

# MUSIC ARTISTS

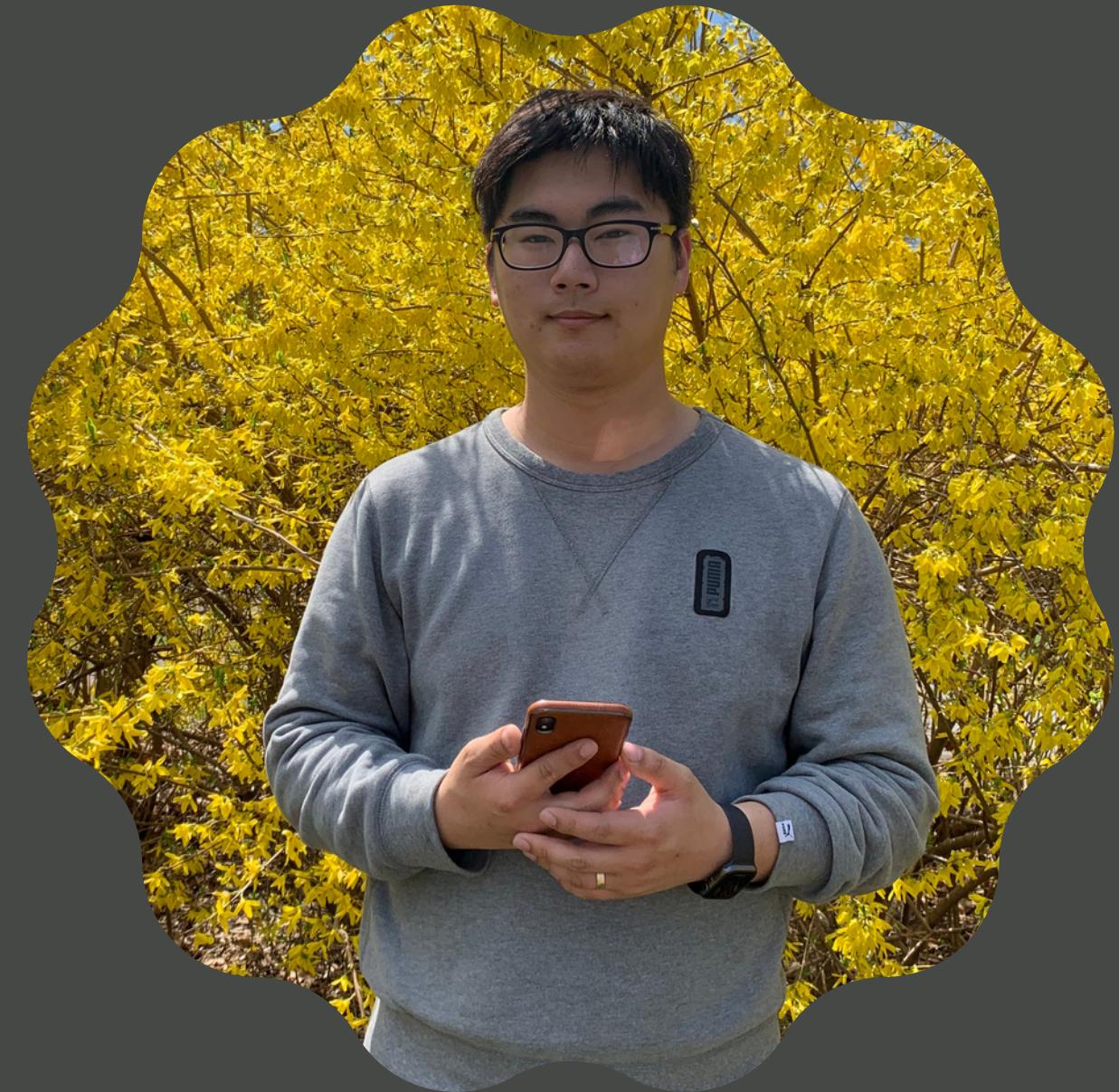
BY SPOTIFY CHART



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YEONJAE ZHANG





# WELCOMING MESSAGE

Hello, Everyone!  
Name: Yeonjae Zhang.  
Title: Data Scientist  
I'm so excited to show my project.

# PROJECT

I created a project to help record labels. They are always looking for artists to join. All artists have potential. However, this project recommends artists with growth potential..

	TRACK	STREAMS
1	– <b>Blinding Lights</b> by The Weeknd	6,329,218
2	– <b>The Box</b> by Roddy Ricch	5,718,614
3	– <b>Dance Monkey</b> by Tones And I	5,566,567
4	▲ <b>La Difícil</b> by Bad Bunny	4,941,288
5	▼ <b>Don't Start Now</b> by Dua Lipa	4,915,903
6	● <b>Baby Pluto</b> by Lil Uzi Vert	4,691,613
7	– <b>Si Veo a Tu Mamá</b> by Bad Bunny	4,218,770
8	▼ <b>Intentions (feat. Quavo)</b> by Justin Bieber	4,202,807
9	▼ <b>Ignorantes</b> by Bad Bunny	4,061,783

# POINTS TO THINK

Which artists are effective and efficient?

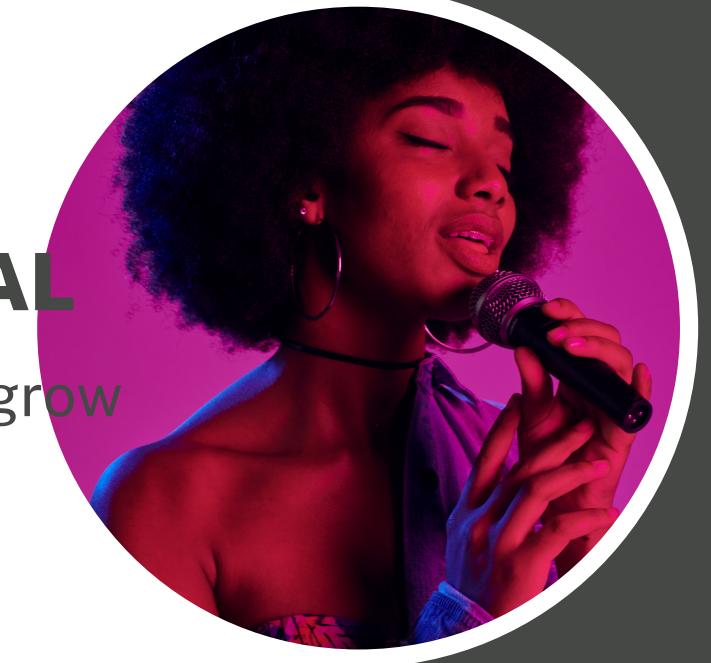
## COST

Will the sales grow as much as the money you spend?

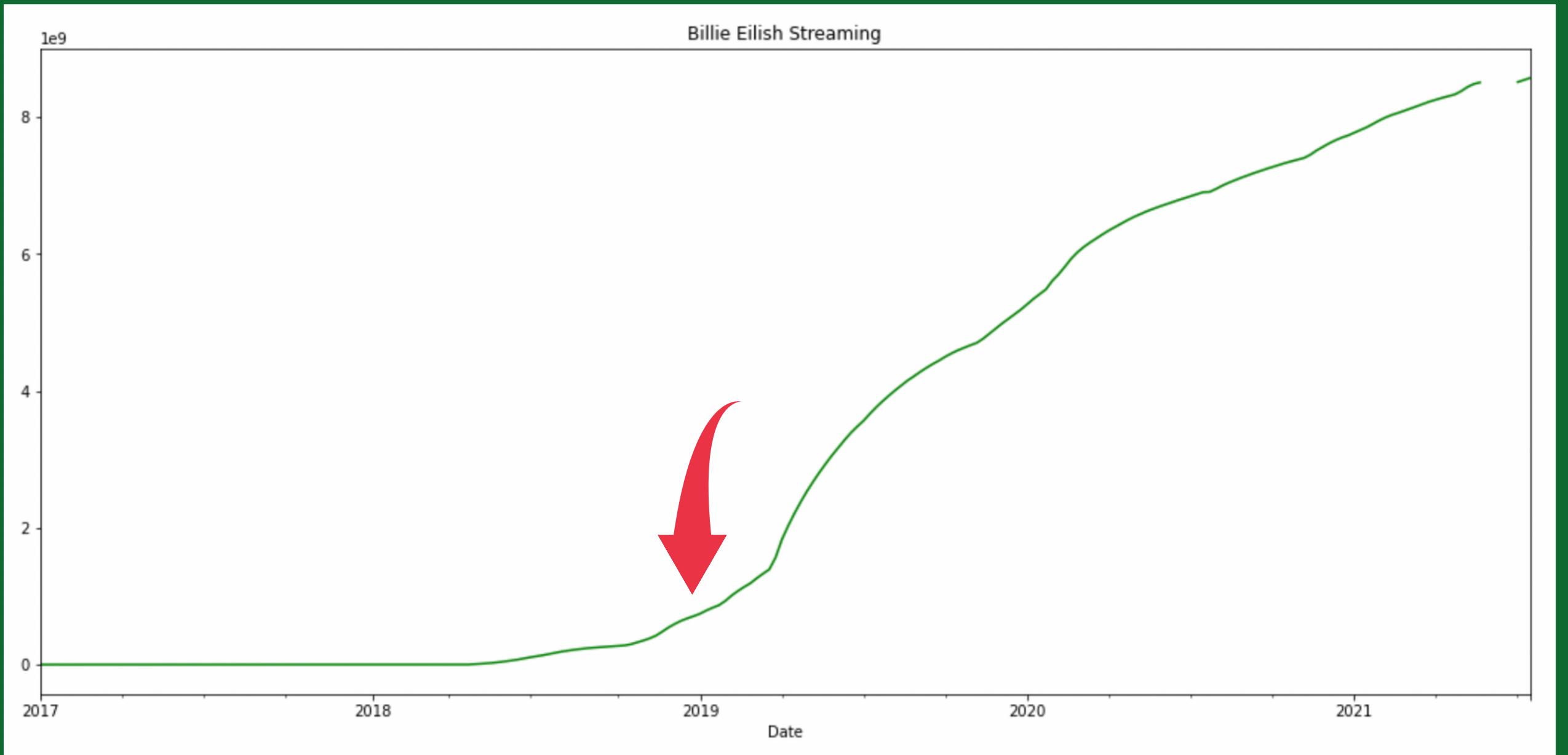


## GROWTH POTENTIAL

Will the artist's influence grow further after contraction?



# BILLIE EILISH STREAMING



When was the best time to sign a contract? Growth potential is not very visible before 2019. However, after 2019, we can see streaming booming. If any labels had predicted the singer's future growth before 2019, they would have signed a contract with Billie Eilish. The label would have made huge profits

# WHAT I DO?

I process data provided by Spotify to recommend effective and efficient artist candidates



## DETERMINING GROWTH

Predict the future growth potential of singers



## ARTIST SEGMENTATION

Divide singers into different groups.

# ABOUT DATA

I got the Top 200 Streaming Chart from Spotify. This data includes charts from 2017 to 2021.

Position	Track Name	Artist	Streams	Date	Genre
0	1 Starboy	The Weeknd	3135625	2017-01-01	['canadian pop', 'canadian contemporary r&b', ...]
1	2 Closer	The Chainsmokers	3015525	2017-01-01	['pop', 'pop dance', 'tropical house', 'edm', ...]
2	3 Let Me Love You	DJ Snake	2545384	2017-01-01	['pop', 'electronic trap', 'dance pop', 'edm', ...]
3	4 Rockabye (feat. Sean Paul & Anne-Marie)	Clean Bandit	2356604	2017-01-01	['pop', 'uk dance', 'dance pop', 'uk funky', ...]
4	5 One Dance	Drake	2259887	2017-01-01	['toronto rap', 'canadian pop', 'canadian hip ...']

1,128 Artists are in this 4 years chart

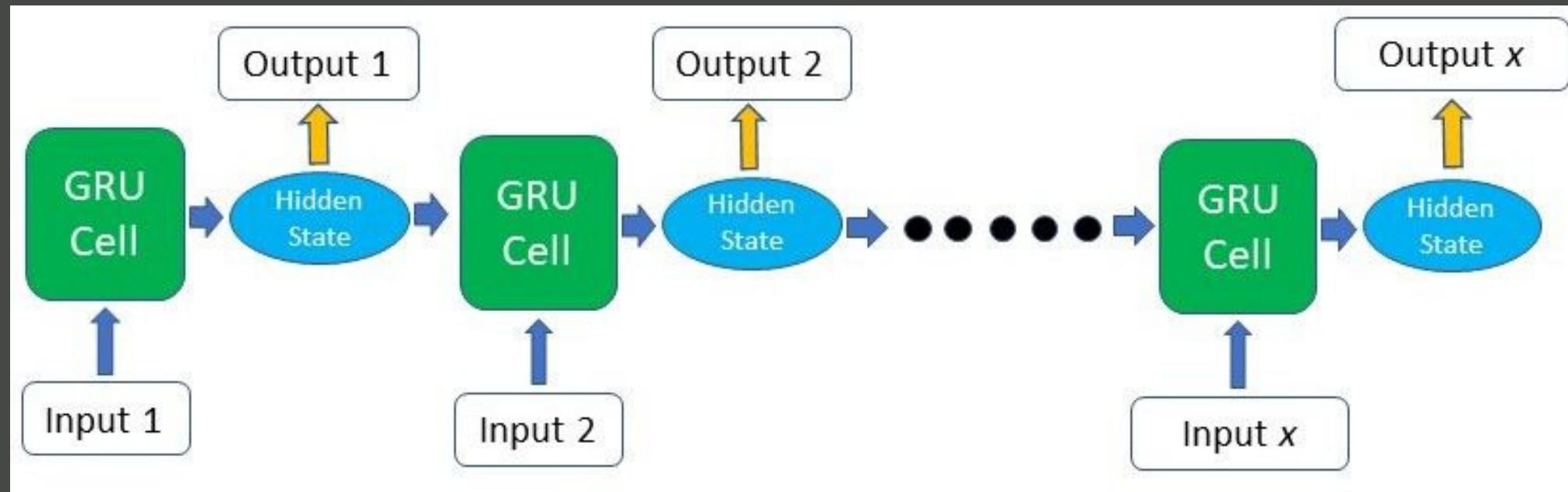
Each song have average 1,188,494 streams each day

The singer with the most streams in four years is Post Malone. 13,513,461,417 Streams

The singer with the fewest streams in four years is M. I. A. 341,003 Streams

I have rounded up the 100 artists on this chart in order of the most streaming.





# DETERMINING GROWTH

I want to predict the growth rate in three months.

## NEURON NETWORK GRU

I decided to use the GRU model of the neuron network. This model uses data from the past to predict the future. For example, if you predict the number of streams tomorrow, you are using the number of streams today, 1 day ago, and 2 days ago to predict.

**Inputs**       $x_{t-4} \ x_{t-3} \ x_{t-2} \ x_{t-1} \ x_t$       **Outputs**       $y_{t+1} \ y_{t+2}$

**Samples**

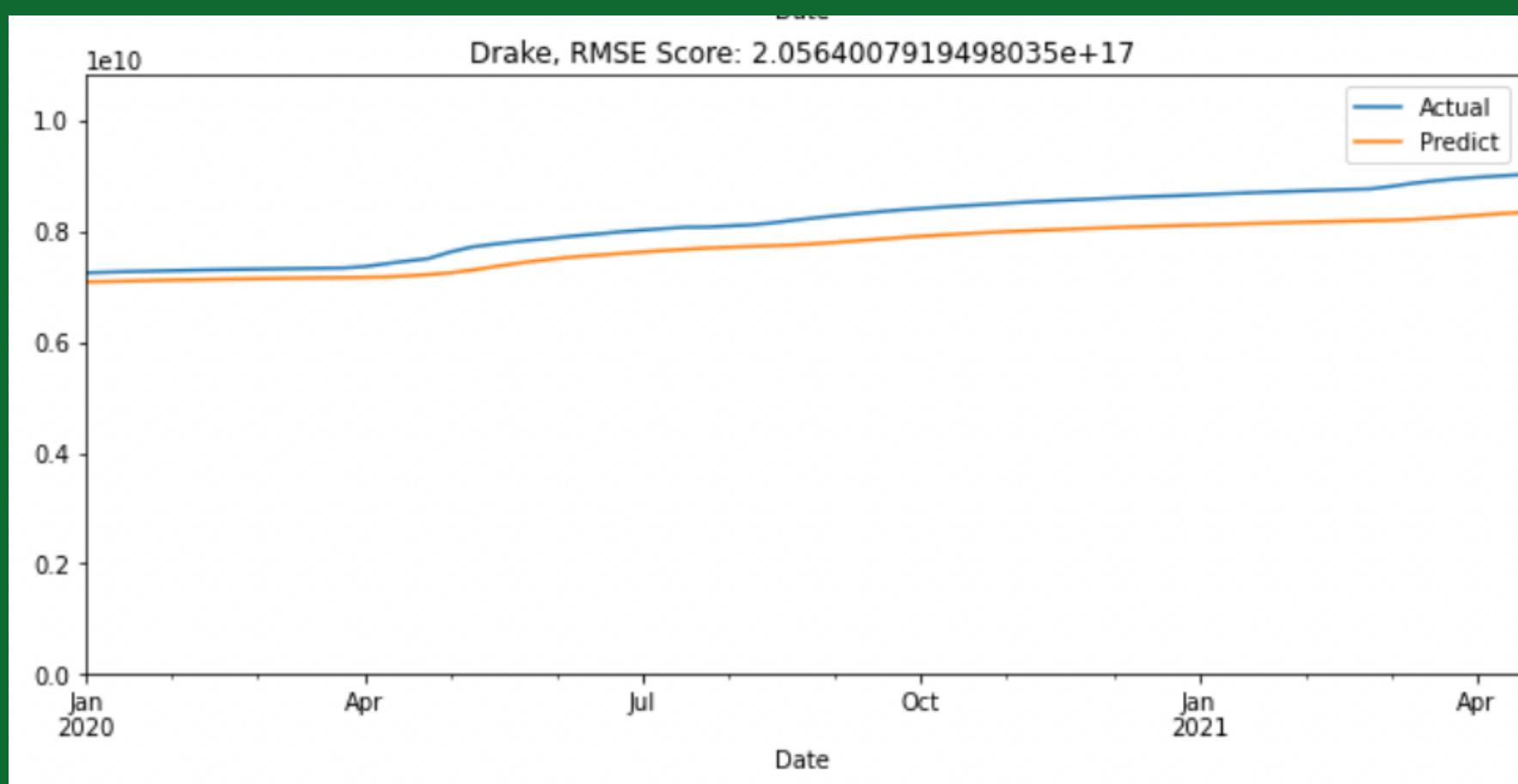
Adj Close

Date	Adj Close	$x_{t-4}$	$x_{t-3}$	$x_{t-2}$	$x_{t-1}$	$x_t$	$y_{t+1}$	$y_{t+2}$
2013-01-02	257.31							
2013-01-03	258.48							
2013-01-04	259.15							
2013-01-07	268.46	257.31	258.48	259.15	268.46	266.38	266.35	265.34
2013-01-08	266.38							
2013-01-09	266.35							
2013-01-10	265.34							
2013-01-11	267.94							
2013-01-14	272.73							
2013-01-15	271.90							

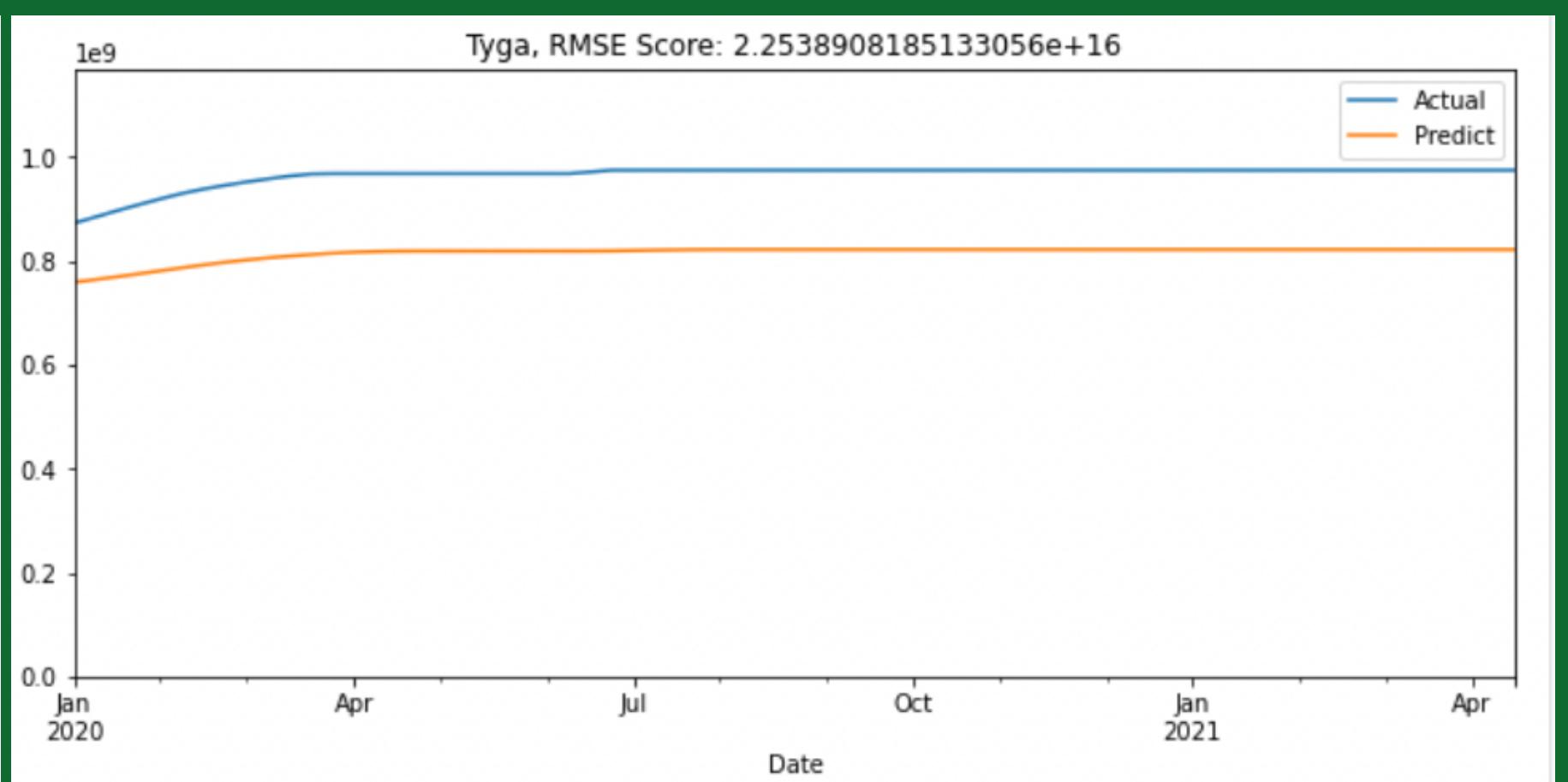
Each time step has one feature

3-D array = [# of samples, # of time steps, # of features]

# DRAKE



# TYGA



# DRAKE



Rank: 4th

Streaming since 2017: 9 billions.

After 3 months,  
the streaming growth rate is  
predicted to be 1.4%.

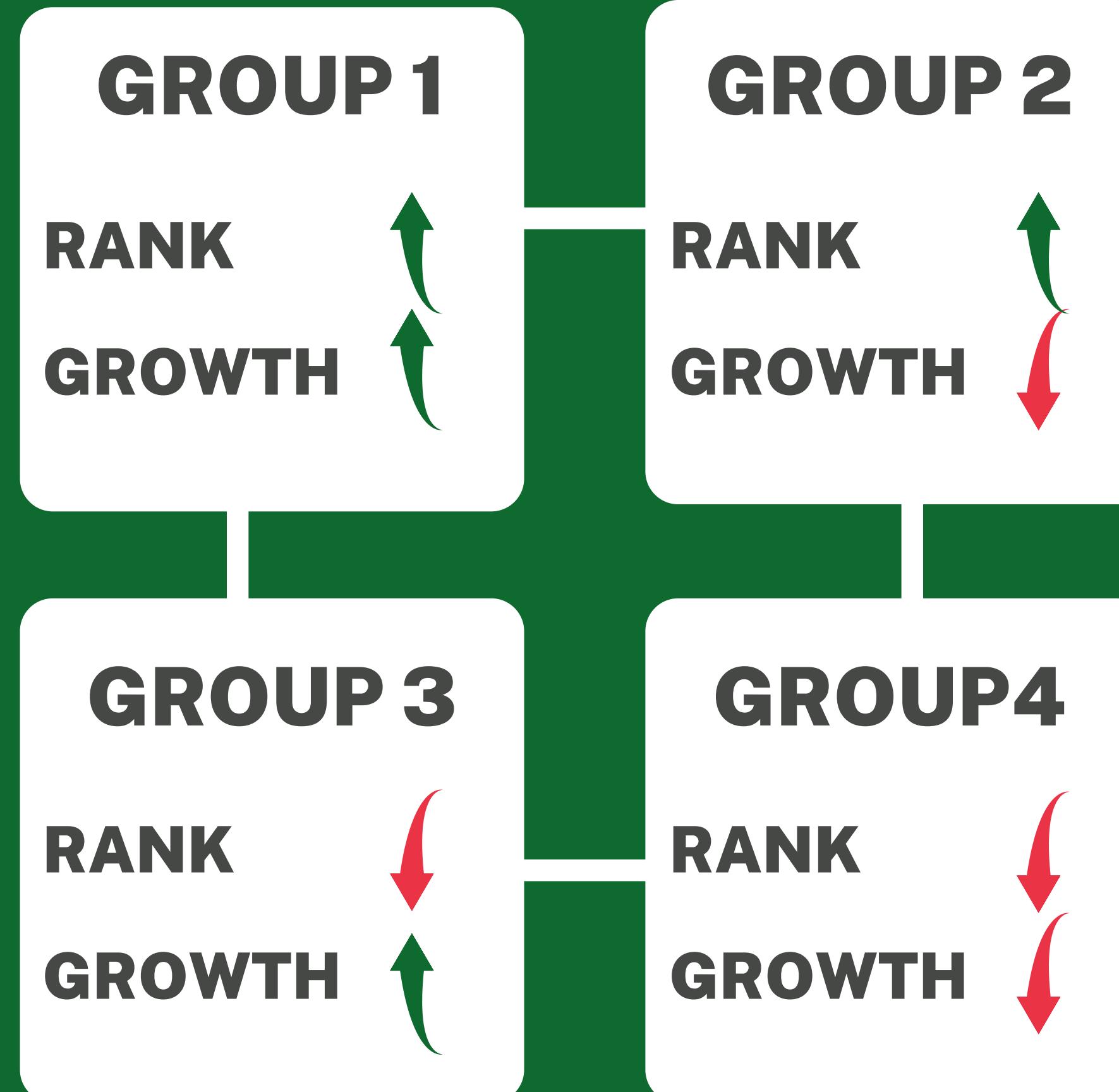
# TYGA

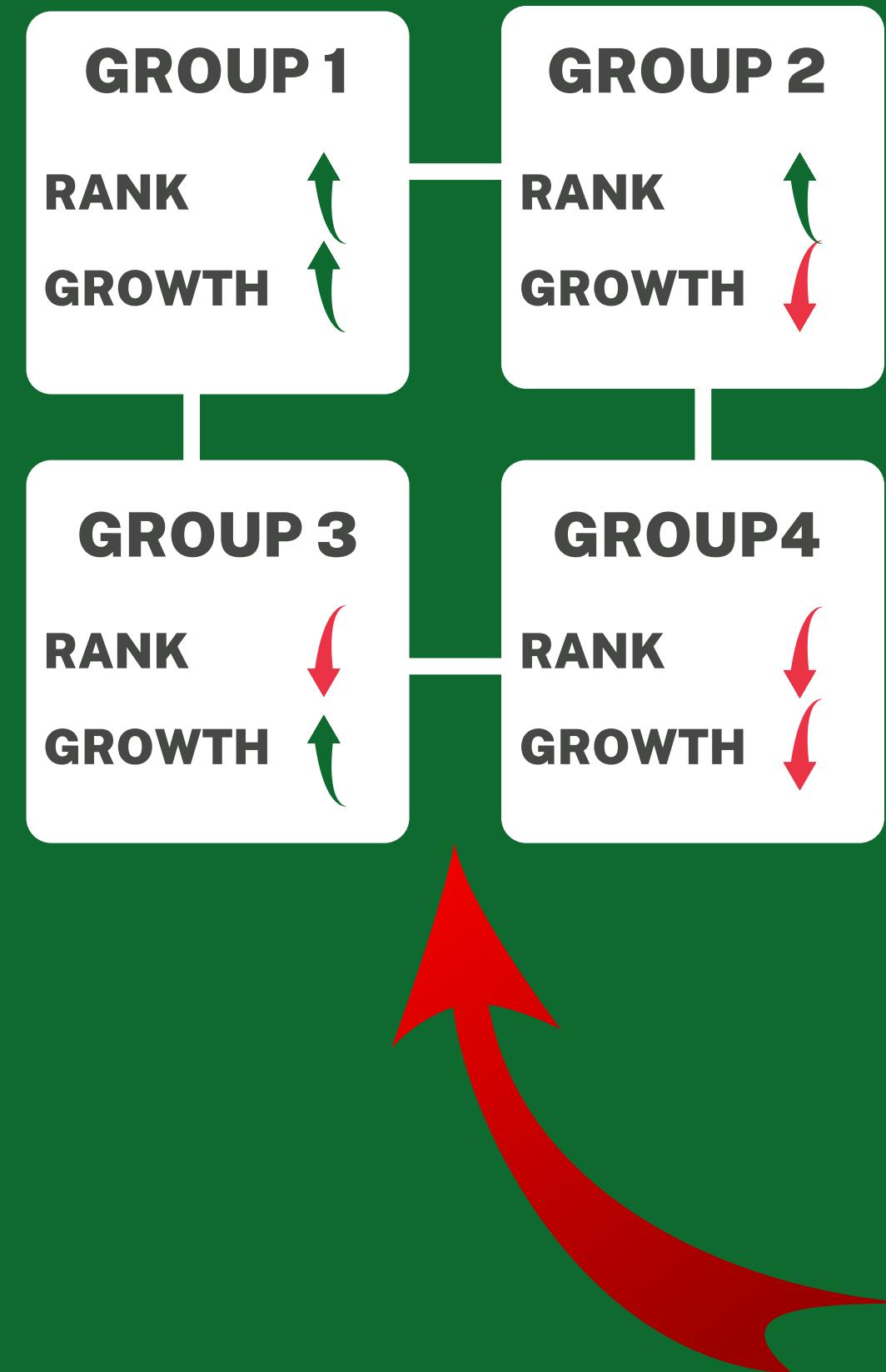


Rank: 97th

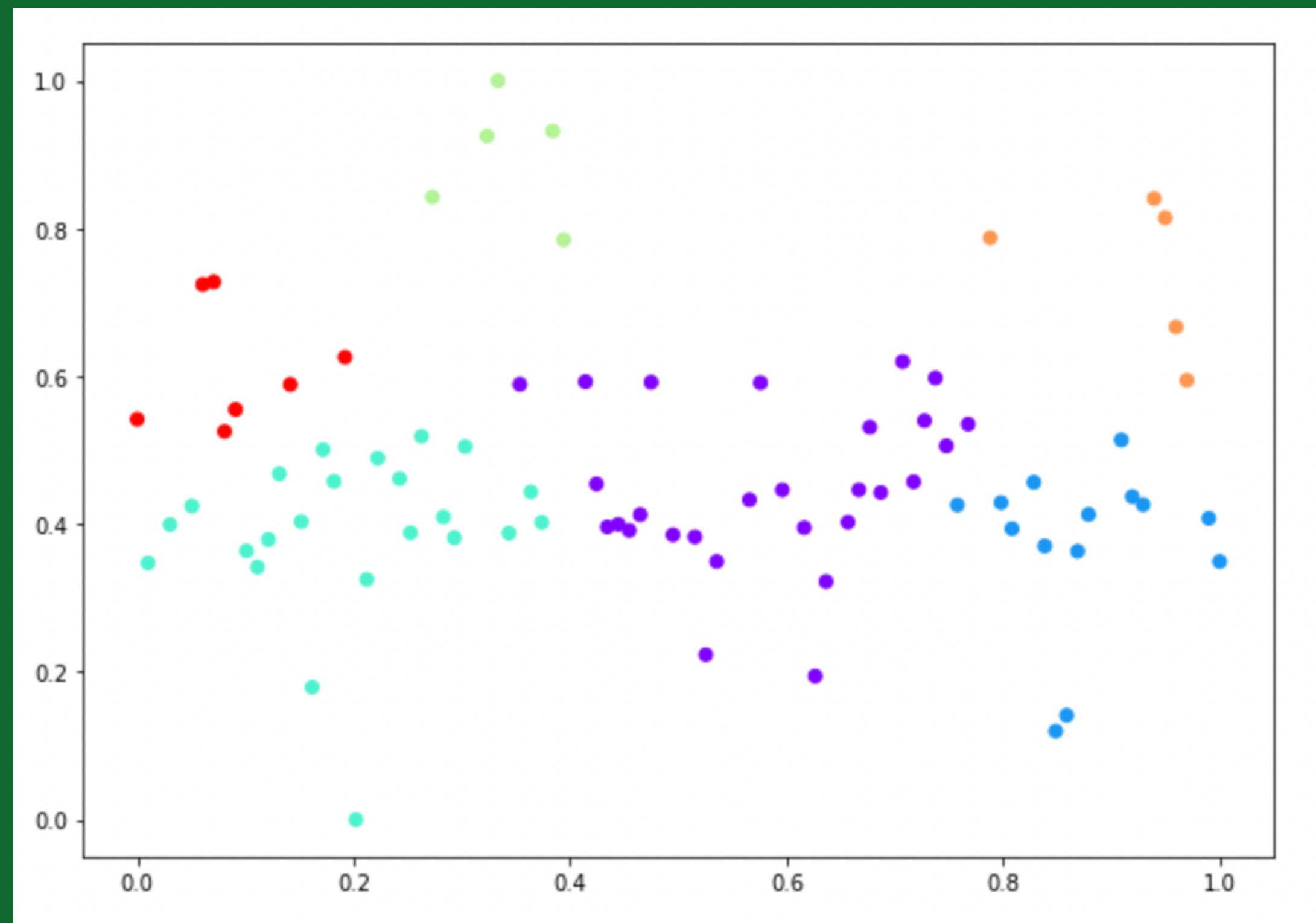
Streaming since 2017: 974 millions.

After 3 months,  
the streaming growth rate is  
predicted to be 20.5%.





# CLUSTERING PERFORMED



# REPRESENTATION

Three artists representing each group were selected.



**BTS**



**LADY GAGA**



**POST MALONE**



Rank	40.000000
Future Growth	0.390759

Rank	28.000000
Future Growth	0.447333

Rank	1.000000
Future Growth	0.153796

# REPRESENTAION

Three artists representing each group were selected.

**GROUP 2**  
**RANK**  
**GROWTH**



## DRAKE



Rank	<b>4.000000</b>
Future Growth	<b>0.014655</b>

## MAROON 5



Rank	<b>19.000000</b>
Future Growth	<b>0.071677</b>

## CARDI B



Rank	<b>27.000000</b>
Future Growth	<b>0.131144</b>

# REPRESENTAION

Three artists representing each group were selected.

## GROUP 3

RANK



GROWTH



### TYGA



Rank	97.000000
Future Growth	0.205176

### BENNY



Rank	79.000000
Future Growth	0.393341

### LIL MOSEY



Rank	96.000000
Future Growth	0.275643

# REPRESENTAION

Three artists representing each group were selected.

**GROUP4**

**RANK**

**GROWTH**



**BRUNO MARS**



Rank	52.000000
Future Growth	-0.001709

**21 SAVAGE**



Rank	69.000000
Future Growth	0.056952

**SHAKIRA**



Rank	84.000000
Future Growth	-0.013659

BTS



**GROUP 1**

**RANK**

**GROWTH**



LADY GAGA



POST MALONE



TYGA



BENNY



LIL MOSEY



**GROUP 3**

**RANK**

**GROWTH**





**THANK YOU!**