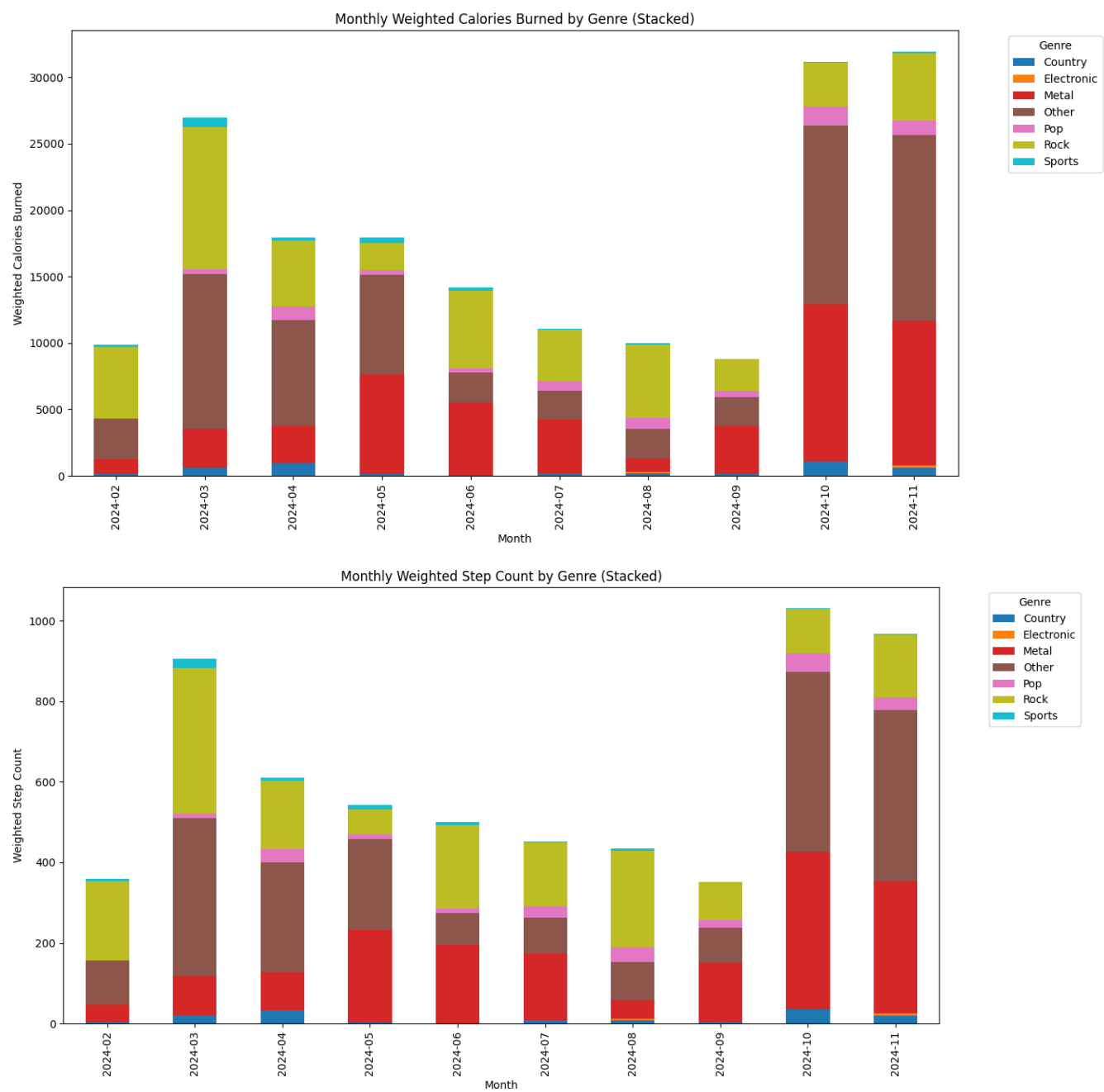


# Music Genres vs Physical Activity

From the stacked bar charts:

- **Metal and Rock:** These genres are associated with moderate to high levels of physical activity, likely reflecting more upbeat or energetic music's effect on the listener.
- **Electronic:** Showed variability, with some periods of high steps and calorie burn, possibly linked to its use during workouts or active sessions.
- **Pop and Country:** These genres generally align with moderate activity levels, showing consistent but not extreme physical activity.
- **Other Genres:** Categories like "Sports" and "Other" had mixed results, possibly due to data variability or external factors influencing activity.



## Key Observations:

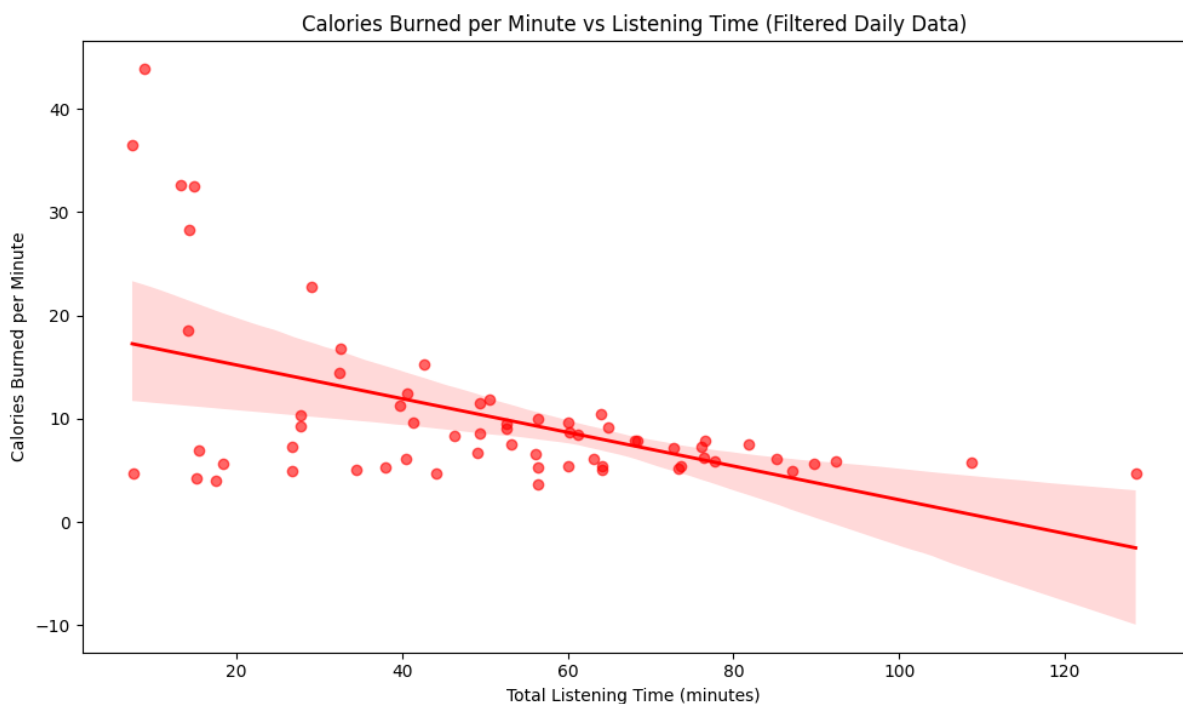
- **Correlation vs. Causation:** While Metal and Rock are strongly associated with higher activity levels, this analysis only identifies correlation, not causation. It's likely that individuals engaging in high-intensity exercise prefer these genres, rather than the music itself driving their activity levels.
- **Consistency Across Metrics:** Both step counts and calories burned displayed similar trends, reinforcing the idea that high-energy genres (e.g., Metal and Rock) align with physically demanding activities.

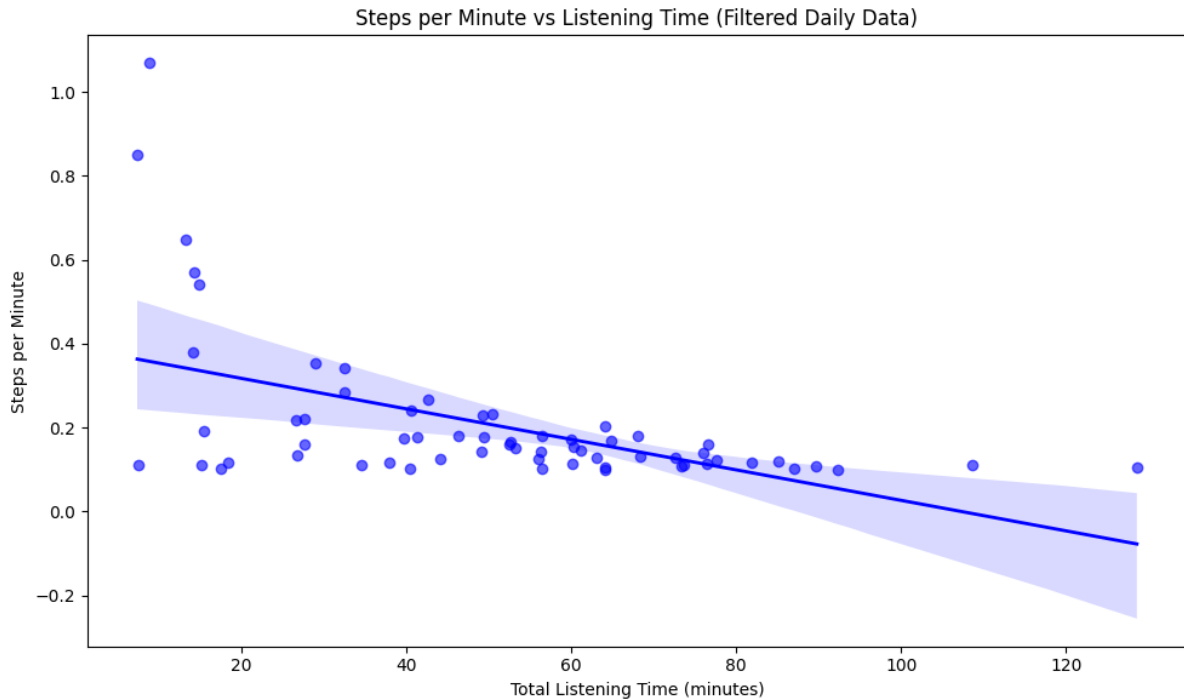
## Listening time vs Exercise Intensity

Based on the analysis and visualizations:

### 1. Scatter Plot Observations:

- The scatter plots for both **Steps per Minute vs Listening Time** and **Calories Burned per Minute vs Listening Time** show widely dispersed points with no clear pattern or clustering.
- The regression lines are nearly flat, indicating a very weak or non-existent relationship between listening time and exercise intensity metrics.





### Conclusion:

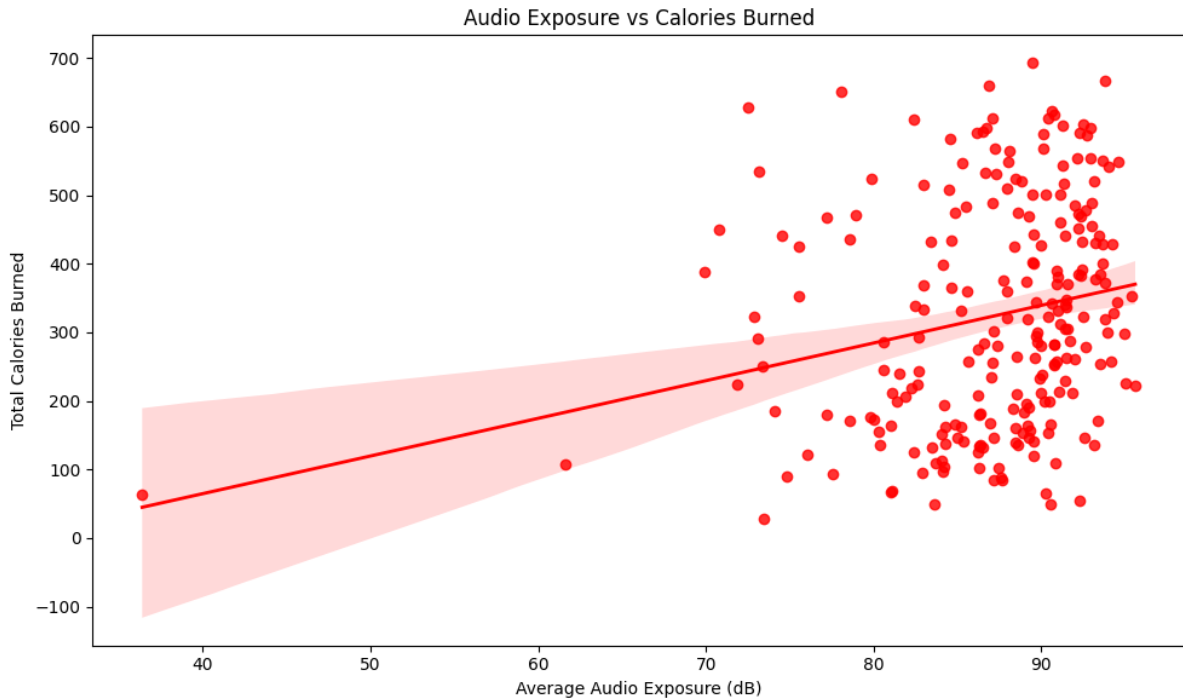
- There is **no meaningful correlation** between listening time and exercise intensity (measured by steps per minute or calories burned per minute).
- This suggests that listening time alone is not a reliable predictor of how intense someone's physical activity is.

The lack of correlation might indicate that other factors, such as the type of activity or external circumstances, play a larger role in determining exercise intensity than the duration of music listening.

## Audio Exposure vs Calories Burned

### • Observation:

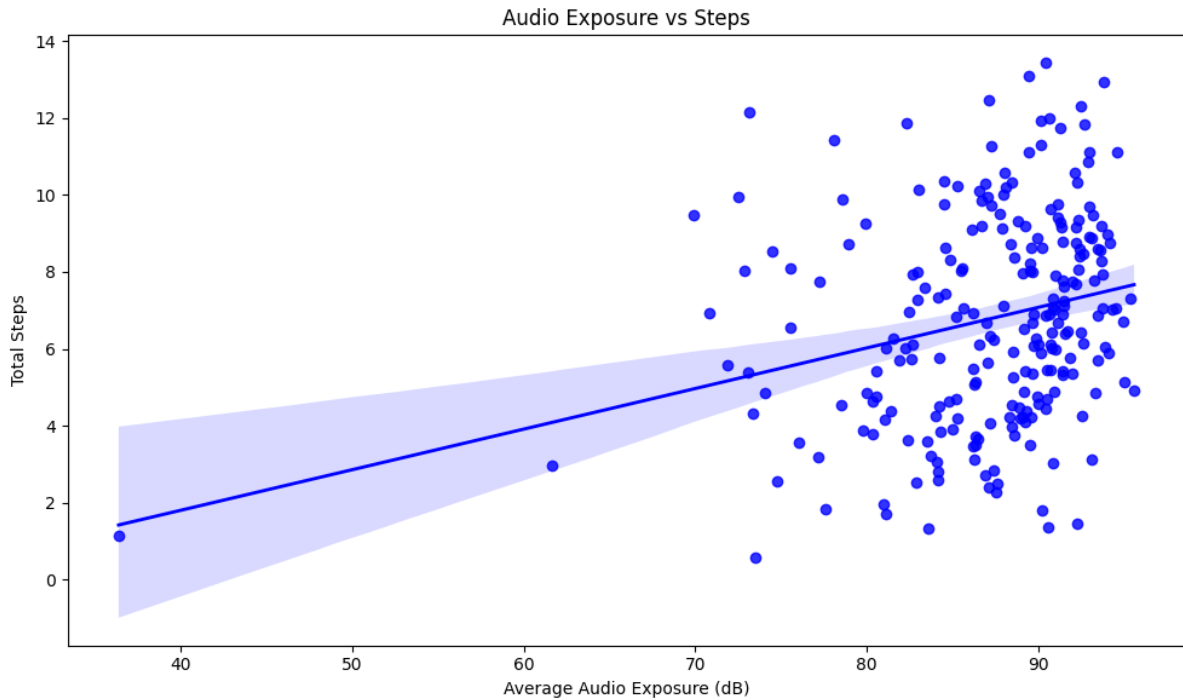
- The regression line shows a **slight positive slope**, indicating a weak **positive correlation** between **average audio exposure (dB)** and **calories burned**.
- Higher audio exposure **might** correspond to slightly more calories burned, but the relationship is weak and has significant variability.
- The **confidence interval (shaded area)** is wide, especially at lower audio exposure levels, indicating a lack of strong predictive power.



- **Conclusion:**
  - There is **no strong evidence** that audio exposure significantly impacts calorie burn levels. The weak correlation suggests other factors likely play a more dominant role.

## Audio Exposure vs Steps

- **Observation:**
  - The regression line here also shows a **slight positive slope**, indicating a weak **positive correlation** between **average audio exposure (dB)** and **steps**.
  - As audio exposure increases, there is a slight tendency for step counts to increase, but again, the relationship is not strong.
  - The wide spread of points around the line and the large confidence interval at lower audio exposure levels reflect high variability.



## Conclusion:

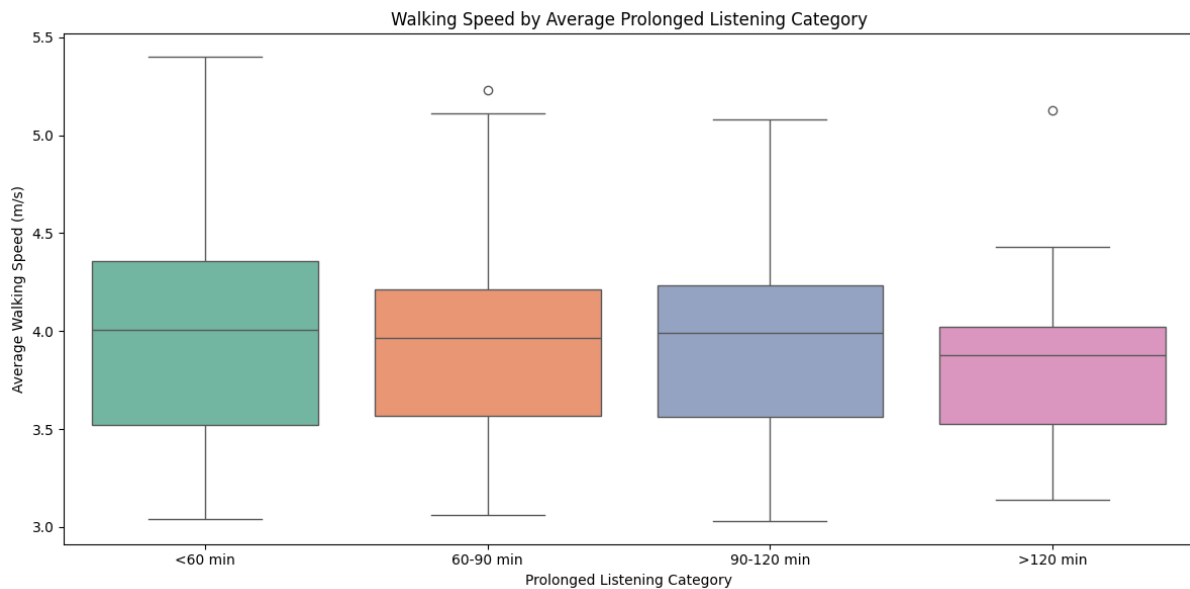
- Similar to calories burned, **audio exposure does not strongly correlate** with step counts. While there may be a slight trend, it is not meaningful or robust enough to suggest a significant association.
- **Key Finding:** Headphone audio exposure (measured in dB) shows a **weak positive correlation** with both calorie burn levels and step counts, but the relationships are not strong or consistent enough to draw meaningful conclusions.
- **Implications:** Audio exposure is likely **not a major factor** influencing physical activity. Other variables, such as the type of activity or environmental factors, are likely more significant.

## Prolonged listening to specific music genres vs walking speed & asymmetry

### 1. Walking Speed by Average Prolonged Listening Category

- **Observations:**
  - The median walking speed (central line in each box) remains consistent across all categories, with slight variation.
  - The <60 min and 60–90 min categories show slightly higher median walking speeds compared to >120 min.

- There is no strong evidence suggesting that prolonged listening impacts walking speed significantly.
- The distribution (IQR) of walking speed is wide across all categories, indicating high variability within each group.

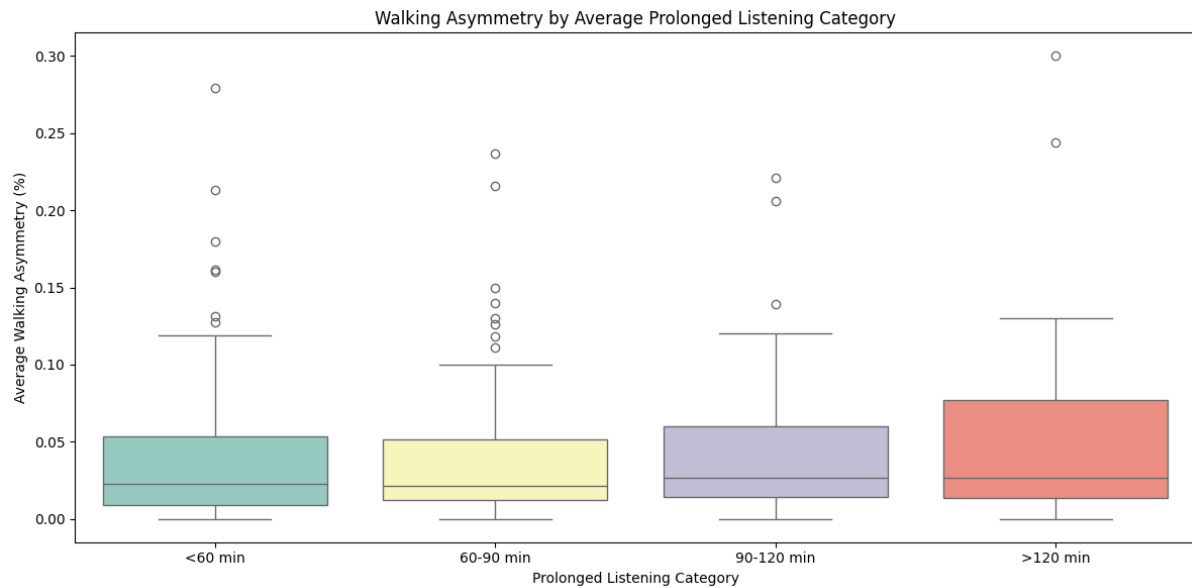


### Conclusion:

- No strong correlation is observed between prolonged listening duration and walking speed.
- Any small differences may be due to external factors rather than listening habits.

### Walking Asymmetry by Average Prolonged Listening Category

- **Observations:**
  - The median walking asymmetry remains nearly constant across all categories.
  - Variability (IQR) increases slightly in the >120 min category, but the difference is not significant.
  - Outliers are more prominent in higher listening categories, indicating occasional deviations in walking asymmetry on specific days.



## Conclusion:

- Prolonged listening does not show a significant effect on walking asymmetry.
- The slight increase in variability in higher categories could be influenced by small sample sizes or external factors.

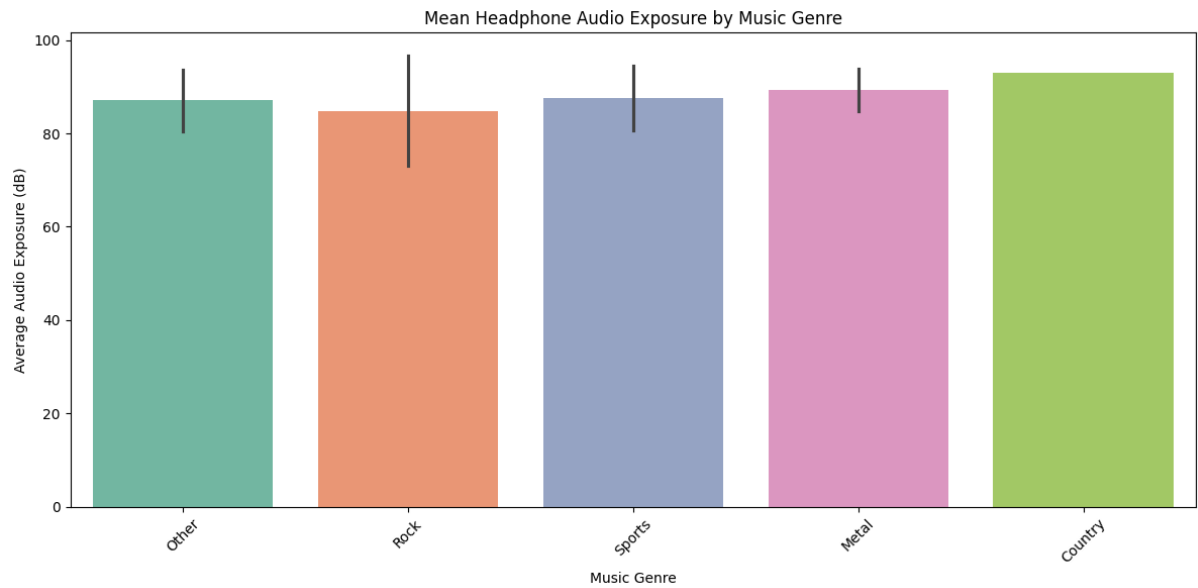
## Music Genres vs Headphone Exposure Levels

### 1. Bar Plot Observations:

- The average headphone audio exposure levels are similar across genres such as "Rock," "Metal," "Sports," "Country," and "Other."
- The height of the bars indicates that **no significant differences in average audio exposure levels** were found between the genres.
- The error bars (representing variability) show some genres (e.g., "Sports" and "Other") have slightly more variability, indicating that listeners of these genres may have more diverse volume preferences.

### 2. Key Takeaways:

- There is no evidence to suggest a strong relationship between **music genre** and **headphone audio exposure levels**.
- Average audio exposure is consistent across genres, and the differences in variability are minimal.



## Conclusion

The analysis suggests that **music genres do not significantly influence headphone audio exposure levels**. While individual preferences and behaviors may vary, no meaningful trend or relationship was observed between genres and exposure levels in the aggregated data.