STAT 301  Statistics I   Fall 2014

Quiz 24: Choice of procedure

Taken on Wed Dec 5. You may work with a randomly selected group of 3 students, submitting one quiz with all names, provided that you all contribute to the work. You may use your text/notes. Please write “Quiz 24” and “STAT 301” on the quiz.

Some of the statistical inference procedures that we have studied include:

A. One-sample \( z \)-procedures for a proportion
B. Two-sample \( z \)-procedures for comparing proportions
C. One-sample \( t \)-procedures for a mean
D. Two-sample \( t \)-procedures for comparing means
E. Paired-sample \( t \)-procedures

For each of the following research questions, identify (by letter) the procedure that you would use to investigate that question.

1. Do cows tend to produce more milk if their handler speaks to them by name every day than if the handler does not speak to them by name? A farmer randomly assigned half of her cows to each group and then compared how much milk they produced after one month.

2. Suppose that I take a random sample of 100 Cal Poly – San Luis Obispo students and record how many are wearing clothing today that mentions Cal Poly in some manner, and I ask a friend who teaches at Cal Poly – Pomona to do the same thing on his campus. We want to investigate whether the proportion of students who wear clothing that mentions Cal Poly differs between the two campuses.

3. Suppose that a baseball manager wants to investigate whether players run more quickly from second base to home plate if they take a wide angle or a narrow angle around third base. He recruits 20 players to serve as subjects for a study. He plans to have each of the 20 players run with each method (wide angle, narrow angle) once.

4. Do sentences in John Grisham’s novels tend to be longer or shorter than sentences in Michael Crichton’s novels?

5. Are people who describe themselves as politically liberal more or less likely to have donated to charity in the past year than people who describe themselves as politically conservative?

6. Does spraying a particular chemical into a cloud produce more rain than not injecting the chemical into a cloud?

7. Are more than 90% of Cal Poly students native-born Californians?

8. Are people who own a pet bird more likely to suffer from lung cancer than people who do not own a pet bird?
9. I bought myself a pedometer so I can record how many steps I walk each day. I wanted to test whether my average number of steps per day exceeds the recommended number of 10,000.

10. Are American adults who have children significantly more likely to play video games than American adults who do not have children?