



Exploring Distress Signals in Online Mental Health Posts Using Linguistic and Environmental Features



by Rubaiyat Alam Ruhin

Motivation



Climate change and psychological distress are increasingly interlinked

Online forums like Reddit are spaces where individuals express emotional states

Can we detect and track emotional distress using language and context?

Research Gap

- Prior work models emotional change over time using language.
- Other studies explore engagement in online mental health communities.
- Few address how external stressors (like weather) shape distress patterns
- This project bridges emotional language with environmental context.

Reframed Research Objectives

- ① Extract emotional traits and map them into Circumplex Model fo Affect
- ② Align these patterns with environmental variables like temperature and humidity
- ③ Build a classifier using LLMs to detect distress with contextual sensitivity.

Reddit Data Collection

12
Subreddits

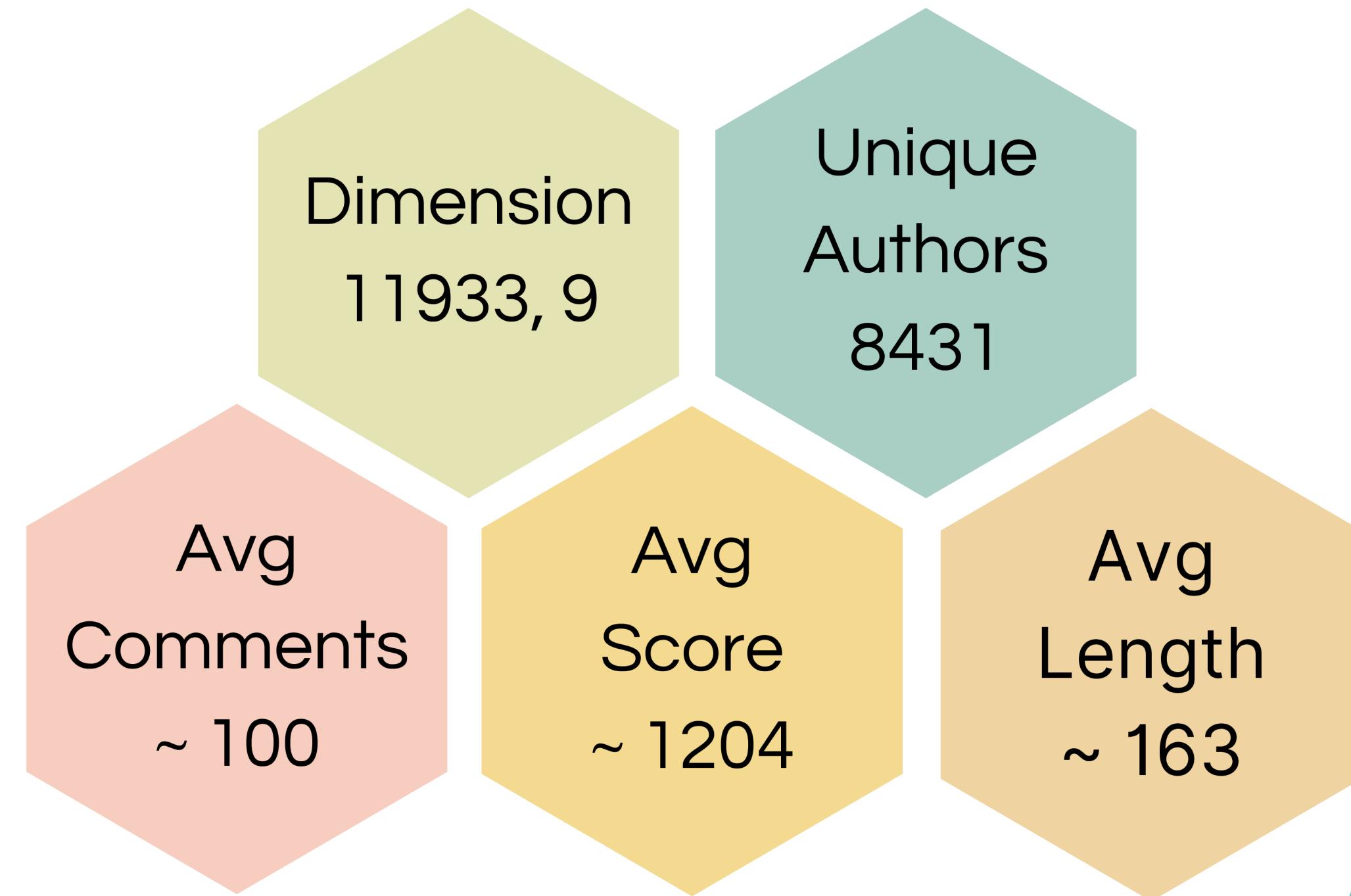
~ 12000
Posts

Global

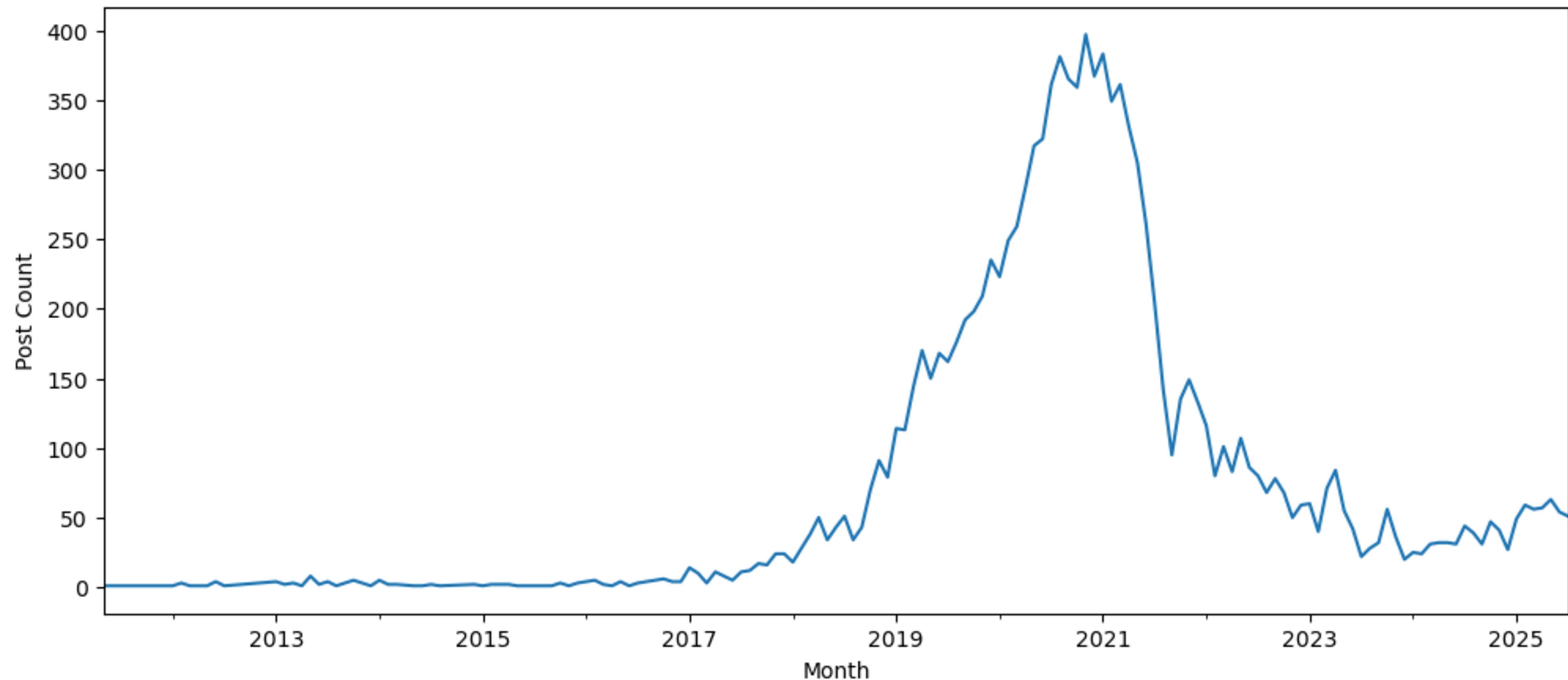
EDA Highlights



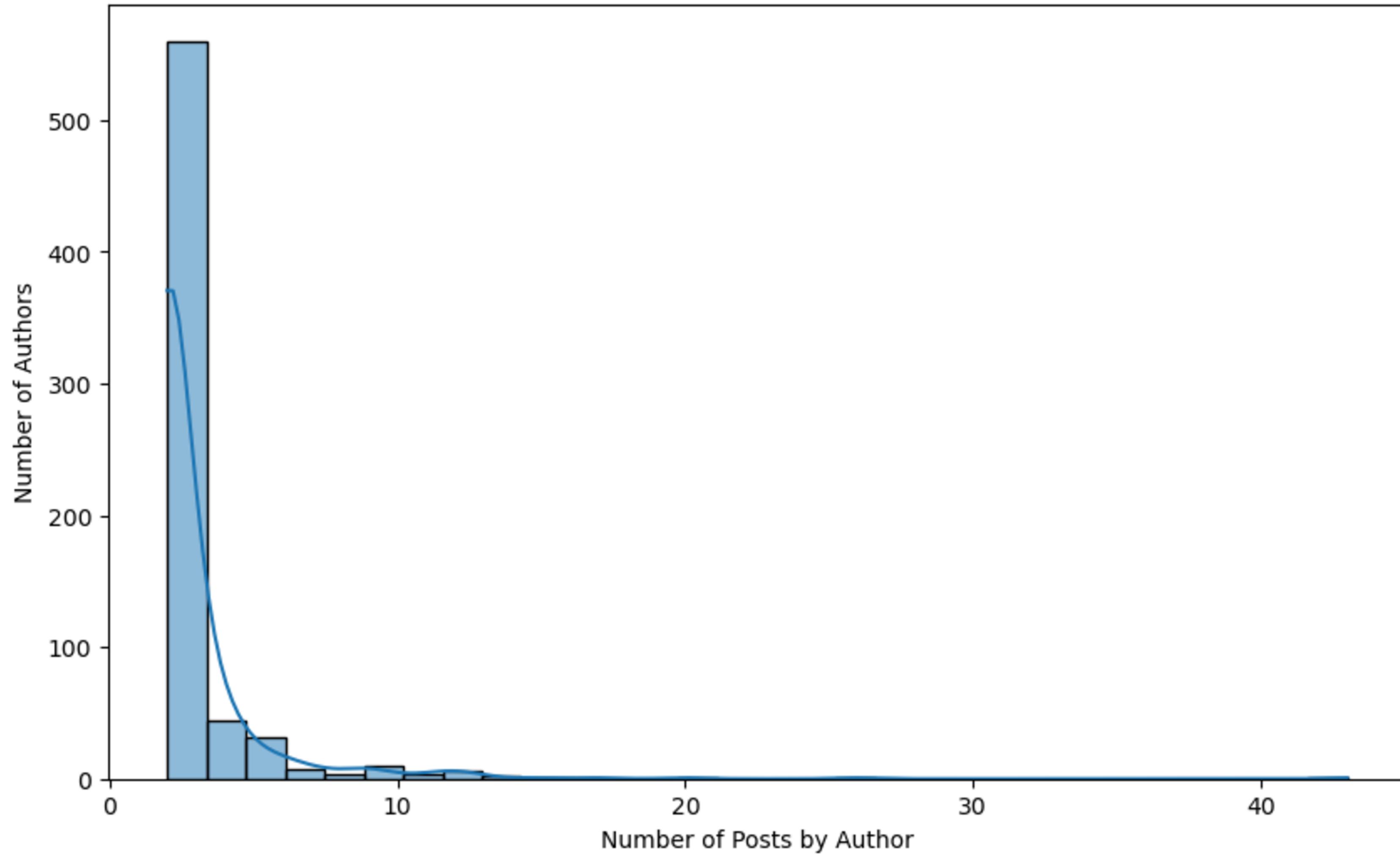
Performed some simple exploratory data analysis on the scrapped reddit data to get a few early insights



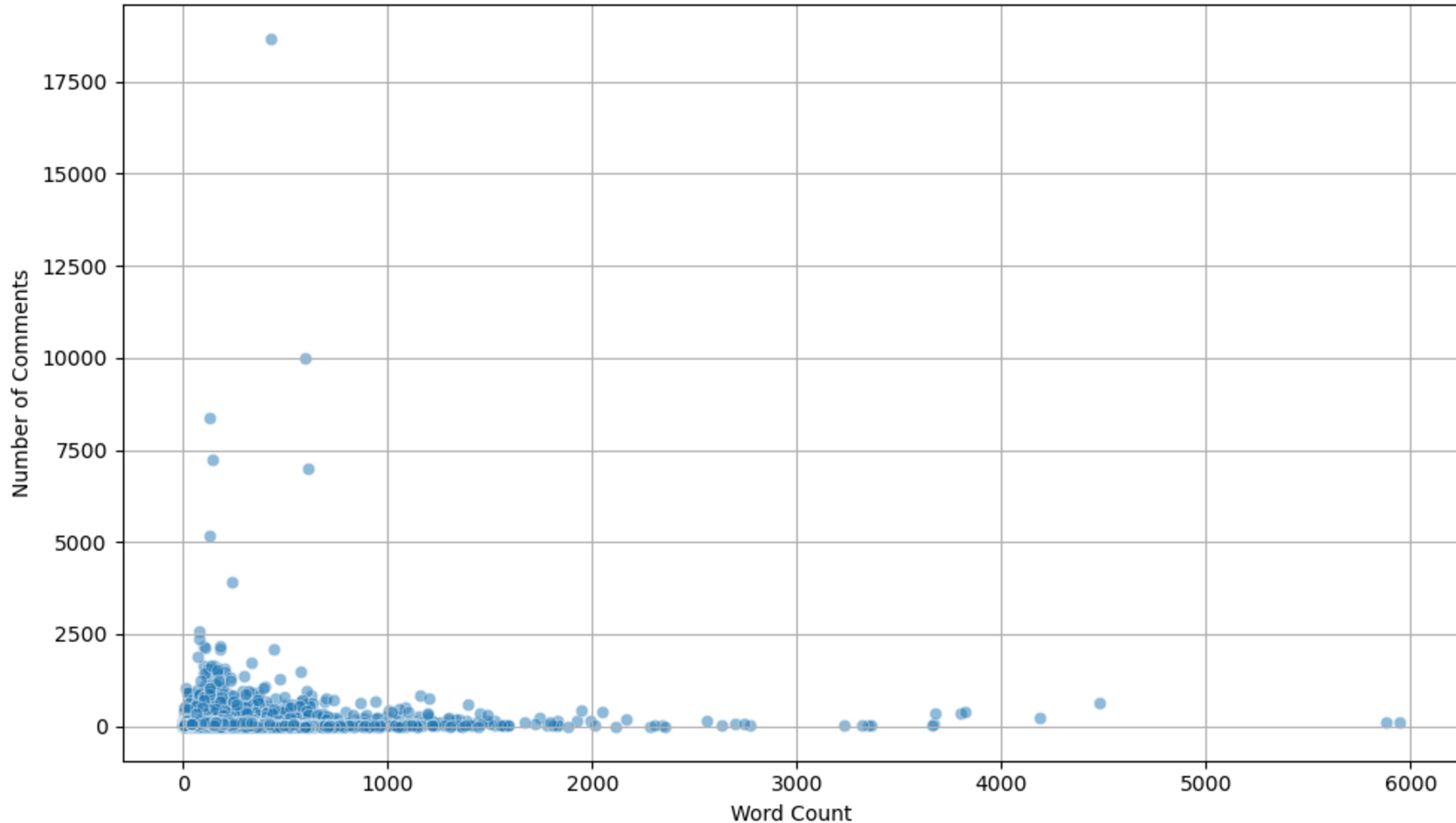
Posts per Month



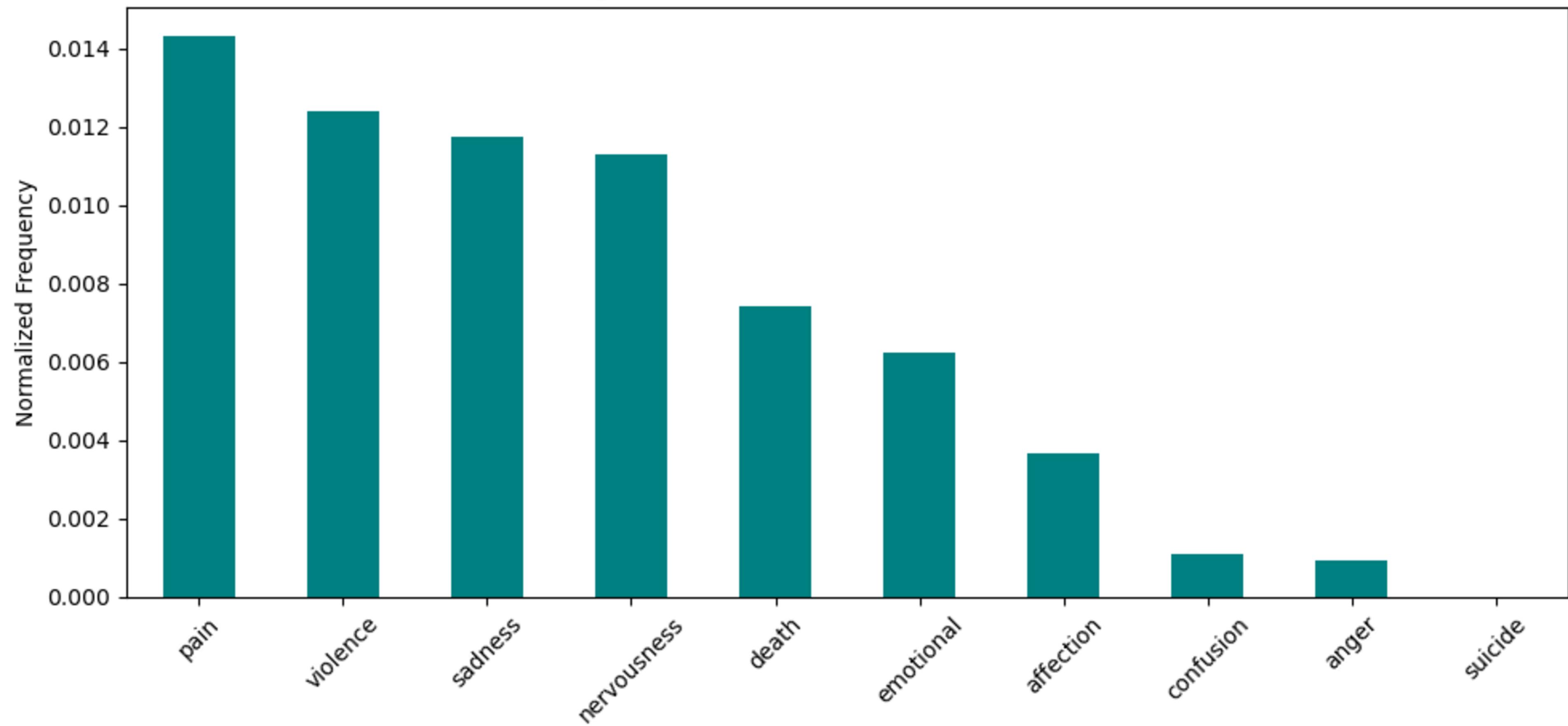
Distribution of Repeated Authors



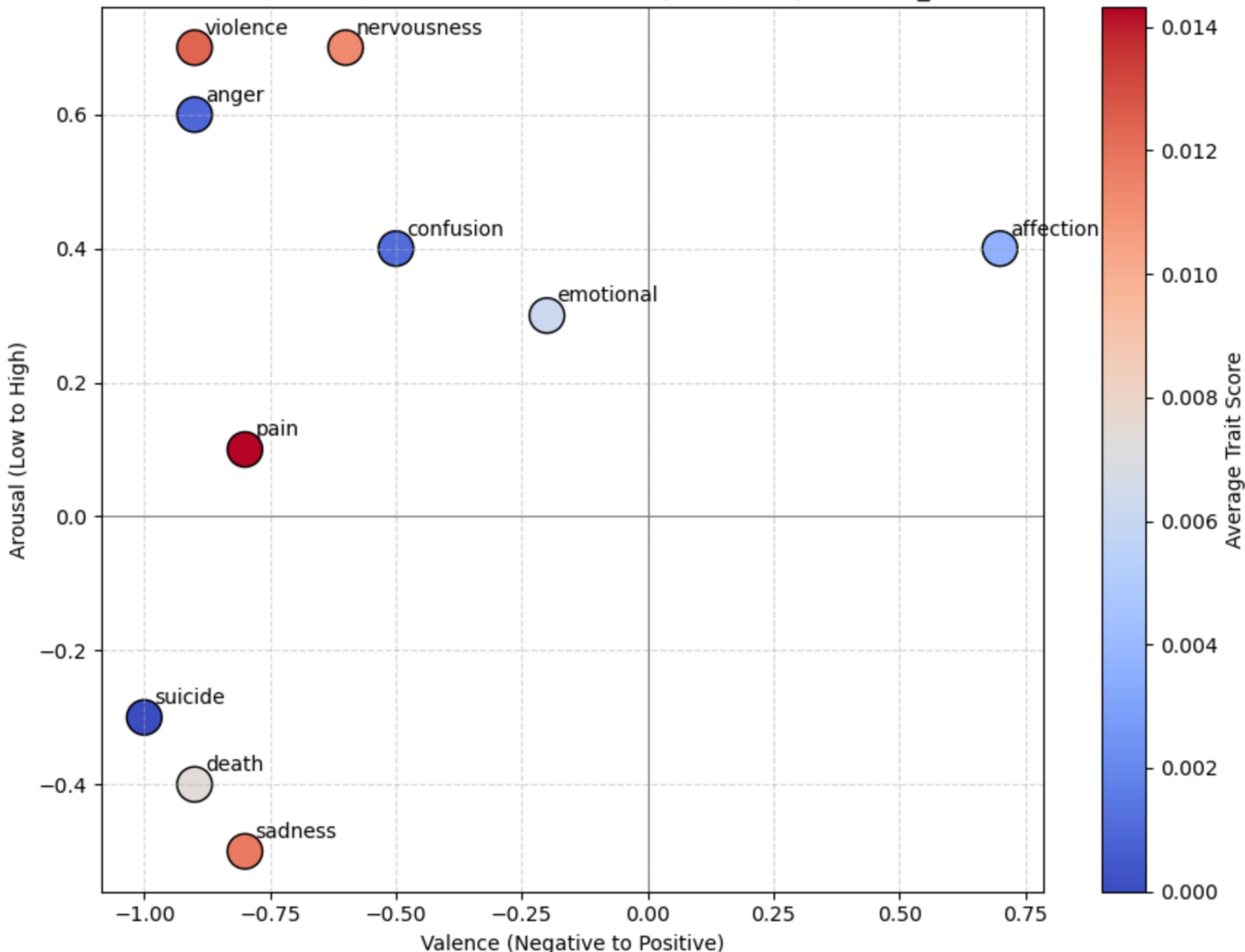
Post Word Count vs Number of Comments



Average Emotion Trait Scores Across Reddit Posts



Circumplex Map of Emotions (Colored by Frequency in reddit_df)



Challenges & Next Steps

- Accumulating adverse weather event data
 - Temporal Misalignment as a post may reference past or future events rather than current mood
-
- Weather data integration
 - Temporal emotion modeling
 - LLM classifier development

References

1. V. Morini, M. Sansoni, G. Rossetti, D. Pedreschi, and C. Castillo, "Participant behavior and community response in online mental health communities: Insights from Reddit," *Computers in Human Behavior*, pp. 108544–108544, Dec. 2024, doi: <https://doi.org/10.1016/j.chb.2024.108544>.
2. V. Morini et al., "Online posting effects: Unveiling the non-linear journeys of users in depression communities on Reddit," *Computers in Human Behavior Reports*, vol. 17, p. 100542, Mar. 2025, doi: <https://doi.org/10.1016/j.chbr.2024.100542>.