

Interactive Music Rankings Visualization

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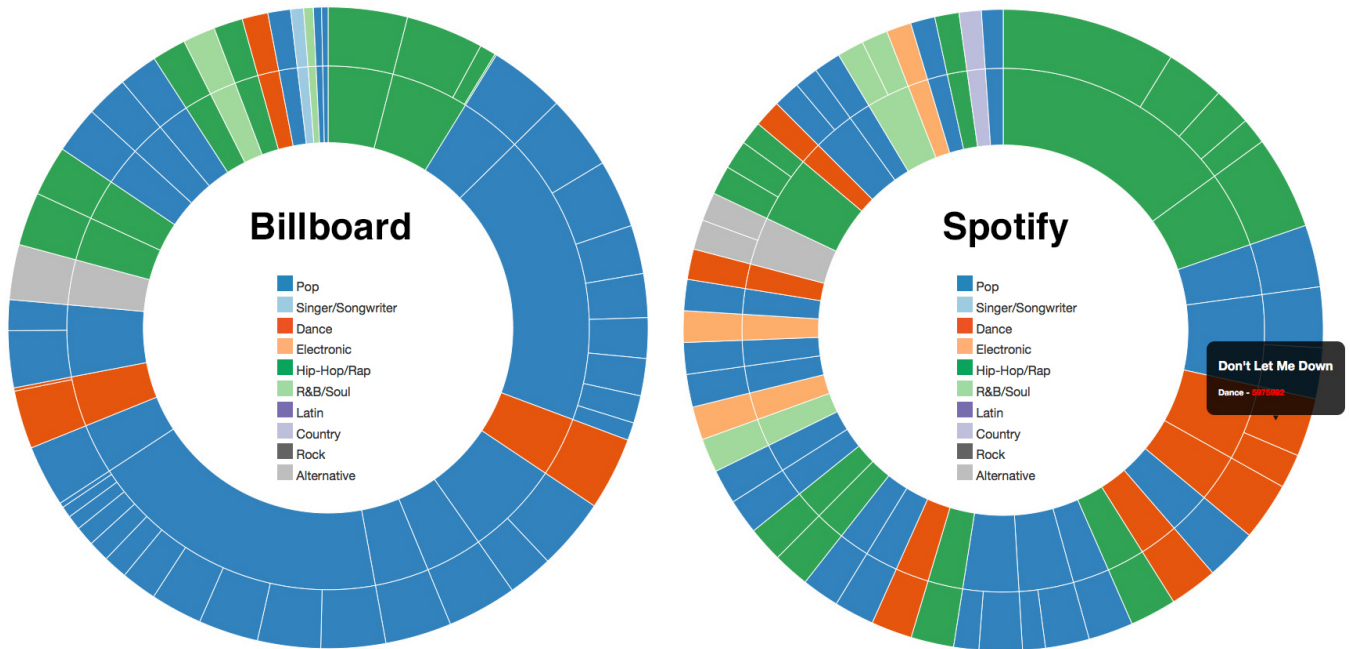


Figure 1: Sunburst interactive visualization of Top 50 songs during May 7th week. Left: data from Billboard separated by rank position, artists, tracks and colors (music genre). Right: similar data from Spotify. The first position is at top-center position, a tooltip shows the track information.

ABSTRACT

Music and rankings are used together to improve marketing and to help users to compare and discover new music. This work presents a new interactive way to show and compare music rankings using the Sunburst technique. We also report a remote user survey that we performed to gather information about people behaviour regarding music. Our visualization makes easier to collect information about artists and tracks, and also to compare the data obtained from the two major music rankings: Billboard and Spotify.

Index Terms: H.5.2 [Information and Interface Management]: User Interfaces— Graphical User interfaces (GUI).

1 INTRODUCTION

Music is a huge industry with several artists and groups competing for popularity and recognition of their work. Their influence is directly proportional to the number of fans they have.

People listen to music everyday, and internet access is changing the way music is listened. Some years ago, the success of a certain artist was mainly calculated by how many LPs or CDs were sold,

what we call physical music. Nowadays, the main source is online streaming, listening music from websites/players such as Youtube [16] and Spotify [13].

Rankings in general were always available and have been used to influence users' choices; music rankings (also called charts) would not be different. TV music channels, such as MTV and VH1, have most of their schedule based on music rankings: they show what most people want to see.

The Billboard [3] magazine produces the most famous music ranking, the "Hot 100" list, which shows the most played tracks (usually called singles, music that is being released on the media) based actually on streaming activity, radio airplay (audience impressions as measured by Nielsen Music) and sales data (as compiled by Nielsen Music). Spotify also produces rankings, which are based on users' streams, and filtered by location, daily or weekly. The data is available at Spotify Charts [14]. These popular rankings reflect the marketing strategy of record labels, and the top artists are usually linked to the major labels.

In this work we aim at providing music ranking visualizations to help the analysis of music data for artists and music labels, and also for users' recommendation. In the case of artists and music labels, new strategies can be planned and put into practice when data is seen and compared, contributing to improve marketing and music quality. Users can use visualizations to analyze music data and compare and classify artists' information. If the user prefers pop music, it is easier to find another pop music only playing with an

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interactive visualization. Also, recommendation systems can interact with what users' are listening to and recommend similar artists.

2 RELATED WORK

There are several works in computer science dealing with music, but only a few are about music rankings. We found two groups of works: analysis and classification, and history and music ranking visualization.

In the first group, there are works about music and visualization analysis such as [10], where they found, among other things, that Spotify and Youtube figure among the most popular on-demand music services. Borkin et al. [4] analyzed the memorability of a visualization.

Data classification is presented at [8] a ranking scalable multi-attribute visualization technique that uses bar charts. Another work, Similarity Graph [11], enables the exploration of data sets in terms of hierarchical similarities.

An example from the second group of works [5] combines a timeline-based visualization, with a set of synchronized views and an interactive filtering mechanism. Another example is *How music taste evolved* [12], which shows Billboard [3] data since 1958 with the top 5 artists for each week, and plays the number one track.

Moreover, there are three important works showing personal music sets. The first one, LastHistory [2], is an interactive visualization for displaying music listening stories, along with contextual information from personal photos and calendar entries. The second is Last Chart! [6], which uses personal data from Last.fm [9] to show Bubble, Cloud and other visualization charts. Finally, Gilks [7] has been tracking his music consumption on Spotify, using Last.fm to collect the data and a handy script to download the data into a CSV.

Our work is related to these groups, mixing visualization of data from Billboard and Spotify, and showing music rankings along time.

3 SUNBURST-BASED MUSIC RANKINGS VISUALIZATION

Before designing our visualization, a preliminary remote user survey was applied to assess people preferences and habits regarding obtaining and listening to music. 377 people from 11 countries, 23 years old in average, answered our questionnaire.

We found out that Youtube (85%), download (67%) and Spotify (45%) are the most used services to listen to music. People discover new music through the same services as they discover music (73%), through friends' recommendation (62%) and music rankings (25%). Music genre influences most users choices for new music, with an influence rate of 93%, followed by artist (81%), music rankings (32%) and release date (22%). When users are interested in music rankings, they mainly look at Billboard (27%), followed by Spotify Charts (22%), and 37% of the people look at one of these at least.

The survey was used to guide our choices, and following that we created a Sunburst-based interactive visualization to display and compare Billboard and Spotify rankings.

Billboard data were acquired with a web crawler, and the data contain the track position, track name, artist, URL to listen on Spotify, last week position, weeks on chart and peak position. Spotify data were acquired from Spotify Charts, and the data contain the track position, track name, artist, streams and URL. The music genre was an extra information mapped with iTunes [1], and added to each CSV file.

Sunburst [15] is a space-filling visualization that uses a radial layout to represent a hierarchy (artist-track). Figure 1 presents a screenshot of our visualization. The ranking starts with the number one track at top-center position, following clockwise. The central area of each circle contains the name of the ranking and the legend of music genres. The inner sections represent the artists and the

outer sections are the tracks. Thickness means the position (Billboard) or the streams (Spotify), and color represents music genre. Tracks from the same artist are clustered no matter what are their position in the ranking. It is also possible to obtain details from the tooltip information. If the mouse is on an artist region it will show the artist name; if it is located at the outer radius, it will show the track name, music genre, and position (Billboard) or streams (Spotify).

When clicking on one artist or track, the visualization interpolates and switches the exhibition, the new form (zoom) showing more details about the visualization.

4 DISCUSSION AND FINAL COMMENTS

This work presents a new interactive way to show and compare music rankings, making it easier to infer and become interested in music based on genres. It is easier to compare and find music when the user is looking at a Sunburst visualization than a list of 50 tracks, as Billboard and Spotify usually show their rankings. In the week shown in Figure 1, it is easy to notice that Billboard is much more Pop than Spotify. This is explained because Billboard considers radio, physical sales and other streaming sources. On Billboard, the biggest artists are Beyoncé (with the new album release) and Prince (on highlight because of his death), both of these artists' tracks are not available at Spotify. As future work we intend to build a comparison system with playing possibilities.

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