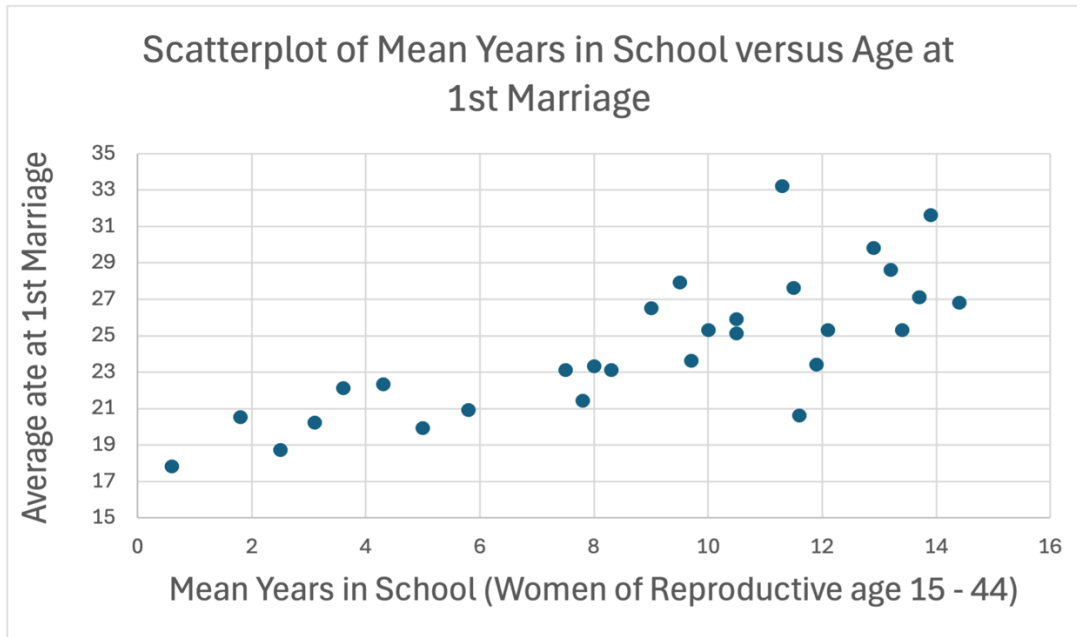


ACTIVITY 4: Worksheet

On the following pages are some scatterplots of relationships found on Gapminder.org. Use your critical thinking skills to answer the questions based on the scatterplots. Make sure you use some of the new vocabulary you learned such as causation, a common response, confounding, and lurking variable. As you answer the questions, think “big picture.” Recall that each dot represents an entire country, so keep this in mind when answering the questions below.

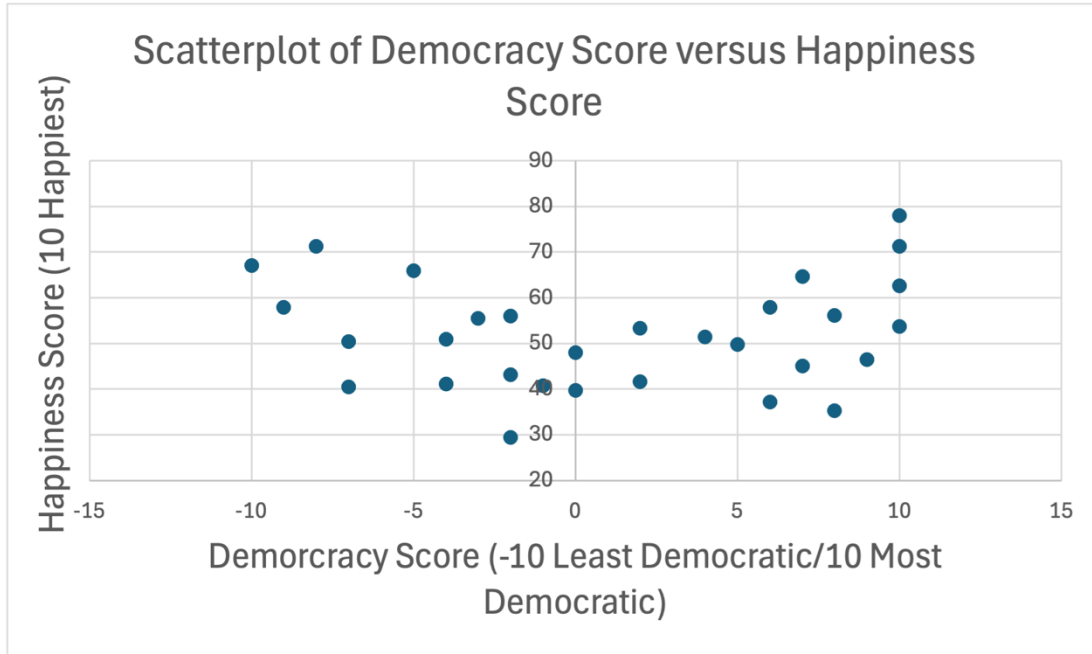
Mean Years in School of Women of Reproductive Age 15-44 versus Average Age at 1st Marriage



1. Describe the relationship (form, direction, and strength) between the mean years in school of women of reproductive age 15 to 44 and the average age at 1st marriage.
2. What happens to the average age at 1st marriage as the mean years in school for women of reproductive age 15 to 44 increases?
3. Do you think the mean years in school for females of reproductive age 15 to 44 directly impacts the average age at first marriage within a country? Explain using the appropriate vocabulary.

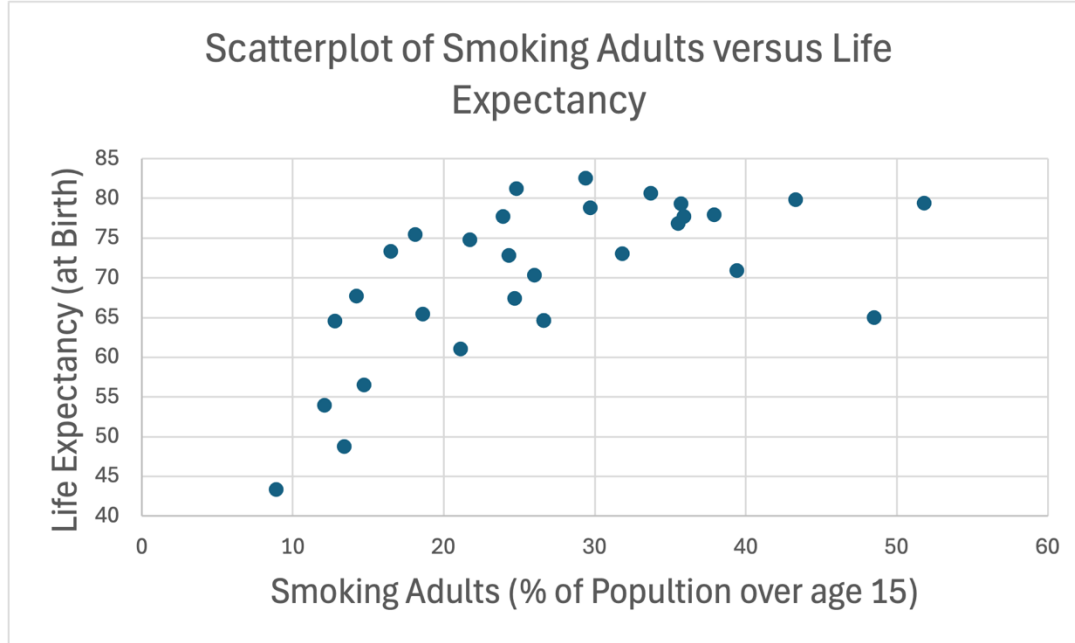
4. What other variables would impact the average age at first marriage within a country and thus weaken the relationship? Explain using the vocabulary and give at least two of these potential variables. Feel free to explore some of the other variables on gapminder.org. Make sure you explain your reasoning for each variable.

Democracy Score (-10 Least Democratic to 10 Most Democratic) versus Happiness Score (Higher Percentage Corresponds to Happier)



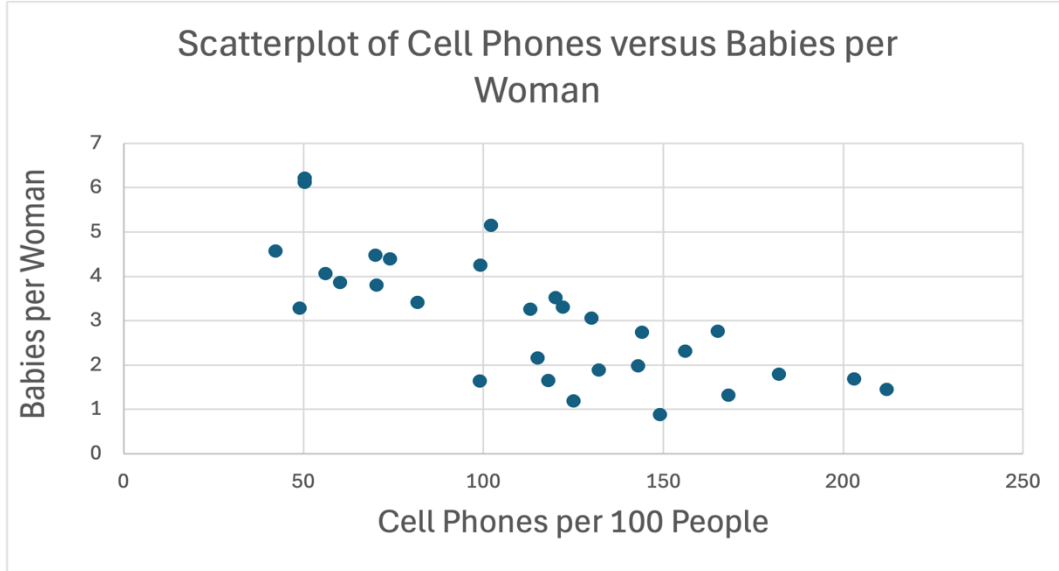
5. The democracy score has to do with the amount of freedom in a country. Based on the data above, does it appear that in countries that have more freedom, the population will generally be happier? Explain!
6. Do you think having greater freedom in a country should impact the overall happiness score of the country? Explain!
7. Why do you think no relationship was found between these two variables? Hint: Many of the countries with lower happiness scores were found in Africa. Make sure you use the appropriate vocabulary in your response.

Smoking Adults (%) versus Average Life Expectancy



8. Explain the relationship (form, direction, and strength) between the percentage of the population over age 15 smoking and the average life expectancy within countries.
9. According to this scatterplot, in general, how does the average life expectancy within countries change as a higher percentage of the population over the age of 15 smokes?
10. Based on your knowledge, how will smoking impact a person's longevity on an individual level?
11. Do you believe that countries that have a higher percentage of smokers "causes" that country to have a greater average life expectancy? Why or why not? Make sure you use the appropriate vocabulary.

Cell Phones per 100 People versus Babies per Woman



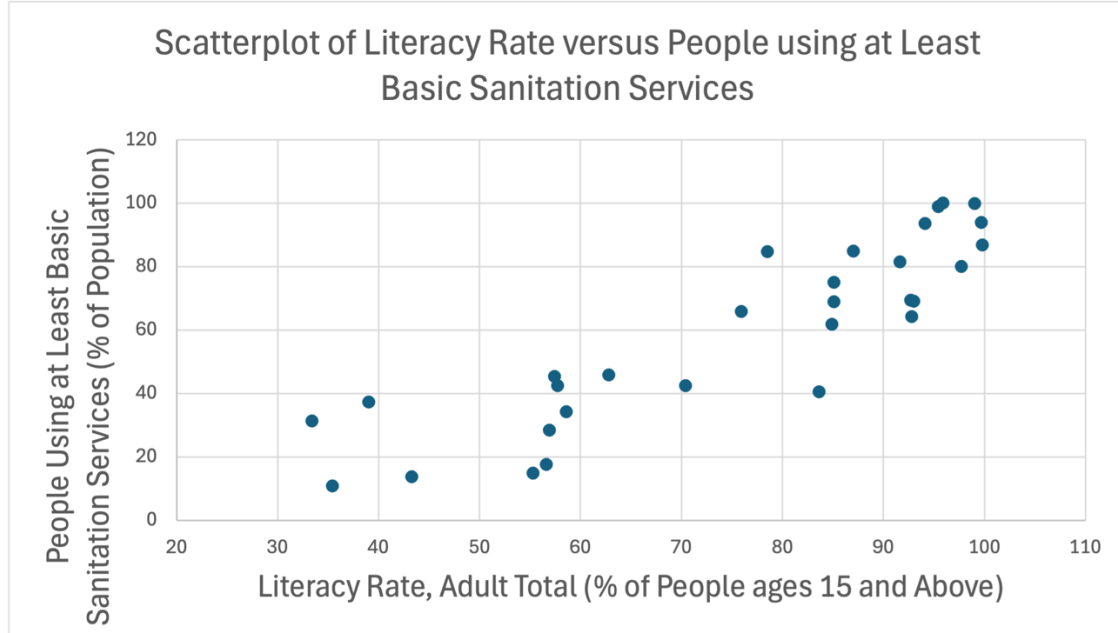
12. Describe the relationship (form, direction, and strength) between the number of cell phones per 100 people in a country and the number of babies per woman.

13. Do you think the increase in the number of cell phones per 100 people in a country “causes” a decrease in the number of babies per woman? Explain.

14. What variables do you think will impact the number of babies per woman in a country? Make sure you come up with at least three and explain why you think they will have an impact on the number of babies per woman.

- 15.** There does appear to be a moderate correlation between the two variables. Why do you think as the number of cell phones per 100 people increases, the number of babies per woman decreases? Justify using the appropriate vocabulary.

Literacy Rate versus at Least Basic Sanitation



16. Describe the relationship (form, direction, and strength) between literacy rate and the percentage of people using at least basic sanitation services.
17. Do you think that a higher literacy rate for a country “causes” a higher use of at least basic sanitation services?
18. What other variables would impact the percentage of people in a country using at least basic sanitation services? Give at least two variables and for each variable, explain why you think it will have an impact. Remember to use the appropriate vocabulary!

Once the class has discussed the previous questions, you are ready to create your last PowerPoint slide.

Slide 5:

For Slide 5, answer the questions below in paragraph form.

1. Do you think the relationship you have been studying is a “correlation,” “causation,” or neither? Explain using the appropriate vocabulary.
2. Do you think you have a common response or confounding? If you feel you have a common response, mention the outside variable that is affecting the two variables making them appear correlated, and justify your answer. If you feel you have confounding, give at least three possible lurking variables that are confounding the relationship and explain why they will also affect your dependent variable.