



Spotify and Billboard Hot 100 Comparison

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Why?

- ▶ I wanted to explore the trends in popular music throughout the decades.

Questions

- ▶ What artist is the most popular?
- ▶ Are newer artists more popular?
- ▶ What is currently the most popular genre?
- ▶ Have popular genres changed over time?
- ▶ Are there still old songs with high popularity?
- ▶ Has music become more explicit over time?
- ▶ Is explicit music more popular?

Technologies Used

- ▶ Excel – data cleaning
- ▶ Python- data cleaning, exploratory data analysis, and graphs
- ▶ SQL – SQLdf in Python for exploratory data analysis
- ▶ PowerPoint-presentation



Data Sources

- ▶ [Data.world - Billboard Hot 100](#) - Billboard Hot 100 data dating back to the 1950's.
- ▶ [Spotify API](#) - 3302 unique artists & 4110 unique tracks

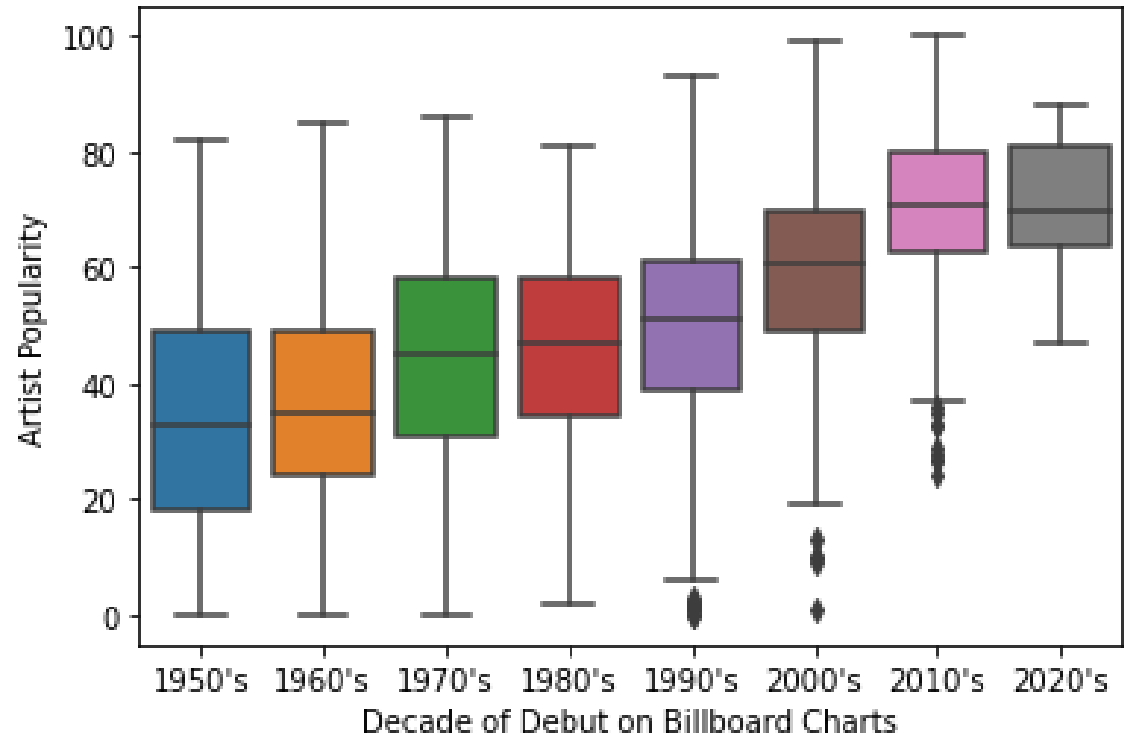
Artist Popularity

- ▶ Who is the most popular artist?
- ▶ Are newer artists more popular?
- ▶ Are there older artists who still have high popularity?

Popularity

- ▶ The Spotify Popularity Index is a 0-to-100 score that ranks how popular an artist is relative to other artists on Spotify at the current time.
- ▶ More recent artists are going to tend to have higher popularity scores.
- ▶ There is both a song and artist popularity score.

- ▶ Newer artists on average are more popular than older artists.



Artist Popularity by decade

- ▶ Older artists are not necessarily less popular.

1950's

Performer	Artist_Popularity	Year
Elvis Presley	82.0	1959
Frank Sinatra	82.0	1959
Bing Crosby	79.0	1958
Nat King Cole	78.0	1959
Brenda Lee	76.0	1959

1960's

Performer	Artist_Popularity	Year
The Beatles	85.0	1964
The Rolling Stones	79.0	1964
Creedence Clearwater Revival	79.0	1968
Stevie Wonder	78.0	1964
Led Zeppelin	78.0	1969

1970's

Performer	Artist_Popularity	Year
Queen	86.0	1975
Elton John	86.0	1970
Michael Jackson	84.0	1971
Fleetwood Mac	81.0	1970
ABBA	81.0	1974

1980's

Performer	Artist_Popularity	Year
Metallica	84.0	1989
Guns N' Roses	81.0	1988
Whitney Houston	79.0	1985
Madonna	79.0	1983
U2	79.0	1983

Continued

- ▶ Popularity rises throughout the decades.
- ▶ Bad Bunny is the most popular artist.

2000's

Performer	Artist_Popularity	Year
Taylor Swift	99.0	2006
Drake	97.0	2009
Justin Bieber	92.0	2009
Shakira	91.0	2001
Kanye West	91.0	2003

2010's

Performer	Artist_Popularity	Year
Bad Bunny	100.0	2019
The Weeknd	97.0	2012
SZA	95.0	2017
21 Savage	94.0	2017
BTS	93.0	2017

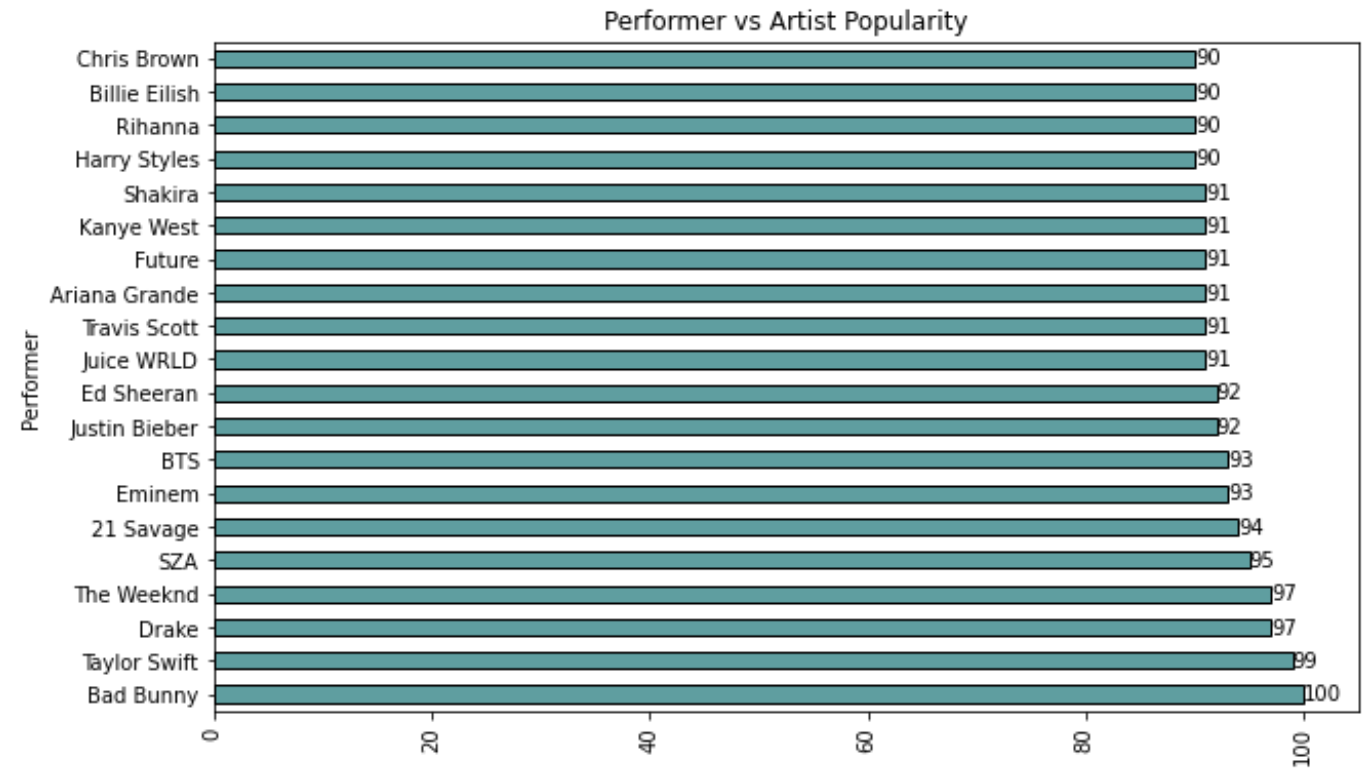
1990's

Performer	Artist_Popularity	Year
Eminem	93.0	1999
JAY-Z	85.0	1996
Mariah Carey	84.0	1990
Red Hot Chili Peppers	84.0	1991
Train	84.0	1999

2020's

Performer	Artist_Popularity	Year
Bad Bunny	100.0	2020
The Weeknd	97.0	2020
Drake	97.0	2020
BTS	93.0	2020
Justin Bieber	92.0	2020

- ▶ Bad Bunny is most popular artist.
- ▶ Only 20 artists with popularity ≥ 90 .



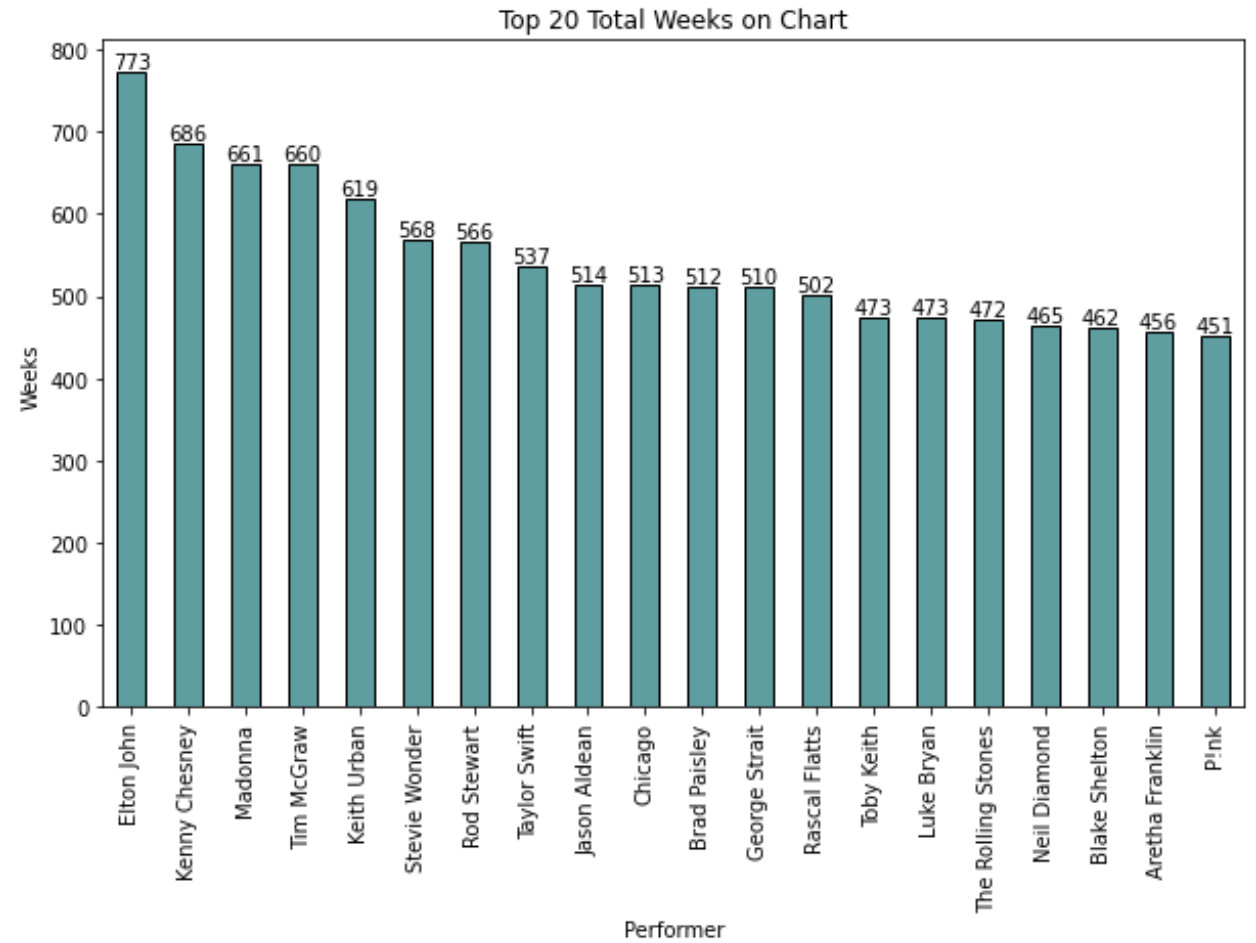
Takeaways

- ▶ Artist Popularity on average goes up over the decades.
- ▶ There are only 20 artists with an Artist Popularity ≥ 90 .
- ▶ Bad Bunny is most popular artist.
- ▶ While older artists on average are less popular there are still older artists with very high popularity.

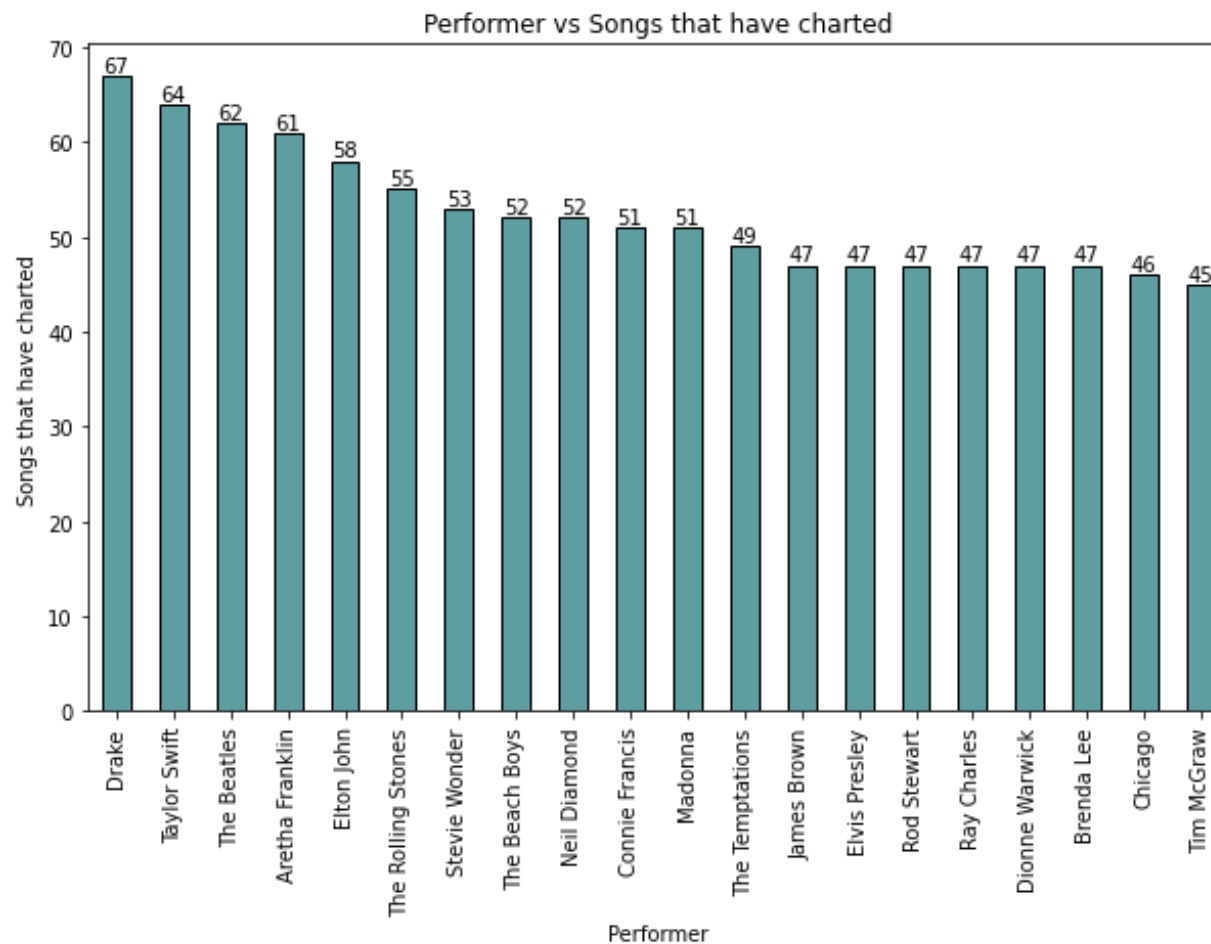
Billboard Hot 100

- ▶ Who has had the most weeks on the chart?
- ▶ Who has had the most songs on the chart?

- ▶ Includes all songs by an artist that have charted.
- ▶ Some songs chart simultaneously.



- ▶ Top 20 artists in terms of how many songs have charted.
- ▶ Most of these artists have around 50 songs.
- ▶ This does not include collaborations.



Takeaways

- ▶ Elton John holds the most total weeks on the chart with 773 weeks.
- ▶ Drake holds the most songs that have charted with 67 songs.

Genre

- ▶ Have genres changed over time?
- ▶ What is currently the most popular genre?
- ▶ What is most frequent genre?

Genre

- ▶ Spotify has 2285 unique genres.
- ▶ Genre is assigned to artist, not specific song.

Most frequent Genres by decade

- Rock and Roll and Adult Standards are most frequent in 50's and 60's.
- Mellow Gold tops the 70's and 80's.
- Mellow Gold contains artists like John Mellencamp, James Taylor, and the Doobie Brothers.
- Rock and its subgenres take up most of the 70's and 80's.

1950's

Genre	
rock-and-roll	126
adult standards	110
rockabilly	99
doo-wop	65
rhythm and blues	51
deep adult standards	42
lounge	39
soul	31
bubblegum pop	28
easy listening	26
brill building pop	14
merseybeat	10
classic rock	9
vocal jazz	8
mellow gold	8
classic soul	8
southern soul	8
arkansas country	8
nashville sound	8
yodeling	7

1960's

Genre	
adult standards	834
rock-and-roll	660
soul	547
bubblegum pop	473
rockabilly	432
classic soul	393
rhythm and blues	360
lounge	265
merseybeat	262
doo-wop	245
southern soul	244
mellow gold	232
folk rock	214
funk	209
easy listening	187
classic rock	180
motown	180
quiet storm	169
brill building pop	162
rock	126

1970's

Genre	
mellow gold	595
soft rock	559
classic rock	416
adult standards	387
folk rock	363
soul	356
funk	323
quiet storm	323
country rock	318
disco	305
album rock	300
rock	297
singer-songwriter	297
classic soul	281
bubblegum pop	247
blues rock	197
hard rock	164
art rock	164
southern soul	137
yacht rock	136

1980's

Genre	
soft rock	696
mellow gold	659
album rock	492
new wave pop	454
rock	448
classic rock	422
hard rock	235
new romantic	225
singer-songwriter	215
disco	204
quiet storm	203
adult standards	194
country rock	191
folk rock	181
new wave	166
art rock	164
heartland rock	155
funk	146
pop rock	140
soul	131

Continued

- Urban contemporary is a genre that includes the likes of Rihanna, Chris Brown, and Kelly Rowland.
- Quiet storm is a subgenre of R&B.
- Notable artists are Smokey Robinson, Commodores, and the Spinners.
- Mellow Gold still has a place in the 90's.
- Rap and Hip Hop become very frequent in the 2000's, 2010's, and 2020's.

1990's

Genre	
urban contemporary	242
contemporary r&b	208
r&b	196
rock	182
pop rock	159
hip hop	150
dance pop	145
hip pop	138
new wave pop	132
quiet storm	127
soft rock	125
neo soul	124
mellow gold	117
new jack swing	113
album rock	99
country	88
permanent wave	75
country rock	74
classic rock	73
hard rock	69

2000's

Genre	
dance pop	305
country	250
country road	221
contemporary country	217
pop	199
urban contemporary	180
r&b	149
pop rock	125
hip pop	124
hip hop	117
post-teen pop	111
alternative metal	108
pop rap	102
rap	98
neo mellow	92
neo soul	86
nu metal	83
rock	81
post-grunge	81
contemporary r&b	77

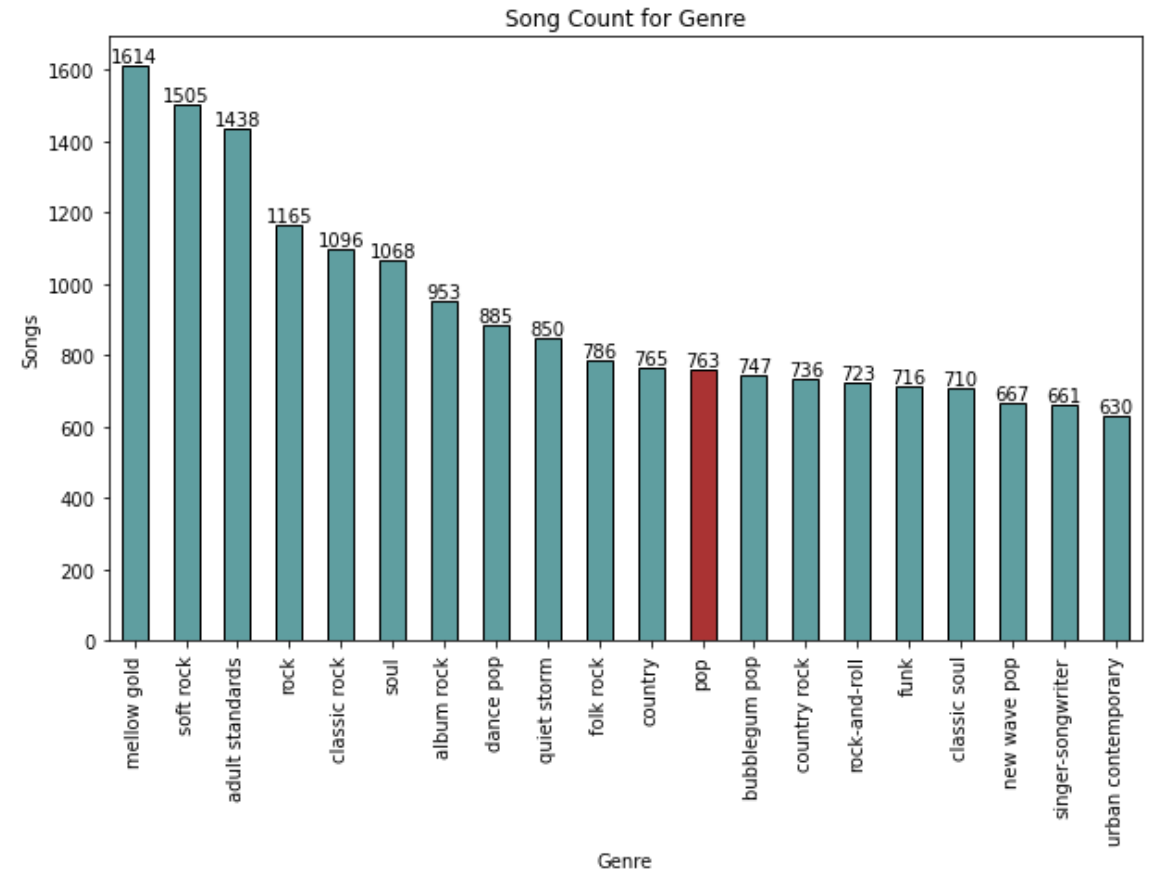
2010's

Genre	
pop	440
dance pop	287
contemporary country	286
country	281
country road	252
rap	210
post-teen pop	114
hip hop	109
trap	108
modern country rock	98
pop rap	98
canadian pop	79
southern hip hop	55
r&b	50
urban contemporary	47
modern rock	46
pop rock	45
melodic rap	44
edm	42
toronto rap	41

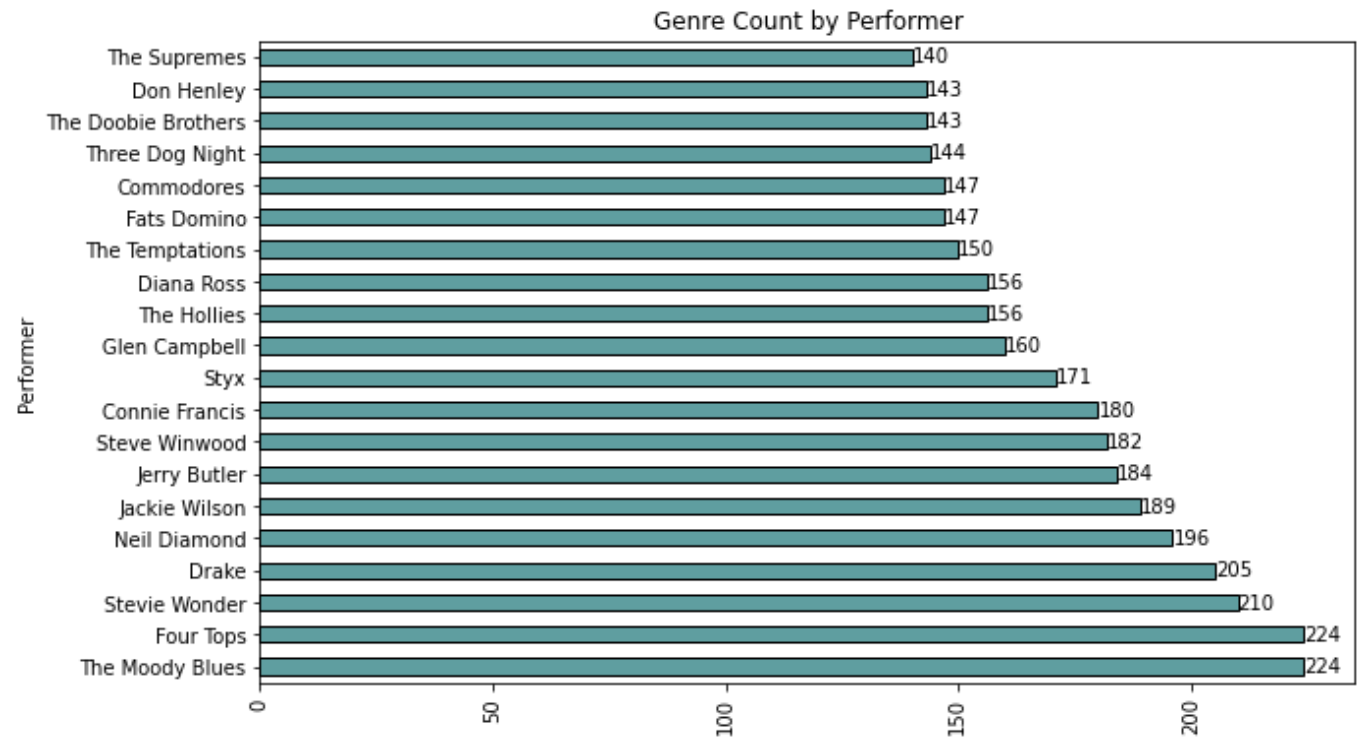
2020's

Genre	
contemporary country	50
pop	40
country	38
rap	33
country road	29
trap	23
dance pop	18
melodic rap	15
chicago rap	12
hip hop	12
canadian pop	8
country pop	7
southern hip hop	7
philly rap	6
memphis hip hop	6
post-teen pop	6
brooklyn drill	6
tennessee hip hop	6
trap queen	5
modern country rock	4

- Mellow Gold has over twice the songs as pop.



- ▶ The top 20 artists for number of genres they have assigned to them.
- ▶ These are mostly older artists.
- ▶ These high numbers may be because of the total number of genres on Spotify.



1950's

Genre	Song_Popularity
adult standards	90.0
easy listening	81.0
classic rock	79.0
rock	79.0
rock-and-roll	79.0
rockabilly	79.0
canadian pop	68.0
lounge	68.0
doo-wop	65.0
cowboy western	63.0
nashville sound	63.0
bubblegum pop	63.0
soul	62.0
swing	62.0
torch song	62.0
vocal jazz	62.0
brill building pop	61.0
rhythm and blues	61.0
mellow gold	60.0
soft rock	60.0

1960's

Genre	Song_Popularity
adult standards	91.0
country rock	81.0
singer-songwriter	81.0
soft rock	81.0
album rock	81.0
classic rock	81.0
swamp rock	81.0
southern rock	81.0
roots rock	81.0
rock	81.0
folk	81.0
folk rock	81.0
mellow gold	81.0
british invasion	81.0
easy listening	81.0
rockabilly	79.0
rock-and-roll	79.0
memphis soul	78.0
funk	78.0
motown	78.0

1970's

Genre	Song_Popularity
europop	84.0
swedish pop	84.0
soul	83.0
quiet storm	83.0
jazz funk	83.0
funk	83.0
disco	83.0
rock	82.0
metal	82.0
hard rock	82.0
glam rock	82.0
album rock	82.0
country rock	81.0
classic rock	81.0
blues rock	81.0
mellow gold	81.0
southern rock	81.0
piano rock	80.0
art rock	79.0
permanent wave	79.0

1980's

Genre	Song_Popularity
new wave pop	87.0
new wave	87.0
new romantic	87.0
permanent wave	87.0
rock	87.0
sophisti-pop	87.0
synthpop	87.0
art rock	86.0
album rock	86.0
mellow gold	86.0
classic rock	86.0
glam metal	85.0
r&b	83.0
soul	83.0
pop	83.0
canadian pop	82.0
canadian singer-songwriter	82.0
soft rock	82.0
heartland rock	82.0
classic canadian rock	82.0

Most popular Genre by decade

- ▶ Adult Standards is most popular in 50's and 60's.
- ▶ Rock, its subgenres, and subgenres of pop are most popular from 60's to 80's.

1990's

Genre	Song_Popularity
pop rock	84.0
athens indie	84.0
permanent wave	84.0
rock	84.0
alternative rock	84.0
boy band	82.0
dance pop	82.0
girl group	81.0
europop	81.0
funk rock	81.0
funk metal	81.0
hip pop	80.0
hip hop	80.0
contemporary r&b	80.0
atl hip hop	80.0
urban contemporary	80.0
r&b	80.0
melancholia	80.0
dream pop	80.0
art pop	80.0

2000's

Genre	Song_Popularity
rap	89.0
detroit hip hop	89.0
hip hop	89.0
alternative rock	83.0
funk metal	83.0
funk rock	83.0
permanent wave	83.0
rap rock	81.0
rap metal	81.0
nu metal	81.0
alternative metal	81.0
post-grunge	81.0
pop rock	81.0
dance pop	77.0
girl group	77.0
hip pop	77.0
pop	77.0
r&b	77.0
urban contemporary	77.0
neo soul	72.0

2010's

Genre	Song_Popularity
shimmer pop	93.0
modern alternative rock	93.0
pop	93.0
modern rock	93.0
canadian contemporary r&b	92.0
canadian pop	92.0
new romantic	90.0
new wave pop	90.0
europop	90.0
rock	89.0
dance pop	89.0
conscious hip hop	89.0
rap	89.0
uk pop	89.0
north carolina hip hop	89.0
hip hop	89.0
talent show	87.0
viral pop	87.0
chicago rap	86.0
melodic rap	86.0

2020's

Genre	Song_Popularity
bedroom pop	89.0
pop	89.0
canadian contemporary r&b	85.0
canadian pop	85.0
uk pop	85.0
k-pop	84.0
k-pop boy group	84.0
chicago rap	83.0
rap	83.0
brooklyn drill	83.0
contemporary country	81.0
melodic rap	80.0
hip hop	79.0
country	79.0
dance pop	79.0
reggaeton	78.0
trap latino	78.0
urbano latino	78.0
rap conscient	76.0
trap	76.0

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- ▶ Hip Hop sees a rise in the 90's and 2000's.
- ▶ Pop and Rock are most popular genres in 2010's.
- ▶ Pop and Rap take over 2020's.

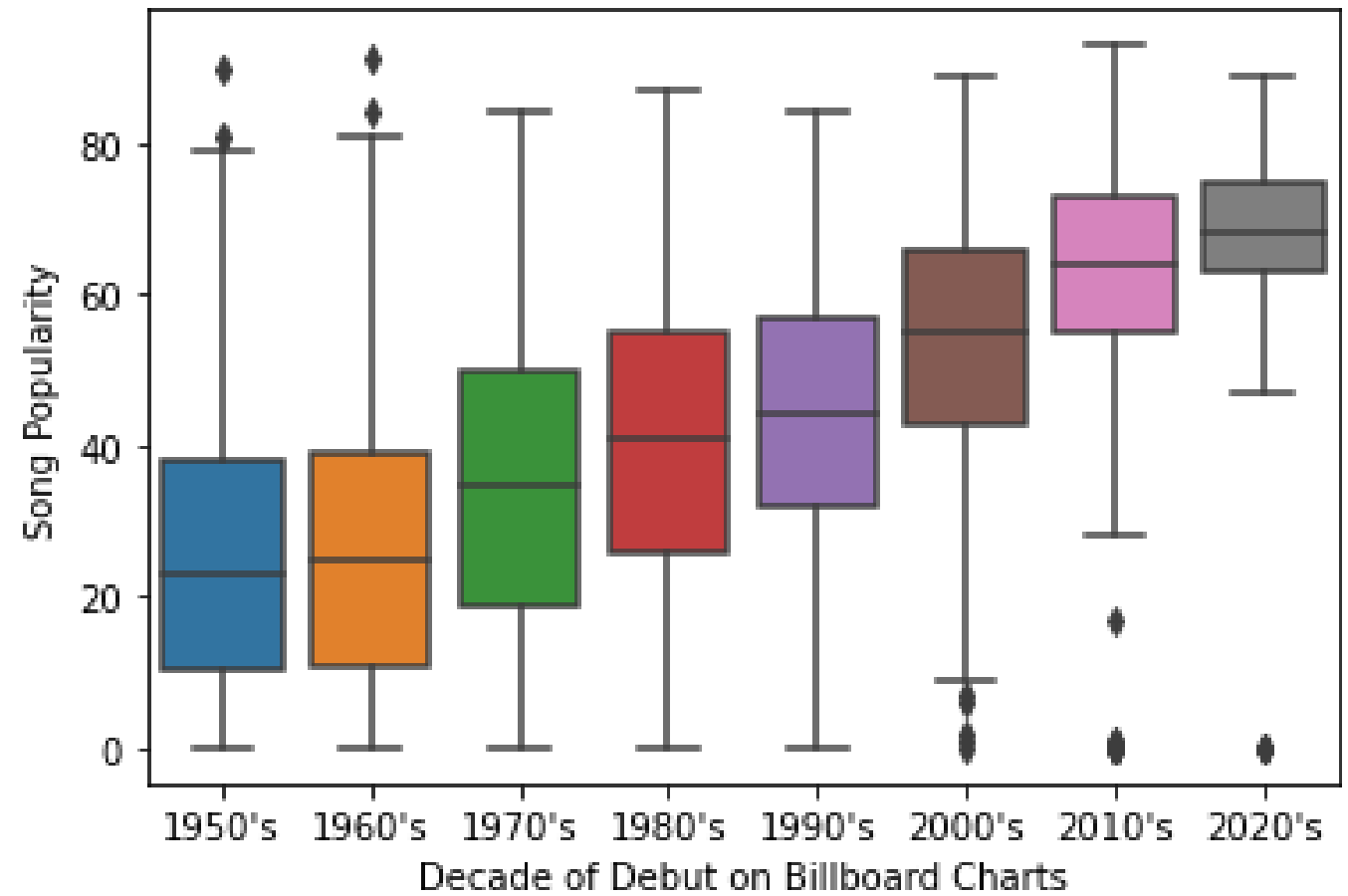
Takeaways

- ▶ Mellow Gold is the most frequent genre on the charts.
- ▶ Genres have shifted over time from Rock being one of the most frequent genres to Hip Hop being one of the most frequent genres.
- ▶ In terms of songs Pop and Rap are the most popular genres in the 2020's.

Song Popularity

- ▶ Are there older songs that still have high popularity?
- ▶ Are newer songs more popular?

- ▶ Newer songs are more popular on average.
- ▶ Some older songs are still very popular.



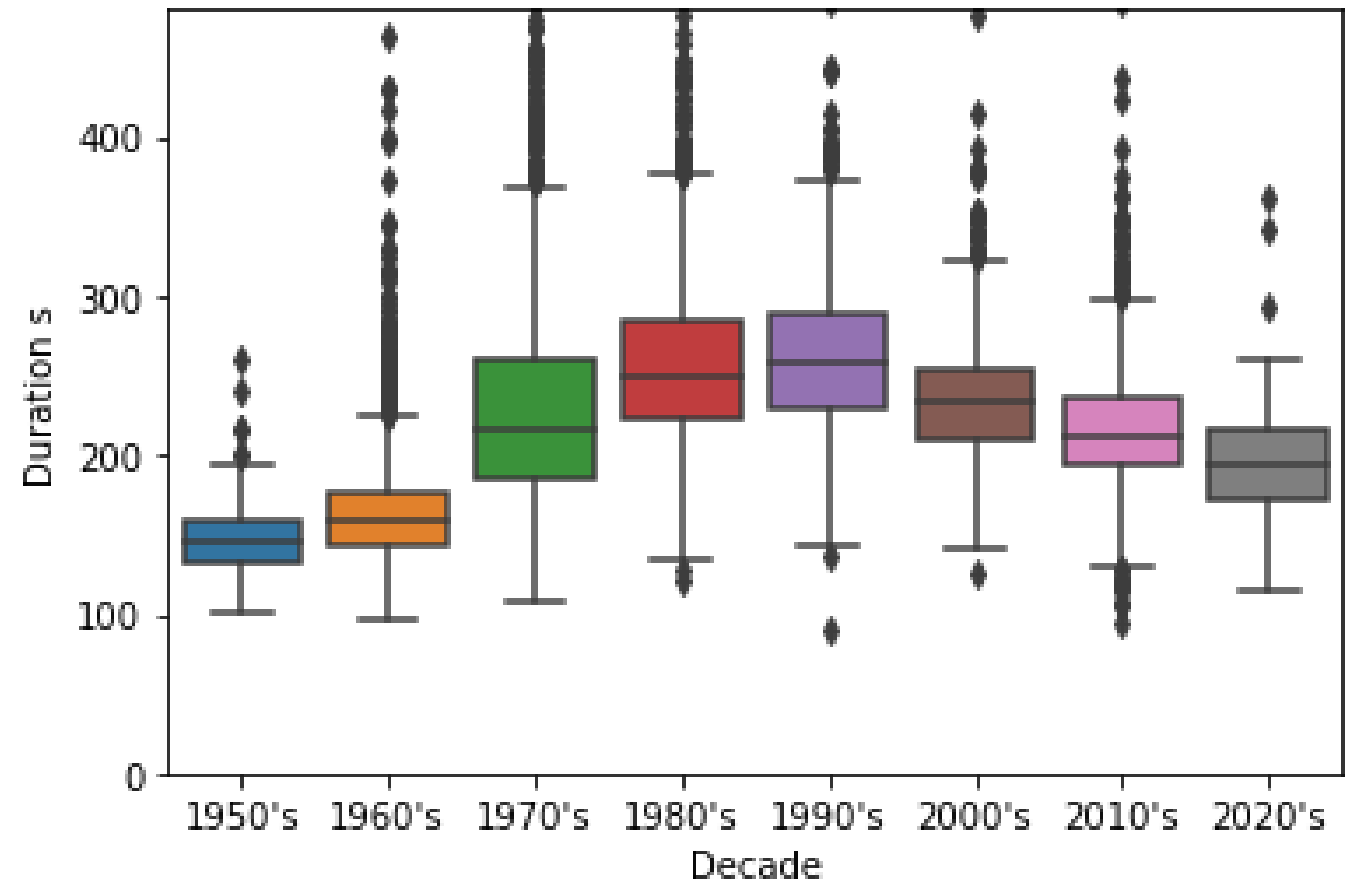
Takeaways

- ▶ Song Popularity rises over time.
- ▶ Some older songs still have high popularity.

Duration

- ▶ Has song duration changed over time?

- ▶ We see a rise until the 90's where duration falls after.
- ▶ Duration doesn't change much over time.
- ▶ Some songs from the 1970's are much longer than more recent songs.



Takeaways

- ▶ Song duration has not changed much over time aside for some outliers.

Explicit

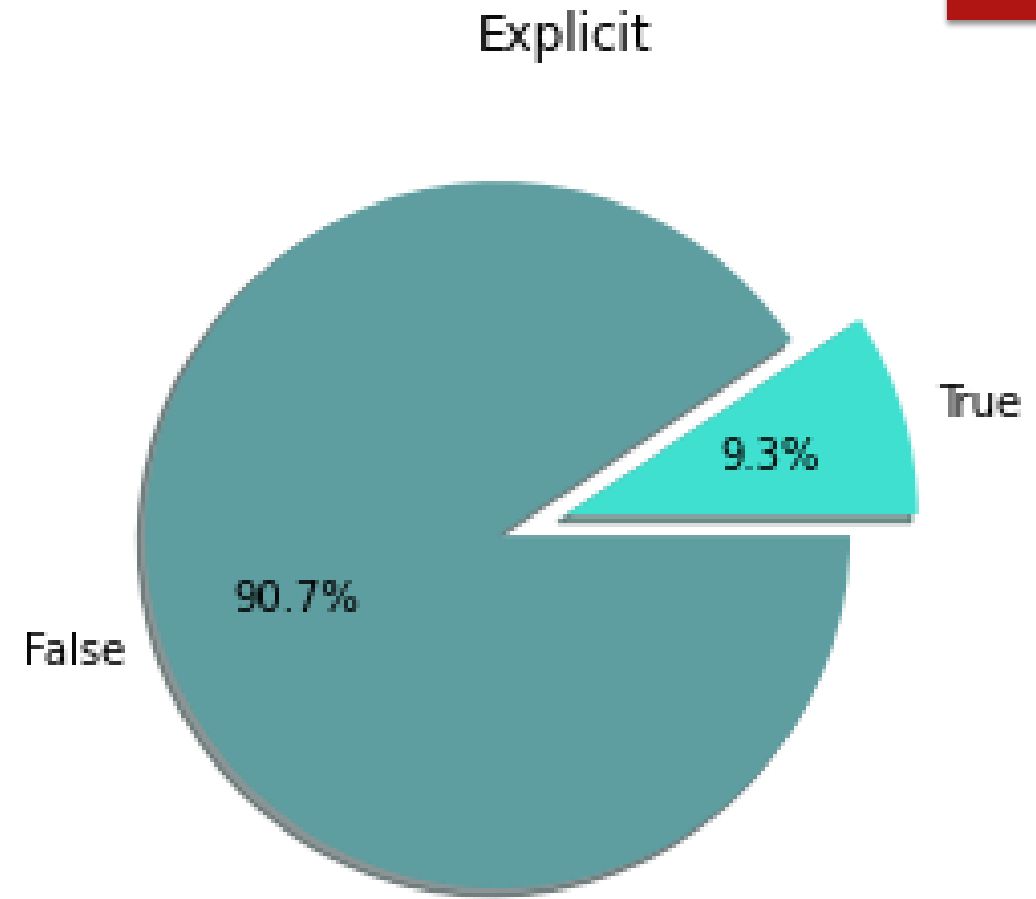
- ▶ Has music become more explicit over time?
- ▶ What genre is most explicit?
- ▶ Is explicit music more popular?

Percent explicit by genre

- ▶ Mellow Gold- .2% explicit
- ▶ Country – 1.3% explicit
- ▶ Pop- 1.5% explicit
- ▶ Rock- 1.7% explicit
- ▶ Rap- 84.3% explicit

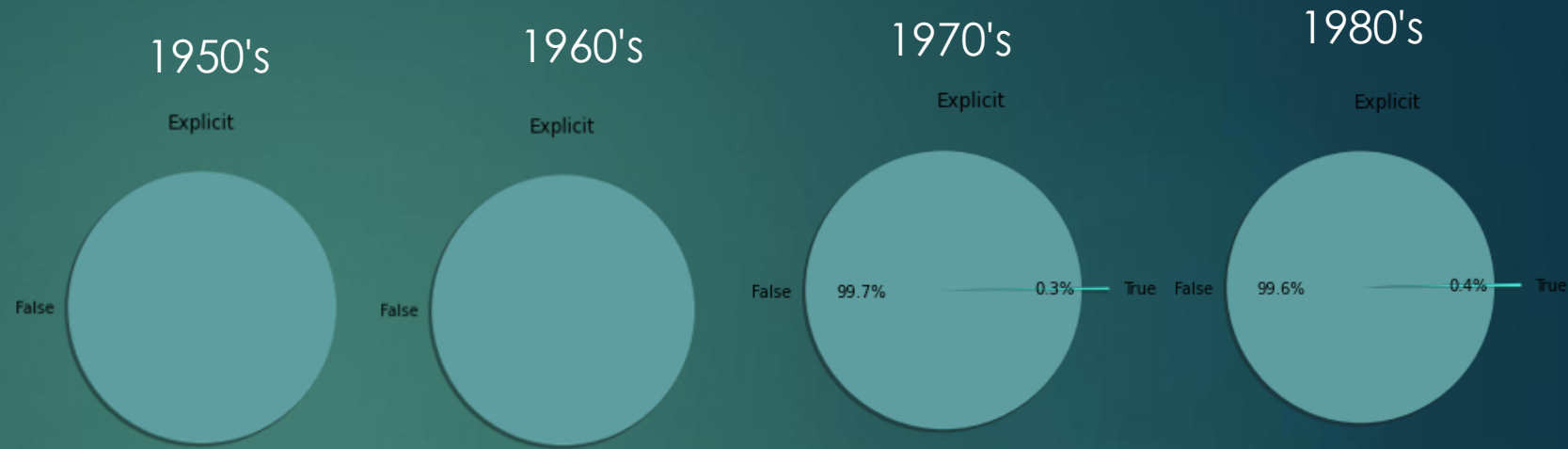
Percent explicit

- ▶ Across the whole dataset, less than 10% of songs are explicit.



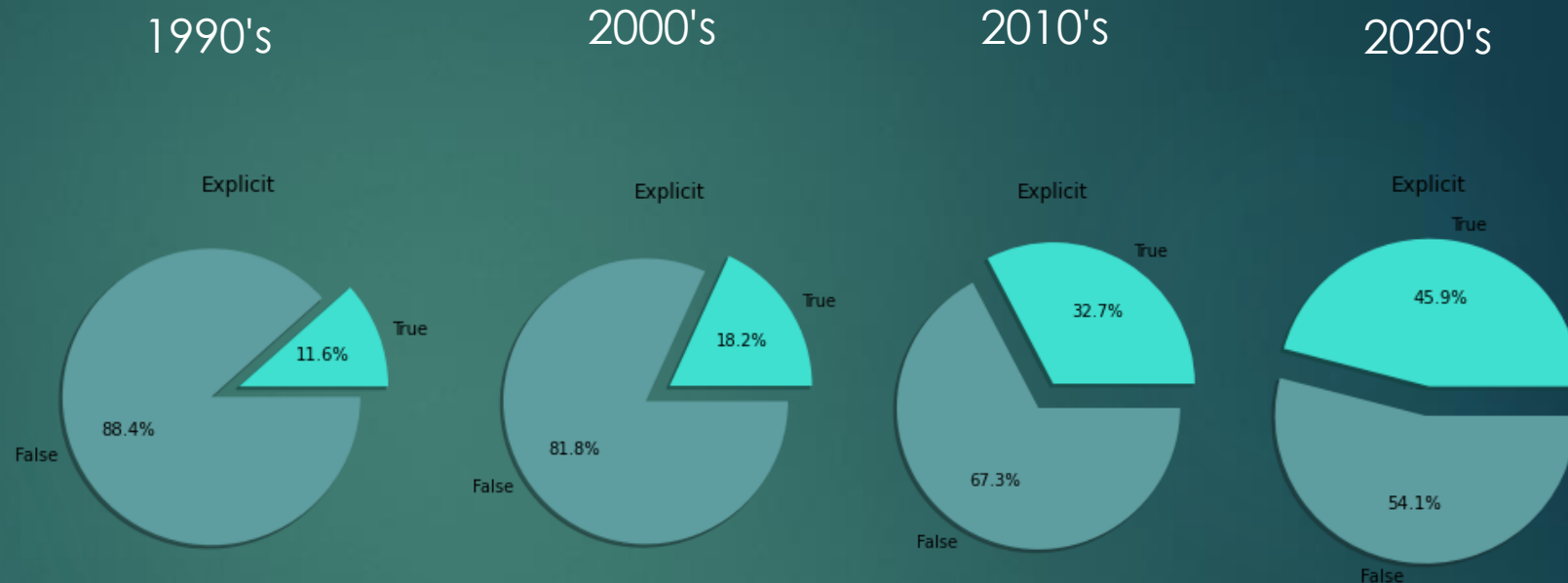
Percent explicit by decade

- No explicit tracks in 50's and 60's.
- Very few explicit tracks from 70's to 80's.

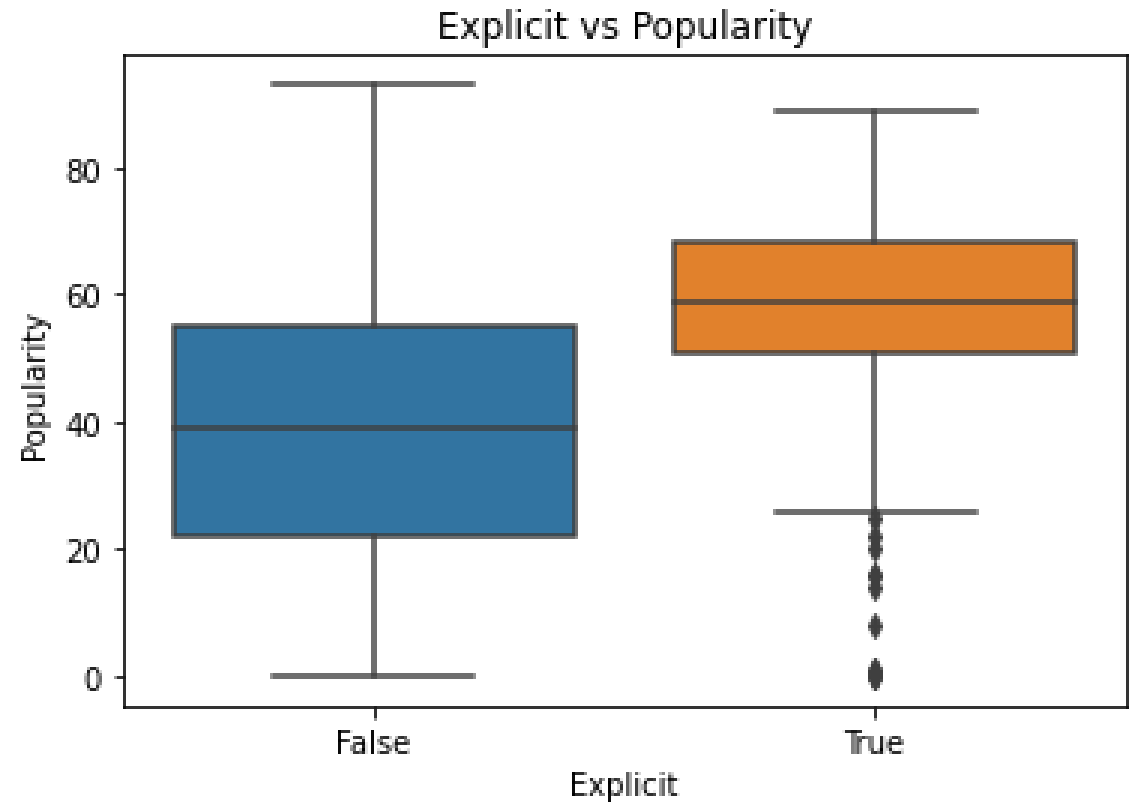


Continued

- There is a jump in explicitness in the 90's.
- Explicitness steadily increases.
- Nearly 50% of tracks in 2020's are explicit.



- ▶ Explicit songs are more popular on average.
- ▶ Clean songs tend to be older.



Takeaways

- ▶ Newer songs are more explicit.
- ▶ Explicit songs are more popular, but that does not necessarily mean that having a song be explicit makes it more popular.

Conclusions

- What artist is the most popular? Bad Bunny.
- Are newer artists more popular? Yes, but older artists still have high popularity.
- What is currently the most popular genre? Pop, Rock, and their subgenres.
- Have popular genres changed over time? Yes, rock dominated the 60's, 70's, and 80's. Hip Hop saw a rise starting in the 90's.
- Are there still old songs with high popularity? Yes, while in large, most old songs don't hold their popularity there are still older songs with high popularity.
- Has music become more explicit over time? Yes.
- Is explicit music more popular? Yes, but that does not necessarily mean music being explicit makes it popular.

Questions?

