MULTIVAR STATS IN ECOL AND GENETICS — EXERCISES

1. The file abcdx.txt contains four factors A, B, C, D and one numerical variable X. How does X depend on the four factors?

2. The file transform.txt contains measurements Y1-Y5 of 5 different physilogical parameters for 80 patients from 8 different treatment groups. Perform an ANOVA for each parameter Yi to assess how it depends on the treatment. Rescale each Yi in an appropriate way to get (approx.) normally distributed residuals.

3. Try to find a probability distribution for which the p-values given by the non-parameteric Kruskal-Wallis test are clearly more reliable than the p-values given by the ANOVA. Hint: R offers random generators like rnorm(), rpois(), rcauchy(), rbinom(), rgamma() for various distributions. You can also transform and combine their outputs.

4. Perform simulations to assess the sensitivities of the Kruskal-Wallis test and the ANOVA, i.e. how probable is it that the tests indicate significance when the responsevariable depends on the factor?