

# Analyzing music rankings from Billboard

Aline Hirsch  
Carlos Moreno Acero  
Charles Lee  
Quentin Ludet

---





---

# 01

## What can our program do?

---

## Collect Ranking Data

Billboard.com provides historical rankings of all top 100 songs. Our program scrapes this data directly from the website.

## Find Genres







Using the getGenre API, we found the genre of every song collected

## Determine Trends

With all of the data collected, we're able to create charts and graphs that show overall trends in popular music

### The Hot 100

APRIL 16, 2022

THIS WEEK		LAST WEEK		PEAK POS.	WKS ON CHART	
1	 <b>As It Was</b> Harry Styles	+	★	-	1	1
2	 <b>Heat Waves</b> Glass Animals	+	★	1	1	64
3	 <b>Big Energy</b> Latto	+	★	3	3	24
4	 <b>Stay</b> The Kid LAROI & Justin Bieber	+		2	1	
5	 <b>Enemy</b> Imagine Dragons X JID	+	★	5		
	 <b>Super Gremlin</b> Kodak Black	+				



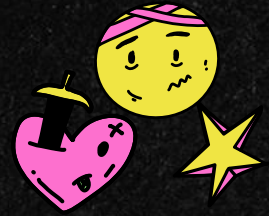


# EXAMPLES

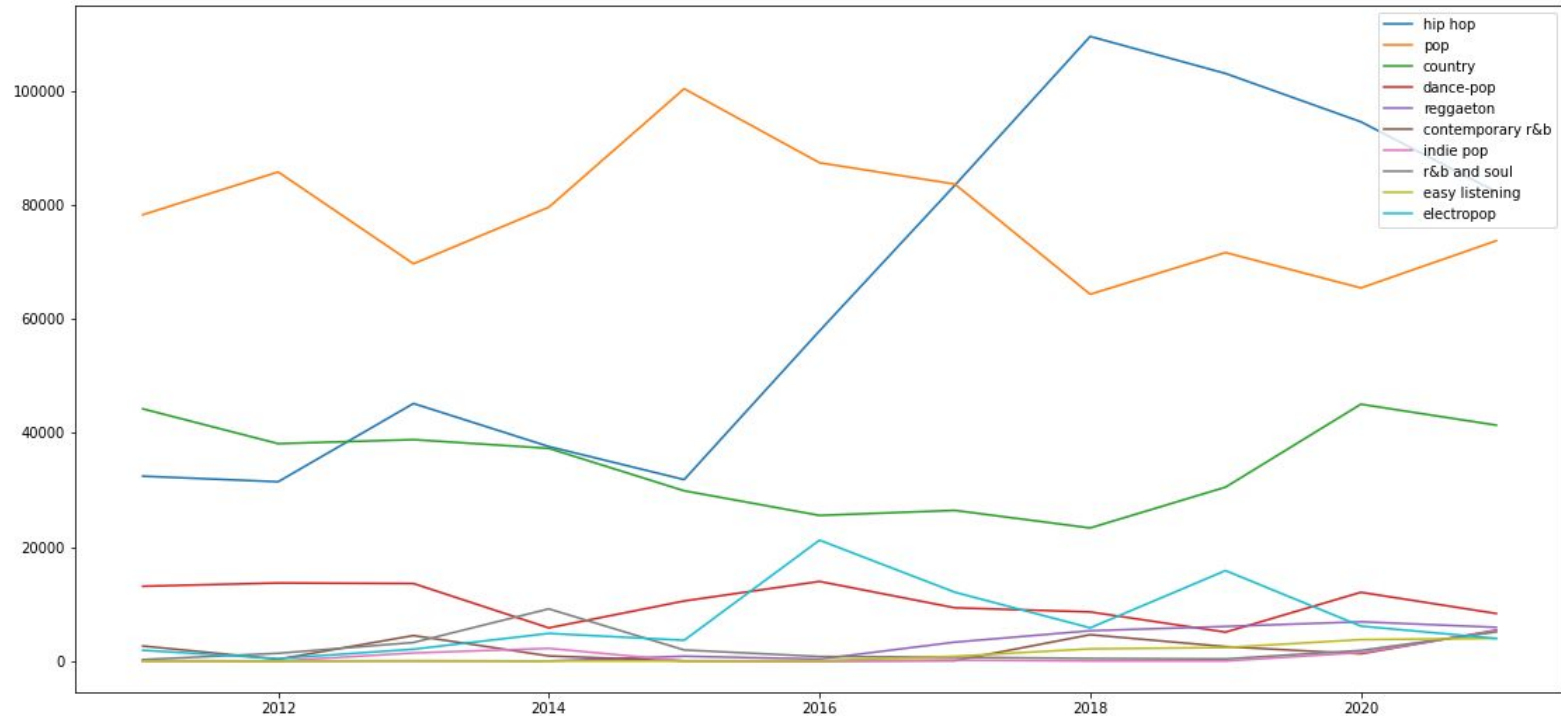
QUESTION

**WHAT ARE THE  
MOST  
POPULAR  
GENRES?**



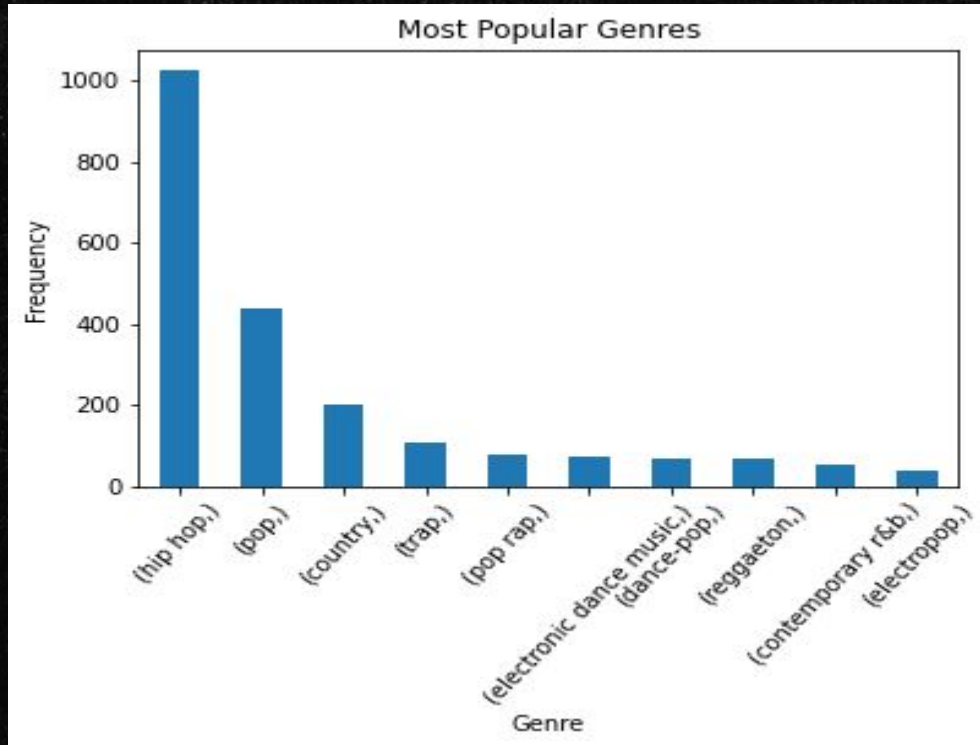


# DATA ABOUT GENRES





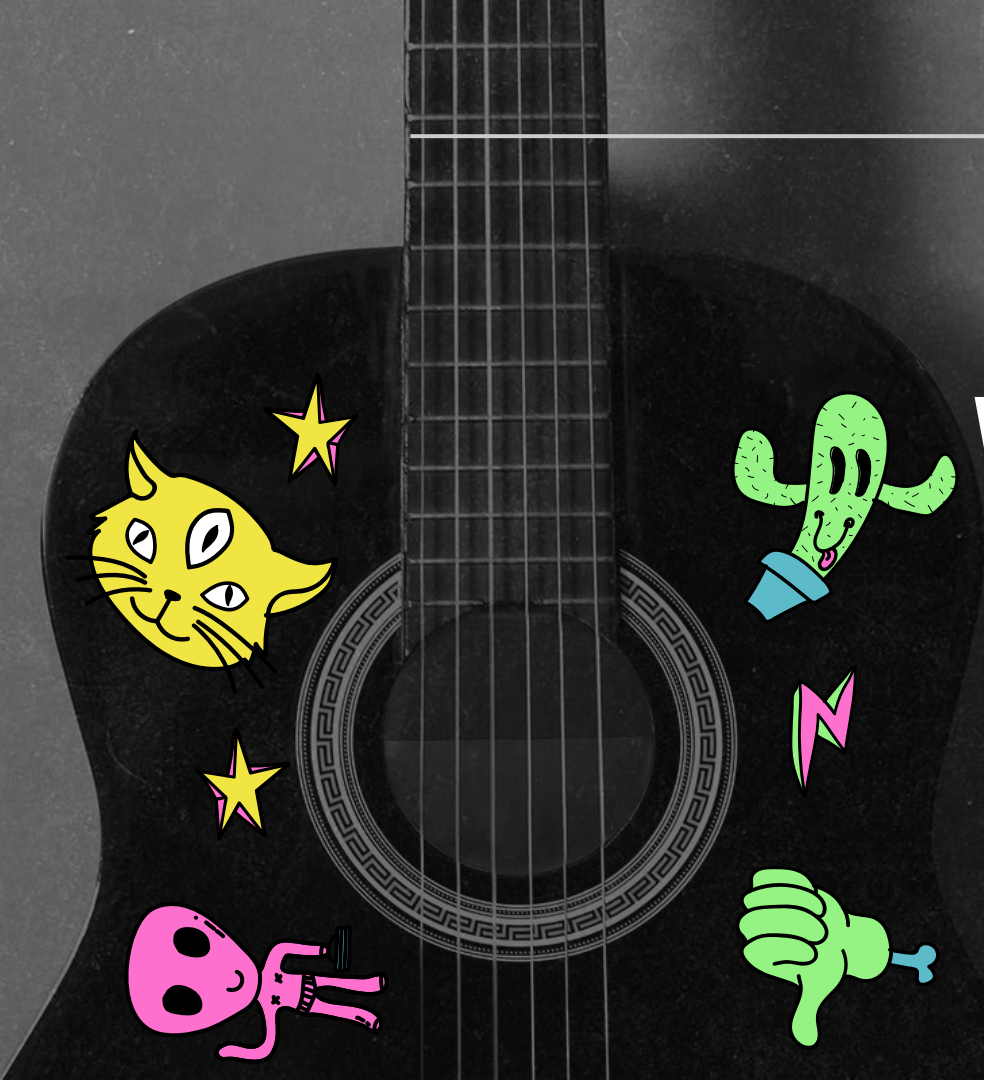
# Most Popular Genres



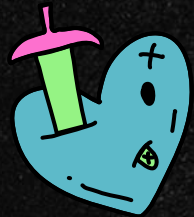
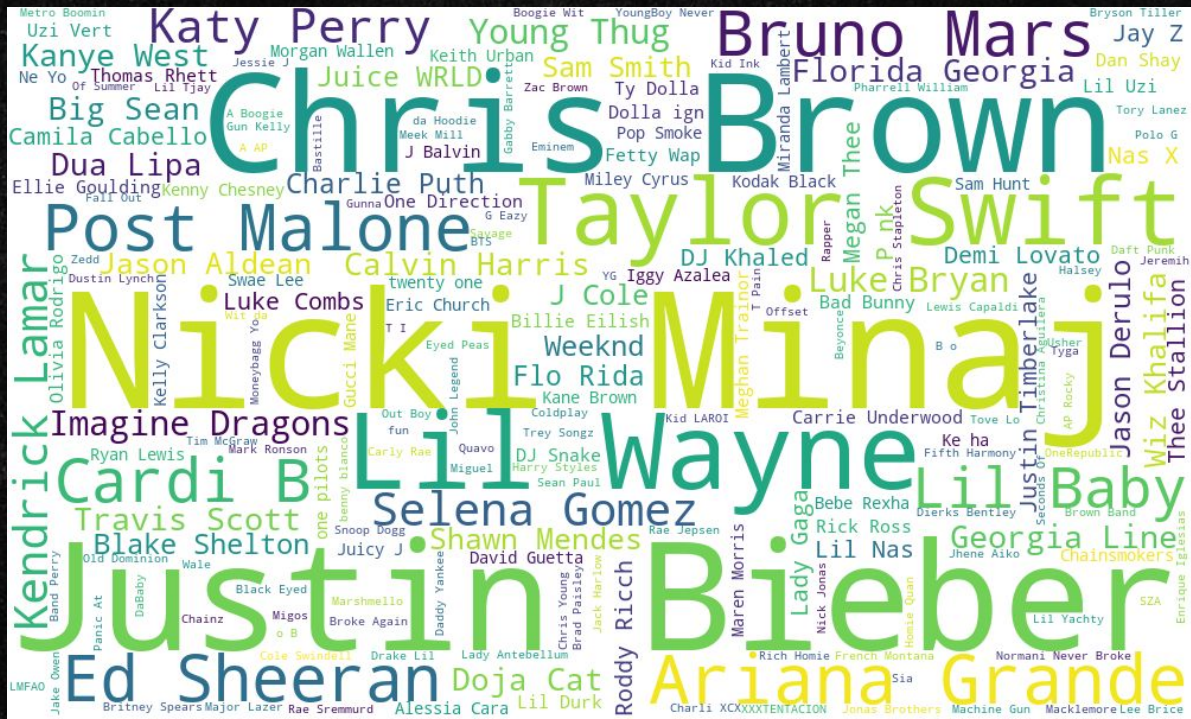
QUESTION

---

**WHAT ARE THE  
MOST  
POPULAR  
ARTISTS?**



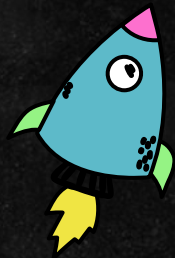




QUESTION

---

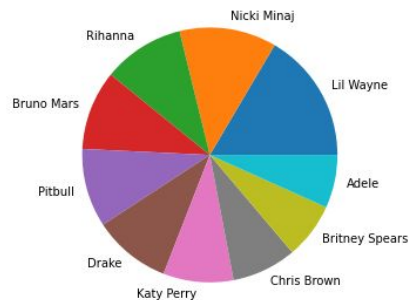
**WHAT WAS THE  
MOST  
POPULAR  
ARTIST ON A  
GIVEN YEAR?**



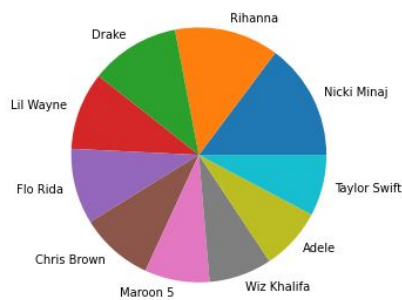


# Top Artists By Year

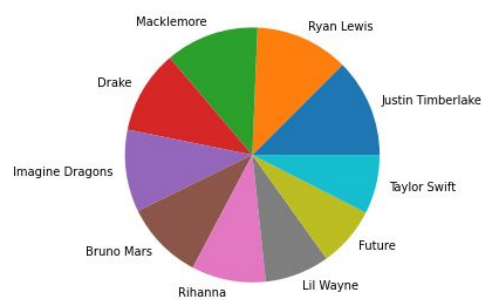
2011



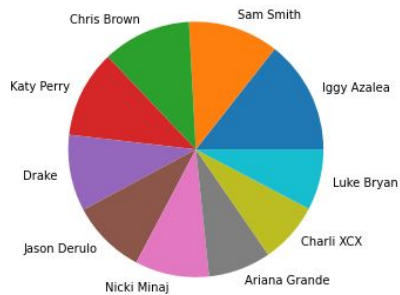
2012



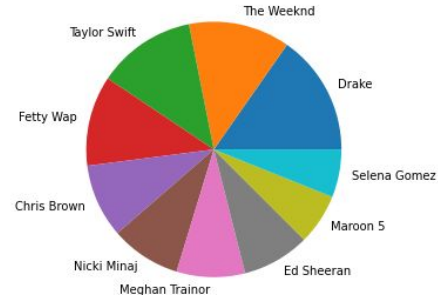
2013



2014

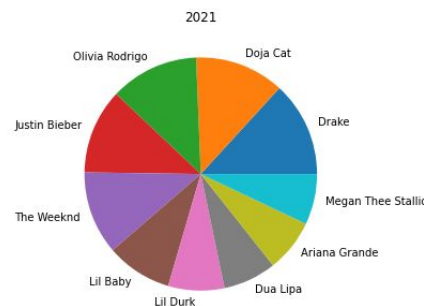
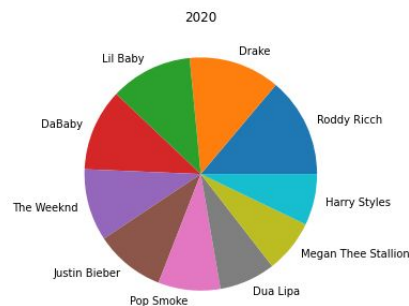
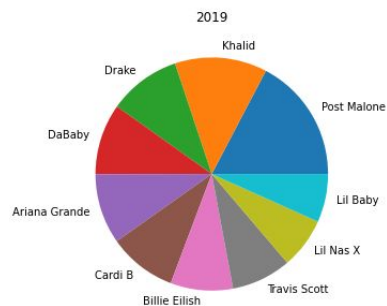
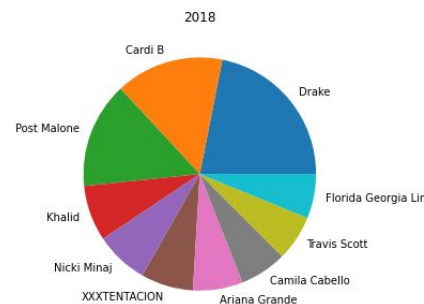
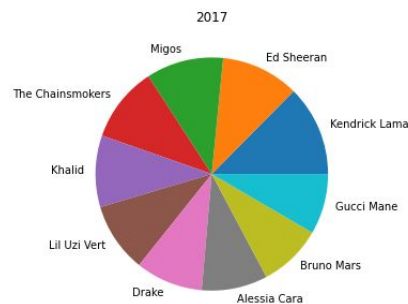
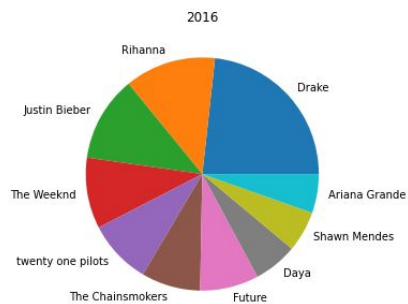


2015



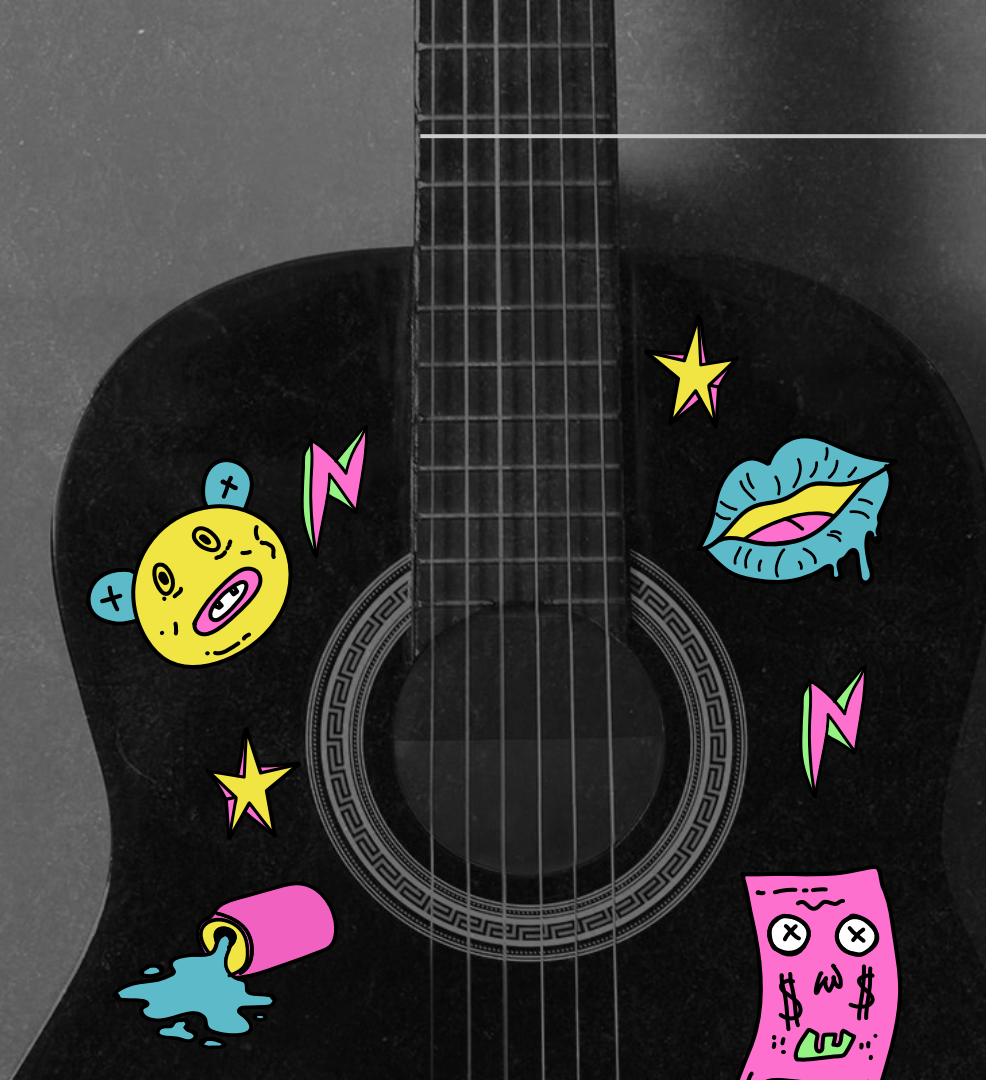


# Top Artists By Year



QUESTION

**HOW MANY  
TIMES HAS A  
GIVEN ARTIST  
APPEARED IN  
THE CHARTS?**



## SAMPLE RUN SCREENSHOT

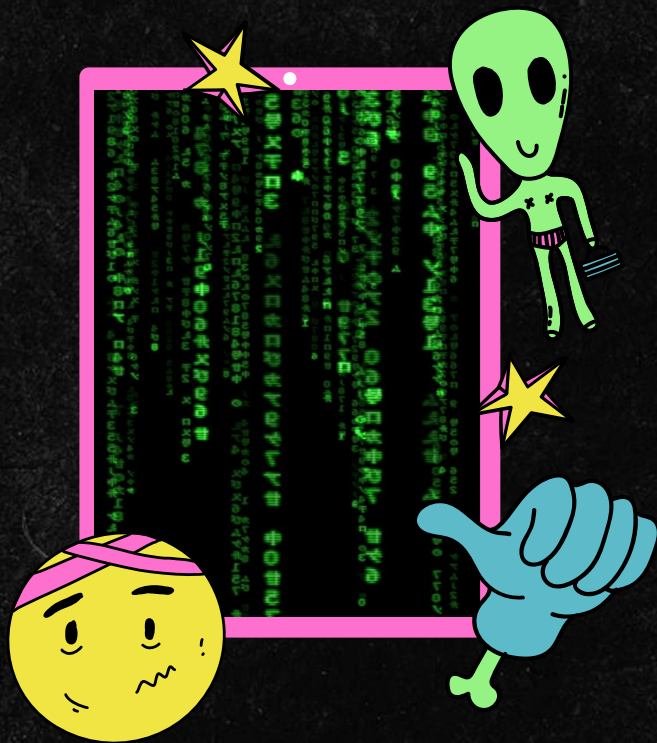
```
Enter the name of the artist you would like to find Bruno Mars  
Bruno Mars Appears in the chart 621 times.
```

	Ranking
2011-01-02	1
2011-01-09	2
2011-01-16	1
2011-01-23	2
2011-01-30	1
...	...
2022-03-27	78
2021-11-21	68
2021-11-21	73
2021-11-21	78
2021-11-21	81

```
[621 rows x 1 columns]
```













---

**HOW DID  
WE DO IT?**

# DATA SCRAPING

From billboard.com

[billboard.com/charts/hot-100/2022-04-16/](https://billboard.com/charts/hot-100/2022-04-16/)

The Hot 100							WEEK OF APRIL 16, 2022		
THIS WEEK		AWARD	LAST WEEK	PEAK POS.	WKS ON CHART				
1		NEW	+	★	-	1	1		
2			+	★	1	1	64		
3			+	★	3	3	24		
4			+		2	1	39		
5			+	★	5	5	20		
6			+		4	3	22		

```
<div class="o-chart-results-list-row-cont
ainer">_</div> == $0
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
<div class="o-chart-results-list-row-cont
ainer">_</div>
```

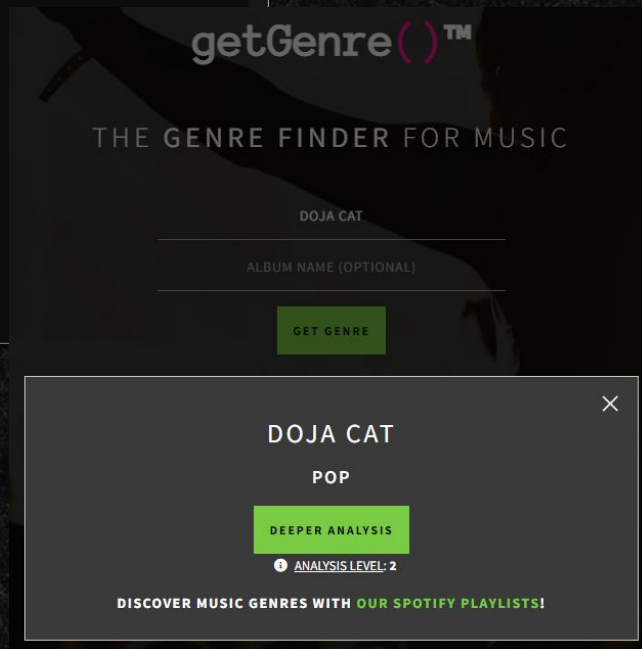




# getGenre API

[https://api.getgenre.com/search?artist\\_name=\[artist\]&analysis=\[analysis\]](https://api.getgenre.com/search?artist_name=[artist]&analysis=[analysis])

```
Python 3.10 (64-bit)
>>> r = requests.get('https://api.getgenre.com/search?artist_name=doja+cat')
>>> print(json.dumps(r.json(), indent=4))
{
  "analysis": {
    "all_genres": [
      "pop"
    ],
    "exhausted": false,
    "level": 2,
    "top_genres": [
      "pop"
    ],
    "type": 1
  },
  "artist_id": "5cj0lljcoR7YOSnX0Po5",
  "artist_name": "doja cat",
  "error": "",
  "version": "0.16.5"
}
>>> _
```





# Finding data using a .JSON file

```
{
  "Grenade | Bruno Mars": [
    [
      1,
      "2011-01-02"
    ],
    [
      2,
      "2011-01-09"
    ],
    [
      1,
      "2011-01-16"
    ],
    [
      2,
      "2011-01-23"
    ],
    [
      1,
      "2011-01-30"
    ],
    [
      1,
      "2011-02-06"
    ]
  ]
}
```

**JSON** format is the key for conversion of a website to tangible data. We process this to find useful information such as the most played song and when it happened.



# WHAT TOOLS DID WE USE?

## PANDAS

Organize and clean data

## JSON & API processing

Interpret API responses and store data

## API & Web services

Find artist genres

## Matplotlib

Create plots and charts

## Word Cloud

Show results in an easily understood way

## Web Scraping

Collect data from billboard.com



---

# DEMO

Watch our code running!

---

