# **Billboard Top 100**

**Part A: Understanding the Data**

This dataset spans from 1940 to 2016 and provides a historical view of the music that has shaped generations.

Key Column Descriptions:

‘week\_peak\_postion’: highest position the song has reached on the chart up to and including the current week;

‘overall\_peak\_postion’: the highest position the song has ever achieved on the chart during its entire time since being listed;

‘week\_total\_week’: the total number of weeks the song has been on the chart as of the current week.;

‘overall\_total\_weeks’: the cumulative total number of weeks the song has ever been on the chart.

Remarkably, Imagine Dragons' "Radioactive" has achieved a record for longevity by remaining an astounding 85 weeks on the charts. As of the latest data point, on the chart dated January 2, 2016, Adele's "Hello" holds the top spot, followed by Justin Bieber's "Sorry".

**Part B: Data Visualization**

1. **Beatles’ Analysis**

A graph with colorful lines

Description automatically generated

This plot illustrates the chart progression of various Beatles songs within the period from February 1, 1964, to June 1, 1964. Time is plotted on the x-axis and the song's chart position on the y-axis.

**Alternative visualization 1: Size and Color**

**A chart with different colors and numbers

Description automatically generated with medium confidence**

**Alternative Visualization 2: Transparency**

**A graph with black dots

Description automatically generated**

**Alternative Visualization 3: Jitter Plot**

**A chart with purple dots

Description automatically generated**

**Comparison analysis:**

The original plot vividly displays the temporal progression of each song. The continuity of the lines allows make it easiest to tracking of each song's journey over time. However, where lines intersect or run closely parallel, it becomes difficult to follow individual tracks, particularly when similar colors are used.

Alternative Visualization 1 offers a unique perspective by making it easier to discern the overall ranking pattern of each song, which is helpful for identifying which songs were hits, yet it’s hard to identify specific position comparing to the original plot.

Alternative Visualization 2 provides a vague representation, as the overlapping transparent points can become muddled, particularly when many songs share similar positions over consecutive weeks.

Alternative Visualization 3 provides a compromise by dispersing data points to minimize overlap, thus making it easier to discern the overall position patterns of individual songs. However, this approach may introduce difficulties in detecting more specific patterns related to particular positions.

Combining the aesthetics from these visualizations could lead to a more informative and balanced view. This composite visualization would allow for the individual tracking of songs, highlight their peak positions, also facilitate temporal comparisons without the confusion of overlapping elements.

**Experiment: area vs. radius**

**A chart with different colored dots

Description automatically generated**

**A chart with different colors of dots

Description automatically generated**

**Analysis:**

The original visualization maps size to radius, wherein higher chart positions correspond to larger circles. This method can intuitively emphasize songs that have achieved greater success. In contrast, mapping size by area may show higher positions with smaller circles, potentially leading to a misleading interpretation.

Therefore, mapping size to radius is advantageous, as the direct relationship between point size and chart position allows for quick and clear data comprehension. Viewers can easily discern which songs dominated the charts and which did not.

## **Explore :**

## **The Evolution of Hip Hop**

**Introduction:** This analysis explores the presence of six pivotal hip hop artists—Drake, JAY-Z, Kanye West, 50 Cent, Ying Yang Twins, and Travis Scott—on the Billboard charts to gauge their popularity, influence, and career longevity.

**Visualization 1:** By analyzing the total number of times each artist appears on the chart, which represents their presence in the Billboard Top 100, we can examine their popularity.

**Bar Chart**

**A graph with different colored bars

Description automatically generated**

**A graph with dots and letters

Description automatically generated**

**A chart with different colors

Description automatically generated**

**Most informative:**

The first bar chart. This graph delivers a straightforward and immediate comparison of the artists' popularity, as it allows for easy identification of each artist's relative success and numbers of appearance in Billboard chat.

**Visualization 2:** I employ a longitudinal approach to chart the evolution of hip hop. This exploration aims to uncover patterns in popularity and career trajectories over time, with using the cumulative number of chart appearances as a metric for success and relevance in the genre.

**Line Graph**

**A graph of different colored lines

Description automatically generated**

**Bubble Chart**

**A graph of different colored circles

Description automatically generated**

**Faceted Line Graphs**

**A graph of different colors

Description automatically generated**

**Most informative:** the first line graph, because it allows for a clear temporal comparison of each artist's chart history. It contextualizes each artist's career within the timeline of hip hop's history, providing a compelling narrative about their rise, reign, and influence in the genre.

**Data Analysis:**

The initial visualization illustrates Drake's exceptional presence in the Billboard Top 100, surpassing 300 chart entries, which notably eclipses his contemporaries. Following Drake are JAY-Z and Kanye West, who also boast significant numbers of chart appearances.

The first line graphs detailing cumulative chart appearances delineate Drake's meteoric rise and sustained influence in the music industry. JAY-Z's trajectory reveals a pioneer who made his mark on the Top 100 earlier than his peers, although his visibility tapered off around 2010, hinting at a transition in his career or musical direction.

In the faceted line graphs,Kanye West's graph reveals a compelling narrative of highs and lows, with fluctuations that map onto his album releases and public persona shifts, which shows not just longevity but a dynamic interaction with the music scene.

Based on the bubble chart, Ying Yang Twins display a more modest footprint in the Top 100, which suggests a more condensed period of peak activity compared to the other featured artists, excluding Travis Scott, who emerged on the scene considerably later, as he appears till late 2015.

# Overall, this analysis spotlights the varied paths each artist has carved within the hip hop landscape, with highlighting the genre's dynamic evolution and its ability to thrive. It also offers a window into the shifting patterns of dominance among hip hop artists over time.

# **Poisonous Mushrooms**

**A graph of different colored bars

Description automatically generatedA white graph with colorful lines

Description automatically generated with medium confidence**

**Analysis:** 'n' represents a neutral odor, it appears predominantly associated with edible mushrooms, whereas an odor like 'f' might be associated with poisonous mushrooms.

**A graph of different colored bars

Description automatically generatedA white graph with colorful dots

Description automatically generated with medium confidenceAnalysis:** the color represented by 'b' seems to be overwhelmingly associated with the poisonous class, while 'u' appears mostly in the edible class.

**A graph of different sizes and colors

Description automatically generatedA graph of numbers and a number of numbers

Description automatically generated with medium confidence**

**Observation:** For odors 'a' (almond) and 'l' (anise), the mushrooms appear to be mostly edible, as shown by the blue bars. The 'n' (none) odor category has a significant mix of both edible and poisonous mushrooms across different gill colors, so odor alone may not be a reliable indicator in this category.

Odors 'p' (pungent), 'c' (creosote), 'y' (fishy), and 'm' (musty) are associated with a high incidence of poisonous mushrooms.

**Rule of Thumb:**

Mostly Edible: mushrooms without almond and anise odors

Mostly Poisonous: mushrooms with a foul, pungent, creosote, and musty odor , and those with buff grill color

**Performance Demonstration:**

The bar chart showing "Mushroom Edibility Distribution by Odor" clearly indicates that certain odors like 'n' (none) are predominantly associated with edible mushrooms, while 'f' (foul) is mostly linked to poisonous ones.

The faceted bar chart "Mushroom Distribution by Gill Color and Odor" further refines the identification process by combining two features. It demonstrates that for mushrooms with a particular odor ('n' for none), certain gill colors like 'k' (black) and 'n' (brown) are almost exclusively linked to edible mushrooms.