Hands-on Biostatistics 2021

Group Hands-on Project

15/7/2021

Data description

For the hands-on project we will be using a simulated dataset related to Multiple Sclerosis (MS) patients (ms_data.csv). The dataset contains data for 25 patients with MS. The outcome studied here is the the Expanded Disability Status Scale (EDSS). The EDSS scale ranges from 0 to 10 and is based on an examination by a neurologist. A scale 0 indicates normal condition. A high value indicates high dissability progression, with 10 indicating death due to MS. A detailed description of EDSS can be found here: http://www.nationalmssociety.org/nationalmssociety/media/msnationalfiles/brochures/10-2-3-29-edss_form.pdf.

We will consider data for the EDSS measured at first visit and last visit (interval of 6 years). Covariates that were believed to influence EDSS scale are age, MS type and gender.

Data file

File in drive: ms_data.csv

- Variables:

1. ID: patient id

2. Gender: (male; female)

3. Age_first: age of patient at baseline, numeric

4. MS_type: Type of MS (RRMS; SPMS; PPMS) See more here https://www.mssociety.org.uk/about-ms/types-of-ms

5. edss_first: EDSS measured at first visit

6. edss_last: EDSS measured at the last visit

Assignment

Of key interest is to study:

1) Whether the average EDSS has changed from the first visit to the last visit

2) Whether the average EDSS at the last visit is different for male and female patients

3) Whether the average EDSS at the last visit is different for patients with different MS type.

4) Whether age is related to EDSS at the first and the last visit.

Note that you should support each research question with a statistical analysis performed in R (use this notebook) which is appropriate for your data.

Remarks

- For each question, motivate your choice of techniques, estimation methods, assumptions you make, and describe possible, problems.

- For each of the above questions, summarize your conclusions and document them as a report to a clinician.

- Work and document your project in an R Notebook (you will find this in classroom) and submit it via group Classroom before July 17, 2021.

Good luck!