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4 September 2020

Student's Performance vs Alcohol Consumption

Introduction: Drinking at parties with friends is a very common thing to do as a student in high school and university. However, going to parties too often may affect a student's performance in classes. As a student myself, although it is fun to go drink and have fun with my friends every once in a while, I'd imagine if I were to party too often I would over stress trying to keep up with my classes. Thinking about this made me wonder how often a student drinks and parties can affect their academic performance. Although this may seem like an obvious answer that students who party everyday are more likely to fail more classes than those who don't drink at all, I've known people in high school and university that do party and drink very often and are still able to keep up in their studies. Everybody like to do their own things in their free time so I can imagine somebody who uses all their free time outside of studying and classes to party with their friends to still be able to maintain their academic performance as long as they know how to manage their time correctly. I assume that students who don't drink at all and those who mildly drink will have similar performances while those to heavily drink may see a slight to severe decrease in scholarly performance.

Data: For my data I will be using a csv file from Kaggle,

["https://www.kaggle.com/uciml/student-alcohol-consumption?select=student-por.csv,"](https://www.kaggle.com/uciml/student-alcohol-consumption?select=student-por.csv) posted by, "UCI Machine Learning," who has conducted a survey of students between the ages 15 – 22 asking them plenty of questions such as what they do in their free time and what their family life

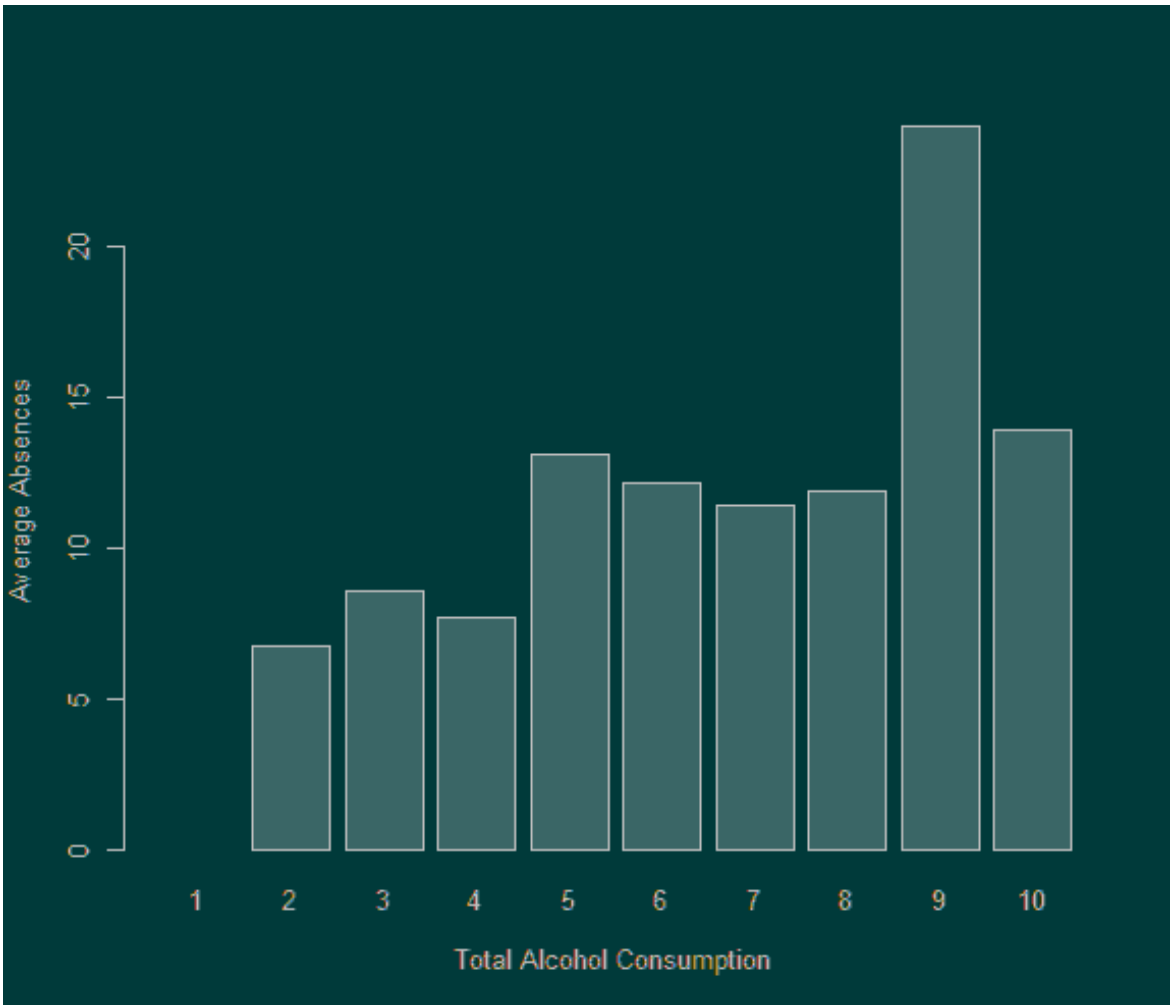
seems to be. This survey was initially taken to make a program that would predict a student's final grade in certain classes depending on the variables taken. However, I will be using the data they already have to determine how well they are doing as a student.

The variables that I will use to determine how much time that a student is using to drink and party with friends are "workday alcohol consumption" and "weekend alcohol consumption", both were rated from a 1-5 scale where 1 is not at all and 5 is very often. However, I combined the two alcohol variables into one "alcohol consumption Total" which will be out of 10 rather than 5. "Number of past class failures", "absences," "study time," "final grade," the highest score the student can get is 20pts, - even though the dataset provides the students' grades for the first two grade periods I think that is unnecessary to use all three variables for the question that I am asking- are the variables that I am going to use to determine the students' performance in school.

Methods and Results: I made several bar graphs showing the comparison of student's performance depending on their alcohol consumption total. For each bar graph I found the average student's performance in each variable separating the students by how often they spend drinking. I did this to find what type of relationship time spent drinking had with each variable corresponding with the student's academic performance. Initially I simply added the scores of each performance variable for each group of students, however this led to a skewed graph since each group does not have the same number of students. I also found the means and standard deviations of each variable across all students so I can compare that to the averages of each group seen in the bar graphs. This was crucial because although a bar graph may seem skewed visually, the standard deviation maybe high enough or the mean maybe close enough so that these who do drink a lot are not significantly hampered by their past times.

Graphs:

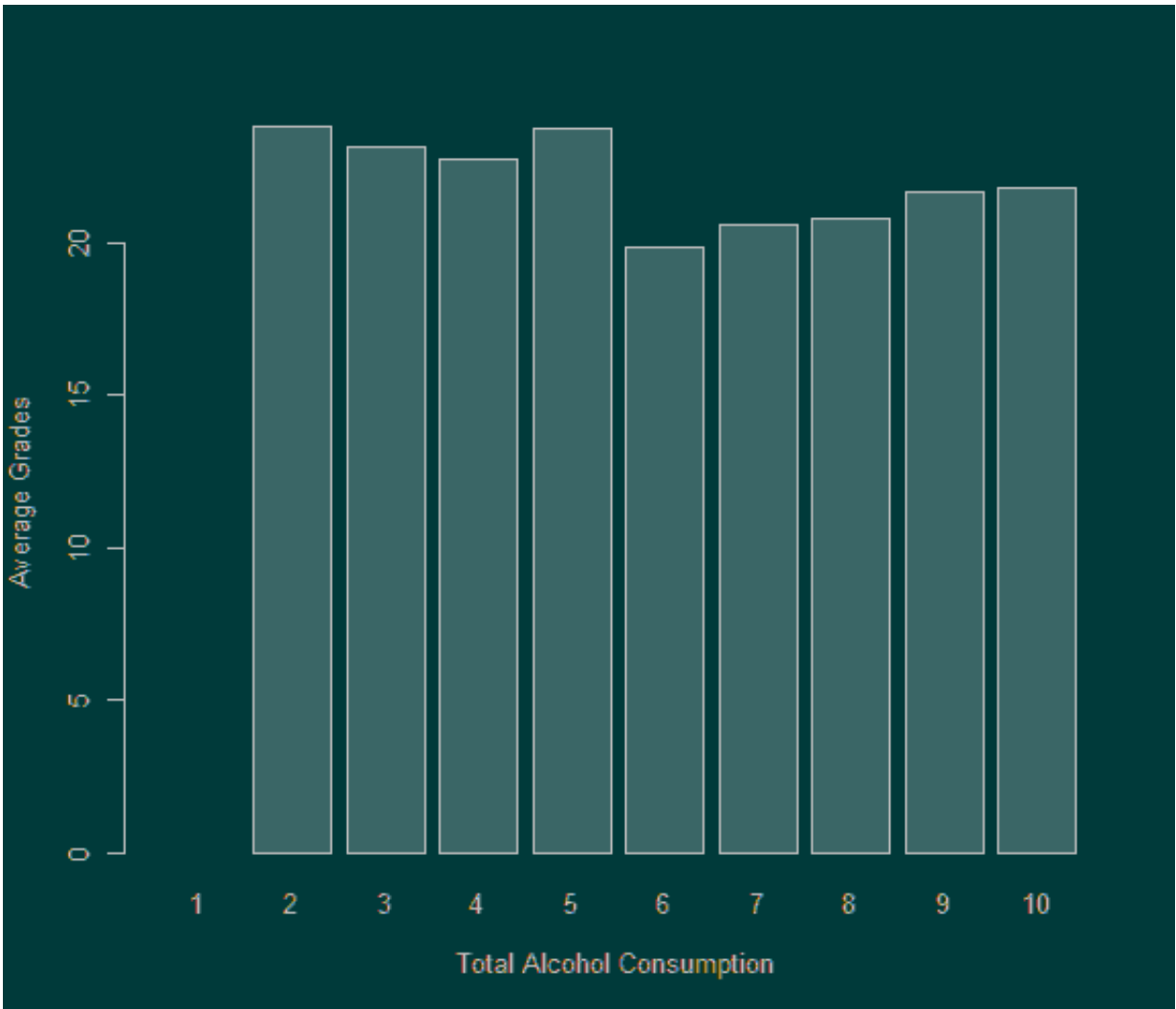
Alcohol vs Absences



Absences Mean: 8.9921

Absences Standard Deviation: 10.9112

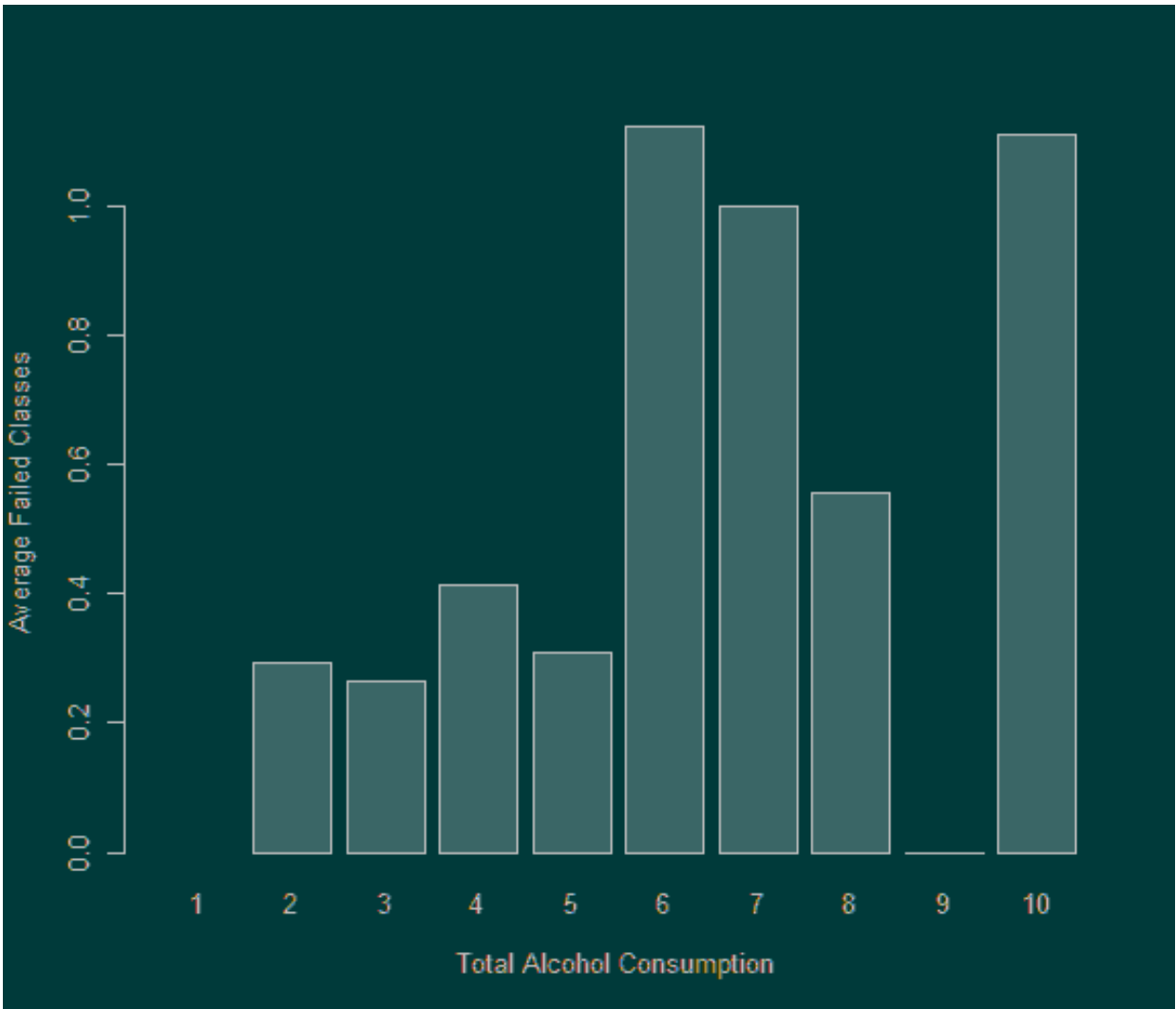
Alcohol vs Grades



Grades Mean: 22.9031

Grades Standard Deviation: 6.6177

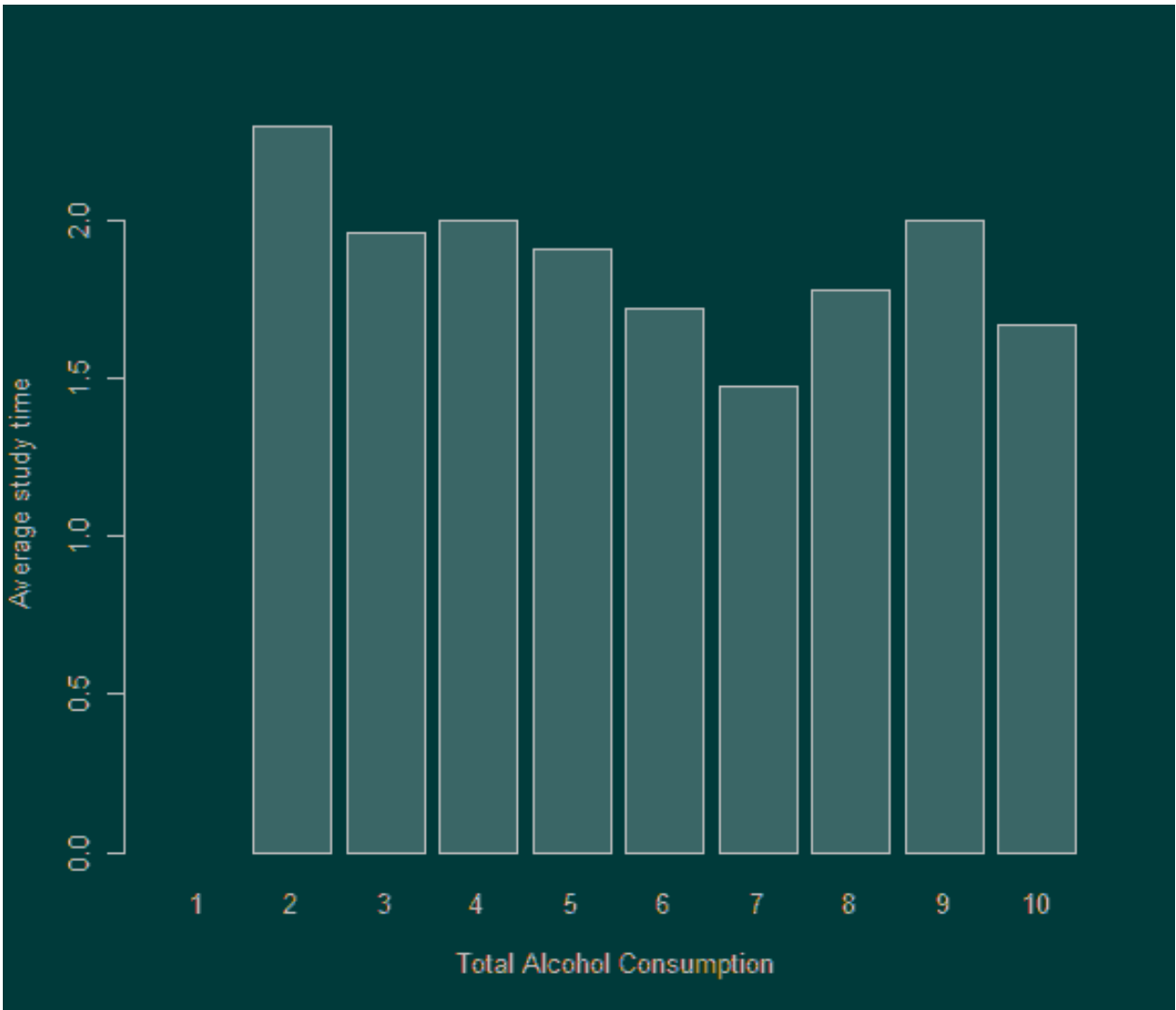
Alcohol vs Failed Classes



Number of Failed Classes Mean: 0.4319

Number of Failed Classes Standard Deviation: 1.0802

Alcohol vs Study Time



Study Time Mean: 2.034

Study Time Standard Deviation: 0.8446

Discussion: Throughout all 4 graphs there is a large spike in negative performance at varying alcohol consumption rates primarily at 6 and 7 which is where the average grades begin to dip, and the number of failed classes begin to raise. This was obviously going to happen as if a student does spend too much time drinking, or any other hobby that may distract them from studying, their performances within their classes will begin to dip. It seems that if a student decides to juggle partying and drinking with their friends they should have a 4 or 5 out of 10 as it seems like the last two groups that have seen little to no issues in relation with their school performance. When looking at each of the means and standard deviations there is not much that they add to what the graphs have to show us other than a few things that I deem as fairly minor when compared to the overall study. The most significant thing the mean and standard deviation seem to offer is that no matter how much a student decides to drink every group seemed to have a similar score for their final grade that year. Even though there was a slight dip beginning at alcohol consumption score of 6, the dip was not severe and does raise as the consumption score increases. Although the data shows that there is a direct correlation between doing worse in school and heavily drinking, I believe that there is more going on in these students' lives rather than simple alcoholism. It is unnatural for students between the ages 15-22 to have an alcohol consumption rating higher than 4 or 5. It is possible that these students who do have these higher alcohol consumption ratings have something going on in their personal life. Having a problematic family life or any issues depending on how severe it is, is something I do think has some sort of correlation to both alcoholism and a lack in academic excellence. However this is outside of the topic I had planned to look over so I had decided not to use some of the other

variables given to find any correlations between family life and alcoholism or family life and academic excellence both of which have obvious answers to.

Conclusion: There does seem to be a correlation between drinking and academic performance but only when the student drinks excessively. If they were to drink moderately their performance sees little to no change compared to those who do not drink at all. However, students who do drink excessively is a great concern to our society and it would be insightful to study more on why students may drink excessively.

References:

Learning, UCI Machine. "Student Alcohol Consumption." *Kaggle*, 19 Oct. 2016,
www.kaggle.com/uciml/student-alcohol-consumption?select=student-merge.R.