R Tutorial

What is R and how do I install it?

Erik Hintz

erik.hintz@uwaterloo.ca
Department of Statistics and Actuarial Science
University of Waterloo

Agenda

- What is R?
- How do I install R?
- How do I work with R?
- How can I find help with R?

Software environment R

What is R?

- R is a free software environment for statistical computing and graphics.
- R was created by Robert Gentleman and Ross Ihaka in 1993. Since mid-1997, R is developed by the R Development Core Team (about 20 people worldwide; many contributors).
- The sources of R (`.tar.gz`) are on `https://cran.r-project.org/` and consist of base and recommended packages .

Software environment R

Why R?

- Comes with tons of functionalities (plotting, optimization, distribution functions, root-finding, matrix algebra, . . .)
- High-level programming language with the ability to write readable code.
- Consists of contributed packages (both the available ones but also the possibility to write your own)

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How to install R?

Step 1 Install R from `https://cran.r-project.org/`.

Step 2 Install an *integrated development environment (IDE)* (an "editor-application" with cool functionalities):

- RStudio (recommended; browser-like): `http://www.rstudio.com/`
- Others (eg Tinn-R on Windows) can be found online, too!

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How to work with R?

- We create scripts, e.g. `myscript.R`, containing the R source code.
- We can run the script interactively line-by-line in R-Studio (recommended).
- Alternatively, can run the scripts in a terminal with `R CMD BATCH myscript.R` or `Rscript myscript.R`

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How to find help with R?

- Comprehensive R Archive Network (http://cran.r-project.org/)
  - Manuals: Click An Introduction to R (detailed basics) and the FAQ
  - Task views: Click here to select packages on certain topics
  - . . . and more
- Manual pages of packages
  - For a specific function, e.g. `pbinom()`, type `?pbinom` or `help("pbinom")`.
    $\Rightarrow$ Study the examples on the help pages!
- Google, Stackoverflow or other places in the www. There are few questions that haven't been asked yet!

And that's what it looks like. . .