Forecasting: Principles and Practice: 2nd Ed.

Rob J Hyndman and George Athanasopoulos

Monash University, Australia, 2020

Available Online: https://otexts.com/fpp2/

Welcome to our online textbook on forecasting.

This textbook is intended to provide a comprehensive introduction to forecasting methods and to present enough information about each method for readers to be able to use them sensibly. We don't attempt to give a thorough discussion of the theoretical details behind each method, although the references at the end of each chapter will fill in many of those details.

The book is written for three audiences: (1) people finding themselves doing forecasting in business when they may not have had any formal training in the area; (2) undergraduate students studying business; (3) MBA students doing a forecasting elective. We use it ourselves for a third-year subject for students undertaking a Bachelor of Commerce or a Bachelor of Business degree at Monash University, Australia.

For most sections, we only assume that readers are familiar with introductory statistics, and with high-school algebra. There are a couple of sections that also require knowledge of matrices, but these are flagged.

At the end of each chapter we provide a list of "further reading". In general, these lists comprise suggested textbooks that provide a more advanced or detailed treatment of the subject. Where there is no suitable textbook, we suggest journal articles that provide more information.

We use R throughout the book and we intend students to learn how to forecast with R. R is free and available on almost every operating system. It is a wonderful tool for all statistical analysis, not just for forecasting. See the Using R appendix for instructions on installing and using R.

All R examples in the book assume you have loaded the **fpp2** package, available on CRAN, using `library(fpp2)`. This will automatically load several other packages including **forecast** and **ggplot2**, as well as all the data used in the book. We have used v2.3 of the **fpp2** package and v8.12 of the **forecast** package in preparing this book. These can be installed from CRAN in the usual way. Earlier versions of the packages will not necessarily give the same results as those shown in this book.

We will use the **ggplot2** package for all graphics. If you want to learn how to modify the graphs, or create your own ggplot2 graphics that are different from the examples shown in this book, please either read the ggplot2 book (Wickham, 2016), or do the ggplot2 course on the DataCamp online learning platform.

The book is different from other forecasting textbooks in several ways.

- It is free and online, making it accessible to a wide audience.
- It uses R, which is free, open-source, and extremely powerful software.
- The online version is continuously updated. You don't have to wait until the next edition for errors to be removed or new methods to be discussed. We will update the book frequently.
- There are dozens of real data examples taken from our own consulting practice. We have worked with hundreds of businesses and organisations helping them with forecasting issues, and this experience has contributed directly to many of the examples given here, as well as guiding our general philosophy of forecasting.
- We emphasise graphical methods more than most forecasters. We use graphs to explore the data, analyse the validity of the models fitted and present the forecasting results.