
Preface

Intend this bare-bones introduction to R as a supplement to a standard first-course textbook in statistics or for those who have already completed such a course and now need to do some statistical analysis on their own. This introduction, as suggested by its title, is bare-bones. It doesn't pretend to teach everything about R—just to get people started with it.

R is a wonderful tool for statistical work. Its flexibility and richness offer a boon to experienced researchers. It also offers great advantages for statistical novices—those taking their first course in statistics. However, for such novices, R can be intimidating, precisely because of its flexibility and richness. Its arcane customs, symbols, and terminology may make the novice shudder. Some of the purported “introductions to R” seem like trying to teach Mozart concertos in the first week of piano lessons. They are just overwhelming. In my experience, extant introductions share the following drawbacks, not for the experienced researcher but for the novice. They tend to present several ways of accomplishing any given task (thus nicely illustrating R's richness), whereas the novice needs just one way to do it. They tend to use traditional R terminology (arguments of functions, vectors, etc.) rather than plain English. They are very short on examples. This feature helps their compactness, but novices need examples. They tend to include advanced statistical techniques (logistic regression, mixed-effects ANOVA, etc.), while the novice is still trying to learn the difference between a mean and a median. I have tried to avoid these drawbacks.

I make the following assumptions about the students using this bare-bones introduction:

- I assume that they are taking a first course in statistics or have already completed such a course. I'm not trying to teach statistical concepts and techniques such as mean, standard deviation, correlation coefficient, t test, and analysis of variance. I assume that the statistics instructor and text-book will cover these topics.
- I assume that they have experience with personal computers, the Internet, and a word processing system.
- I assume that they (and their instructors) can devote a very limited amount of time to this bare-bones introduction. I'd like to think one could get through this entire introduction, including working through the examples, in a few hours.
- I do *not* assume that they have had any prior experience in computer programming.
- Finally, I'm going to use the Windows platform. It's the most commonly available. R will work on other platforms, and much of what we cover here will work perfectly well on other platforms, but to keep things simple, I'm just using Windows.

Here are the guidelines I used in putting this material together:

- Start from the very beginning with each topic. This includes downloading R, R Commander, and an add-on package.
- Keep it short. Don't try to cover everything—just get started.
- Always include at least one example for anything that gets introduced.
- When there are several different ways to accomplish something, just present one, and move on.
- When it's necessary to introduce some of R's weird terms, try to give a translation into plain English or, at least, into the common language of elementary statistics.
- Use examples from the behavioral/social sciences. A lot of what we cover will work equally well in other fields, for example, biology, allied health fields, and business, but I've not tried to include examples from these other fields.
- Don't introduce any statistical techniques beyond those covered in the typical first course in statistics in the behavioral/social sciences. In fact,

don't even try to cover all the techniques in the first course. A sampling of them will do.

- Use textboxes, highlighting, varying fonts, and so on to enhance students' comprehension.
- Introduce both base R (and its usual add-on packages) and R Commander. As tempting as it is, I don't think doing R Commander by itself (or even first) is a good idea.

Occasionally, I must admit, I violate one of these rules—but only occasionally.

I realize that my assumptions and rules, as just outlined, may encourage my colleagues to pummel me with criticisms. Why introduce only this way to accomplish some task? What about this nifty add-on package? Won't this common English translation of a technical R term possibly mislead? And so on. I'll accept those criticisms. But I'll add a bet. If, within a few hours of instruction, I can get students feeling comfortable and confident using R, I'll bet those students will go on to learn a whole lot more about R on their own. We just need a good start.

In this book, Chapter 1 is a bare-bones introduction to base R and its usual add-on packages. Chapter 2 is a bare-bones introduction to R Commander. Chapter 3 covers frequently asked questions about just a few other topics that go barely beyond the bare-bones topics in Chapters 1 and 2. Skipping sections within Chapter 3, or even all of it, will not jeopardize the integrity of Chapters 1 and 2.

“Self-Checks” are scattered throughout to help the reader practice newly introduced procedures. Some readers may wish to skip these as the main text also includes practical examples of the procedures. Other readers will find that the Self-Checks help reinforce learning.

The book has a companion Web site, <http://www.sagepub.com/BareBonesR>, which contains downloadable data sets used in the text as well as selected updates for R and corrections to the text.

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