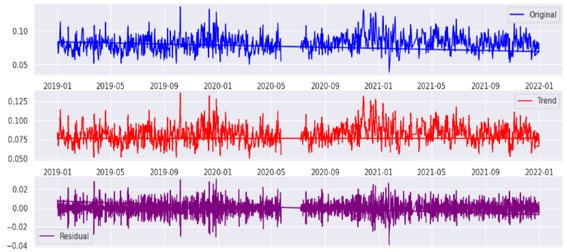


Figure 2: Time series plot of Sentiments Over Time.

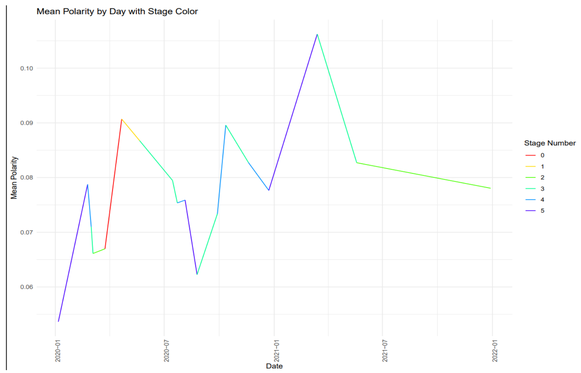


Figure 3: The Polarity Change over Time under Different Stages.

HPC Resources Used

Harnessing the immense computational might of TACC, we efficiently navigated vast data terrains to create the best code to achieve our goals.

Our project's success was greatly enhanced by the collective wisdom and expertise of the diverse group of mentors and experts in various fields. Their readiness to offer assistance was one of our most prized asset.

Project Findings

Analysis

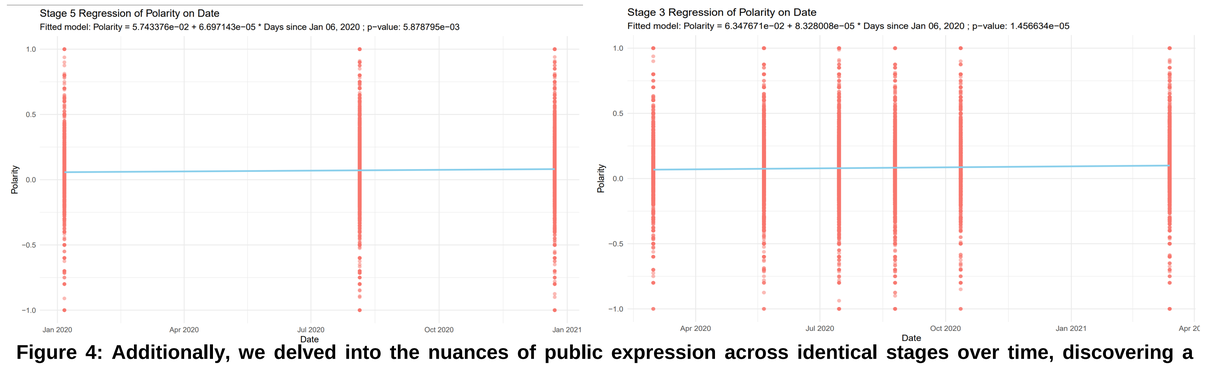


Figure 4: Additionally, we delved into the nuances of public expression across identical stages over time, discovering a trend of increasing calmness in stages. 3 and 5 as time progressed.

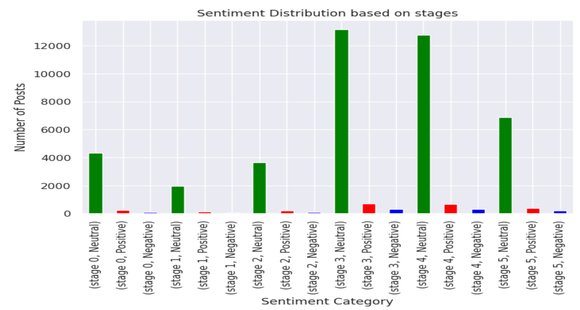


Figure 5: The polarity decreases (people express more negatively) as Austin is under more severe stages.

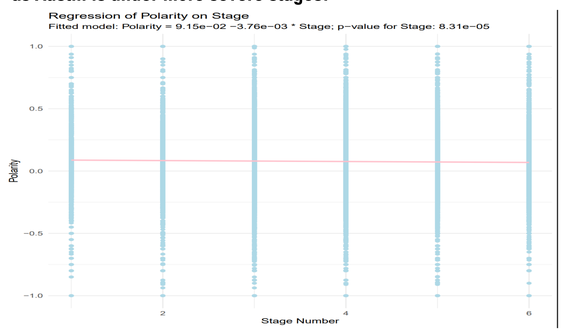


Figure 6: Due to the evidence gathered we can see that the sentiment for all 3 forms of comment (positive, negative, neutral) spike once Stage 3 is put in place.

Conclusions

Our analysis revealed a tangible link between the sentiment of the data and the corresponding pandemic stage at the time of the postings. This shows the importance of how policy makers and leaders handle the more severe stages of an event, effects the moods and reactions of the people.

Future Work

Future enhancements for this project aim to develop comprehensive sentiment analysis across entire text passages, thereby deepening context comprehension and boosting research precision. Additionally, we plan to unravel the behavioral patterns of users as they navigate through the evolving phases of the pandemic.

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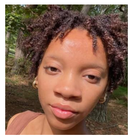

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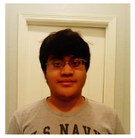

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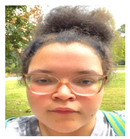

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References and Resources

- **Dataset URL:** https://utexas.box.com/s/rnyd9y4w5k8vxg9is4pw11670f943zt9
- **Github Repo URL:** https://github.com/SirMore/REDWARN#data-sources