

“Televisions, Physicians, and Life Expectancy”

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This article uses data about life expectancy, television sets, and number of physicians in a country to teach students about association, correlation, and causation. The students were first asked to estimate the life expectancy in various countries and the number of people per television set in the countries. The students were also asked to speculate about if there was a relationship between the life expectancy and the number of people per television set. The instructor then gave the students the actual data. The students discussed the distribution of the two data sets and then created a scatter plot of life expectancy vs. people per television set. The class met in a room with computers so the scatter plot was created on those and the correlation coefficient was also calculated. The correlation was found to be  $-.606$ . This correlation coefficient brought up interesting questions of causation. Although it is clearly a ridiculous question, the instructor posed the question: if we send televisions to countries with low life expectancies, will the life expectancy increase? The students should recognize this as an outlandish question and it shows just because there may be a correlation, causation cannot be concluded. This correlation also gives students the opportunity to consider other variables and other explanations as to why this correlation may occur. Finally, the instructor introduces the data for people per physicians in the countries. The correlation between life expectancy and the number of people per physician was found to be  $-.666$ .

I thought this article provided a great use of data to show students the difference between causation and correlation. The data was easy for the students to understand and interpret which

made it more interesting to the students. In this article, the instructor gave the students the data but the activity could also be extended so that the students would find the data on their own using the internet. This activity would be useful to students so they can be aware of inaccurate claims of causation.

Using this activity would also support Recommendation 3 and 4 made by the GAISE report. Recommendation 3 emphasizes statistical literacy and developing statistical thinking. Although a news report would probably not make a claim as the correlation discussed in this activity, it teaches students to be aware that a correlation does not imply causation between variables. This awareness also teaches students to use a statistical style of thinking and not just accept someone else's claims. The 4<sup>th</sup> recommendation made by the GAISE report encourages active learning in the classroom. This data could easily be incorporated into a group activity in which the students could discover on their own that it is unrealistic to claim that there is a causation between the variables.