

1. Introduction: The questions I explored were, "How does sentiment change across Rihanna's different music albums?", "How do stopwords impact different albums of Rihanna's music?", and "Do the top keywords show a recurring theme in different albums of Rihanna's?". This topic matters because music is everywhere and it being a huge part of our lives, it is essential to note how artists express themselves and why they do it along with how they are doing it making them a unique element to explore and study. My dataset includes all of Rihanna's albums. Methods I used were tokenization, iteration, sorting, plot functions for visuals, the VADER sentiment analyzer, file upload, index-based process, classes and objects.
2. Methods: First, I decided to organize my data by sorting Rihanna's albums from most recent created to least recent because doing so would give me flexibility with analyzing the questions I was focused on answering more efficiently. Then, I used the Vader sentiment analyzer we learned in class to figure out the sentiment of each album. Hence, one visualization shows the average sentiment across each album with a different color for each to distinguish clearly. For the stopwords I ended up downloading the 'nltk' library because this enabled the stopwords to be carried out in an effective way. Similarly, along with the stopwords a visualization of the average stopwords per album is available which provides more insight on why certain stopwords are more used in particular albums than others. Then for the top keywords I did similar things we have done in class by creating an empty dictionary to store them in and find the top 10 keywords to figure out if there are any recurring themes across her albums along with a visual that shows the associated 10 top keywords for each album. All visualizations are in the form of bar charts which provides clarity and a simple way to view the comparisons for each visualization.
3. Results: Note that more details are available in the colab notebook so see notebook for more but what I found was the sentiment analysis revealed significant variations in emotional tone across Rihanna's albums. Each album is different in that it is unique where there is also a diverse range of sentiment present through all of her songs aka discography. The analysis of stopwords percentage across Rihanna's albums reveals varying levels of word complexity and lexical density. The analysis of top keywords reveals a consistent focus on love, self-expression, and lifestyle throughout Rihanna's career, but with shifts in emphasis and specific lyrical choices that give each album its distinct flavor and highlight her evolution as an artist. The presence of certain words can also be attributed to the nature of pop music, which often uses repetition.
4. Discussion: My results model a genuine representation of certain themes in Rihanna's music that contribute to her own uniqueness in the vast world and music industry as well as her role as an artist in society. What did not work well

when I was doing this project at first was uploading my data the mount drive way because I kept getting errors. What worked well was that every question I focused on turned out to utilize my knowledge with how we have done things in class so for the most part I had a clear idea and direction of how to execute things which was fun and nice. If I had more time I probably would add some more visuals and get more familiar with GitHub. Ethical considerations include the unreleased songs that were used because now that I am thinking about this, I could be held responsible for ethically misusing that data since the artist never released them and it also raises another point of where those unreleased songs came from in the file and who has permission to be using them.

5: Conclusion: This final project aims to show my audience of peers and instructor how I incorporate math programming and software relevant to our valuable class gained skills and knowledge to further my research in analyzing music data through different comparisons. Specifically, I used Rihanna's music albums for 3 different comparisons to figure out what her music is speaking and expressing.