

FROM BEAT TO BYTE



by Nicolò Antonio Testa

Decoding the
popularity trend
for 2023

1994



2000



2007



Analysis of popularity trends for tracks using Spotify data for the period March 1st to October 31st, 2023* on Top 50 Pop Chart



*Data Source: Spotify API

What is Popularity rate for tracks?

- **Spotify Metric (0 - 100)**
- **Algorithmic Scoring**
- **Dynamic Evolution**



How to use them?

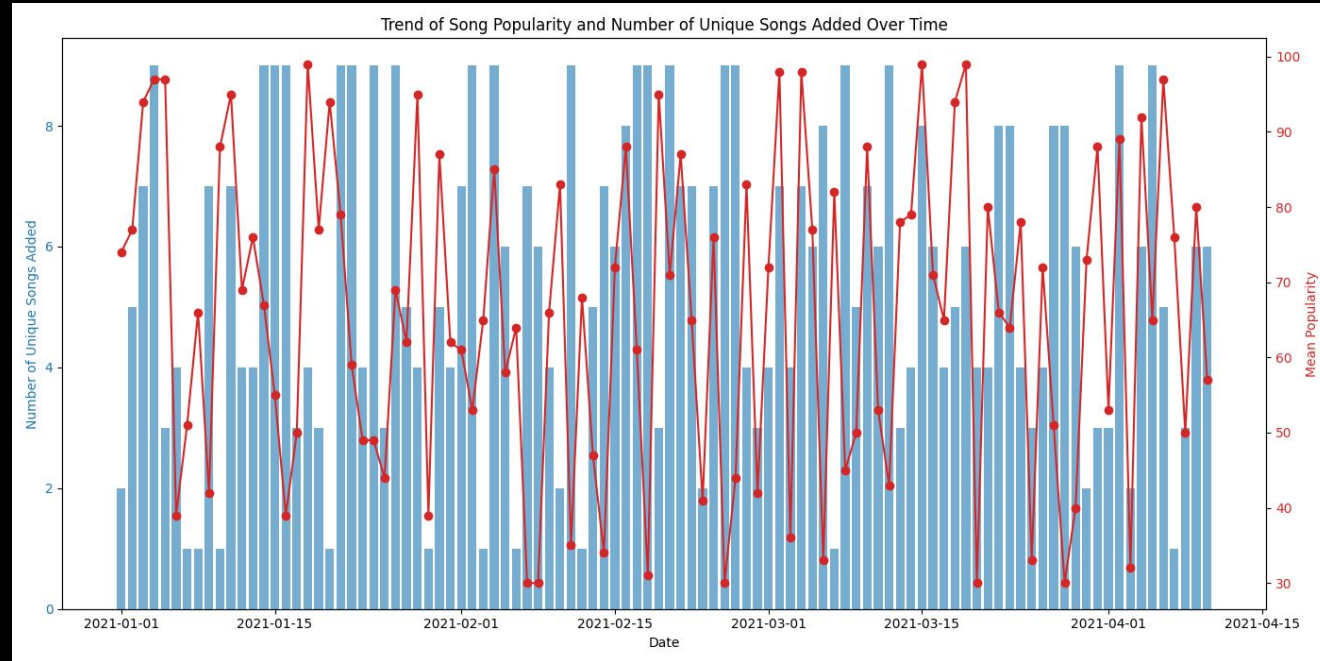
- **Tailoring Music Discovery**
- **Measuring Artist Success**
- **Informing Royalty Payments**
- **Tracking Music Trends**



How the Popularity Trend act when tracks are added

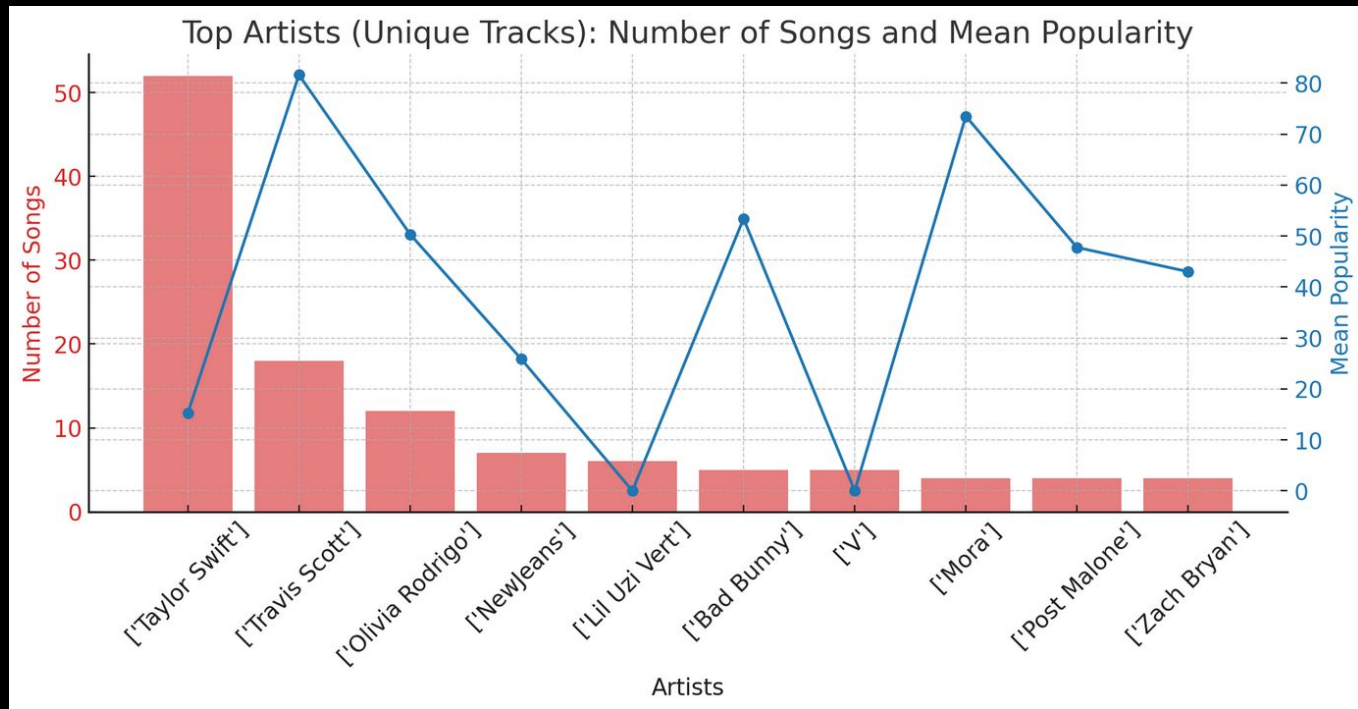
Red line is the popularity, and as we can see when **(Blue bar)** a track is added or released on the platform, the mean decrease.

The chart effectively illustrates the relationship between track release dates and their popularity, showcasing a stable trend that aligns with our goals



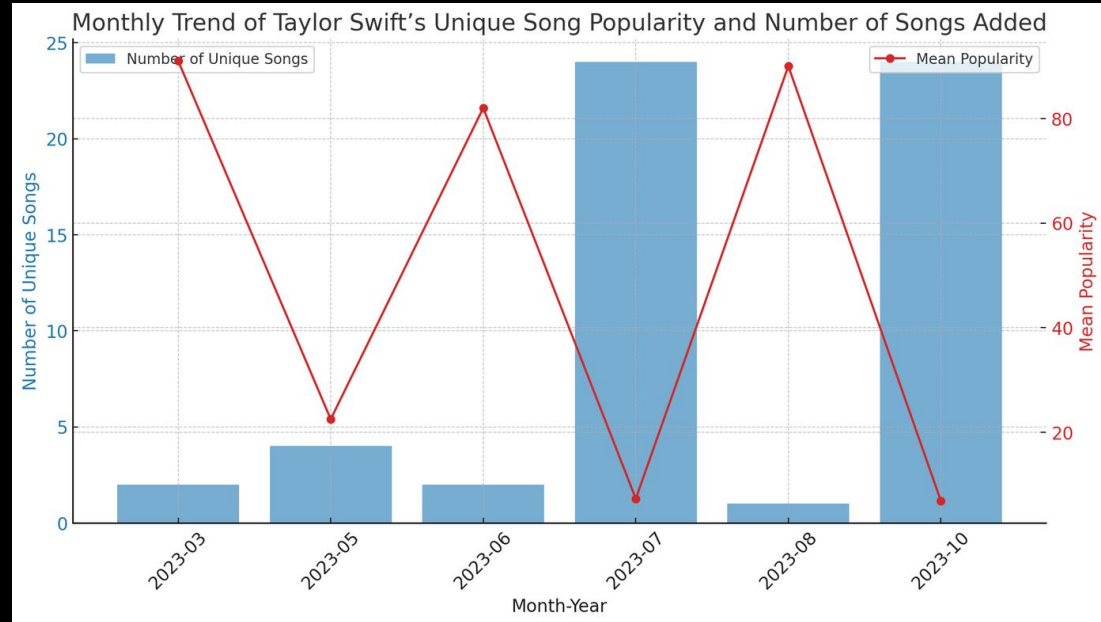
Tendency of popularity on the total number of songs x artist

- Unexpected trend, investigation needed.
- Is it possible in 2023 a single artist can make so many influence on trend?



The Taylor Swift Impact

- Taylor Swift's discography heavily influences music trends.
- Her success continues to overshadow others, reinforcing her 2023 industry prominence.

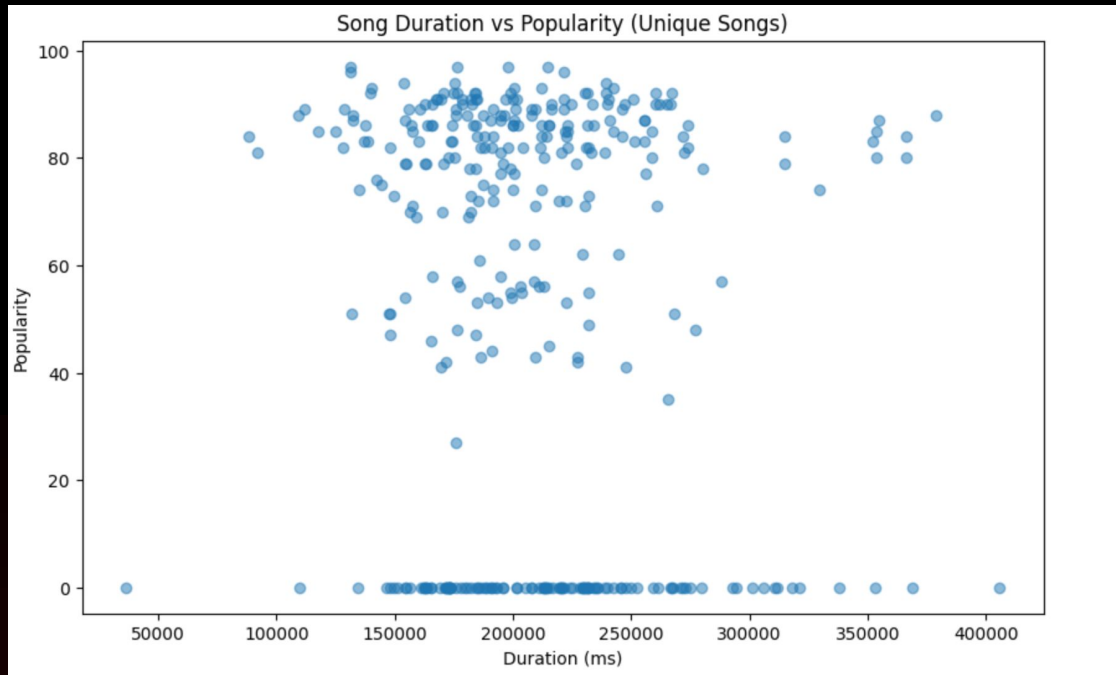


"And the haters gonna hate, hate, hate, hate, hate" (Taylor Swift - Shake It Off)



A little curiosity

In today's social media-dominated landscape with its brief attention spans, I've explored whether there's a link between a track's popularity and tracks length. The answer is no.



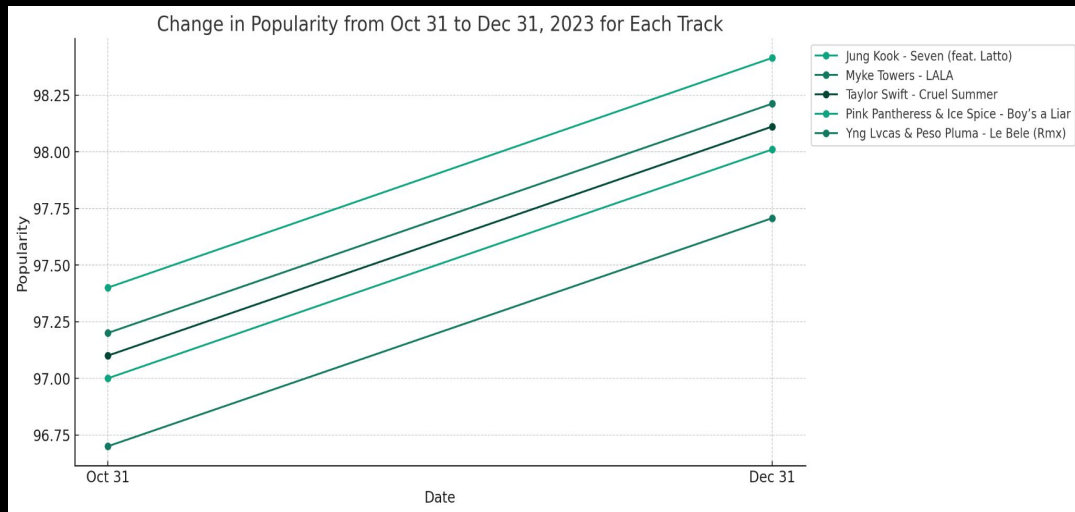
Bad Bunny approves

Prediction Model On The Main Popularity

1. Time Series Analysis
2. ARIMA model
3. Increase of the trend

Estimated increase by December 31, 2023:

+ ~1.03%



Deeper looking into the model...

data_collection_date

2023-03-31	87.68
2023-04-01	81.66
2023-04-02	86.88
2023-04-03	87.40
2023-04-04	87.62
2023-04-05	88.34
2023-04-06	88.34
2023-04-07	88.52
2023-04-08	85.10
2023-04-09	88.50
2023-04-10	88.92
2023-04-11	89.26
2023-04-12	89.54
2023-04-13	89.78
2023-04-14	89.96
2023-04-15	84.98
2023-04-16	89.72
2023-04-17	89.58
2023-04-18	89.68
2023-04-19	89.96



SARIMAX Results

Dep. Variable:	track_popularity	No. Observations:	213
Model:	ARIMA(1, 0, 1)	Log Likelihood	-638.368
Date:	Fri, 10 Nov 2023	AIC	1284.736
Time:	16:44:19	BIC	1298.182
Sample:	03-31-2023	HQIC	1290.170
	- 10-29-2023		

Covariance Type: opg

	coef	std err	z	P> z	[0.025	0.975]
const	89.5023	0.717	124.784	0.000	88.097	90.908
ar.L1	-0.8337	0.327	-2.550	0.011	-1.474	-0.193
ma.L1	0.9014	0.244	3.699	0.000	0.424	1.379
sigma2	23.4718	1.140	20.587	0.000	21.237	25.706

Ljung-Box (L1) (Q):	0.08	Jarque-Bera (JB):	14603.41
Prob(Q):	0.78	Prob(JB):	0.00
Heteroskedasticity (H):	6.87	Skew:	-5.61
Prob(H) (two-sided):	0.00	Kurtosis:	41.98

Predicted Popularity with the Average Trend

tracks at 31.10	popularity
Jung Kook - Seven (feat. Latto)	97.4
Myke Towers - LALA	97.2
Taylor Swift - Cruel Summer	97.1
Pink Pantheress & Ice Spice - Boy's a Liar	97.0
Yng Lvcas & Peso Pluma - Le Bele (Rmx)	96.7



tracks 31.12	popularity
Jung Kook - Seven (feat. Latto)	98.4
Myke Towers - LALA	98.2
Taylor Swift - Cruel Summer	98.1
Pink Pantheress & Ice Spice - Boy's a Liar	98.0
Yng Lvcas & Peso Pluma - Le Bele (Rmx)	97.7

Note: Average popularity on October 31st 2023: 88.58. Expected increase by December 31, 2023: ~1.03%.

Next Steps...

- Estimates are based on general trends, not individual track histories, need a deeper look.
- Forecasts are based on the assumption of the continuation of past trends, and this can be used as a starting point for establishing a final goal.
- Unforeseen events may impact actual popularity.
- Use forecasts as a general guide, not precise predictions.

“Cambiate un Ferrari por un Twingo” - Shakira



Q&A



Tech tools:

- pandas
- matplotlib
- numpy
- seaborn
- adfuller
- plot acf, plot pacf
- ARIMA
- Google Presentation

Human After All - Daft Punk