Preface

Teaching political analysis with R asks instructors and students to work through an initial learning curve. Students must become comfortable with commands, objects, scripts, and the occasional error message while they are also learning research methods. But the investment is worthwhile. R gives students a transparent and reproducible way to work with data, along with transferable skills they can carry into graduate school or the workforce. This book is designed to make that undertaking manageable from the beginning.

The fourth edition builds on a classroom-tested approach refined across earlier editions of *An R Companion to Political Analysis* and its companion text, *The Essentials of Political Analysis*. Substantive political questions and analytical reasoning come first; software is introduced as a tool for answering those questions. The book provides a ready sequence of explanations, examples, datasets, and recurring routines that instructors can adapt to their specific class rather than having to recreate core components of introductory research methods.

Our approach is progressive and practice based. Important ideas and skills are introduced in a simple form, practiced in a meaningful context, and revisited later with greater depth and complexity. Learning R is much like learning to drive: you start practicing basic maneuvers as soon as possible and don't wait until you completely understand the engineering. In this spirit, students begin useful political analysis with a modest set of R skills and expand their technical knowledge as new research questions require it.

The chapters put this philosophy into practice through a consistent learning routine. Students run working examples, examine the results, modify the code, interpret what changes, and preserve their work in scripts. New technical skills appear when they have an analytical purpose, helping students connect how R works with why a method is useful.

Repeated practice with familiar conventions helps students retain earlier lessons and approach new problems with greater confidence. The book also encourages them to consult documentation, learn from diagnostic messages, and return to earlier examples when they need help. As students become more able to solve routine problems for themselves, instructors can devote more attention to research design, interpretation, and substantive political questions. A clear core sequence, selective closer looks, and advanced extensions allow that progression to be adjusted to different course goals and levels of preparation.

What's Different in the Fourth Edition?

The fourth edition is a coordinated redesign of the book, the RCPA4 package, its datasets, its examples, and its documentation. Rather than updating these components separately, we revised them together as a coherent learning environment. The result gives students an accessible entry into political analysis with R while better preparing them to work independently, and it gives instructors an integrated set of flexible teaching resources.

A more accessible and capable RCPA4 package. RCPA4 functions now follow more consistent conventions, support weighted analysis where appropriate, and provide clearer guidance when students encounter common problems. Their results can be saved, examined, and used in later analysis, creating a smoother path from guided companion functions to more advanced R methods. Students can install RCPA4, load it in R, and begin working with the functions and datasets used throughout the book.[1]

Current, carefully curated political datasets. The book and package feature five datasets.[2]

- Selected variables from the 2024 American National Election Study (use `data=anes`, see Appendix A),
- Dataset for a laboratory experiment on the effect of televising the 1960 American Presidential Debate (use `data=debate`, see Appendix B),
- Selected variables from the 2024 General Social Survey (use `data=gss`, see Appendix C),
- Updated dataset on the fifty U.S. states (use `data=states`, see Appendix D), and
- Updated cross-national dataset (use `data=world`, see Appendix E).

These teaching datasets use student-friendly variable names and organization and are accompanied by detailed information about concepts, coding, measurement, and sources. Students can therefore begin analyzing substantive political questions without first having to prepare large and complicated original datasets.

Stronger integration of analysis and documentation. Function help, a consolidated quick-reference guide, dataset help, and complete variable appendices make it easier to move from an example to the information needed to understand and extend it. In electronic editions, defined terms such as **vector** and **data frame** are linked to glossary entries, while variables such as `world$icc_treaty_ratified`[3] are linked to their descriptions. Internal links connect related sections, tables, figures, and appendices, and the text has been revised for efficient reading in electronic as well as print formats.

A clearer progression toward independent analysis. Guided examples begin with simple solutions that students can adapt to more complicated problems. As they progress, students move from reproducing an analysis to examining results, modifying code, working with model objects and predictions, diagnosing problems, and answering new questions. The goal is not simply to reproduce the book's analyses, but to develop the judgment and confidence needed to conduct independent political analysis.

Greater flexibility for instructors. The fifteen-chapter structure is modular enough for a semester-long course or a shorter sequence focused on selected methods. "A Closer Look" sections address supplemental topics that may be important for independent research but optional in an introductory course. End-of-chapter exercises have been removed from

[1] See A Quick Reference Guide to RCPA4 Functions for a summary of featured functions and lists of additional and deprecated functions.

[2] A sixth dataset, `students`, is a hypothetical college directory used to illustrate random sampling methods.

[3] `world$icc_treaty_ratified`: Whether the country is currently a state party to the Rome Statute of the International Criminal Court (Yes/No) Source: ICC Assembly of States Parties, current list checked July 2026. Armenia and Ukraine are coded Yes; Hungary is coded No following withdrawal. https://asp.icc-cpi.int/states-parties

the main text so instructors can pair the guided examples with their own assignments or separate practice materials.

Improved presentation of analytical results. Examples throughout the book emphasize the connection among a research question, the analysis, and its interpretation. The revised functions and examples also give students more control over clear, informative tables and figures that can be adapted for reports and research projects. Data visualization receives particular attention as both an analytical tool and a way to communicate political patterns effectively.

> **Note**
>
> This book is designed as a companion to a political analysis textbook, not as a complete introduction to analyzing data with R, or R programming. R and its packages will continue to evolve, so the goal is not to memorize a fixed collection of commands. It is to learn how to read function documentation, adapt working examples, diagnose problems, and use software thoughtfully to answer research questions.

Of course, a book like this leaves out more than it covers. We don't, for example, discuss writing functions with R, scraping web pages, or advanced packages for data analysis like `tidyverse`. As students progress beyond the scope of this book, they will want to learn how to use new functions (or perhaps write their own functions) and we're happy to help them begin that journey.

Advice for Instructors

This book helps students apply political science research methods with R while developing good habits in interpretation, reproducible analysis, and presentation. It is a practical companion to a methods textbook rather than a comprehensive reference to R programming.

R is useful for teaching because it is free, works across major operating systems, and allows students to build a reusable collection of scripts. The RCPA4 companion functions provide accessible starting points with consistent arguments, while still preparing students to adapt examples and learn additional R tools.

> **Tip**
>
> Students benefit from seeing R as a research tool rather than as a programming course. Emphasize the question, the data, and the interpretation.

Devote part of an initial class or lab session to installing R, RStudio, and the RCPA4 package. Have students run `welcomeC()` to verify that the software, package, functions, and datasets are available. If you've worked with R for a while, remember that the environment may look unfamiliar to a novice and leave time to resolve setup problems.[4]

[4] If you're accustomed to using R for political analysis, it's hard to see it the way a novice user does. For further reading on the curse of expertise and its implication for teaching, see Carl Wieman, "The 'Curse of Knowledge,' or Why Intuition About Teaching Often Fails," *American Physical Society News*, November 2007, https://www.aps.org/archives/publications/apsnews/200711/backpage.cfm; and Steven Pinker,

Require students to work from saved R scripts rather than entering commands only in the console. For each chapter, students should run the setup code, reproduce the guided example, modify at least one argument, and save a script showing the completed work. They should also reproduce at least one table or figure from the chapter and briefly interpret the result. This routine turns each chapter into a manageable cycle of replication, experimentation, and explanation.

Lab time can reinforce this workflow. Short, regular sessions in which students compare scripts, diagnose errors, and receive individual help are often more effective than waiting until a large assignment is due. The emphasis should remain on using R to answer research questions and documenting enough of the process for the analysis to be reproduced.

> **!** Important
>
> The goal is not to memorize every R command. The goal is to learn how to use R to answer political science research questions.

> **⚠** Warning
>
> Do not assume that installation will take only a few minutes. Leave time for students to install R, RStudio, packages, and any required updates.

Accompanying Core Text

Instructors will find that this book makes an effective supplement to any of a variety of methods textbooks. However, it is a particularly suitable companion to our own core text, *The Essentials of Political Analysis* (see Table 1). The textbook's substantive chapters cover basic and intermediate methodological issues and ideas: measurement, explanations and hypotheses, univariate statistics and bivariate analysis, controlled relationships, sampling and inference, statistical significance, correlation and linear regression, and logistic regression.

For instructors who have used Edwards and Pollock's political analysis textbooks before, here is how the fourth edition of the *R Companion* corresponds with the seventh edition of *The Essentials of Political Analysis*.

Table 1: Outline for Teaching with *Essentials of Political Analysis, Seventh Edition* and *R Companion to Political Analysis, Fourth Edition*

Syllabus Topic	Textbook Readings
Class Orientation and Overview	Intro. in *Essentials*; Getting Started in *RCPA4*
Definition and Measurement of Concepts	Chapter 1 in both
Measuring and Describing Variables	Chapter 2 in both

The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century (New York: Penguin Books, 2014), Chapter 3. Working with students in lab sessions can help instructors identify what they need to learn. Students are good at teaching classmates what they've recently learned and enjoy active learning in lab sessions.

Table 1: Outline for Teaching with *Essentials of Political Analysis, Seventh Edition* and *R Companion to Political Analysis, Fourth Edition*

Syllabus Topic	**Textbook Readings**
Creating and Transforming Variables	Chapter 3 in both
Explanations, Hypotheses & Comparisons	Chapter 4 in both
Graphing Relationships & Describing Patterns	Chapter 5 in both
Research Design & Research Ethics	Chapter 6 in both
Making Controlled Comparisons	Chapter 7 in both
Foundations of Statistical Inference	Chapter 8 in both
One and Two Sample Hypothesis Tests	Chapter 9 in both
Chi-Square Test & ANOVA	Chapter 10 in both
Correlation & Linear Regression	Chapter 11 in both
Multiple Regression	Chapter 12 in both
Analyzing Residuals	Chapter 13 in both
Logistic Regression	Chapter 14 in both
Conducting Your Own Political Analysis	Chapter 15 in both

Students can read the corresponding chapters in *The Essentials of Political Analysis* and then work through the guided examples in the *R Companion*. Instructors can supplement these tutorials with problem sets, laboratory activities, or other practice assignments suited to their courses. The central idea is to get students in front of the computer, experiencing political research firsthand, as soon as possible. Theory and practice go well together.