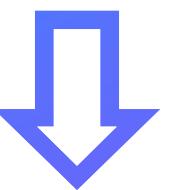


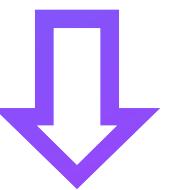
# **Recommendation for Artists**

**via Spotify Streaming**

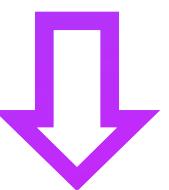
# **Problem Statement**



# **Data Preparation**



# **Data Analysis**

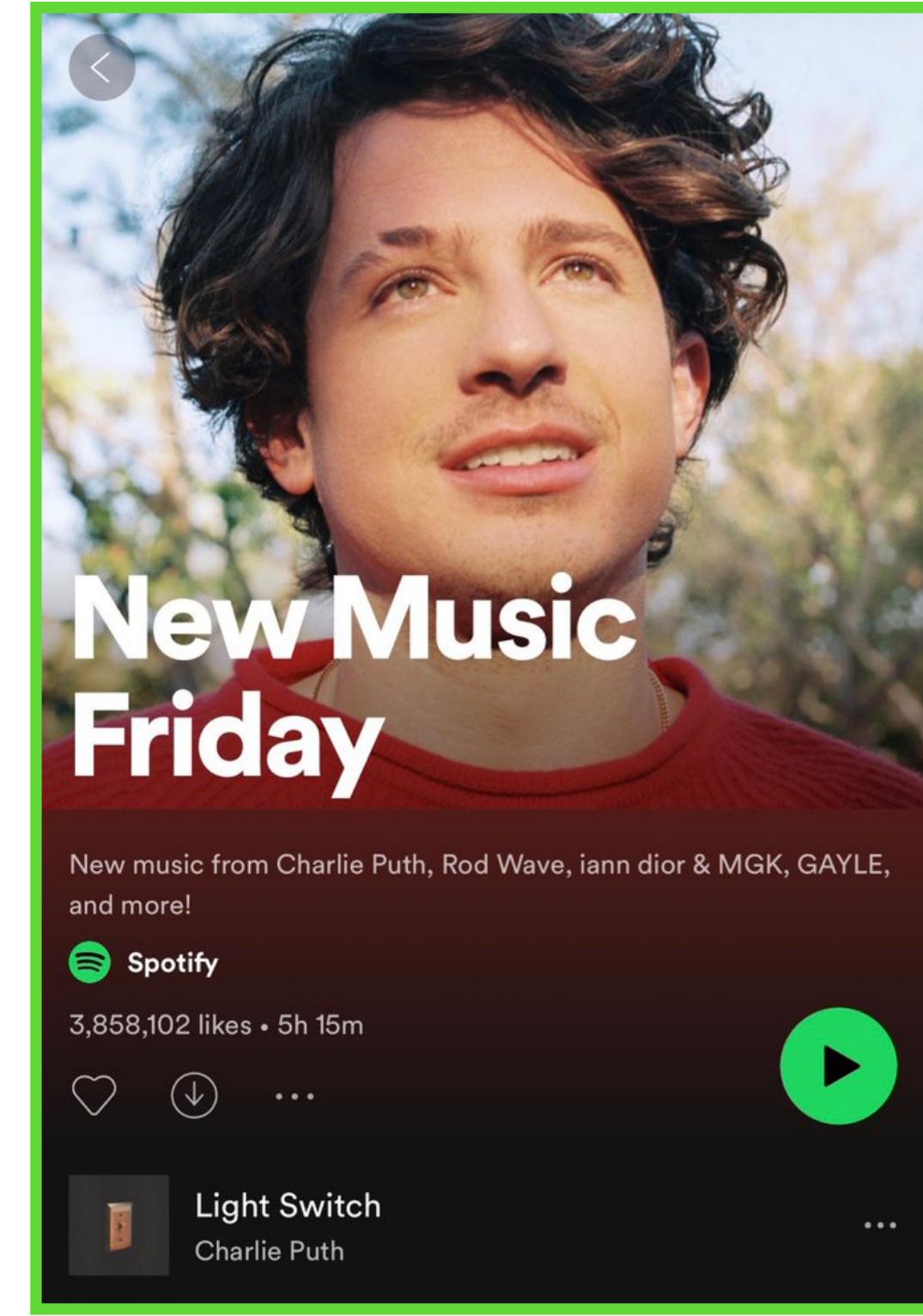


# **Visualization**

# Problem Statement



Music industry and its impact on the economy, and to achieve such success cannot count the huge contribution of music streaming services—like Spotify



And in this scenario, we are an agency that can help management plans and strategies for Charlie Puth. By focusing on what can grow **streaming counts** and target **the right audience**.

**[Persona]** We analyze & specify about *demographic info, bio, brand affinity, awards and achievements, frustrations, and motivations* that Charlie Puth have.

**Brand affinity**

Charlie Puth is a popular singer-songwriter who is known for his catchy pop songs and smooth vocals. His fans are typically young adults who are passionate about music and pop culture. They are drawn to Charlie's relatable lyrics and his positive attitude.

**Awards & Achievements**

In 2011, Charlie Puth won the Pop Crush Music Award for Best Cover Song for his work 'Someone like You.'

For his performance in 'See You Again', he received the Hollywood Music in Media Award for Song – Feature Film, as well as the Critics' Choice Movie Award for Best Song in 2015. For the same work, he was also given the Billboard Music Award for Top Rap Song in 2016.

In 2017, he released two songs, "Attention" and "How Long", with the former peaking at number five on Billboard Hot 100. Both were included in his second studio album, Voicenotes (2018), which was released to positive reviews from critics and peaked at number four on the Billboard 200.

In 2019, Puth released the singles "I Warned Myself", "Mother" and "Cheating On You". His third studio album is expected to be released in 2020.

**Demographic info**

Age  
29

Location  
Rumson, New Jersey, United States

Family Status  
His mother is Debra, a music teacher who |

+ Add field

**Bio**

He is an American singer, songwriter, and record producer. His initial exposure came through the viral success of his song videos uploaded to YouTube. Charlie's breakthrough came in 2015 with the release of his debut single, "Marvin Gaye," featuring Meghan Trainor.

**Frustrations (pain points)**

Feeling isolated from friends and family, dealing with negative comments from fans, and being away from home for long periods of time

**Motivations (goals)**

To continue to make music that connects with people, to tour the world, and to make a positive impact on the world

# Hypothesis

**Hypothesis #1: Plan to release new music products based on high peak streaming of season factors.**

**Hypothesis #2: Launch the tour live show where the area has the highest streaming**

**Hypothesis #3: Opportunity to extend the music market based on the highest streams of locations**

# Data Preparation



Scott Teal  
Senior Product Marketing Specialist - Tableau  
July 17, 2019

SHARE:



This summer, we're celebrating Data + Music—music trends, artists, genres, and towns—in a [series of visualizations](#) from the Tableau community. Like Pooja Gandhi, who visualized [audio features of top tracks](#), or Sean Miller, who visualized the [greatest metal albums of all time](#). In a [recent webinar](#) with our team and Skyler Johnson, Data Visualization Designer at Spotify, we shared how you can dig into the data behind [Spotify's Top 200](#) and Viral 50 charts. Read this blog post to learn how to get started with Spotify data and create a basic dashboard to understand top tracks and artists by country.

If you'd like to learn more about how to connect to your own Spotify listening data with the Spotify API, [watch the webinar with Skyler](#).

## Connecting to Spotify data

Follow these steps to learn how to get the latest data from Spotify's charts and bring it into Tableau for analysis.

### Get the data:

1. Navigate to <https://spotifycharts.com/regional> to download data from Spotify's Top Charts.
2. Select Top 200 or Viral 50 depending on the purpose of your analysis—to see top tracks or trending tracks. For this analysis, we will choose Top 200.
3. Use the dropdowns to filter by your specific country or select Global to see all country data. For this analysis, we're going to focus on Global data so we can see listening habits by country. You can also choose to select Daily or Weekly data. For the purpose of this analysis, we will choose Daily and use the date dropdown to select the most recent date.
4. Click "Download to CSV" in the top right-hand corner. Note: I performed this for all available countries and dates prior to July 1st, 2019 and combined the csv's into one file called Spotify\_Daily\_Streaming. That can be [downloaded here](#).



DHRUVIL DAVE · UPDATED 2 YEARS AGO

▲ 227

New Notebook

Download (991 MB)

:

## Spotify Charts

A dataset of all daily hit charts curated by Spotify

Data Card Code (15) Discussion (2)

### About Dataset

#### Content

This is a complete dataset of all the "Top 200" and "Viral 50" charts published globally by Spotify. Spotify publishes a new chart every 2-3 days. This is its entire collection since January 1, 2017.

Usability ⓘ  
10.00

License  
Database: Open Database, Cont...

Expected update frequency



ANDRII SAMOSHYN · UPDATED 3 YEARS AGO

▲ 253

New Notebook

Download (3 MB)

:

## Dataset of songs in Spotify

The full list of genres

Data Card Code (47) Discussion (6)

### About Dataset

The full list of genres included in the CSV are Trap, Techno, Techhouse, Trance, Psytrance, Dark Trap, DnB (drums and bass), Hardstyle, Underground Rap, Trap Metal, Emo, Rap, RnB, Pop and Hiphop.

Usability ⓘ  
10.00

License  
CC0: Public Domain

Expected update frequency



## Here are the datasets we collected from:

- Spotify Charts—Top 200—Global (Combined by Scott Teal, 2019) [\[URL\]](#)
- Spotify Charts—Top 200—Global (Combined by Dhruvil Dave, 2022) [\[URL\]](#)
- List of Genres in Spotify (Combined by Andrii Samoshyn, 2020) [\[URL\]](#)

	Date	Track URL	Position	Track Name	Artist	Streams	Country
0	2017-07-20	https://open.spotify.com/track/3RXkboS74UYzN14...	1	NaN	NaN	3457	Lithuania
1	2018-07-31	https://open.spotify.com/track/77wz2VtAwxAwYOG...	1	Miljonair (feat. SBMG, Lil' Kleine, Boef & Ron...	\$hirak	238729	Netherlands
2	2018-08-02	https://open.spotify.com/track/77wz2VtAwxAwYOG...	1	Miljonair (feat. SBMG, Lil' Kleine, Boef & Ron...	\$hirak	245639	Netherlands
3	2017-07-23	https://open.spotify.com/track/6mw02h3qbWmuq2b...	1	Millionär	187 Strassenbande	387632	Germany
4	2018-06-29	https://open.spotify.com/track/2iUXsYOEPPhVqEBw...	1	Youngblood	5 Seconds of Summer	261795	Australia
5	2018-06-11	https://open.spotify.com/track/55S2PQgSMYAhgoT...	1	Youngblood	5 Seconds of Summer	276266	Australia
6	2018-06-16	https://open.spotify.com/track/2iUXsYOEPPhVqEBw...	1	Youngblood	5 Seconds of Summer	56610	New Zealand
7	2018-09-27	https://open.spotify.com/track/7ATATJztoWLcqDA...	1	BEBE	6ix9ine	12957	Panama
8	2018-09-03	https://open.spotify.com/track/7ATATJztoWLcqDA...	1	BEBE	6ix9ine	14261	Panama
9	2018-09-14	https://open.spotify.com/track/7ATATJztoWLcqDA...	1	BEBE	6ix9ine	14429	Panama

## [Scott Teal, 2019]

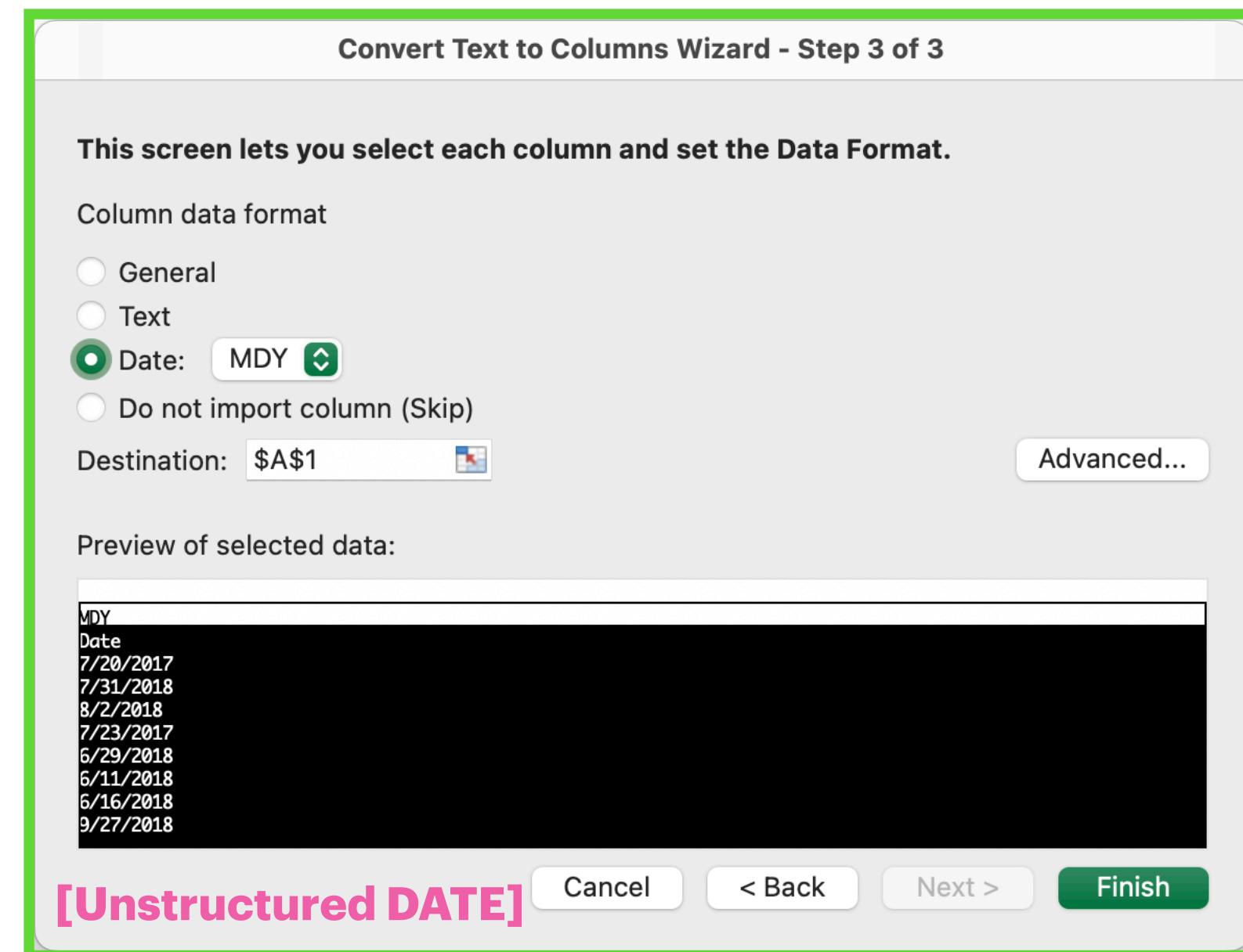
	title	rank	date	artist	url	region	chart	trend	streams
0	Chantaje (feat. Maluma)	1	2017-01-01	Shakira	https://open.spotify.com/track/6mlCuAdrwEjh6Y6...	Argentina	top200	SAME_POSITION	253019.0
1	Vente Pa' Ca (feat. Maluma)	2	2017-01-01	Ricky Martin	https://open.spotify.com/track/7DM4BPaS7uofFul...	Argentina	top200	MOVE_UP	223988.0
2	Reggaetón Lento (Bailemos)	3	2017-01-01	CNCO	https://open.spotify.com/track/3AEZUABDXNtecAO...	Argentina	top200	MOVE_DOWN	210943.0
3	Safari	4	2017-01-01	J Balvin, Pharrell Williams, BIA, Sky	https://open.spotify.com/track/6rQSrBHf7HIZjt...	Argentina	top200	SAME_POSITION	173865.0
4	Shaky Shaky	5	2017-01-01	Daddy Yankee	https://open.spotify.com/track/58IL315gMSTD37D...	Argentina	top200	MOVE_UP	153956.0
5	Traicionera	6	2017-01-01	Sebastian Yatra	https://open.spotify.com/track/5J1c3M4ElCFNxX...	Argentina	top200	MOVE_DOWN	151140.0
6	Cuando Se Pone a Bailar	7	2017-01-01	Rombai	https://open.spotify.com/track/1MpKZi1zTXpERKw...	Argentina	top200	MOVE_DOWN	148369.0
7	Otra vez (feat. J Balvin)	8	2017-01-01	Zion & Lennox	https://open.spotify.com/track/3QwBODjSEzelZyV...	Argentina	top200	MOVE_DOWN	143004.0
8	La Bicicleta	9	2017-01-01	Carlos Vives, Shakira	https://open.spotify.com/track/0sXvAOmXgjR2QUq...	Argentina	top200	MOVE_UP	126389.0
9	Dile Que Tu Me Quieres	10	2017-01-01	Ozuna	https://open.spotify.com/track/20ZAJdsKB5IGbGj...	Argentina	top200	MOVE_DOWN	112012.0

## [Dhruvil Dave, 2022]

	danceability	energy	key	loudness	mode	speechiness	acousticness	instrumentalness	liveness	valence	...	id	uri	track_href	analysis_url	duration_ms	time_signature	genre	song_name	Unnamed: 0	title
0	0.831	0.814	2	-7.364	1	0.4200	0.0598	0.013400	0.0556	0.3890	...	2Vc6NJ9PW9gD9q343XFRKx	spotify:track:2Vc6NJ9PW9gD9q343XFRKx	https://api.spotify.com/v1/tracks/2Vc6NJ9PW9gD...	https://api.spotify.com/v1/audio-analysis/2Vc6...	124539	4	Dark Trap	Mercury: Retrograde	NaN	NaN
1	0.719	0.493	8	-7.230	1	0.0794	0.4010	0.000000	0.1180	0.1240	...	7pgJBLVz5Vmnl7uGHmRj6p	spotify:track:7pgJBLVz5Vmnl7uGHmRj6p	https://api.spotify.com/v1/tracks/7pgJBLVz5Vm...	https://api.spotify.com/v1/audio-analysis/7pgJ...	224427	4	Dark Trap	Pathology	NaN	NaN
2	0.850	0.893	5	-4.783	1	0.0623	0.0138	0.000004	0.3720	0.0391	...	0vSWgAlfpye0WCGeNmuhNy	spotify:track:0vSWgAlfpye0WCGeNmuhNy	https://api.spotify.com/v1/tracks/0vSWgAlfpye0...	https://api.spotify.com/v1/audio-analysis/0vSW...	98821	4	Dark Trap	Symbiote	NaN	NaN
3	0.476	0.781	0	-4.710	1	0.1030	0.0237	0.000000	0.1140	0.1750	...	0VSXnJqQkwuH2ei1nOQ1nu	spotify:track:0VSXnJqQkwuH2ei1nOQ1nu	https://api.spotify.com/v1/tracks/0VSXnJqQkwuH...	https://api.spotify.com/v1/audio-analysis/0VSX...	123661	3	Dark Trap	ProductOfDrugs (Prod. The Virus and Antidote)	NaN	NaN
4	0.798	0.624	2	-7.668	1	0.2930	0.2170	0.000000	0.1660	0.5910	...	4jCeguq9rMTlbMmPHuO7S3	spotify:track:4jCeguq9rMTlbMmPHuO7S3	https://api.spotify.com/v1/tracks/4jCeguq9rMTl...	https://api.spotify.com/v1/audio-analysis/4jCe...	123298	4	Dark Trap	Venom	NaN	NaN
5	0.721	0.568	0	-11.295	1	0.4140	0.0452	0.212000	0.1280	0.1090	...	6fsyplJHyWmelNsOLC1cos	spotify:track:6fsyplJHyWmelNsOLC1cos	https://api.spotify.com/v1/tracks/6fsyplJHyWme...	https://api.spotify.com/v1/audio-analysis/6fsy...	112511	4	Dark Trap	Gatteka	NaN	NaN
6	0.718	0.668	8	-4.162	1	0.1370	0.0254	0.007800	0.1240	0.0380	...	0XfQbq7DaMOmVXgQ71eA6E	spotify:track:0XfQbq7DaMOmVXgQ71eA6E	https://api.spotify.com/v1/tracks/0XfQbq7DaMOm...	https://api.spotify.com/v1/audio-analysis/0XfQ...	77584	4	Dark Trap	kamikaze (+ pulse)	NaN	NaN
7	0.694	0.711	8	-5.525	1	0.2210	0.0397	0.000000	0.1120	0.2830	...	0LLeuNBWPOg3XA73yab3PT	spotify:track:0LLeuNBWPOg3XA73yab3PT	https://api.spotify.com/v1/tracks/0LLeuNBWPOg3...	https://api.spotify.com/v1/audio-analysis/0LLe...	127524	3	Dark Trap	T.R.U. (Totally Rotten Underground)	NaN	NaN
8	0.774	0.751	1	-2.445	1	0.1980	0.0614	0.000000	0.0728	0.1890	...	37gqBnUAZe8BY8WR56kDNk	spotify:track:37gqBnUAZe8BY8WR56kDNk	https://api.spotify.com/v1/tracks/37gqBnUAZe8B...	https://api.spotify.com/v1/audio-analysis/37gq...	140326	4	Dark Trap	I Put My Dick in Your Mental	NaN	NaN
9	0.893	0.907	11	-10.406	1	0.3670	0.1520	0.031100	0.5580	0.3020	...	2ggqfj97qyiORmXoVFzP5j	spotify:track:2ggqfj97qyiORmXoVFzP5j	https://api.spotify.com/v1/tracks/2ggqfj97qyiO...	https://api.spotify.com/v1/audio-analysis/2ggq...	121979	4	Dark Trap	Andromeda	NaN	NaN

	Playlist	Genre
0	19WuHd4MxWLzE1fpMmw4S4	Dark Trap
1	6XyR8uzgkSoDzHuOxxRtLH	Dark Trap
2	37lj3ofyhvEhFEH8YZMZ2X	Dark Trap
3	07zTlfPpsxeoWdumbkNWMI	Dark Trap
4	2dCISRLsnptdkDQnpi5H2f	Dark Trap
5	3CCC01CIQgca5cu14tgSzj	Underground Rap
6	6MrMW8FhdwKI34liP3fovI	Trap Metal
7	4cuGsxEp3w42Q8GVMTEMD	Trap Metal
8	6leTmw4eOwpRqQXhR38WHk	Trap Metal
9	0OzrpLh3mFdRgQluMQtcwU	Trap Metal

[Andrii Samoshyn, 2020]



### Step 3: Modify Columns

Column Name	Data Type	Primary Key <input type="checkbox"/>	Allow Nulls <input type="checkbox"/>
Date	date	<input type="checkbox"/>	<input type="checkbox"/>
Track_URL	nvarchar(200)	<input type="checkbox"/>	<input type="checkbox"/>
Position	tinyint	<input type="checkbox"/>	<input type="checkbox"/>
Track_Name	nvarchar(200)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Artist	nvarchar(200)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Streams	int	<input type="checkbox"/>	<input type="checkbox"/>
Country	nvarchar(50)	<input type="checkbox"/>	<input type="checkbox"/>

[Fix Data Types]



```
--tạo cột thêm pay per stream
SELECT date, track_url, POSITION, track_name, artist, Streams, country, (Streams*0.003) as Pay_Per_Stream
FROM Spotify_Dataset_230820_01

--xử lý null
SELECT ISNULL(artist,'null'), ISNULL(track_name,'null')
SELECT*
from Spotify_Dataset_230820_01
WHERE Artist = 'null'

UPDATE Spotify_Dataset_230820_01
set Track_Name = 'Other'
WHERE Artist = 'null'

UPDATE Spotify_Dataset_230820_01
set Artist = 'Other'
WHERE Track_Name = 'null'

SELECT *
FROM Spotify_Dataset_230820_01
WHERE Track_Name = 'other' and Artist = 'other'

SELECT*
FROM Spotify_Dataset_230820_01
```

[Manipulate Streams → "Pay per Stream"]  
[Replace NULL values with "Others"]

The terminal window shows Python code for interacting with a website to crawl artist names and their genres. The code uses Selenium to find elements by ID and XPATH, and handles exceptions for missing elements. The browser window shows the Chosic Music Genre Finder website, which allows users to search for artists and view their genres.

[Crawl data from Artist Name to find Genres]

# Visualization & Analysis



## Recommendation for Artists via Spotify Streaming

Data: 2017-2019 || Streams shown in million

**56,497M**

Sum of Streams

**8058**

Count of Artist

**27.01K**

Count of Track Name

2017

2019



### Top 5 Most Streamed Tracks

Shape of You

489M

God's Plan

345M

Despacito - Remix

274M

rockstar

273M

Perfect

238M

### Top 5 Most Streamed Artists

● Sum of Streams ● Count of Track Name

1,500M

1,000M

500M

0M

Post Malone

1,764M

31

Drake

1,553M

71

Ed Sheeran

1,534M

51

XXXTENTACION

1,037M

46

Ariana Grande

945M

45

### Sum of Streams by Year, Quarter and Month

Sum of Streams

2,000M

1,000M

0M

Jan 2017

Jul 2017

Jan 2018

Jul 2018

Jan 2019

Jul 2019

Year

1,433M

1,782M

1,615M

1,570M

1,705M

1,749M

1,620M

1,896M

1,694M

1,972M

2,061M

1,924M

2,056M

2,240M

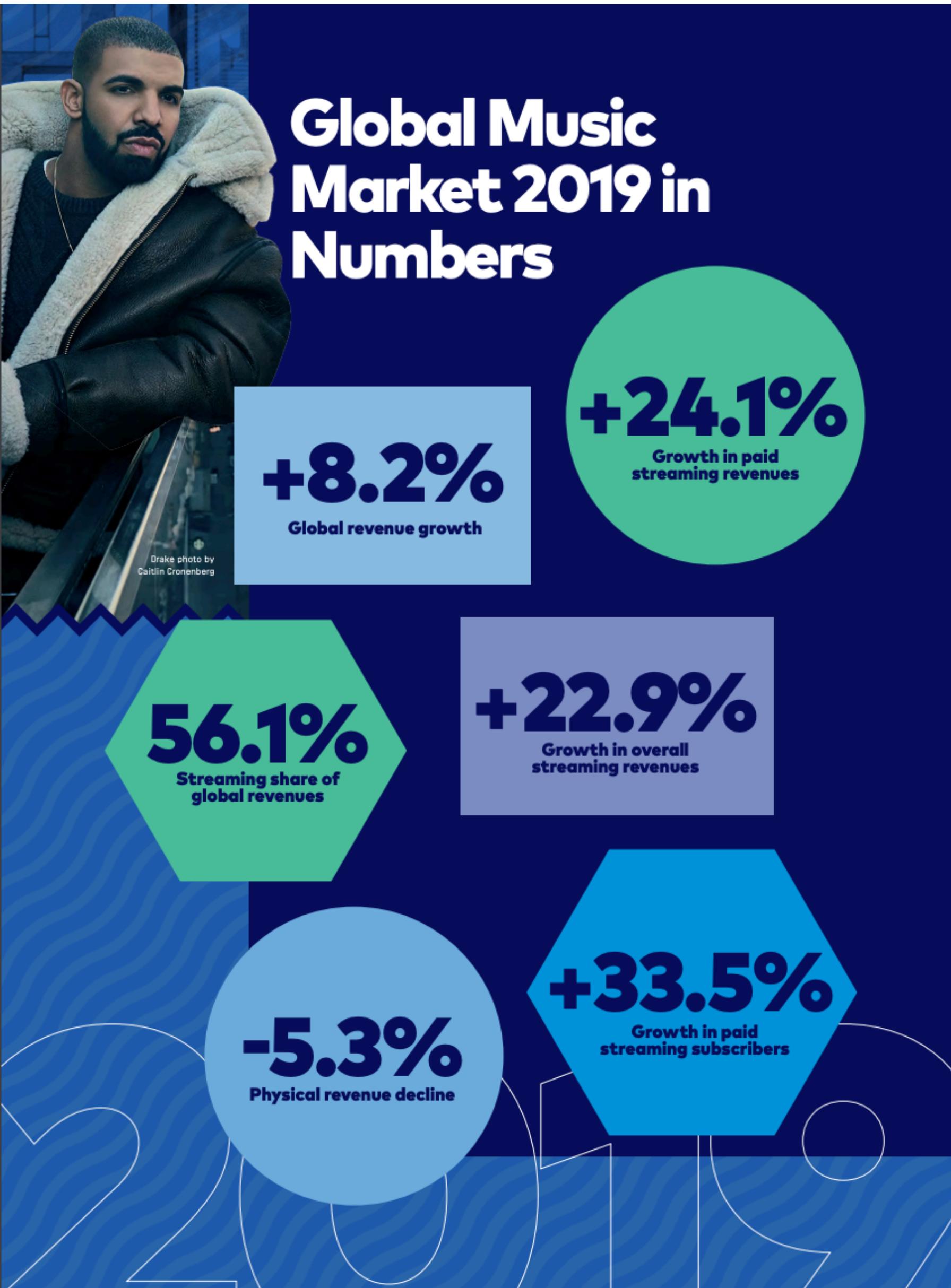
2,091M

2,091M

2,201M

86M

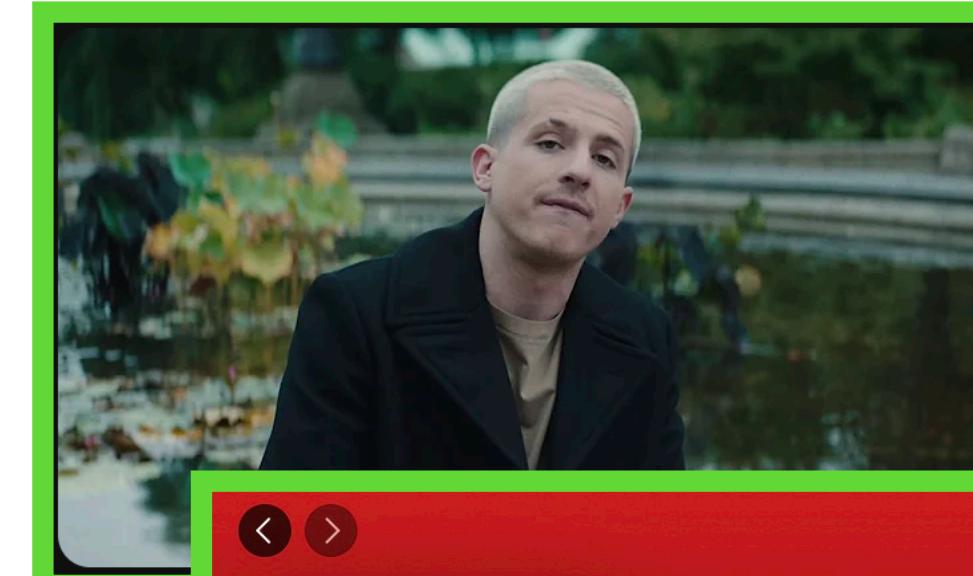
# IFPI (International Federation of the Phonographic Industry) Global Music Report 2019 vs 2020



# # Released Date



Streams increase during the summer and year-end, so we recommendation Charlie Puth to release a single or album at this time. Or teaser/footprint 1-2 months in advance so that the audience can grasp the color of the upcoming music release.



Charlie Puth - Cheating On You (Teaser)  
2K views • 3 years ago

Warner Music ME

1 Cheating on You  
Charlie Puth

October 1, 2019

© 2019 Artist Partner Group, Inc. for the United States and WEA International Inc. for the world outside of the United States. A  
© 2019 Artist Partner Group, Inc. for the United States and WEA International Inc. for the world outside of the United States. A

May 11, 2018

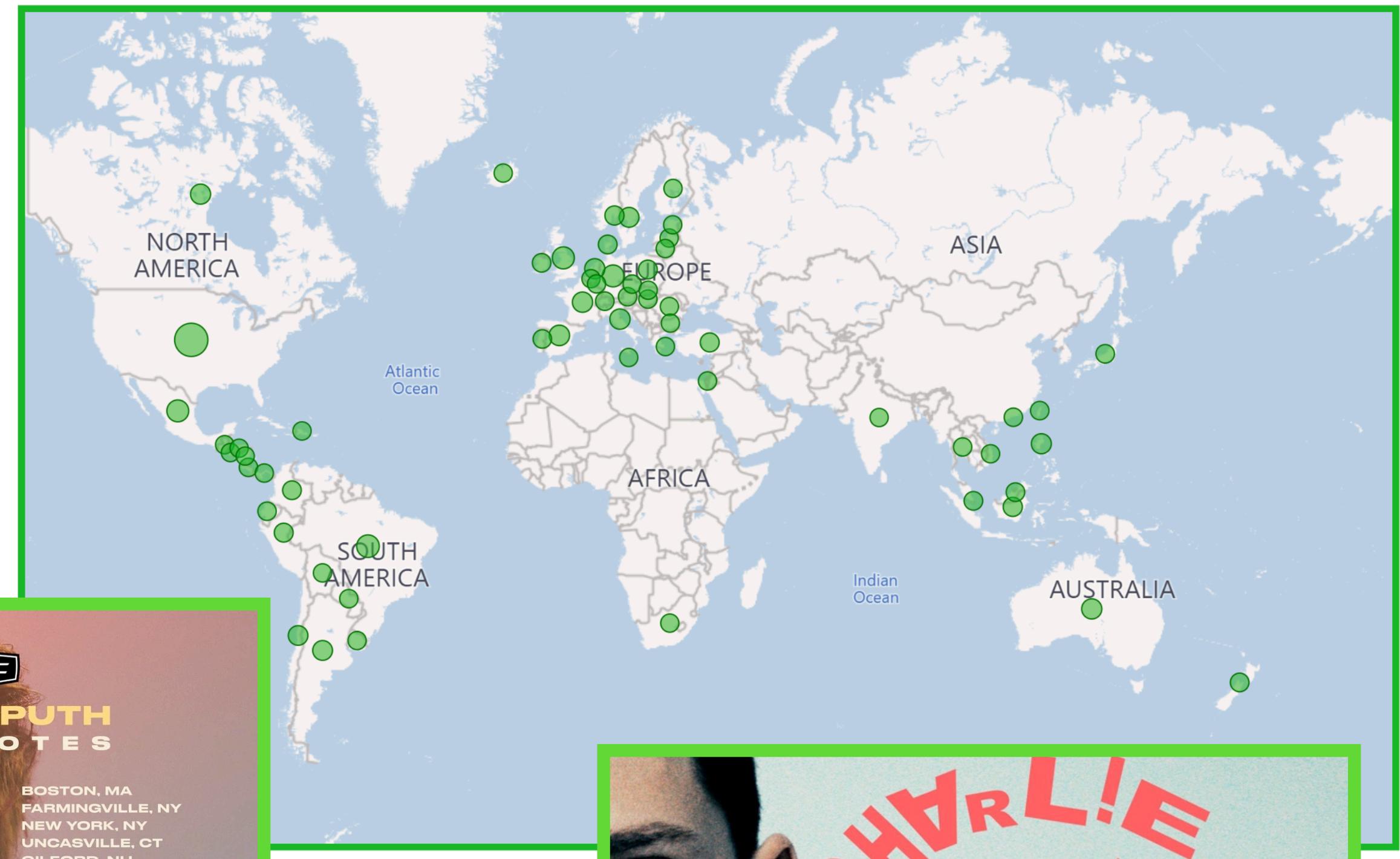
© 2018 Artist Partner Group, Inc. for the United States and WEA International Inc. for the world outside of the United States. A Warner Music Group Company.  
© 2018 Artist Partner Group, Inc. for the United States and WEA International Inc. for the world outside of the United States. A Warner Music Group Company.

Album  
**Voicenotes**

# #Locations

For locations with high streams, we'll recommend Charlie Puth to focus **event organization resources and sponsors** in that area. And for regions like Asia with less streams but **potential audience**, I'd try marketing strategies that are more relevant to the fanbase in the region - see how those regions listen to genres and artists. But at the time of 2019, during the COVID-19 pandemic, we should also **consider the timing of the tour to avoid difficult procedures**, and the number of spectators that can attend.

Country	Sum of Streams
Global	23,607,478,660
United States	8,374,849,621
Brazil	2,451,735,409
United Kingdom	2,145,094,850
Germany	2,069,139,998
Mexico	2,060,367,736
Spain	1,265,858,674
Italy	1,165,883,269
France	1,163,806,655
Australia	1,102,763,001
<b>Total</b>	<b>45,406,977,873</b>



# #Collaboration

With locations with a high concentration of listeners, we can work with artists with different fanbases/fandoms to appeal to different audiences like Country, Country Pop, and Pop

With the locations with potential listeners as above, we can collaborate with Asian artists, specifically K-Pop.



**Thanks for Listening**  
Have a great weekend!

