

17.1: Introduction to R

R is a language and environment for statistical computing and graphics. It was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John Chambers and colleagues. It is based off of another language called S. R is an integrated suite of software facilities for data manipulation, calculation, and graphical display. It includes:

- an effective data handling and storage facility,
- a suite of operators for calculations on arrays, in particular matrices,
- a large, coherent, integrated collection of intermediate tools for data analysis,
- graphical facilities for data analysis and display either on-screen or on hardcopy, and
- a well-developed, simple and effective programming language which includes conditionals, loops, user-defined recursive functions, and input and output facilities.

R is a powerful and effective tool for computing, statistics and analysis, and producing graphics. However, many applications exist that can do these or similar things. R has a number of benefits that make it particularly useful for a book such as this. First, similar to the book itself, R is open source and free. This comes with a set of associated advantages. Free is, of course, the best price. Additionally, this allows you, the student or reader, to take this tool with you wherever you go. You are not dependent on your employer to buy or have a license of a particular software. This is especially relevant as other software with similar functionality often cost hundreds, if not thousands, of dollars for a single license. The open source nature of R has resulted in a robust set of users, across a wide variety of disciplines—including political science—who are constantly updating and revising the language. R therefore has some of the most up-to-date and innovative functionality and methods available to its users should they know where to look. Within R, these functions and tools are often implemented as packages. Packages allow advanced users of R to contribute statistical methods and computing tools to the general users of R. These packages are reviewed and vetted and then added to the CRAN repository. Later, we will cover some basic packages used throughout the book. The CRAN repository is where we will download R.

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