

Exercises for the course
“An introduction to R”

Exercise session Basic Statistics with R: Thursday - March 12, 2020

Exercise 1: *Drosophila cold shock*

Download the data file `ccrt.txt` from the web page. This file contains the chill coma recovery times (CCRT: time the flies need to recover after a certain time spent at freezing temperature) for two populations of *Drosophila ananassae* from Bangkok (BKK) and from Kathmandu (KATH).

- Read the data into the variable `data.ccrt`.
- Calculate the sample mean and the sample standard deviation of `ccrt`.
- Calculate the sample mean and the sample standard deviation for the two subvectors of `ccrt` corresponding to flies from Bangkok and Kathmandu, respectively.

Are these two means significantly different? Choose a suitable test and justify its usage.

Exercise 2: *Heartbeats again*

Recall `heartbeats.txt`. Now, you can finally test whether the weight increase is significantly different in the two groups.

Do the test for the whole dataset and for each weight class separately. What is your conclusion?

Exercise 3: *Response to an attack*

The common red spider (Bohnen-spinnmilbe) is a vermin of agricultural plants to which plants react with the production of toxic substances. Do plants “remember” a former attack? Two groups of each 20 cotton plants are being infected with the mite. One group has never encountered this mite before. The second group has already survived a former attack. After a certain time, the mites on the plants are counted. You find the result in the file `mite.txt` on the web page. Is there a significant difference between the two groups? Compare the two groups visually (produce an appropriate plot) and apply a suitable test. Formulate an answer!

Solutions and questions: We will correct these exercises at 3:30 pm in room B01.019. The solutions are also already online.

Today is also your last chance to ask questions about any topic seen during the last two weeks.

Good luck for the exam!