

Music Trend Analysis

Nicolò Paolo Ferrari

The background of the slide is black, featuring several thin, vibrant green lines that flow from the bottom left towards the top right, creating a sense of movement and rhythm.

**IRON
HACK**

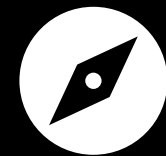
Agenda



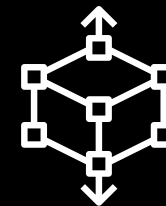
Business problem



Extracting data



Exploratory analysis



Modelling



Music over time



Key takeaways

Business Problem

- Objective:**
- What are the most important audio features in the most popular songs?
 - Are there any audio features recurrent patterns that repeat over-time?
 - Can we spot differences starting from 2018 to 2021?

- Actions:**
- Create terrific insights to support music labels producing top hits

- Audience:**
- Music producers / artists

Extracting Data



Billboard top100 songs per week

June 2018 - May 2021 (150 weeks)



Spotify API

Exploring Data

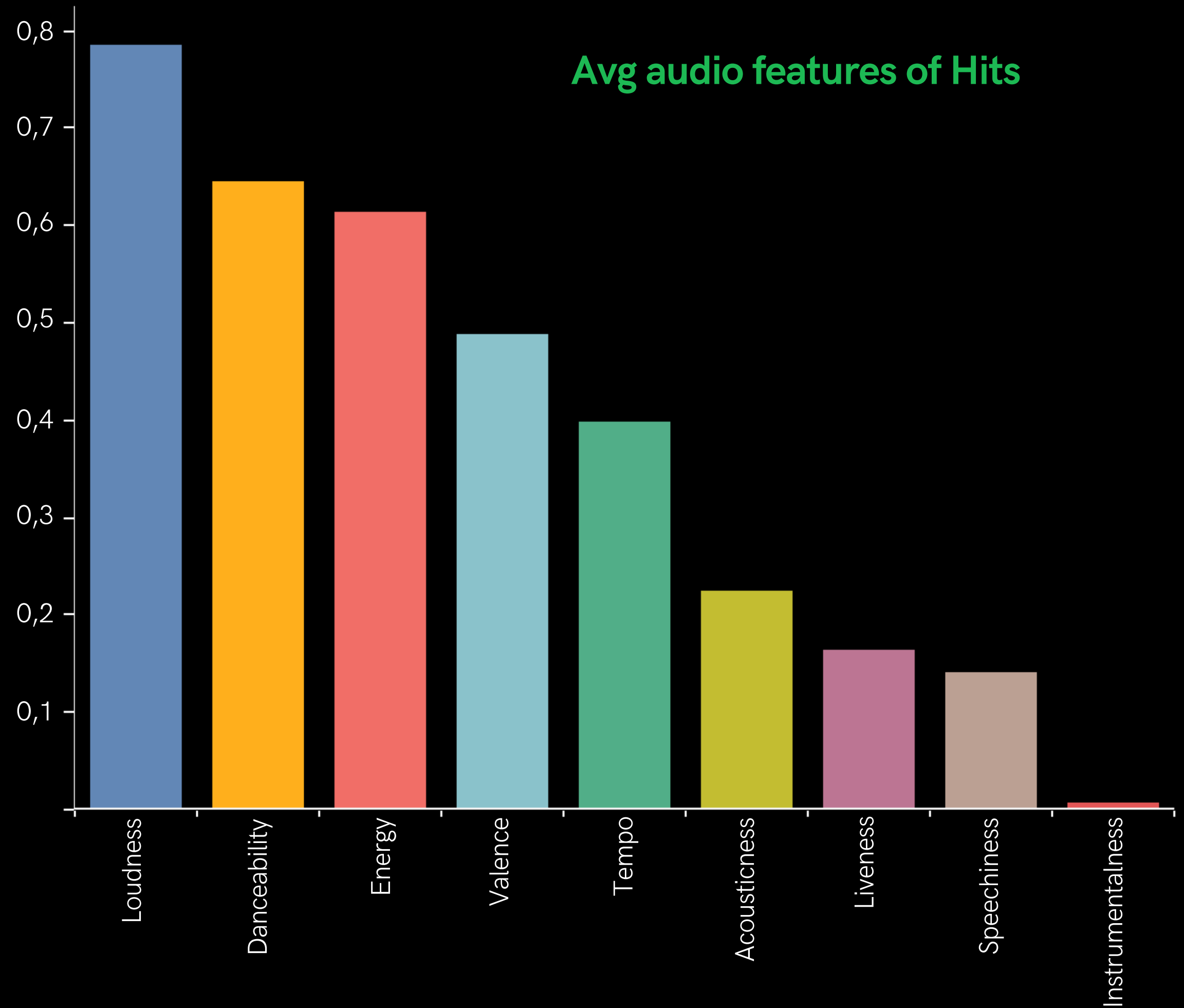
15.000
Hits



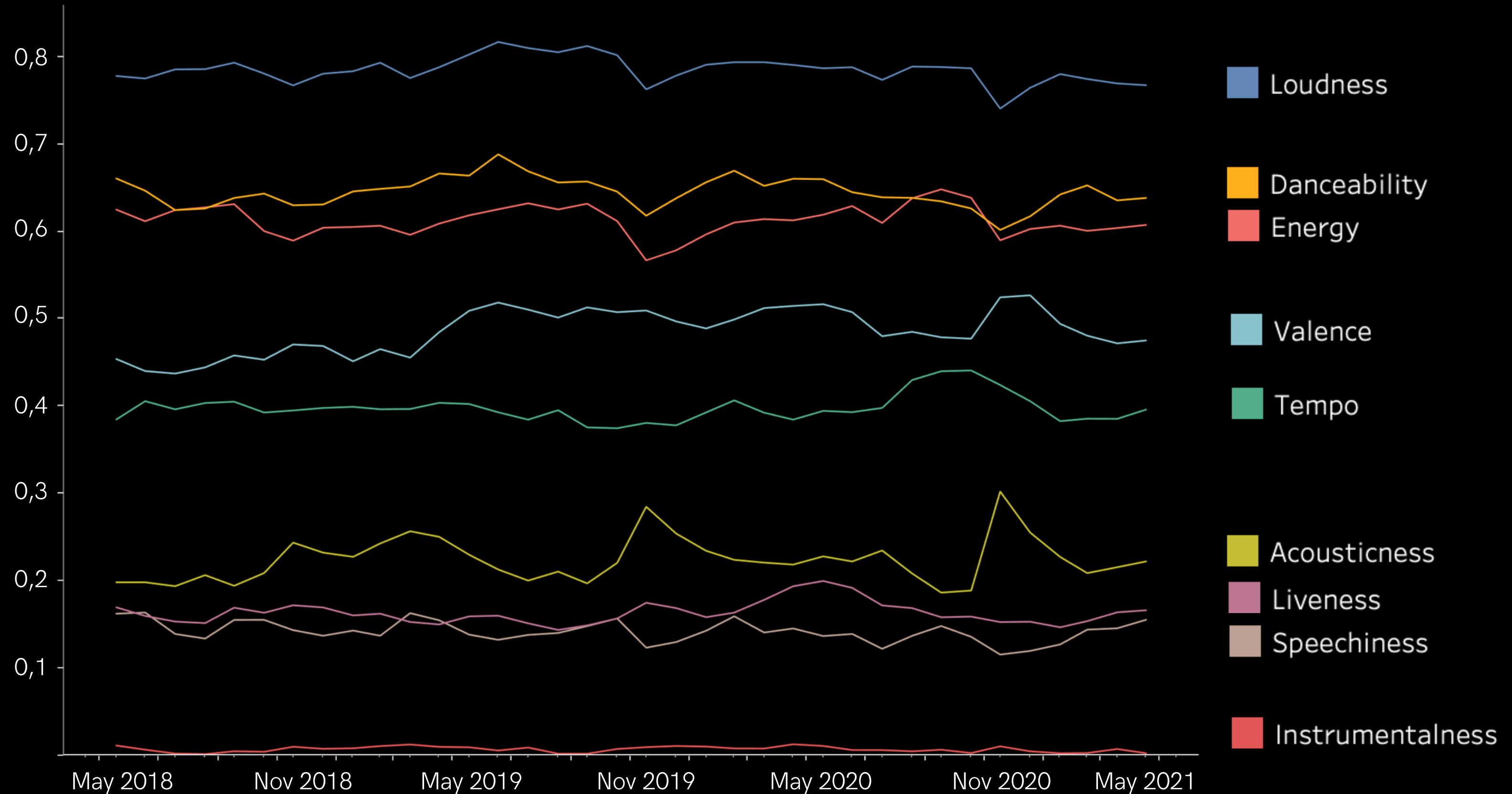
Wrapping audio features

- Loudness
- Danceability
- Energy
- Valence
- Tempo
- Acousticness
- Liveness
- Speechiness
- Instrumentalness
- Mode
- Key

Exploratory Analysis



Music Over Time



Modelling

UNSUPERVISED MACHINE LEARNING (K-MEANS)

3 music clusters (1st week):

- Energy, Loudness, Tempo
(Rap/Pop Cluster)
32 Hits
- Danceability, Speechiness
(Commercial/Dance Cluster)
41 Hits
- Instrumentalness, Acousticness
(Trap Cluster)
27 Hits

Modelling

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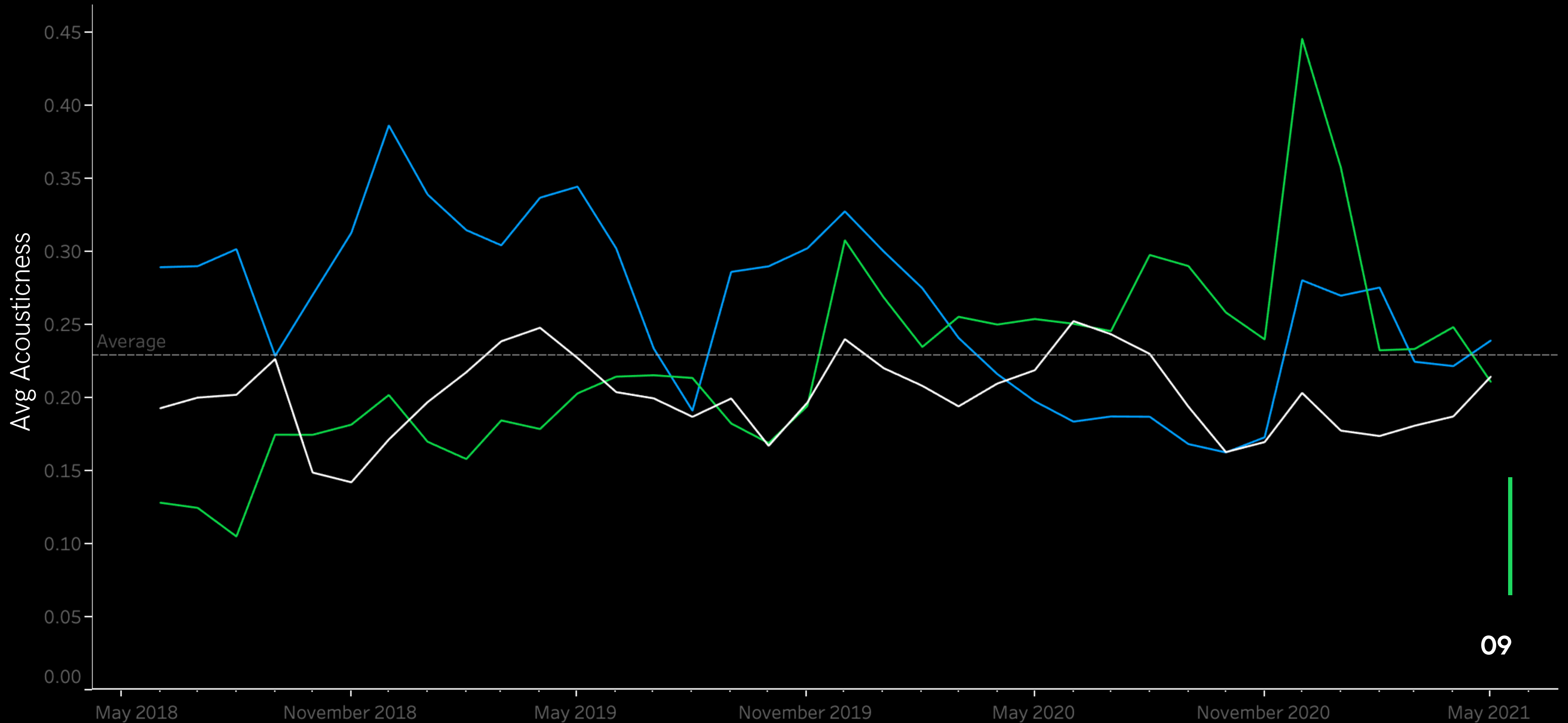
TIME SERIES ANALYSIS CASCADING WEEK BY WEEK (K-NEAREST NEIGHBORS):

How music features of each cluster have changed overtime

Acousticness

(Range: 0,10 - 0,44)

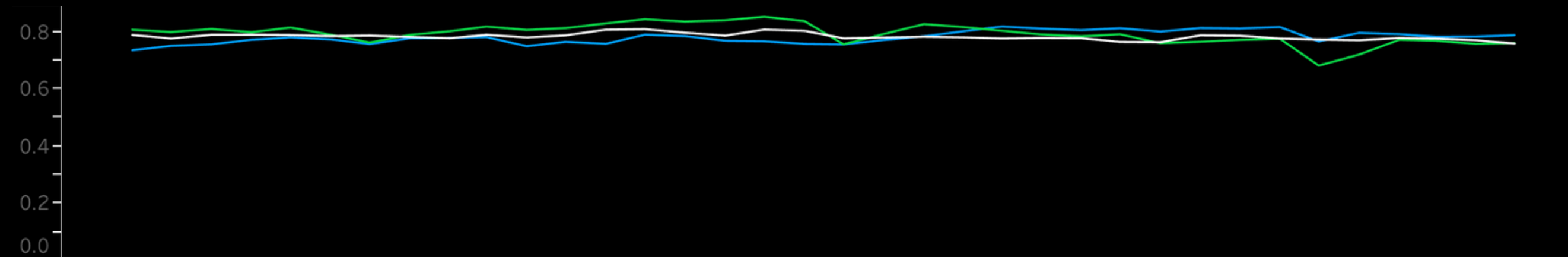
- Commercial/Dance Cluster (DAN, SPE)
- Rap/Pop Cluster (EN, LOU, TEM)
- Trap Cluster (INST, ACOU)



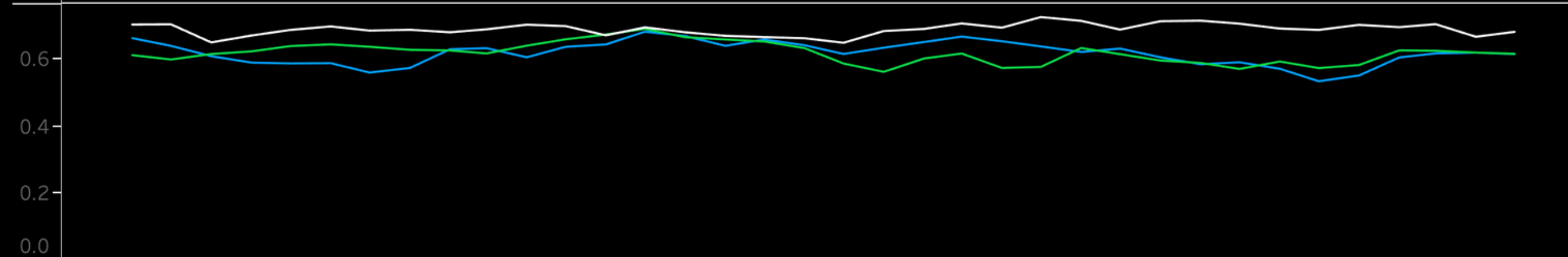
Audio Features VS Clusters

- Commercial/Dance Cluster (DAN, SPE)
- Rap/Pop Cluster (EN, LOU, TEM)
- Trap Cluster (INST, ACOU)

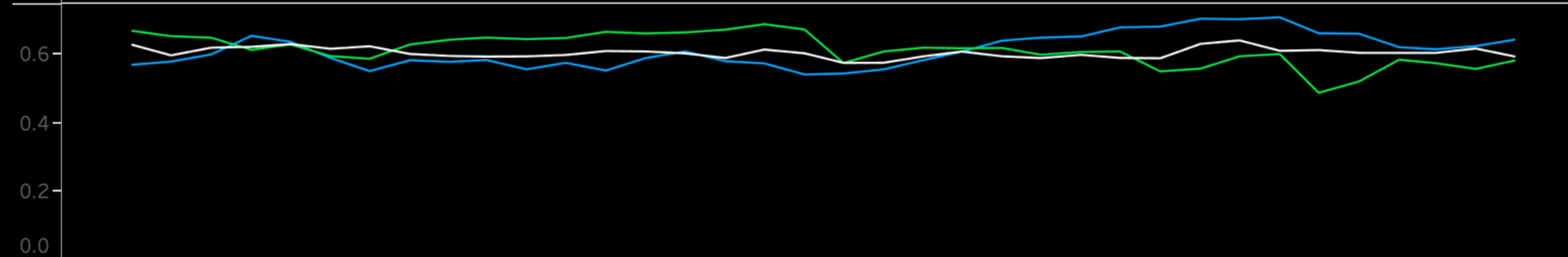
Avg Loudness



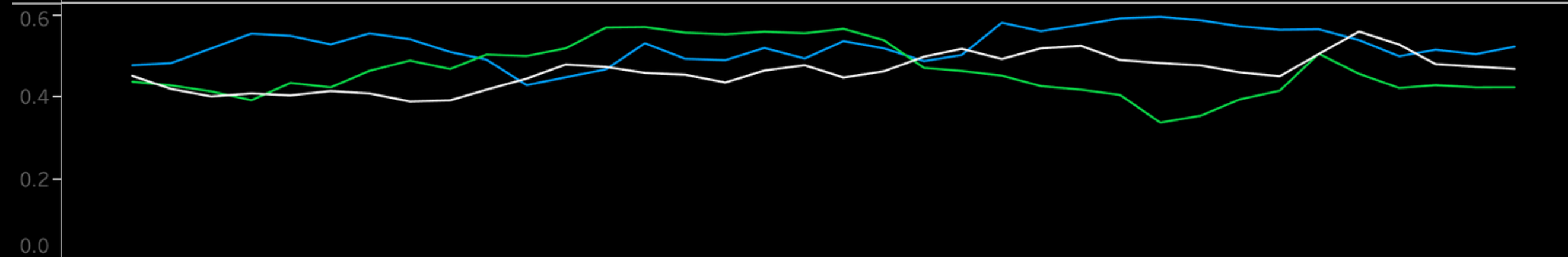
Avg Danceability



Avg Energy



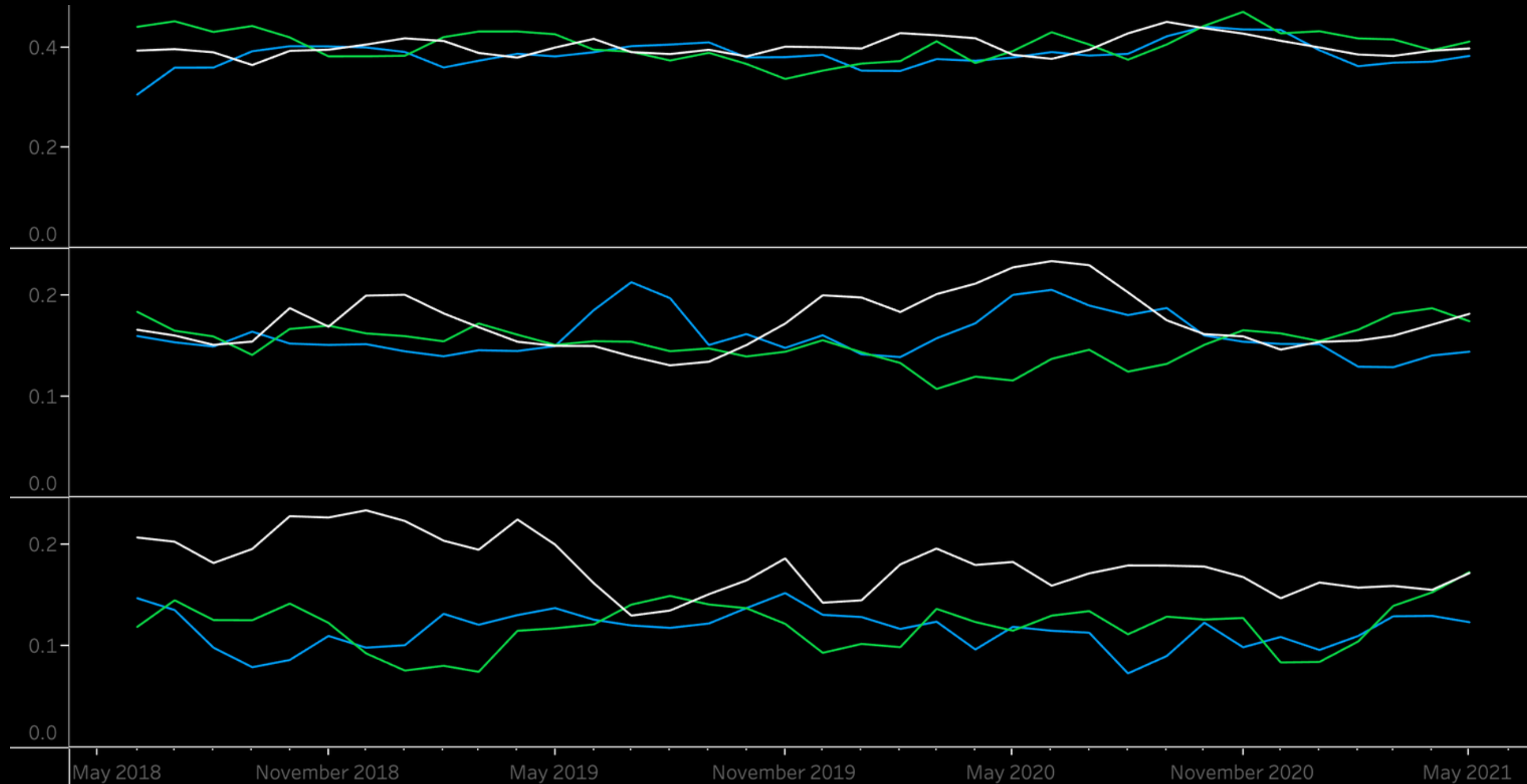
Avg Valence



Audio Features VS Clusters

- Commercial/Dance Cluster (DAN, SPE)
- Rap/Pop Cluster (EN, LOU, TEM)
- Trap Cluster (INST, ACOU)

Avg Tempo



Avg Liveness

Avg Speechiness

Key Takeaways

MUSIC AS A SOCIAL CONSTRUCT

- **Relationship between music and culture:**
- Musical sounds and practices in a given collectivity are relative to the respective social functions music carries out in any particular cultural setting.

PRODUCERS ADAPT TO TRENDS / SPOTIFY

- **No significant changes in the clusters:**
- --> labels fit trends and barely move from 'what works', even if genres of songs differs

AUDIO FEATURES SONGS:

- Stay in the range of what works
- Acoustic songs --> popular in Winter (Dec, Xmas time)
- Danceable/Valence (happier) songs --> popular in Summer time (Jun)

Questions?

Super good luck Ironhackers!!



This is me!

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