

---

# Predicting User Rating of a Hip Hop Album



# Why hip hop?



## 2020 BILLBOARD MIDYEAR CHARTS

Powered by Nielsen Music/MRC Data

### TOP 10 ARTISTS BY TOTAL CONSUMPTION

	ARTIST	TOTAL ALBUM-EQUIVALENT CONSUMPTION	ALBUM SALES	DIGITAL SONGS	ON-DEMAND AUDIO STREAMS	ON-DEMAND VIDEO STREAMS
1	DRAKE	2.460 million	57,000	390,000	3.019 billion	369.416 million
2	THE WEEKND	2.175 million	439,000	664,000	2.134 billion	315.775 million
3	LIL UZI VERT	1.966 million	28,000	116,000	2.720 million	290.152 million
4	POST MALONE	1.886 million	93,000	586,000	2.290 billion	302.237 million
5	YOUNGBOY NEVER BROKE AGAIN	1.886 million	20,000	119,000	2.422 billion	772.237 million
6	EMINEM	1.868 million	315,000	552,000	1.854 billion	560.886 million
7	LIL BABY	1.725 million	33,000	281,000	2.123 billion	490.889 million
8	BILLIE EILISH	1.676 million	283,000	652,000	1.736 billion	405.816 million
9	RODDY RICCH	1.640 million	19,000	271,000	2.074 billion	576.671 million
10	DABABY	1.530 million	26,000	311,000	1.965 billion	369.931 million

### TOP 10 ALBUMS (Album sales + TEA + on-demand SEA)

	ARTIST	TITLE	TOTAL ALBUM-EQUIVALENT CONSUMPTION	ALBUM SALES	SONG SALES	ON-DEMAND AUDIO STREAMS	ON-DEMAND VIDEO STREAMS
1	LIL BABY	<i>My Turn</i>	1.467 million	31,000	249,000	1.775 billion	402.974 million
2	THE WEEKND	<i>After Hours</i>	1.423 million	407,000	527,000	1.246 billion	105.747 million
3	LIL UZI VERT	<i>Eternal Atake</i>	1.374 million	24,000	82,000	1.896 billion	141.922 million
4	RODDY RICCH	<i>Please Excuse Me for Being Antisocial</i>	1.352 million	18,000	254,000	1.787 billion	248.535 million
5	POST MALONE	<i>Hollywood's Bleeding</i>	1.140 million	60,000	477,000	1.370 billion	127.477 million
6	BAD BUNNY	<i>YHLQMDLG</i>	927,000	59,000	79,000	1.088 billion	175.246 million
7	EMINEM	<i>Music to Be Murdered By</i>	855,000	226,000	224,000	779.543 million	121.024 million
8	JUSTIN BIEBER	<i>Changes</i>	854,000	187,000	381,000	796.529 million	86.629 million
9	BTS	<i>Map of the Soul: 7</i>	842,000	552,000	388,000	347.616 million	51.220 million
10	BILLIE EILISH	<i>When We All Fall Asleep, Where Do We Go?</i>	798,000	198,000	268,000	781.077 million	81.844 million

# Why hip hop?



## 2020 BILLBOARD MIDEAR CHARTS

Powered by Nielsen Music/MRC Data

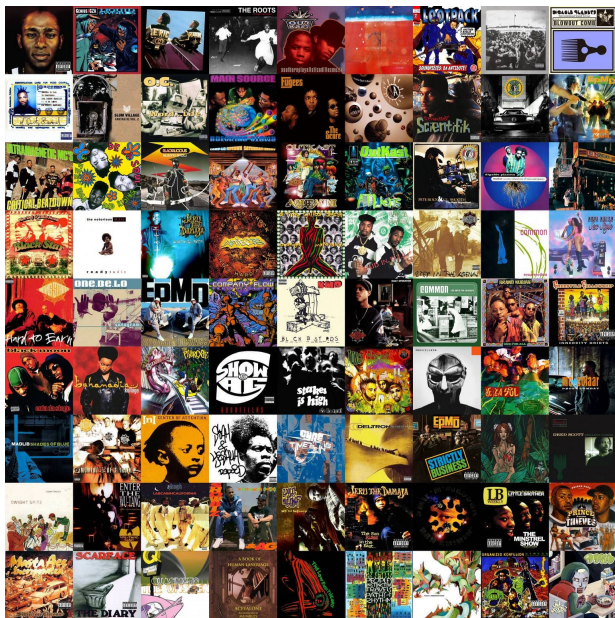
### TOP 10 ARTISTS BY TOTAL CONSUMPTION

	ARTIST	TOTAL ALBUM-EQUIVALENT CONSUMPTION	ALBUM SALES	DIGITAL SONGS	ON-DEMAND AUDIO STREAMS	ON-DEMAND VIDEO STREAMS
1	DRAKE	2.460 million	57,000	390,000	3.019 billion	369.416 million
2	THE WEEKND	2.175 million	439,000	664,000	2.134 billion	315.775 million
3	LIL UZI VERT	1.966 million	28,000	116,000	2.720 million	290.152 million
4	POST MALONE	1.886 million	93,000	586,000	2.290 billion	302.237 million
5	YOUNGBOY NEVER BROKE AGAIN	1.886 million	20,000	119,000	2.422 billion	772.237 million
6	EMINEM	1.868 million	315,000	552,000	1.854 billion	560.886 million
7	LIL BABY	1.725 million	33,000	281,000	2.123 billion	490.889 million
8	BILLIE EILISH	1.676 million	283,000	652,000	1.736 billion	405.816 million
9	RODDY RICCH	1.640 million	19,000	271,000	2.074 billion	576.671 million
10	DABABY	1.530 million	26,000	311,000	1.965 billion	369.931 million

### TOP 10 ALBUMS (Album sales + TEA + on-demand SEA)

	ARTIST	TITLE	TOTAL ALBUM-EQUIVALENT CONSUMPTION	ALBUM SALES	SONG SALES	ON-DEMAND AUDIO STREAMS	ON-DEMAND VIDEO STREAMS
1	LIL BABY	<i>My Turn</i>	1.467 million	31,000	249,000	1.775 billion	402.974 million
2	THE WEEKND	<i>After Hours</i>	1.423 million	407,000	527,000	1.246 billion	105.747 million
3	LIL UZI VERT	<i>Eternal Atake</i>	1.374 million	24,000	82,000	1.896 billion	141.922 million
4	RODDY RICCH	<i>Please Excuse Me for Being Antisocial</i>	1.352 million	18,000	254,000	1.787 billion	248.535 million
5	POST MALONE	<i>Hollywood's Bleeding</i>	1.140 million	60,000	477,000	1.370 billion	127.477 million
6	BAD BUNNY	<i>YHLQMDLG</i>	927,000	59,000	79,000	1.088 billion	175.246 million
7	EMINEM	<i>Music to Be Murdered By</i>	855,000	226,000	224,000	779.543 million	121.024 million
8	JUSTIN BIEBER	<i>Changes</i>	854,000	187,000	381,000	796.529 million	86.629 million
9	BTS	<i>Map of the Soul: 7</i>	842,000	552,000	388,000	347.616 million	51.220 million
10	BILLIE EILISH	<i>When We All Fall Asleep, Where Do We Go?</i>	798,000	198,000	268,000	781.077 million	81.844 million

# What makes a hip hop album?

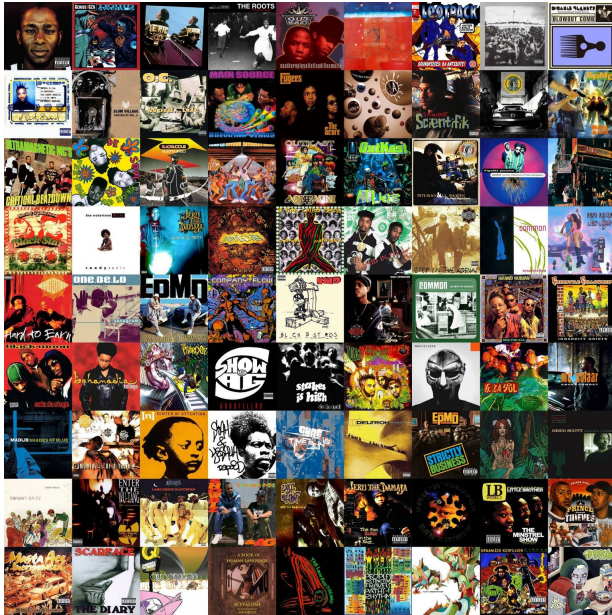


Popularity  
Critical acclaim  
Number of tracks/duration  
Featuring artists/collaboration  
Genre/style  
Format  
When it was made/released  
Label  
Explicit content  
Instrumentals  
Debut  
Digital availability  
Album art

And, of course... the ARTIST



# What makes a hip hop album?



Popularity  
Critical acclaim  
Genre/style  
Region  
Tenure  
Discography  
Personal features  
Platform



# Methodology

AOTY



OVERVIEW **BEST ALBUMS** NEW RELEASES TOP ARTISTS

## The Best Hip Hop Albums of All Time by User Score

DECADE All GENRE Hip Hop MIN. RATINGS 50

### 1. Kendrick Lamar - To Pimp a Butterfly



MARCH 16TH, 2015

USER SCORE  
**93** 4528 reviews



AOTY

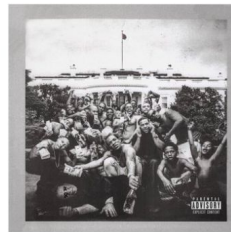
search albums, artists, genres etc.

Best Albums Discover New Releases Lists Genres News Community Sign In

OVERVIEW USER REVIEWS LISTS COMMENTS (30) DISCOGRAPHY

#### Kendrick Lamar To Pimp a Butterfly

MUST HEAR ALBUM



CRITIC SCORE  
**95** Based on 42 reviews  
2015 Ratings: #1 / 892  
Year End Rank: #1

USER SCORE  
**93** Based on 4,528 ratings  
Liked by 243 people

DETAILS  
March 16, 2015 / release date  
LP / format  
Aftermath / Interscope / label  
Hip Hop / genres  
tags  
jazz rap hip hop masterpiece conscious hip hop  
west coast hip hop More Add Tag

#### Kendrick Lamar



CRITIC SCORE  
**89** Based on 126 reviews

USER SCORE  
**87** Based on 13,863 ratings

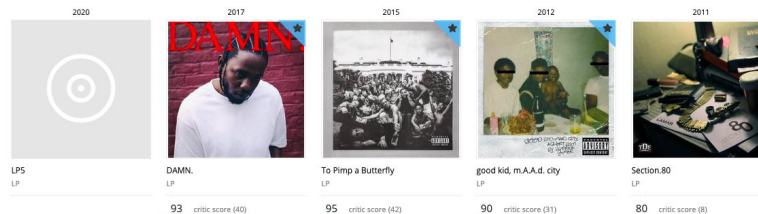
DETAILS  
Hip Hop, R&B, Experimental Hip Hop / genres  
@kendricklamar  
tags  
west coast hip hop compton 2nd grammy award winner  
10000 or more user ratings 2000 or more user ratings users top artists  
goat Add Tag

SORT Release Date

Type Clear Albums

Featured  
Compilation (1)  
EP (2)  
LP (5)  
Mixtape (5)  
Reissue (2)  
Single (42)  
Unofficial (5)  
Video (1)

ADD A RELEASE



# Methodology

AOTY



OVERVIEW **BEST ALBUMS** NEW RELEASES TOP ARTISTS

## The Best Hip Hop Albums of All Time by User Score

DECADE All ▼ GENRE Hip Hop ▼ MIN. RATINGS 50 ▼

### 1. Kendrick Lamar - To Pimp a Butterfly



MARCH 16TH, 2015

USER SCORE  
**93** 4528 reviews



AOTY

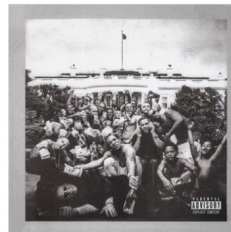
search albums, artists, genres etc. 🔍

Best Albums Discover New Releases Lists Genres News Community Sign In

OVERVIEW USER REVIEWS LISTS COMMENTS (30) DISCOGRAPHY

#### Kendrick Lamar To Pimp a Butterfly

★ MUST HEAR ALBUM



CRITIC SCORE

→ **95**

Based on 42 reviews  
2015 Ratings: #1 / 892  
Year End Rank: #1

USER SCORE  
**93**

Based on 4,528 ratings  
2015 Ratings: #1  
Liked by 243 people

↓

DETAILS

SUBMIT CORRECTION

March 16, 2015 / release date  
LP / format  
Aftermath / Interscope / label  
Hip Hop / genres  
tags  
jazz rap hip hop masterpiece conscious hip hop  
west coast hip hop 6 More Add Tag

#### Kendrick Lamar



CRITIC SCORE

→ **89**

Based on 126 reviews

USER SCORE

→ **87**

Based on 13,863 ratings

DETAILS

→ Hip-Hop, R&B, Experimental Hip Hop / genres  
Twitter @kendricklamar  
tags  
west coast hip hop compton 2nd grammy award winner  
10000 or more user ratings 2000 or more user ratings users top artists  
goat Add Tag

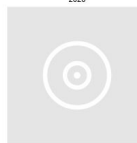
SORT Release Date ▼

Type Clear Albums

Featured  
Compilation (1)  
EP (2)  
LP (5)  
Mixtape (5)  
Reissue (2)  
Single (42)  
Unofficial (5)  
Video (1)

+ ADD A RELEASE

2020



LP5  
LP

2017



DAMN.  
LP

93 critic score (40)

2015



To Pimp a Butterfly  
LP

95 critic score (42)

2012



good kid, m.A.A.d. city  
LP

90 critic score (31)

2011



Section.80  
LP

80 critic score (8)

# Methodology

AOTY

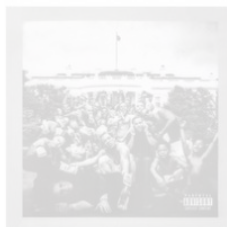


OVERVIEW **BEST ALBUMS** NEW RELEASES TOP ARTISTS

The Best Hip Hop Albums of All Time by User Score

DECADE All GENRE Hip Hop MIN. RATINGS 50

## 1. Kendrick Lamar - To Pimp a Butterfly



MARCH 16TH, 2015

USER SCORE  
**93** 4528 reviews



AOTY

search albums, artists, genres etc.

Best Albums Discover New Releases Lists Genres News Community Sign In

OVERVIEW USER REVIEWS LISTS COMMENTS (36) DISCOGRAPHY

Kendrick Lamar  
**To Pimp a Butterfly**  
★ MUST HEAR ALBUM

CRITIC SCORE  
**95** Based on 42 reviews  
2015 Ratings: #1 / 102  
Year-End Rank: #1

USER SCORE  
**93** Based on 4,528 ratings  
2015 Rating: #1  
Liked by 243 people

DETAILS  
SUBMIT CORRECTION

March 16, 2015 / release date  
LP / format  
Aftermath / Interscope / label  
Hip Hop / genres  
tags  
west coast hip hop conscious hip hop  
west coast hip hop conscious hip hop conscious hip hop  
west coast hip hop conscious hip hop conscious hip hop

CRITIC SCORE  
**89** Based on 126 reviews

USER SCORE  
**87** Based on 13,863 ratings

DETAILS  
SUBMIT CORRECTION

Hip Hop, R&B, Experimental Hip Hop / genres  
@kendricklamar  
tags  
west coast hip hop conscious hip hop conscious hip hop  
conscious hip hop conscious hip hop conscious hip hop  
conscious hip hop conscious hip hop conscious hip hop

Release Date

Type: LP

Featured  
Compilation (1)  
EP (2)  
LP (5)  
Mixtape (5)  
Reissue (2)  
Single (42)  
Unofficial (6)  
Video (1)

2020  
LP5 LP

2017  
DAMN. LP  
93 critic score (42)

2015  
To Pimp a Butterfly LP  
95 critic score (42)

2012  
good kid, m.A.A.d. city LP  
90 critic score (31)

2011  
Section.80 LP  
80 critic score (8)

+ ADD A RELEASE

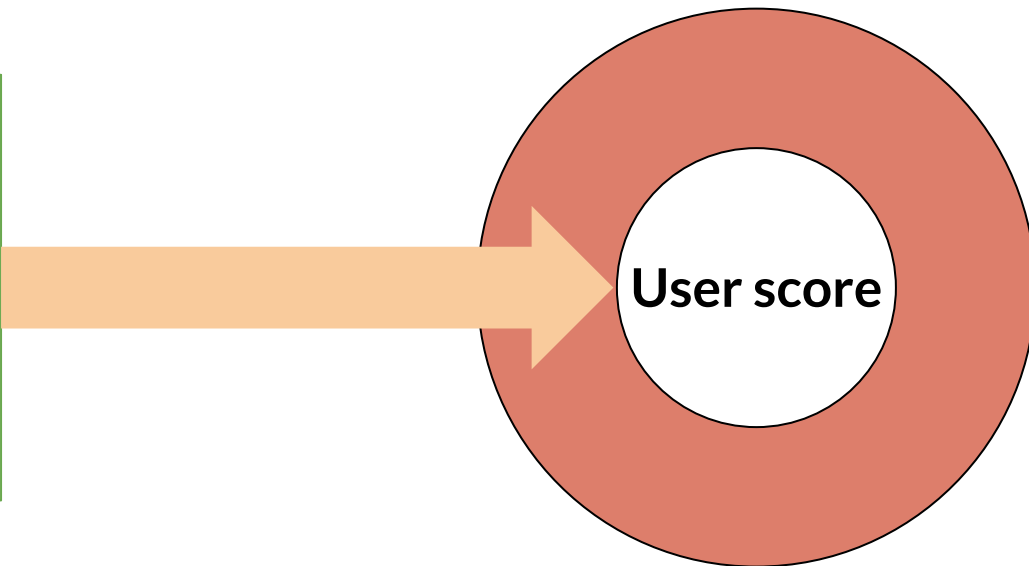


# Model

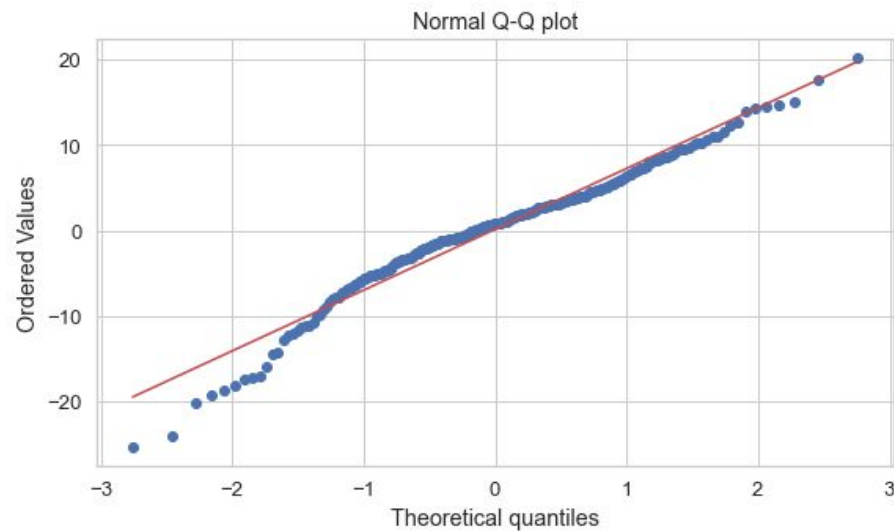
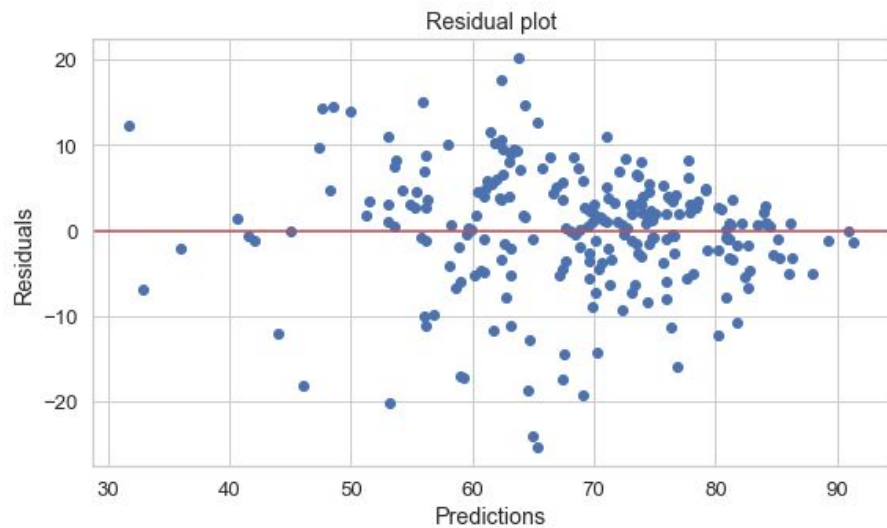
Format (LP vs. non-LP)  
Label (major vs. non-major)  
Total number of tracks/duration  
Percentage of explicit content  
Mode (major vs. minor)  
Average tempo  
Instrumentalness  
Featuring other artists

Debut album  
Number of user ratings for album  
Number of user ratings for artist on  
Years artist has been active  
Album Spotify popularity  
Other genres  
Regional style  
Number of times artist appeared on list

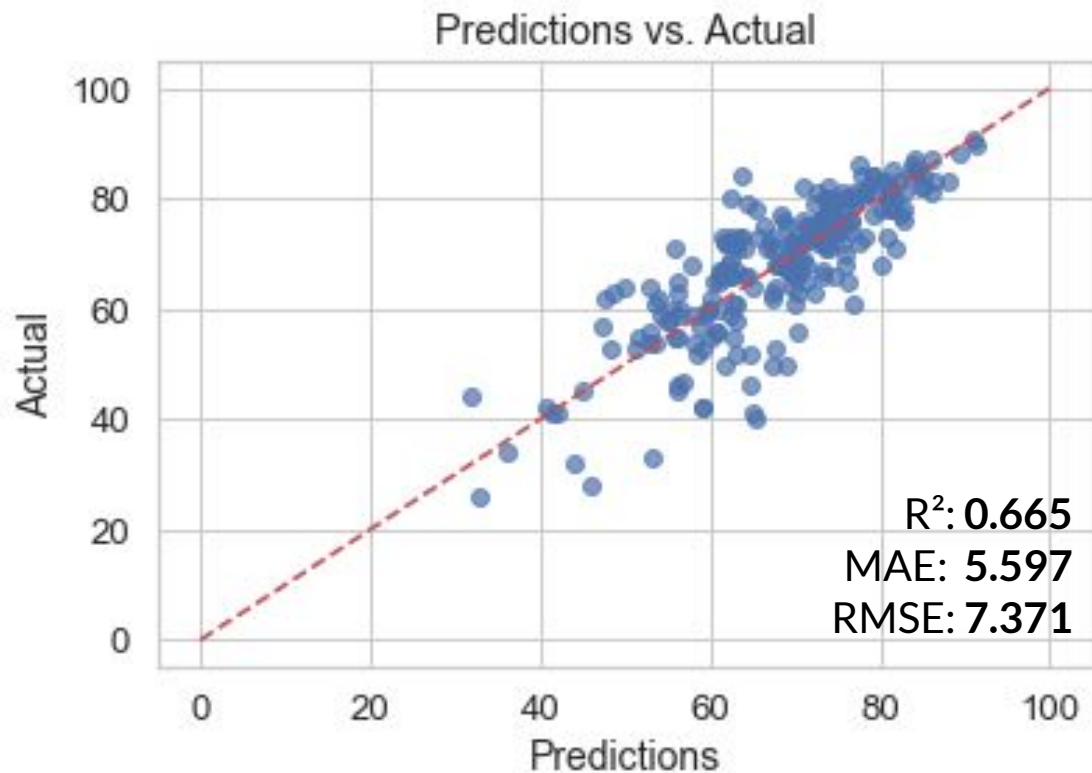
Album critic score  
Years since release  
Trap rap  
Artist Spotify popularity  
Number of user ratings  
Pop rap



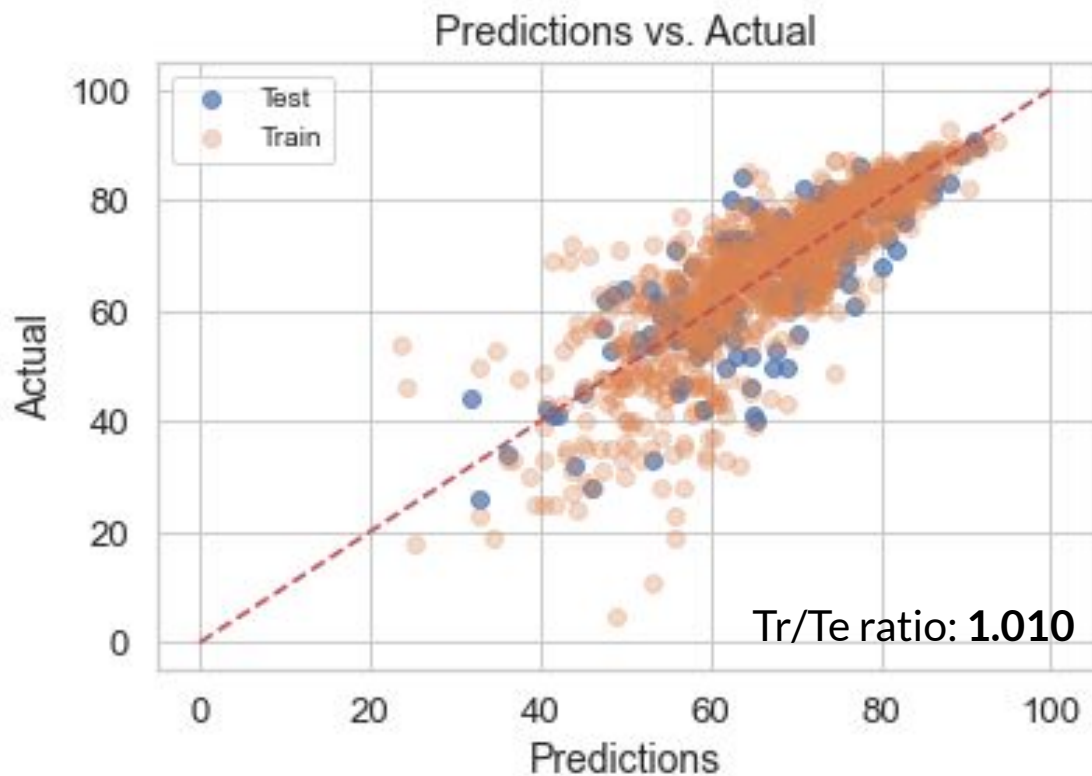
# Model



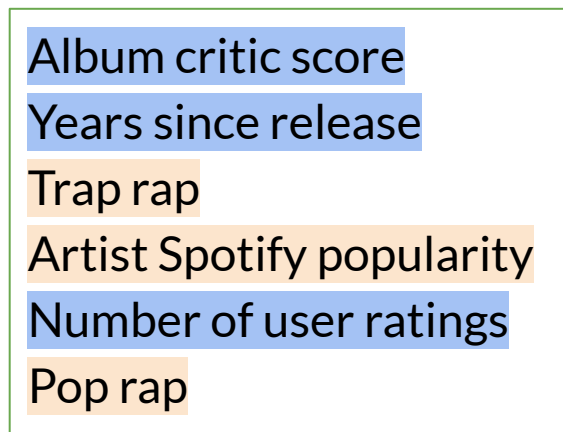
# Model



# Model



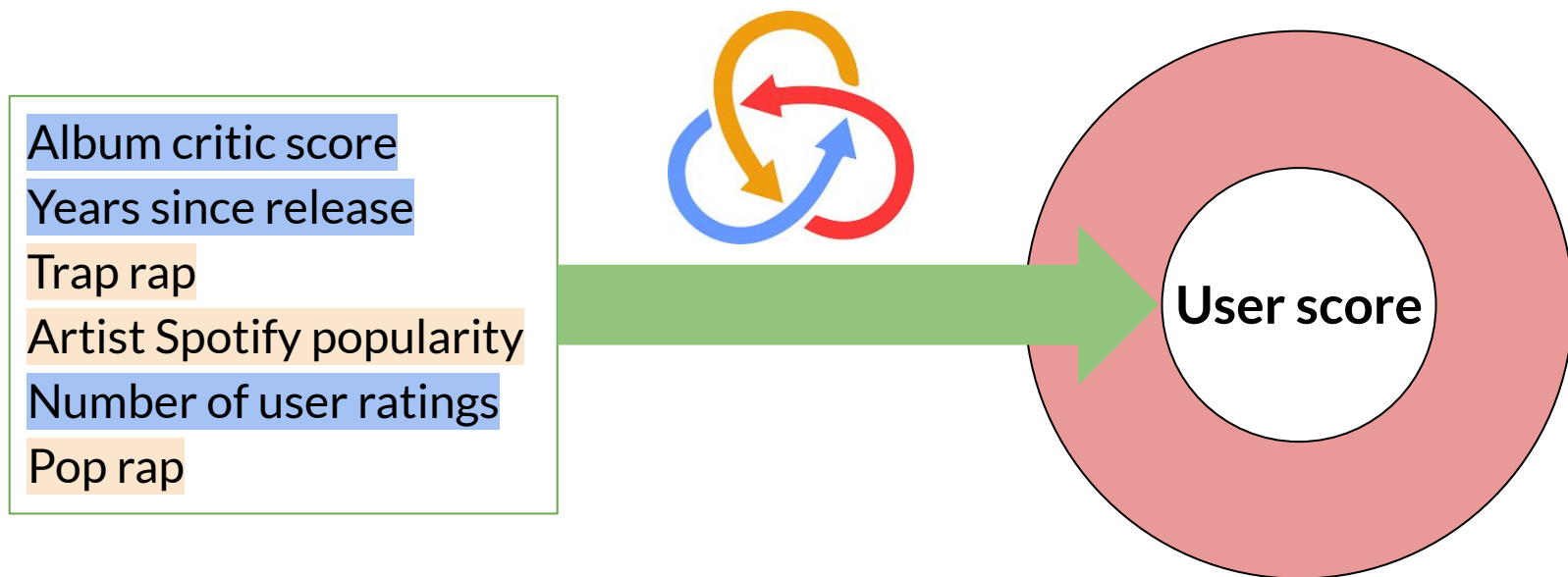
# Conclusions



User score



# Conclusions



# Future Exploration

- Explore interaction terms
- Further analysis of outliers
- Explore negative correlations
- Other data:
  - Artist features
  - “Sophomore slump”
  - Posthumous
  - Trends

---

**Thank you!**

---

# Appendix

<b>Dep. Variable:</b>	user_score	<b>R-squared:</b>	0.622
<b>Model:</b>	OLS	<b>Adj. R-squared:</b>	0.620
<b>Method:</b>	Least Squares	<b>F-statistic:</b>	257.3
<b>Date:</b>	Thu, 08 Oct 2020	<b>Prob (F-statistic):</b>	3.39e-194
<b>Time:</b>	21:41:55	<b>Log-Likelihood:</b>	-3370.0
<b>No. Observations:</b>	944	<b>AIC:</b>	6754.
<b>Df Residuals:</b>	937	<b>BIC:</b>	6788.
<b>Df Model:</b>	6		
<b>Covariance Type:</b>	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	33.9590	2.647	12.830	0.000	28.764	39.154
num_user_ratings	0.0051	0.001	8.590	0.000	0.004	0.006
artist_sp_pop	-0.1663	0.020	-8.413	0.000	-0.205	-0.127
yrs_since_release	0.3618	0.041	8.780	0.000	0.281	0.443
critic_score	0.5919	0.028	20.834	0.000	0.536	0.648
trap_rap	-5.2341	0.826	-6.334	0.000	-6.856	-3.612
pop_rap	-6.5152	1.163	-5.601	0.000	-8.798	-4.232

<b>Omnibus:</b>	144.447	<b>Durbin-Watson:</b>	2.035
<b>Prob(Omnibus):</b>	0.000	<b>Jarque-Bera (JB):</b>	327.566
<b>Skew:</b>	-0.851	<b>Prob(JB):</b>	7.41e-72
<b>Kurtosis:</b>	5.331	<b>Cond. No.</b>	5.89e+03

<b>Dep. Variable:</b>	user_score	<b>R-squared:</b>	0.667
<b>Model:</b>	OLS	<b>Adj. R-squared:</b>	0.655
<b>Method:</b>	Least Squares	<b>F-statistic:</b>	56.91
<b>Date:</b>	Thu, 08 Oct 2020	<b>Prob (F-statistic):</b>	3.08e-145
<b>Time:</b>	21:26:25	<b>Log-Likelihood:</b>	-2468.4
<b>No. Observations:</b>	708	<b>AIC:</b>	4987.
<b>Df Residuals:</b>	683	<b>BIC:</b>	5101.
<b>Df Model:</b>	24		
<b>Covariance Type:</b>	nonrobust		

<b>Omnibus:</b>	137.029	<b>Durbin-Watson:</b>	2.011
<b>Prob(Omnibus):</b>	0.000	<b>Jarque-Bera (JB):</b>	453.836
<b>Skew:</b>	-0.905	<b>Prob(JB):</b>	2.82e-99
<b>Kurtosis:</b>	6.480	<b>Cond. No.</b>	1.04e+16

