

Statistical Methods II: Week 8 Assignment (due 17 March, 2025)

1. The data set `leprosy` available in the R package `lmreg` (taken from Senedecor and Cochran, 1967) contains pre- and post-treatment scores on abundance of leprosy for patients receiving treatments A, D or F (Placebo). Fit a regression model for the post-treatment score on the treatment regarded as a ‘factor’ with three levels, and plot the residuals against the pre-treatment score.
2. For the data set of Question 1, fit a regression model for the pre-treatment score on the treatment regarded as a ‘factor’ with three levels, and plot the residuals of Question 1 against the residuals of this regression. [This is called a partial regression plot.]
3. Find the partial correlation between the post-treatment score and the pre-treatment score.
4. Compare the partial correlation of Question 3 with the correlation between the two variables. Do you expect the observed order between the two correlation to prevail in other data sets too?
5. Obtain the partial regression of the post-treatment score on the pre-treatment score, and comment on the regression coefficients.