The E-learning System for Linear Models; The >eR-Biostat Initiative for Developing Countries

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The >eR-Biostat Initiative

One of the main problems in high education at a master level in developing countries is the lack of high quality course materials for courses in master programs. The **>eR-Biostat** initiative is focused on masters programs in Biostatistics/Statistics and aims to develop a new E–learning system for courses at a master level.

The >eR Learning System

The **>eR-learning system**, developed as a part of the **>eR-Biostat** initiative, offers free online course materials for master students in biostatistics/statistics in developing countries. For each course, the materials are publicly available and consist of several types of course materials:

- Notes for the course.
- Slides for the course.
- R programs, ready to use, which contain all data and R code for all examples and illustrations discussed in the course.
- Homework assignments and exams.

The >eR courses

The courses are organized in three clusters:

Introductory courses: these courses do not aim to cover new topics in statistics but to train new master students to use R for data analysis:

- Introduction to R.
- Basic concepts in exploratory data analysis and computational statistics.
- Introduction to statistical modeling using R.

Core (I): consists of basic courses in biostatistics at a master level:

- Linear Models.
- GLM.
- Non Parametric Statistics
- Survival Analysis.
- Introduction to Bootstrap.

Core (II): consists of advanced courses in biostatistics at a master level:

- Longitudinal data analysis.
- Multivariate analysis.
- Bayesian Analysis.

We >eR a community

We are a community of both students and teachers in developing countries and teachers in developed countries. Our aim is to provide high quality, R-based, materials for curriculum (credit) courses in master programs in statistics. Interested to join us and to contribute a course? contact us by email

erbiostat@gmail.com

The >eR-learning System for the Linear Models Course

The linear model course is based on the book **Practical Regression and ANOVA using R** by **Julian J. Faraway** which is available online (in **CRAN website**). The course is developed as a master level credit course and consists of 9 classes, each of three hours. The course combines theory and application using R. Topics covered in the course include:

- Simple linear regression.
- Multiple linear regression.
- Least squares and generalized least squares.
- Estimation.
- Inference.
- Variable selection.
- Lack of fit tests.
- Transformations.
- Model diagnostic.

Homework assignments and an example of an exam are available as well. All course materials are publicly available online in:

GitHub: https://github.com/eR-Biostat

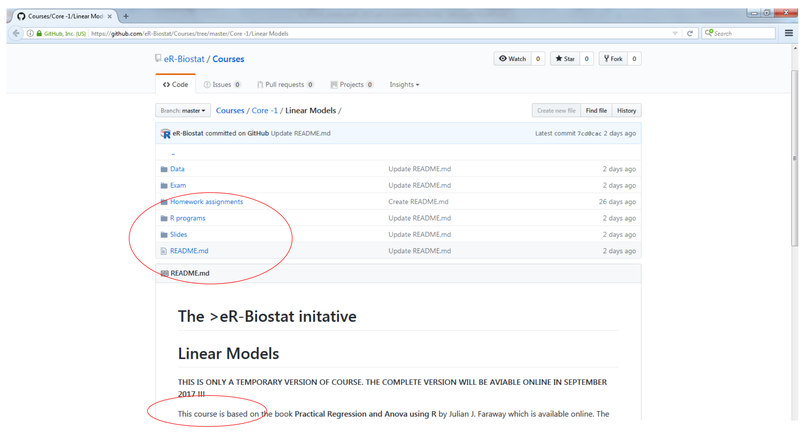

Figure 1: Course materials developed for the linear model course.

Example of slides/R programs is shown in Figure 2. The complete course will be available online in October 2017.

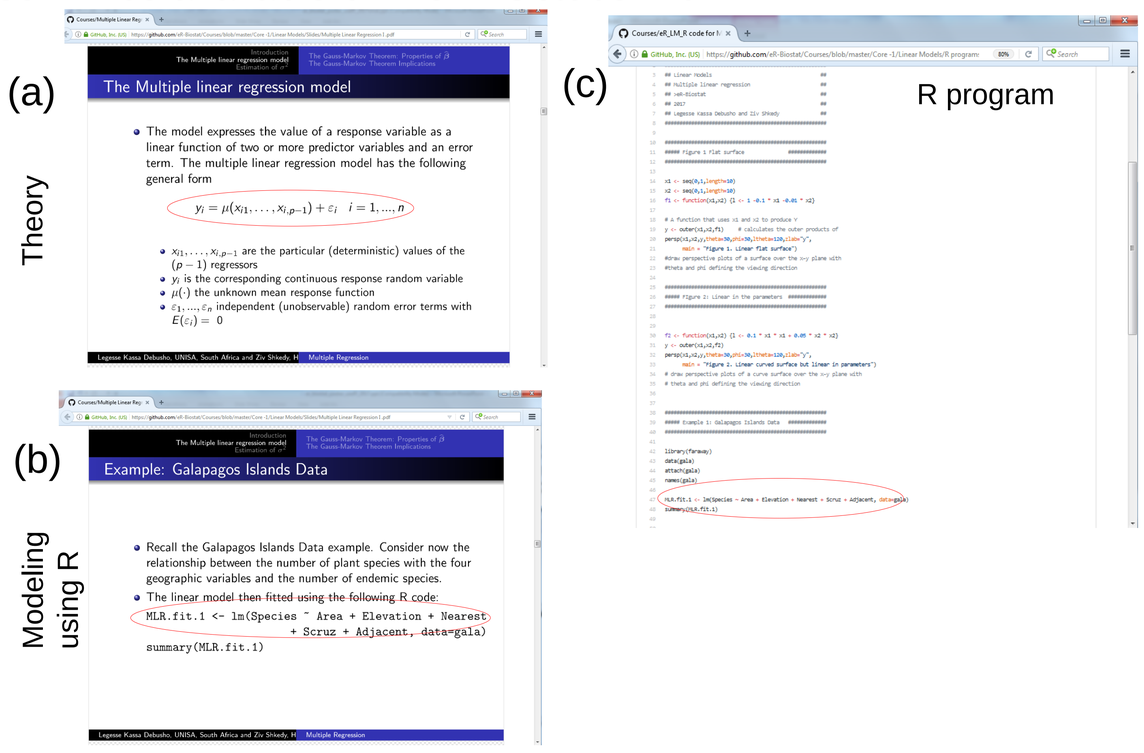

Figure 2: Panel a: an example of a slide about multiple linear regression.
Panel b: an example of a slide with a specific R implementation.
Panel c: an example of an R program for multiple linear regression.

E-learning system using R
Biostatistics

GitHub: https://github.com/eR-Biostat

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