Project 2

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Spotify API

Analyze from spotify

Section 1: Querying the billboard top 50 songs (2003 - 2020)

Section 2: Find the popularity

Section 3 : Data Visualization

Section 4 : Make a hit song

Section 1

Querying the Billboard Top 50 Songs (2003 - 2020)

So from the graph above, the data shows that dance-pop, hip hop, pop are the most popular genres in billboard. The result seems to reflect popular trends at some level: people love dance-pop. Back to 2000. The first time that dance-pop became a popular genre was in the 2000s. According to *The People History*, it points out that :

" for a decade filled with much suffering in terms of the September 11th attacks, two wars in the Middle East, and an economic downturn, a lot of the music had to strike a fine balance between upbeat and optimistic while still reflecting the pain that many experienced. Some of the more popular genres of the decade included Dance-Pop, Indie Rock, and Emo.”

Perhaps, people can relieve the pain from those disasters and find hope from the dance-pop. Besides, Dance-pop has strong beats with easy, uncomplicated song structures, so it helps explain why dance-pop still so popular continued 17 years..

Section2

Find the popularity

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Who do you want to search?BTS
How many times your would like to search?(limited 50 times)20
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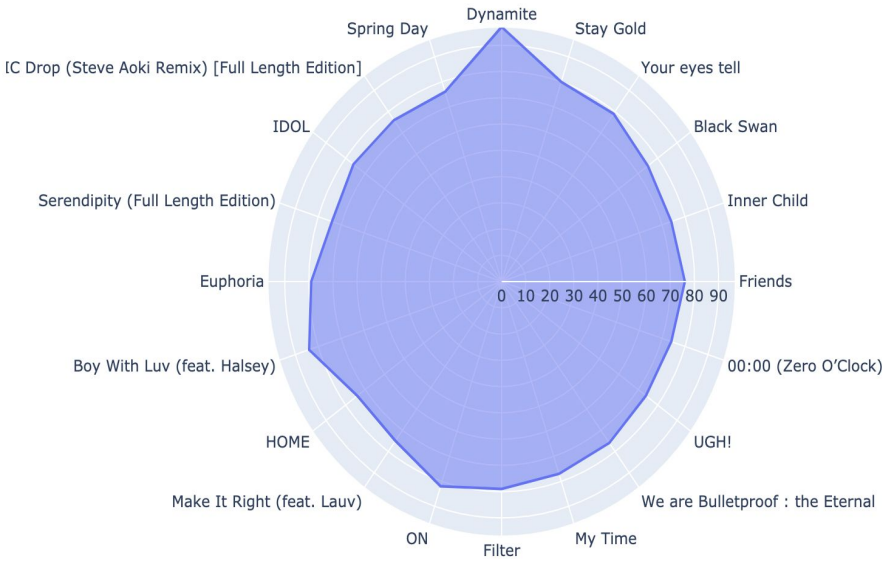
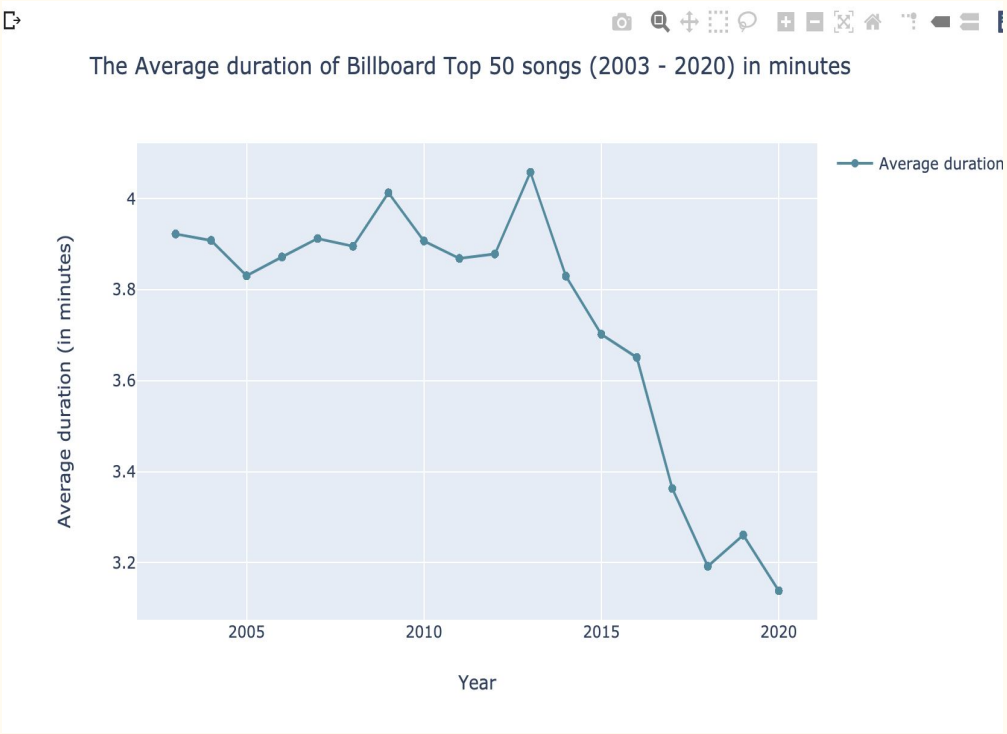


	Year	Popularity	Song
19	2020-08-28	97	Dynamite
18	2020-07-14	80	Stay Gold
17	2020-07-14	79	Your eyes tell
11	2020-02-21	75	Black Swan
16	2020-02-21	74	Inner Child
15	2020-02-21	76	Friends
14	2020-02-21	74	00:00 (Zero O'Clock)
13	2020-02-21	74	UGH!
12	2020-02-21	76	We are Bulletproof : the Eternal
10	2020-02-21	77	My Time
9	2020-02-21	79	Filter
8	2020-02-21	82	ON
7	2019-10-18	75	Make It Right (feat. Lauv)
6	2019-04-12	74	HOME
5	2019-04-12	84	Boy With Luv (feat. Halsey)
1	2018-08-24	79	Euphoria
4	2018-08-24	74	Serendipity (Full Length Edition)
3	2018-08-24	76	IDOL
2	2018-08-24	76	MIC Drop (Steve Aoki Remix) [Full Length Edition]

Section 3

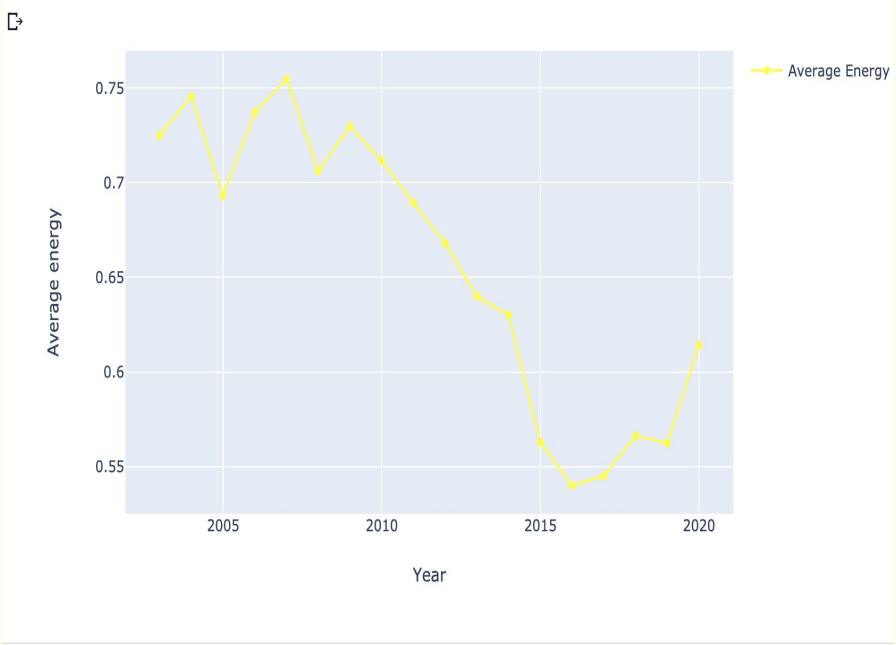
Vitualize features

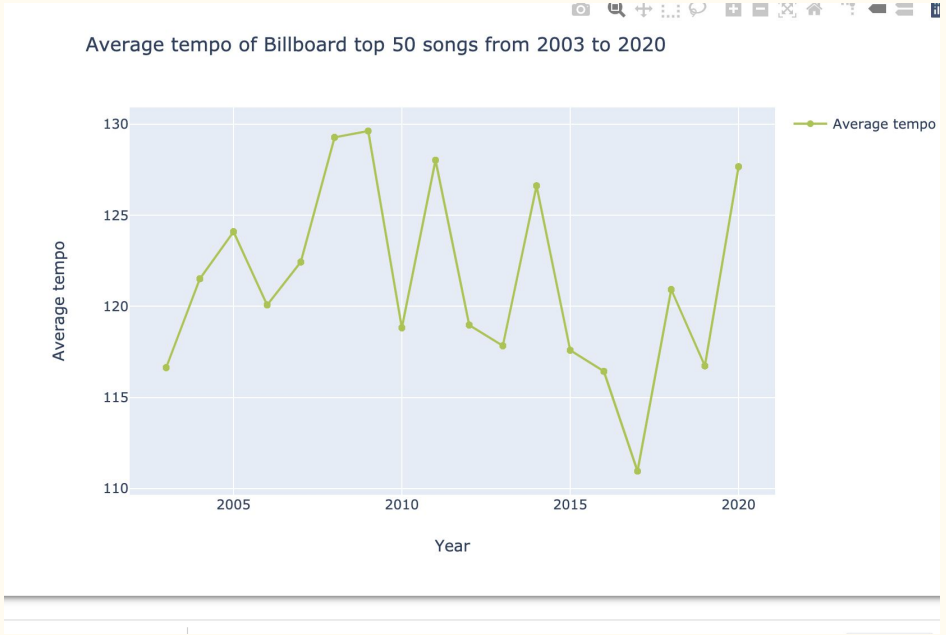


- *From the graph above, the line trend indicates that the average duration of track is getting short, typically after 2013. One main factor is streaming-media. Data from RIAA(The Record Industry Association) shows that streaming revenue is 75% of the music industry's revenue. According to the DiGital Music News, Dylan Smith points out that:*

  " Spotify is often criticized for having one of the lowest payments per stream, between 0.003*and* 0.005 per play."

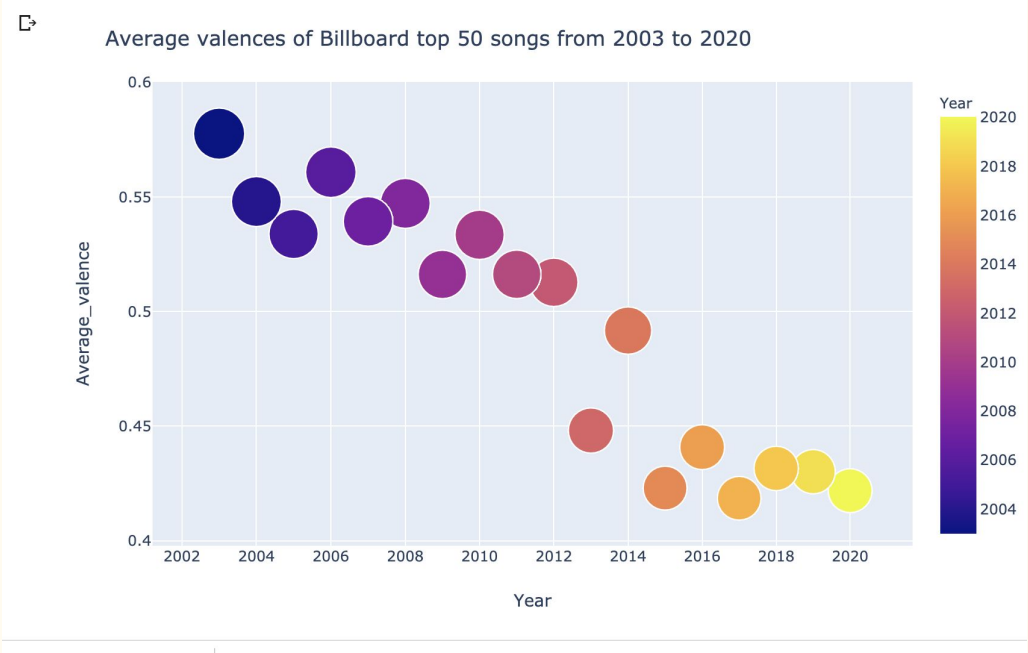
- *Within the same amount of time, shorter songs played more times, and it returns musicians a higher share of the revenue.*
- *Besides, as technology developed so fast, we are now in the era of information explosion: all kinds of information rapidly increase but are hard to manage. Some applications like tik tok are now shorter in our attention through the fragmentation propagation. At some level, our perception is changing: one minus video is longer than it used to be, as people nowadays more easily concentrate within 10 to 15 seconds.*


Average Energy
0.75
0.7
0.65
0.6
0.55
Average energy
2005
2010
2015
2020
Year


Average tempo of Billboard top 50 songs from 2003 to 2020
Average tempo
130
125
120
115
110
Average tempo
2005
2010
2015
2020
Year

- *In music theory, high energy tracks sound fast and noisy; lower energy tracks sound slow and peaceful. From the average energy of billboard top 50 songs from 2003 to 2020 above, the average energy of songs showed a downward trend, especially from 2009 to 2016. After 2017, the average energy gradually recovered. The point in 2017 indicates that pop music is getting slower and relatively quiet compared to the past ten years.*
- *Besides, the average tempo can also refect this case. On an average tempo of a billboard top 50 songs from 2003 to 2020, the mean tempo is relatively high between 2003 and 2016. It indicates that the beat of popular music is relatively fast, especially from 2008 to 2009, which is close to 130. In 2017, the average tempo reached the lowest level, indicating pop music is relatively slow in 2017.*
- *Combining those two graphs, the line trend in both average energy and tempo suggests that pop music was relatively faster and noisier before 2016. From 2016 to 2017, pop music began to be relatively slow and quiet. Then, it goes back to a relatively fast and noiser again. Several factors like social anxiety, social pressure may help to explain this situation. According to Pop music is slowing down as people feel more reflective in 'dark times', Phoebe Weston explains that:*

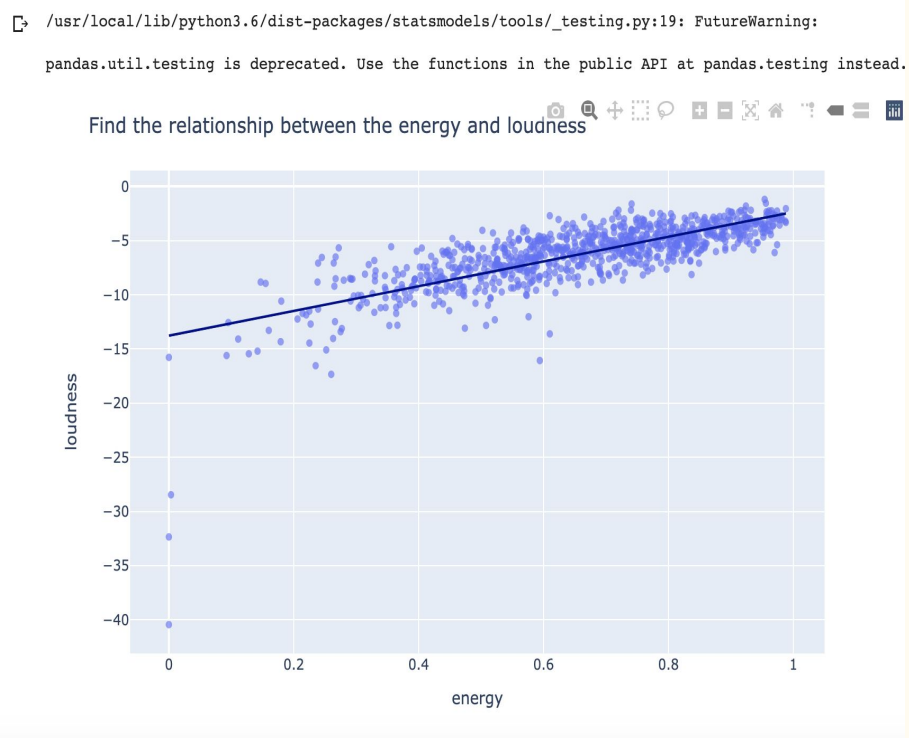
  " Slow-burning ballads could also be a sign the country is feeling more reflective. As the sociopolitical climate got darker, people did not want to hear upbeat bop".



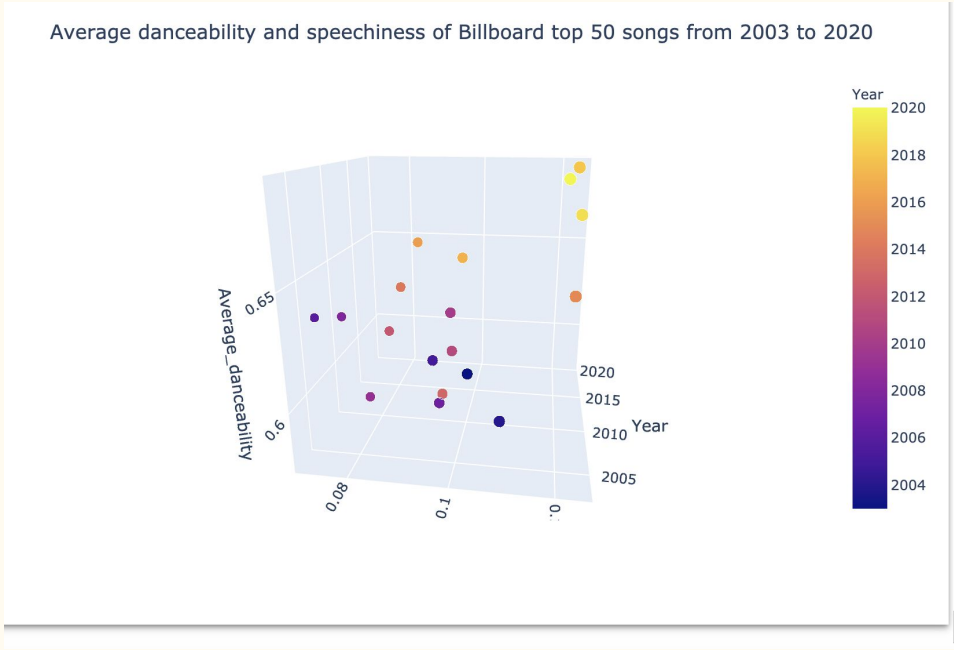
Valence describes the musical positiveness conveyed by a track. high valence sounds more positive (e.g. happy, cheerful, euphoric), while low valence sounds more negative (e.g. sad, depressed, angry). Based on the average valence of billboard top 50 songs, it shows that the average valence is in decline. This suggests that the mood of pop music in recent decades has tended towards depression. This result also proves the analysis in the previous section. What' more, according to *Is pop music really getting sadder and angrier?*, Lior Shamir points out that:

" You see a very consistent, very clear change that lyrics become angrier, more fearful, sadder, and less joyful."

- Recall the analysis in the previous section, both the average energy and the average tempo is racing from 2018 to 2020. It seems like Pop music in recent years is releasing high energy, but instead of happiness or brightness, pop music is releasing non positive energy such as anger, sadness, fear.
- Therefore, songs are like a mirror of society: what is happening right now can be reflected in the songs. Hence, the negative tone in recent pop music also reflects changes in society, and even though artists do not express the protest songs publicly about political events, they can still influence the overall mood.



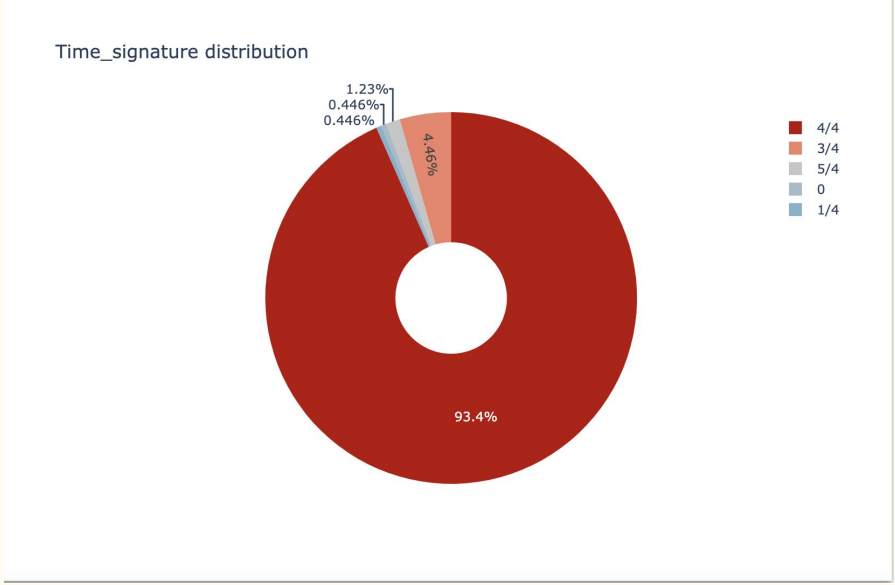
From the graph above, we find that energy and loudness has linear relashiop, more specifically, the energy and loudness has upward trend. The R^2 is around 0.558801, which is means that around 55.9% of loudness data can be explained by the energy data. No so good, as the higher the R-squared, the better the model fits the data. The graph also shows some outliers. Nevertheless, this graph still shows that as energy gets larger, the music will getting more noise as the value of loudness also getting larger.



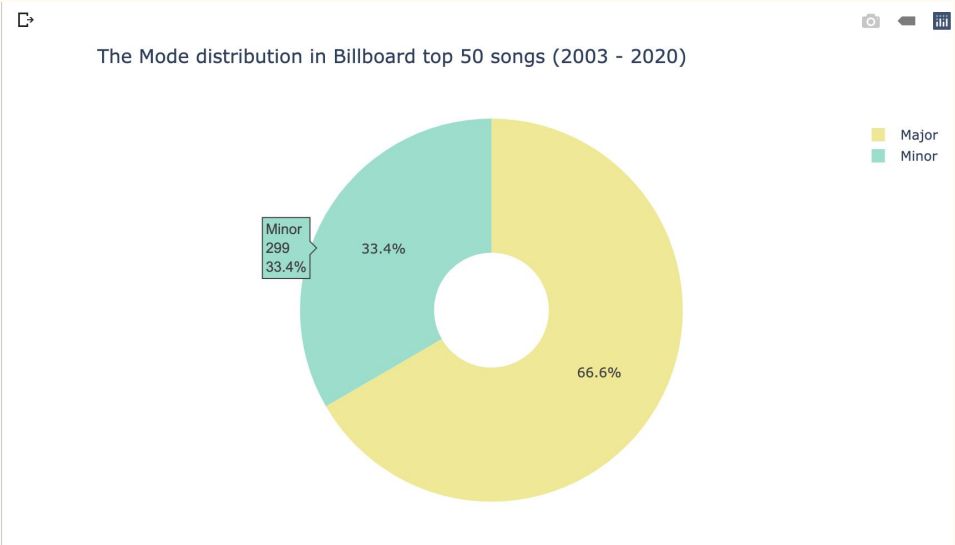
Based on the graph above, the darker the dot, the higher the value. Therefore, the average spechiness and danceability are increasing in recent years.

Section 4

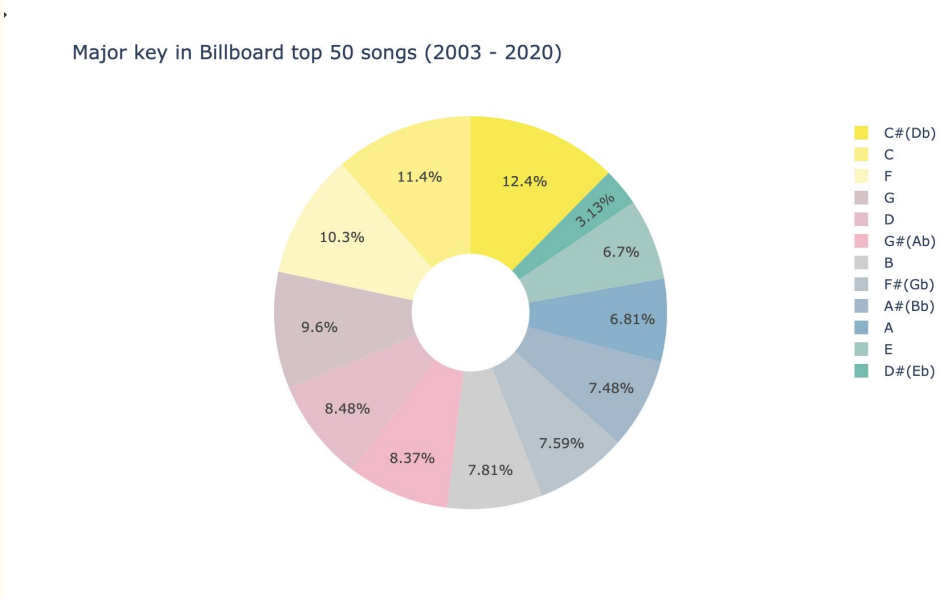
Make a Hit Song



From this pie chart we can see that majority of the time signature is 4/4, more specifically, 93.4% of the pop music use 4/4 beat, and 4.47% of pop music use 3/4 beat. Why most pop song like to use 4/4 beat? Most common answer is that rhymes based on powers of two can easily be compounded or subdivided. In this case, 4/4 can be seen as 2 bars of two, or half of a bar of eight.



Based on this pie chart, approximately 66.5% of hit songs prefer the major, and 33.5% of hit songs use the minor.



From the graph above, we can see that most hit song choose C#/ Db, approximate 12.5%, and around 11.3% hit song choose C, around 10.2% choose F, and still has 9.5% choose G.

Conclution

1. Dance-pop and hip-pop are still the mainstream among all genres.

2. The average duration of a song is getting shorter since the revenue for the artists is relative to streaming-media.

3. The pop songs used to get slow and peaceful from 2016 to 2017, and later it back to fast and noise in recent years. However, instead of release positive energy, the pop song in recent years releases more negative energy.

4. The secret of making a hit song is:

4/4 (time signature) + Major + C/ C#/Db/F (key).

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