Preface

The Absolute R Beginner

For whom was this book written?

Since 2000, we have taught statistics to over 5000 life scientists. This sounds a lot, and indeed it is, but with some classes of 200 undergraduate students, numbers accumulate rapidly (although some courses have involved as few as 6 students). Most of our teaching has been done in Europe, but we have also conducted courses in South America, Central America, the Middle East, and New Zealand. Of course teaching at universities and research organisations means that our students may be from almost anywhere in the world. Participants have included undergraduates, but most have been MSc students, postgraduate students, post-docs, or senior scientists, along with some consultants and nonacademics.

This experience has given us an informed awareness of the typical life scientist's knowledge of statistics. The word "typical" may be misleading, as those scientists enrolling in a statistics course are likely to be those who are unfamiliar with the topic or have become rusty. In general, we have worked with people who, at some stage in their education or career, have completed a statistics course covering such topics as mean, variance, *t*-test, Chi-square test, and hypothesis testing, and perhaps including half an hour devoted to linear regression.

There are many books available on doing statistics with R. But this book does not deal with statistics, as, in our experience, teaching statistics and R at the same time means two steep learning curves, one for the statistical methodology and one for the R code. This is more than many students are prepared to undertake. This book is intended for people seeking an elementary introduction to R. Obviously, the term "elementary" is vague; elementary in one person's view may be advanced in another's.

R contains a high "you need to know what you are doing" content, and its application requires a considerable amount of logical thinking. As statisticians, it is easy to sit in an ivory tower and expect the life scientist to knock on our door and ask to learn our language. This book aims to make that language as simple

as possible. If the phrase "absolute beginner" offends, we apologize, but it answers the question: For whom is this book intended?

All authors of this book are Windows users and have limited experience with Linux and with Mac OS. R is also available for computers with these operating systems, and all the R code we present should run properly on them. However, there may be small differences with saving graphs. Non-Windows users will also need to find an alternative to the text editor Tinn-R (Chapter 1 discusses where you can find information on this).

Datasets used in This book

This book uses mainly life science data. Nevertheless, whatever your area of study and whatever your data, the procedures presented will apply. Scientists in all fields need to import data, massage data, make graphs, and, finally, perform analyses. The R commands will be very similar in every case. A 200-page book does not offer a great deal of scope for presenting a variety of dataset types, and, in our experience, widely divergent examples confuse the reader. The optimal approach may be to use a single dataset to demonstrate all techniques, but this does not make many people happy. Therefore, we have used ecological datasets (e.g., involving plants, marine benthos, fish, birds) and epidemiological datasets.

All datasets used in this book are downloadable from www.highstat.com.

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