

STAT 442
Sept. 4, 2008

Assignment 1

Due: question 1 is due in lecture, Tuesday, Sept. 16. Question 2 is deferred to assignment 2.

Note: Do not attach "raw" computer output. Relevant components of the output should be incorporated in the main body of your assignment solutions. Be sure to answer the questions in complete sentences.

Late policy: Late assignments will not be accepted except in cases of genuine emergency. In calculating the final course grade, the final examination score will be substituted for any missing assignment grades, i.e. the weighting scheme will be altered on an individual basis to allow for missing assignments.

1. Refer to the analysis of the tornado data provided in the course text in Chapters 2 and 3. Similar data (downloaded from www.spc.noaa.gov) for the years 2000-2004 can be found in a comma delimited spreadsheet file on the course website. The file contains data on 6419 tornados with the following fields by column number:

Column	Contents
1	Unique identifier
2	Year of tornado
3	Month (integer)
4	Day of month (integer)
5	force Scale category (killer tornados are defined by values 3 or higher)
6	number of deaths attributed to tornado

a. Re-organize the data (see note on web page) to conduct an analysis similar to that provided in Chapter 2. In particular, after initial plotting of the data, fit a main effects model in the form provided on pages 39 and 41 of the text.

b. Re-code the month variable to combine the non-tornado months (Jul-Dec). Fit this model and conduct a significance test to compare this model with that fitted in part a. State the hypothesis being tested in terms of the parameters of the model in a.

c. Using the month variable in the reduced form from b, produce a table in the format of table 3.2(c) page 48. (last three lines of the table).

This question is now part of assignment 2, which will be due Sept. 30th

2. Refer to exercise Chapter 2, exercise 2 (page 26) and Chapter 4, exercise 11 (page 106).

- a. Provide solutions to both exercises
- b. Conduct goodness of fit tests for the Poisson assumption using the Pearson and likelihood approaches.