

The >eR-Biostat initiative
Making R based education materials in
statistics assessable for all

BRUSSELS
useR!
2017!

We  a community: the >eR-Biostat initiative

Ziv Shkedy

Hasselt University, Belgium & Gondar University, Ethiopia

useR!, 2017, Brussels, Belgium



ER-BioStat

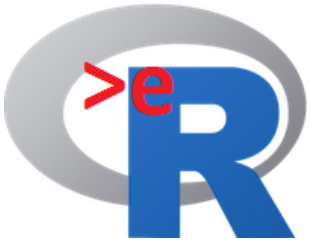
Email: erbiostat@gmail.com



<https://github.com/eR-Biostat>

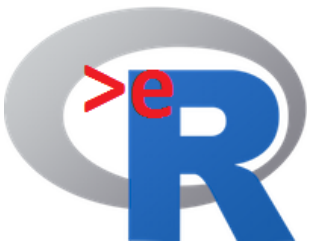


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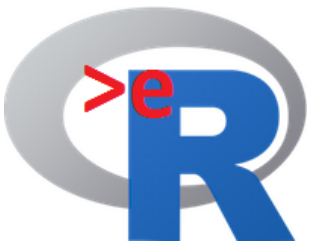
The >eR-Biostat Initiative

- >eR-Biostat = E-learning system using R (biostatistics)
- Joint work with:
 - Nolen Joy Perualila (Hasselt University, Belgium).
 - Ziv Shkedy (Hasselt University, Belgium).
 - Khangelani Zuma (HSRC, South Afrika).
 - Legesse Debusho (University of South Africa, UNISA).
 - Adetayo Kasim (Durham University, UK).



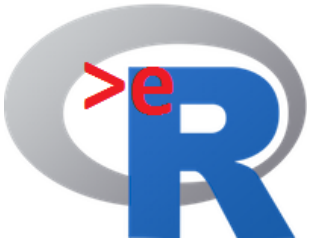
Motivation

- Low capacity in developing countries in education in biostatistics/statistics.
- Reasons:
 - Young teaching staff (usually with master degrees).
 - Small number of PhD holders.
 - Lack of high quality materials for master programs.
 - Academic staff is not always updated in the current methods/software available.
- Results:
 - Difficult to maintain a master program at a high level.



The >eR-Biostat Initiative

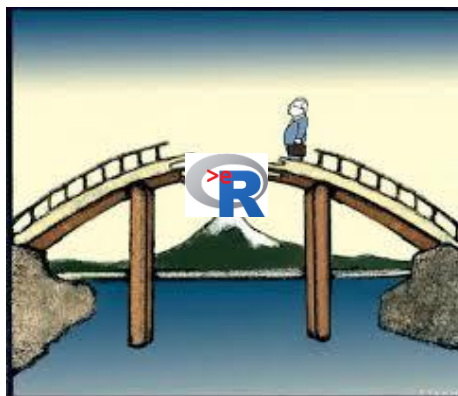
- The >eR-Biostat Initiative aims to:
 - Develop accessible course materials in biostatistics/statistics.
 - Focus on master programs.
 - Bring students and teachers costs to minimum by providing free, high quality and applied course materials for both students and teachers.
 - Increase usage of R.



We  a community

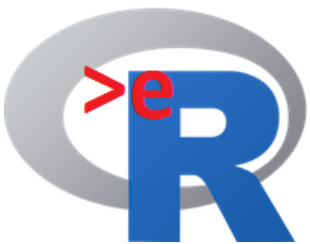
- Building a bridge between two communities:

Academic staff and master students in developing countries.



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 materials at master levels.
 - All materials available to download without password.
- Focus on:
 - **Introductory courses:** to train students to use R.
 - **Core courses:** at 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.

All available
online in a
GitHub page.



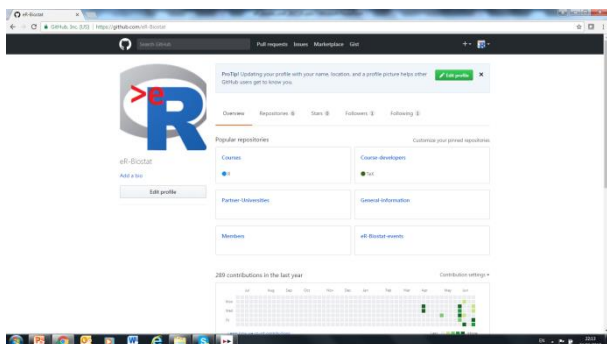
Courses and time line

- **Introductory courses:**
 - Introduction to R.
 - Basic concepts in exploratory data analysis and statistical computing using R.
 - Introduction to statistical modeling using R.
 - **Core (I):**
 - Linear models.
 - GLM.
 - Non Parametric.
 - Survival analysis.
 - **Core (II):**
 - Longitudinal data analysis.
 - Multivariate analysis.
 - Bayesian analysis.
 - Resampling based methods.
 - More...
- online**
- September/October 2017**
- July 2018**
- July 2019**



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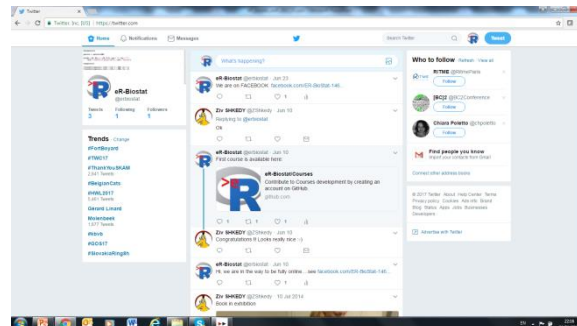
The community online:



<https://github.com/eR-Biostat>



ER-BioStat



@erbiostat

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

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



Example of a course: An introduction to R

- Online course materials :

The screenshot shows the GitHub repository page for 'eR-Biostat/Courses'. The commit history table is as follows:

Commit	Message	Time
eR-Biostat committed on GitHub	Update README.md	Latest commit 7cd0cac 3 days ago
Core -1	Update README.md	3 days ago
Introductory Courses	Delete eR-Biostat_Statistical_Computing_2017_V1.pdf	5 days ago
README.md	Update README.md	8 days ago

The README.md preview shows the following text:

The >eR-Biostat initiative

Making R based education materials assessable for all

The E-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:

- **An introduction to R:**
- **A part of the introductory courses.**
- **Train students to use R in data analysis.**
- **The students are not expected to study anything new in statistics.**



Example of a course: An introduction to R

- A part of the introductory courses:

Courses/Introductory Co X

GitHub, Inc. [US] | <https://github.com/eR-Biostat/Courses/tree/master/Introductory%20Courses>

eR-Biostat committed on GitHub Delete eR-Biostat_Statistical_Computing_2017_V1.pdf Latest commit 1911728 a day ago

File	Commit Message	Time
Basic concepts in exploratory data analysis ...	Delete eR-Biostat_Statistical_Computing_2017_V1.pdf	a day ago
Introduction to R	Update README.md	4 days ago
Introduction to statistical modeling using R	Update README.md	2 days ago
README.md	Update README.md	2 days ago

README.md

The >eR-Biostat initiative

Making R based education materials assessable for all

Introductory courses

This group of courses are developed at an introductory level. Only basic level knowledge of statistics is required. The courses DO NOT aim to teach the student new topics in statistics but to train the students to use R in data analysis.

Available courses in this group:

- Introduction to R (<https://github.com/eR-Biostat/Courses/tree/master/Introductory%20Courses/Introduction%20to%20R>).
- Basic concepts in exploratory data analysis and computational statistics in R (<https://github.com/eR-Biostat/Courses/tree/master/Introductory%20Courses/Basic%20concepts%20in%20exploratory%20data%20analysis%20and%20computational%20statistics>).
- Introduction to statistical modeling using R (will be available online in 2018).

EN 22:37 24/06/2017



Example of a course: An introduction to R

- Online course materials :

The screenshot shows a GitHub repository page for 'eR-Biostat / Courses'. The repository is on the 'master' branch. The file list shows a commit by 'eR-Biostat' that updated the README.md file 4 days ago. Below this, a table lists files and their commit history:

File	Commit Message	Time
Data	Create README.md	15 days ago
R programs	Add files via upload	15 days ago
Slides	Add files via upload	15 days ago
README.md	Update README.md	4 days ago

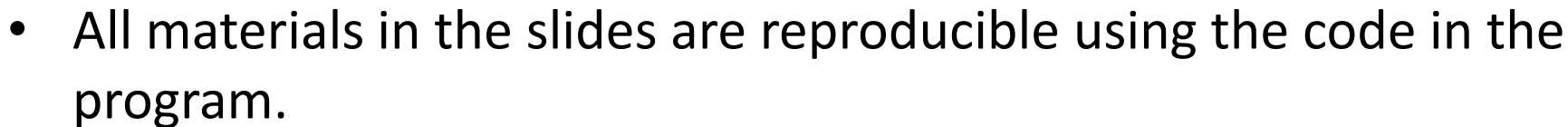
A red circle highlights the 'Data', 'R programs', and 'Slides' files. A red arrow points from this circle to a red text box on the right that says: '• Datasets, if not a part of R, are available online as well.'

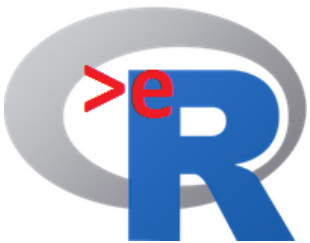
The README.md file content is visible below the file list, starting with 'The >eR-Biostat initiative' and 'Introduction to R'. It describes the course as an introductory course to R, suitable for a two-day workshop or a course of 3-4 classes. It lists topics covered in the course:

- Two sample t-test.
- Basic plots



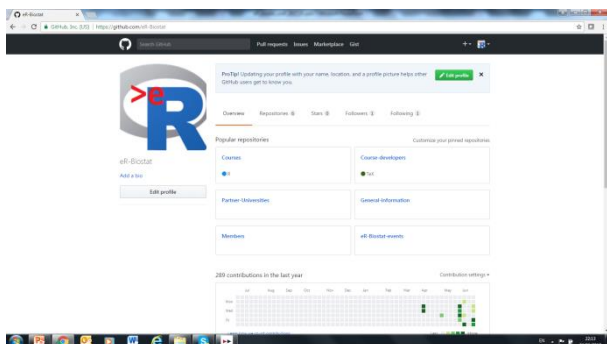
Example of a Slide





Usage of courses materials

The community online:



<https://github.com/eR-Biostat>

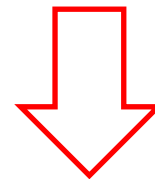
- GitHub page with course materials .
- Information about activities.

- 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.
 - Non Parametric.
 - Survival analysis.
 - **Core (II):**
 - Longitudinal data analysis.
 - Multivariate analysis.
 - Bayesian analysis.
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 - More...
- Online materials include:
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To setup the course level

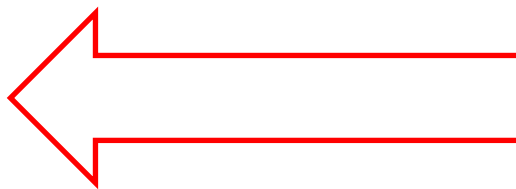
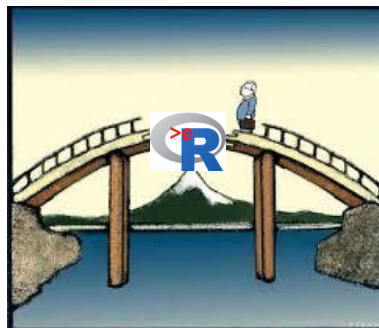


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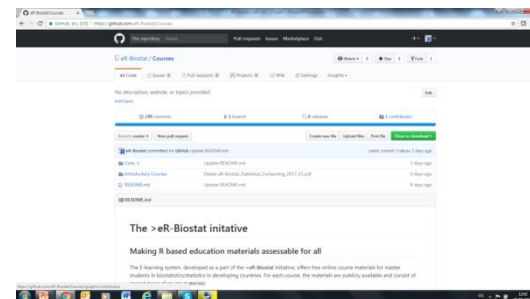
- Capacity building in statistics education (at a master level) via community building.
- Target departments, i.e. master programs.

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

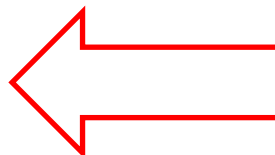


Introductory courses.
Linear models.
GLM.
Non Parametric.
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Bayesian analysis.
More...

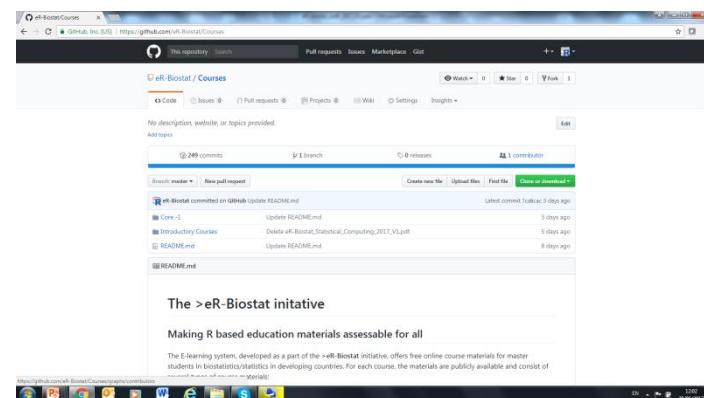


We  a community

- Partner universities in the south:
- Gondar University, Ethiopia:
 - Master in Biostatistics.
- University of South Africa (UNISA):
 - Trajectory in Biostatistics (as a part of the master).
-



GitHub

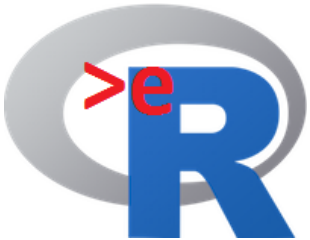


- Training events: >eR-Biostat workshops in partner universities (for both students and academic staff).



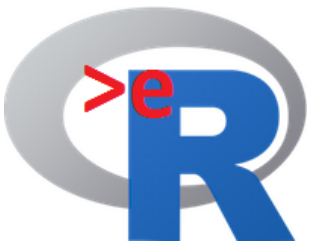
>eR-Biostat events

- Enlarge the collaboration network to other universities.
- Training workshops in the south for both students and teachers in academic year 2017/2018:
 - >eR-Biostat workshop in Gondar University, Ethiopia, August/September 2017.
 - >eR-Biostat workshop in Jomo Kenyatta University, Kenya, 02/10/2017-05/10/2017.
 - >eR-Biostat linear models course in Gondar University, Ethiopia, November/December, 2017.
 - >eR-Biostat workshop in Ghana, Spring, 2018.
 - >eR-Biostat workshop in Ethiopia, Spring, 2018.
 - ESPOL University, Ecuador, April, 2018.



We  a community

So what do we want from you ?



We  a community

So what do we want from you ?

- Join the community and contribute a course !!!
 - Course at a **master level**.
 - Slides: one slide per page.....so it is ready for use in class.
 - R programs for examples etc...
 - Links to books if available online.
- Interested to teach a course in Ethiopia (Spring 2018) ?
- Send us an email:

erbiostat@gmail.com



The >eR-Biostat initiative
E-learning system using R
Biostatistics

Thank you ve**R**y much !!



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Email: erbiostat@gmail.com



<https://github.com/eR-Biostat>



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