

# Predicting Hit Songs

Hot 100 Billboard Chart

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February 26, 2019

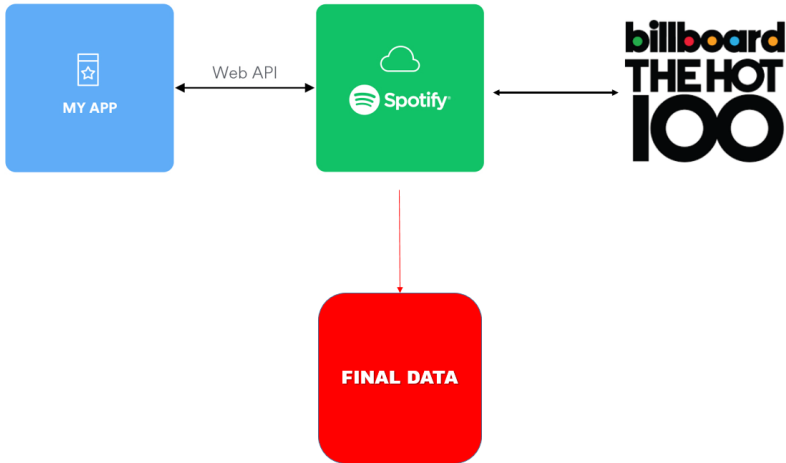
- Introduction
- The Data and EDA
- Model Building and Evaluation
- Results and Interpretation
- Recommendation and Conclusion

- Data was extracted from the Spotify API
- Get out of bed

# The Data

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# Collecting the Data



- Latest data retrieval was on December 28, 2018

## Data Snap

```
## 'data.frame':      116372 obs. of  25 variables:
## $ artist_name      : Factor w/ 32105 levels "'Dwellers",
## $ track_id         : Factor w/ 116191 levels "0009UBVA8D
## $ track_name        : Factor w/ 96809 levels "'03","'84",
## $ acousticness      : num  0.28 0.153 0.0141 0.191 0.0051
## $ danceability       : num  0.724 0.841 0.817 0.687 0.834
## $ duration_ms       : int   207333 212500 210368 214290 31
## $ energy             : num  0.647 0.798 0.539 0.792 0.73 0
## $ instrumentalness: num  0.00 3.33e-06 4.96e-04 0.00 0
## $ key               : int   1 1 6 5 8 8 6 2 9 4 ...
## $ liveness          : num  0.102 0.0618 0.099 0.167 0.124
## $ loudness          : num  -5.64 -4.21 -6.35 -2.75 -3.71
## $ mode              : int   1 0 0 1 1 0 1 1 0 1 ...
## $ speechiness       : num  0.0658 0.229 0.0621 0.0452 0.2
## $ tempo             : num  107 95.9 97.1 100 155 ...
```

## The Data...

- Tempo: Beats Per Minute (BPM) of the song.
- Energy: The energy of a song, the higher the value, the more energetic.
- Danceability: The higher the value, the easier it is to dance to this song.
- Loudness: The higher the value, the louder the song (in dB).
- Valence: The higher the value, the more positive mood for the song.
- Length: The duration of the song.
- Acousticness: The higher the value the more acoustic the song is.
- Release Year: The year each song was released.
- **Popularity (Target Variable):** The higher the value (on a scale of 0 to 100) the more popular the song is.

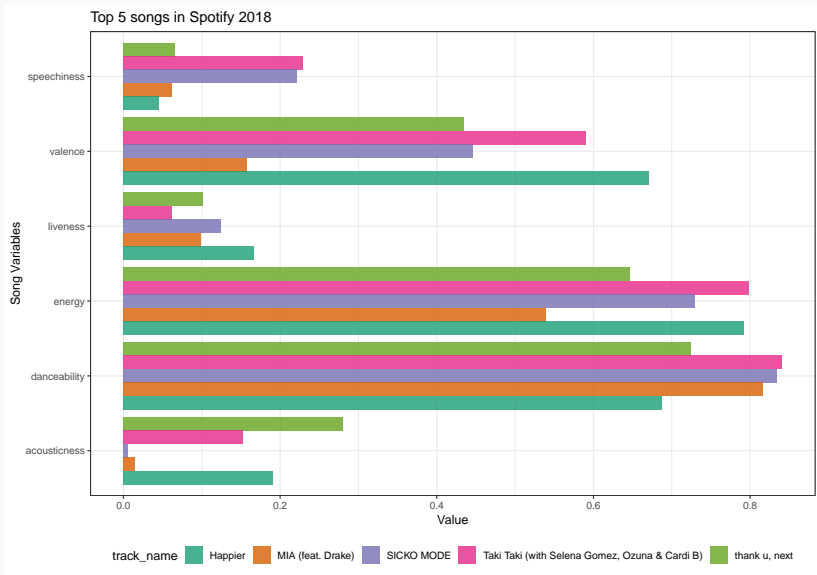
**Source:** See features description [here](#)

# Exploratory Data Analysis

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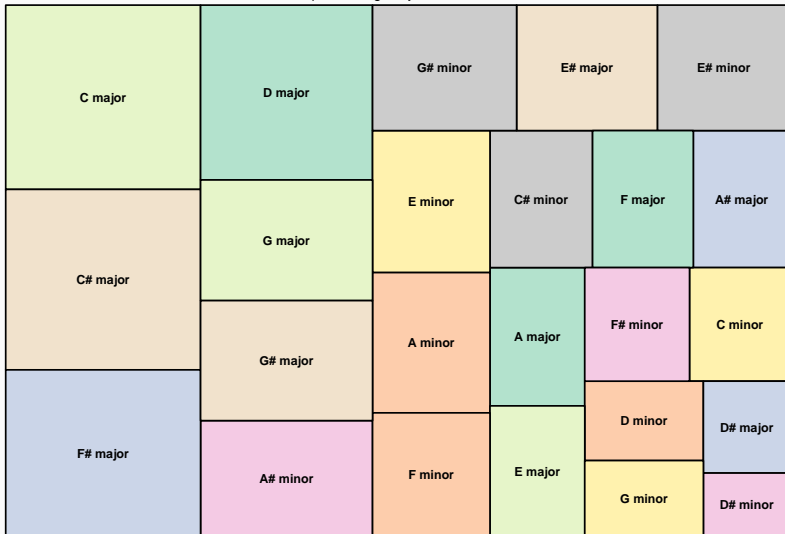


# Most Popular Songs of 2018



# Top 100 Songs by Key

Top 100 Songs Key characteristics

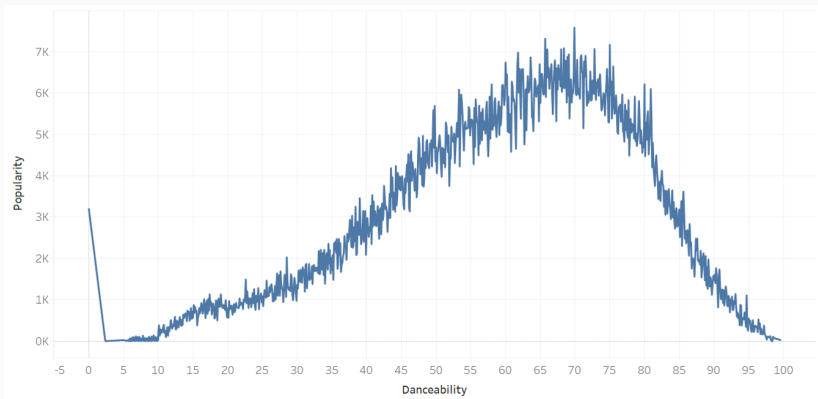


# Top 100 Songs by Key and Emotion

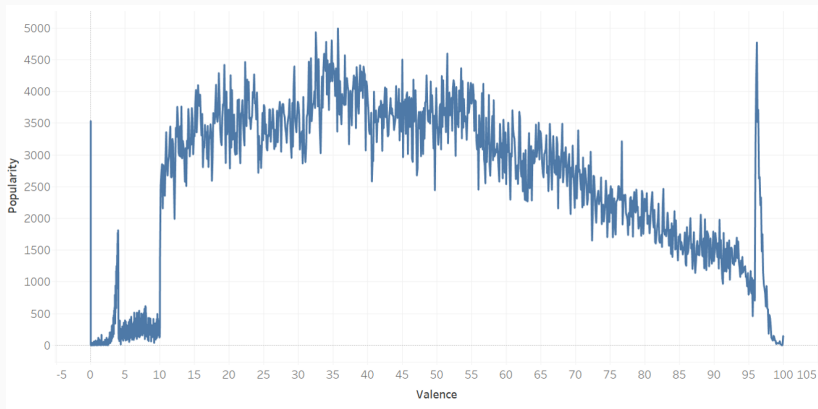
Top 100 Songs Key characteristics and Emotion

F minor: Obscure, Plaintive, Funereal	G major: Serious, Magnificent, Fantasy	F sharp major : Conquering Difficulties, Sighs of Relief	C sharp minor : Despair, Wailing, Weeping	D major: Triumphant, Victorious War-Cries
C sharp major: Fullness, Sonorousness, Euphony	A sharp major: Joyful, Quaint, Cheerful	G sharp minor: Grumbling, Moaning, Wailing	E minor: Effeminate, Amorous, Restless	E major: Quarrelsome, Boisterous, Incomplete Pleasure
F major: Complaisance and calm	C major :Innocently Happy	A major : Joyful, Pastoral, Declaration of Love	G minor: Discontent, Uneasiness	C minor :Innocently Sad, Love-Sick
		A sharp minor: Terrible, the Night, Mocking	A minor : Tender, Plaintive, Pious	F sharp minor: Gloomy, Passionate Resentment
				G sharp major : Death, Eternity, Judgement

# Are danceable songs popular?



# How does mood affect the popularity of a song?



# Energy Vs. Popularity

