A Spatial Exploration of Music Consumption through the Lens of Socio-Political Power

Team 30: **Liz Olson, Juliana Menezes, Tobi Taiwo, Shivali Vashisht & Xiaoxiao Zeng**

How You Like That
BLACKPINK

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Meet Our Team

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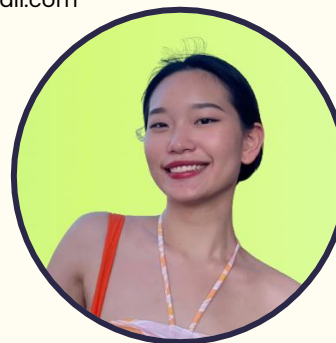Biol, GIS Tech, MEnv Student
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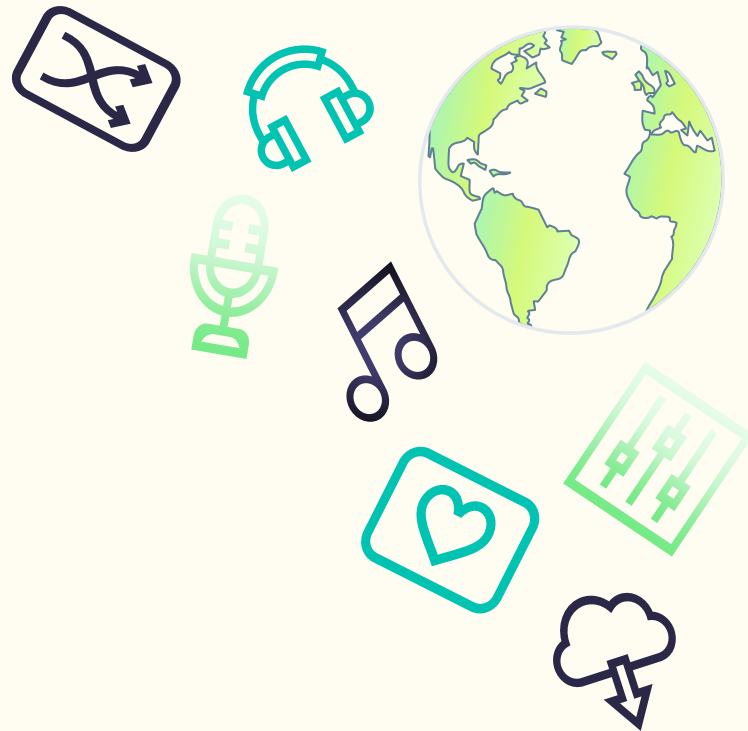**How You Like That**
BLACKPINK

0:50

3:03

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Background

- Music streaming is a lucrative industry of the media business, allowing for increased accessibility and cultural exchanges through song

- Prior to streaming platforms, music was exchanged in file sharing formats Napster, Limewire and BitTorrent which came with copyright and piracy issues

- Mid 2000's pioneers: Pandora and Spotify

- Music streaming continues to evolve, with increased revenue every year since inception

According to MIDiA reports, global music subscribers **surged 26.4% to 523.9 million** during the pandemic

How You Like That
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Business Problem

Are international exchange of music equitable across socio-political lines?

- Streaming research is lacking and non-cohesive

- **Through our analysis and visualizations we hope our project may;**
  - Help streaming platforms elucidate audience behavior and listener engagement by nation, denoting exchanges of cultural music
  - Identify "importers" and "exporters" of music
  - Target audiences to market new music and artists for tour bookings, merchandise consumption, and international success

- This project will further conversation about streaming behavior through the lens of soft power and encourage equity and opportunity for local talent and diversity on global platforms

How You Like That
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Data Sources

Streaming Data

Economic Data

Blinding Lights
The Weeknd

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Data Overview

33 countries Spotify music top charts between 2017 - 2020
- 16 Europe
- 10 America
  - 8 Latin America/ Caribbean
  - 2 North America
- 5 Asia
- 2 Oceania (Australia + New Zealand)

155,074 observations (song/country chart pairs)
- 46,090 unique songs
- 8,756 artists originating from 117 countries
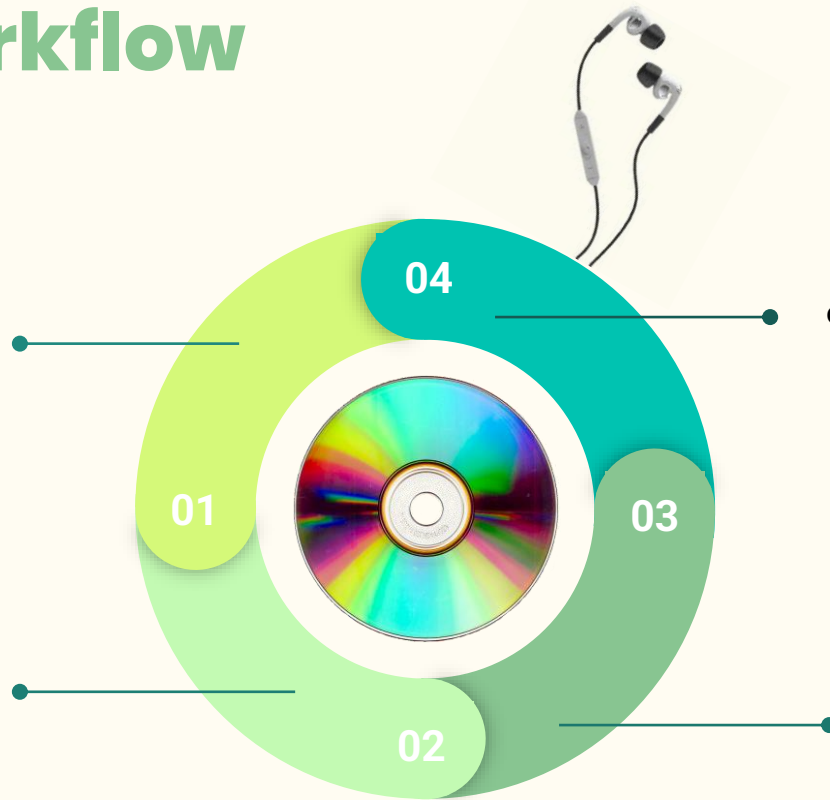
Shape of You
Ed Sheeran

3:03

Project Workflow

Data Acquisition

We obtained our data from 5 different sources

Data Wrangling

Using Python3, R Studio and Jupyter notebooks, we cleaned our raw data by removing irrelevant variables, standardizing artist and origin country names

Analysis and Modelling

Descriptive statistics, correlations, regressions, and a centrality evaluation

Exploratory Analysis and Visualization

We created charts, a network map and an ArcGIS Storymap website to detail our findings and notable trends
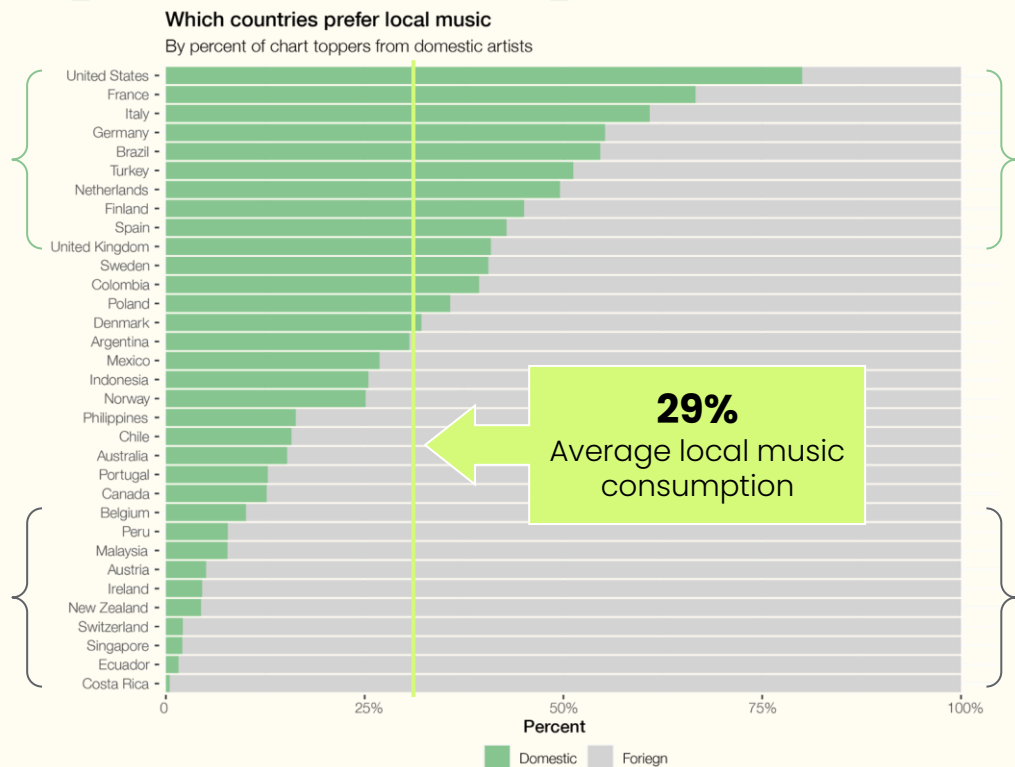
01
02
03
04

Blinding Lights
The Weeknd

0:45

3:03

Exploratory Data Analysis

Which countries prefer local music
By percent of chart toppers from domestic artists

Top 10
Domestic Music Consumption

Top 10
Foriegn Music Consumption

29%
Average local music consumption

United States
France
Italy
Germany
Brazil
Turkey
Netherlands
Finland
Spain
United Kingdom
Sweden
Colombia
Poland
Denmark
Argentina
Mexico
Indonesia
Norway
Philippines
Chile
Australia
Portugal
Canada
Belgium
Peru
Malaysia
Austria
Ireland
New Zealand
Switzerland
Singapore
Ecuador
Costa Rica

Percent

0   25%   50%   75%   100%

■ Domestic ■ Foriegn
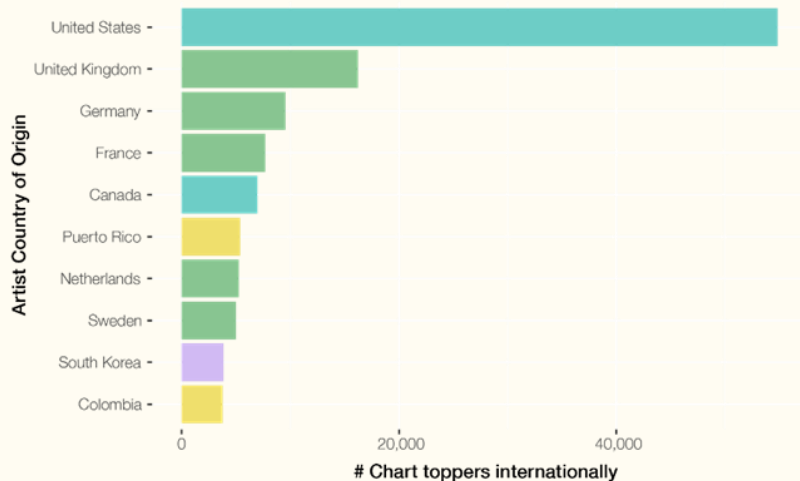
New Rules
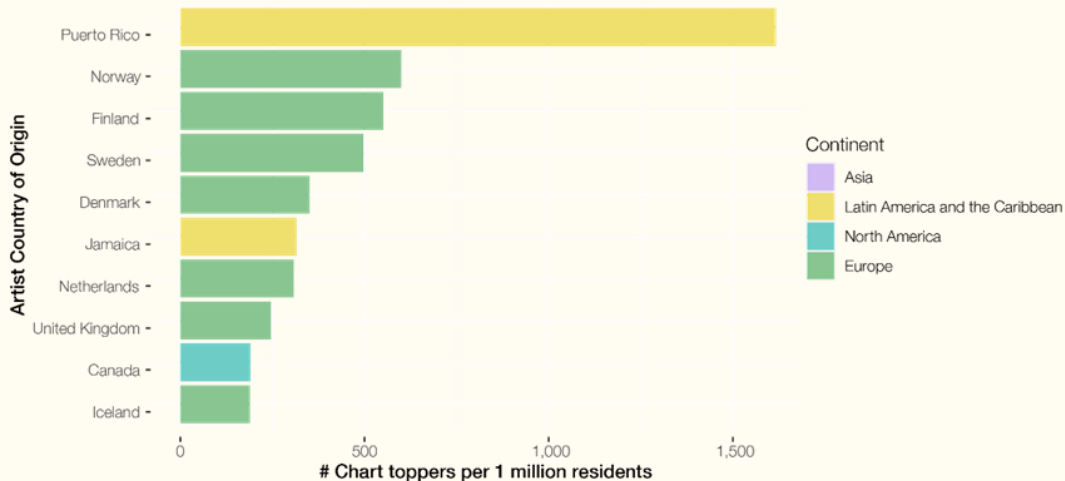Dua Lipa

3:03

Exploratory Data Analysis

Most influential 10 countries
by raw number of international chart-topping songs

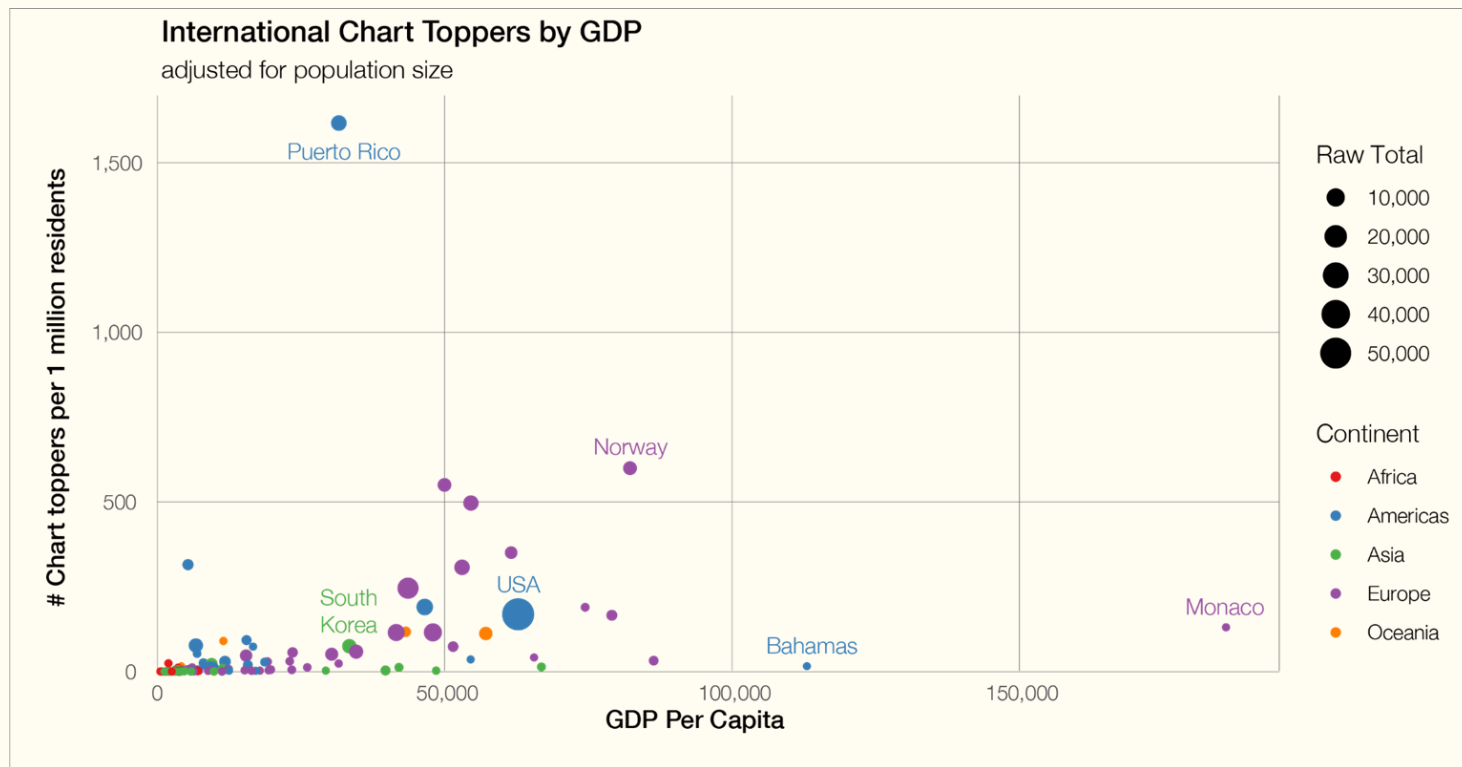**Countries with Outsized Influence**
adjusted for population size

Blinding Lights
The Weeknd

2:39   3:03

Exploratory Data Analysis

International Chart Toppers by GDP
adjusted for population size

Results

Network Analysis

- Network analysis helps to uncover the structure of relationships between countries. We assess the level of centrality to identify the most influential countries on music charts internationally as well as the diversity of music tastes within each country.

Linear Regressions

- Linear regressions help to uncover the relationships between economic factors such as GDP, education expenditure, and inflows of foriegn direct investment with measures of international musical influence.

I Like It
Cardi B

1:33   3:03

Network Map

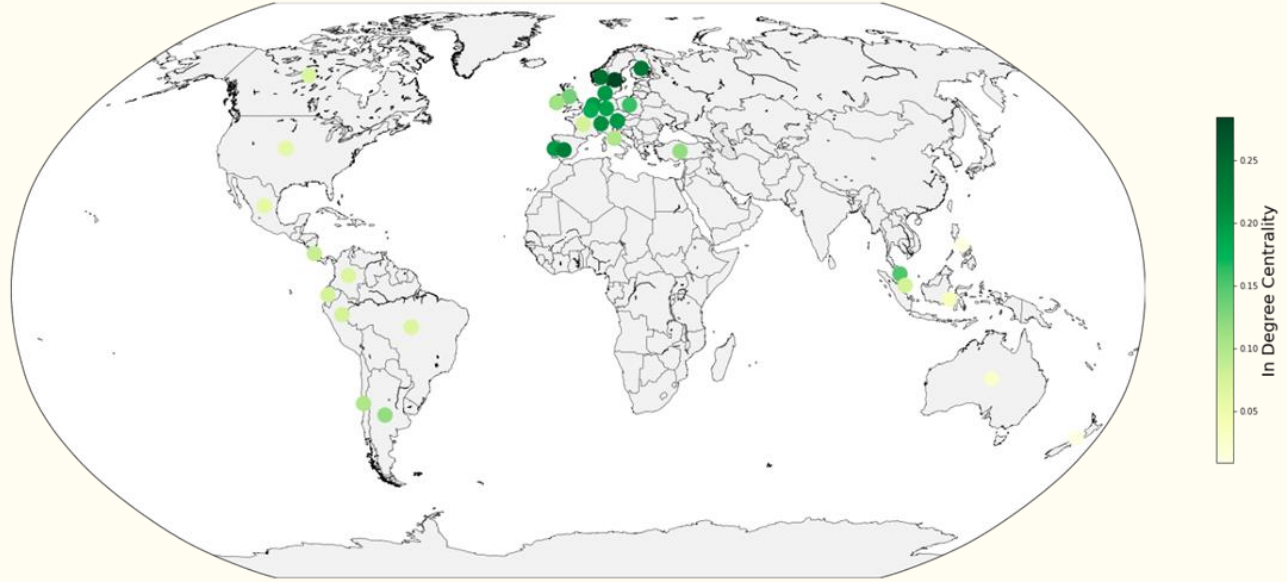thank u, next
Ariana Grande

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In-Degree Centrality Index

The in-degree centrality index depicts **whether a given country takes in diverse music** from around the world.

The top 10 countries are all in Europe.

In Degree Centrality

0.25
0.20
0.15
0.10
0.05

Despacito
Luis Fonsi

3:03

Socioeconomic Analysis

Table 1: Regression Results

	Dependent variable:			
	n_per_1m_capita			
	(1)	(2)	(3)	(4)
GDP Per Capita	0.002***	0.003***	0.003***	−0.004***
	(0.001)	(0.0005)	(0.0005)	(0.001)
Education Extenditure		17.326**	31.588***	−0.274
		(7.523)	(8.126)	(9.544)
Net FDI Inflows			−0.774	0.449
			(1.147)	(1.038)
GDP x Education				0.001***
				(0.0003)
Constant	20.523	−76.786**	−135.309***	3.966
	(21.621)	(32.794)	(35.650)	(41.805)
Observations	109	89	87	87
R^2	0.097	0.386	0.487	0.608
Adjusted R^2	0.089	0.372	0.468	0.589

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

GDP per capita and **percent of GDP expenditure on education** are highly correlated with the number of chart-topping songs per 1 million residents.

Controlling for **net foriegn direct investment outflows** increases the magnitude and significance of this relationship, as well as the percentage of variation explained by the model.

That's What I Like
Bruno Mars

2:36

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Interface & Storymap

GLOBAL PATTERNS OF MUSIC SPREAD

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July 27, 2022

Wild Thoughts
DJ Khaled

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Interface & Storymap
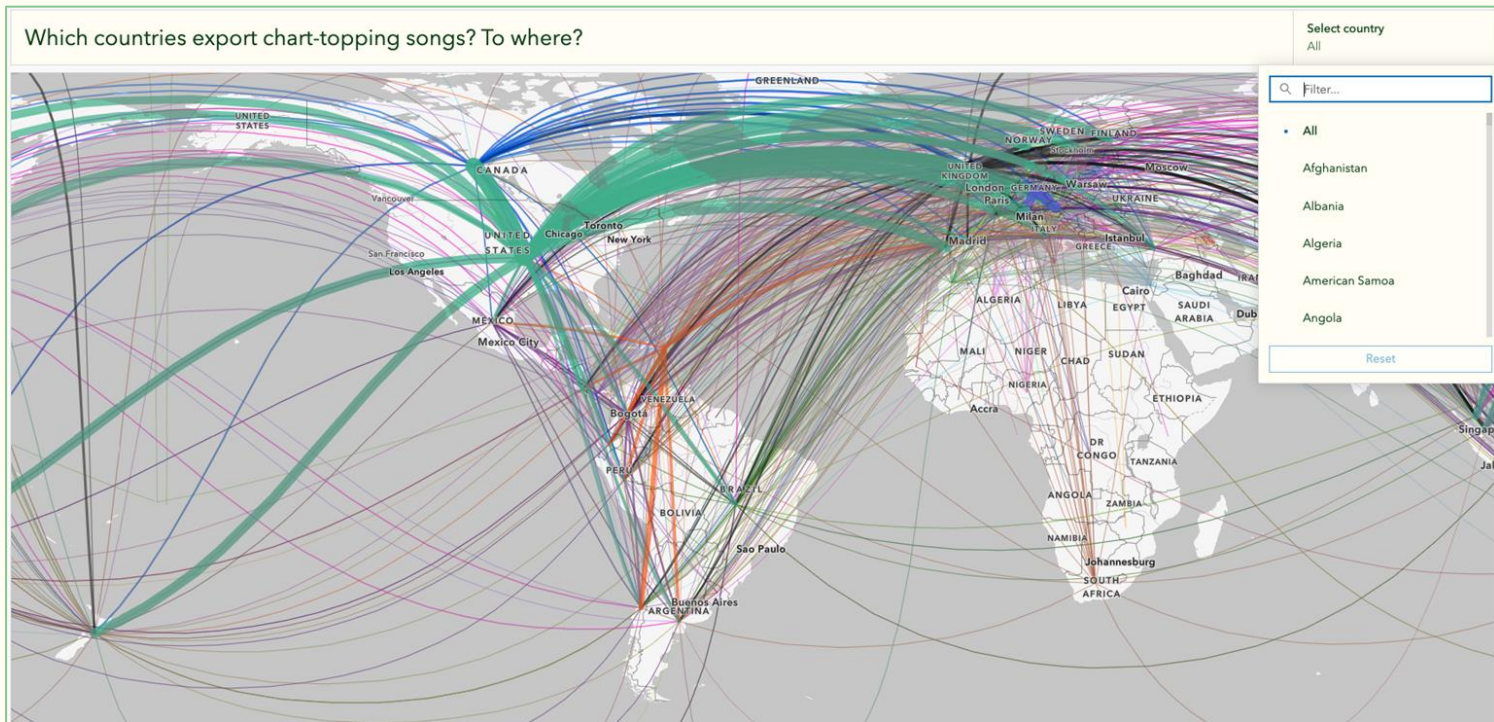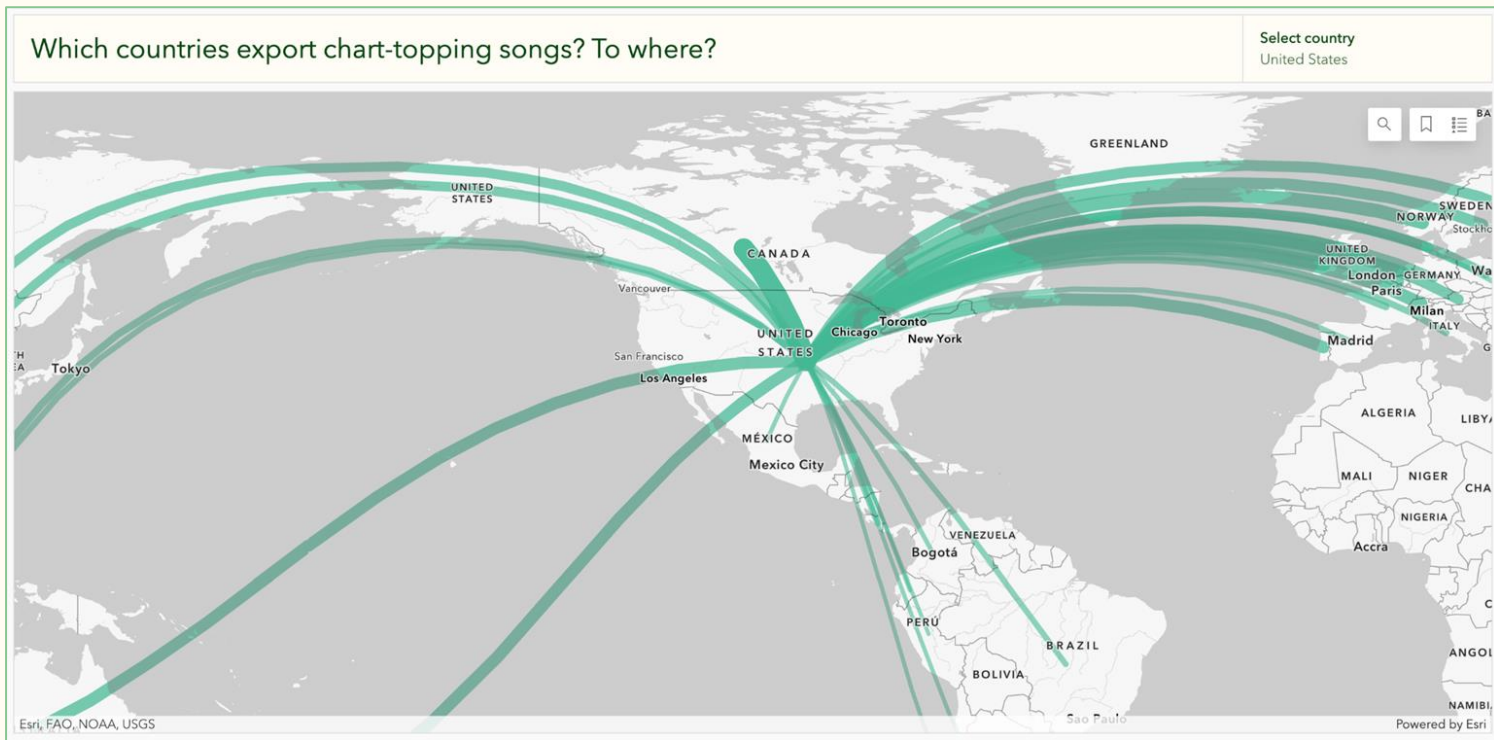
Which countries export chart-topping songs? To where?

Select country
All

Filter...

- All
  Afghanistan
  Albania
  Algeria
  American Samoa
  Angola

Reset

That's What I Like
Bruno Mars

2:36   3:03

Interface & Storymap

Which countries export chart-topping songs? To where?

GREENLAND

SWEDEN
NORWAY
Stockho

UNITED
STATES

UNITED
KINGDOM
London · GERMANY · Wa
Paris
Milan
ITALY
Madrid

CANADA

Vancouver

Toronto
Chicago
New York

UNITED
STATES

ALGERIA
LIBY

Tokyo

San Francisco

Los Angeles

MÉXICO

Mexico City

MALI
NIGER
CHA

NIGERIA

VENEZUELA

Accra

Bogotá

PERÚ

BRAZIL

ANGOL

BOLIVIA

NAMIBI

Sao Paulo

Esri, FAO, NOAA, USGS

Powered by Esri

That's What I Like
Bruno Mars

2:36

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Conclusions

No; international exchanges of music are not equitable across socio-political lines

- European charts have more diverse streaming behavior and notable contributions of other nations in their top charts compared to other countries

- Western and developed countries are overly represented in the top 10 nations contributing to global charts as "exporters"
  - K-pop expansion
  - When controlling for population size, Puerto Rico dominates

- African countries seem to be relatively less influential in the global spread of music compared to other nations

Dakiti
Bad Bunny

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△	Sweden
△	Norway
3	Finland
△	Spain
5	Switzerland
△	Denmark
△	Netherlands
8	Austria
△	Portugal
△	Germany

Consumers of Diverse Foreign Music

★	Ecuador
★	Canada
★	Colombia
★	Brazil
★	USA
★	Mexico
★	Indonesia
★	Australia
★	New Zealand
★	Philippines

- Countries at the bottom of the list are former colonies and have been part of the settler-imperialism process

- Some former colonial powers are at the top of the list

- Cluster of former Anglophone colonial nations at the bottom of the list

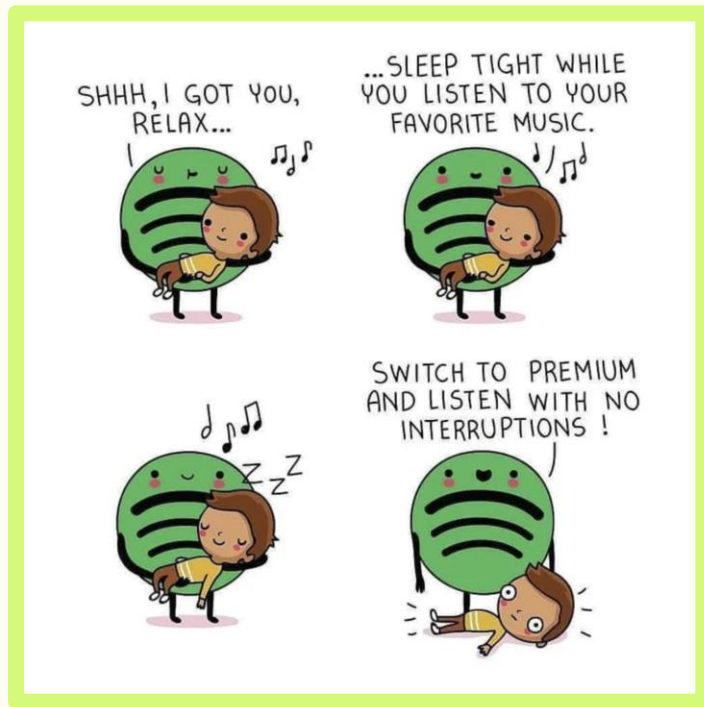**Dakiti**
Bad Bunny

1:20　　　　　　　　　　　　　3:03

Limitations & Future Directions

- As of October '21, Spotify became available in 180 countries, 85 of these nations were added in February '21

- Spotify has paid subscription plans for music streaming, which makes it less accessible to many across the world

- Although the music dataset represented many nations, 50% of them were based in Europe did not provide song release dates, just daily chart behavior

- Although global trending songs were chronicled from 2017 to 2020, trade/nation behavior data from 2018 was used due to economic pandemic variations across most recent years

Dakiti
Bad Bunny

2:09   3:03

THANKS!

Thank you!

Dakiti
Bad Bunny

3:00   3:03

Resources

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