Visualization Project Questions and Concept

Project Planning

Question:

Backstory- As executives at a major music label, we want to understand what makes a song popular. This Spotify data provides over a century of music characteristics, including valence, loudness, danceability and more. By analyzing how these characteristics have evolved over time and how they relate to popularity, we can identify trends that inform which types of songs are likely to be a hit in the future.

DASHBOARD CREATION

Descriptive Dashboard:

Line chart-

X-axis = year

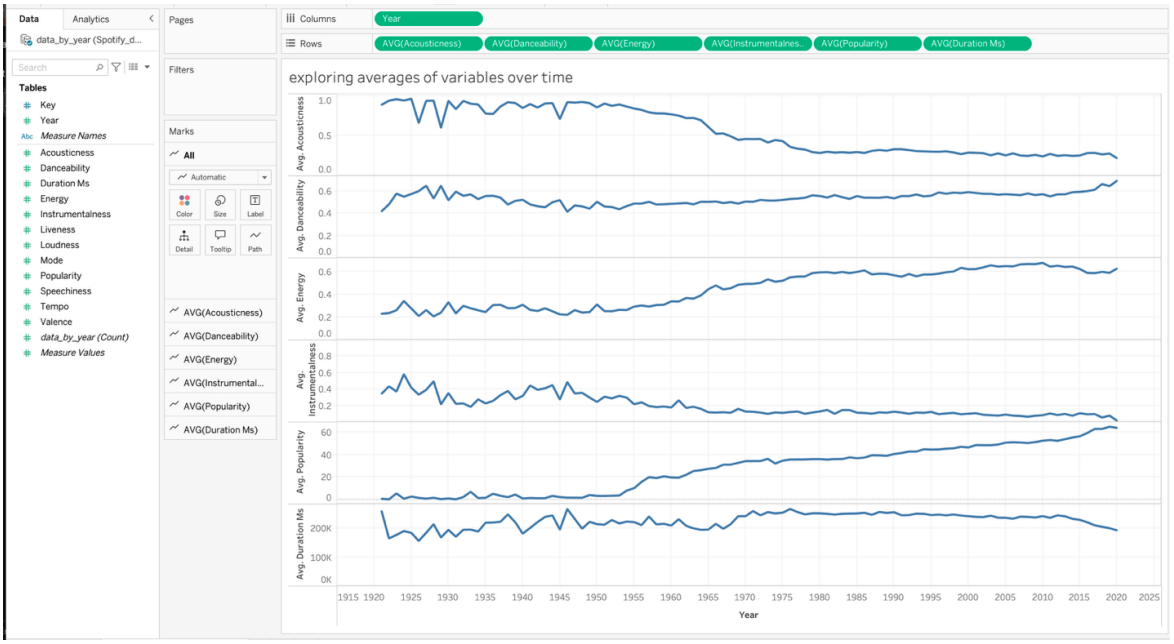
Y-axis = each characteristic to show the change over the years?

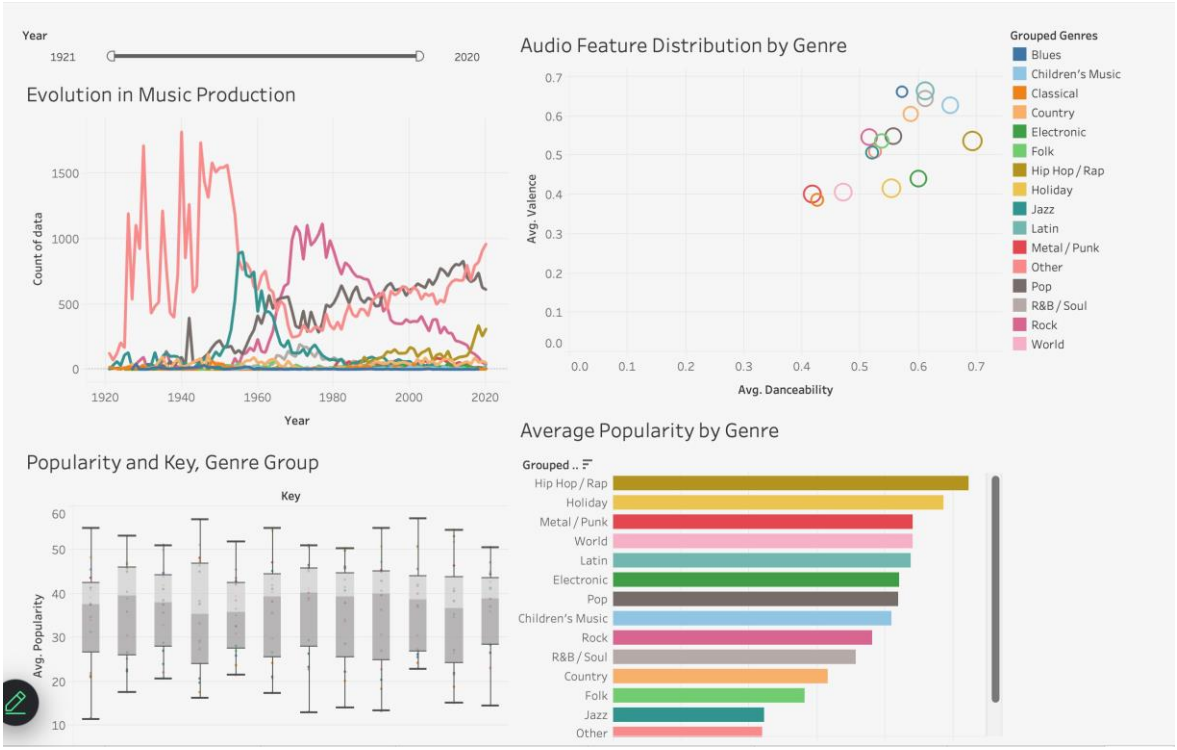
Interactivity, maybe add a year range slider to go see the trends

Histogram-

X axis = popularity

Y axis =



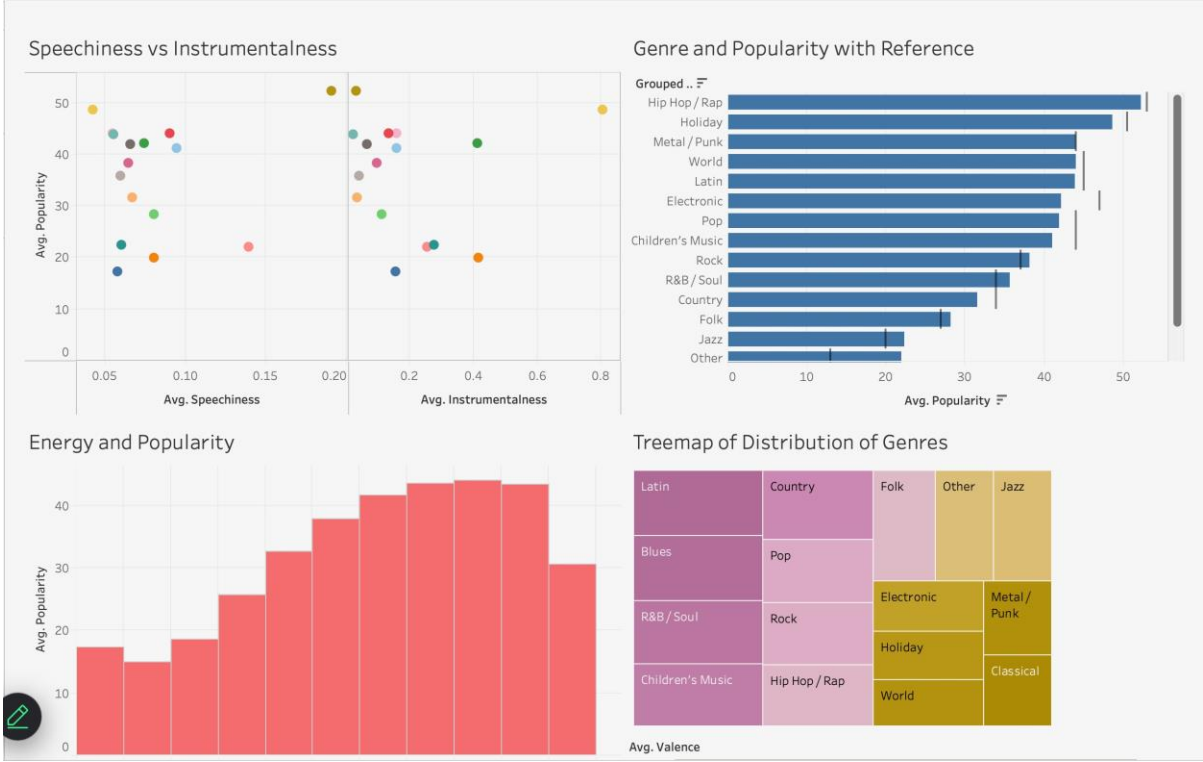


<u>Diagnostic Dashboard:</u>

Heat map -

X axis – which feature looks like its effecting popularity more

Y axis- popularity



<u>Predictive Dashboard:</u>

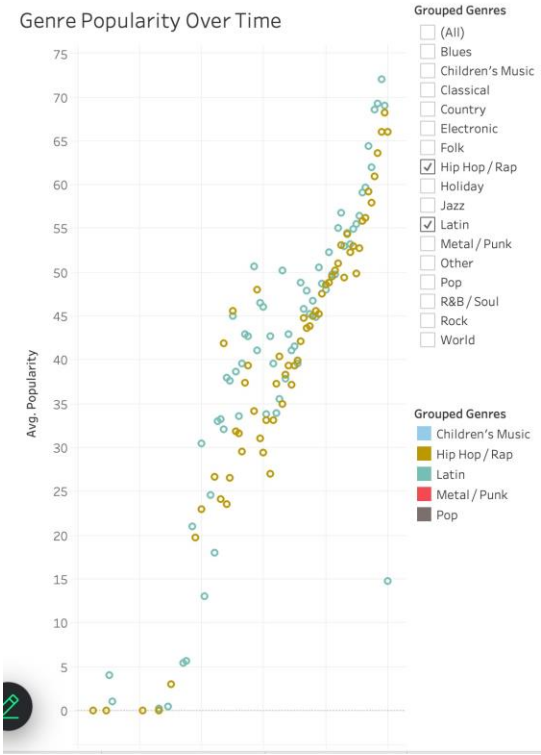
Forecast line chart

X axis- year

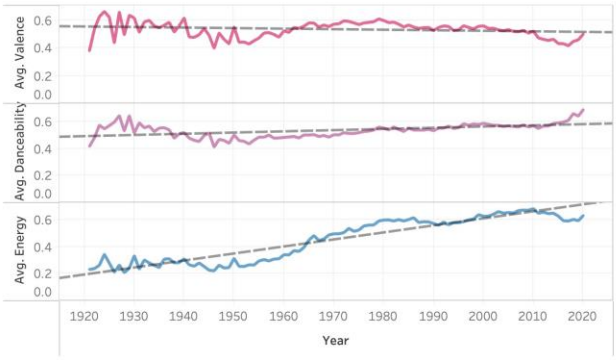
Y axis – average popularity

To predict future popularity trends

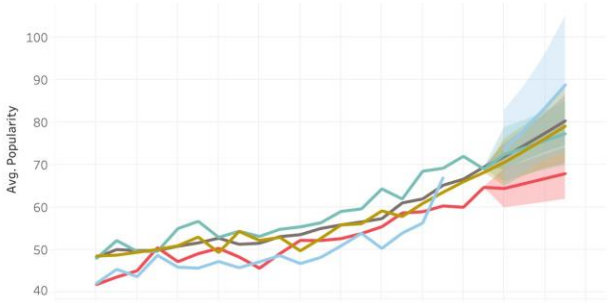
Genre Popularity Over Time



Energy, Valence, Danceability Over Time



Genre Popularity Forecast



CODE FOR TABLEAU

Genres Grouped Code filter

```
IF CONTAINS(LOWER([Genres]), "pop") THEN "Pop"

ELSEIF CONTAINS(LOWER([Genres]), "rock") THEN "Rock"

ELSEIF CONTAINS(LOWER([Genres]), "jazz") THEN "Jazz"

ELSEIF CONTAINS(LOWER([Genres]), "hip hop") OR CONTAINS(LOWER([Genres]), "rap") THEN "Hip Hop / Rap"

ELSEIF CONTAINS(LOWER([Genres]), "electronic") OR CONTAINS(LOWER([Genres]), "edm") OR CONTAINS(LOWER([Genres]), "house") OR CONTAINS(LOWER([Genres]), "techno") THEN "Electronic"

ELSEIF CONTAINS(LOWER([Genres]), "classical") OR CONTAINS(LOWER([Genres]), "symphony") OR CONTAINS(LOWER([Genres]), "orchestra") THEN "Classical"

ELSEIF CONTAINS(LOWER([Genres]), "country") THEN "Country"

ELSEIF CONTAINS(LOWER([Genres]), "folk") THEN "Folk"

ELSEIF CONTAINS(LOWER([Genres]), "r&b") OR CONTAINS(LOWER([Genres]), "soul") THEN "R&B / Soul"

ELSEIF CONTAINS(LOWER([Genres]), "blues") THEN "Blues"

ELSEIF CONTAINS(LOWER([Genres]), "metal") OR CONTAINS(LOWER([Genres]), "punk") THEN "Metal / Punk"

ELSEIF CONTAINS(LOWER([Genres]), "latin") OR CONTAINS(LOWER([Genres]), "salsa") OR CONTAINS(LOWER([Genres]), "bossa") THEN "Latin"

ELSEIF CONTAINS(LOWER([Genres]), "world") OR CONTAINS(LOWER([Genres]), "african") OR CONTAINS(LOWER([Genres]), "turkish") OR CONTAINS(LOWER([Genres]), "klezmer") THEN "World"

ELSEIF CONTAINS(LOWER([Genres]), "children") THEN "Children's Music"

ELSEIF CONTAINS(LOWER([Genres]), "christmas") OR CONTAINS(LOWER([Genres]), "holiday") THEN "Holiday"

ELSE "Other"

END
```

Genres just first genre code, null still shows up but just exclude it in tableau chart/graph

```
IF NOT ISNULL([Genres]) AND [Genres] <> 'Null' AND [Genres] <> '0' THEN
```

```
    SPLIT([Genres], ",", 1)
END
```

HANDY REFERENCE NOTES

Model Notes:

Heat Map: 2 predictor variables, response = color

Dual axis chart: once variables are narrowed down, could be more streamlined approach to demonstrate 2 variables influence on popularity

Scatter plot: descriptive dashboard, visually represent 1 variable

Tree map: could use this as an interactive element in the descriptive/diagnostic dashboard, if we wanted to explore genres this could be way to do it

Small multiple: could also be good for exploring different elements and genre

Bullet chart: can be the definitive chart to narrow down certain song elements having a significant impact on popularity

Stacked area: good for conceptualizing time; if we wanted to document certain sound features over time and relate it to popularity. Could be in the diagnostic or predictive dashboard

Histogram (w/ parameters): descriptive dashboard

Boxplot: descriptive dashboard

Packed bubble chart: i think this would be GREAT for genre in the descriptive/diagnostic dashboard

Reference/average lines, trend line used to narrow down significant variables

Trend line could also be used in predictive

Forecast: predictive, popularity and chosen variables(s)

Cluster analysis: diagnostic

Control chart: diagnostic/predictive

VIDEO PRESENTATION SCRIPT

Data description: HEDDA

The data was scraped from Spotify's API and was uploaded to Kaggle. It contains about 160,000 rows, including genres, artist, release year, and audio features per track.

The audio features of valence, acousticness, danceability, energy, speechiness, and instrumentalness are all rated from 0 to 1.

The keys are marked by numbers from the major note of the track [0: C, 1: C#/Db, 2: D, ...]

Popularity calculated by the Spotify algorithm is ranked from 0 to 100 and is based on the total number of plays and how recent those plays are, as well as the number of shares, saves, and skips.

Graph and Plot Summaries (Presentation Notes)

Evolution in Music Production RILEY (interactive)

- Over time we have seen a decrease in the popularity of certain genres or rather what musicians desire to create. As music industry values change, so does the voice of art.
- We see a decrease in the expansive genres of music umbrella'd under other
- Rock starts as an unpopular genre and then a boom in the creation of rock songs happens in the 1970s.
- Many genres die out (classical and Jazz). Jazz, once incredibly popular in the 40s, becomes a shell of its former glory.
- While genres like Pop, hip-hop rise as emerging genres
- And other, our broad genre group rises in song count as genres become more expansive and experimental

Audio Feature HEDDA

- Music is about how it makes us feel
- We see that the valence and danceability of music are intertwined.

- Genres like classical and metal, though highly emotional, do not inspire the same desire to move as genres like Pop, Latin music, blues. Sometimes, the difference between danceability lies in where the music is heard.
- Children's Music is highly emotionally positive and danceable

Popularity Key ZESITA

- the key of the music allows us to imagine what kind of success an artist can experience
- Some keys have more outliers and wider upper and lower bound limits
- If we want guaranteed success, we can choose certain keys

Average Popularity by Genre SYDNEY

- hip hop and rap have experience great growth as a genre which is reflected by the average popularity of songs in the genre
- Jazz is largely unpopular as well as folk, slower more niche fields don't have as broad a reach
- World music genre popularity reflects the importance of culture on music listening

Speechiness and Popularity HEDDA

- Most genres are not incredibly speechy
- Hip/hop leads in high speechiness and the highest popularity

Instrumentalness and Popularity HEDDA

- holiday music largely instrumental, its popularity seems to rely on this trait
- This is also seen with electronic genre
- There are genres where there is an inverse relationship for example with hiphop

Energy and Popularity SYDNEY

- Higher energy music is typically more popular, the popularity climbs, however extremely high energetic music may be not consistently listenable

Genre and Popularity with Reference ZESITA

- hip hop leads with clear margin but it does not seem to yet be a staple
- Newer genres experience higher popularity but popularity may not be as consistent

Treemap RILEY (interactive)

- allows us to visualize shares of data with the size

- Pop, Rock, Country, and Hip Hop/Rap occupy largest shares of map
- this shows what is dominating the industry

Genre Population over time SYDNEY

- graph allows us a deliberate focus on some of our most popular genres
- with our selected group we can easily visualize genre growth

Energy Valence Danceability ZESITA

- our most significant change in music features appears to be energy, which has grown rather consistently
- Unsurprisingly, danceability only shows a slight slope, music and dancing are entangled together
- Valence shows a decrease, perhaps reflecting the current social environment

Genre Popularity Forecast SYNDEY

- metal is expected to grow however not as rapidly as children's music and hip/hop

conclusion: ZESITA

- This project showed how data visualization can uncover the story of how music continuously evolves while revealing what features contributed to the popularity of the song. We found that the music elements like danceability, valence and energy were the key factors of listener preference and popularity patterns. By analyzing these trends, we began to forecast how music will develop in the future, with genres like with metal, hip-hop, children's music and Latin showing strong growth for music in the future.

- Danceability, Valence, and Energy were key to predicting popularity
- Top genres in the future:
    - Metal
    - Pop
    - Hip-Hop
    - Children's Music
    - Latin