Statistics 659 - Assignment 6
(due Wednesday, March 9, 2016, 11:59pm)

Instructions:

- Whether you write out the solutions by hand or in a text document, be sure that they are *neat, legible and in order* (even if you choose to solve them in a different order).
- **Type** your name, email address, course number, section number and assignment number at the top of the first page (or cover page).
- Either scan or print your solutions to a **PDF** file under 15MB in size. It must be in a *single* file, not separate files for separate pages. Name the file using your name (for example, I could use twehrly659hw01.pdf) to avoid confusion with other students and/or assignments. *Do not* take a photo of each page and then paste them into a document – this will make your file too big and the results will generally not be very readable anyway.
- Login to your WebAssign account to upload your file. You must do this by **11:59 pm U.S. Central time**, *according to the WebAssign server*, on the due date. We highly recommend that you start the upload at least 15 minutes earlier. You can make multiple submissions but *only the last submission will be graded*.

This assignment covers the material in Chapter 4 discussed in Lectures 17 through 20.

4.1, 4.2, 4.5, 4.7, 4.8, 4.9

4.15 Before answering parts a., b., and c., answer the following part d.
d. Use logistic regression to carry out a likelihood ratio test for equality of odds ratios between race and merit pay for the five districts. Compare the results of this test to the Breslow-Day test.

4.16, 4.17, 4.19, 4.22, 4.24, 4.30 (1/2 page should be long enough).

Additional Problem:
1. Analyze the data in Table 7.23, p. 237, using logistic regression to analyze sets of 2×2 tables.

(a) Report the conditional odds ratios for each department and their 95% confidence intervals.

(b) Perform the tests using logistic regression equivalent to the Cochran-Mantel-Haenszel and Breslow-Day tests. Write down their null and alternative hypotheses and interpret the results.

(c) If you delete the data for Department 1, do you think a common odds ratio is reasonable? If so, report an estimate for the common odds ratio using computer output and report a 90% confidence interval for this quantity.

(Only for students having taken STAT 414, 610, 630, or another mathematical statistics course) 4.34, 4.35