

How Does the Number of Hours Worked per Week effect GPA?

1. Executive Summary

Abstract

The four years spent in college working towards earning a degree can be described by some as a whirlwind of chaos. Between studying for exams, classes and the homework necessary to obtain a high GPA, sometimes it seems as though it is all college students have time for. However, when college students have to pay for their tuition themselves or are in need of money for living expenses and etc., they must then add a work schedule into their already hectic schedule. If students have to take homework and study time away to make time to work, their grades may begin to suffer. This report seeks to find out if a college student's GPA is affected by the amount of hours they work per week.

Method

The method used to collect the data was a survey distributed on a college campus to a random sample of its students. The questionnaire asked the students how many hours per week they worked and also what their current GPA. The method used to analyze the data was the regression method finding the correlation between the two variables. The explanatory variable used in the study is the hours worked per week and the response variable is the GPA.

Conclusion

It was concluded that there is not a relationship between the hours worked per week and GPA. This is because the correlation coefficient was very small and negative meaning

the possible indirect relationship between GPA and hours worked per week is very weak and cannot be used to prove a relationship.

2. Introduction

Our statistics projects was analyzing how the number of hours that college students worked per week affects the students' GPA. According to *Citigroup* magazine, almost 80 percent of college students work at least a part time job during the school year (Fang, 2013). Because of this statistic, our group sought out if a student is working more hours, would it then mean that they would have less time to do homework and study resulting in a lower GPA. Therefore, we hypothesized that the more hours students worked per week has an indirect relationship with the students' GPA.

The data that was used was extracted from a study done by Laurie Geller, *Does Working too many Hours Hurt your GPA?* at MSU. The two quantitative variables that were used in this study were the number of hours worked per week and the GPA of the students.

3. Techniques of Data Collection

Obtaining the data was done by Geller creating a survey asking MSU students how many hours per week they worked and their GPA. Therefore, the students that were surveyed were the sample and all MSU college students was the population. In order for Geller to ensure a simple random sample, she reached out to the professors at MSU to distribute the surveys to the students.

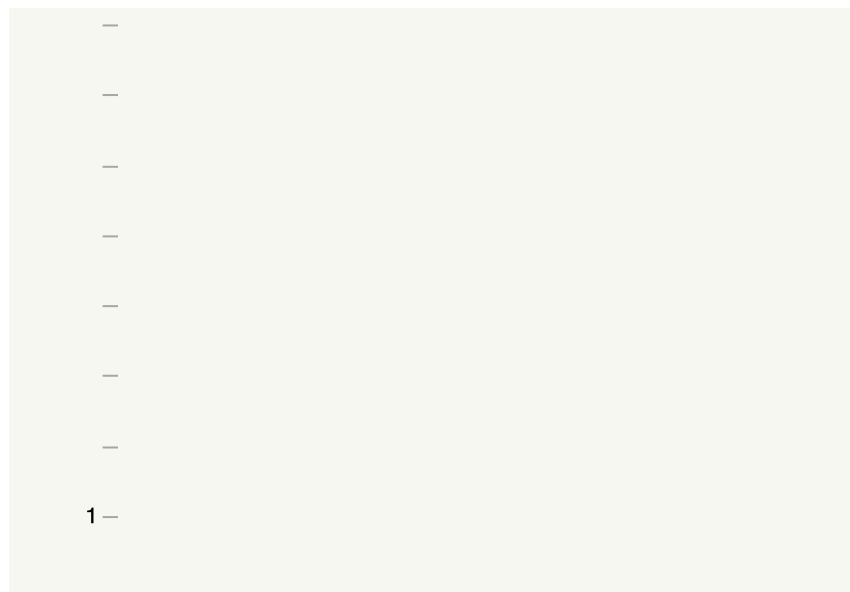
In Geller's study, the range of the number of hours per week was between 0 and 60 hours. However, for our study, the number of hours worked per week ranged from 0 to 40 hours. This is because we wanted to use a smaller range of hours worked in order to get a better

representation of typical hours that college students work. By doing this we could also have a lower probability of outliers.

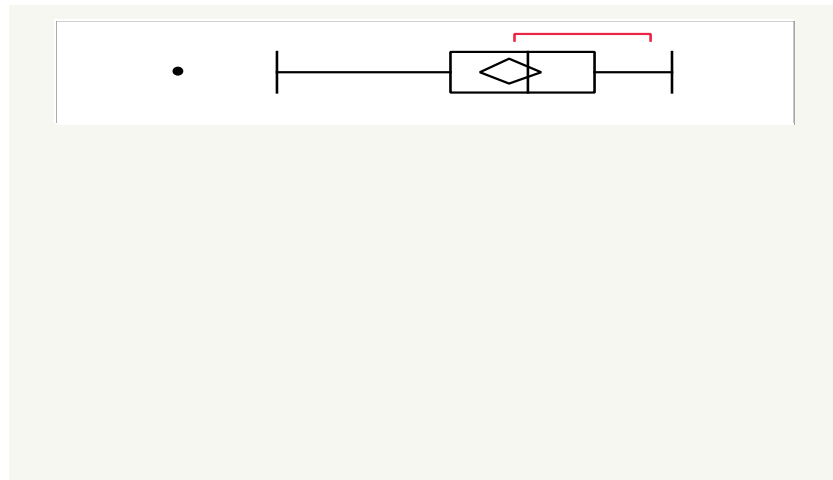
4. Summary of Data

The following graphs are visualizations of the data collected

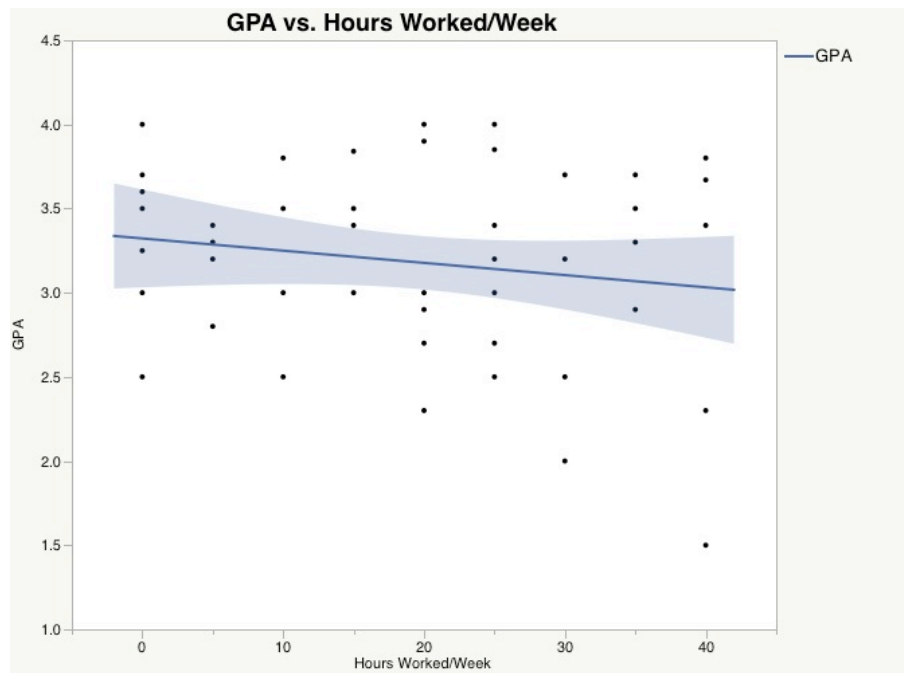
Scatterplot of GPA and Hours Worked per Week



Histogram and Boxplot of Hours Worked per Week Frequency



Regression Line of GPA and Hours Worked per Week



Summary of Descriptive Statistics

Variable	Mean	Median	St. Dev.	Q1	Q3	Correlation
Hours/Week	19.6	20	12.81	10	30	-0.16697
GPA	3.1802	3.275	.5576	2.875	3.6175	

5. Analysis

When we analyzed the data in JMP, we created a box plot, histogram and a scatter plot with a line of regression. The scatterplot of GPA vs hours worked shows a wide variety of results. Some students maintained a high GPA while working 40 hours a week, while others had their GPA suffer. There were also students who didn't work and had a low GPA, but overall results varied at every level of hours worked.

The box plot of the GPA distribution shows that there is one outlier which was the value of 1.7. Since there was only one outlier, we concluded that it did not skew the analysis of the data. From the summary of descriptive statistics, we found that there is only a -0.16679 correlation between hours worked and GPA, and a very small negative slope on our linear regression line

6. Conclusion

Based on the information above, we can conclude that there is not a relationship between hours worked and GPA. Results from Geller's study found a wide range of results from student to student, and no strong correlation between the two variables. Some outside variables could also have an effect on the relationship such as grade level, gender, age, living on or off campus, etc. which we did not include. But based on the data we collected and analyzed, the number of hours a student works per week does not have an effect on their GPA.