Homework assignment #2

PLS 298 Applied Stat Modeling

F2019

1. Using the Char Height data set from class (char\_with\_fake.csv), construct a model with random effects for these data, using CharHt as the response variable. Assume that Transect is the only relevant grouping factor, and that Slope (of the topography) and Diameter (of the trees) are the only available predictors. In reporting about the model please include:

* a) A brief explanation of how you chose variables, and which (if any) you decided to allow to vary by group (Transect).
* b) An assessment of how much variation there is in the group-level random effects.
* c) A brief assessment of how well your selected model fits the data.

2. Get data on performance scores for pairs figure skating in the 1932 olympics (from <http://www.stat.columbia.edu/~gelman/arm/examples/olympics/olympics1932.txt>). This is formatted for R as “olympics.csv” on Smartsite in the homework folder.

(An aside: to convert a table like the one at that website, you can use the function reshape(), specifying direction=”long” and “varying” as the columns you want turned into long form, here the various judge columns)

Let’s assume the question is: which is the bigger source of variation in the scores for skating programs, the judges or the skating pair? Fit a mixed model for these data with “score” as the response variable, and random effects for judge and skating pair (“judge” and “pair”). Interpret the results (coefficients and their standard errors, standard errors of the random effects). Is there a judge that tends to give consistently higher scores?