

Notebook3_final_prod

December 12, 2025

1 Notebook 3: Final Product

This notebook will run through the title of the final product, an image of the final product, a description of the final product, and a Manifest of all resources used.

1.0.1 Title of Final Product:

Has Music Gotten Simpler Since the 1950's?

1.0.2 Image of Final Product:

Has Music Gotten Simpler Since the 1950's?

An Analysis from how the Top 100 and Top 5 Billboard songs have changed from 1958 to 2022



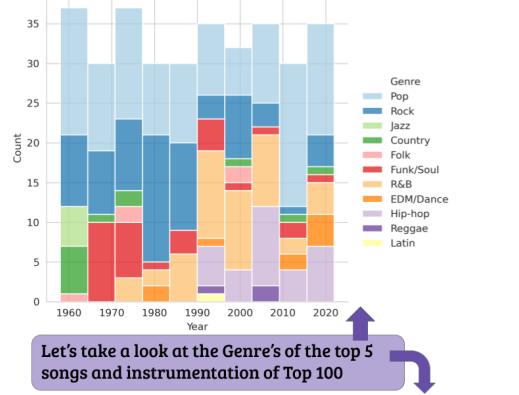
Data source(s):

<https://github.com/madeleinehamilton/BiMMuDa>
<https://www.kaggle.com/datasets/ludmink/billboard>

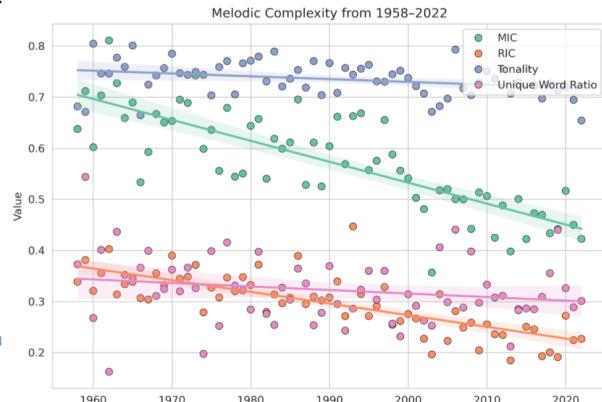
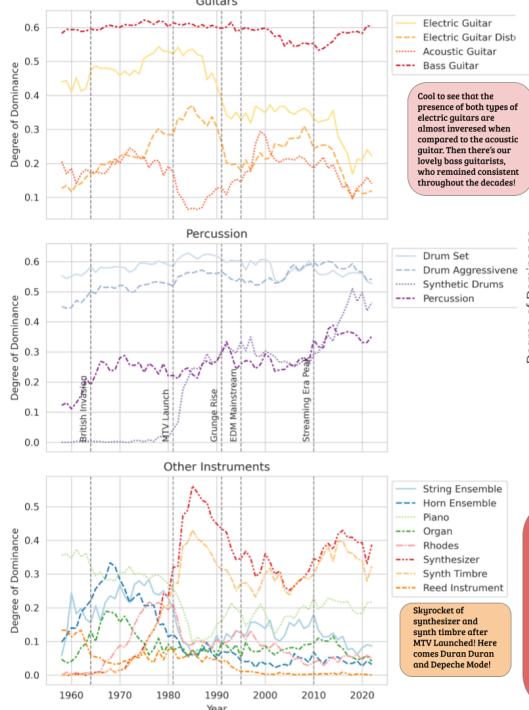
Designed by Paco Herrera

We see that overall, there is some sort of positive correlation between most variables regarding melodic complexity when looking at the Top 5, meaning that they all declined together. It's important to note that every variable had a negative relationship to year! It looks like melodies HAVE gotten "simpler" since the 50's—but is it that simple?

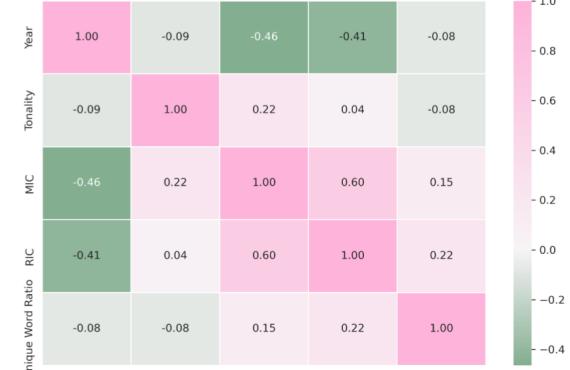
Genre Distribution of Top 5 Songs (1958-2022)



Degree of Dominance per Instrument from 1958-2022



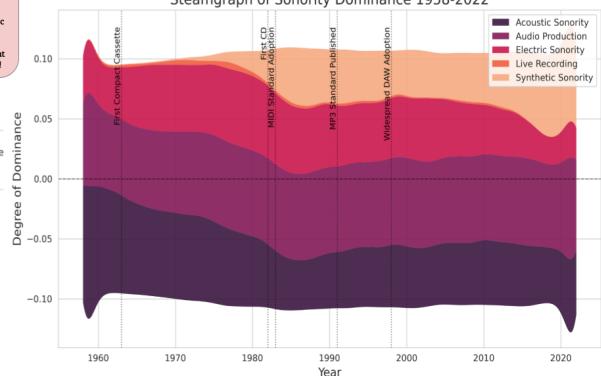
Correlation of Melodic MIC, RIC, Tonality, and Unique Word Ratio (1958-2022)



*MIC = Unpredictability of the next melodic note

*RIC = unpredictability of the next rhythmic note

Steamgraph of Sonority Dominance 1958-2022



We see that beginning in the 1980s there is a clear rise in synthetic sonority alongside a decline in acoustic elements like guitar and symphonic instruments. Electric sonority also gradually decreases, representing just how rapidly music technology evolves. These patterns suggest that even when the data points in one direction (toward "simplification"), new technologies introduce their own confounding complexities. As one musical dimension becomes simpler, another often becomes more intricate, revealing how musical change is continually shifting.

1.0.3 Description of the Final Product

The final product is a collection of a stacked barchart, a paired scatterplot with regression lines and heatmap, multiple line graphs of instrumentation, and a steamgraph of sonority. The goal is for the reader to acknowledge the paired plot and realize that music has “gotten simpler” since the 1950’s, but then to utilize the remaining figures to think critically about that initial claim. When looking at the other figures, the reader should realize that there are MANY factors to consider (significantly more than what I mentioned in the infographic), and that the measurement used is just one of many.

1.1 Resource Manifest

Name	Type	Description	Link
bimmuda genre	.csv file	Top 5 Songs Per Year + metadata	bimmuda_genre.csv
bimmuda per melody full	.csv file	Song IDs + Tonal metadata	bimmuda_per_melody_full.csv
bimmuda per song full	.csv file	Top 5 Songs Per Year + Melodic metadata	bimmuda_per_song_full.csv
hot100 charts	.tsv file	Top 100 Weekly Charts Data	hot100_charts.tsv
mgphot gene values	.tsv file	Gene Values (Metadata) of Top 100	mgphot_gene_values.tsv
mgphot genes SONGS_FULL	.tsv file	Descriptions of each gene My own re-organization of the BiMMuDa data	mgphot_genes.tsv SONGS_FULL.csv
hot 100	.csv file	Different top 100 csv to check mine with	hot100.csv
BiMMuDa GitHub	External Link	BiMMuDa GitHub Repo	https://github.com/madelinehawkins/BiMMuDa
BiMMuDa Research	External Link	Research Paper for BiMMuDa	https://transactions.ismir.net/2018-09-10/10.1145/3209095.3209103.pdf
MGPHot GitHub	External Link	MGPHot GitHub Repo	https://github.com/utdata/rwth-aachen-university-mgphot
BMGPHot Research	External Link	Research Paper for MGPHot	https://transactions.ismir.net/2018-09-10/10.1145/3209095.3209102.pdf
Billboard Hot 100 & More	External Link	Kaggle data to quality assure the data used	https://www.kaggle.com/datasets/billboard/hot-100-songs
Notebook 1	Jupyter Notebook	Establishes the data	Notebook1_est_data.ipynb
Notebook 2.1	Jupyter Notebook	Barchart, Linegraphs, Widget creation	EDA_I.ipynb
Notebook 2.2	Jupyter Notebook	Heatmap creation	EDA_II.ipynb
Notebook 2.3	Jupyter Notebook	Finalizing and Revising all figures	EDA_III.ipynb
Notebook 3	Jupyter Notebook	Final Production Descriptions	Notebook3_final_prod.ipynb

Name	Type	Description	Link
Billboard Starter Notebook	External Link	Foundation for Widget	https://www.kaggle.com/code/
Steamgraph with Python and Matplotlib	External Link	Foundation for Steamgraph	https://python-graph-gallery