

(IF IT IS HELPFUL, YOU MAY TEAR THIS PAGE OFF AND RE-ATTACH IT LATER)

For methods 2 and 3, once the school has selected the sample of students to interview, we will assume that there are no issues with getting in contact with the students or getting the students to respond or cooperate.

- a) Consider sampling method 1 only. Why might such a sampling method be biased in producing an estimate of the mean amount of weekly homework for all students at CPHS?

Three required components:

1. Provides reasonable explanation for why the sample might not be representative of the population
2. Links the nonrepresentative nature of the sample and the variable of interest (amount of homework)
3. Indicates a plausible direction for the bias of the estimator.

EXAMPLE: These students might be the first to arrive at school because they are rushing to get into tutorials because they had so much math homework and couldn't figure out how to finish it all. Thus the mean amount of weekly homework for these early arrivers might be greater than the mean amount of homework for the population of all students at the school.

- b) Consider sampling methods 2 and 3 only. Which of these two is the better method if the goal is to obtain an accurate estimate of the mean amount of time spent on math homework for all students at CPHS? Explain carefully.

FOUR Required components:

1. Student demonstrates understanding that a stratified sample involves taking a sample of students from EACH of the 50 classes (really, three students from each class)...
2. and demonstrates understanding that a clustered sample involves taking EVERY student from a few (really six) randomly selected classes.
3. Discusses a statistical advantage of selecting a few students from each class (more likely to get a representative sample in terms of homework load, since you are getting students from every class and/or stratifying reduces sampling variability thus likely yields a more representative sample)
4. Discusses a statistical DISadvantage of only including six (or "a few" or "some", etc) classes. For instance, perhaps the 6 classes you select are all Pre-AP or AP math classes. That might cause you to over-estimate the mean homework amount for all students at the school.