

**Stat 21 with Prof. Suzy
Worksheet for Week 3**

Instructions: For each of the following research questions, identify (by letter) the procedure that you would use to investigate that question. (You may or may not use all of the procedures.) Also, specify whether you think a *confidence interval* or a *hypothesis test* is more useful to answer each question.

The different inferential procedures we have covered are

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

1. Health recommendations suggest walking 10,000 steps per day. Suppose that you collect data from a sample of Fitbit users and you want to test if they average more than 10000 steps per day.

2. Are people who own a pet bird more likely to suffer from lung cancer than people who do not own a pet bird?

3. The manager of a restaurant wants to determine the extent to which different kinds of background music affect how frequently customers order from the “daily specials” menu. For a period of several weeks, he randomly decides each night whether to play classical music, or rock music in the background. Then he keeps track of how many parties order at least one item from the “daily specials” menu each night.

4. 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.

5. A researcher is interested in studying whether Americans gained weight, on average, while in quarantine by virtue of the COVID-19 pandemic. She took a random sample of Americans and asked their weight before the pandemic, and their weight in late 2021.

6. Do male science teachers tend to receive higher salaries than female science teachers? And if so, how much more?