

Statistics 659 - Assignment 5
(due Wednesday, February 24, 2016, 11:59pm)

Instructions:

- The textbook exercises are in the book by Alan Agresti. This assignment covers material from Lectures 12–15.
- 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*.

3.11, 3.12, 3.13, 3.14, 3.15, 3.17, 3.18, 3.19, 3.20

Additional Problems:

1. Use the `ods select` statement in `proc genmod` to obtain summary measures of fit for the 16 possible Poisson regression models for the crab satellite data. The response is `satell`. The explanatory variables are `color`, `spine`, `width`, and `weight`. Do not consider interaction terms. Be sure to treat `color` and `spine` as class variables. On the basis of these summary measures, recommend one or more models that seem to be most appropriate for the data.

2. Refer to the horseshoe crab data of Table 3.2. In problems 3.13 and 3.14 you fit a Poisson regression model and a negative binomial regression model, respectively. Fit each of the four following models on this data set. Then use AIC to choose the best fitting model out of the six models including the two models fit previously and the four following models:

- (a) Zero-inflated Poisson regression model with weight in the zero model.
- (b) Zero-inflated Poisson regression model with intercept only zero model.
- (a) Zero-inflated negative binomial regression model with weight in the zero model.
- (b) Zero-inflated negative binomial regression model with intercept only zero model.

(Only for students having taken STAT 414, 610, 630, or another mathematical statistics course) 3.21