Lab 4 - January 30, 2017

Exercise 1: FG% for Kobe Bryant's Career
Use the dataset KobeBryantStats.csv to analyze the Field Goal Percentage for Kobe Bryant across his career. Do this analysis both independently on each year, as well as a cumulative analysis in which each successive year's posterior comes from all data from the current year and before.
Use an appropriate data model and for this problem assume we want to be non-informative with the prior.

- Make inferences about the trajectory of Kobe's career (at least as far as shooting percentage can tell you).

- What is the probability that Kobe had a higher 'true shooting percentage' in his prime than he did in his first year in the league?

Code for this problem is available in the KobeBryant.R file.

Exercise 2: Point Differential vs. the spread: Is there a bias?
For this problem, look at the football scores dataset available with the LearnBayes package. For simplicity here, assume that score differential of an NFL football game is $N(\mu, \sigma^2)$ where μ is the unknown mean parameter and σ^2 is fixed at 13 for this example.

We would like to know if the Vegas spread for NFL games is a good predictor of the actual score. In this circumstance I mean that the Vegas spread is accurate (we aren't looking at precision yet). In other words, is the average difference between the true spread and the Vegas spread 0?

Use a conjugate analysis to investigate this question.

Code to do so is available in the Lab4FootballScores.R file.

The answer to this question is pretty obvious in this case. What would be a better question to answer about the difference between the actual and Vegas spreads?