IYSE 6420 Fall 2020 Homework5

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1. Paddy Soil Adhession.

Pan and Lu (1998) provide measurements of adhesion on 43 pairs of samples of paddy soil to steel and rubber. From 1974 to 1983, during the rice-growing season, the adhesion of soils to steel and to rubber were measured in situ simultaneously in paddy fields in South China. As steel and rubber have long been the most important mate- rials used for wetland running gears such as wheel and track, it is expected that the adhesion to them would be roughly the same. The adhesion was measured with an adhesometer.

Data set paddy.dat has two columns: (1) adhesion to steel, and (2) adhesion to rubber. Both measurements are given in kPa.

(a) Fit the linear regression model where the response variable y is adhesion to rubber. Report the parameter estimates and Bayesian R2

(b) What adhesion with rubber do you predict in paddy soil for which adhesion to steel was 2. Find 95% credible set for a single predictive response.