1 Question 01

You decide to study a recent outbreak of **Flu-X**, a super-flu plaguing Lehigh University students. The Flu-X virus is quite infectious, and when it infects its victims they exhibit a curious symptom—they uncontrollably study statistics!

The first step in your study is to estimate the proportion of students infected with **Flu-X**.

(A)

What is the **population** under study?

To estimate the proportion of students infected with Flu-X, now uncontrollably studying statistics, you decide to select 100 names from the student registry at Lehigh University. You plan to observe each student and record: their major, their expected year of graduation, whether they are uncontrollably studying statistics.

(B)

What is another name for the 100 students you've selected to study?

(C)

Is randomly sampling 100 students **representative** of the population? Why or why not?

(D)

What if instead of randomly selecting and observing the 100 sampled students, you decided to send a University wide email asking students to reply with their major, expected year if graduation,

and whether they cannot stop studying statistics. Could asking students to reply to your email introduce any biases?

(E)

What are the **observations** in the above estimation project?

(F)

Please name one **variable** that is collected

2 Question 02

Can the number of observations in a sample be larger than the number of observations in the population of interest? Why or why not?

3 Question 03

After sampling 100 students you find more than 80% are infected with Flu-X. Students all around you on campus are uncontrollably studying statistics! There is a shortage of calculators, students are babbling about statistical distributions and computing averages. Only you can stop this outbreak!

(A)

If you sampled 100 students by choosing friends you've made at LU and students who attend the same classes you do, what would this sample be called?

(B)

Other researchers may call the sample of friends and students in the same class as you a biased sample. What do they mean when they say that?

(C)

Describe, in your own words, how you might take a simple random sample of 100 students on campus.

(D)

Suppose you wanted to collect an equal number of freshman, sophomores, juniors, and seniors. To do this, you divided students by whether they're freshman, sophomores, juniors, and seniors, and then within each group (or strata) selected 25 students at random. What would the above sampling strategy be called?