Final-Project-Draft

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Introduction

What

What this project covers is a text analysis of Lana Del Rey song lyrics. The goal of this project will uncover a sentiment analysis of Lana's lyrics to paint a picture of her artistic evolution and draw correlation between the emotional identity of her lyrics and their respective album commercial success and reception. This project will attempt to cover at least three albums: Born to Die, Ultraviolence, and NFR!.

Why

I chose this project scope for a few reasons:

1) In the field of marketing, understanding the consumer's emotional psychology is important in constructing user journeys that help guide and inform sales and marketing campaign. I want to explore that subject but with a personal muse I find interesting. Doing a text to sentiment analysis will help me accomplish this.
2) It is also in my interest to apply a statistical lens to something that is more categorical in nature. That will stretch my statistics understanding while keeping it within a relatively comfortable understanding of the topic.

How

First off, I will use a lyric website to generate the lyrics. According to 'Text Mining with R', each stanza can be called a character vector that will be analyzed. Therefore, I will employ tidytext and forcat for the text analysis/mining, dplyr for the data framing, and application of statistical concepts of distribution and inference for the analysis.

Body

Why is it important?

Text analysis is important because it is useful "method for turning large amounts of unstructured data into something that can be understood and analysed."^1 This method helps to find meaning out of written communications, like song lyrics or a series of tweets from consumers. Analyzing that text data and uncovering sentiment can help businesses better understand the user journey and design an experience for customer conversion.

Each row of text or token will be associated with a one of the six main sentiments from this wheel. The main six are at the inner center of the circle.

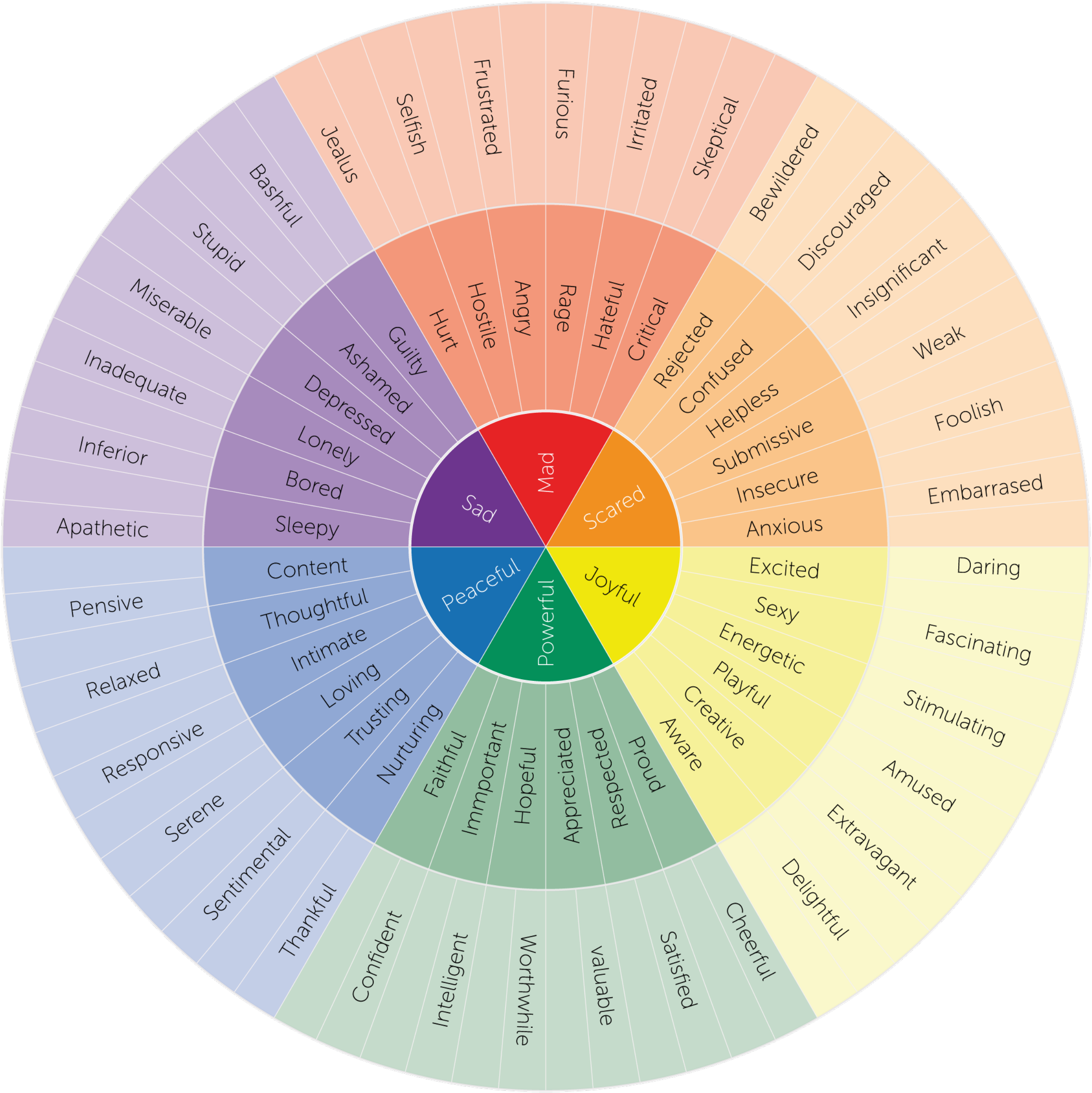


Figure 1: The Sentiment Wheel

Problems, Challenges, and Resolutions

I've encountered a few challenges in exploring this project:

1) How to structure the unstructured text data?

I am attempting to just use the simple data structure the tidytext tutorial provides, via using the ’janeaustinr’package. However, that file already exists in a package that can be brought over to R easily. My challenge is with figuring out how to “package” the album lyrics. My original intent was to use tidytext to structure the text and diplyr to structure and clean the text. However, upon more research and discussion with peers, the method to do text analysis will require technical skills outside the scope of this project. As such, this project will use Excel and its .csv file to organize the text data.

2) How to assign sentiment to the text?

Another challenge is figuring out how to assign the sentiment to the lines of text. At the moment, I am unsure of the approach. However, the project may have to do a manual qualitative assessment of the lyrics and assign sentiment that way before the whole data set is formatted. I would like to avoid my own personal bias when assigning/inferring sentiment to the lyrics, but that will be a limitation I will acknowledge in the final project.

3) Open issue:

The project had to scale back and focus on one album only. Initially, I did not realize the technical learning curve that comes with text analysis and the methodology needed for it. However, through this project I am learning that method and taking the time to be methodical with my project. The project’s output may not be as polished as I had initially hoped, but regardless of the outcome, I do feel it will advance my knowledge and interest in text/sentiment analysis.

Topics from Class

Topic 1: R Markdown and describing the data.

R Markdown will be used to summarize the data.

```r
library(readr)
lanadelrey<-read.csv("lanadelrey.csv")
```

```r
dim(lanadelrey)
```

```
## [1] 643  10
```

```r
names(table(lanadelrey$Song))
```

```
##  [1] "Bartender"
##  [2] "California"
##  [3] "Cinnamon Girl"
##  [4] "Doin Time"
##  [5] "Fuck It I Love You"
##  [6] "Happiness Is A Butterfly"
##  [7] "Hope Is A Dangerous Thing For A Woman Like Me To Have But I have It"
##  [8] "How to Disappear"
##  [9] "Love Song"
## [10] "Mariners Apartment Complex"
## [11] "Norman Fucking Rockwell"
## [12] "The Greatest"
## [13] "The Next Best American Record"
## [14] "Venice Bitch"
```

```
names(lanadelrey)
```

```
##  [1] "Lyric"        "Song"         "Track.Number" "Album"        "Sad"
##  [6] "Mad"          "Scared"       "Peaceful"     "Powerful"     "Joyful"
```

As show, there are 643 observations - these will represent each line of lyric spanning across the 14 songs in *Norman Fucking Rockwell!*. There are 10 variables in this data set; however, since this is a sentiment analysis, the applicable variables the project will analyze are the six emotions: Sad, Mad, Scared, Peaceful, Powerful, and Joyful. According to the Wheel of Sentiment, while these are the main emotions, the contain a multitude of other more complex emotions. For example, feelings of "rage" or "jealousy" can be classified as "Mad."

```
typeof(lanadelrey$Sad)
```

```
## [1] "integer"
```

These are also categorical, non-ordinal variables. Binary code will represent whether any of the sentiments exist in a line of lyric. It is also possible a line of lyric may contain more than one sentiment. "1" will represent the presence of the sentiment, and "0" will represent the absence. Now, we will look at the numerical frequency of each sentiment.

```
sum(lanadelrey$Sad)
```

```
## [1] 123
```

```
sum(lanadelrey$Mad)
```

```
## [1] 33
```

```
sum(lanadelrey$Scared)
```

```
## [1] 68
```

```
sum(lanadelrey$Peaceful)
```

```
## [1] 78
```

```
sum(lanadelrey$Powerful)
```

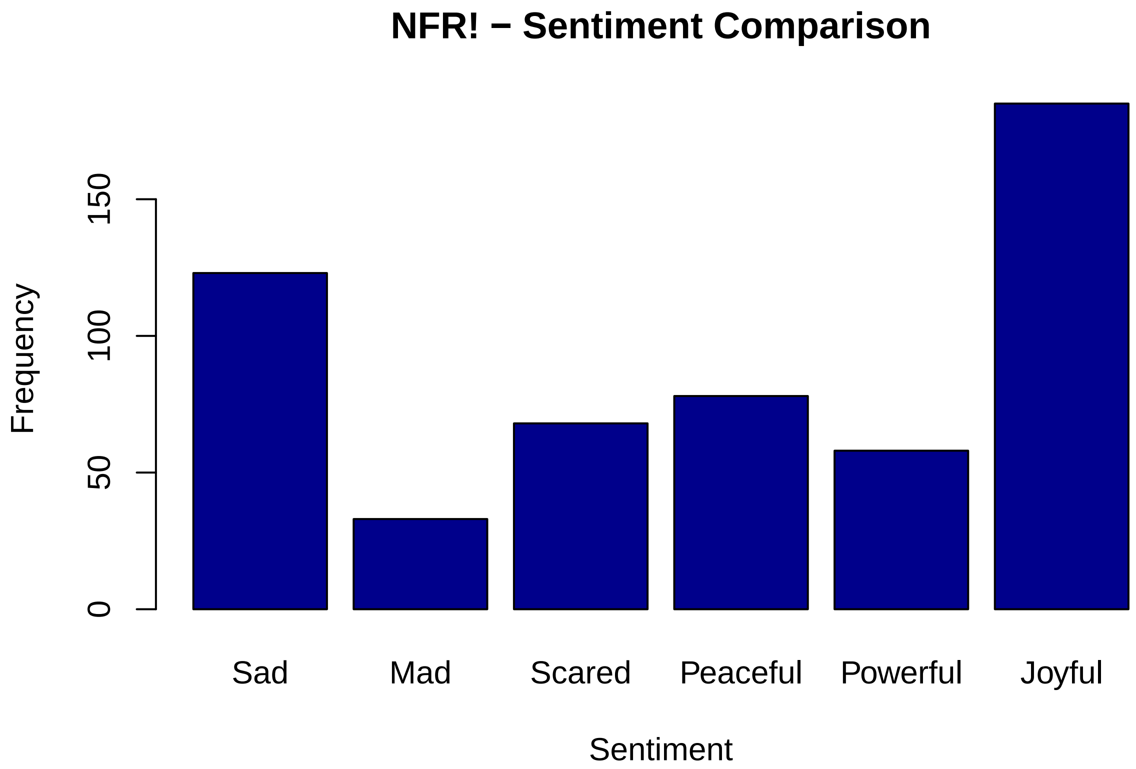
```
## [1] 58
```

```
sum(lanadelrey$Joyful)
```

```
## [1] 185
```

```
Sentiments<-c(123, 33, 68, 78, 58, 185)
```

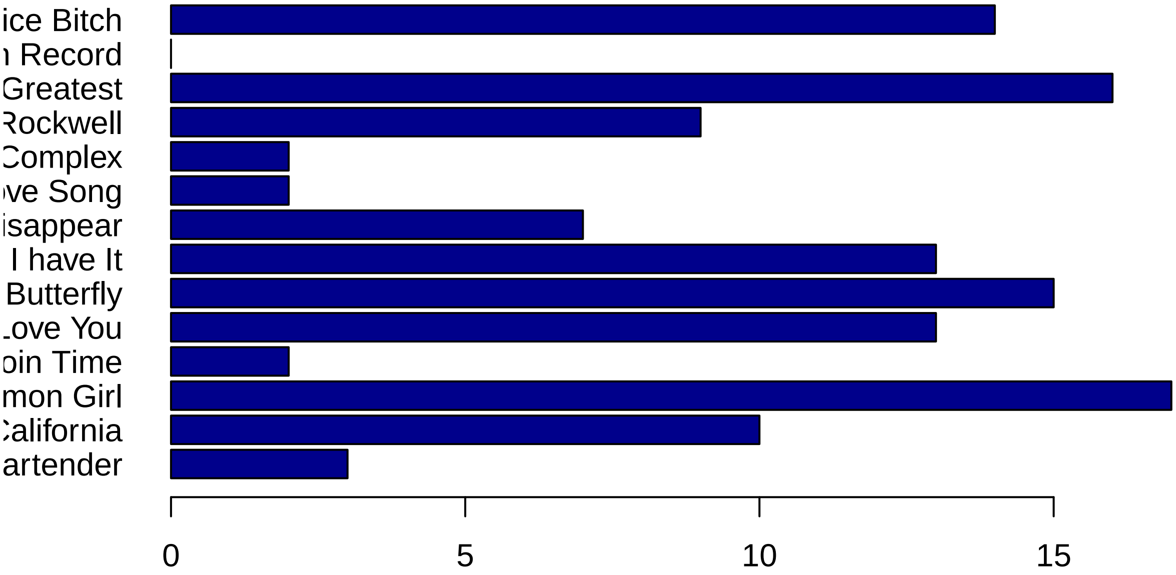
```
barplot(Sentiments,
       main = "NFR! - Sentiment Comparison",
       xlab = "Sentiment",
       ylab = "Frequency",
      names.arg = c("Sad", "Mad", "Scared", "Peaceful", "Powerful", "Joyful"),
     col = "darkblue",
        horiz = FALSE)
```



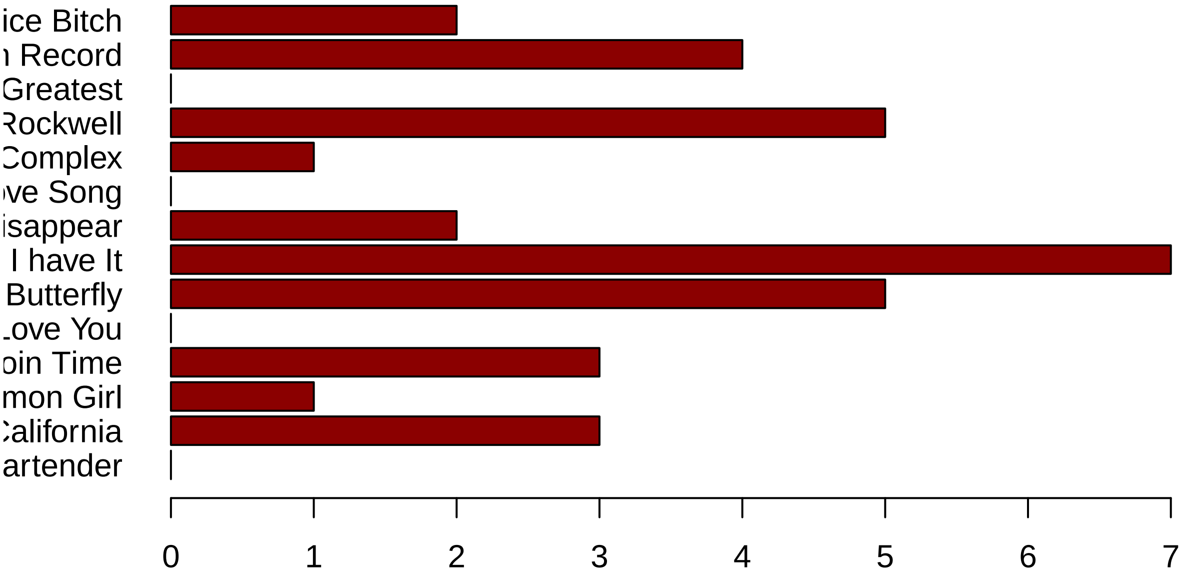
The frequency of sentiment on *NFR!* is as follows: Sad (123), Mad (33), Scared (68), Peaceful (78), Powerful (58), and Joyful (185). As shown below, sentiment is further broken down by the 14 songs to show the how many times a sentiment appears in a song.

```
sadtable<-table(lanadelrey$Song, lanadelrey$Sad)
madtable<-table(lanadelrey$Song, lanadelrey$Mad)
scaredtable<-table(lanadelrey$Song, lanadelrey$Scared)
peacefultable<-table(lanadelrey$Song, lanadelrey$Peaceful)
powerfultable<-table(lanadelrey$Song, lanadelrey$Powerful)
joyfultable<-table(lanadelrey$Song, lanadelrey$Joyful)
```

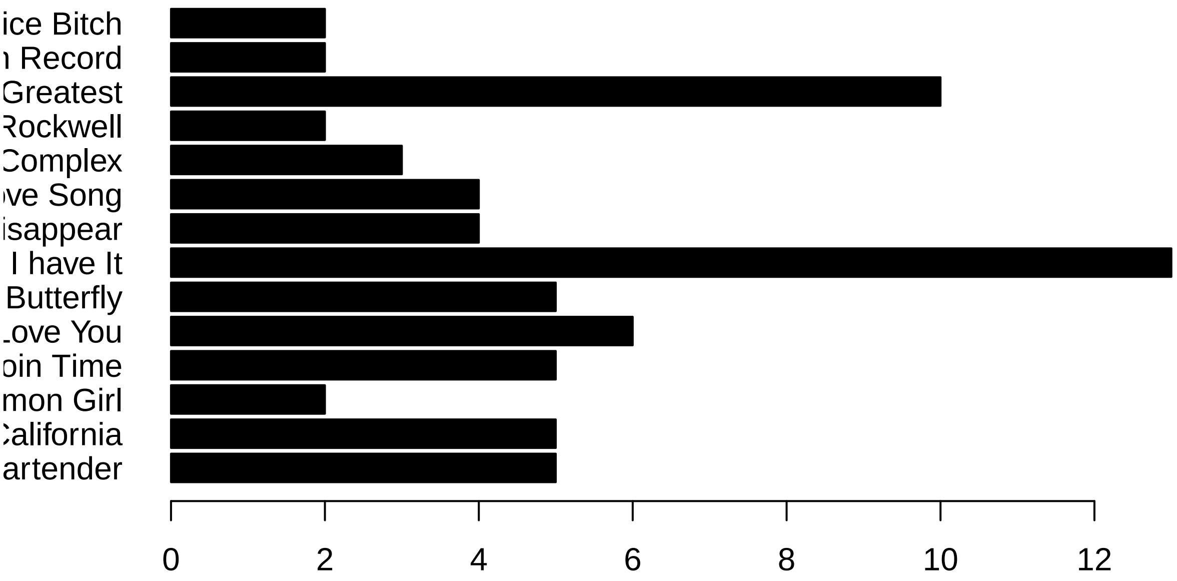
```
barplot(sadtable[,2],
        horiz = TRUE,
        col = "darkblue",
        las = 1)
```



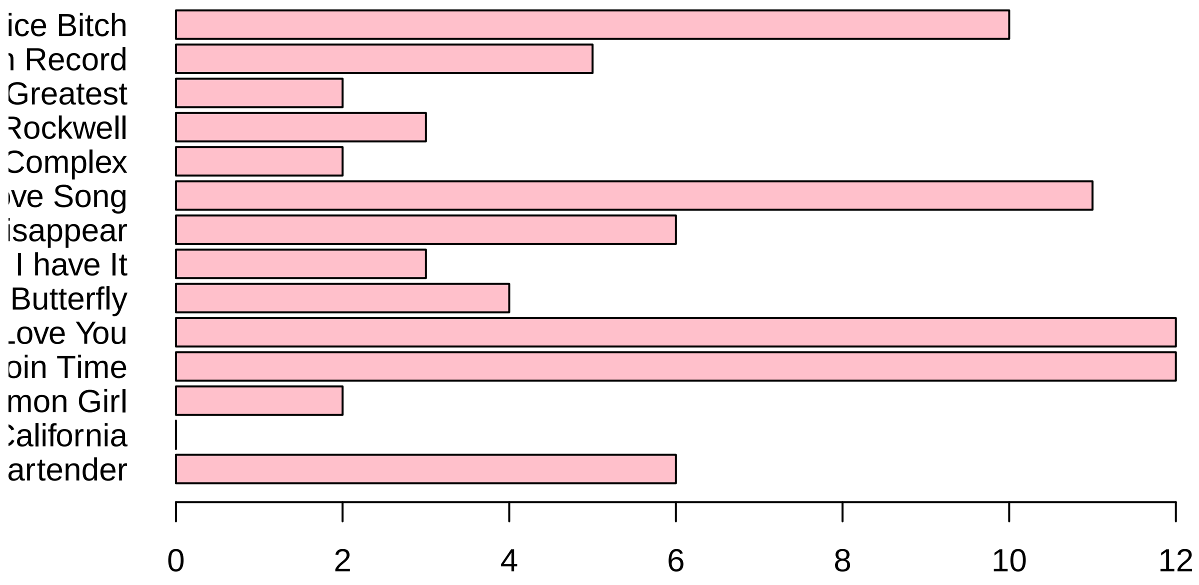
```
barplot(madtable[,2],
        horiz = TRUE,
        col = "darkred",
        las = 1)
```



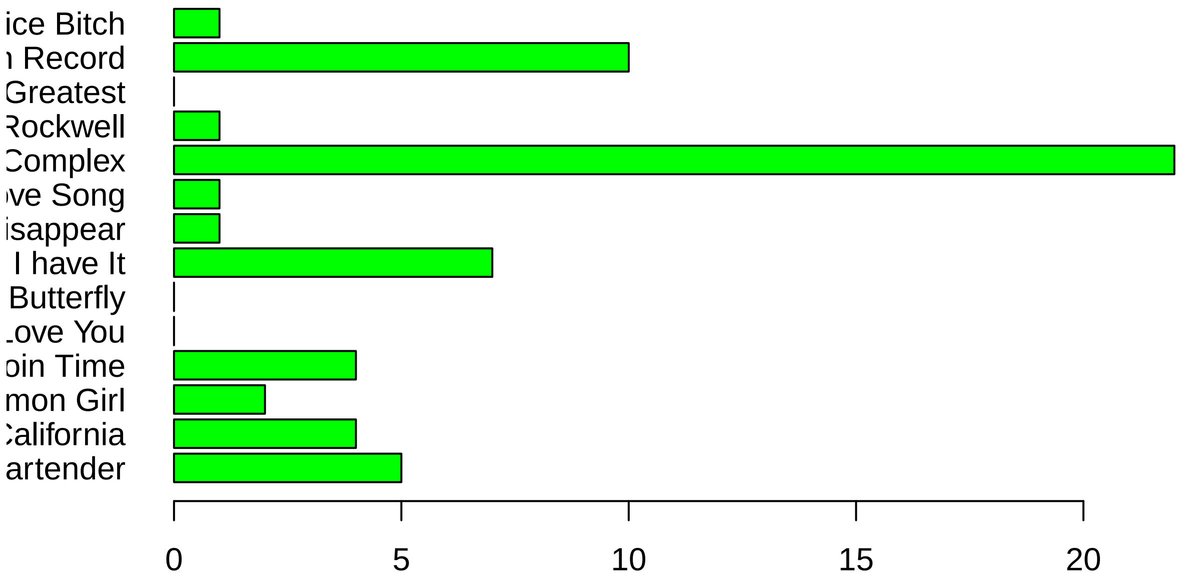
```
barplot(scaredtable[,2],
        horiz = TRUE,
        col = "black",
        las = 1)
```



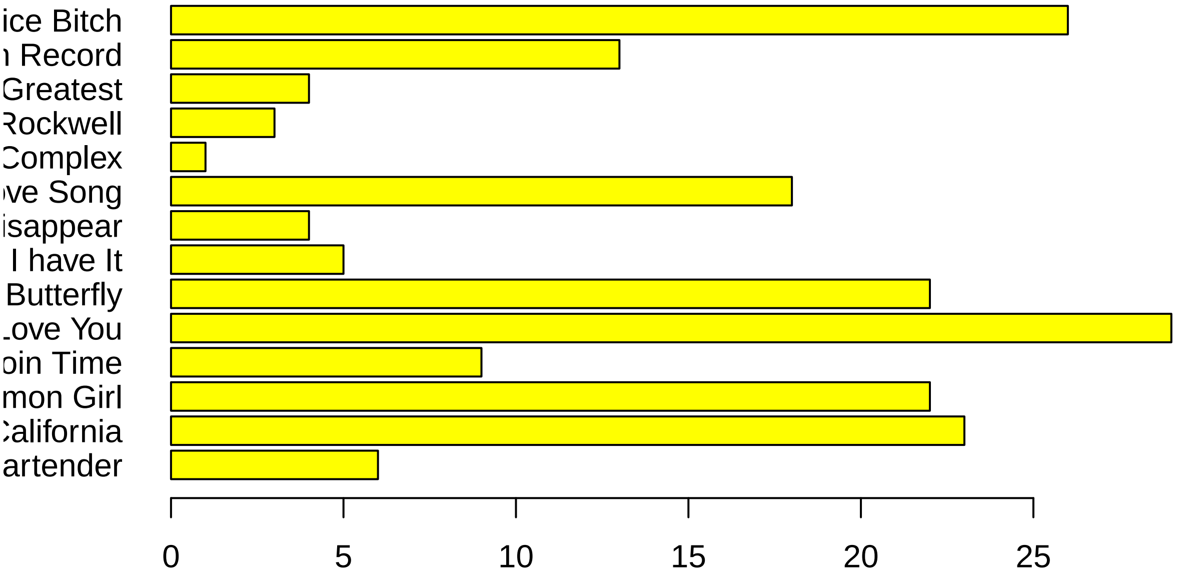
```
barplot(peacefultable[,2],
        horiz = TRUE,
        col = "pink",
        las = 1)
```



```
barplot(powerfultable[,2],
        horiz = TRUE,
        col = "green",
        las = 1)
```



```
barplot(joyfultable[,2],
        horiz = TRUE,
        col = "yellow",
        las = 1)
```



Topic 2: Github

The project will be shared in the Github repository.Additionally, I am using a few learning tutorials from other users in Github to deal with the text analysis.

Topic 3: Text Analysis

The text analysis relates to Chapter 2 from the class textbook on Summarizing Data, specifically categorical data. Although the data is not numerical, the project will still look at the "distribution" of sentiment by looking at sentiment frequency.

Topic 4: Logistic Regression

Once the distribution of the sentiment has been generated, this project will use logistic regression to understand the effect of lyric sentiment on the song/album's commercial success and reception (this information will be pulled from Billboard.com)

Topic 5: Cleaning text data

Tidytext will allow for cleaning the text data by removing "stop words" and punctuation.

Conclusion

At this time, I do feel this project will advance my knowledge and curiosity around text analysis. I was excited that R had the capability to do that type of analysis.