Quiz 19: Paired data

Assigned on Thur Nov 13; due on Tues Nov 18. You may work with a group of as many as 4 students, submitting one quiz with all names, provided that you all contribute to the work. You may use your notes.

We have studied three statistical inference techniques for comparing two groups:
   A. Two-sample $z$-procedures for comparing proportions
   B. Two-sample $t$-procedures for comparing means
   C. Paired-sample $t$-procedures

For each of the following 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?