Introduction and Purpose

Mental health should be an important focus for many people, regardless of age or gender. My purpose in studying this dataset is to analyze the relationship between improving one's mental health based on what kind of music one listens to and how often one listens to said music. Music is often known as a means of escape for many people, no matter the genre they may enjoy. Analyzing what genre people find the most helpful, and if it even truly helps at all. Studying this could be very useful in bettering people's mental health.

Introduction to the Data

The data is from Kaggle, a site for data science with tools to learn and datasets to work with. This set features data from people who experience some type of mental illness, such as anxiety, depression, insomnia, or OCD. There are several different values for each person in this dataset including their age, the frequency of each genre they listen to, their streaming platform, whether or not they listen while working, their overall favorite genre, and whether or not listening to music has improved their mental health.

Pre-processing

The dataset I used was relatively clean, with a select number of null values from a few columns. To be able to graph the data that I wanted to see I needed to melt my data into different sets. For starters, I wanted to be able to see people's favorite genre for those whose music has worsened their condition.

```
df_worsen = df_cleaned[df_cleaned['Music effects'] == 'Worsen']
```

Next, I wanted to see the different average values for each mental illness to analyze which of them was the most common.

```
df_melt = pd.melt(df_cleaned, id_vars=None,
    value_vars=['Depression','Anxiety','Insomnia','OCD'],
    var_name='illness', value_name='scale')
```

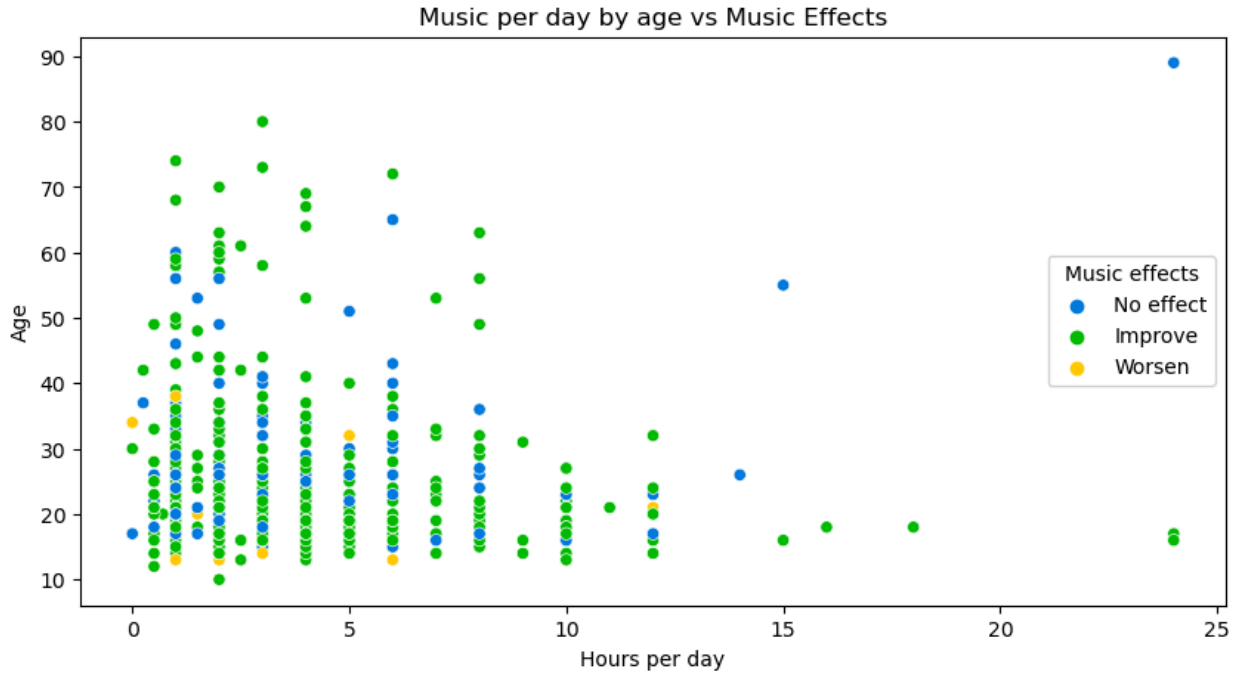
I also wanted to analyze the frequency of each favorite genre alongside the effects that each genre had. I then created a pivot table in order to put them into a heatmap.

```
pivot = df_cleaned.pivot_table(
    index='Fav genre', columns='Music effects',
    aggfunc='size', fill_value=0)
```

And lastly, I wanted to visualize the frequency of each genre available. Because of this I melted the frequencies together into one subset of the data.

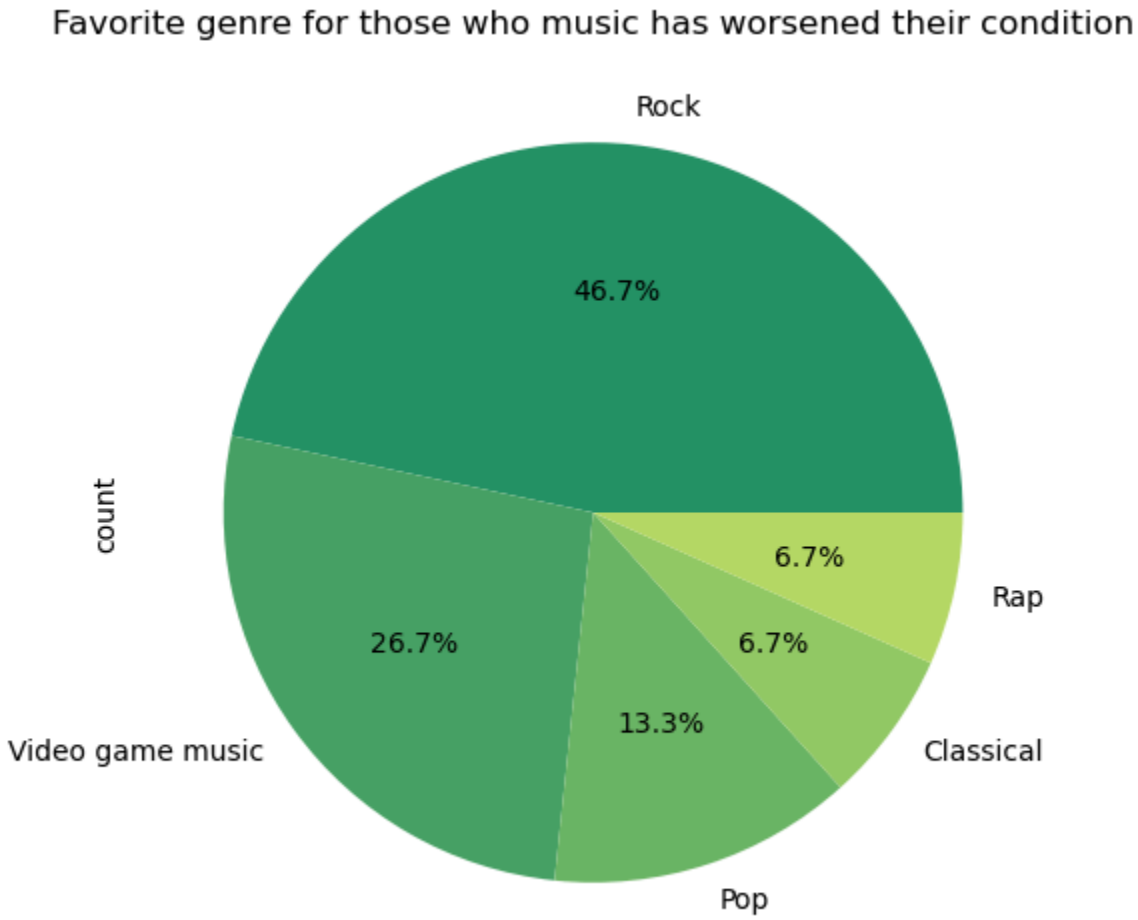
```
freq_melt = pd.melt(df_cleaned, id_vars=None,
     value_vars=['Frequency [Classical]', 'Frequency [Country]',
     'Frequency [EDM]', 'Frequency [Folk]', 'Frequency [Gospel]',
     'Frequency [Hip hop]', 'Frequency [Jazz]', 'Frequency [K pop]',
     'Frequency [Latin]','Frequency [Lofi]','Frequency [Metal]',
     'Frequency [Pop]','Frequency [R&B]','Frequency [Rap]',
     'Frequency [Rock]','Frequency [Video game music]'],
     var_name='Frequency', value_name='Response')
```

Visualization No. 1



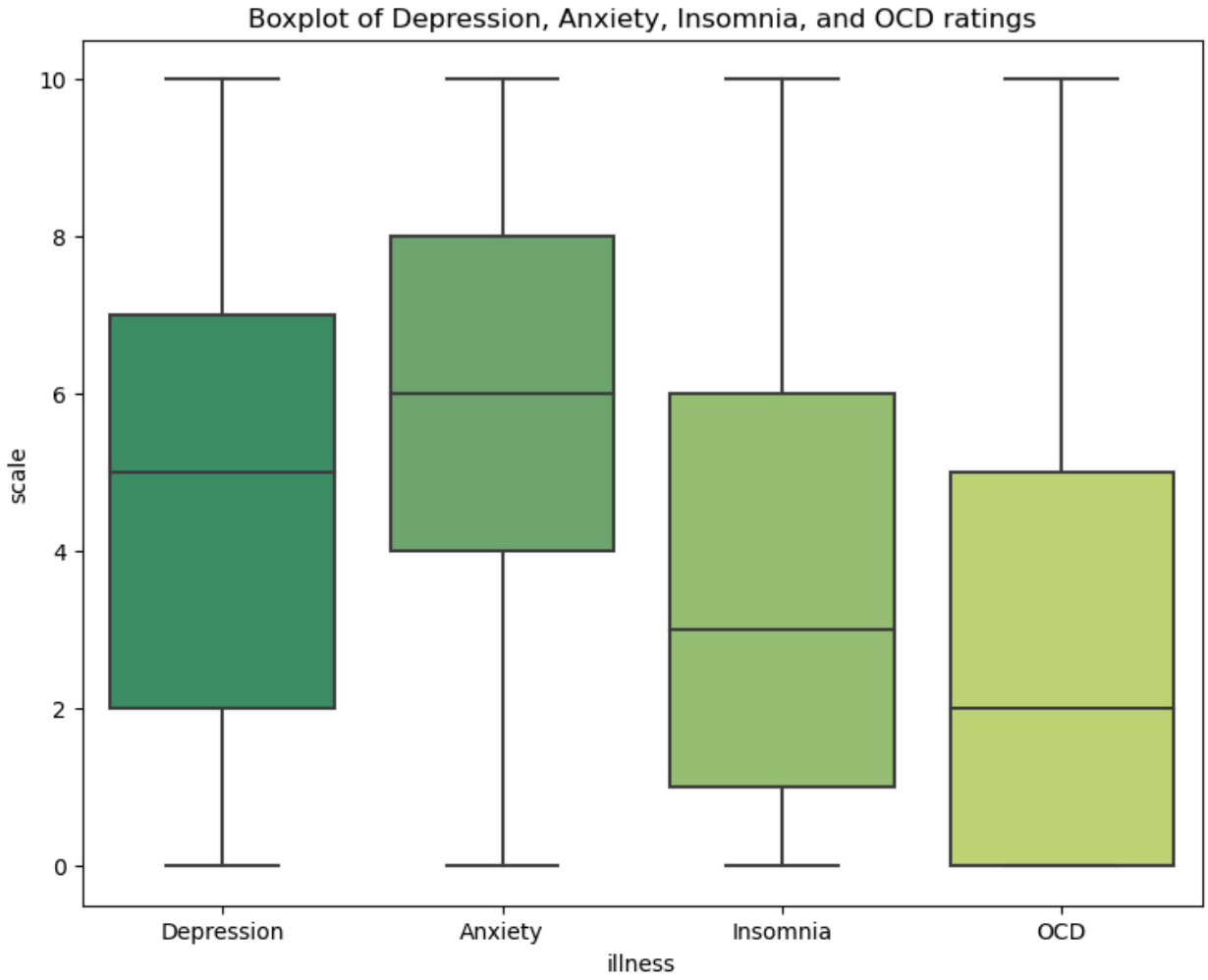
This scatterplot shows the relationship between age, how many hours a person listens to music in a day. It also includes whether or not listening improves their condition or has no effect. As we can see with this visualization, we have a lot of improvement from many different ages. The graph is skewed to the left on how many hours everyone listens to music with most of the focus being towards zero to ten hours a day.

Visualization No. 2



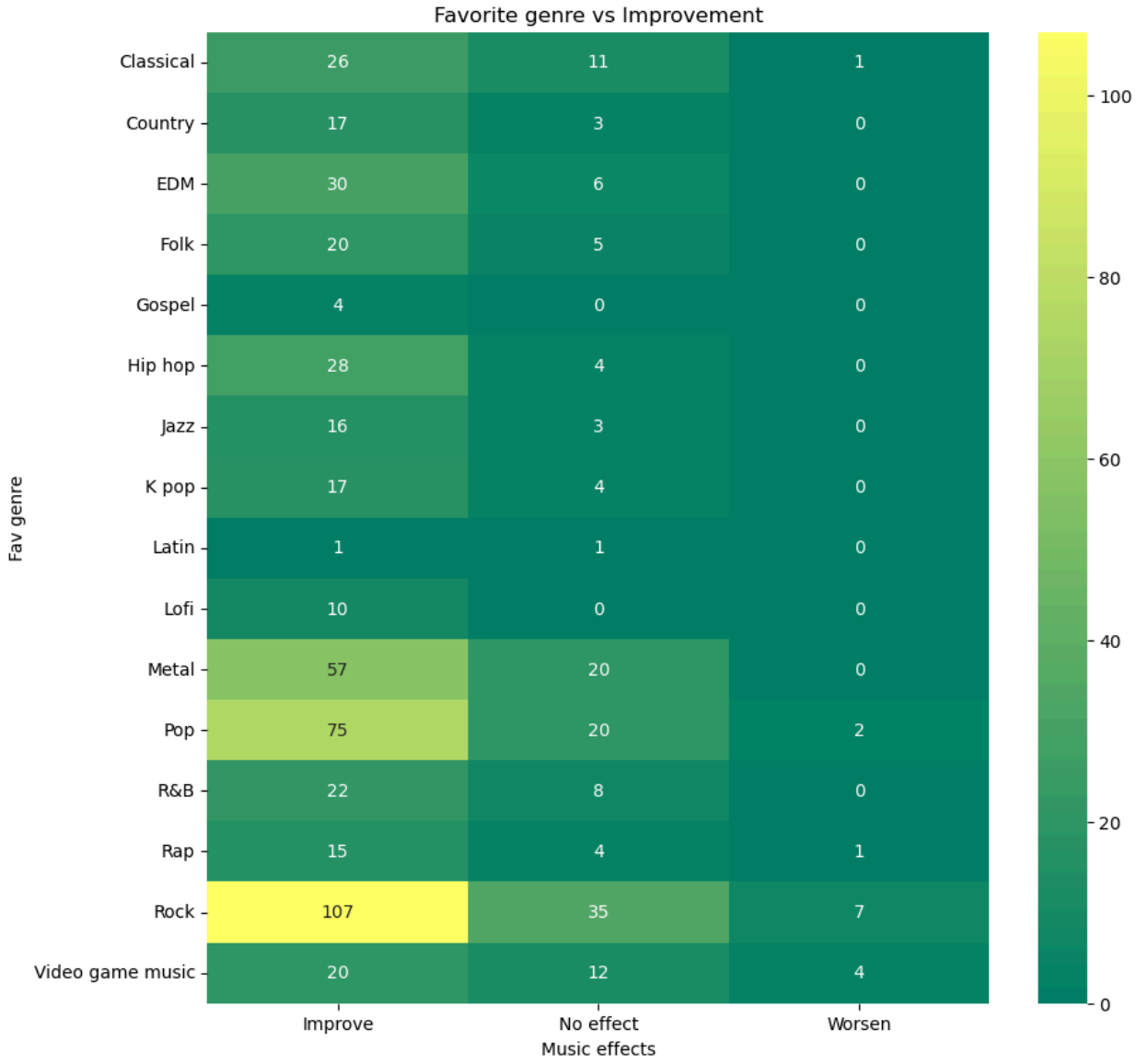
With this pie chart we can see the favorite genres of people whose music has worsened their mental health. We have Rock being the genre that worsens peoples condition the most and Video Game Music right behind it. Rap and Classical are the genres that worsen peoples condition the least.

Visualization No. 3



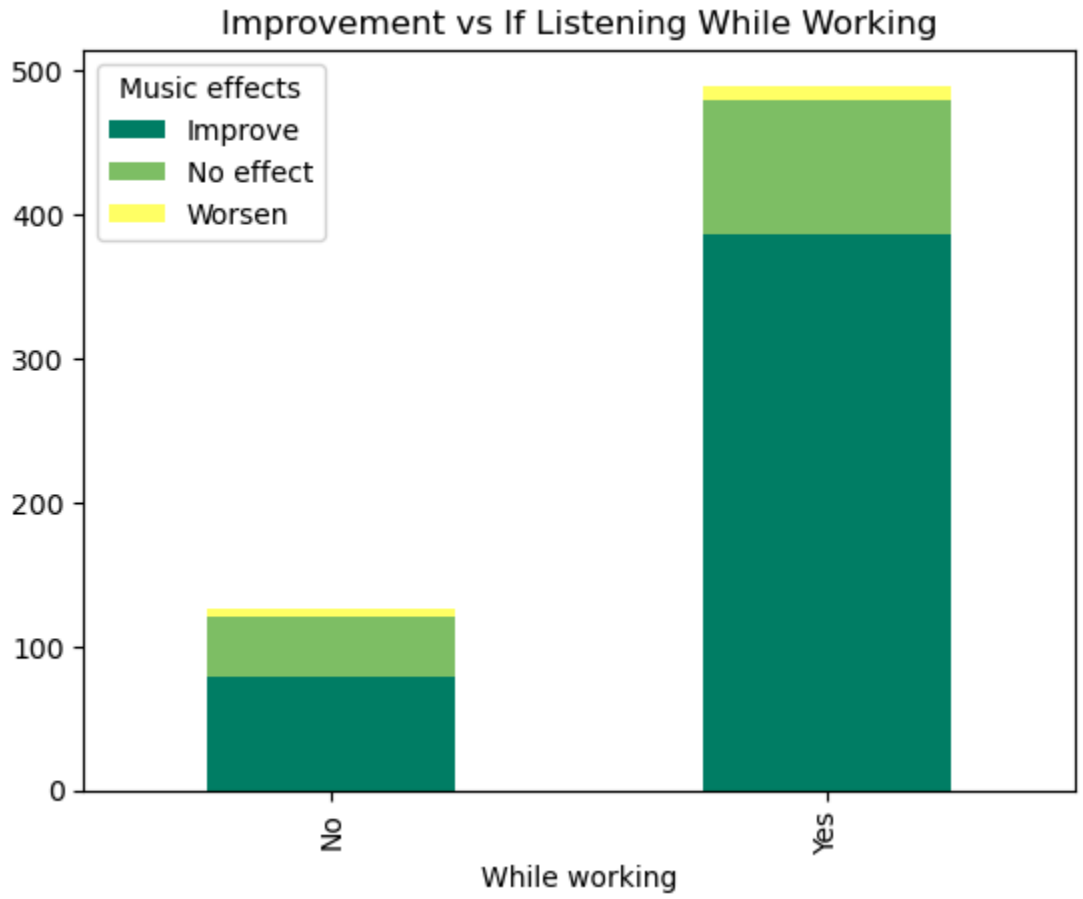
This boxplot shows four different illnesses that our data set includes: depression, anxiety, insomnia, and OCD. The conditions are rated on a scale from zero to ten with zero being no condition/no impact and ten having the most severe impact of their condition. The boxplot shows that anxiety is the most common condition with an average rating of six. Depression follows right behind it with an average of five. Bringing up the rear we have Insomnia with an average of three and OCD with an average of two.

Visualization No. 4



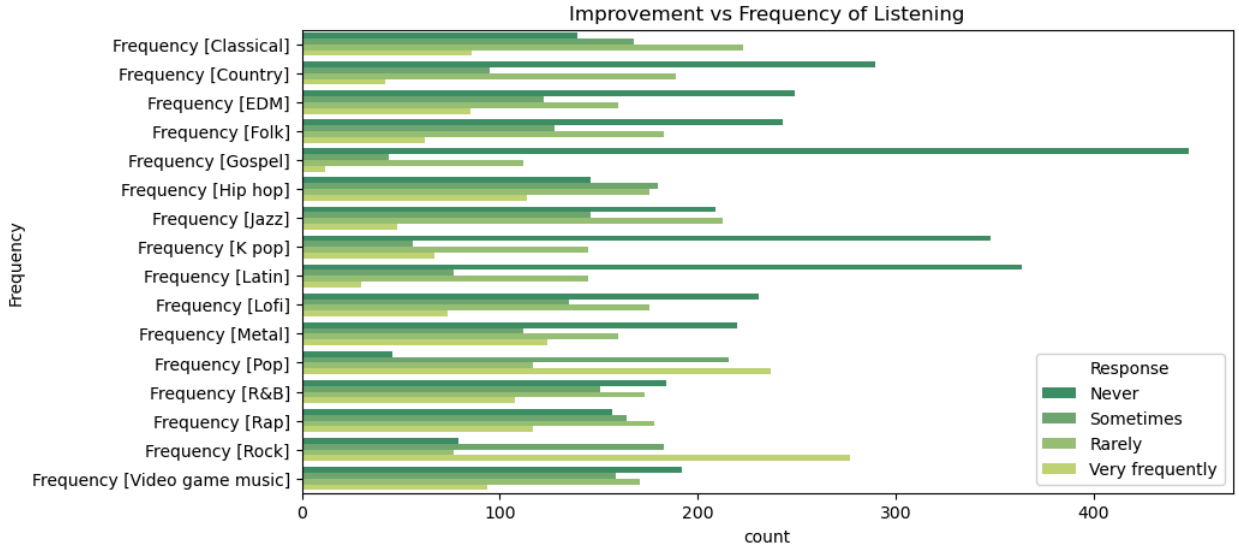
Here we have a heatmap that visualizes our list of favorite genres and the frequency of improvement for each genre. Light green is our highest score and dark green is our lowest. As we can see with our visualization, rock music has the highest rates of improvement with one-hundred and seven improvements to people's mental health. This visualization shows that rock music is also a genre that worsens peoples condition the most.

Visualization No. 5



This bar plot shows the count of how many people experience improvement based on whether or not they listen to music while working. This shows that listening to music while working helps a large majority of people who suffer from mental health conditions. A small number of people find that music worsens their condition while working, while others believe there to be no effect.

Visualization No. 6



Finally, this countplot visualizes the different genres and the count of how many people listen to a genre and how often they listen to that genre. Rock is by far the most popular genre among those who suffer from mental health conditions while Gospel is a resounding no across the board. Pop is a close runner up for most frequent and metal is in third place.

Storytelling and Impact

This data tells us one important detail and that is that music does, in fact, improve one's mental health. For the most part, it seems as though rock music improves people's mental health the most and pop and metal come in right behind it in terms of favoritism and improvement. Though oddly enough, rock music is one of the highest genres that also seems to cause people's mental health condition to worsen rather than improve. Though, our pool of people whose condition has worsened because of music is very small. With these visualizations, I was able to answer my question of if music improves someone's mental health and the genre that improves it the most. And I was also able to answer another question that I didn't think of at the start— whether or not music helps to improve one's mental health while working, as well. One way that my visualizations may cause harm would be the possibility of someone listening to rock music to help better their mental health, and only making it worse in the long run. Different perspectives that are missing from this work would be those who are suffering from different mental health conditions besides the four that were studied in the dataset.