

Spotify Analysis: What Makes Up a Popular Song in 2020?

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This analysis explores what key musical characteristics make up the top 10 songs in a datapull of 30,000 songs from the Spotify API.

The data used in this analysis comes from Kaggle's [30000 Spotify Songs Dataset](#). The API pull that created this dataset was done in late January of 2020.

Buckets are employed in this analysis to enhance comprehension of trends within the dataset and to improve the readability of visualizations. These buckets are defined by rounding numbers to the nearest ten (10) or tenth (0.1), depending on the number.

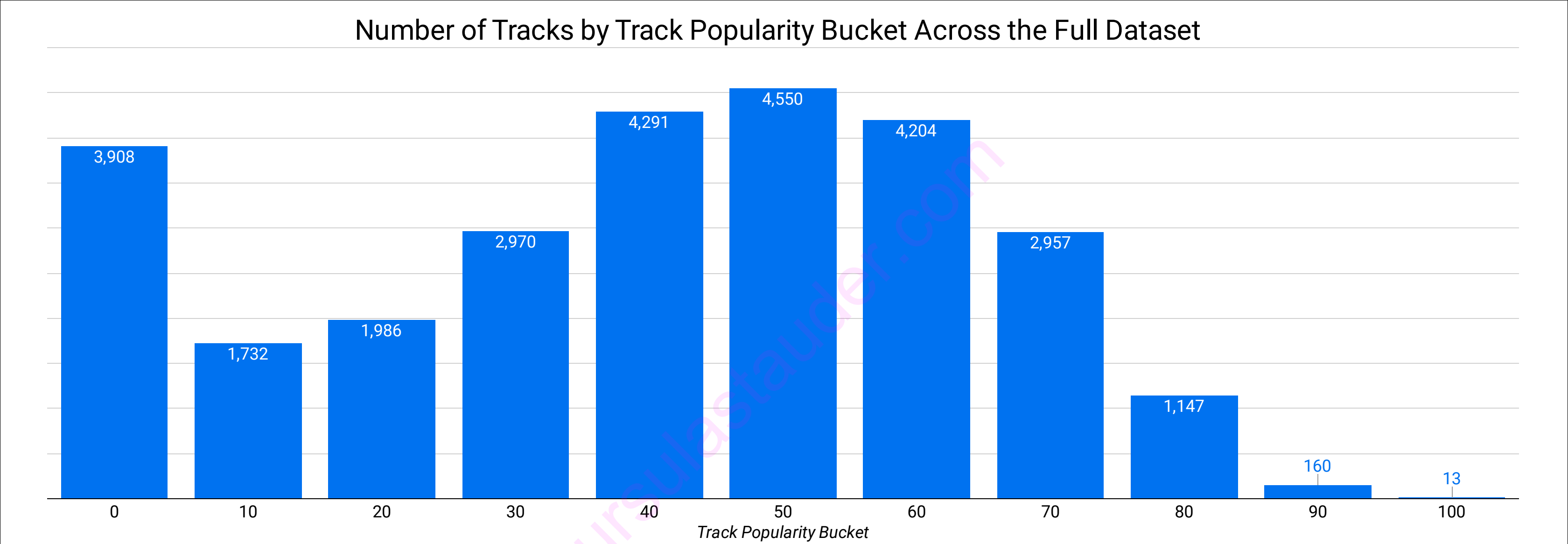
High Level > What are the top songs in terms of popularity?

Tracks Ordered by Popularity			
	Track Name	Track Artist	Track Popularity ▼
1.	Tusa	KAROL G	98
2.	The Box	Roddy Ricch	98
3.	Memories	Maroon 5	98
4.	Blinding Lights	The Weeknd	98
5.	Falling	Trevor Daniel	97
6.	Don't Start Now	Dua Lipa	97
7.	everything i wanted	Billie Eilish	97
8.	RITMO (Bad Boys For Life)	The Black Eyed Peas	96
9.	Yummy	Justin Bieber	95
10.	bad guy	Billie Eilish	95

Track popularity is a score from Spotify that can range from 0 to 100, where higher scores equate to more popularity.

When arranging the dataset of 30,000 songs, the above 10 songs are the top in terms of popularity. Each of these top 10 songs holds a popularity score equal to or exceeding 95.

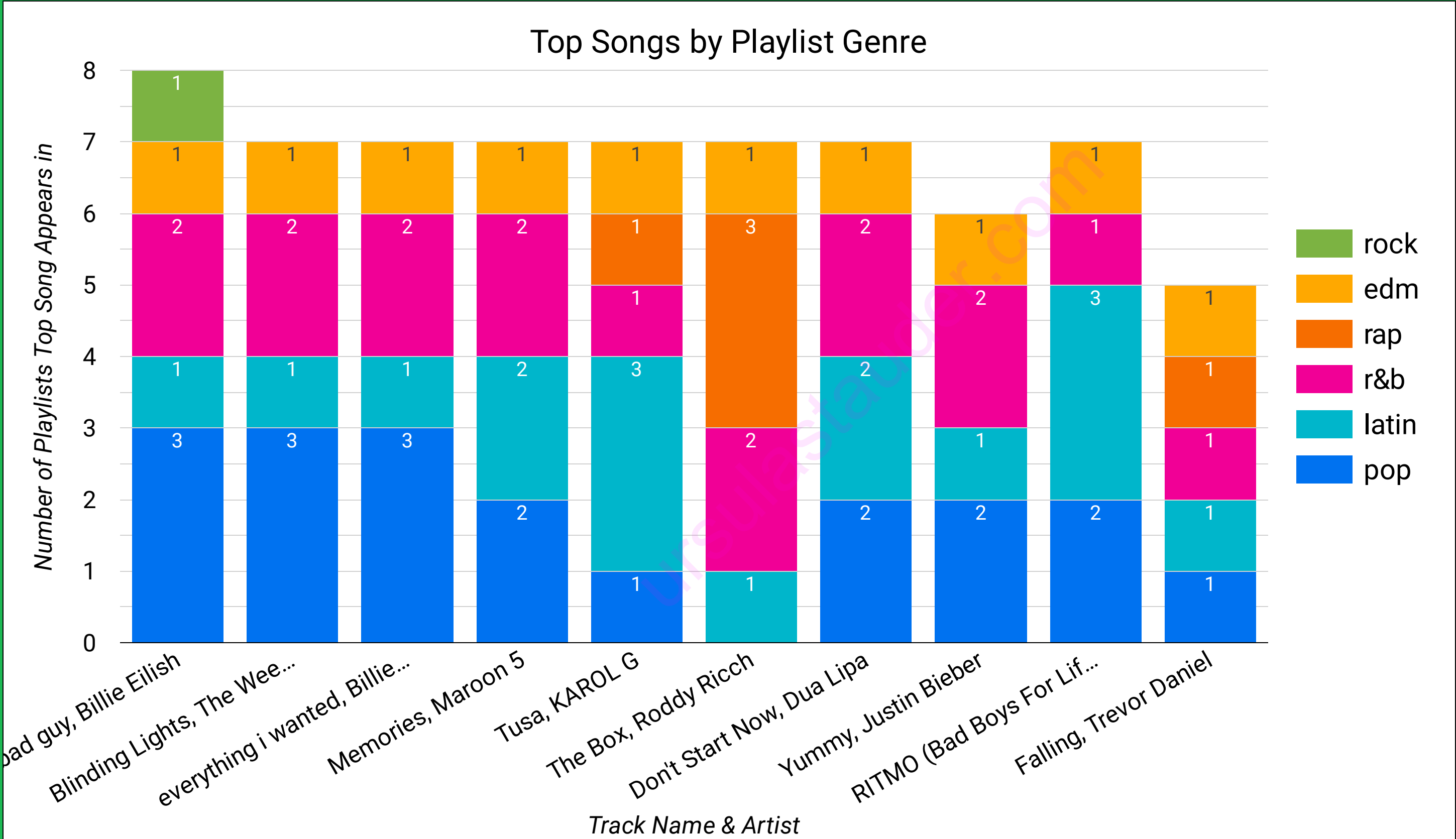
High Level > What are the most frequently occurring track popularity scores?



When reviewing the complete dataset of 30,000 songs, the most frequently occurring track popularity range is 50, encompassing scores between 45 to 54 when rounded to the nearest ten.

The top 10 songs, in terms of track popularity, fall within the 100 bucket, characterized by scores between 95 and 100. These 10 tracks are a part of only 13 top popularity songs out of the 30,000 songs. Therefore, the 13 tracks within the 100 bucket constitute the top 0.043% of tracks based on popularity!

Genres > Which types of playlists feature the top popular songs?



Each top song features in at least 1 EDM, R&B, or Latin playlist.

Even though there are more unique pop playlists containing top popular songs, not all of the top songs made it into a pop playlist. *The Box by Roddy Ricch* is the sole song excluded from a pop playlist.

When looking at playlist genre range, *bad guy by Billie Eilish*, *Tusa by KAROL G*, and *Falling by Trevor Daniel* stand out as the only 3 songs spanning across 5 different playlist genres.

All other songs span across 4 different playlist genres.

Song Duration > Do the top songs have similarities in duration?

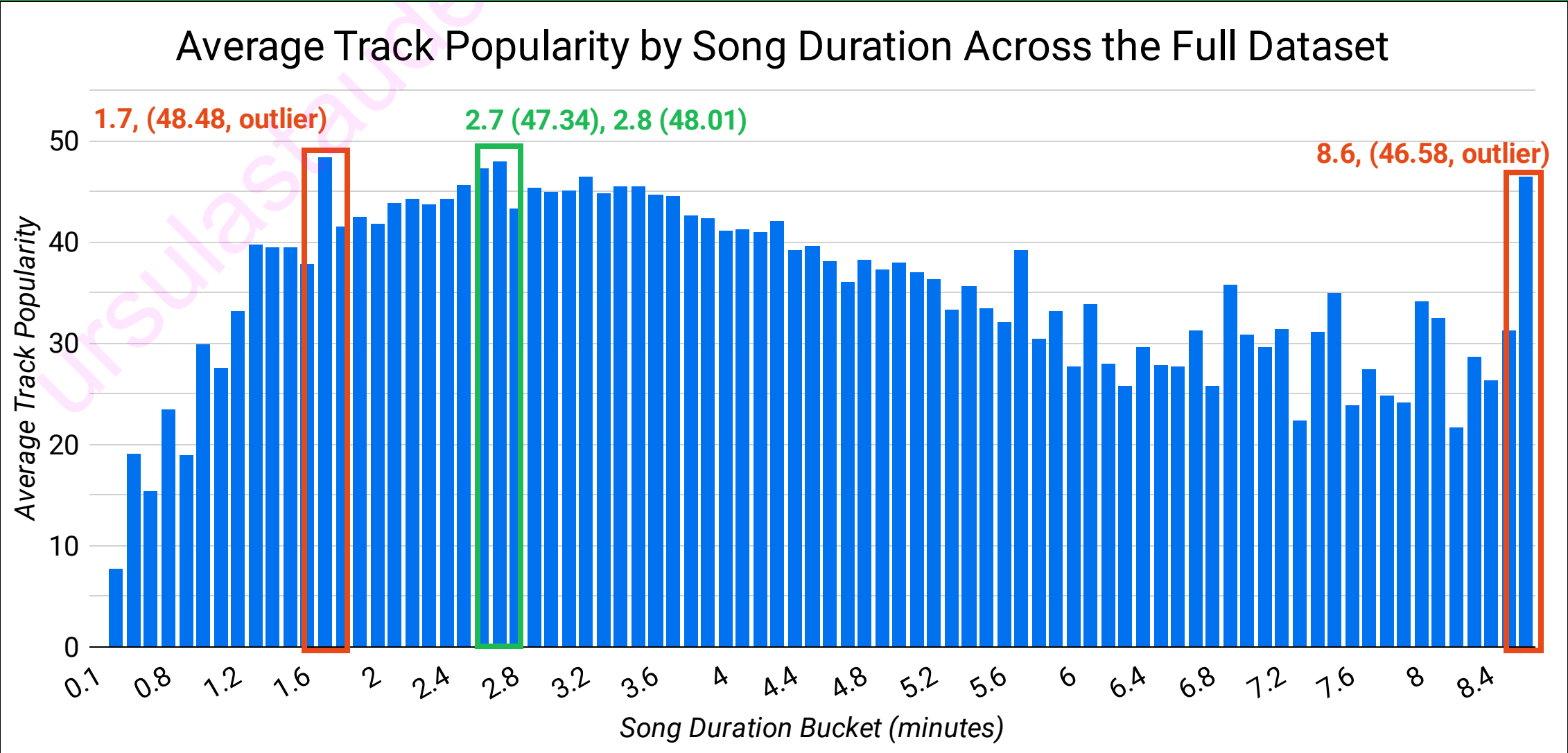
Left:

Among the top 10 songs ranked by track popularity, *everything i wanted* by Billie Eilish holds the longest duration, playing for a total of 4.09 minutes. 8 out of the top 10 songs by track popularity range from 3 to 3.7 minutes in length.

Right:

When plotting the average track popularity against the song duration in minutes across the entire dataset, it becomes evident that song durations of 1.7 and 8.6 minutes appear as outliers, exhibiting notably high average track popularity. Excluding these outliers, the song durations of 2.7 and 2.8 minutes demonstrate the highest average track popularity, averaging to 47.34 and 48.01. Interestingly, it's noteworthy that the top songs in terms of popularity have, on average, longer song durations compared to the overall dataset averages.

Duration in Minutes of Top 10 Popular Songs	
Track Name & Artist	Duration (Minutes)
The Box, Roddy Ricch	3.28
Tusa, KAROL G	3.35
Don't Start Now, Dua Lipa	3.05
Falling, Trevor Daniel	2.66
Memories, Maroon 5	3.16
RITMO (Bad Boys For Life), The Black Eyed Peas	3.7
everything i wanted, Billie Eilish	4.09
bad guy, Billie Eilish	3.23
Yummy, Justin Bieber	3.51
Blinding Lights, The Weeknd	3.36



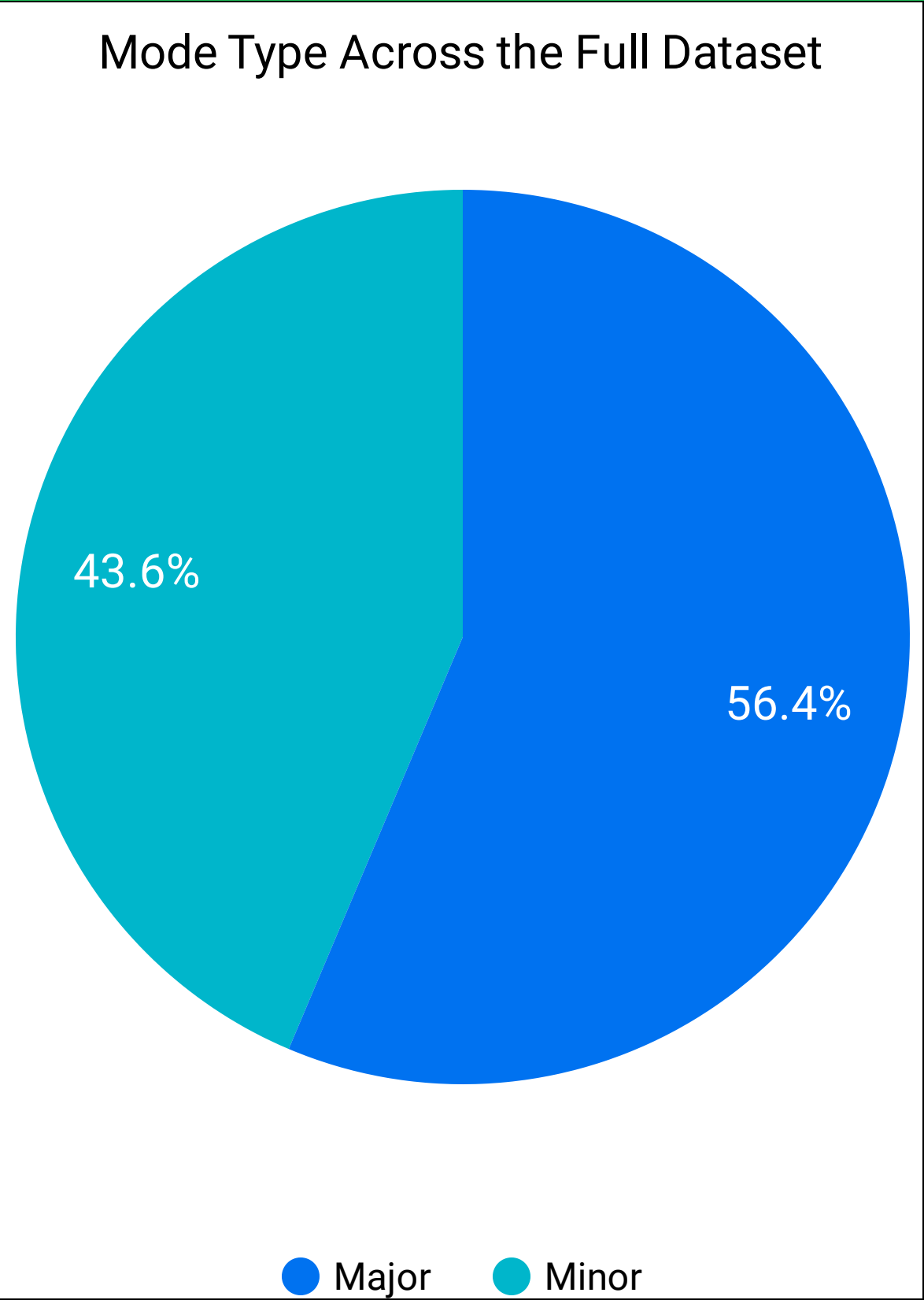
Mode > Are the top songs written in major or minor scales?

Mode of Top 10 Popular Songs				
	Track Name	Track Artist	Mode	Popularity ▾
1.	Tusa	KAROL G	Major	98
2.	The Box	Roddy Ricch	Minor	98
3.	Memories	Maroon 5	Major	98
4.	Blinding Lights	The Weeknd	Major	98
5.	Falling	Trevor Daniel	Minor	97
6.	Don't Start Now	Dua Lipa	Minor	97
7.	everything i wanted	Billie Eilish	Minor	97
8.	RITMO (Bad Boys For Life)	The Black Eyed Peas	Minor	96
9.	Yummy	Justin Bieber	Minor	95
10.	bad guy	Billie Eilish	Major	95

The *mode* of a track refers to whether it uses a major or minor scale as the basis for its melody and harmony.

Above:
6 out of the top 10 popular songs are written in the minor scale, while the remaining 4 are written in the major scale.

Right:
When examining the mode proportions across the entire dataset, it's evident that a majority of the songs are written in a major key. However, it's interesting to note that this doesn't seem to reflect what we observe in the sample of top 10 songs by popularity, as 60% of these top songs are written in a minor key.



Danceability > Do the top songs have good dance potential?

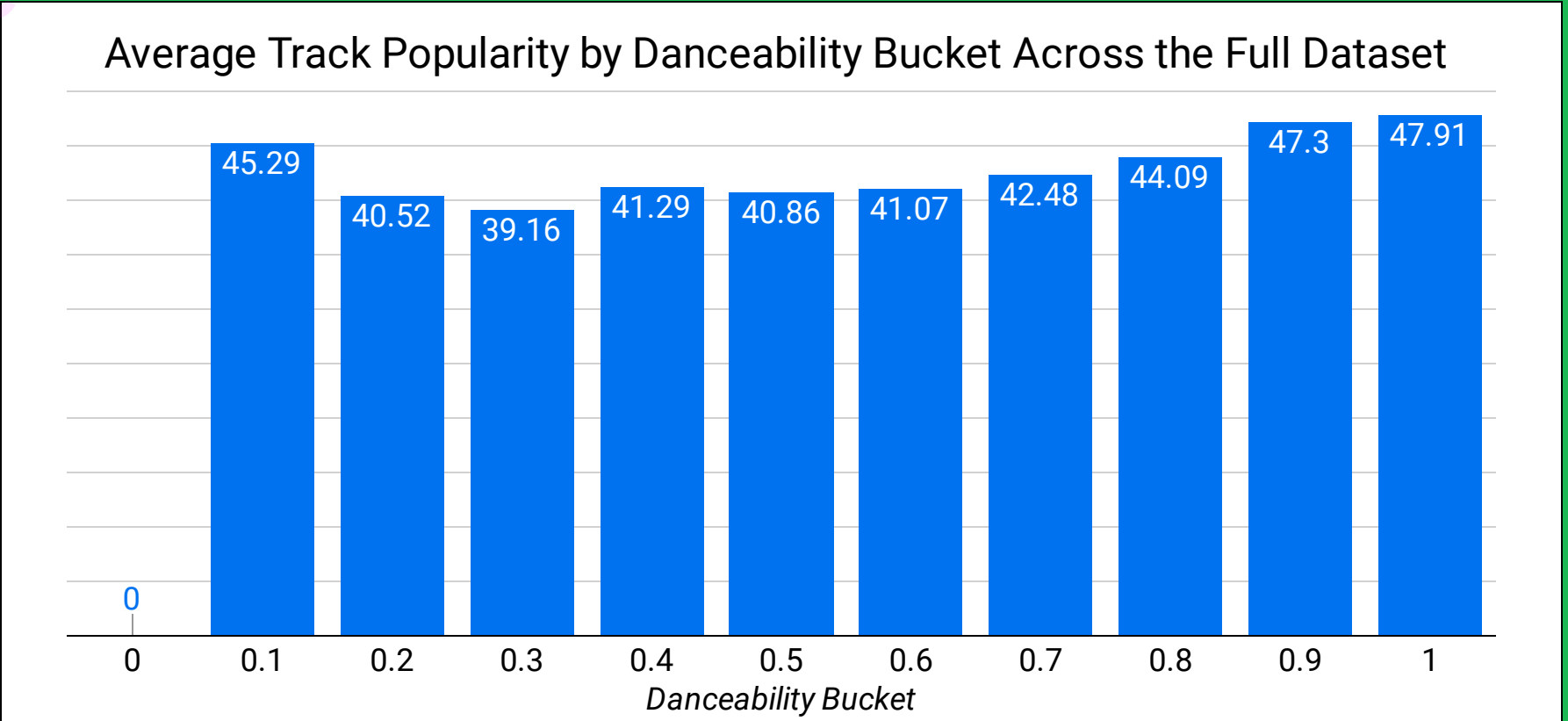
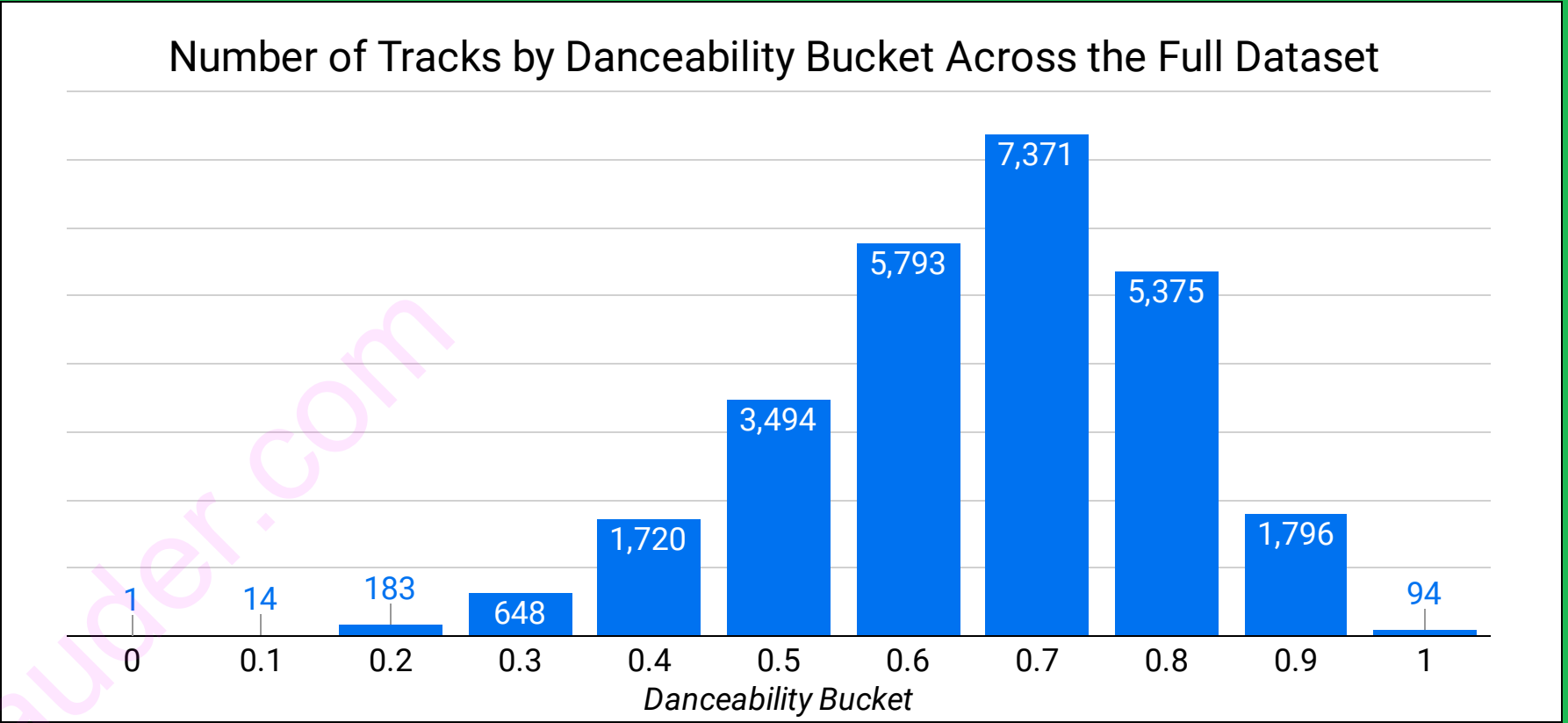
Danceability of Top 10 Popular Songs	
Track Name & Artist	Danceability ▾
The Box, Roddy Ricch	0.9
Tusa, KAROL G	0.8
Don't Start Now, Dua Lipa	0.79
Falling, Trevor Daniel	0.78
Memories, Maroon 5	0.76
RITMO (Bad Boys For Life), The Black Eyed Peas	0.72
everything i wanted, Billie Eilish	0.7
bad guy, Billie Eilish	0.7
Yummy, Justin Bieber	0.66
Blinding Lights, The Weeknd	0.51

Danceability rates how suitable a track is for dancing from 0.0 to 1.0 based on its tempo, rhythm stability, beat strength, and rhythmic regularity. Higher scores indicate a track contains musical elements that make it very danceable.

Above:
8 out of the top 10 popular songs have a danceability score of 0.7 or higher. This inclination towards higher danceability scores within the top songs underscores a trend where these tracks are crafted to be more rhythmically engaging and conducive to movement, potentially contributing to their widespread popularity among listeners.

Top Right:
When examining the entire dataset, the most prevalent danceability bucket is 0.7, encompassing scores between 0.65 and 0.74. Notably, 80% of the top 10 songs fall into this bucket or higher.

Bottom Right:
When examining the entire dataset, the danceability buckets of 0.9 and 1 have the highest average track popularity. This correlation aligns with expectations, as popular, mainstream music typically finds its place in settings that demand dancing, such as clubs and parties.



Valence > Are the top songs extreme in emotion?

Valence of Top 10 Popular Songs	
Track Name & Artist	Valence ▾
Don't Start Now, Dua Lipa	0.68
RITMO (Bad Boys For Life), The Black Eyed Peas	0.67
The Box, Roddy Ricch	0.64
Memories, Maroon 5	0.58
Tusa, KAROL G	0.57
bad guy, Billie Eilish	0.56
Yummy, Justin Bieber	0.5
Blinding Lights, The Weeknd	0.35
everything i wanted, Billie Eilish	0.24
Falling, Trevor Daniel	0.24

Valence measures the musical positiveness of a track on a scale from 0.0 to 1.0. Higher scores indicate more upbeat, positive qualities while lower scores indicate more downbeat, negative qualities.

Above:

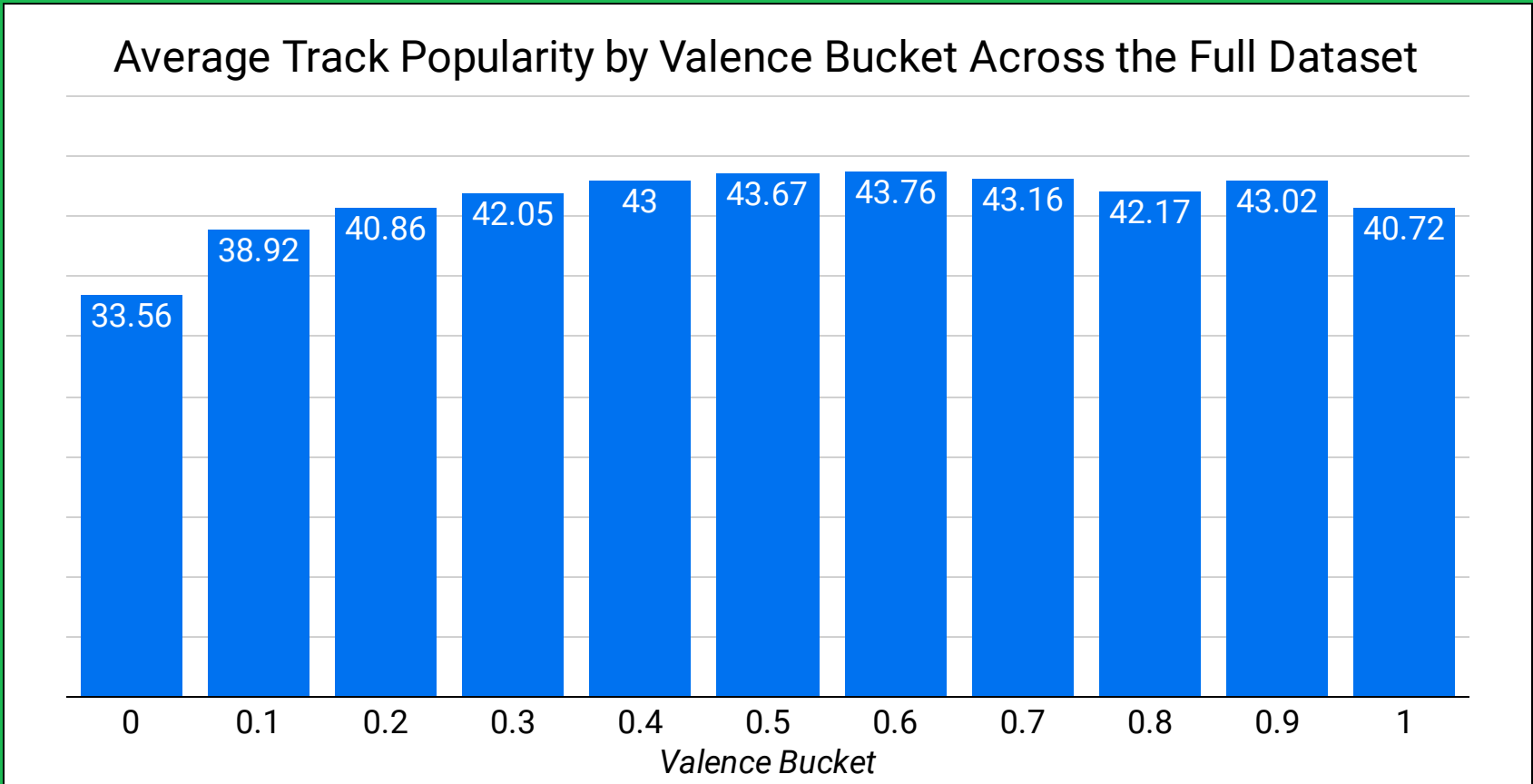
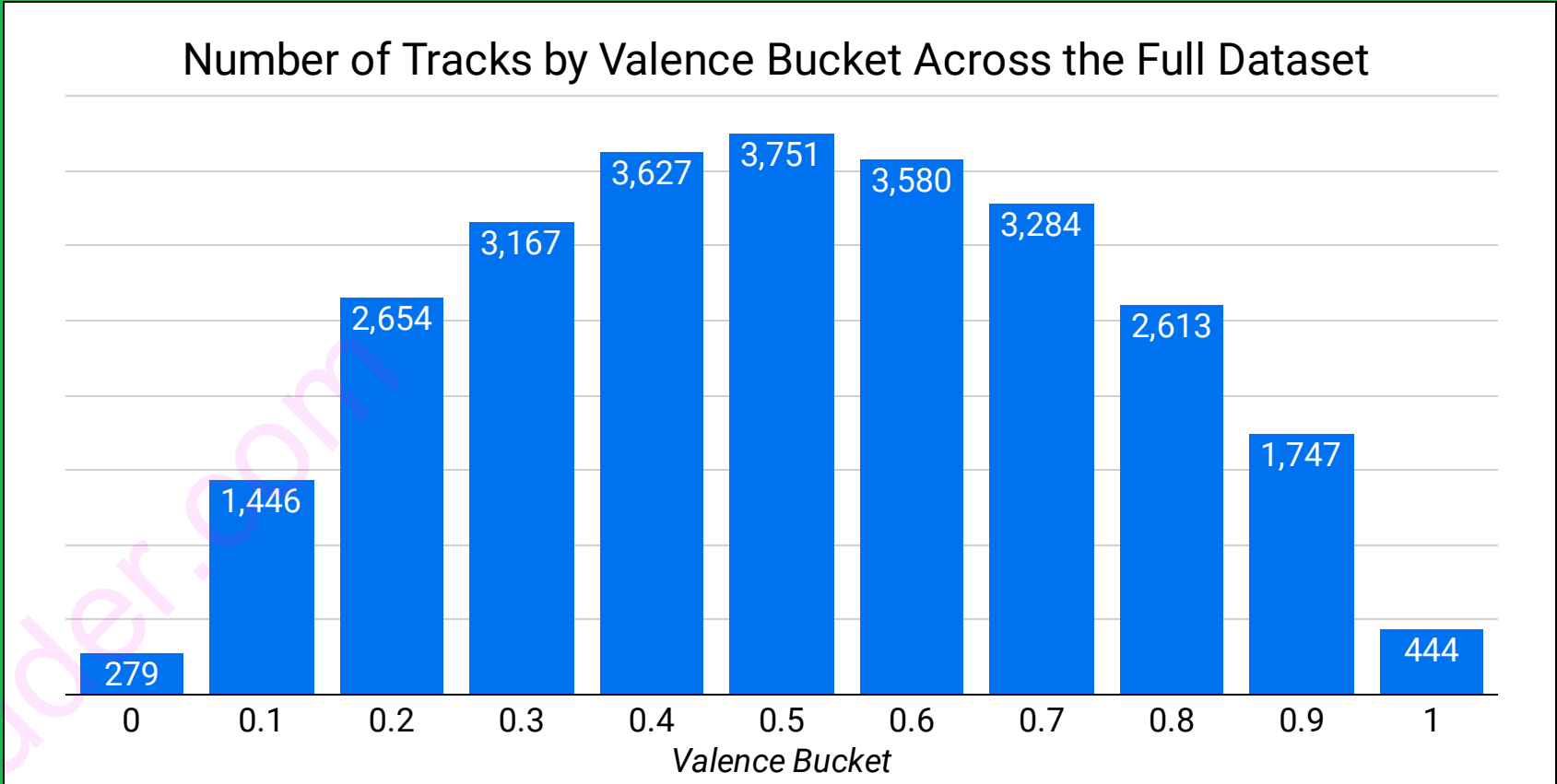
The presence of 7 out of the top 10 popular songs falling within the valence score range of 0.5 to 0.7 suggests that these songs tend to express a balanced emotional tone, leaning neither strongly towards positive nor negative emotions

Top Right:

When examining the entire dataset, the most common valence bucket is 0.5, encompassing scores between 0.45 and 0.54. It's intriguing to note the prevalence of songs within this range, suggesting that perhaps artists aim to create music that doesn't lean excessively toward either negative or positive emotions, aiming for a broader audience relatability.

Bottom Right:

When examining the entire dataset, the valence buckets of 0.5 and 0.6 exhibit the highest average track popularity. This aligns with expectations as songs with a valence score right in the middle tend to strike a balance between positive and negative emotions. This mixed emotional tone has the potential to appeal to a broader audience, possibly contributing to their increased popularity.



Tempo > What's the BPM?

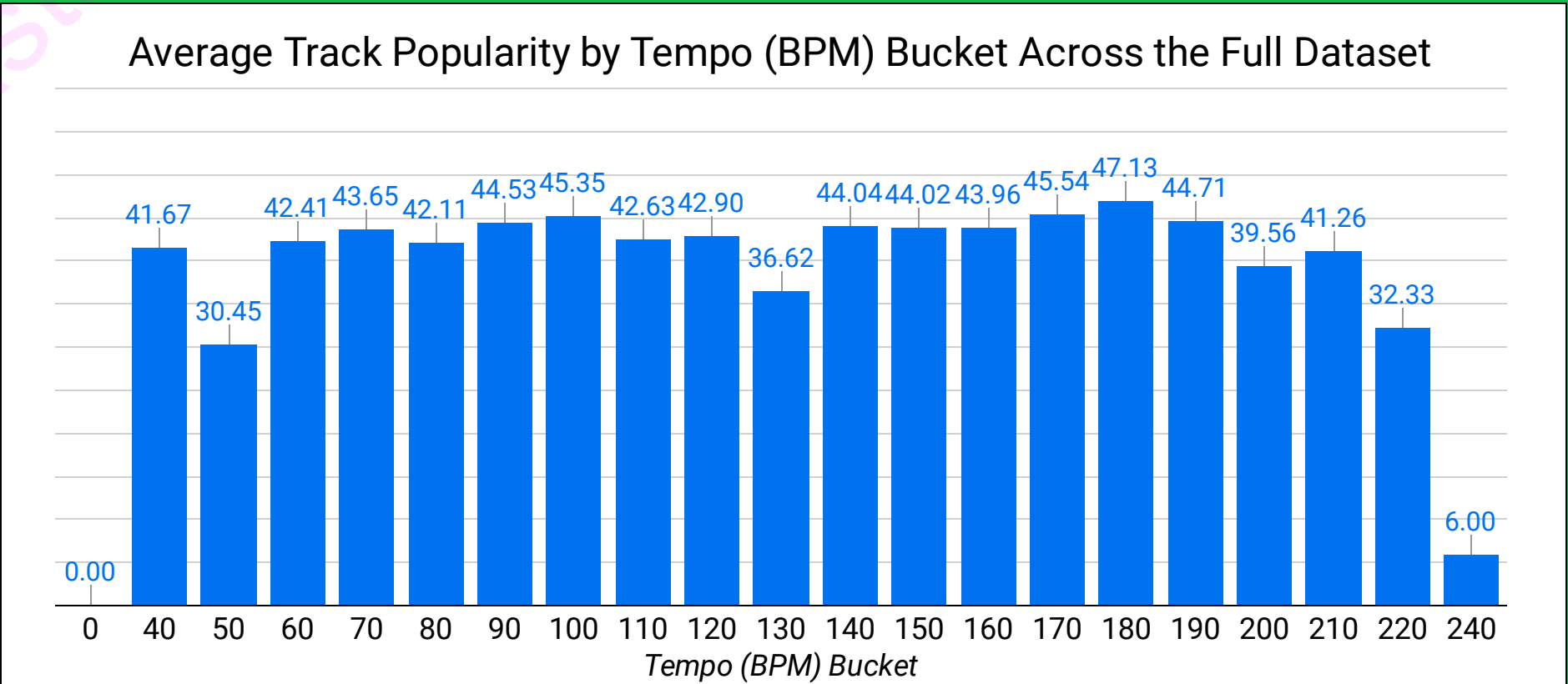
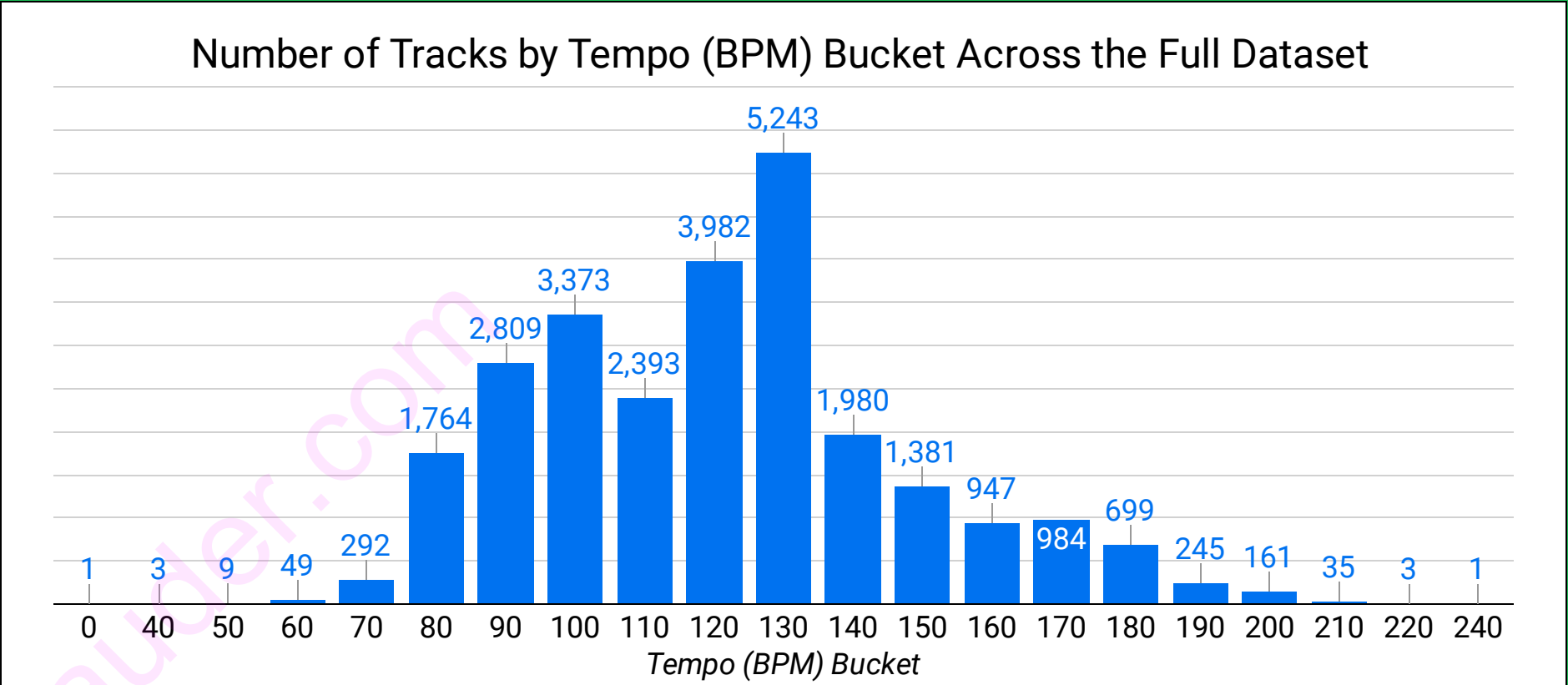
Tempo (BPM) of Top 10 Popular Songs	
Track Name & Artist	Tempo (BPM) ▾
Blinding Lights, The Weeknd	171.02
Yummy, Justin Bieber	145.84
bad guy, Billie Eilish	135.13
Falling, Trevor Daniel	127.09
Don't Start Now, Dua Lipa	123.94
everything i wanted, Billie Eilish	120.01
The Box, Roddy Ricch	116.97
RITMO (Bad Boys For Life), The Black Eyed Peas	104.99
Tusa, KAROL G	101.09
Memories, Maroon 5	91.02

Tempo is the estimated speed of a track in beats per minute (BPM). It is derived from the average rate of beats in the music

Above:
9 out of 10 top songs have a BPM above 100. For reference, *Stayin' Alive by the Bee Gees* has a BPM of 104.

Top Right:
When looking across the full dataset, the most common tempo bucket tracks fall into is 130, which includes BPMs between 125 and 134. The prevalence of songs in the 130 BPM tempo bucket could be interesting because this tempo often resonates with energetic and danceable music. It might indicate a trend where a significant portion of music in this dataset is tailored for upbeat and lively rhythms, potentially reflecting certain preferences or trends in popular music.

Bottom Right:
When looking across the full dataset, the tempo bucket of 180 has the highest average track popularity. This is interesting because this tempo often aligns with energetic and fast-paced music, which could suggest a preference for more lively tracks among audiences, potentially contributing to their higher average track popularity.



Wrap Up

Key Takeaways:

- The top 10 popular songs are part of the 13 songs that fall into the top popularity bucket, constituting a mere 0.04% of the 30,000-song dataset.
- Top songs by popularity span EDM, R&B, Latin, Rock, and Pop playlists, showcasing diverse genre presence.
- Almost every top popular song ranges from 3 to 3.7 minutes in length, slightly longer than the top durations when considering average track popularity across the entire dataset (2.6 to 2.7 minutes).
- 60% of the top 10 popular songs are in the minor scale, while about 56% of the entire dataset contains songs written in the major scale.
- Almost all top popular songs exhibit high danceability scores of 0.7 or above, suggesting their engaging rhythms can impact popularity. Additionally, they have a valence score between 0.5 and 0.7, implying a balanced tone that can attract a wider audience.
- 90% of the top popular songs have a BPM of over 100.

Conclusion:

While the top songs exhibit trends such as diverse genre presence, consistent track duration, prevalent minor scale usage, high danceability scores, balanced tones, and BPMs exceeding 100, various other factors can significantly influence a song's popularity. These include, but are not limited to, marketing strategies, music label support, established fanbase, social media impact, and more! Despite these commonalities among top songs, a comprehensive analysis involving these unexplored variables would offer a more nuanced understanding of what truly drives a song's popularity.