BIO 206 Spring 2021

Assignment 11—Questions from Chapter 9 “Contingency Analysis: Associations between Categorical Variables”, Part II

**Due Mon, May 10, 11:59 pm**

(20 pt)

* Please type your final answers to the problems on the main pages of your assignment. After the pages with typed answers, attach handwritten pages showing your calculations. On the pages of calculations, clearly indicate the problem numbers and final answers. For calculations using a contingency analysis, include a table of observed values, your calculations for expected values, and a table of expected values, on the handwritten pages. Don't use computers for the analyses unless the directions say to use Vassarstats.
* Directions for reporting results of statistical tests---on the typed pages, report:

--n (sample size)

--degrees of freedom

--alpha (Threshold level of significance. Decide on the value before doing the statistical test. The default is to test at alpha = 0.05, meaning at the 5% significance level.)

--the name and value of the test statistic (Example: X2 value = 0.55)

--p-value (from a table of critical values in the back of the textbook)

--Describe your conclusion in a sentence.

Example 1: “Births are not evenly distributed over the days of the week.”

Example 2: “The proportion of wild-type flies was significantly greater than expected by the 3:1 ratio.”

Example 3: “The proportions of people who are interested in each of the five areas of psychology are significantly different.”

The word "significantly" means that you did a statistical test and p < 0.05 (or whatever alpha was.)

* 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.
* Please type and staple and put your name and the number or title of the assignment on the first page. Print and hand in during class. If you miss class or need to turn in a late assignment, upload your assignment to Dropbox on D2L.
* Correction to chapter 12, p. 328. Treatment is a categorical variable and salamander number is a numerical variable.

Chapter 9 Assignment problems:

18a (4 pt) show your work. You don't have to finish the statistical test, just calculate expected values.

18b (3 pt)

18c (3 pt) Hint: what kind of study was this? Manipulative, prospective, or retrospective?

28 (2 pt)

31 (2 pt)

35b (4 pt) Test the hypothesis using the test of independence at Vassarstats.net online. Report elements listed in the directions above.

**Directions for Vassarstats.net for contingency table:**

Follow the pathway: Frequency Data>>scroll down the page to “Chi-square, Cramer's V, and Lambda” and click on it >> Enter the numbers of row and columns. Enter the actual numbers observed (not percentages) in “Data Entry”. Report each of the elements of a statistical test that are listed in the directions at the top of this page. If df = 1, then report the corrected value of chi-square.

Problem (not in the book):

1 (2 pt) What kind of variables does the test of independence/contingency test require? (See bottom of p. 243 or lecture notes.)

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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.