Statistics for biologists/BIOS14 2022

FINAL EXAM

You can work on this exam between the 30.12.2022 at 0900 and the 13.01.2023 at 1600. You submit via Canvas.

The exam comprises two parts, each counting 50% of the final score. Each part includes the analysis of a dataset, for which you will choose your own research questions that can be answered through statistical analysis of the available data.

Your report should be maximum 5 pages + an Appendix including the (clean and annotated!) analysis code

We will evaluate the reports based on the following points

a. Formulation of research question(s) (10%)
b. Choice, justification and presentation of the analysis methods (20%)
c. Presentation of results in text (20%)
d. Presentation of results in figures/tables (20%)
e. Interpretation/conclusions (20%)
f. Clarity of analysis code (10%)

If you have any (technical) questions, please write an email to all three of us and we will respond as quickly as possible (Øystein is in the field from the 4th of January and only partly available).

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Good luck!

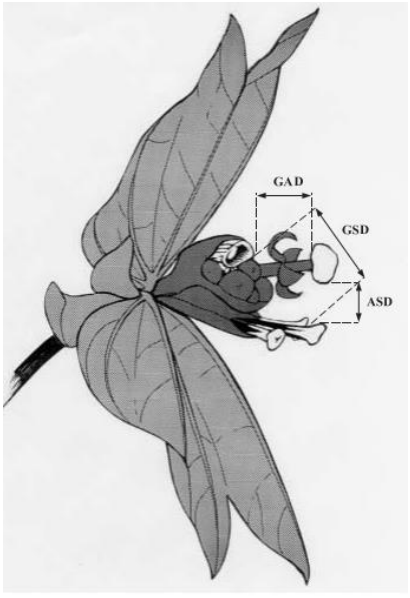
Part 1

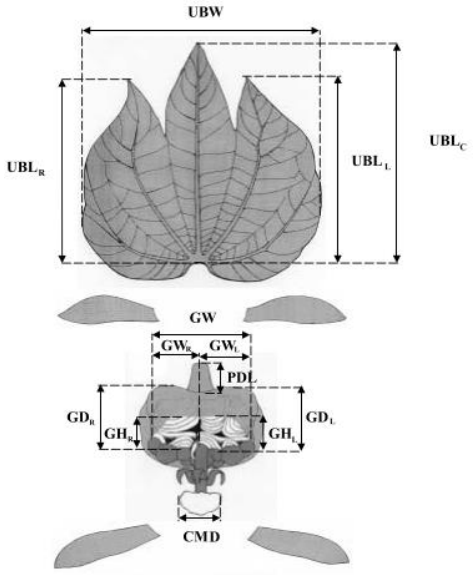
The following data are from an experiment in which *Dalechampia* plants from two populations each of two species ("S" and "L") were exposed to either dry or wet experimental conditions in a greenhouse. Blossom traits were measured on blossoms in early bisexual condition. The data comprise the following variables:

table = Which table in the greenhouse
pop = Population ID
sp = Species ID
treat = Treatment (Dry/Wet)
plant = Plant ID
GAD = Gland-anther distance in mm
ASD = Anther-stigma-distance in mm
GSD = Gland-stigma distance in mm
GA = Gland area (square root of gland width * gland height in mm)
UBW = Upper bract width in mm
UBL = Upper bract length in mm
LBW = Lower bract length in mm
LBL = Lower bract length in mm

The following line will read the data (adjust the file path to where you keep the data file):

```
dat = read.csv("exam2022_part1.csv")
```





Part 2

The following dataset comprise measurements of horn length and body mass of mountain goats. The data include the following variables:

Sex: M/F
date: hunting date
hornL: length of the left horn in mm
hornR: length of the right horn in mm
season: hunting year
month: hunting month
day: hunting day
yr: hunting year
daynr: day number from January 1st
age: age when killed
cohort: birth year
mass: body mass in kg
density: population density at birth, low / high

The following line will read the data (adjust the file path to where you keep the data file):

```
dat = read.table("exam2022_part2.txt", header=T)
```