Team Name: Faang

Swetha Mamidiga (Smami3@unh.newhaven.edu)

Ajay Kumar (Avatt1@unh.newhaven.edu)

Sruthi Sundararajan (ssund3@unh.newhaven.edu)

Research question:

MUSIC MAKES AN IMPACT

Using data mining techniques and Spotify to predict a person's mood.
Would it be possible of predict a person mood to play same type of songs if a person chooses one type of song? The data behind their music listening history would reveal any insight into their emotional states.?

Selected dataset:

The dataset which we have selected is the actual data based on the people's moods, it includes Danceability, Acousticness, Energy,Instrumentalness, Liveness, Valence, Loudness, Speechiness and Tempo because they have more influence to classify the tracks.

3. List of exploration techniques:

In our project we used have both univariate and bivariate analysis for the data exploration. The dataset which we have contains only numerical attributes. So we have used the following data exploration techniques:

For Univariate -

Histograms

For Bivariate -

Histplot

pieplot

4.Description of data explorations:

The first exploration technique which we have used in our project is univariate analysis. The attributes which we have considered for this analysis are count of record and target. We have used histograms for this analysis.

1. Acousticness :

number<float>

A confidence measure from 0.0 to 1.0 of whether the track is acoustic. 1.0 represents high confidence the track is acoustic.
>= 0<= 1

2. Danceability :

number<float>

Danceability describes how suitable a track is for dancing based on a combination of musical elements including tempo, rhythm stability, beat strength, and overall regularity. A value of 0.0 is least danceable and 1.0 is most danceable.

3. Duration_ms :

integer

The duration of the track in milliseconds.

4. Energy :

number<float>

Energy is a measure from 0.0 to 1.0 and represents a perceptual measure of intensity and activity. Typically, energetic tracks feel fast, loud, and noisy. For example, death metal has high energy, while a Bach prelude scores low on the scale. Perceptual features contributing to this attribute include dynamic range, perceived loudness, timbre, onset rate, and general entropy.

5. Instrumentalness :

number<float>

Predicts whether a track contains no vocals. "Ooh" and "aah" sounds are treated as instrumental in this context. Rap or spoken word tracks are clearly "vocal". The closer the instrumentalness value is to 1.0, the greater likelihood the track contains no vocal content. Values above 0.5 are intended to represent instrumental tracks, but confidence is higher as the value approaches 1.0.

6. Liveness :

number<float>

Detects the presence of an audience in the recording. Higher liveness values represent an increased probability that the track was performed live. A value above 0.8 provides strong likelihood that the track is live.

7. Loudness :

number<float>

The overall loudness of a track in decibels (dB). Loudness values are averaged across the entire track and are useful for comparing relative loudness of tracks. Loudness is the quality of a sound that is the primary psychological correlate of physical strength (amplitude). Values typically range between -60 and 0 db.

8. Mode :

integer

Mode indicates the modality (major or minor) of a track, the type of scale from which its melodic content is derived. Major is represented by 1 and minor is 0.

9. Speechiness :

number<float>

Speechiness detects the presence of spoken words in a track. The more exclusively speech-like the recording (e.g. talk show, audio book, poetry), the closer to 1.0 the attribute value. Values above 0.66 describe tracks that are probably made entirely of spoken words. Values between 0.33 and 0.66 describe tracks that may contain both music and speech, either in sections or layered, including such cases as rap music. Values below 0.33 most likely represent music and other non-speech-like tracks.

10. Tempo :

number<float>

The overall estimated tempo of a track in beats per minute (BPM). In musical terminology, tempo is the speed or pace of a given piece and derives directly from the average beat duration.

11. time_signature :

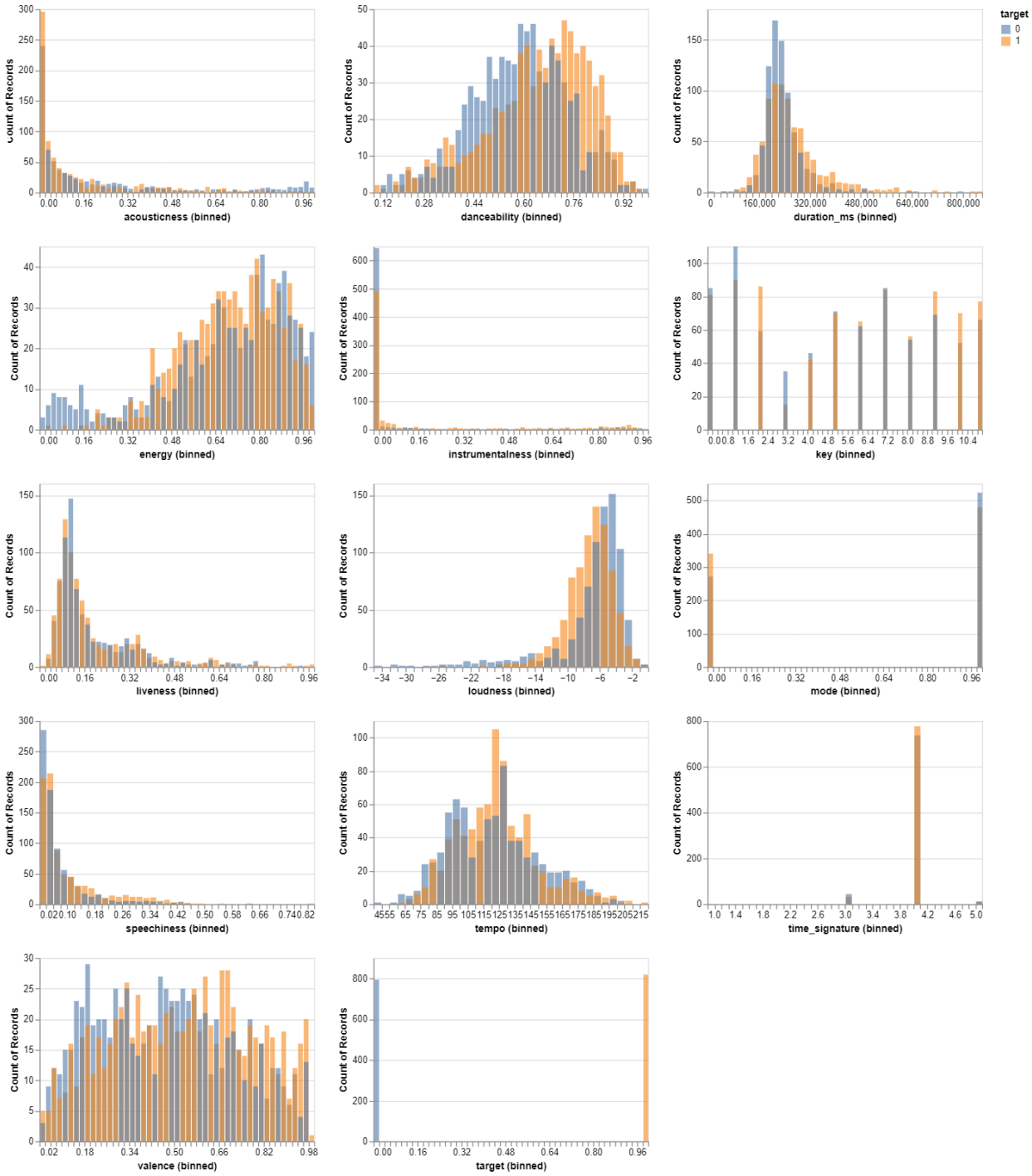
integer

An estimated time signature. The time signature (meter) is a notational convention to specify how many beats are in each bar (or measure). The time signature ranges from 3 to 7 indicating time signatures of "3/4", to "7/4".
>= 3<= 7

12. Valence :

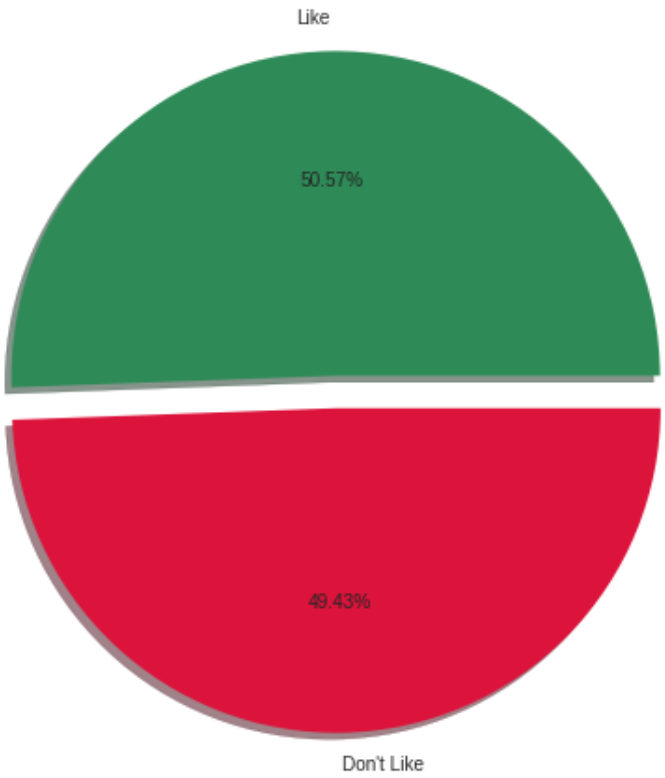
number<float>

A measure from 0.0 to 1.0 describing the musical positiveness conveyed by a track. Tracks with high valence sound more positive (e.g. happy, cheerful, euphoric), while tracks with low valence sound more negative (e.g. sad, depressed, angry).
>= 0<= 1


target
0
1
Count of Records
acousticness (binned)
danceability (binned)
duration_ms (binned)
energy (binned)
instrumentalness (binned)
key (binned)
liveness (binned)
loudness (binned)
mode (binned)
speechiness (binned)
tempo (binned)
time_signature (binned)
valence (binned)
target (binned)

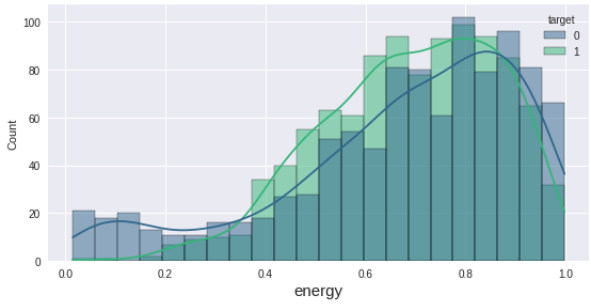
Subplot :

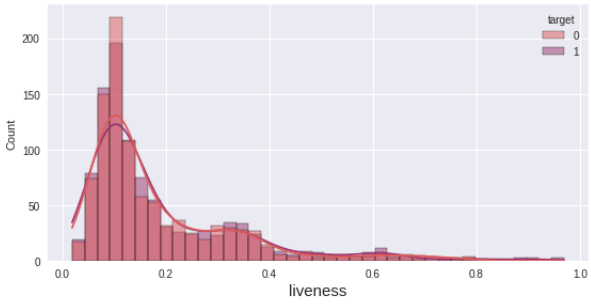
This subplot describes how many people enjoy and dislike tunes, revealing that 50.57 percent like and 49.43 percent dislike music.

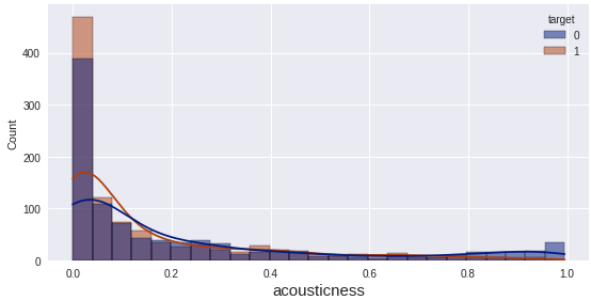


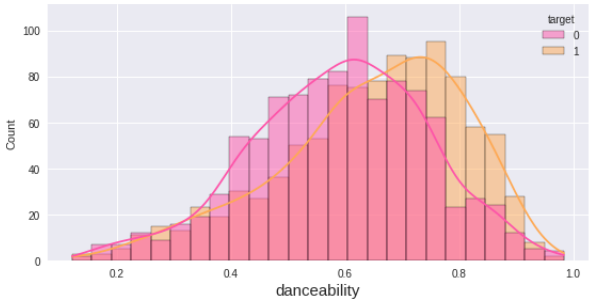
Histplot :

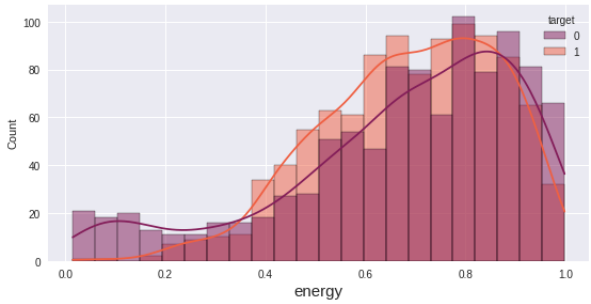
all attributes vs target is done here

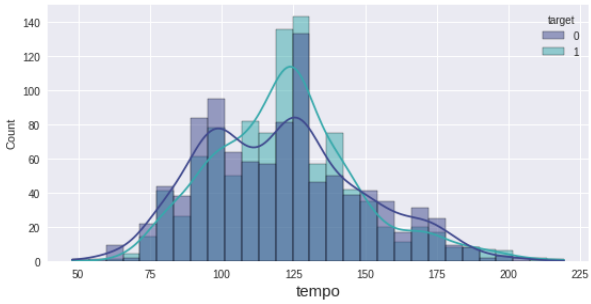












5. Github repository link:

https://github.com/Ajay-kumarv/music-makes-an-impact/blob/5bf5fb0501174a86f26e787bef6056a4c53d8858/FAANG.ipynb