

Stat 11 with Prof. Suzy
Worksheet for Class 23

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.)

The different inferential procedures we have covered are

- A. One-sample t-procedures for a mean
- B. Two-sample t-procedures for comparing means
- C. Paired-sample t-procedures
- D. One-sample z-procedures for a proportion
- E. Two-sample z-procedures for comparing proportions
- F. Chi-square goodness-of-fit procedures
- G. Chi-square test for independence
- H. Chi-square test for homogeneity

1. Is hand washing (whether or not a person washes their hands) associated with contracting COVID-19 (whether or not they contract the virus)?

2. 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.

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

4. The manager of a company's human resource department examines employee attendance records to investigate whether more than 20% of employee sick days are taken on Fridays.

5. The manager of a restaurant wants to investigate whether playing different kinds of background music might 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, rock music, easy listening music, or no music in the background. Then he keeps track of how many parties order at least one item from the "daily specials" menu each night.

6. Are people equally likely to be born on any of the seven days a week? A random sample of people was taken to investigate the question.

7. 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.

8. A recent survey investigated whether American adults who have children are significantly more likely to play video games than American adults who do not have children.

9. 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 mid-2021 (after quarantine, hopefully).

10. Do male science teachers tend to receive higher salaries than female science teachers?