

Chapter 1: Simulation

In order to get a feeling how results of an ANOVA procedure for a one factor model can look like, experiment with with function. It generates a data.frame and plots the resulting data.

Create a data frame using equal means, so 'under the null hypothesis' and compare this to the results of an experiment with different means.

The two factor model can be treated by creating a similar code.

```
genOneWay <- function (levels=c("A", "B"), J=10, means=c(12,15), sd=1)
# Generates data frame according to one-way anova model with
# given factor levels, number of replications and group expectations.
# Then length of levels should be equal to the length of means
I <- length(levels)
n <- I*J
treatment <- rep(levels, each=J)
yield <- numeric(n)
for (i in 1:I)
yield[((i-1)*J+1):(i*J)] <- sd *rnorm(J)+ means[i]
data.frame(treatment, yield)
```

```
dat <- genOneWay()           #generates data according to the model with default parameters
plot(yield~treatment, data=dat)      # plot boxplot of measurement of each level
dataov <- aov(yield~treatment, data=dat) # perform analysis of variance
model.tables(dataov)           # table of effects
model.tables(dataov, type="means")  # table of means
summary(dataov)               #ANOVA table
par(mfrow=c(2,2))
plot(dataov)
```