**BIO 206: Biostatistics Spring 2021**

Assignment 6: Questions from Chapter 6 "Hypothesis Testing"

(78 pts)

**Due Mon., April 19**

* Please type put your name and the number and title of the assignment on the first page.
* Make sure to answer every question within a problem.
* For practice problems, please write an answer in your own words before checking your answer against the solutions in the back of the book. Then, compare the solution to your answer. If your answer wasn't correct, don't change it--write about how the solution in the book differed from your answer and why it's correct. In other words, show evidence that you are thinking independently and learning. In this way, you can get full credit even if you originally didn't have the correct answer.
* Assignments turned in after the beginning of class are late, unless a person has an excused absence.

Chapter 6--Practice Problems

1) (3 pt) Explain

2 a and b (4 pt)

2c (3 pt) Here’s what the question is asking: If you did a statistical analysis and got a certain conclusion with alpha = 0.01, what would happen to your conclusion if everything stayed the same except that you changed alpha to 0.05?  What would happen to the probability of making a Type II error?

3 all (2 pt)

5 all (5 pt)

6 all (4 pt)

7 all (4 pt)

8 all (4 pt)

9 (3 pt)

11 all (10 pt)

Chapter 6--Assignment Problems

16 all (5 pt)

17 all (5 pt)

19 (2 pt) Hint: only one is true

20 (2 pt) Hint: only one is true

21 all (8 pt)

30b only (2 pt)

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Most cases of cervical cancer are linked to a few strains of the human papillomavirus (HPV). A vaccine (Gardasil) was developed against these HPV strains. Clinical trials followed young women 16 to 26 years of age after random assignment to groups receiving either vaccination or administration of a placebo. The trials followed the women for two to four years for signs of HPV-caused cervical cancer. Of 8460 women given Gardasil, none developed HPV-caused cervical cancer. In contrast, 53 of the 8487 women given a placebo did.

3a. (4 pt) State the most appropriate null and alternative hypotheses for this study. The default is that the statistical tests are two-tailed.

3b. (1 pt) What kind of study was this?

3c (3 pt) Could this study determine a causal relationship between treatment and cervical cancer? Explain.

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1. (2 pt) In your own words, explain what pseudoreplication is. (Covered in the textbook on p. 115-116.)

2. (2 pt) Give your own example of pseudoreplication that isn’t in the book.

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At the end of your paper, please write “Number of hours I spent on this homework:” and add an estimate. Don’t include time that you spent reading the chapter. This number won’t affect your grade.