

A.P. Statistics
Assignment 3.11

Remember to show your thinking through your work.

For each of the following:

- a) Identify the question, population, and sample.
 - b) Discuss any potential bias or lurking variables that may affect the results.
 - c) Write about the extent to which we can generalize the findings to all people who use cell phones.
- 1) In a study by Joshua E. Muscat and others reported in the Journal of the American Medical Association, the cell phone habits of 469 people with brain cancer were compared with those of 422 healthy people matched by age, gender, and other characteristics. The cell phone use of the group with cancer averaged 2.5 hours per month, compared with the control group's 2.2 hours per month. Although the difference of 0.3 hours on the cell phone per month was not significant, the average time on the cell phone of the group with cancer was higher.

a)

b)

c)

- 2) In the London Sunday Times, Jonathan Leske reported on a study that investigated cell phone use as a cause of cancer. This study compared a group of 118 people with an eye cancer (uveal melanoma) with a control group of 475 people without the disease. The group with cancer had a much higher rate of cell phone use than the control group.

a)

b)

c)

- 3) Stewart Fist reported the results of an experiment investigating the link between cell phone use and tumors in mice. The study exposed one hundred mice to cell phone radiation for two half-hour periods each day over eighteen months. The researchers fitted another hundred mice with the same type of antennas, which never had the power turned on. The tumor rate was twice as high in the exposed group as in the unexposed group.

a)

b)

c)

3) Show all your work. Indicate clearly the methods you use, because you will be graded on the correctness of your methods as well as on the accuracy of your results and explanation

4. Because of concerns about employee stress, a large company is conducting a study to compare two programs (tai chi or yoga) that may help employees reduce their stress levels. Tai chi is a 1,200-year-old practice, originating in China, that consists of slow, fluid movements. Yoga is a practice, originating in India, that consists of breathing exercises and movements designed to stretch and relax muscles. The company has assembled a group of volunteer employees to participate in the study during the first half of their lunch hour each day for a 10-week period. Each volunteer will be assigned at random to one of the two programs. Volunteers will have their stress levels measured just before beginning the program and 10 weeks later at the completion of it.

(a) A group of volunteers who work together ask to be assigned to the same program so that they can participate in that program together. Give an example of a problem that might arise if this is permitted. Explain to this volunteer group why random assignment to the two programs will address this problem.

(b) Someone proposes that a control group be included in the design as well. The stress level would be measured for each volunteer assigned to the control group at the start of the study and again 10 weeks later. What additional information, if any, would this provide about the effectiveness of the two programs?

(c) Is it reasonable to generalize the findings of this study to all employees of this company? Explain.