

Stat 218 - Day 37 Selecting Procedures

Now that we have learned many procedures for analyzing and drawing conclusions from data, one of the challenges is deciding which procedure to apply in a given situation. Some of the questions to ask yourself are:

- Is there only a response variable, or is there also an explanatory variable?
- Is the response variable quantitative or categorical?
- Is the explanatory variable quantitative or categorical?
- For categorical variables, are there two categories or more than two?
- When there is a quantitative response variable and a categorical explanatory variable with two categories, were the data collected in a matched-pairs or independent-samples design?

For more specific advice, see section 13.1 of the text. You might find the flowchart there to be especially helpful. Also see section 13.2 for many examples.

Some of the statistical inference techniques in this course include:

- A. One-sample t -procedures for a mean
- B. Two-sample t -procedures for comparing means
- C. Paired-sample t -procedures
- D. Chi-square goodness-of-fit procedures for binary (dichotomous) data
- E. Chi-square goodness-of-fit procedures
- F. Chi-square procedures for 2×2 two-way tables
- G. Chi-square procedures for (non- 2×2) two-way tables
- H. One-way ANOVA procedures
- I. Linear regression procedures

Practice:

Suppose that I record the following for each student enrolled in this class:

- gender
- major
- score on first exam in this course
- score on second exam in this course
- time spent sleeping last night
- handedness (left- or right-handed)
- political inclination (liberal, moderate, or conservative)
- time spent on the final exam in this course

For each of the following questions, indicate (by capital letter) which procedure is the appropriate one to address the question. Also record what the variables are in each setting and what type they are. Finally, record an explanation about how you arrived at your decision.

- a) Do the various majors differ with regard to average sleeping time?

- b) Is there an association between gender and major?

- c) Do students tend to score lower on the second exam than on the first exam?

- d) Are more than 10% of Cal Poly students left-handed?

- e) Are the three political inclinations equally represented?

- f) Is a student's score on the first exam useful for predicting his/her score on the second exam?

- g) Do male and female students differ with regard to the average time they spend on the final exam?

- h) Do the proportions of left-handers differ between males and females on campus?

- i) How much sleep did Cal Poly students get on average last night?