CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
Alejandro G. Gonzalez

Project Number
S1210

Project Title
Finding a Correlation between Public School Lunch Meal Cost and Public School Physical Fitness Test in the State of CA

Abstract

Objectives/Goals
This experiment will determine if there is a correlation between public school lunch meal costs and the public school physical fitness test in the state of California.

Methods/Materials
After using a linear regression t-test to prove that there is a correlation I will then use the correlation formula to show a positive linear relationship between the two. If this relationship is seen, it will show schools with a lower lunch cost will have low percentage of students in the healthy fitness zone while schools with a higher lunch cost will have a higher percent rate of students in the healthy fitness zone. Data for county lunch costs and county fitness test results will be gathered from the California Department of Education website.

Results
The data supported my hypothesis. The linear-regression t-test showed that there is a positive linear relationship between the data. These results show that there is a correlation.

Conclusions/Discussion
Because my data comes from a census from all California counties and n is sufficiently large (satisfying the Central Limit Theorem), I was able to perform the t-test. I used my TI-84 calculator for the linear regression t-test. Based on the results from the linear regression t-test, I am able to reject the null hypothesis at the 5% level and even at the 1% level, therefore I accept the alternative hypothesis. This shows that there is a positive linear relationship between California county lunch prices and the percent of students in the Healthy Fitness Zone for that county. Based on the r2 value of 0.282, even with the alternative hypothesis accepted, the relationship is moderately weak with an r value of 0.53 and the linear regression line ($y = 66.031 + 3.779x$) only being 28.2% accurate. Because the data seems to be normally distributed along the residual plot, I can assume that the linear regression line is a good predictor for percent of students in the Healthy Fitness Zone based on a counties lunch price even with an r2 value of 0.282. With this statistical analysis I can conclude that there is a moderately weak linear relationship between county lunch cost and the percent of students in the healthy fitness zone. In addition the linear regression line can be used as a good predictor for the data.

Summary Statement
To find a correlation between public school lunch meal cost and public school physical fitness test in the state of California.

Help Received
None