STEVENS
INSTITUTE OF TECHNOLOGY
1870

MA 222

HOMEWORK 1

Show ALL WORK to get full credit.
(Write the pledge on top of your work and sign under it.)

Problem 1:

A recent study at Britain's Oxford and Exeter Universities explored whether a woman's diet before conception affects the gender of her child. Researchers studied the eating habits of 740 women during their first-time pregnancies and found that higher caloric intake prior to conception can significantly increase the chances of having a son while more restricted diets are more likely to produce daughters. They found that high potassium diets (eating bananas) and calcium rich diets (cereal and milk) were associated with having a baby boy. Researchers concluded that eating a bowl of cereal for breakfast can increase the chances of a male birth. "Of women eating cereals daily, 59 percent had boys, compared with only 43 percent who bore boys in the group eating less than a bowlful per week."
Source: CNNHealth.com

a) Identify the population and sample of the study.
b) What is the variable of the study?
c) Determine whether the data for this study are qualitative or quantitative.

Problem 2:

Researchers at the Ohio State University and Zeppelin University Friedrichshafen, in Germany, recently conducted a study regarding the elderly and negative news coverage. The researchers presented 276 subjects with several stories (with photos) about either old or young people. Participants were presented with one of two versions of each story. In one version the main character was painted in a positive light and in the other the same character was described negatively. After the participants finished reading their self-esteem was measured. The study found that older readers were more inclined to read the negative stories about youth. In addition, they found that the more negative stories older people read about younger individuals, the higher their self-esteem tended to be. This could explain the prominence of negative media coverage on networks with an older audience such as Fox News and MSNBC.
Source: Huffpost Media

a) Identify the population and sample of the study.

b) What is the variable of the study?
c) Determine whether the data for this study are qualitative or quantitative.

Problem 3:

Identify the sampling method used in each of the following study.

a) The FDA chooses 15 hospitals around the country at random. Every doctor in the chosen hospitals is asked to participate in the study.
b) Every 4^{th} dorm room is selected for a survey regarding study hours and campus security.
c) A state politician wants to gauge public opinion in his area before deciding to run for reelection. For the study, 200 registered voters are chosen at random from each county in his district.
d) In order to complete a psychology project, you pass out surveys to the first 25 people you find in the student union.

Problem 4:

"Does taking 80 mg of aspirin each morning reduce the risk of heart attacks in African-American women over the age of 50?" If the results of this study showed that aspirin did indeed reduce the risk of heart attacks in this population, would you be justified in recommending that your 52-year-old uncle begin taking aspirin daily? Does your answer change based on the ethnicity of your uncle? Explain.

Problem 5:

Find a study of interest on the internet. (**Note:** Though it may be tempting to choose a very short article, if the article is too short, it might not contain all of the necessary elements.)

Once you have found a study of interest, answer the following questions.

a) What is the title of the article? What is the link to the article?
b) Who conducted the study, when and where?
c) What question(s) does the study seek to answer?
d) Identify the population and sample in the study.
e) Identify the variable(s) being studied.
f) Describe how the sample was chosen.
g) What is the sampling method? Is there any potential bias in the sampling method? Explain your answer.
h) What is the result(s) (conclusion) of the study?
i) Do you feel comfortable believing the result(s) of the study based on your analysis? Explain your answer.

Problem 6:

The students in two fourth grade classes were clocked for the time to the nearest second required to run completely around the school's playground:

Times for Class 1	58, 48, 53, 61, 67, 72, 59, 74, 62, 58, 47, 62, 65, 47, 50, 53, 48, 55, 49, 57, 50, 53, 51, 56, 52, 55
Times for Class 2	65, 70, 78, 49, 58, 71, 74, 56, 53, 67, 68, 55, 59, 67, 51, 79, 45, 55, 54, 63, 62, 57, 61, 59

a) Sketch a central stem and plot the leaves for Class 1 on the right and Class 2 on the left of the stem.
b) Which class had the better performance? Explain by referring to the stem and leaf plot.