How to use this book

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The book is organised around **method topics**, not courses. There are sixteen topic chapters, an unnumbered method chooser, five reporting-template chapters, and five appendices.

Three reading modes

As an author with data. Open Find your method. Answer the question *"what are you trying to do?"* until you land on a method. Read the method page top to bottom. Adapt and check the displayed R code against your data, package versions and assumptions. The Output & Results section explains what to inspect. Reporting templates are starting points to complete with your actual design and results, not descriptions of analyses you have not performed.

As a peer reviewer. Search for the method by name and jump straight to the **For Reviewers** section at the bottom of the page. It links to the shared checklist below and to that method's assumptions and practical tips. Detailed method-specific reviewer notes remain editorial work; they are not yet supplied by the imported entries. Read Theory and Assumptions before judging an application.

As a learner. Each topic chapter has labs under `chapters/<topic>/labs/`. Labs follow *Hypothesis* → *Visualise* → *Assumptions* → *Conduct* → *Conclude*. Work through them in order; the methods they exercise live in the same chapter and are linked from the labs.

Conventions

- Examples are R, displayed without execution during the reference build. All 80 lab scripts pass syntax checks; the maintenance review executed the tidy-data and import/join labs. Other examples and scientific outputs still need checking in their intended data and package environment.
- Method pages organize background, prerequisites, theory, assumptions, code, interpretation and practical tips. Their reviewer sections provide navigation to the relevant checks rather than completed specialist appraisals.
- The Reporting Templates part contains draft Methods and Results wording. Replace every example-specific statement with the analysis actually performed.

Shared reviewer checklist

1. **Match the analysis to the question and design.** Identify the estimand, outcome scale, sampling unit and dependence structure. Compare them with the selected method's Theory and Assumptions sections.

2. **Ask for evidence about relevant assumptions.** Locate the diagnostics and sensitivity analyses needed for this application. A successful package call alone does not establish that the assumptions are met.
3. **Reconcile the reported analysis.** Check sample counts and denominators, exclusions, missing-data handling, transformations and uncertainty summaries against the stated model and supplied analysis code.
4. **Check reproducibility and interpretation.** Look for data provenance, package versions and sufficient code to reproduce the reported calculation. Distinguish the model's output from the scientific claim made from it.
5. **Check the Methods paragraph.** It should identify the question, analysis unit, model or test, relevant settings, handling of missing observations and diagnostic checks. Record unresolved details rather than assuming defaults.

This is a general reading aid. Method-specific validity and reporting requirements need an appraisal of the actual study and relevant primary methodological sources.

What this book is not

It is not a linear introductory textbook. It does not derive every result from first principles. It does not cover SAS, Stata, SPSS, or Python. It does not host the interactive decision-tree wizard (Shiny apps remain on the live site).

Building locally

```
Rscript --vanilla -e '
install.packages(
  c("bookdown", "rmarkdown", "knitr", "bslib",
    "downlit", "xml2", "htmltools", "sessioninfo"),
  repos = "https://cloud.r-project.org"
)'
python3 -m unittest discover -s tests
Rscript --vanilla -e 'bookdown::render_book("index.Rmd",
output_format="bookdown::bs4_book")'
python3 scripts/build-download-manifest.py
python3 -m http.server 8000 --directory docs
```

Run these commands from the repository root and open http://localhost:8000. HTML is the primary reading format. README.md also documents the verified EPUB build and its link-finalization step. PDF requires a separate TeX qualification.