Statistics 630 - Assignment 2

(due Wednesday, September 17, 2014, 11:59 pm)

Instructions:

- The textbook exercises are in the book by Evans and Rosenthal. This assignment covers material from Chapters 1 and 2 discussed in Lectures 04–06.
- 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 twehrly630hw01.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*.

Answer the following problems from Chapter 1:

1.5.7 Use the situation in Problem 1.5.7 to answer the following parts:
(a) Suppose that the batter hits a home run. What is the conditional probability that he was thrown a curve ball?
(b) Suppose that the batter does not hit a home run. What is the conditional probability that he was thrown a curve ball?

1.5.9, 1.5.13, 1.5.14, 1.5.18abc (after working this problem, read problem 1.5.21)

Answer these additional Problems from Chapter 1:

Problem A: If a parent has genotype Aa, he transmits either gene A or gene a to an offspring (each with probability 1/2). The gene he transmits to one offspring is independent of the one he transmits to another. Consider a parent with three children and the following events:
B=children 1 and 2 have the same gene
C=children 2 and 3 have the same gene
D=children 1 and 3 have the same gene
Show that all these events are pairwise independent, but not mutually independent.

Problem B: (Problem 1.5.22) –the problem is in **Assignments**.

Answer the following problems from Chapter 2:

2.1.5
2.1.5 (b) Show that $I_{A\cup B} = \max\{I_A, I_B\}$.
2.1.5 (c) Show that $I_{A^c} = 1 - I_A$.

2.1.8

2.2.4

2.3.4, 2.3.8, 2.3.10, 2.3.13, 2.3.14
2.3.15 (change the wording of part b to "What is the probability that the player obtains the first basket on the tenth throw?", change the wording of part c to "What is the probability that the player obtains the second basket on the tenth throw?")

2.3.18