How Different Habits of BU Students Affect Music Listening

MA 213

Introduction

TOPIC AREA

Our study looked into the different habits and backgrounds of BU students to see if it they influence their music listening patterns. Our main variables of interest are class year, college, country of origin, participation in athletics , social media consumption, time in class, time spent studying outside of class, favorite/most listened to music genre, and time spent listening to music.

HYPOTHESIS

We hypothesized that students who study for longer periods of time will listen to more music than students who spend less time studying. We hypothesized that students who play an organized sport at BU will be more likely to listen to more hours of music than student who were not on an athletic sports team.

Methods

SURVEYS

We created an anonymous Google Form with questions to gather information on our variables and shared it . Some biases in the sharing process would be eg; Class levels may come in contact with more people in their class level resulting in differences in distribution. However none were significant to the results of the experiment.

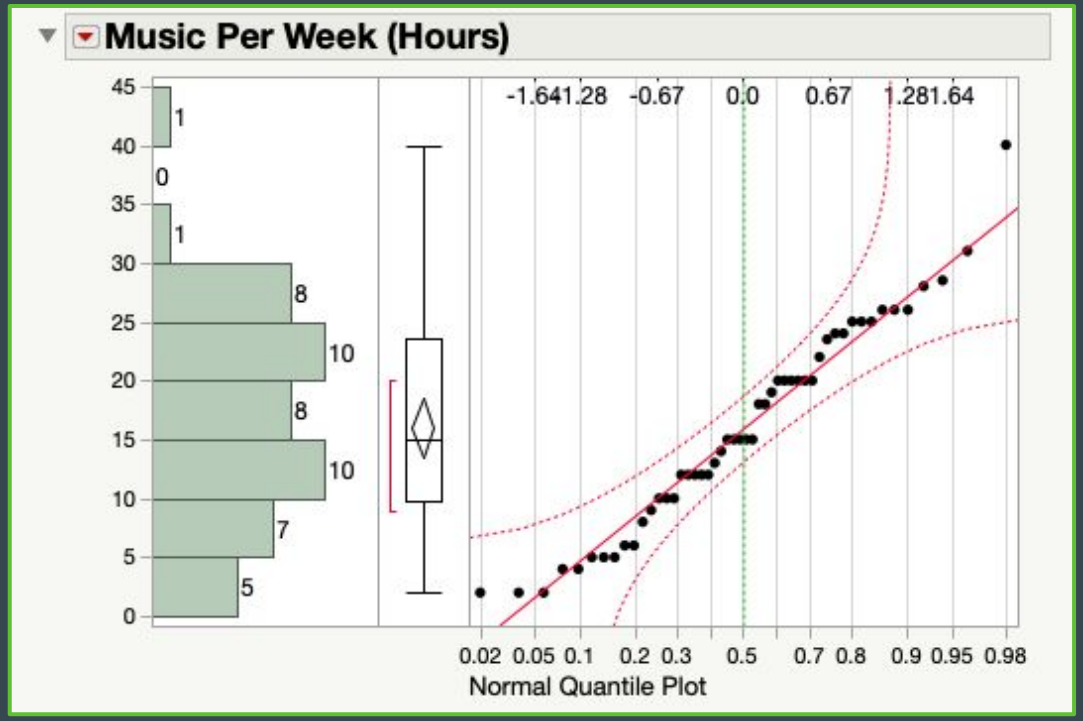
DATA CLEANING

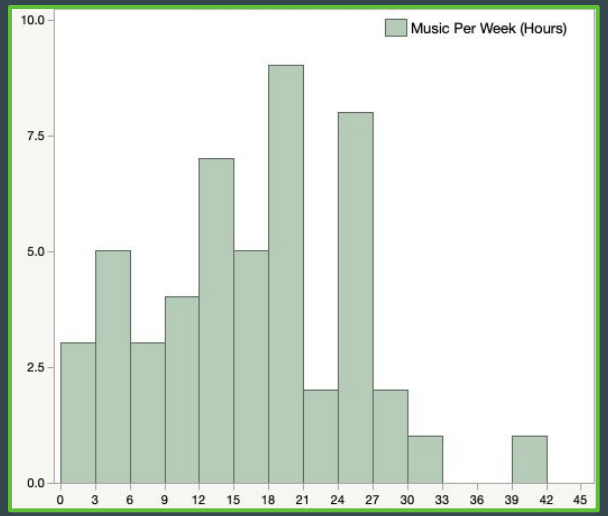
Some participants answered questions in various formats eg; United states , U.S, or , left open responses blank.We cleaned up our data for easier use by grouping similar answers written in different formats, and if the values from a response was not adequate, removing the row.

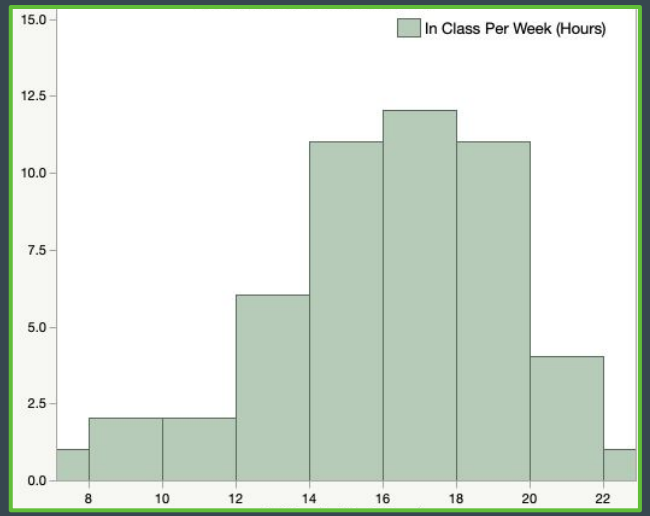
Raw Data Conclusions

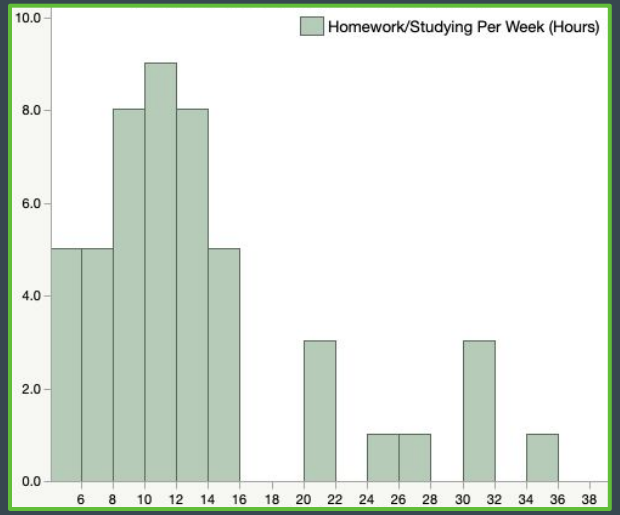
Assessment of normality

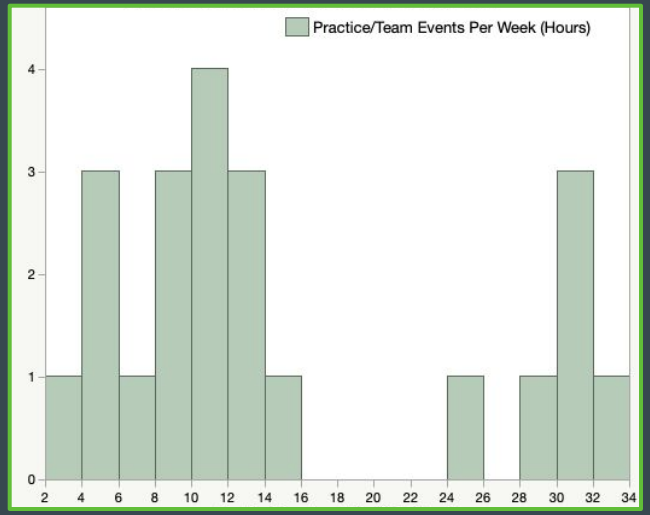
As most of our data points are inside the confidence bands, we can assume that with high confidence the data is normal.





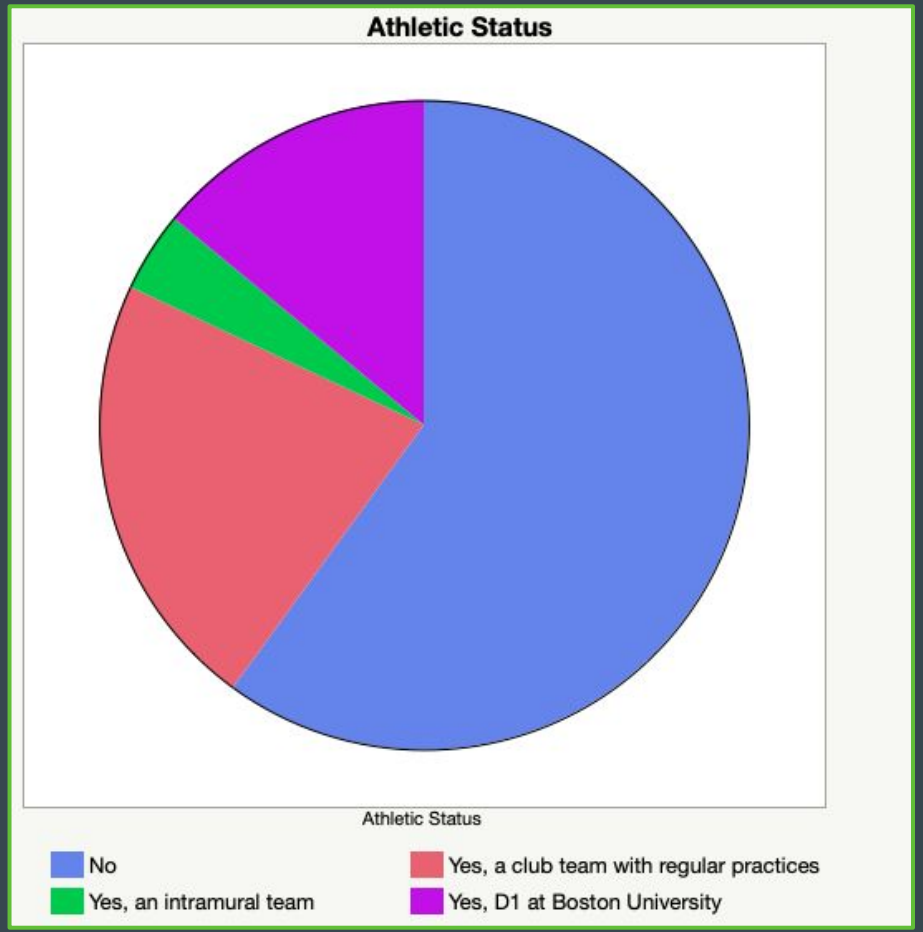






Quick Summaries:

- Music
  - 15.98
  - 15
- In Class
  - 15.50
  - 16
- Out of Class
  - 12.62
  - 10
- Athletic activities
  - 14.25
  - 10



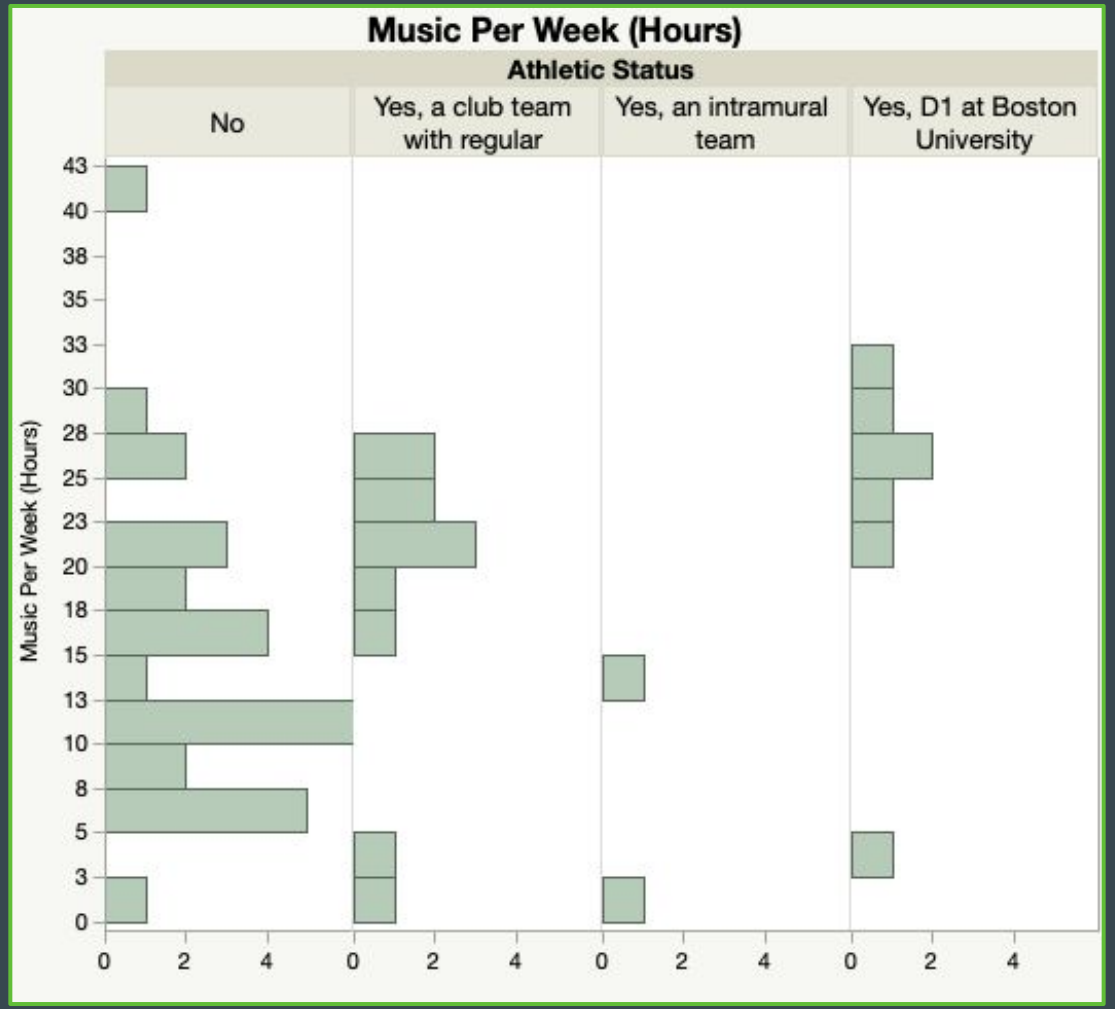
Athletic status

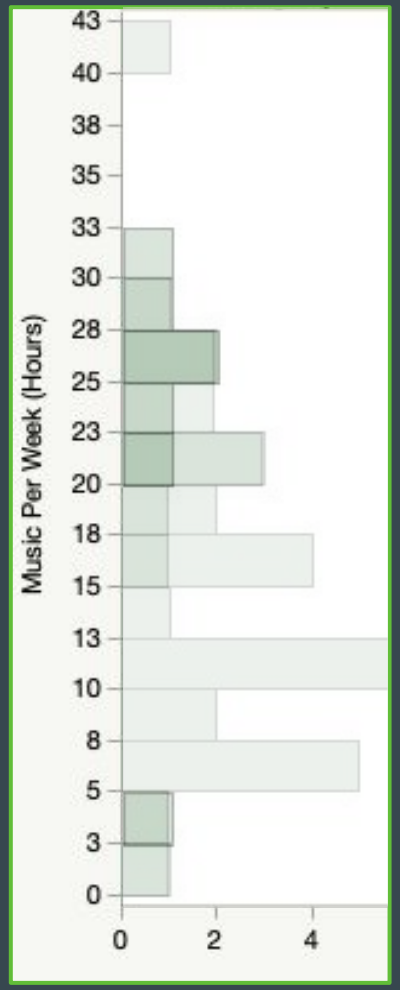
- Our data
  - 60% N
  - 40% Y
    - 10% IT
    - 55% CT
    - 35% D1
- Accuracy in comparison to our population
  - 41% Y
    - 17.1% IT
    - 48.6% CT
    - 34.3% D1

https://www.bu.edu/president/boston-university-facts-stats/

Music Per Week of the Different Athletic Statuses

- Variable overview
- How its graphed
  - What this tells us





Music Per Week of Athletic Statuses

- Overlay
- Excluding “Yes, an intramural team”
- More music hours = very heavy
  - Skews
  - Outliers

Testing

Hypothesis Testing

Hypothesis 1: Students who participate on an athletic team will listen to more music than students who do not.

Test used: difference in means test

$H_0: u_n = u_a$

$H_A: u_n < u_a$

At the 95% significance level, one tailed

Rejection if z-score is < -1.645, p value < 0.05

$$z = (x_1 - x_2) \div \sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}$$

Which becomes

$$(14.167 - 18.7) \div \sqrt{(8.116)^2/30 + (9.115)^2/20}$$

Z score: -1.799

P-value: .0367

We can reject the null hypothesis, and our hypothesis that athletes listen to more hours of music in the week is correct.

Hypothesis Testing

Hypothesis 2: students who spend more hours studying per week will spend more hours listening to music.

Test used: linear regression

With this test, we chose to perform a linear regression to see the coefficient of x (hours spent studying per week) on y (hours spent listening to music per week).

Our test was at the significance level of 0.05.

$H_0: \beta_1 = 0$

$H_A: \beta_1 \neq 0$

R^2: 0.015

P-value: .3978

Only 1.5% of the variation of hours of music listened to per week was explained by the regression. The coefficient on x was actually negative, but it wasn't statistically significant. We fail to reject the null hypothesis.

$$y = \beta_0 + \beta_1 x + e$$

Which becomes

$$\textit{hours of music} = \beta_0 + \beta_1 \textit{hours of studying} + e$$

$$\textit{hours of music} = 17.79 - 0.14x + e$$

$$\textit{std errors} \quad (2.45) \quad (0.17)$$

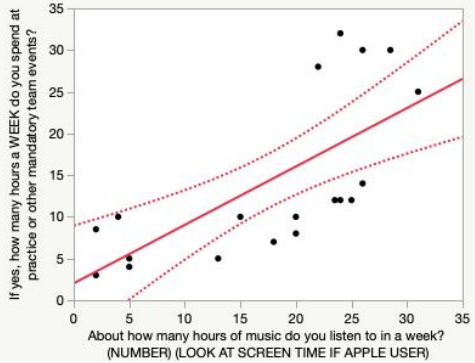
$$\beta_0\ Prob > |t| = <.0001\ *$$

$$\beta_0\ Prob > |t| = .3978$$

$$R^2 = 0.015$$

Scatterplot of Hypothesis 1: Hours of Practice per week (for athletes) and Hours of Music Listened to per week

Bivariate Fit of If yes, how many hours a WEEK do you spend at practice or other mandatory team events?
By About how many hours of music do you listen to in a week? (NUMBER) (LOOK AT SCREEN TIME IF APPLE USER)



Linear Fit

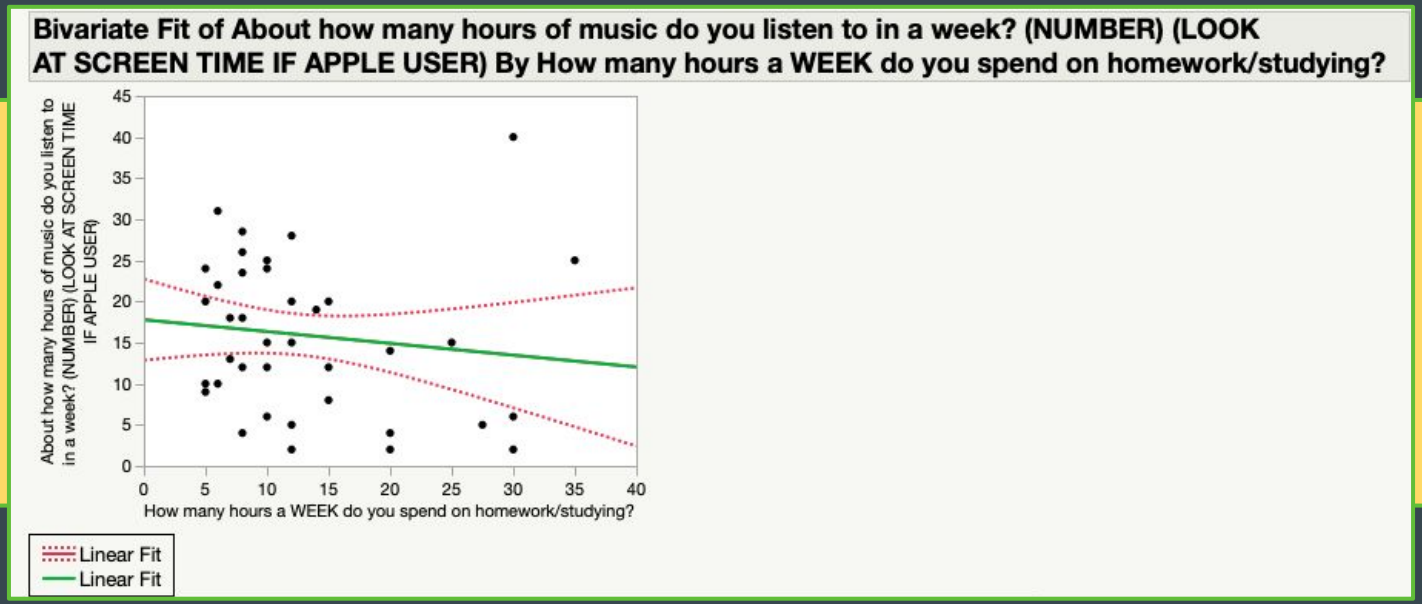
Linear Fit

If yes, how many hours a WEEK do you spend at practice or other mandatory team events? = 2.0224378 + 0.7005374*About how many hours of music do you listen to in a week? (NUMBER) (LOOK AT SCREEN TIME IF APPLE USER)

Summary of Fit

RSquare	0.466938
RSquare Adj	0.440285
Root Mean Square Error	7.333663
Mean of Response	14.25
Observations (or Sum Wgts)	22

Scatterplot of Hypothesis 2: Hours Studying per week and Hours Listening to Music per week



Discussion

Our Hypotheses

By analyzing the difference in means test z score at the 95% level of significance, our final conclusion was to reject the null hypothesis for our first test. Our hypothesis, Students who participate on an athletic team will listen to more hours of music per week than students who do not, holds true.

As for our second hypothesis of Students that spend more hours studying per week will spend more hours listening to music per week, by analyzing the regression of our data, the significance of a relationship between hours students spent studying per week and the amount of music they listened to did not show a strong relationship and thus we cannot reject the null hypothesis, in other words, our hypothesis was not correct.

Other research

In a Harvard MRI study on music and its effects, the study shows significant results on the mobility of those who listened to music while in rehabilitation versus those who did not. Knowing this, these results could show a benefit for BU's student athletes, and encourage playing music during workouts and practices.

THANK YOU