AP Statistics

2019-01-10 4.1 and 4.2 Review

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1. The school's newspaper has asked you to contact 100 of the approximately 1100 students at the school to gather information about student opinions regarding food at your school's cafeteria.

With as much precision as possible, describe the population for your study.

The 1100 students at the school.

2. Each state conducts an annual study of seat belt use by drivers following guidelines set by the federal government. Seat belt use is observed at randomly chosen road locations at random times during daylight hours. The locations are based on counties within each state. In Hawaii, the counties are the islands that make up the state's territory, and the survey is conducted on the 4 most populated islands: Oahu, Maui, Hawaii (referred to as "The Big Island"), and Kauai. The sample sizes on the islands are proportional to the amount of road traffic., so each location is equally likely to be selected.

Is this a SRS of road locations in the state of Hawaii? Explain.

This is a stratified random sample, not a simple random sample.

3. A medical study of heart surgery investigates the effect of a drug called a beta-blocker on the pulse rate of the patient during surgery. The pulse rate will be measured at a specific point during the operation. The investigators will use 20 patients facing heart surgery as subjects. You have a list of these patients, numbered 1 to 20, in alphabetical order.

A. Describe the design of a completely randomized, controlled experiment to test the effect of beta-blockers on pulse rate during surgery.

Using chance, select ten subjects as identified by their numbers. These will be given the drug. The other remaining 10 will not be given the drug.

B. Use the section from the random digits table below to carry out the randomization required by your design and list the outcome of the randomization.

96746	12149	37823	7**18**68	18442	351**19**	62**10**3	39244
96927	19931	36809	74192	77567	88741	48409	419**03**
43909	99477	2533**0**	**6**4359	40**08**5	16925	85**11**7	36071

15689 14227 06565 14374 **13**352 49367 81982 872**09**
36759 58984 68288 22913 18638 54303 00795 08727

Drug: 18,19,10,03,06,08,11,15,13,09

No drug: 01,02,04,05,07,12,14,16,17,20

4. One study of cell phones and the risk of brain cancer looked at a group of 469 people who have brain cancer. The investigators matched each cancer patient with a person of the same age, gender, and race who did not have brain cancer, then asked about the use of cell phones. RESULTS: “Our data suggests that the use of handheld cellular phones is not associated with risk of brain cancer.”

A. Is this an observational study or an experiment? Justify your answer.

Observational – the use of cellphones was not modified by the researchers.

B. Based on this study, would you conclude that cell phones do not increase the risk of brain cancer? Why or why not?

This is observational, so cause and effect can not be concluded. Additionally, only those without brain cancer were actually questioned.