ST495/590 – Assignment 9 – Due 4/18

1. In this assignment you will perform hierarchical Bayesian analysis of the growth curves data described in

   Erickson et al. (2004). Gigantism and comparative life-history parameters of tyrannosaurid dinosaurs

   (1) Download the data from Table 1 and reproduce Figure 2 (sans cheesy dinosaurs).

   (2) Describe and fit a separate model for each species, plot the estimated growth curves (with uncertainty), and report the estimated (with uncertainty) mean body weight at age 30 for each species.

   (3) Describe and fit a hierarchical model for all species (but with each species having a different growth curve), plot the estimated growth curves (with uncertainty), and report the estimated (with uncertainty) mean body weight at age 30 for each species.

   (4) Which model (separate or hierarchical) fits the data better? Justify your choice. What are the advantages and disadvantages of each approach.

2. Read

   https://en.wikipedia.org/wiki/History_of_statistics#Bayesian_statistics.

   Define "subjectivist statistician" and discuss in 2-3 sentences why you do or do not fall in this camp.

You should turn in your responses to these questions in 2 pages (i.e., one piece of paper with text on both sides). You should also turn in a separate file with carefully commented code. Only output in the 2 page document will be graded. Please staple both documents together!