Tempo of the Times

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Project Overview

This project looks to examine how societal shifts affect musical compositions. Artists seek to create music that entertains the masses while reflecting current events in their art. Music is no exception. We look to find connections between civil strife and compositions of current music.

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MSD & The Echo Nest

Through our initial research, we discovered the Million Song Dataset- a Columbia University project powered by the Echo Nest. MSD is a compilation of musical indicators found in the Echo Nest. In addition, this data set provided release date and lyric data powered by Musix Match. After this data was stored, Echo Nest was minded for the original data. Through cross referencing the original data with that found in the MSD, a dataset was built for the analysis.

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Data available through Musix Match allowed for a sentiment analysis of the lyrics in each song. We call this metric *polarity* and discuss it in detail in our indicators section. This data was the limiting factor to the dataset, limiting the number of songs to 175,081. The creation of a large, robust dataset, allowed for a deep analysis of music from 1950-2011.

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Musical Quantifiers

The following quantifiers were collected from Echo Nest while constructing the dataset: Mode, Key, Time Signature, Loudness, Valence, Tempo, Danceability, Acousticness, Hotness, and Energy.

In addition to these listed quantifiers, we conducted sentiment analysis on lyric data of selected songs as provided by MusixMatch to produce our final musical quantifier, Polarity.

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Definitions of Musical Indicators

Mode: Whether a song is in a Major or minor key (0 or 1)

Key: What Key the song uses (integers 1-12)

Tempo: How fast a song is on average (0-200)

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More Definitions

Danceability: How danceable a song is on average (0-1)

Energy: How intense and powerful aspects of the song are (0-1)

Time Signature: How many beats in a measure (integers 1-16)

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More Definitions

Valence: How positive a song sounds on average (0-1)

Acousticness: The amount of natural unprocessed sounds relative to electric sounds (0-1)

Loudness: How loud a song is on average (0 to -20)

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Polarity

A metric created through a sentiment analysis package in R. The database MusixMatch provided a *bag of words* for a number of songs, which were then analyzed for their sentimentality. This indicator is an original statistic not found in either MSD or the Echo Nest. This metric allowed for an original exploration of music in its time.

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Hotness- Its Importance

Hotness is an indicator that is based on the “total activity” of a particular song across whatever medium of technology of the given time. Hotness was used to scale the data in our analysis. To obtain a representative model of the population, individual songs were weighted according to their popularity. By doing so, any nonrepresentative song found in our data set was discounted. With individual songs having respective hotness, the analysis was completed after weighting.

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Economic Data

Economic metrics such GDP, CPI, public savings, private investment, unemployment, defense spending were used to quantify social well-being. These indicators were extracted from the Bureau of Economic Analysis. In addition, the Economic Performance Index, a metric created by the International Monetary Fund, was used in our analysis.

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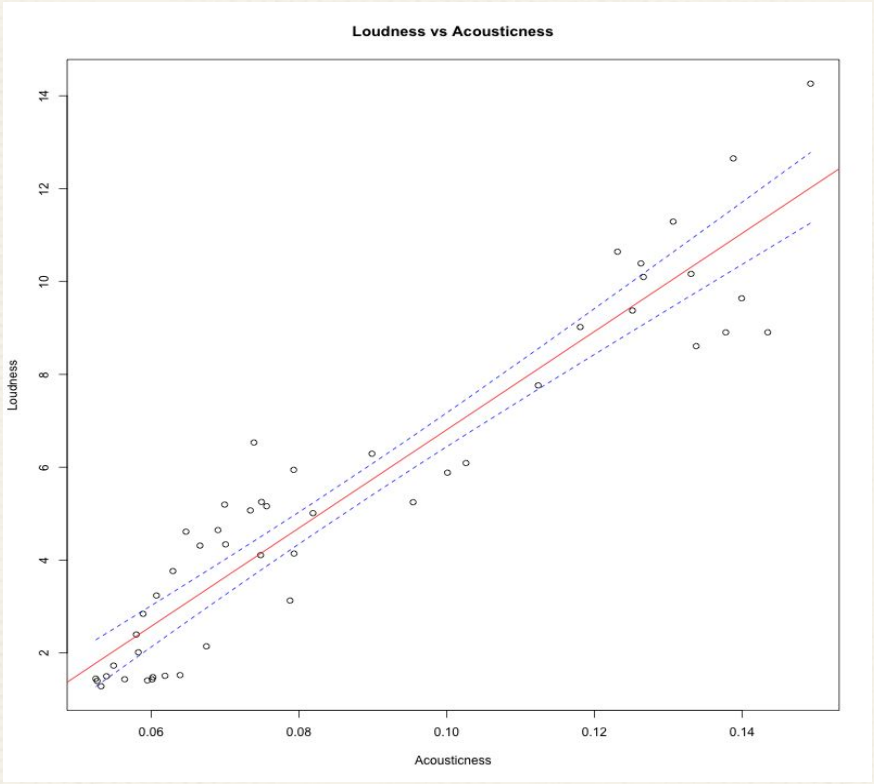
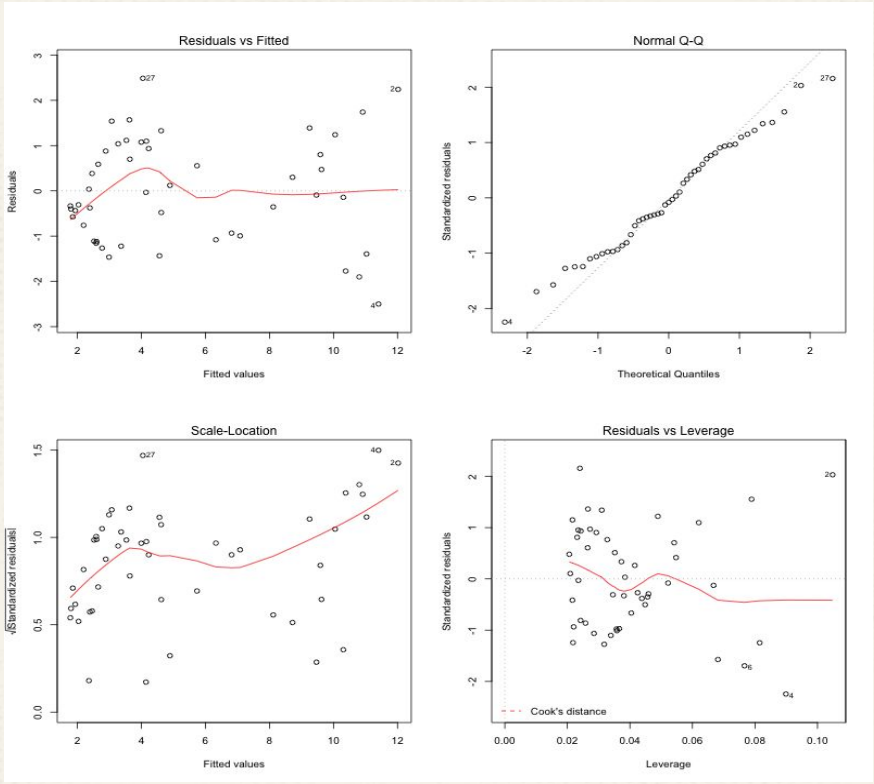
Models





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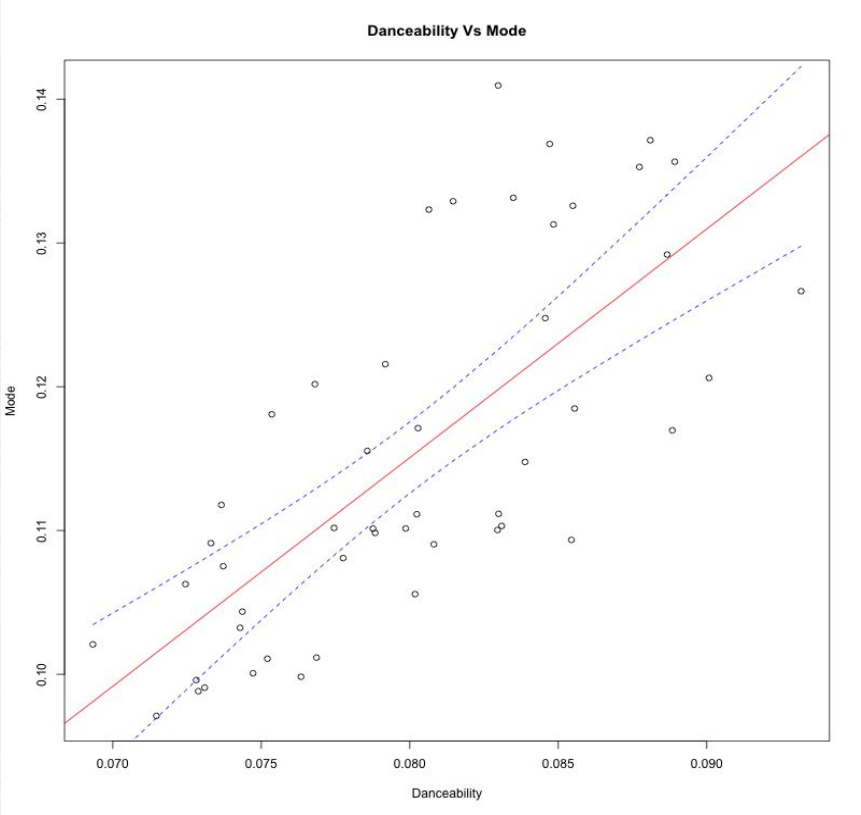

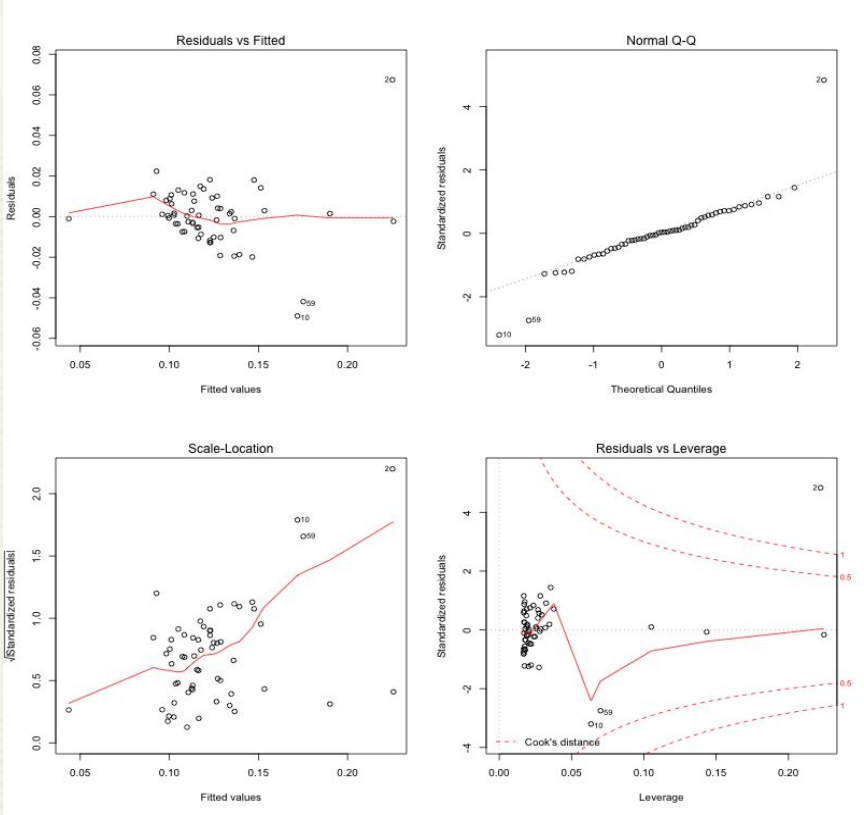

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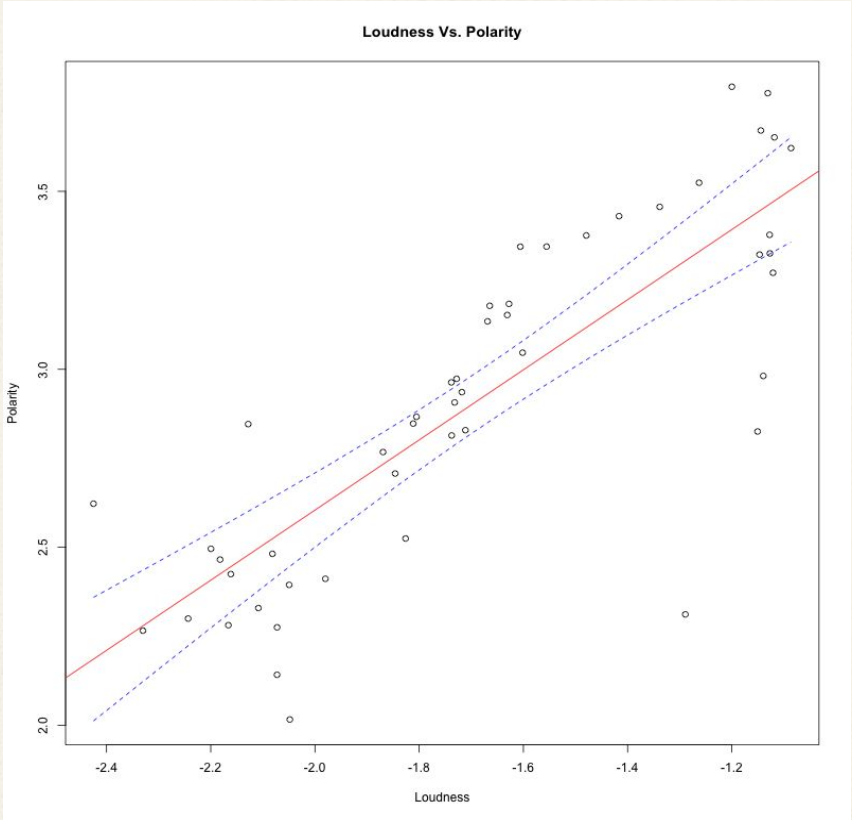

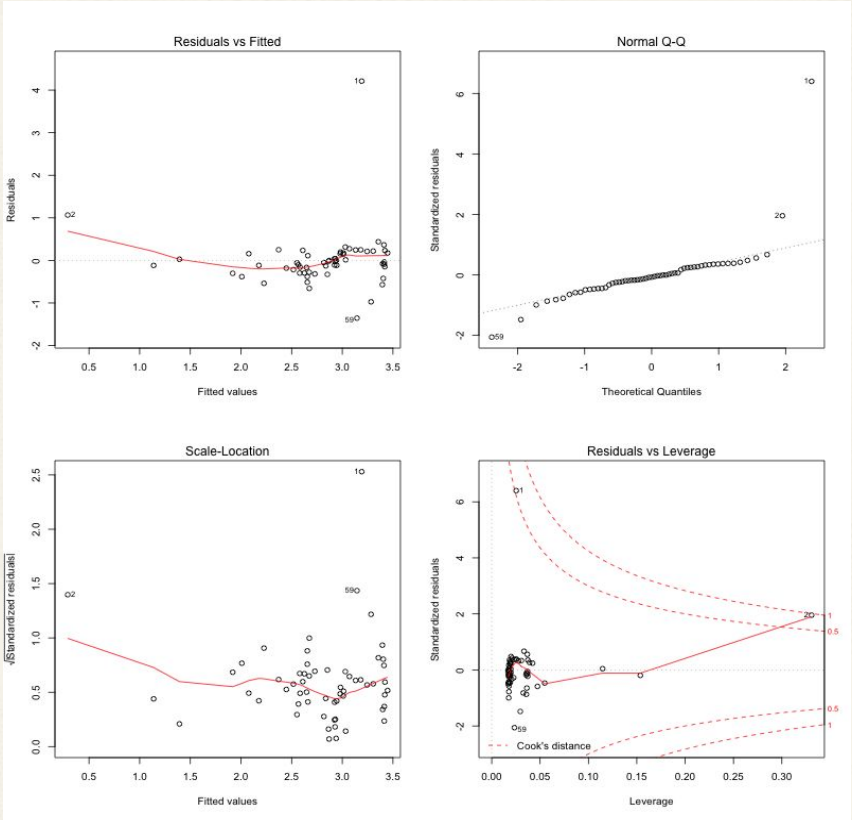

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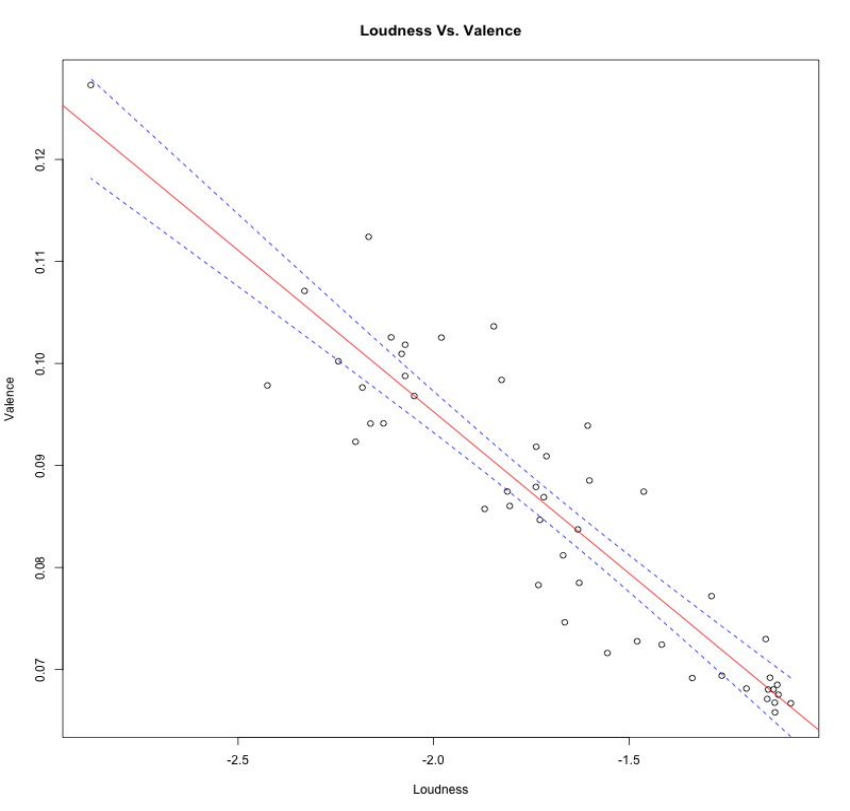

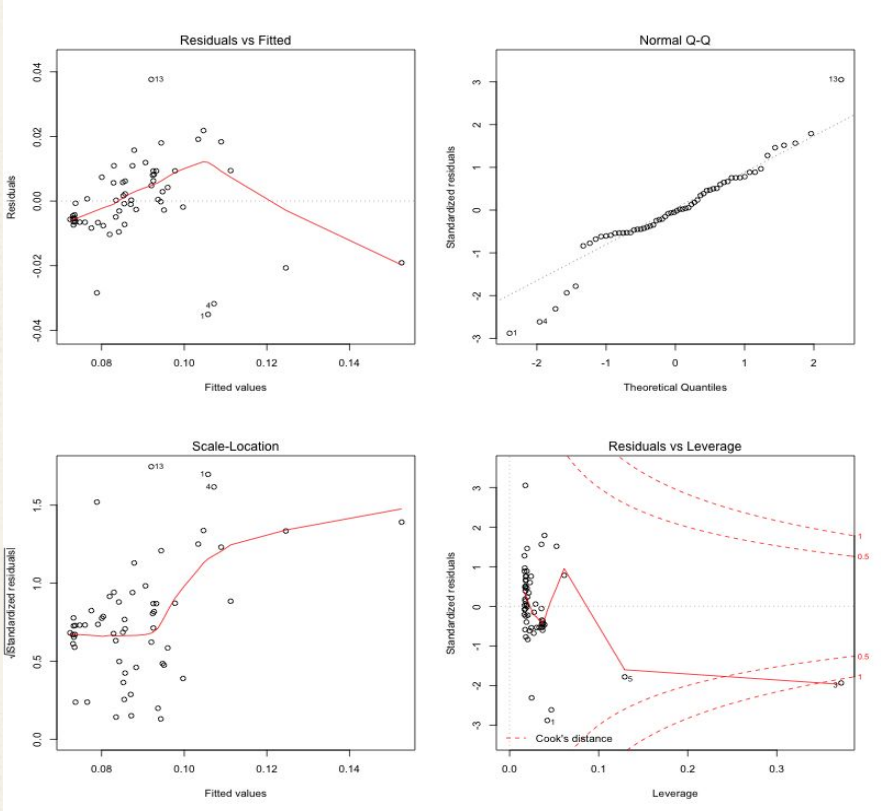

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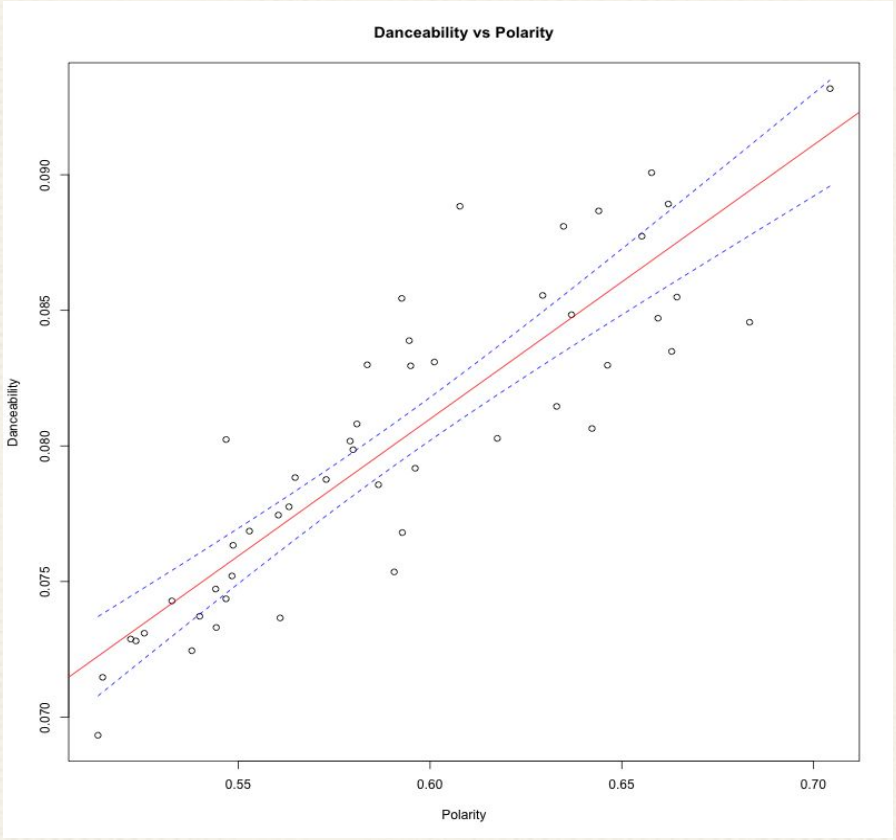

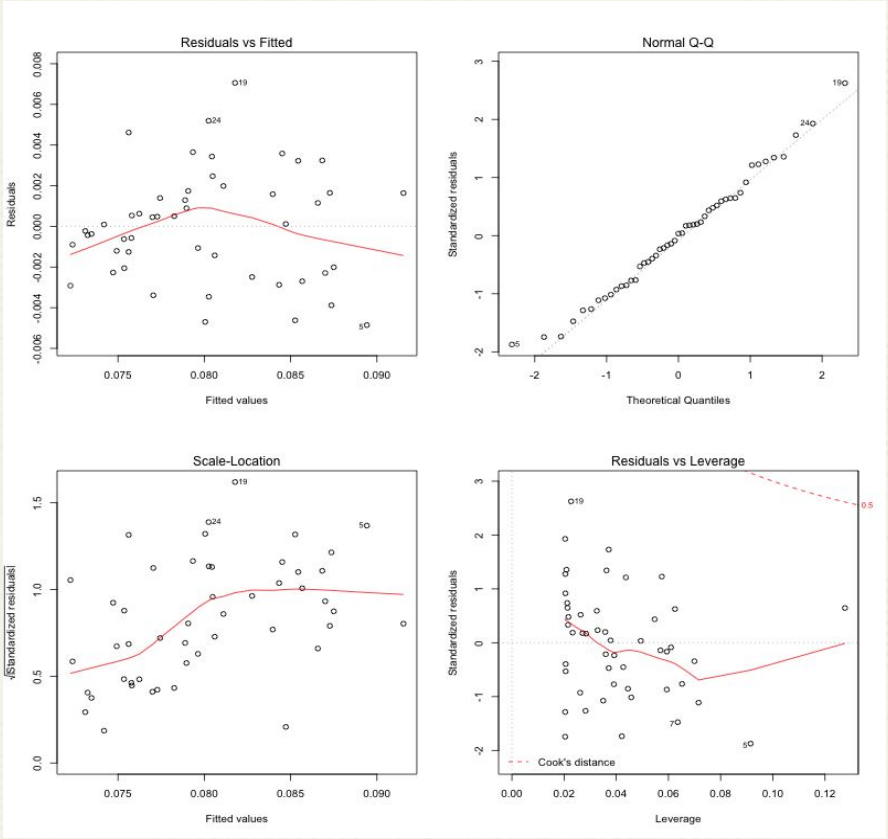

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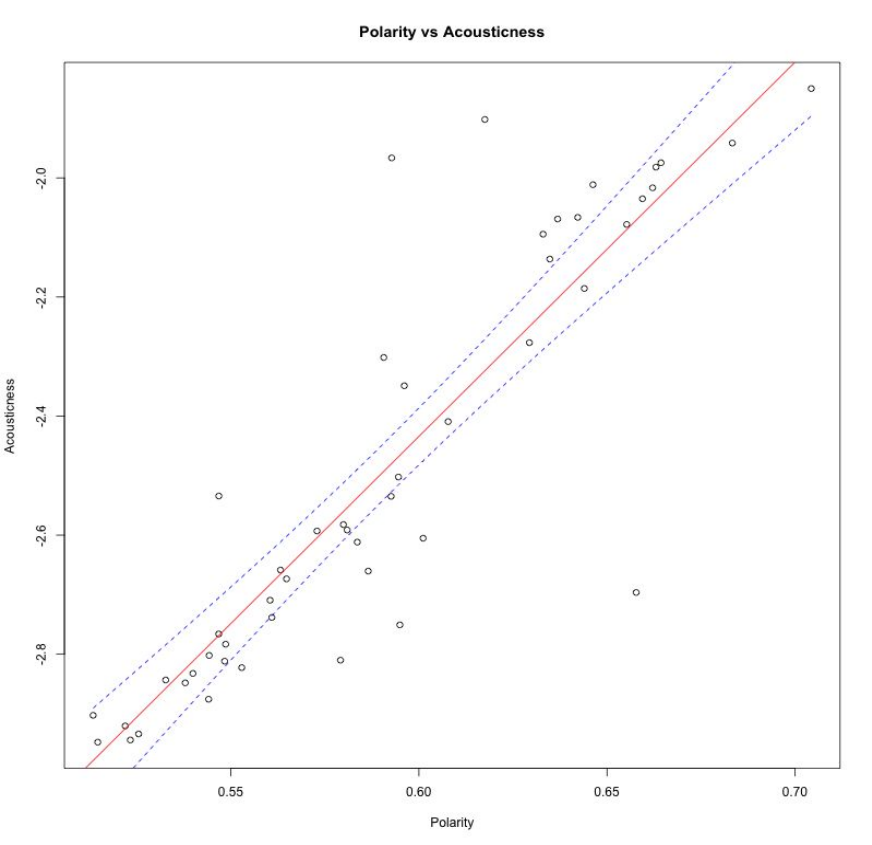

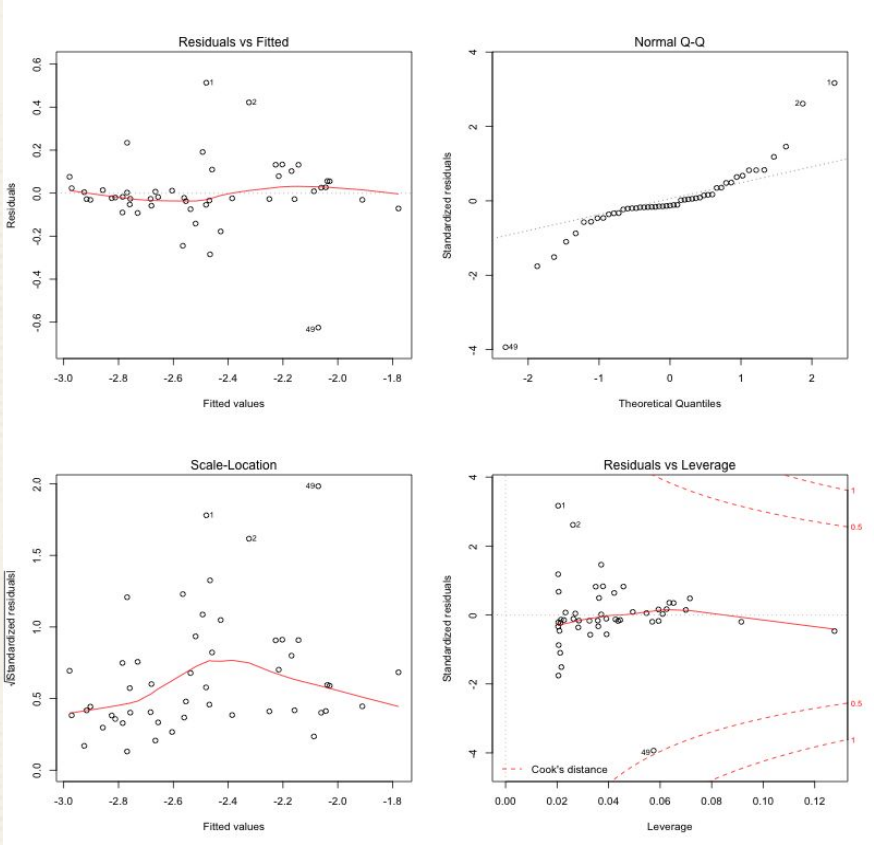

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