Music and Mental Health: A Data-Driven Exploration

This presentation explores the relationship between an individual's music preferences and their self-reported mental health conditions using a comprehensive dataset from Kaggle. With a diverse sample of 736 participants ranging from 10 to 89 years old, the researchers aimed to identify any correlations between music taste, average time of listening to different genre of music and mental well-being.

The Research Team

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Data Analyst with a passion for mental health research.

Filani Opeyemi Morenike

Data analyst skilled in uncovering trends in complex datasets.

Kolawole Olatunde Peter

Skilled analyst and power bi developer adept at telling stories with data.

The Kaggle Dataset

Comprehensive

The dataset was meticulously curated and managed by @catherinerasgaitis.

Global Reach

The data includes participants from around the world, providing a diverse and inclusive sample.

Detailed Records

The dataset includes a wide range of mental health and music-related variables.

Participant Demographics

Sample Size

736 participants

Age Range

10 to 89 years old

Music Listening

0 to 4 hours per day

Data Cleaning Process

1   Identifying Missing Values

We used .isnull() to detect any missing data and replaced it appropriately.

2   Ensuring Data Type Consistency

We verified that all columns had the correct data types for accurate analysis.

3   Deduplicating the Data

We removed any duplicate entries to ensure the integrity of the dataset.

Data Manipulation and Overview

Data Exploration

We performed thorough data manipulation and analysis to uncover meaningful insights. This included creating new columns, such as 'age group', to better understand listener demographics.

Data Overview

The dataset provided a comprehensive view of music listening habits, covering streaming service usage, genre preferences, and the impact of music on mental health.

Rigorous Analysis

By rigorously analyzing the data, we were able to identify key trends and patterns that shed light on the role of music in people's lives.

Problem Statement

?. How does Music effects affect the mental health

?. What is the Impact of fav genre of music on mental health

?. Compare the mental health level of people that listen to a particular genre very frequently and people that don't listen at all

?. investigate the relationship between mental health and hours of listening to music

Key Findings

- Respondents with higher anxiety levels tends to prefer folk music, while those experiencing depression preferred lo-fi genres.
- Gospel music was preferred by those experiencing insomnia, and lo-fi music was preferred by those dealing with OCD.
- Rock music was the most popular genre, with 25.54% of respondents reporting it as their favorite.

- 17 respondents within age brackets of 10-39 reported music worsens their mental health. Loud music such as Rock, pop, video game, classical, rap are the contributing factors that can increase anxiety level.
- 542 respondents Across all age brackets reported music effects improved their mental health. Genre like folk improved Anxiety level significantly.
- 169 respondents reported music has no effect on their mental health.

- The charts (between the average hours of listening to music and Mental health) show a linear relationship btw the two variables. We can also infer that the variables are positive and strongly correlated
- As the hours spent on listening to music increases, Depression level, insomnia and OCD level increases significantly while Anxiety level increment was slightly significant
- People within the age bracket of 80-89 never listened to Rock but listened frequently to classical music which in turn improves their Anxiety level, reduces depression, improves their quality of sleep and reduces OCD

Top Four Favourite Music Genre

Rock

25.54% of participants reported rock as their preferred music genre.

Pop

Pop music was the second most popular genre at 15.49%.

Metal

Metal music was enjoyed by 11.96% of participants.

Classical

Classical music was the choice of 7.2% of listeners in the dataset.

Impact of Music on Mental Health

1

Positive Impact

73% of participants reported that music had a positive effect on their mental health.

2

No Effect

30% of participants stated that music had no impact on their mental well-being.

3

Negative Impact

Only 2.3% of participants said that music worsened their mental health.

Made with Gamma

Statistical Analysis

ANOVA

Null hypothesis: $H_0: \mu_1 = \mu_2 = \mu_3$

Alternative hypothesis: H_a: Means are not all equal

Check at 95% confidence level.

Machine 1	Machine 2	Machine 3
150	153	156
151	152	154
152	148	155
152	151	156
151	149	157
150	152	155
$\bar{x}_1 = 151$	$\bar{x}_2 = 150.83$	$\bar{x}_3 = 155.50$

1 — One-way ANOVA Test

Used to examine the relationship between music preferences and mental health conditions

$$SS_{between} \text{ (or column)}$$
$$SS_{within} \text{ (or error)}$$

$$F = \frac{\frac{SS_{between}}{df_{between}}}{\frac{SS_{within}}{df_{within}}}$$

$$F = \frac{MSS_{between}}{MSS_{within}}$$

2 — Significant Effects

Insomnia and depression showed significant effects from music preferences

3 — Non-Significant Effects

Anxiety and OCD showed no significant effects from music preferences

ANOVA

Limitations and Considerations

Sample Size

The study had a relatively large sample size, but it may not be representative of the broader population.

Self-Reported Data

The use of self-reported mental health conditions could introduce potential biases or inaccuracies.

Music Listening Habits

The study only examined the amount of time spent listening to music, not the specific ways in which individuals engage with music.

Correlation vs. Causation

The study establishes correlations, but further research is needed to understand the underlying causal mechanisms.

Implications and Future Research

Insights

1

The study provides valuable insights into the relationship between music preferences and mental health conditions.
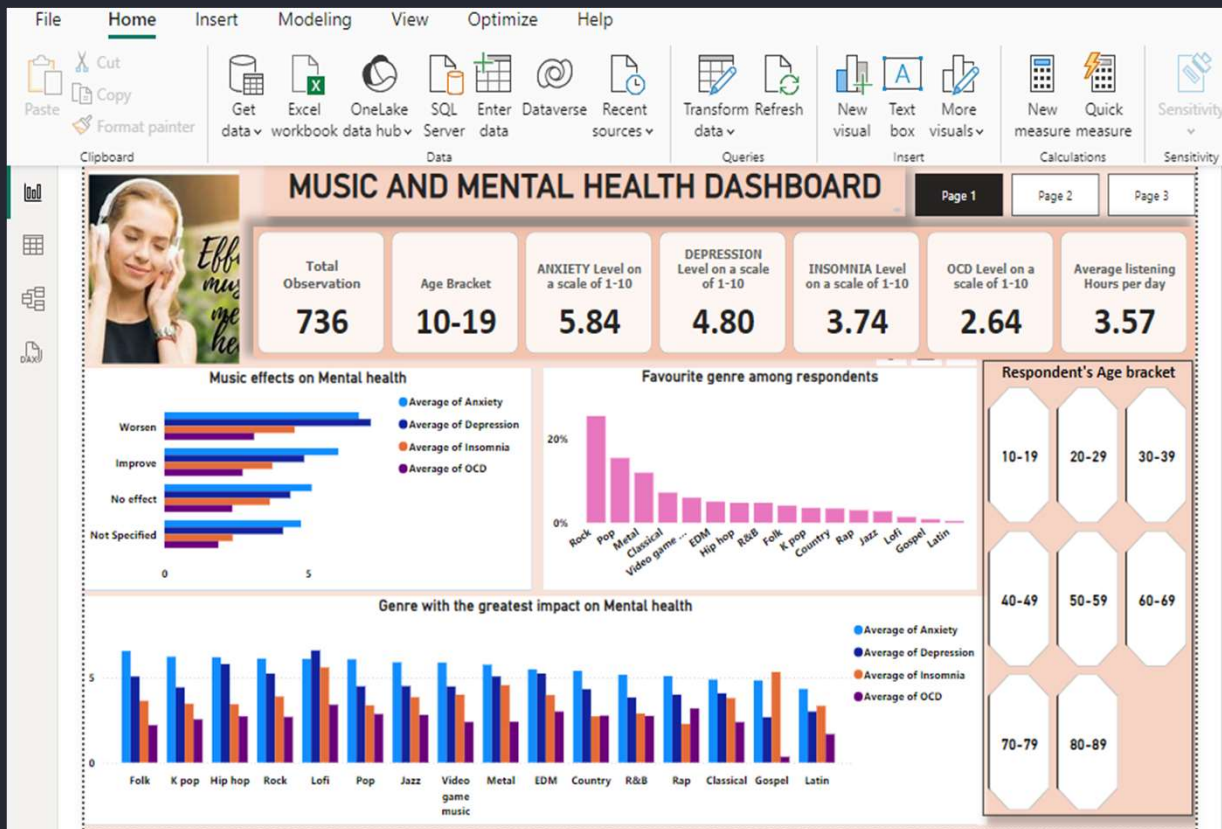
Potential Interventions

2

The findings could inform the development of music-based therapies or interventions for certain mental health conditions.

Future Research

3

Further research is needed to explore the mechanisms behind these relationships and expand the understanding of music's impact on mental health.

Power Bi Visual

Link to Music and Mental Health dashboard

Conclusion

❑ Music can have a significant positive impact on mental health

❑ Certain music genres are more closely associated with mental health benefits

❑ Personalized music recommendations can enhance the mental health impact