



Spotify Analysis on Turkish Music

Umre Metin

Mina Silahtaroglu

What we have done before:

- Data Exploration
- For the top artists, looked for the correlation between the top songs' attributes and "danceability"
- Plotted the top songs' danceability
- Looked for the most positive songs
- Plotted the valences of albums

Data Exploration

```
glimpse(top20_info)
```

```
## List of 3
## $ artist_info :'data.frame':  20 obs. of  4 variables:
##   ..$ artist_id      : chr [1:20] "2yMN0IP20GOaN6q0p0zL5k" "64d1rUxfizSAOE9UbMnUZd" "2l00l9ASKE7E196nHpb1B7" "1F2v33FQT
avJyaD7ZsyhdA" ...
##   ..$ artist_name     : chr [1:20] "Tarkan" "Sezen Aksu" "Toygar Işıklı" "Gülşen" ...
##   ..$ artist_popularity: int [1:20] 65 68 61 63 62 66 62 64 61 61 ...
##   ..$ artist_followers : int [1:20] 1421303 1871943 71313 592431 204422 672924 419011 397980 403279 372282 ...
## $ artist_genres:'data.frame':  40 obs. of  2 variables:
##   ..$ artist_id: chr [1:40] "2yMN0IP20GOaN6q0p0zL5k" "2yMN0IP20GOaN6q0p0zL5k" "64d1rUxfizSAOE9UbMnUZd" "64d1rUxfizSAOE9Ub
MnUZd" ...
##   ..$ genres      : chr [1:40] "turkish pop" "turkish rock" "turkish pop" "turkish rock" ...
## $ top_tracks   :Classes 'tbl_df', 'tbl' and 'data.frame':  200 obs. of  18 variables:
##   ..$ artist_id      : chr [1:200] "2yMN0IP20GOaN6q0p0zL5k" "2yMN0IP20GOaN6q0p0zL5k" "2yMN0IP20GOaN6q0p0zL5k" "2yMN0IP20
GOaN6q0p0zL5k" ...
##   ..$ track_id       : chr [1:200] "6vEL7E8TGzrxuxbrgdlkLL" "1BfpV5h16V1Gtr41GEF9c0" "1tiIKelgeYVi1KcylVnZdq" "0oVnsgyHc
lNnGeEb4hRoYO" ...
##   ..$ track_name     : chr [1:200] "Simarik" "Kedi Gibi" "Kış Güneşi" "Ay" ...
##   ..$ track_popularity: int [1:200] 63 57 57 57 56 55 52 52 51 51 ...
##   ..$ album_id       : chr [1:200] "6ebdbUXZn5AURKeRNXqiay" "4fJzakARJP2UfOjSj5Q9s1" "06EBiLh3V0q2d0UdXnic7e" "11KfFiHZx
XiBoEq52HAsJi" ...
##   ..$ album_name     : chr [1:200] "Ölürüm Sana" "10" "Aacayipsin" "Karma" ...
##   ..$ duration_ms    : int [1:200] 235218 249006 235171 260713 233639 246456 236054 248580 273307 256069 ...
##   ..$ danceability    : num [1:200] 0.775 0.699 0.652 0.685 0.705 0.753 0.649 0.806 0.743 0.729 ...
##   ..$ energy          : num [1:200] 0.818 0.897 0.706 0.763 0.883 0.926 0.807 0.865 0.871 0.788 ...
##   ..$ key             : int [1:200] 7 7 11 11 4 9 3 4 4 10 ...
##   ..$ loudness        : num [1:200] -8.69 -4.48 -13.41 -6.54 -8.35 ...
##   ..$ mode            : int [1:200] 1 1 0 0 0 1 0 0 0 0 ...
##   ..$ speechiness     : num [1:200] 0.164 0.0585 0.0436 0.0839 0.0508 0.103 0.135 0.0544 0.0618 0.0714 ...
##   ..$ acousticness    : num [1:200] 0.0518 0.0145 0.0158 0.00443 0.0223 0.00718 0.0613 0.0758 0.000997 0.0352 ...
##   ..$ instrumentalness: num [1:200] 0.00 4.05e-06 0.00 1.64e-04 8.34e-03 2.28e-06 5.05e-06 2.25e-05 1.18e-02 3.15e-05 ...
##   ..$ liveness        : num [1:200] 0.114 0.239 0.0843 0.217 0.0526 0.0407 0.0648 0.0696 0.177 0.0969 ...
##   ..$ valence         : num [1:200] 0.826 0.568 0.892 0.418 0.73 0.79 0.761 0.569 0.572 0.722 ...
##   ..$ tempo           : num [1:200] 97.1 98 91 90 93.9 ...
```

For the top artists we have looked for the correlation between the top songs' attributes and "danceability"

	Correlation
Danceability-Energy	0.3761065
Danceability-Liveness	-0.0662805
Danceability-Acousticness	-0.4103602
Danceability-Instrumentalness	0.0243880
Danceability-Speechiness	0.2082801
Danceability-Valence	0.4624117
Danceability-Tempo	-0.2163613

We had fun :)

We looked for the most positive songs in the top20 artists' best songs. And it was "Karabiberim" from Serdar Ortaç which is also our favorite!!!

```
Musical_Positivity <-  
  top20Artist_songFeatures %>%  
  arrange(desc(valence)) %>%  
  select(artist_name, track_name, valence) %>%  
  head(10)  
  
Musical_Positivity %>%  
  knitr::kable()
```

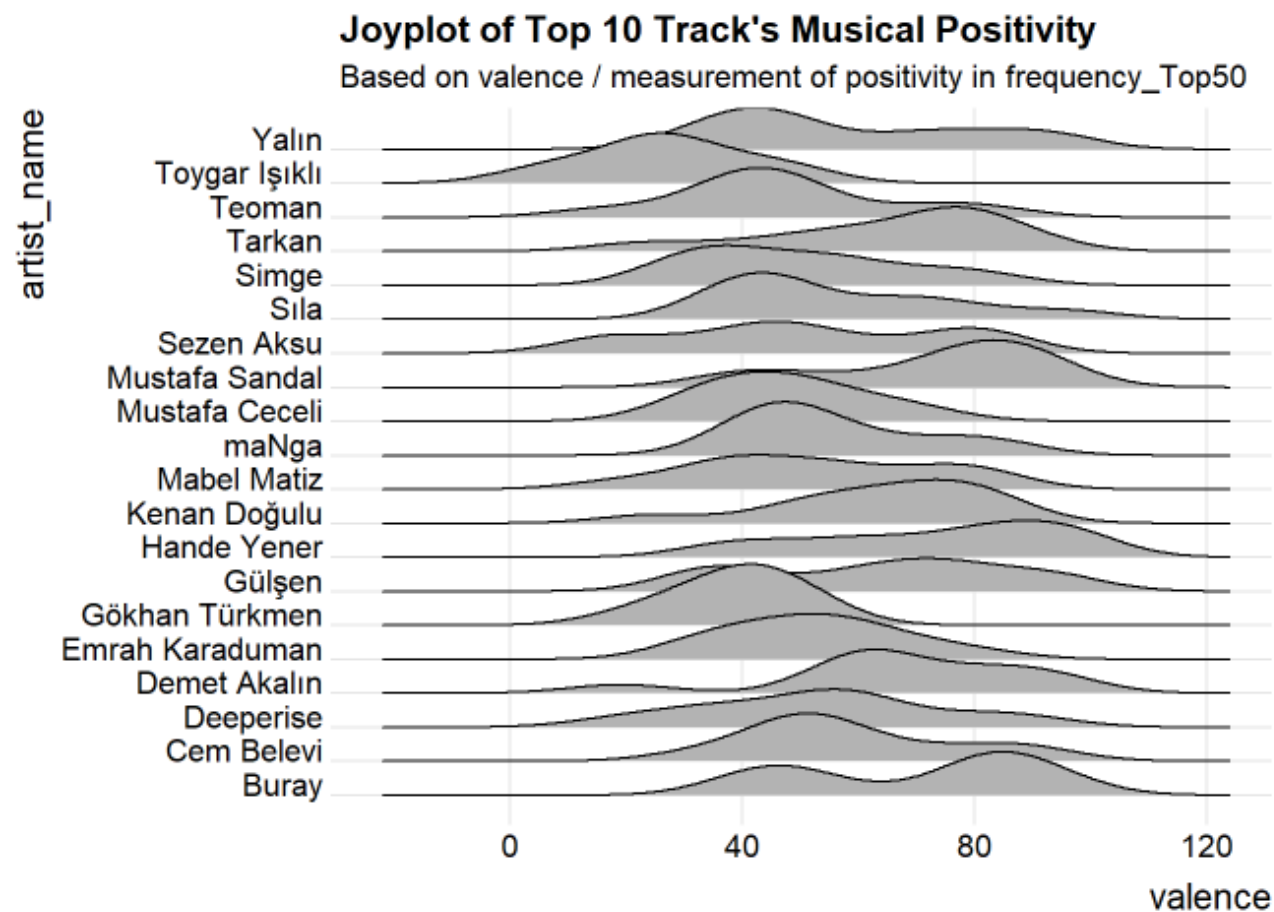
artist_name	track_name	valence
Serdar Ortaç	Karabiberim	96.8
Hande Yener	Aşkın Ateşi	96.1
Hande Yener	Mor	96.1
Sıla	Kafa	96.0
Buray	Tac Mahal	95.2
Hande Yener	Kırmızı	94.5
Gülşen	Yukardan Ayarlı	94.3
Serdar Ortaç	Gamzelim	94.2
Mustafa Sandal	Jest Oldu	93.5
Demet Akalın	Çanta	92.7

Joyplot for Musical Positivity (Valence)

The plot below represents the visualization of the artists in top20 accordingly with their songs' valence

```
ggplot(top20Artist_songFeatures, aes(x = valence, y = artist_name)) +  
  geom_joy() +  
  theme_joy() +  
  ggtitle("Joyplot of Top 10 Track's Musical Positivity", subtitle = "Based on valence / measurement of positivity in frequency_Top50")
```

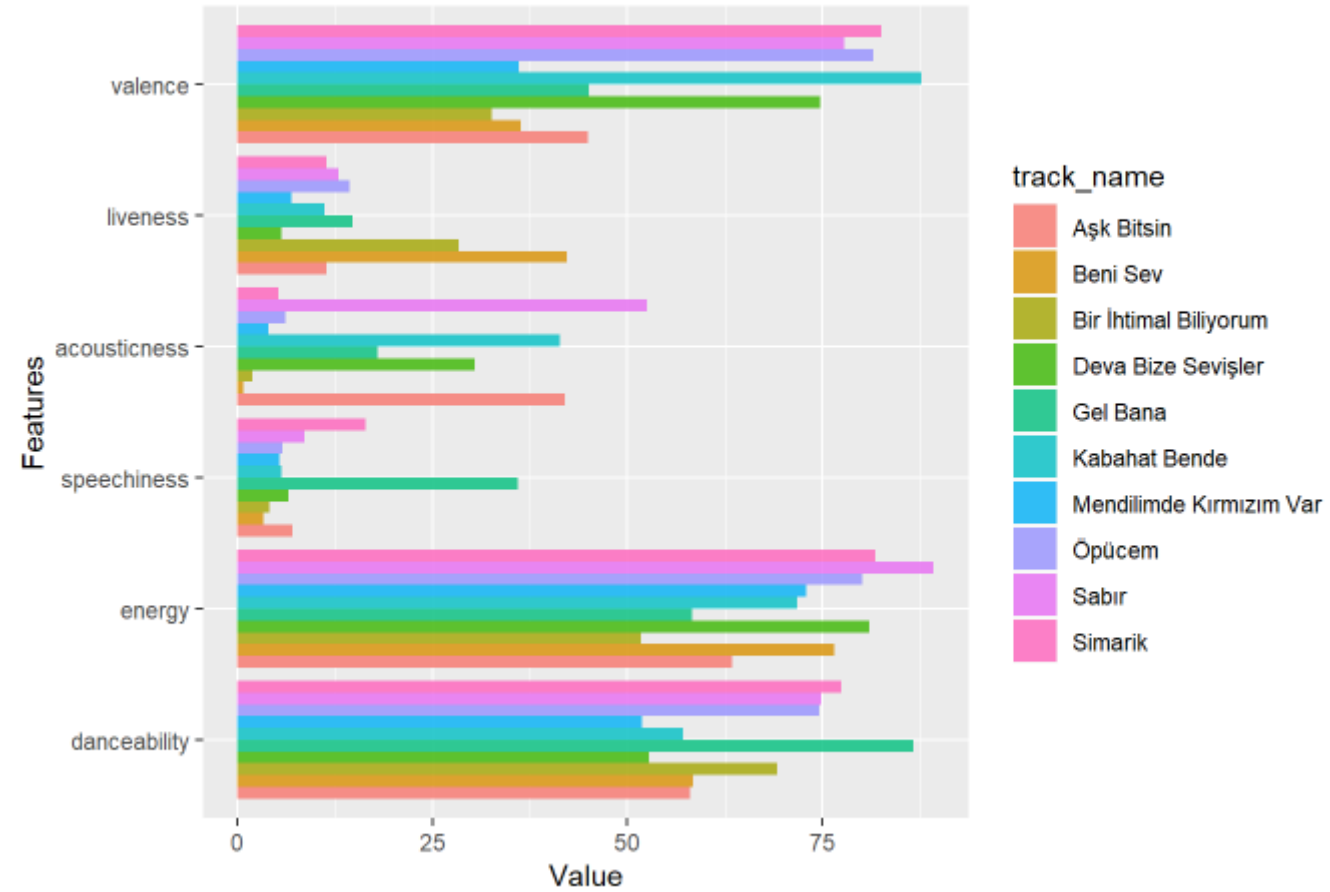
```
## Picking joint bandwidth of 9.27
```



The Top200 Tracks data is arranged descending accordingly with the track popularity, top 10 is listed below:

artist_name	album_name	track_name	artist_id	track_id	track_popularity	album_id
Gülşen	Bir İhtimal Biliyorum	Bir İhtimal Biliyorum	1F2v33FQTavJyaD7ZsyhdA	24mpJgP2YZUBif9NvmYyh4	69	2CICALHFSoebVWZqi9hvUo
Mustafa Sandal	Gel Bana	Gel Bana	0mkH5jj3goQ51JtPKVodTo	3AXScNtH6Ywywwma6u8h95	67	2yRDMGROahDlyRWfmbHGT2Q
Yalın	Deva Bize Sevişler	Deva Bize Sevişler	46zuW8tHxwahYn7VNMgYTa	7l8e7Pe8qndxhCU245rlve	66	4L1PIFhDNf4qc1K2yBQqOh
Buray	Kehanet	Kabahat Bende	1qZ684TB9E1BjH58btdtYd	3UgBLWFgadLahNGxTDYG2d	65	54fUFXduCOTJEksa3bUU89
Hande Yener	Beni Sev	Beni Sev	08mjMUUjyTchMHCW7evc3R	0bE8X3KwUiflTMaibVR9eD	64	2xUTDtK1rGCdFmEqUKFCLw
Simge	Ben Bazen	Öpücüm	4StjyzjcmZ7a9QncHVf0pu	1pq9w58vpi5nnEllpgl1tF	64	7JkYuwCd3THEGv2YZYgSDE
Tarkan	Ölürüm Sana	Simarik	2yMN0IP20GOaN6q0p0zL5k	6vEL7E8TGzrxuxbrgdlkLL	63	6ebdbUXZn5AURKeRNXqiay
Sıla	Acı	Sabır	5gFPI3KWxEwA9bLEO47Ow0	6l6gNA8Sif7kdSQZ9kObe3	63	33FUvw367XssYPX3LcWiFd
Buray	Kehanet	Aşk Bitsin	1qZ684TB9E1BjH58btdtYd	7KwJ77WnVmphcdSDtlHe47	62	54fUFXduCOTJEksa3bUU89
Mabel Matiz	Maya	Mendilimde Kırmızım Var	1dpqJqluNqideTvmxBsSku	14Bw31VNlw08fsNZgvNb6H	62	77lgNgqEBd2qBlzk7DcHA3

Top 10 Turkish Pop Songs in Spotify 2019



Artists' frequency in the Top50:

(Since the dataset was a sample for top20 artists' best 10 songs, we had sliced the most popular 50 songs)

At this part, we have checked the frequencies of the artists in the top50 songs. The most frequent artist in the list is Tarkan, followed by: Sezen Aksu, Yalın, Teoman, Buray. (Top5 Artists)

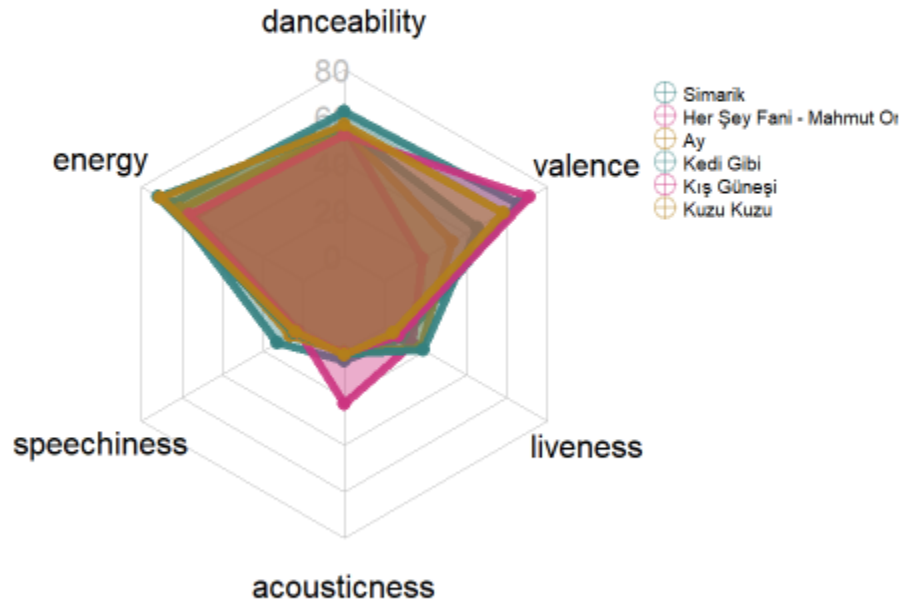
```
frequency_Top50 <-  
  top20Artist_songFeatures %>%  
  arrange(desc(track_popularity)) %>%  
  slice(1:50)  
  
df <- as.data.frame(frequency_Top50)  
  
countsFreq <- frequency_Top50$artist_name  
  
fin_Freq <-  
  sapply(paste0(".*(", countsFreq, ").*|.*)" , sub, "\\1", frequency_Top50)  
table(grep("\\w", fin_Freq, value = T))
```

```
##  
##          Buray      Deeperise Emrah Karaduman      Gülşen  
##             5          2          4          1  
##      Hande Yener      Kenan Doğulu      Mabel Matiz      Mustafa Sandal  
##             1          1          4          1  
##      Müslüm Gürses      Sezen Aksu          Sila          Simge  
##             4          5          2          4  
##          Tarkan      Teoman          Yalın  
##             6          5          5
```

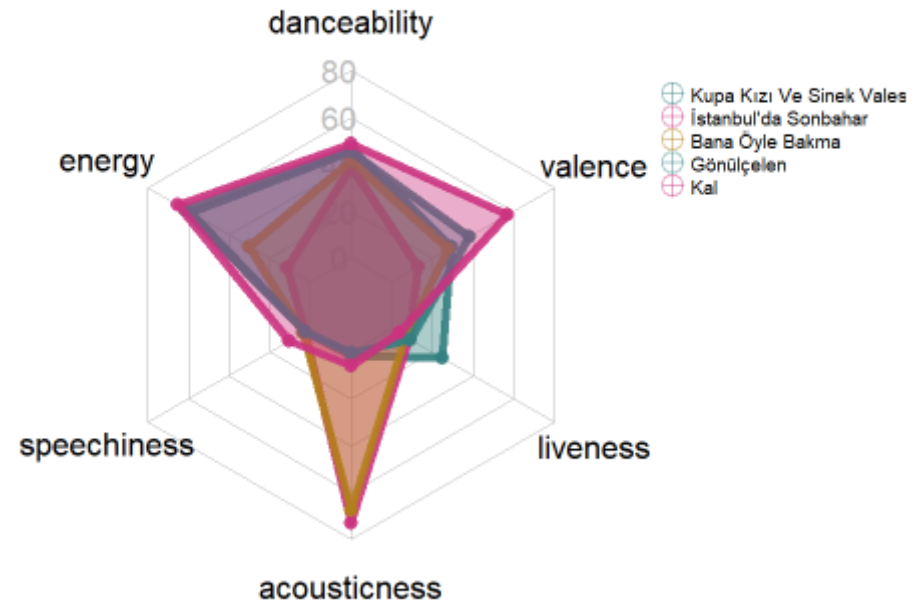
Radar chart for the Top5 singers in “Turkish Pop”

Top Artist: Tarkan, followed by: Teoman, Yalın, Sezen Aksu and Buray :)

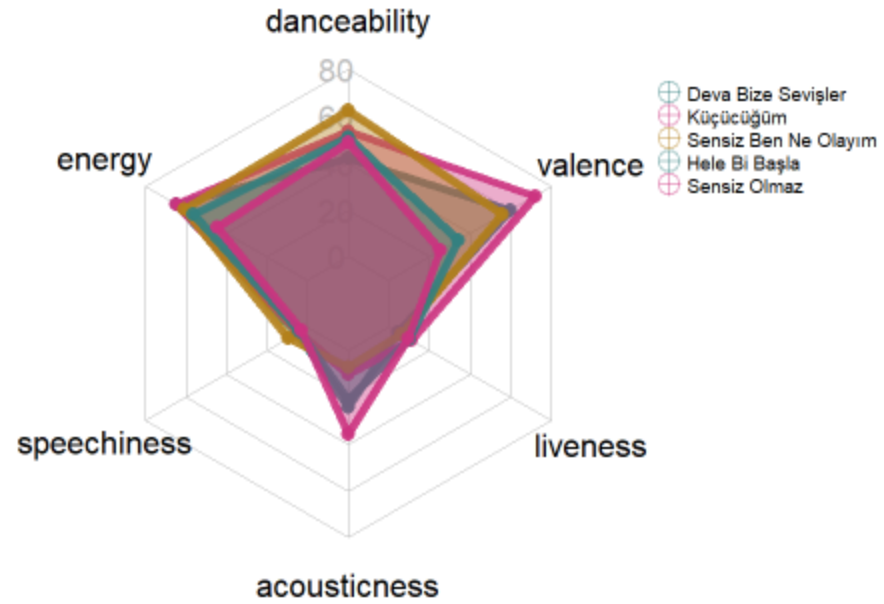
Tarkan Top Songs from the Top50



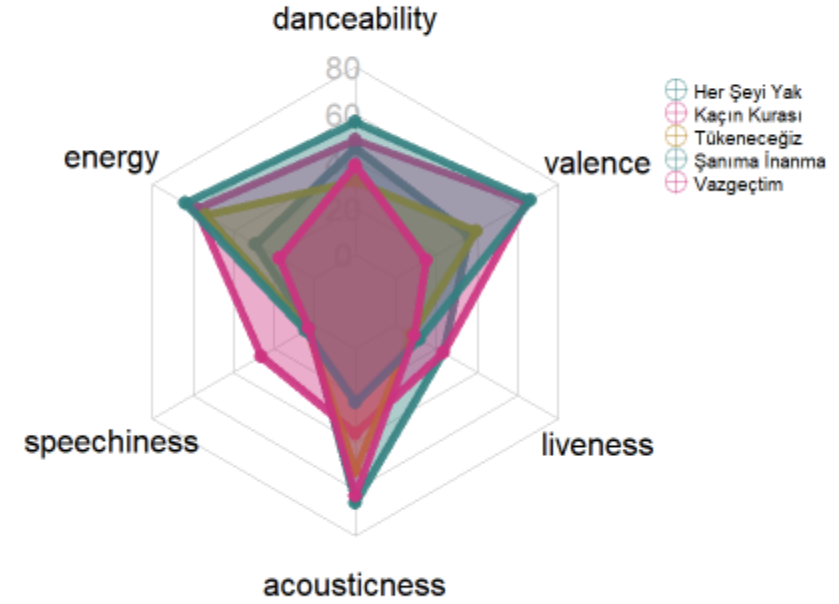
Teoman Top Songs from the Top50



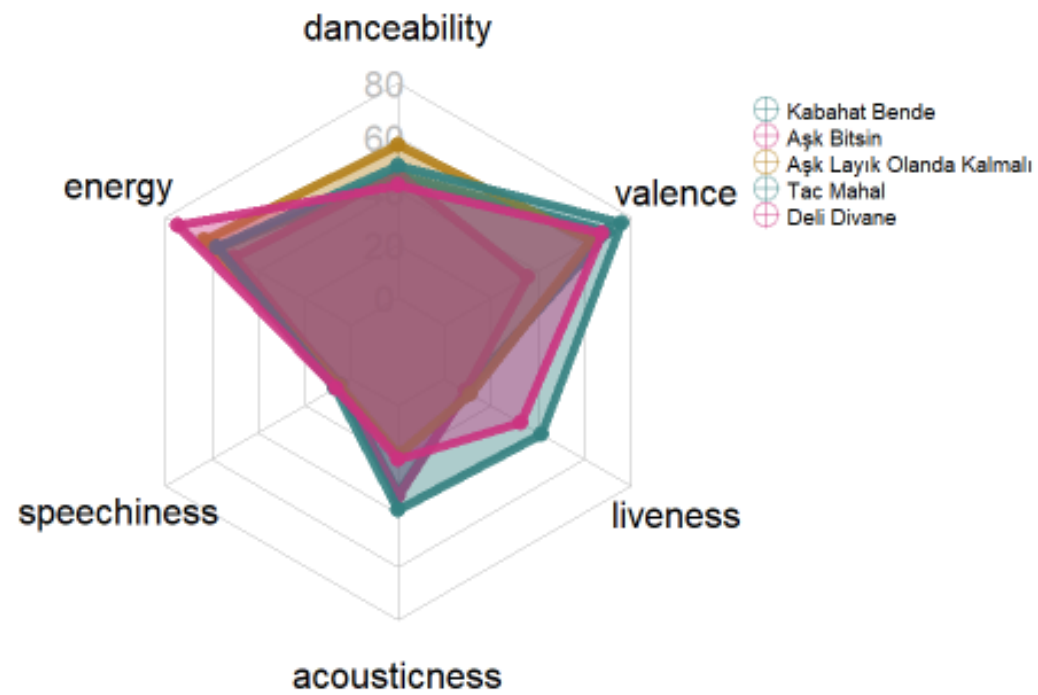
Yalın Top Songs from the Top50



Sezen Aksu Top Songs from the Top50



Buray Top Songs from the Top50



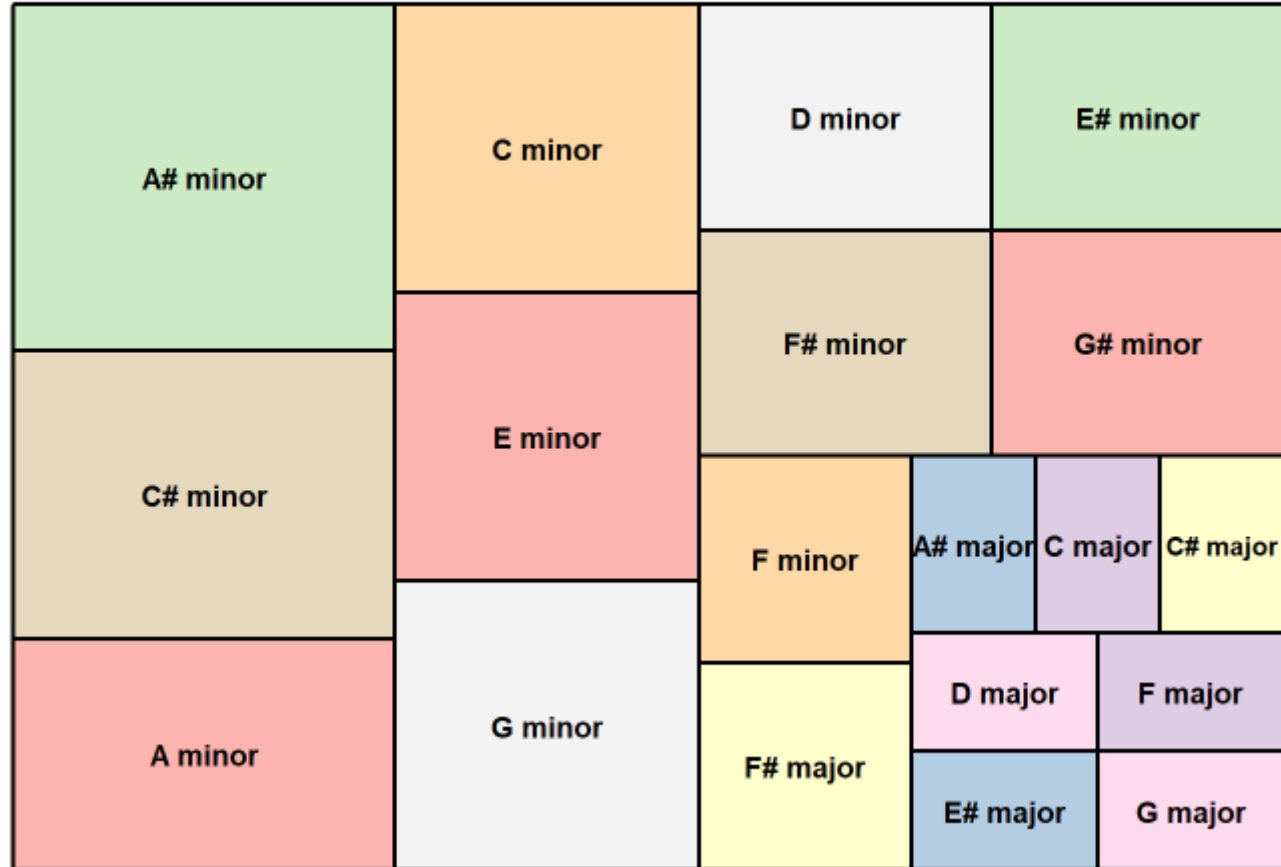
KEY EMOTIONS

- C major :Innocently Happy
- C minor :Innocently Sad, Love-Sick
- C sharp minor : Despair, Wailing, Weeping
- C sharp major: fullness, sonorousness, euphony
- D major: Triumphant, Victorious War-Cries
- D minor: Serious, Pious, Ruminating
- D sharp minor: Deep Distress, Existential Angst
- D sharp major: Cruel, Hard, Yet Full of Devotion
- E major: Quarrelsome, Boisterous, Incomplete Pleasure
- E minor: Effeminate, Amorous, Restless
- F major: Complaisance and calm
- E sharp minor: Obscure, Plaintive, Funereal
- F sharp major : Conquering Difficulties, Sighs of Relief
- F sharp minor: Gloomy, Passionate Resentment
- G major: Serious, Magnificent, Fantasy
- G minor: Discontent, Uneasiness
- G sharp major : Death, Eternity, Judgement
- G sharp minor : Grumbling, Moaning, Wailing
- A major : Joyful, Pastoral, Declaration of Love
- A minor : Tender, Plaintive, Pious
- A sharp major: Joyful, Quaint, Cheerful
- Bflat minor : Terrible, the Night, Mocking
- B major: Harsh, Strong, Wild, Rage
- B minor: Solitary, Melancholic, Patience

Turkish Pop Listeners Love The Mocking or Melancholic Songs The Best!!!

Followed by despair, plaintive, love-sick songs :(

Top 50 Songs Key characteristics



Top 50 Songs Major vs Minor



The Most Common Words in the Hits!

"Love" is the most common word in the hit songs' name. The first visual represents the 200 songs of the top20 artists. Second visual represents the most popular 50 tracks of 15 artists. The only word in common is "sensiz"



sensiz