

23. **Pain.** Researchers comparing the effectiveness of two pain medications randomly selected a group of patients who had been complaining of a certain kind of joint pain. They randomly divided these people into two groups, then administered the pain killers. Of the 112 people in the group who received medication A, 84 said this pain reliever was effective. Of the 108 people in the other group, 66 reported that pain reliever B was effective.
- Write a 95% confidence interval for the percent of people who may get relief from this kind of joint pain by using medication A. Interpret your interval.
 - Write a 95% confidence interval for the percent of people who may get relief by using medication B. Interpret your interval.
 - Do the intervals for A and B overlap? What do you think this means about the comparative effectiveness of these medications?
 - Find a 95% confidence interval for the difference in the proportions of people who may find these medications effective. Interpret your interval.
 - Does this interval contain zero? What does that mean?
 - Why do the results in parts c and e seem contradictory? If we want to compare the effectiveness of these two pain relievers, which is the correct approach? Why?

(Use a calculator to find all these confidence intervals – not by hand and assume conditions for inference are met).

- 11. Teen smoking, part I.** A Vermont study published in December 2001 by the American Academy of Pediatrics examined parental influence on teenagers' decisions to smoke. A group of students who had never smoked were questioned about their parents' attitudes toward smoking. These students were questioned again two years later to see if they had started smoking. The researchers found that among the 284 students who indicated that their parents disapproved of kids smoking, 54 had become established smokers. Among the 41 students who initially said their parents were lenient about smoking, 11 became smokers. Do these data provide strong evidence that parental attitude influences teenagers' decisions about smoking?
- What kind of design did the researchers use?
 - Write appropriate hypotheses.
 - Are the assumptions and conditions necessary for inference satisfied?
 - Test the hypothesis and state your conclusion.
 - Explain in this context what your P-value means.
 - If that conclusion is actually wrong, which type of error did you commit?
- 13. Teen smoking, part II.** Consider again the Vermont study discussed in Exercise 11.
- Create a 95% confidence interval for the difference in proportion of children who may smoke and have approving parents and those who may smoke and have disapproving parents.
 - Interpret your interval in this context.
 - Carefully explain what "95% confidence" means.

29. **Intentional walk.** During the 2004 baseball season, San Francisco Giants' slugger Barry Bonds was such a dangerous hitter that many teams simply chose to walk him rather than throw him a pitch he could hit. Just before a series of games in New York, an analyst advised the Mets that they should pitch to Bonds. As evidence, he reported that thus far in the season the Giants had scored in 37 of 79 innings when Bonds was walked intentionally, but in only 107 of 298 innings when the opponents did not walk him. Does this provide evidence that teams should not intentionally walk Barry Bonds?