Identifying Political Shifts

Description: This Shiny app analyzes Reddit comments to extract sentiment and profanity scores based on user discussions in specific subreddits. The application leverages the `RedditExtractoR` package for data fetching and performs sentiment analysis using the `sentimentr` package. By aggregating and visualizing this data, the app provides users with a deeper understanding of public sentiment towards political figures and topics.
Features:

- User-friendly interface allowing input for subreddit, political leaders, and countries.
- Fetches recent comments from specified subreddit.
- Performs sentiment analysis and displays average sentiment for specified entities.
- Visualizes sentiment analysis results using interactive plots.
- Word frequency analysis with filtering of common and irrelevant words.
- Displays top positive and negative comments from the fetched data.
- Option to download sentiment analysis results as a CSV file.

Live Demo: Access the Shiny App
Source Code: GitHub Repo
https://github.com/nandre21/Political-Sentiment.git

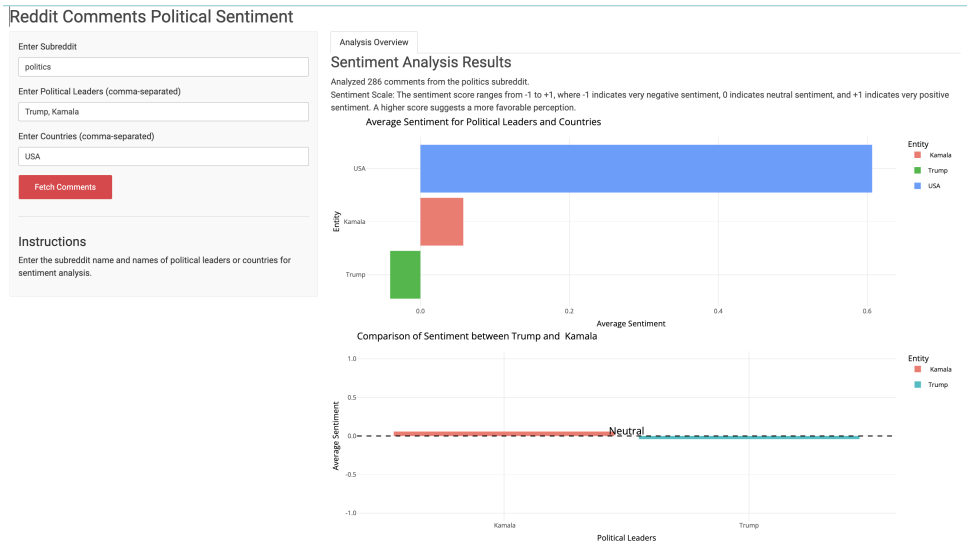

Figure 1: Screenshot of the project

Project Significance

The sentiment analysis of Reddit comments regarding political leaders and policies provides invaluable insights into public opinion and can serve as a predictive tool for political forecasting. Understanding how sentiment evolves can indicate shifts in public support, revealing whether a leader is in danger of being ousted or if policies are gaining traction among the populace.

Project Potential

- **Real-Time Analysis:** In an era where public opinion can shift rapidly, this project provides real-time insights. By analyzing recent Reddit comments, it captures the pulse of the public, allowing for immediate feedback on political events or statements.
- **Predictive Power:** The application of sentiment analysis as a forecasting tool is groundbreaking. By recognizing patterns in sentiment scores over time, stakeholders can predict potential political crises or shifts before they manifest in the real world. For instance, if sentiment around a particular leader dips significantly, it may signal growing discontent that could lead to political change.
- **Data-Driven Decision Making:** Policymakers, political analysts, and even campaign strategists can leverage this tool to inform their strategies. By understanding public sentiment towards specific policies or leaders, they can tailor their approaches accordingly. This data-driven methodology can enhance the effectiveness of political campaigns and governance.
- **Public Engagement:** This project democratizes data analysis by providing accessible insights to the public. Users, regardless of their technical background, can engage with the data, fostering a more informed citizenry.
- **Interdisciplinary Approach:** The project sits at the intersection of technology, politics, and social science. It employs advanced computational techniques to extract insights from social media, highlighting the growing importance of data analytics in political science.

Forecasting Political Changes

- **Public Sentiment as an Indicator:** By analyzing sentiment scores over time, we can track fluctuations in public opinion. A consistent decline in sentiment may indicate rising dissatisfaction, potentially foreshadowing a political shift or challenge to leadership.
- **Crisis Detection:** Sudden drops in sentiment scores can signal an impending crisis. For instance, if a political leader's sentiment turns significantly negative following a controversial decision, it may suggest that calls for resignation or reform are becoming more prominent.
- **Election Predictions:** By examining sentiment trends regarding different political figures, stakeholders can gauge the viability of candidates in upcoming elections. For example, if a particular leader's sentiment is significantly more favorable than their opponents, it may predict electoral success.
- **Public Policy Evaluation:** This analysis helps evaluate the effectiveness of policies. If sentiment remains negative even after the implementation of a new policy, it may necessitate a review or adjustment of that policy.

Mathematics Behind Sentiment Analysis

The core of sentiment analysis in this project relies on deriving sentiment scores from text data. Here's how it works:

- **Sentiment Scoring:** Each comment is processed to assign a sentiment score. The `sentimentr` package utilizes a lexicon-based approach, where words are assigned values based on their sentiment orientation (positive, negative, or neutral).

- **Calculating Scores:**
  - Each word's sentiment score is calculated based on its occurrence in the comments. For example:
    - Positive words (e.g., "great", "improve") contribute positively to the score.
    - Negative words (e.g., "bad", "failure") contribute negatively.
  - The overall sentiment score for a comment is computed as the sum of the sentiment scores of individual words, normalized for the number of words in the comment.
- **Interpreting Sentiment Scores:**
  - A sentiment score can range from -1 (very negative) to +1 (very positive). Scores near 0 indicate neutrality.
  - A score above +0.1 might be considered favorable sentiment, while a score below -0.1 would be interpreted as unfavorable.

Filtering Words

The project also filters out irrelevant and common words to enhance the accuracy of the sentiment analysis. The words filtered include:

- **Stop Words:** Common words such as "the", "is", "in", which do not add significant meaning to the text.
- **Profane Words:** Offensive language that might skew sentiment analysis results. Examples include words like "idiot", "stupid", etc.
- **Irrelevant Words:** Words that are specific to particular contexts and do not contribute to sentiment, such as "yeah", "okay", etc.

Conclusion

This Shiny app serves as an innovative tool for analyzing sentiment and profanity in Reddit comments, providing insights into public opinion on political leaders and countries. By interpreting sentiment scores and understanding trends, users can foresee potential political changes and the public's reaction to political events. This project not only enhances the ability to engage with current political discourse but also empowers researchers, policymakers, and interested citizens to understand the dynamics of public sentiment in an increasingly digital world.