An Introduction to R

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Outline

Characteristics

- R is a programming language that has been optimized for data analysis and modeling.

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- R is a programming language that has been optimized for data analysis and modeling.
- R can be used as an object-oriented programming language, or as a statistical environment within which sets of instructions can be performed automatically.

Utility

1. R runs on Windows, Mac-OS, and Unix variants;
2. R provides a vast number of useful statistical tools;
    1. many of which have been painstakingly tested;
3. R produces publication-quality graphics in a variety of formats;
4. R plays well with LaTeX via the `Sweave` package;
5. R plays well with FORTRAN, C, and shell scripts;
6. R scales, making it useful for small and large projects;
7. R is object-oriented;
8. R eschews the GUI.

Frustration

1. R cannot do everything;
2. R will not hold your hand;
3. The documentation can be opaque;
4. R can drive you crazy, or age you prematurely;
5. The contributed packages have been exposed to varying degrees of testing and analysis;
6. R stores objects in RAM;
7. R eschews the GUI.

A contrast

1. R is object-oriented;
2. SAS is PROCedure-oriented;

Talking with R

- Interactively.
  - Write commands at prompt.
  - Use arrows for history.

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  - Write commands at prompt.
  - Use arrows for history.
- Batch
  - Write scripts.
  - Use `source()`

Working Directory

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Relevant commands

- `getwd()`
- `setwd()`

Workspace

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Relevant commands

- `ls()`

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- `ls()`
- `rm()`
- `rm(list=ls())`

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- `ls()`
- `rm()`
- `rm(list=ls())`
- `save.image()`
- `save()`
- `load()`

Local Help

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Relevant commands

- `help()`
- `?<command>`

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- `help()`
- `?<command>`
- `help.search()`
- `help.start()`

Remote Help

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Relevant commands

- `RSiteSearch()`
- Google
  - R-help ...

Responsive Help

A list-server exists. Information is available at:
`https://stat.ethz.ch/mailman/listinfo/r-help`

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Relevant issues

- Post questions as a last resort.
- `http://www.r-project.org/posting-guide.html`

R is hard work

Work hard!

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That means:

- Read widely.
- Use the resources available.
- Experiment patiently and flexibly.
- Keep scripts.
- Comment generously.