



# Through the Ages: Song Popularity Classification Over Time

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# Who am I?



**A data scientist and musician!**

**Github:**



**Email:**



**LinkedIn:**



**Spotify:**



# Agenda

- Data Overview
- Analysis of music over time
- Classification system
- Looking forward
- Closing



# The Bottom Line

# Whitney Houston said it best....

***"I wanna  
dance with  
somebody"***

- People gravitate towards **danceable** songs in **major** keys with **lyrics**



# Business Problem

- A streaming service seeking to provide the best possible **listening experience**
- A **classification system** based on music popularity
- Why **popularity?**
  - Increased **listening time** and user **satisfaction**

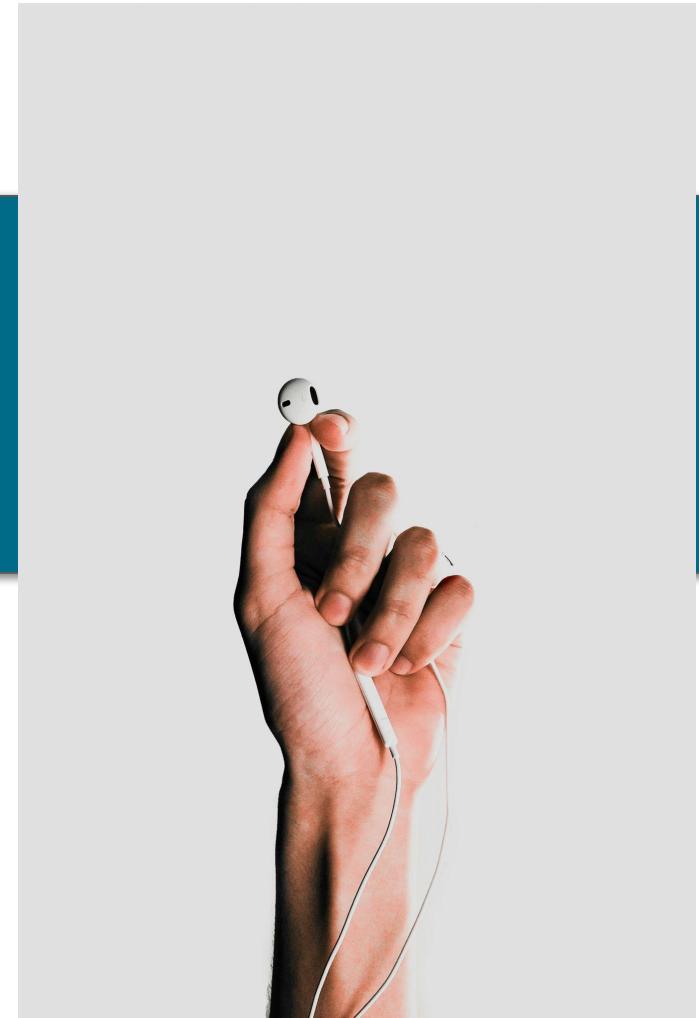


# Data Overview

- Over **170,000** Spotify songs
- All **genres**, spanning release years between **1921** to **2020**
- Quantified **audio features**

## Limitations:

- “Popularity” might be biased, but is likely comprised of:
  - Number of streams
  - Number of playlist adds
- Not all songs are rated



# Examples of Audio Features

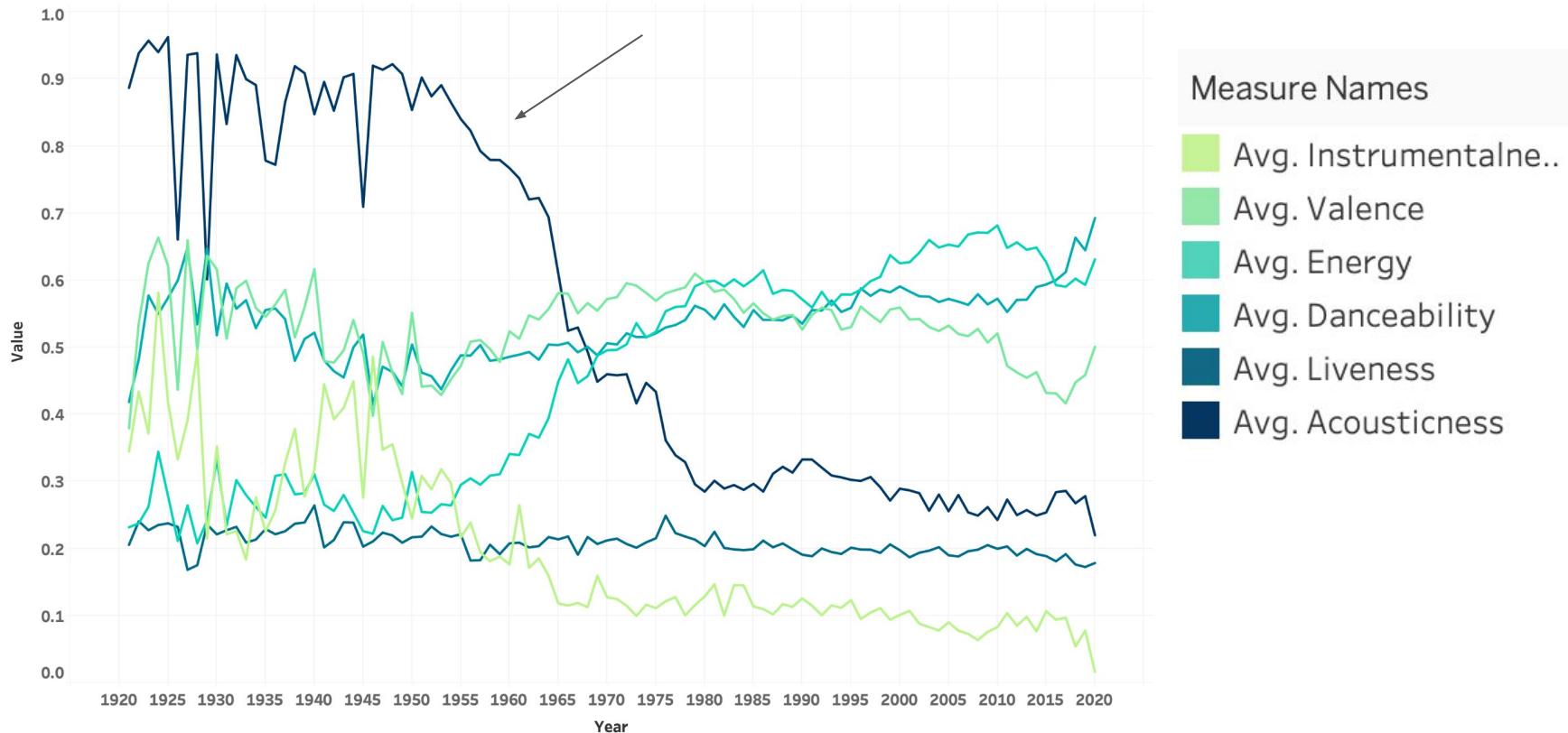
- **Acousticness**
- **Danceability**
- Duration
- **Energy**
- **Explicitness**
- **Instrumentalness**
- Key
- Liveness
- **Mode**
- Speechiness
- Valence



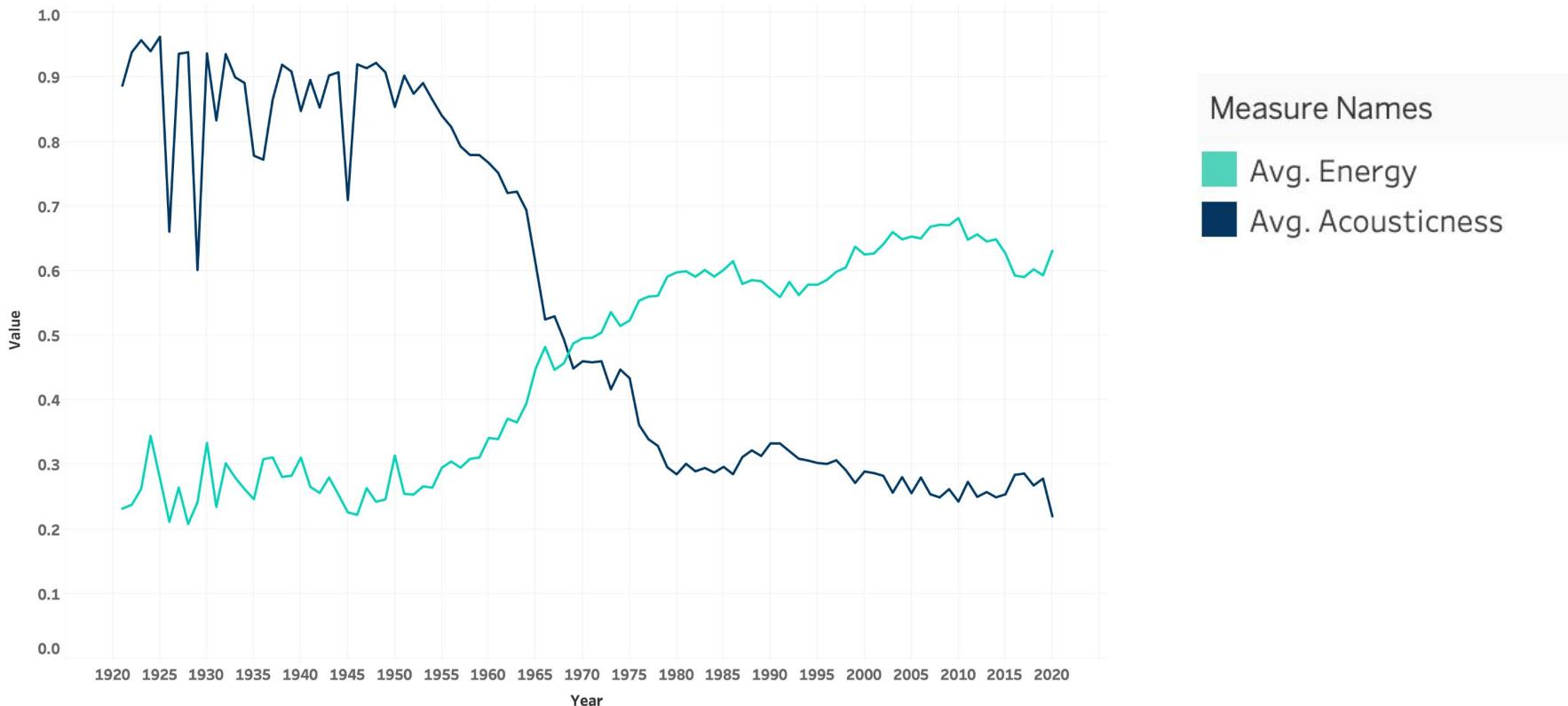


# Analysis

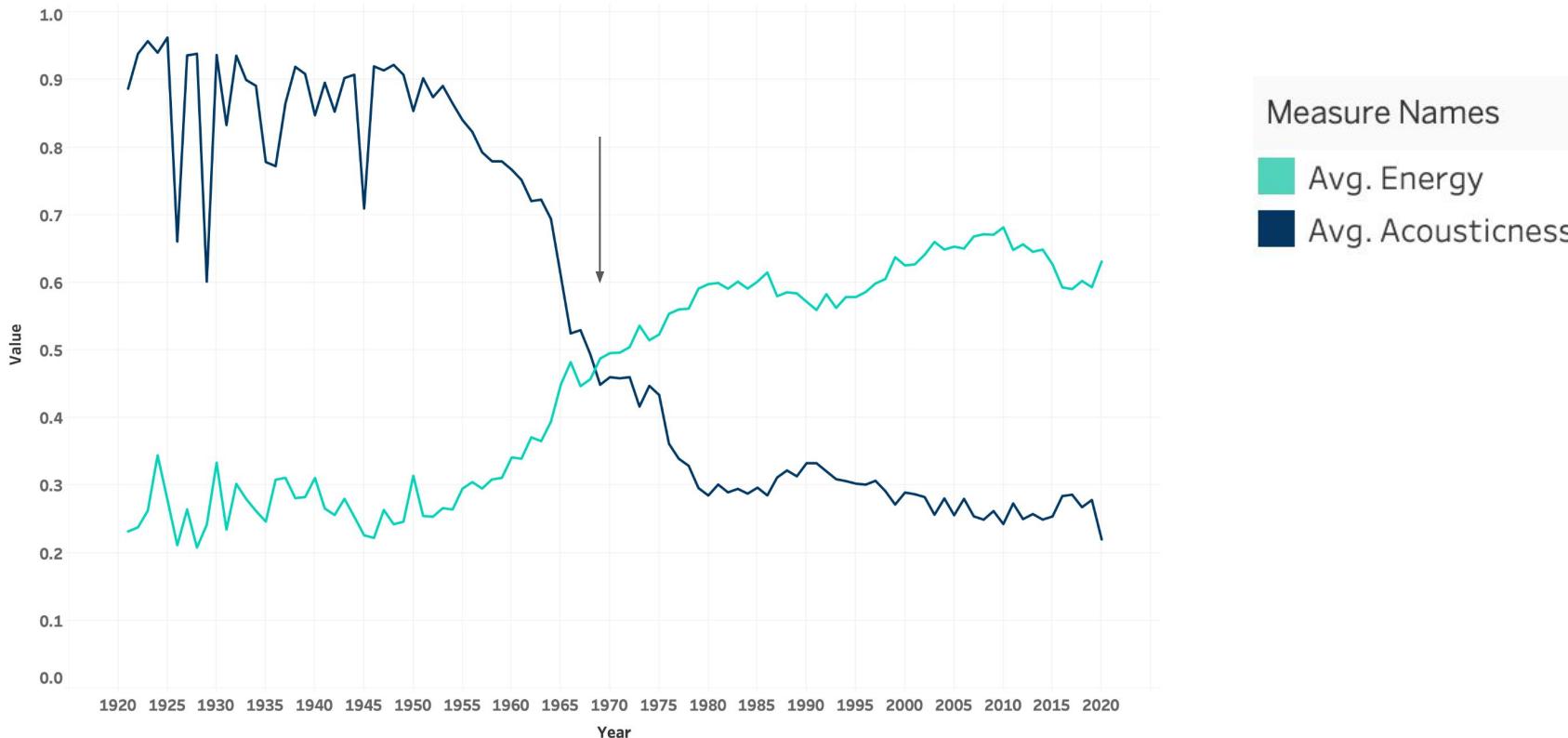
# Not all features are equal over time



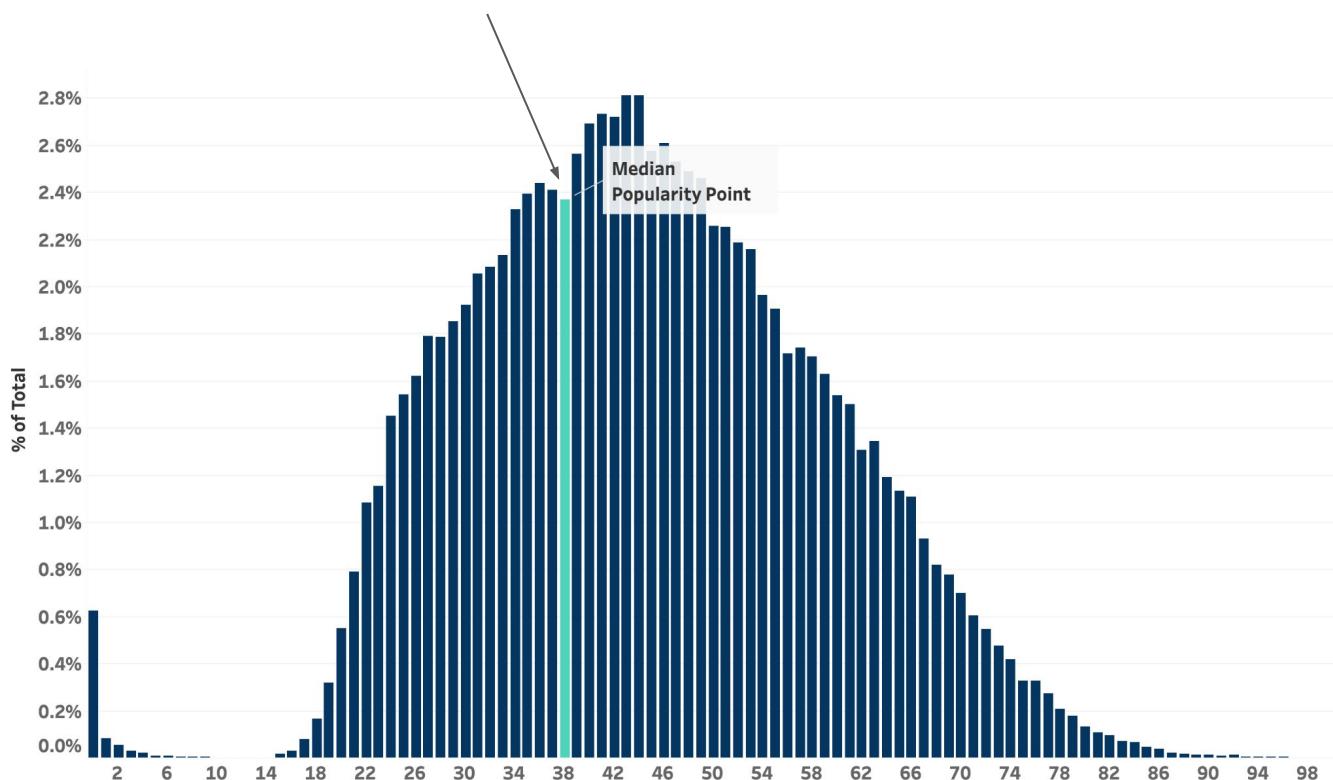
# Priorities changed in the 60's...



# ...specifically in 1968



# Popularity scoring



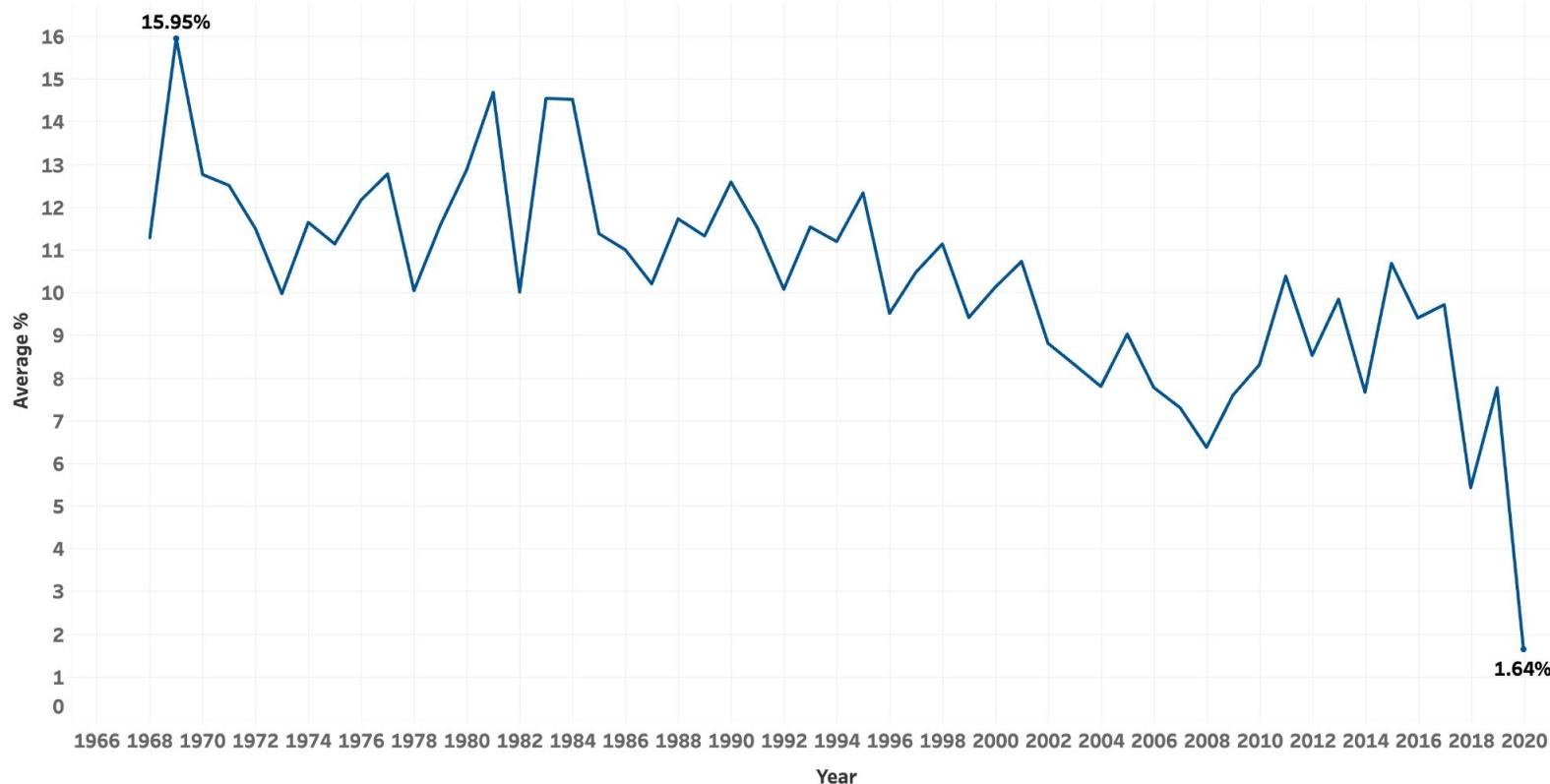
"Popular" =  
a score of  
**38 - 100**  
(the median  
score among  
songs  
post-1968)

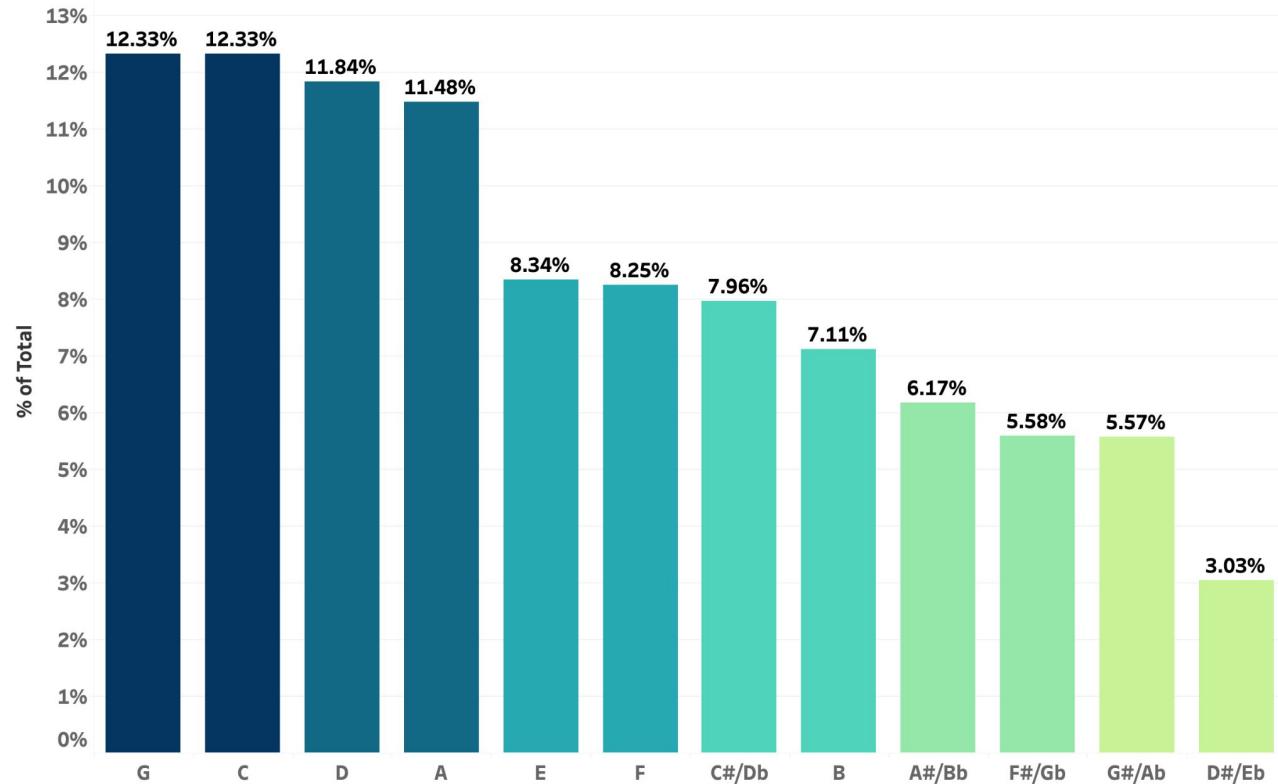
# What qualities contribute most to song popularity?

- Instrumentalness
- Key
- Mode
- Danceability
- Whether or not a song is explicit



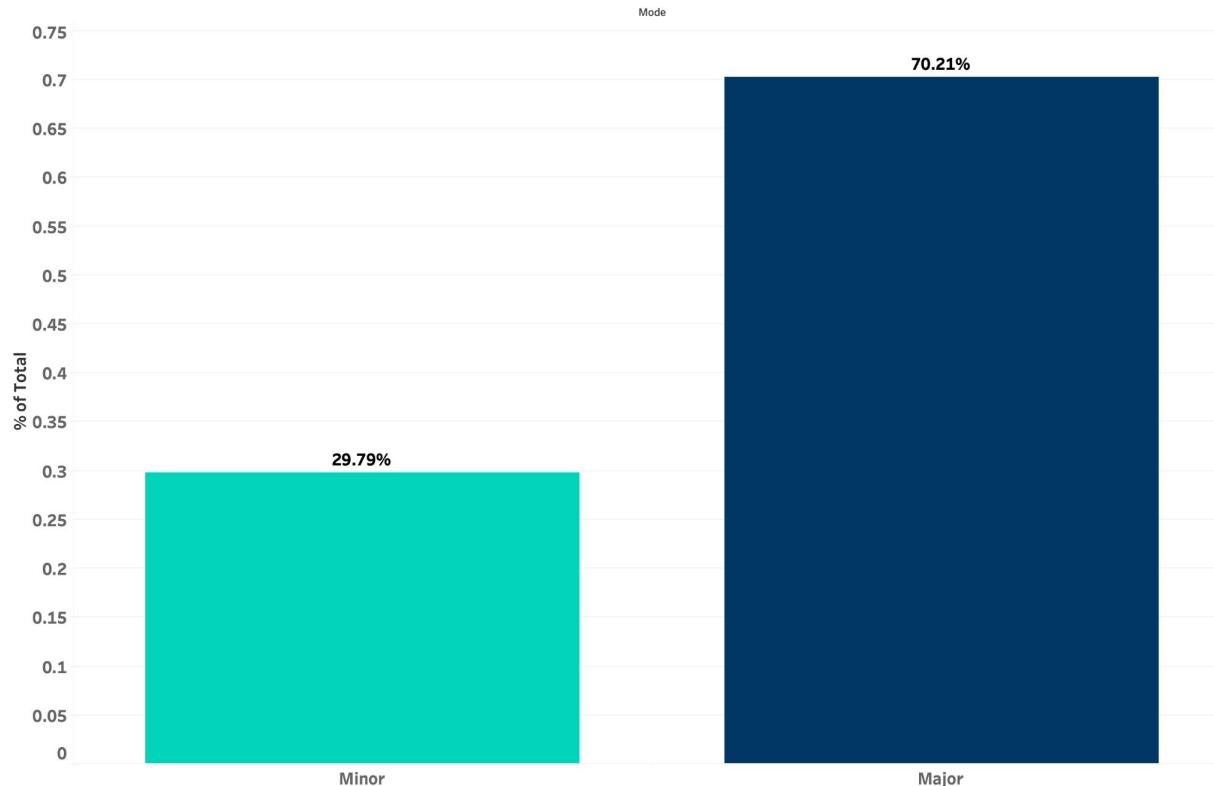
# Average instrumentalness is 9%



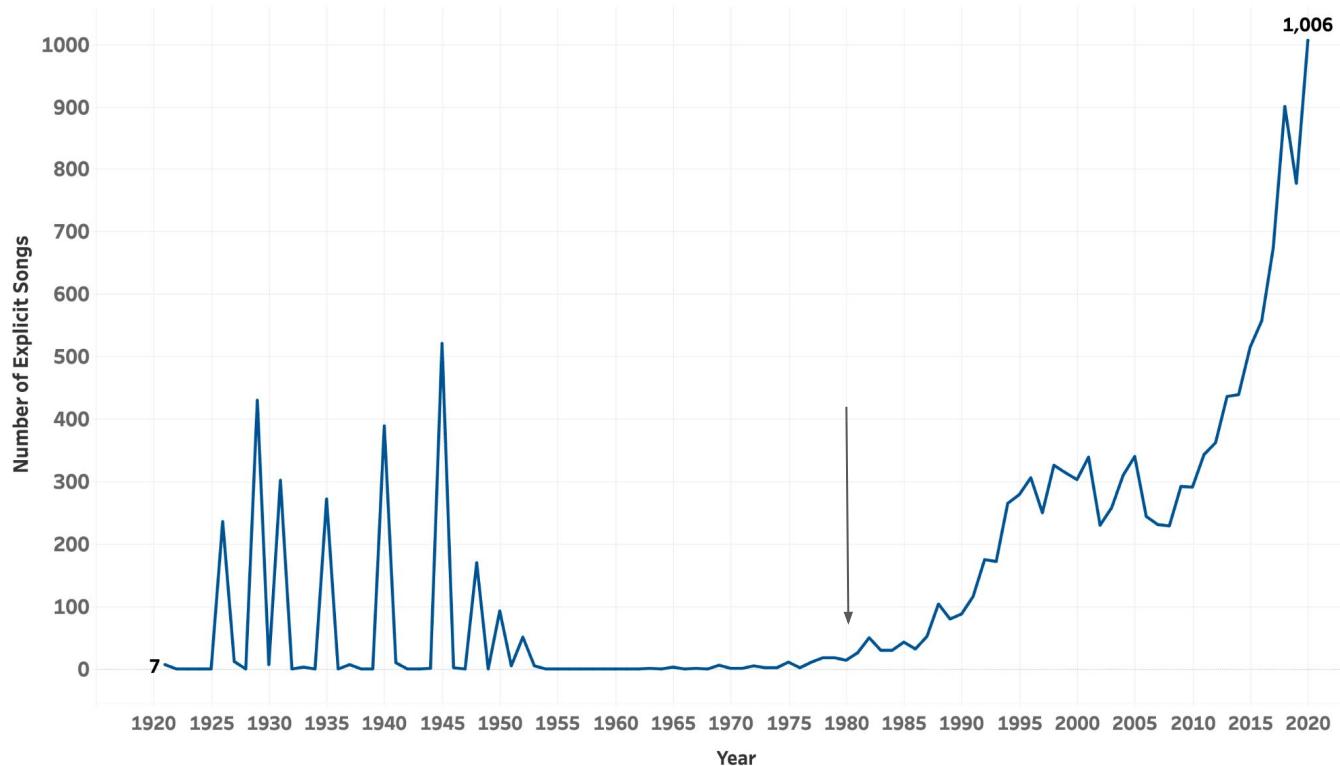


**G, C, D,  
and A are  
the most  
popular  
keys**

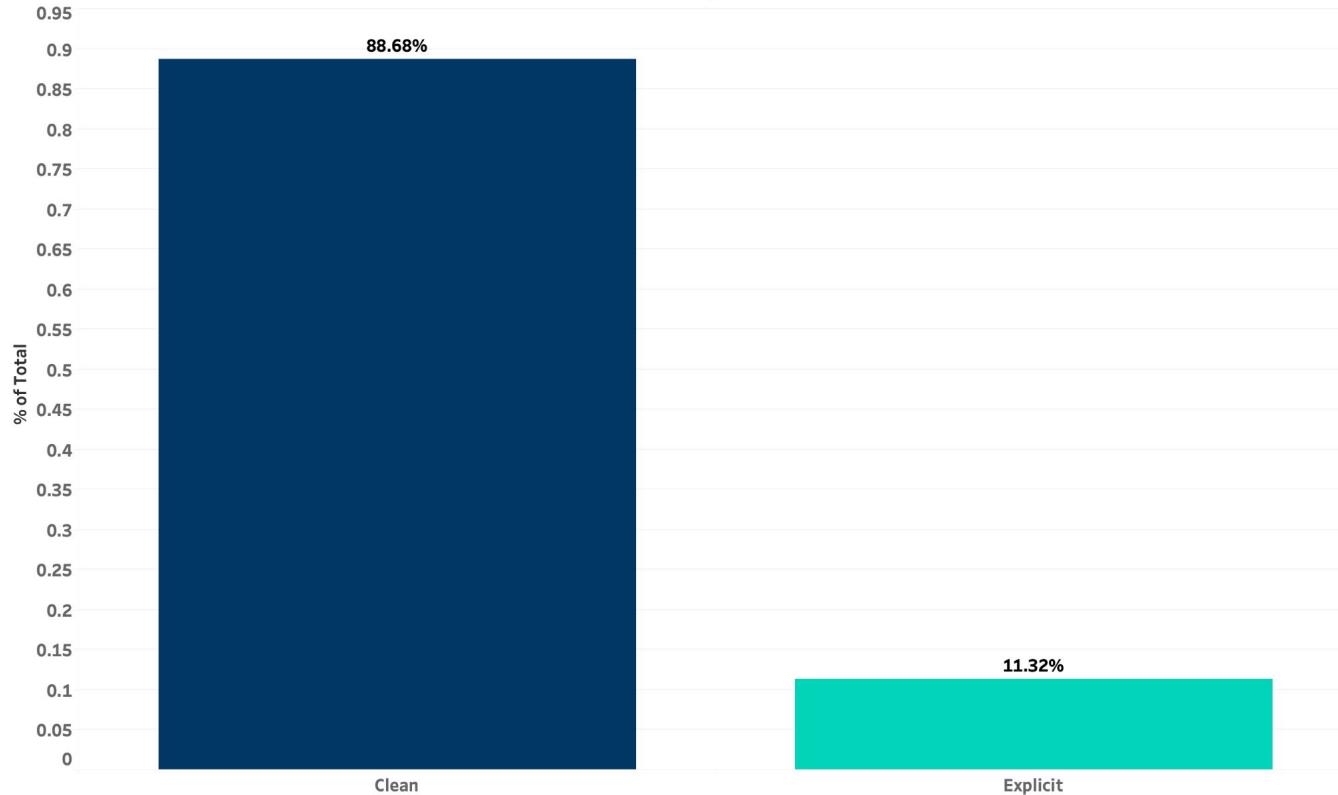
# 70% of songs are in a major key



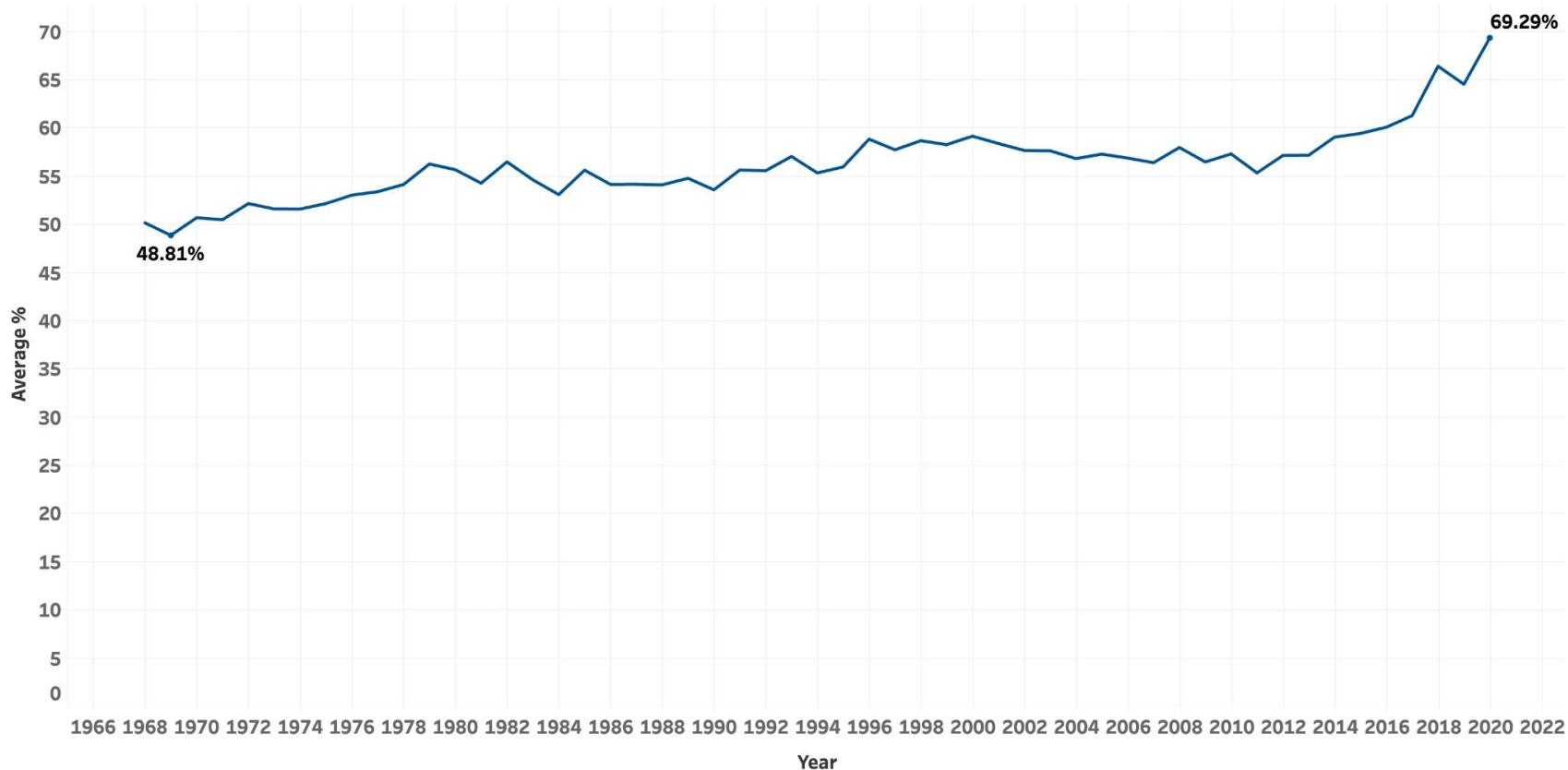
# Explicit songs skyrocketed in the 80's...



# ... but 89% of popular songs are still clean



# Danceability averages 59% in popular songs





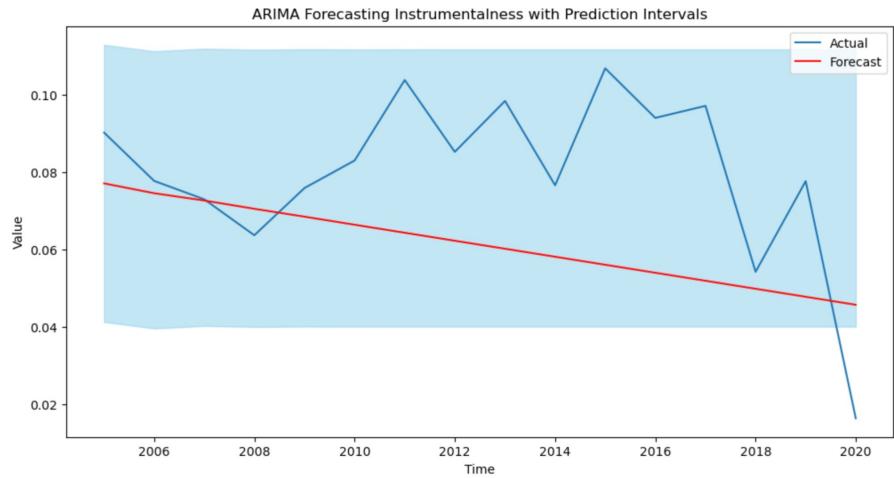
Looking Forward

# Recommendations

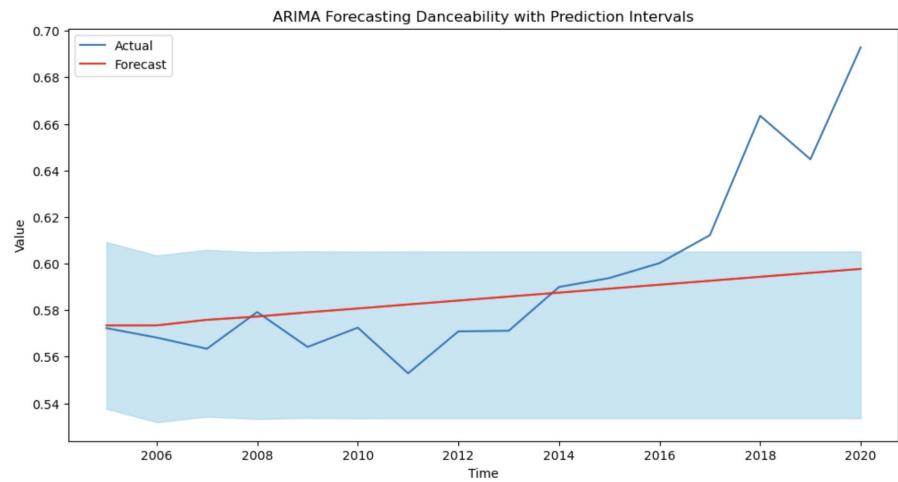
- Most popular songs are in **major keys**
- **G, C, D, and A** are the most common keys
- Avoid **explicit** lyrics
- Songs with **high danceability** will likely persist in popularity
- People gravitate towards songs with **lyrics**



# Looking towards the future



Instrumentalness will remain **low**



Danceability will remain **high**

# Future Lines of Inquiry

- Analyzing audio features  
of specific **genres** (rock,  
jazz, alternative, etc.)





Questions?

# Sources

Images:

Slide 1) Photo by [Totte Annerbrink](#) on [Unsplash](#)

Slide 5) Photo by [rakhmat suwandi](#) on [Unsplash](#)

Slide 6) Photo by [Daniel Fontenele](#) on [Unsplash](#)

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Data:

<https://www.kaggle.com/datasets/vatsalmavani/spotify-dataset>

# Thank you!



Github:



Email:



LinkedIn:



Spotify:



# Appendix

Interactive Tableau Dashboard:

