10.2 Using *t* Procedures Wisely

Read 644–648

When doing two-sample *t* procedures, should we pool the data to estimate a common standard deviation? Is there any benefit? Are there any risks?

> *Benefit: slightly more power due to slightly larger df. Risk, if equal variance condition isn't met, then the p-value can be quite a bit off.*

What about a two-sample test for a difference in proportions? Why do we pool for this test??

Should you use two-sample *t* procedures with paired data? Why not? How can you know which procedure to use?

Alternate Example: *Testing with distractions*
Suppose you are designing an experiment to determine if students perform better on tests when there are no distractions, such as a teacher talking on the phone. You have access to two classrooms and 30 volunteers who are willing to participate in your experiment.
(a) Design an experiment so that a two-sample *t* test would be the appropriate inference method.

(b) Design an experiment so that a paired *t* test would be the appropriate inference method.

(c) Which experimental design is better? Explain.

HW: page 658 (59–65, 67–70)