What is R?

- A statistical programming language and computing environment, implementing the S language.
- Two implementations of S:
  - S-PLUS: commercial, for Windows and (some) Unix/Linux, eclipsed by R.
  - R: free, open-source, for Windows, Macintoshes, and (most) Unix/Linux.
How does a statistical programming environment differ from a statistical package (such as SPSS)?

- A package is oriented toward combining instructions and rectangular datasets to produce (voluminous) printouts and graphs. Routine, standard data analysis is easy; innovation or nonstandard analysis is hard or impossible.
- A programming environment is oriented toward transforming one data structure into another. Programming environments such as R are extensible. Standard data analysis is easy, but so are innovation and nonstandard analysis.

Why Use R?

- Among statisticians, R has become the de-facto standard language for creating statistical software. Consequently, new statistical methods are often first implemented in R.
- There is a great deal of built-in statistical functionality in R, and many (literally thousands of) add-on packages available that extend the basic functionality.
- R creates fine statistical graphs with relatively little effort.
- The R language is very well designed and finely tuned for writing statistical applications.
- (Much) R software is of very high quality.
- R is easy to use (for a programming language).
- R is free (in both of senses: costless and distributed under the Free Software Foundation’s GPL).
What became the R Project for Statistical Computing was started around 1990 by Robert Gentleman and Ross Ihaka, then both at the University of Auckland in New Zealand.

Several other individuals joined Ross and Robert, until in 1997 a “core team” of nine members was formed.

R-Core now comprises 20 members, and is responsible for preparing the basic R software, which is distributed along with a set of “recommended” packages.

The “copy-left” to the R software is owned by the R Foundation, composed of the members of R Core and several other individuals.

I have already mentioned the thousands of packages that are available for R.

Most of these are distributed by the Comprehensive R Archive Network, headquartered in Vienna, which is directed by members of R-Core.

Many other packages reside in the Bioconductor Project, founded by Robert Gentleman.
CRAN has been accumulating contributed packages at a feverish pace: