The >eR-Biostat initiative

Making R based education materials in statistics accessible for all

We a community: the >eR-Biostat initative

Ziv Shkedy
Hasselt University, Belgium & Gondar University, Ethiopia

4th PhD week in Gondar University, Ethiopia
28/08/2017-31/08/2017

Visit us on Facebook ER-BioStat
GitHub https://github.com/eR-Biostat
Email: erbiostat@gmail.com
twitter @erbiostat

The >eR-Biostat Initative

- >eR-Biostat = E-learning system using R (biostatistics)
- Leading team:
  - Ziv Shkedy (Hasselt University, Belgium).
  - Khangelani Zuma (HSRC, South Africa).
  - Legesse Debusho (University of South Africa, UNISA).
  - Adetayo Kasim (Durham University, UK).
  - Tadesse Awoke (Gondar University).
  - Kassahun Alemu (Gondar University).

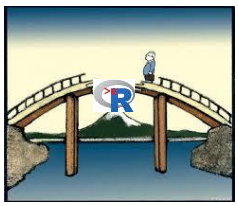
The >eR-Biostat Initiative

- The >eR-Biostat Initiative aims to:
  - Develop accessible course materials in biostatistics/statistics.
  - Focus on **all education levels**: undergraduate & master programs.
  - Bring students and teachers costs to minimum by providing free, high quality and applied course materials.
  - Increase usage of R.

We R a community

- Building a bridge between two communities:

Academic staff and students in the south.



Development of E- learning capacity using R.

Academic staff in the north.

The >eR-Biostat Initiative: general idea

- The main idea:
  - Development of online, publically available and free martials at all education levels.
  - All materials available to download without password.

- Focus on all education levels:
  - Introductory courses: for all students (statisticians and non statisticians).
  - Undergraduate courses: for undergraduate/master students in statistics.
  - Core courses: for students at a master level in biostatistics/statistics.

A typical course structure

- Applied approach: link with software so students can implement the methods from the class.
- Focus on R.
- A typical course materials:
  - Slides.
  - Set of R program for all the examples in the slides.
  - Datasets (if not included in R).
  - Home works assignments.
  - Example of Exams.
  - YouTube tutorials.

All available online in a GitHub page.

Courses and time line

- Introductory courses:
  - Introduction to R. **online**
  - Introduction to statistical modeling using R.
    - Introduction to Regression models using R.
    - Introduction to ANOVA models using R.
    - Introduction to logistic regression using R.

    } **online**

- Developed for non statisticians with basic knowledge of statistics and R.
- Aim:
  - Develop skills in data analysis using R.

Courses and time line

- Undergraduate courses:
  - Linear regression using R.
  - Basic concepts in exploratory data analysis and statistical computing using R.
  - Basic concepts of statistical inference using R (I).
  - Basic concepts of statistical inference using R (II)-available as online course only.

  } **online**

- Developed for undergraduate/master students in statistics.
- Aim:
  - Develop skills in data analysis using R.
  - Advance usage of the R software.
  - New methodology for EDA.
  - Basic programing in R.

Courses and time line

- Core (I):
  - Linear models.
  - GLM.
  - Non Parametric.
  - Analysis of categorical data:
    - Analysis of binary data. **online**
    - Log-linear models.

Will be available online during 2017/2018.

- Developed for master students in statistics.
- Aim:
  - Complete courses at a master level.

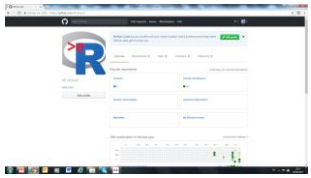
Courses and time line

- Core (II):
  - Longitudinal data analysis.
  - Multivariate analysis.
  - Bayesian analysis.
  - Resampling based methods.
  - Survival analysis.
  - More…

We a community

The community online:

GitHub



https://github.com/eR-Biostat

- GitHub page with course materials .
- Information about activities.

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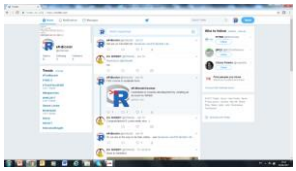
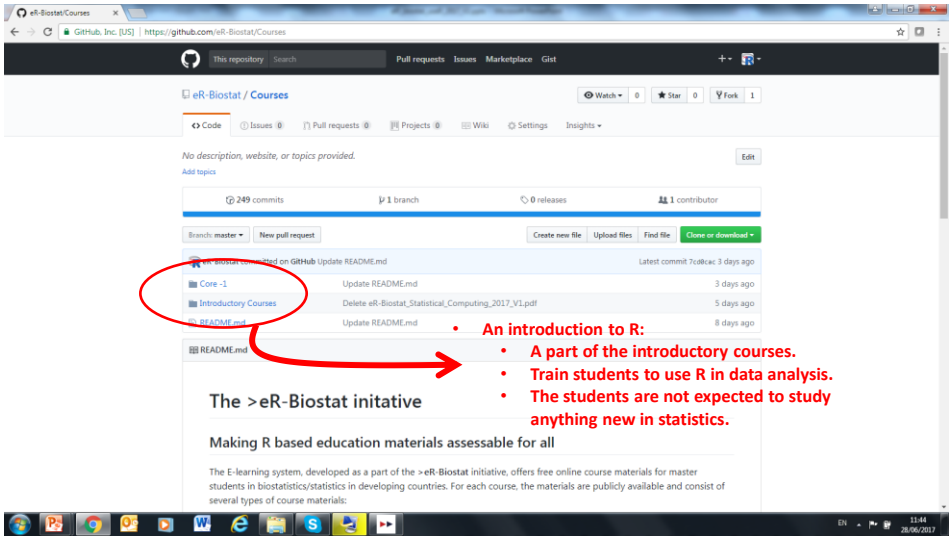


@erbiostat

- Communication teachers/students in the south.
- Information about course materials.
- Information about activities.

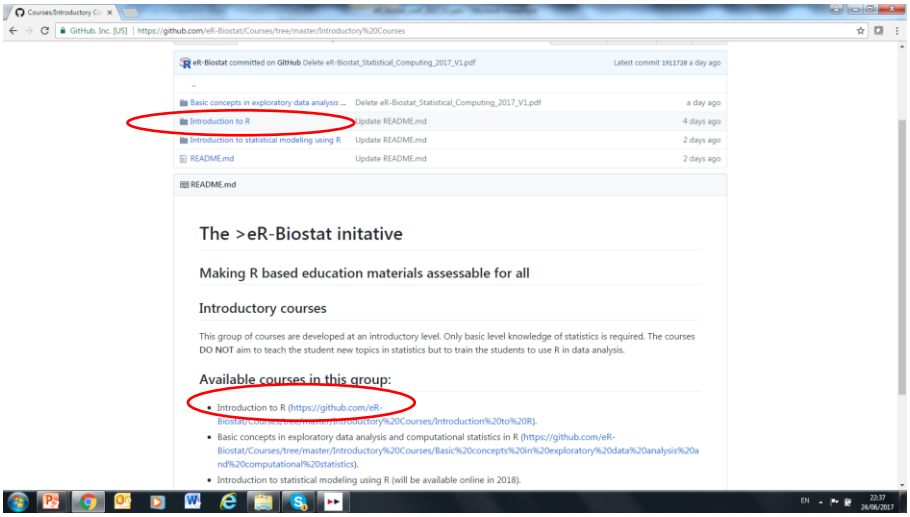
Example of a course: An introduction to R

- Online course materials :



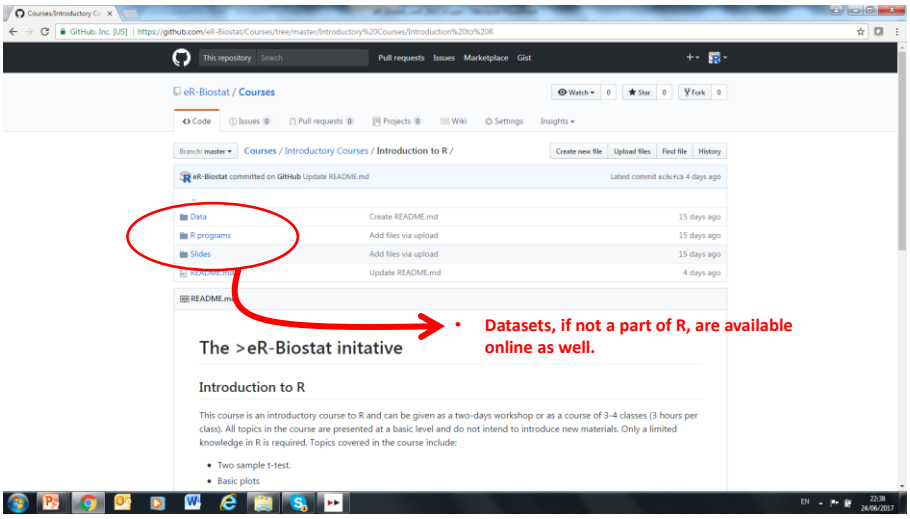
Example of a course: An introduction to R

- A part of the introductory courses:



Example of a course: An introduction to R

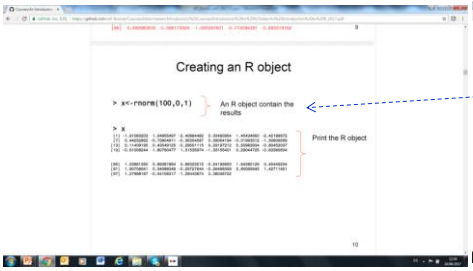
- Online course materials :



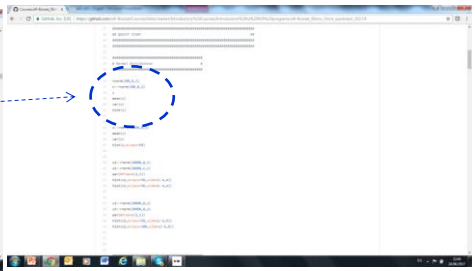
- **Datasets, if not a part of R, are available online as well.**

An introduction to R: slides and R program

Example of a Slide



R program



- All materials in the slides are reproducible using the code in the program.

Usage of courses materials

The community online:

GitHub

https://github.com/eR-Biostat

- GitHub page with course materials .
- Information about activities.

- Accessible to everybody.
- Independent usage of course materials by academic staff in the south.
- Taring workshops.

Courses materials for core courses

- For the core courses:
  - Core (I):
    - Linear models.
    - GLM.
    - Binary data and log nilar models.
    - Non Parametric.
    - Survival analysis.
  - Core (II):
    - Longitudinal data analysis.
    - Multivariate analysis.
    - Bayesian analysis.
    - Resampling based methods.
    - More…

- Online materials include:
  - Slides.
  - Set of R program for all the examples in the slides.
  - Datasets (if not included in R).
  - Home works assignments.
  - Example of Exams.

To setup the course level

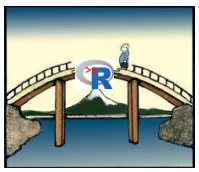
Master level courses

We a community

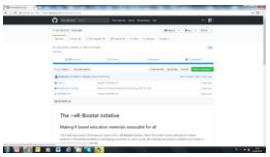
- Capacity building in statistics education (at all levels) via community building.
- Target departments, i.e. undergraduate & master programs.

Credit courses as a part of the curriculum of the master program in the south.

In the long run: Independent usage and NOT short courses format.



>eR-Biostat courses



Introductory courses.
Linear models.
GLM.
Non Parametric.
Survival analysis.
Longitudinal data analysis.
Multivariate analysis.
Bayesian analysis.
More…

Who do we support ?

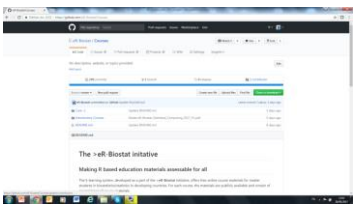
- Students in statistics: all levels.
- Students in other disciplines: all levels.
- Academic staff : all levels.

- Main concept:
  - Download and use in class.
  - No password protected.
  - Use as a complete course (i.e., a credit course within a program curriculum) or as a part of existing course.

We a community

- Partner universities in the south:
  - Gondar University, Ethiopia:
    - Master in Biostatistics.
- ….

GitHub



- Training events: >eR-Biostat workshops in partner universities (for both students and academic staff).

The >eR-Biostat initiative

E-learning system using R

Biostatistics

Thank you veRy much !!

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