SENTIMENT ANALYSIS IN R: THE TIDY WAY

Ranking pop songs through the years

Julia Silge
Data Scientist at Stack Overflow

Lyrics of pop songs

song_lyrics

- rank, the rank a song achieved on the Billboard Year-End Hot 100
- song, the song's title
- artist, the artist who recorded the song
- year, the year the song reached the given rank on the Billboard chart
- lyrics, the lyrics of the song.

Lyrics from the Billboard Year-End Hot 100, sourced by Kaylin Walker

Tidying song lyrics

```
> tidy_lyrics %>%
    count(word, sort = TRUE)

# A tibble: 42,156 x 2
    word     n
   <chr> <int>
 1   you 64606
 2     i 56472
 3   the 53451
 4    to 35752
 5   and 32555
 6    me 31170
 7     a 29282
 8    it 25688
 9    my 22821
10    in 18553
# ... with 42,146 more rows
```

Sentiment analysis of pop songs

```
> lyric_sentiment %>%
    count(song, sentiment, total_words)

# A tibble: 39,564 x 4
                song    sentiment total_words     n
               <chr>        <chr>       <int> <int>
 1 0 to 100  the catch up       anger         894    29
 2 0 to 100  the catch up anticipation         894    14
 3 0 to 100  the catch up      disgust         894    33
 4 0 to 100  the catch up         fear         894     9
 5 0 to 100  the catch up          joy         894     5
 6 0 to 100  the catch up     negative         894    47
 7 0 to 100  the catch up     positive         894    34
 8 0 to 100  the catch up      sadness         894    12
 9 0 to 100  the catch up     surprise         894     8
10 0 to 100  the catch up        trust         894    29
# ... with 39,554 more rows
```

SENTIMENT ANALYSIS IN R: THE TIDY WAY

Let's practice!

SENTIMENT ANALYSIS IN R: THE TIDY WAY

Connecting sentiment to other quantities

Julia Silge
Data Scientist at Stack Overflow

Sentiment and...

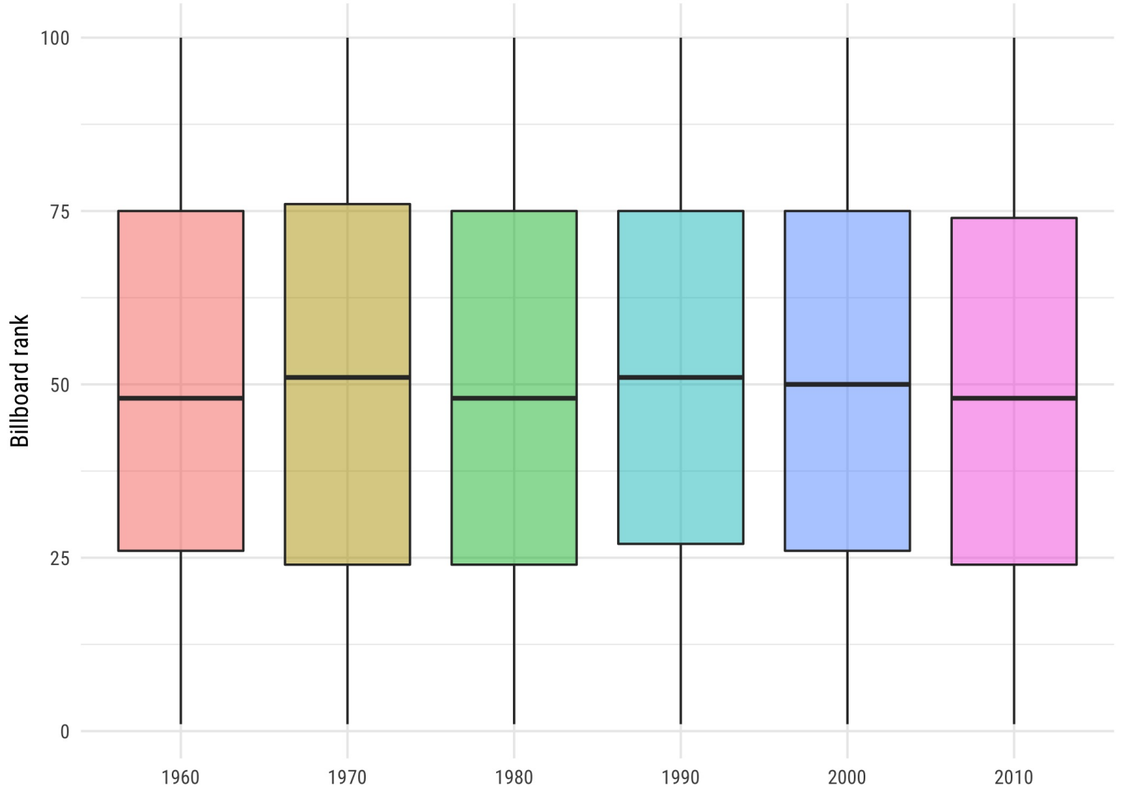
- how far a song reached on the Billboard chart?
- when the song was released?

Sentiment and rank

```
> lyric_sentiment %>%
    filter(sentiment == "positive") %>%
    count(song, rank, total_words)

# A tibble: 4,777 x 4
                  song  rank total_words     n
                 <chr> <int>       <int> <int>
 1 0 to 100  the catch up    97         894    34
 2     1 2 3 4 sumpin new    40         670    18
 3        1 2 3 red light    48         145     9
 4             1 2 step     5         437    20
 5          100 pure love    46         590    11
 6          100 pure love    82         590    11
 7            100 years     77         257     4
 8                  123     62         220    15
 9           18 and life    61         285     9
10           19 somethin    84         281     6
# ... with 4,767 more rows
```

Exploring with boxplots



SENTIMENT ANALYSIS IN R: THE TIDY WAY

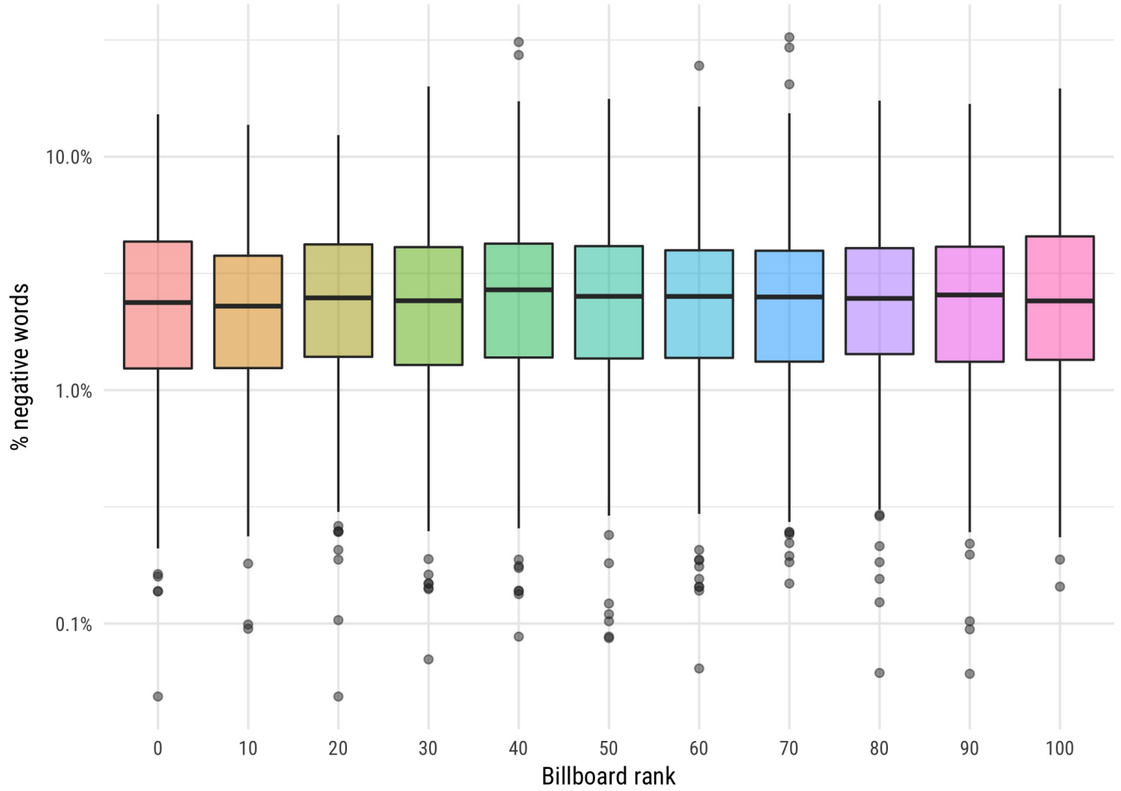
Let's practice!

SENTIMENT ANALYSIS IN R: THE TIDY WAY

Moving from rank to year

Julia Silge
Data Scientist at Stack Overflow

Sentiment and rank



Pop songs over time

```
> lyric_sentiment %>%
    filter(sentiment == "positive") %>%
    count(song, year, total_words)

# A tibble: 4,772 x 4
                  song  year total_words     n
                 <chr> <int>       <int> <int>
 1 0 to 100  the catch up  2014         894    34
 2     1 2 3 4 sumpin new  1996         670    18
 3        1 2 3 red light  1968         145     9
 4             1 2 step  2005         437    20
 5          100 pure love  1994         590    11
 6          100 pure love  1995         590    11
 7            100 years  2004         257     4
 8                123  1988         220    15
 9           18 and life  1989         285     9
10           19 somethin  2003         281     6
# ... with 4,762 more rows
```

Pop songs over time

- Define new columns using `mutate()`
- Visualize using `geom_boxplot()`

Modeling sentiment

```
sentiment_model <- lm(percent ~ year, data = sentiment_by_year)

summary(sentiment_model)
```

SENTIMENT ANALYSIS IN R: THE TIDY WAY

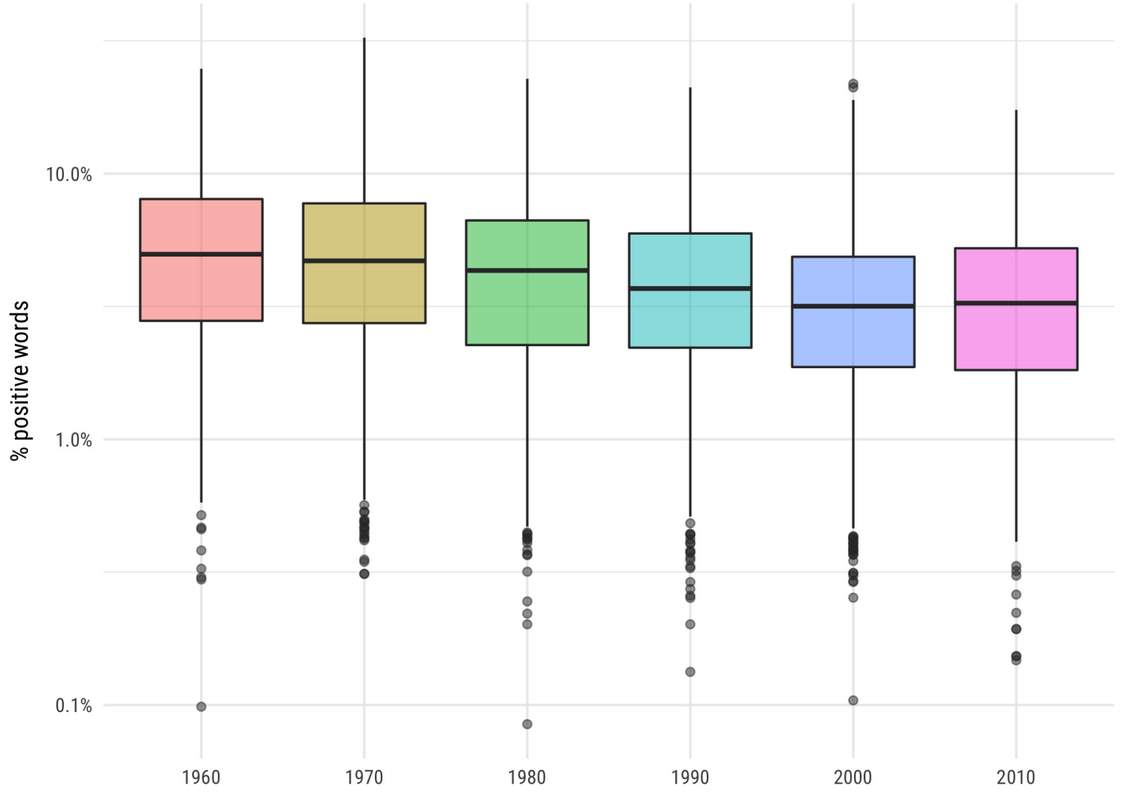
Let's practice!

SENTIMENT ANALYSIS IN R: THE TIDY WAY

You made it!

Julia Silge
Data Scientist at Stack Overflow

Positive sentiment and year



Diverse texts, powerful techniques

- Social media text from Twitter
- Classic narrative text by Shakespeare
- TV news text sourced from closed captioning
- Lyrics from pop songs

Tidy text

Tidy data principles makes text mining easier and more effective

http://tidytextmining.com/

SENTIMENT ANALYSIS IN R: THE TIDY WAY

Thanks!