Song Key Mode & Popularity

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Will changing the mode of a song make it more popular? (Would it make it more likely to be in the Top 100?) This is what we are going to try to look at by analyzing Spotify's Top 100 streamed songs!

First of all, in music, "keys" are sets of notes which sound harmonious together. One of the most distinguishing features of a musical key is its "mode" which we can categorize as "major" or "minor." These two modes affect the mood of music similarly to how certain beats may make songs more "likeable." Music that is written in a major key mode usually sounds happy, while music that is written in a minor key mode usually sounds sad or serious. We are interested in whether these modes (major vs. minor) of songs' keys affect their popularity.

Through this evaluation, we will go through Spotify's Topp 100 2017 data set to analyze whether people are actively listening to more songs that are in major key modes or minor key modes. As a null hypothesis, we would state that this mode would not affect songs' popularity.

Once we loaded the data, we are going to make a small summary to see actually how many songs in Spotify have a minor or a major mode.

Table01

```
##   mmode avg_rank count diff_estimate
## 1     0 48.78571    42      2.955665
## 2     1 51.74138    58      2.955665
```

We can read from this graph, that at least for the 2017's Top 100, songs that had a Major (or happier sound) were more popular. However, this might just be by chance.

Out of curiousity, let's also evaluate how other features (danceability, key, loudness, etc) in the song play around with the 'Mode' of it:

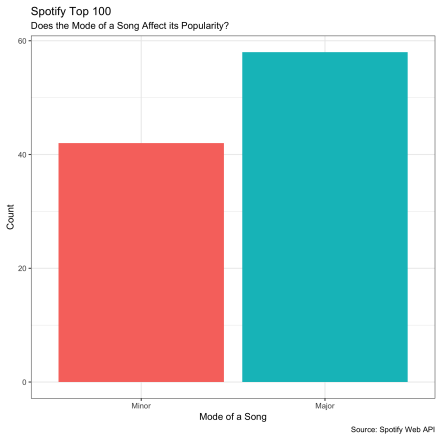


Figure 1:

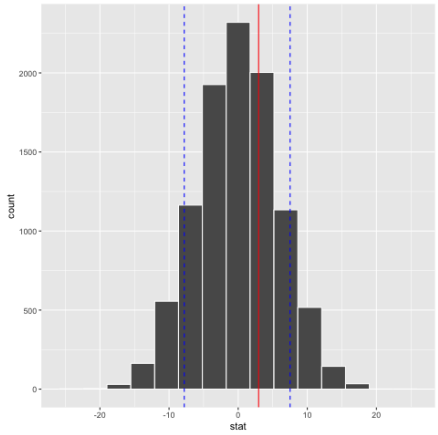
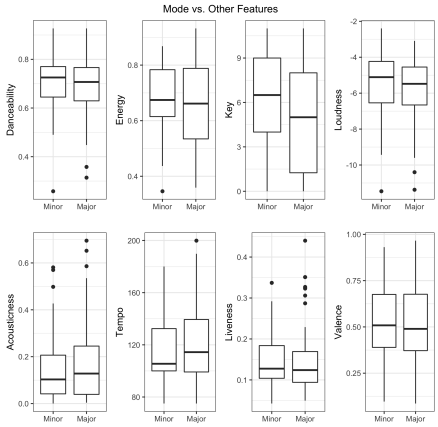


Figure 2:



Now, through 'Estimation through simulation', we are going to test if the 'Mode' does actually play a role into the fact that the songs made it to the Top 100.

We understand, that by just working with this feature (rather than the combination of features) is a limitation of our work. And if given more time, we would love to explore all the features to see what makes a song really popular.

Our hypothesis are as follows:

H_0: There is no difference between the popularity of Songs with Minor Mode and Major Mode.
H_A: There is a difference between the popularity of Songs with Minor Mode and Major Mode.

Please add a little statistical summary here and made graph more readable (add CI, mean value, p-value, if hyp is rejected or not.)

RESULTS:

- Our p-value is _____, which is really small, as our p-value is (smaller/larger) than the alpha (0.05), we reject (do not reject) the null hypothesis.

This analysis is really limited due to time constraints and we are just taking into consideration one feature of

the songs. We would like to interact with all the features and their combinations to see how this affects a song's popularity.

We think that given more time in the future, we would like to try a more in depth analysis and maybe try through a Decision Tree to consider all features.

REFERENCES

Top Spotify Tracks of 2017

Wikipedia Major and Minor

Statistical Inference Lecture