

Evanbook

A Template for quarto

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Evanbook

A modern, modular, and professional Quarto Book template

Created by Evan Zhou ·

Powered by Quarto

[Start Reading](#) →

Preface

i Note

Welcome to **Evanbook**, a modern and modular Quarto Book template designed to support your academic, technical, and documentation writing workflows.

Whether you're creating:

- a package manual,
- a scientific project report, or
- an educational book,

Evanbook provides a clean and extensible starting point with opinionated structure and styling.

Why this template?

This book template was born out of the need for: - **structured content organization** - **customizable and elegant visual design** - **R + Python + Markdown compatibility** - **multi-chapter publishing and web deployment**

Who should use Evanbook?

- **Researchers** writing technical documentation
 - **Instructors** creating course material
 - **Developers** building package or API documentation
 - **Writers** seeking a professional digital publishing format
-

Structure of this book

Each part of this book demonstrates how to structure a multi-part Quarto project:

1. **Getting Started** — project setup and tool basics
2. **Workflow Modules** — reusable writing components
3. **Advanced Topics** — deployment, extensions, customization
4. **Appendices** — reproducibility, references, tooling

Feel free to customize this page with your own motivations and audience-specific notes.

Part I

Getting Started

1 Installation and Setup

Before using this book template, ensure your environment is properly configured.

1.1 1.1 Install Quarto

You can install Quarto from the official website:

- <https://quarto.org/docs/get-started>

```
# Windows/macOS/Linux  
# Download from the website and follow the installer instructions
```

Check version:

```
quarto --version
```

1.2 1.2 Install R and RStudio

If you're using R:

- Install **R** from: <https://cran.r-project.org>
- Install **RStudio IDE** from: <https://posit.co/download/rstudio-desktop>

1.3 1.3 Install Python (optional)

If your book uses Python code blocks, install Python (3.8):

```
# Install via Anaconda or python.org
python --version
```

Optional: set up a virtual environment using `venv`, `conda`, or `virtualenv`.

1.4 1.4 Recommended Tools

Tool	Purpose
Quarto	Rendering and publishing
R / Python	Language support
VS Code	Lightweight editing
Git + GitHub	Version control, deployment

1.5 1.5 Initialize a New Project

To create a new project based on this template:

```
quarto use template evanbio/evanbook
cd evanbook
quarto preview
```

2 Quarto Basics

This chapter introduces the key components of a Quarto document and how to work with them interactively.

2.1 Anatomy of a .qmd file

Each Quarto document starts with a **YAML header** (metadata block), followed by **mark-down text** and **code chunks**.

```
---
title: "Example Document"
author: "Evan"
format: html
---
```

Heading 1

Some text.

```
summary(mtcars)
```

mpg	cyl	disp	hp
Min. :10.40	Min. :4.000	Min. : 71.1	Min. : 52.0
1st Qu.:15.43	1st Qu.:4.000	1st Qu.:120.8	1st Qu.: 96.5
Median :19.20	Median :6.000	Median :196.3	Median :123.0
Mean :20.09	Mean :6.188	Mean :230.7	Mean :146.7
3rd Qu.:22.80	3rd Qu.:8.000	3rd Qu.:326.0	3rd Qu.:180.0
Max. :33.90	Max. :8.000	Max. :472.0	Max. :335.0

drat	wt	qsec	vs
Min. :2.760	Min. :1.513	Min. :14.50	Min. :0.0000
1st Qu.:3.080	1st Qu.:2.581	1st Qu.:16.89	1st Qu.:0.0000
Median :3.695	Median :3.325	Median :17.71	Median :0.0000
Mean :3.597	Mean :3.217	Mean :17.85	Mean :0.4375
3rd Qu.:3.920	3rd Qu.:3.610	3rd Qu.:18.90	3rd Qu.:1.0000

Max. :4.930	Max. :5.424	Max. :22.90	Max. :1.0000
am	gear	carb	
Min. :0.0000	Min. :3.000	Min. :1.000	
1st Qu.:0.0000	1st Qu.:3.000	1st Qu.:2.000	
Median :0.0000	Median :4.000	Median :2.000	
Mean :0.4062	Mean :3.688	Mean :2.812	
3rd Qu.:1.0000	3rd Qu.:4.000	3rd Qu.:4.000	
Max. :1.0000	Max. :5.000	Max. :8.000	

You can use `r`, `python`, `bash`, and more as code chunk engines.

2.2 2.2 Markdown Elements

Quarto supports standard Markdown syntax:

- **Bold**, *italic*, `code`
- Lists: - item, 1. item
- Links: [text](url)
- Images: ![image.png]
- Tables:

Name	Value
A	100
B	200

2.3 2.3 Code Chunks

Code chunks are delimited by triple backticks and `{lang}`:

```
# R chunk
summary(iris)
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width
Min. :4.300	Min. :2.000	Min. :1.000	Min. :0.100
1st Qu.:5.100	1st Qu.:2.800	1st Qu.:1.600	1st Qu.:0.300
Median :5.800	Median :3.000	Median :4.350	Median :1.300

Mean	:5.843	Mean	:3.057	Mean	:3.758	Mean	:1.199
3rd Qu.	:6.400	3rd Qu.	:3.300	3rd Qu.	:5.100	3rd Qu.	:1.800
Max.	:7.900	Max.	:4.400	Max.	:6.900	Max.	:2.500
Species							
setosa	:50						
versicolor	:50						
virginica	:50						

Use `echo`, `eval`, `warning`, `message` chunk options to control output.

2.4 2.4 Rendering Documents

To preview your book:

```
quarto preview
```

To render all chapters:

```
quarto render
```

You can also render individual `.qmd` files if needed.

2.5 2.5 Directory Structure

Typical Quarto book structure:

```
evanbook/
  _quarto.yml
  styles.css
  index.qmd
  01_installation.qmd
  02_quarto-basics.qmd
  ...
```

Part II

Workflow Modules

3 Data Cleaning Essentials

Data cleaning is one of the most critical steps in any data workflow.

This chapter outlines reusable strategies for cleaning and preparing your data for analysis.

3.1 Inspecting Data

Use tools like `summary()`, `str()`, or `skimr::skim()` to understand the structure and quality of your dataset.

```
summary(mtcars)
```

mpg	cyl	disp	hp
Min. :10.40	Min. :4.000	Min. : 71.1	Min. : 52.0
1st Qu.:15.43	1st Qu.:4.000	1st Qu.:120.8	1st Qu.: 96.5
Median :19.20	Median :6.000	Median :196.3	Median :123.0
Mean :20.09	Mean :6.188	Mean :230.7	Mean :146.7
3rd Qu.:22.80	3rd Qu.:8.000	3rd Qu.:326.0	3rd Qu.:180.0
Max. :33.90	Max. :8.000	Max. :472.0	Max. :335.0
drat	wt	qsec	vs
Min. :2.760	Min. :1.513	Min. :14.50	Min. :0.0000
1st Qu.:3.080	1st Qu.:2.581	1st Qu.:16.89	1st Qu.:0.0000
Median :3.695	Median :3.325	Median :17.71	Median :0.0000
Mean :3.597	Mean :3.217	Mean :17.85	Mean :0.4375
3rd Qu.:3.920	3rd Qu.:3.610	3rd Qu.:18.90	3rd Qu.:1.0000
Max. :4.930	Max. :5.424	Max. :22.90	Max. :1.0000
am	gear	carb	
Min. :0.0000	Min. :3.000	Min. :1.000	
1st Qu.:0.0000	1st Qu.:3.000	1st Qu.:2.000	
Median :0.0000	Median :4.000	Median :2.000	
Mean :0.4062	Mean :3.688	Mean :2.812	
3rd Qu.:1.0000	3rd Qu.:4.000	3rd Qu.:4.000	
Max. :1.0000	Max. :5.000	Max. :8.000	

3.2 3.2 Handling Missing Values

Common approaches include:

- Removing rows with NA
- Imputing values
- Using domain knowledge to infer missing information

```
# Drop rows with missing values
clean_data <- na.omit(raw_data)
```

3.3 3.3 Removing Duplicates

```
clean_data <- distinct(raw_data)
```

Use `duplicated()`, `distinct()` (dplyr), or `janitor::get_dupes()`.

3.4 3.4 Standardizing Column Names

```
library(janitor)
clean_data <- raw_data |> janitor::clean_names()
```

3.5 3.5 String Cleaning

Use `stringr::str_trim()`, `str_to_lower()`, etc., to normalize text.

```
library(stringr)
df$name <- str_to_title(str_trim(df$name))
```


4 Data Visualization Basics

This chapter introduces the basics of data visualization using **ggplot2**.

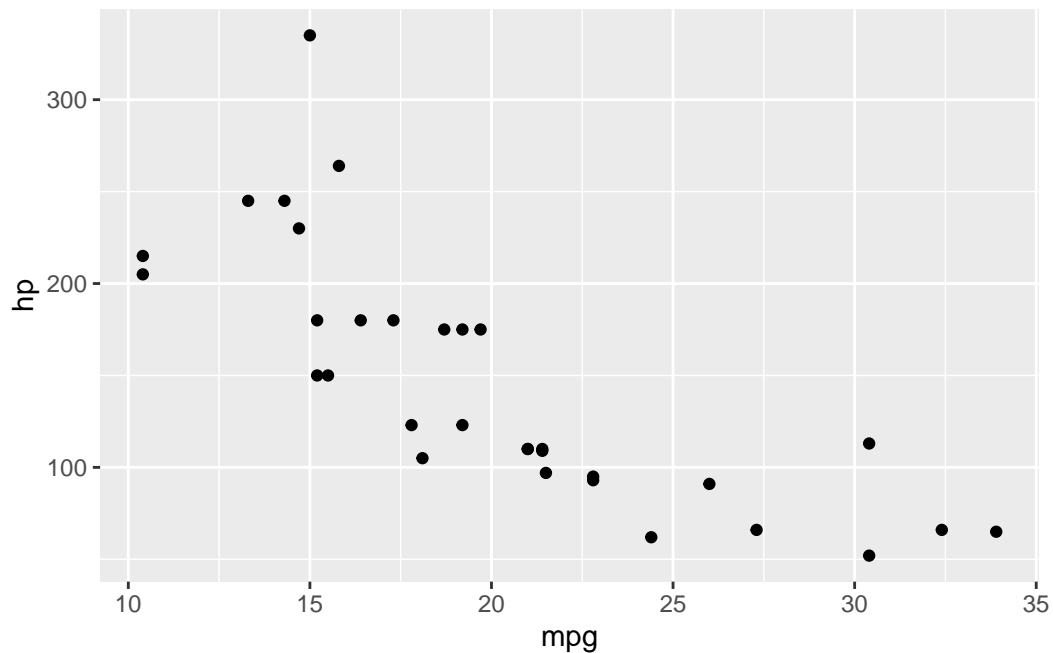
Visualizations turn raw data into insights.

4.1 The Grammar of Graphics

The core idea of **ggplot2** is to build plots layer by layer:

```
library(ggplot2)

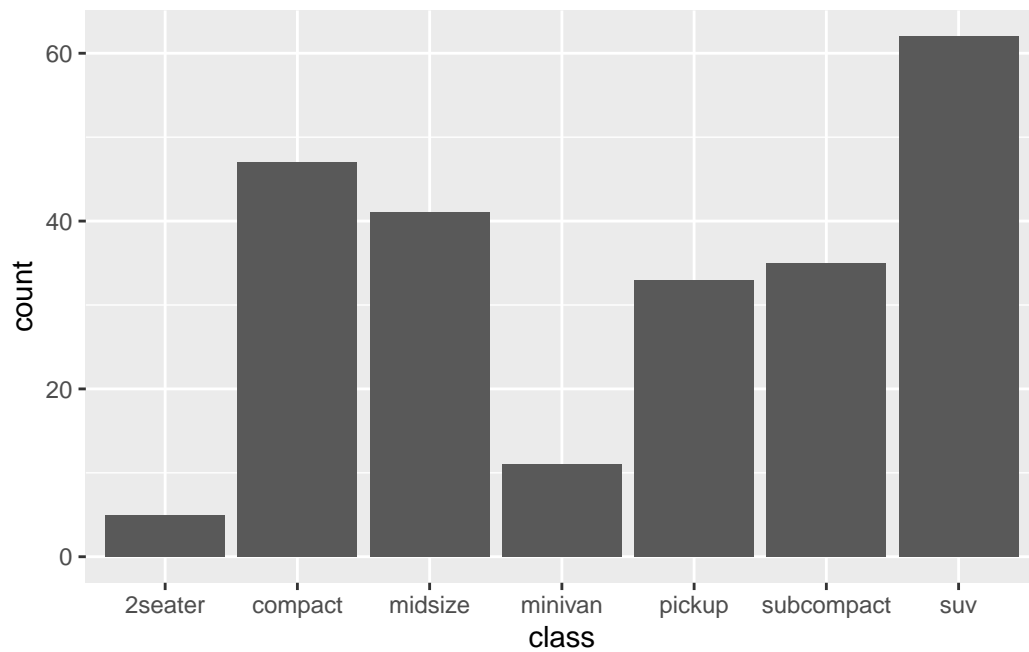
ggplot(mtcars, aes(x = mpg, y = hp)) +
  geom_point()
```



4.2 Common Plot Types

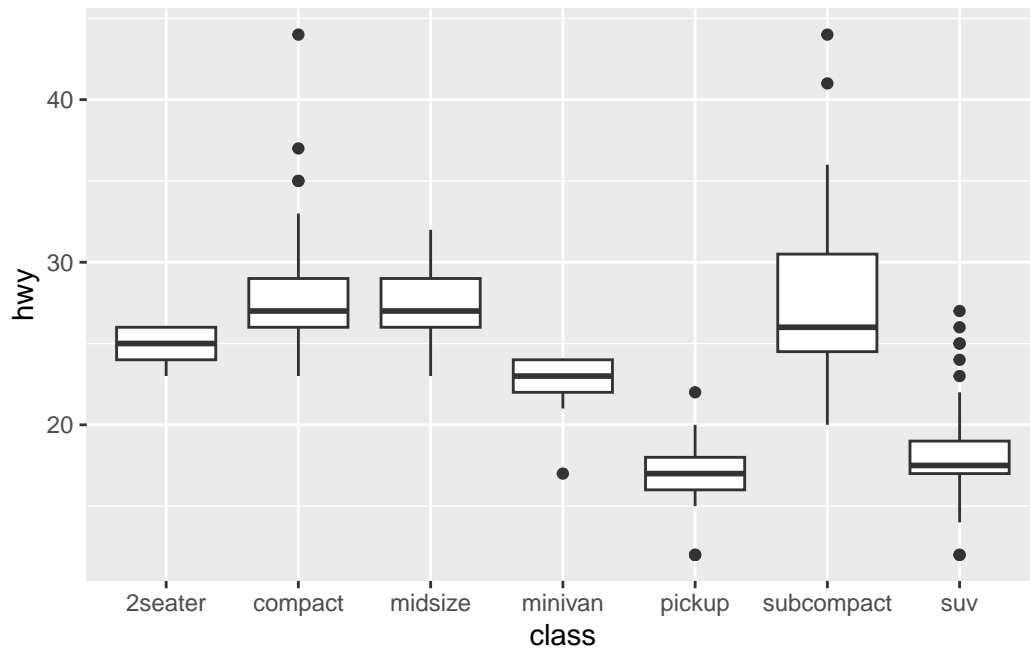
4.2.1 Bar Chart

```
ggplot(mpg, aes(class)) +  
  geom_bar()
```



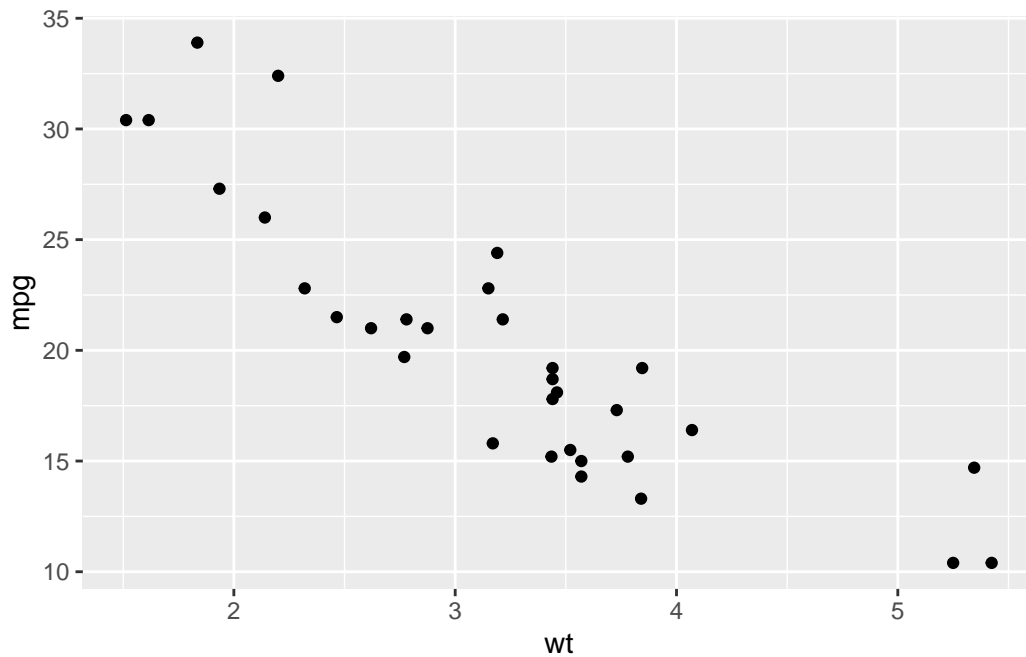
4.2.2 Boxplot

```
ggplot(mpg, aes(class, hwy)) +  
  geom_boxplot()
```



4.2.3 Scatter Plot

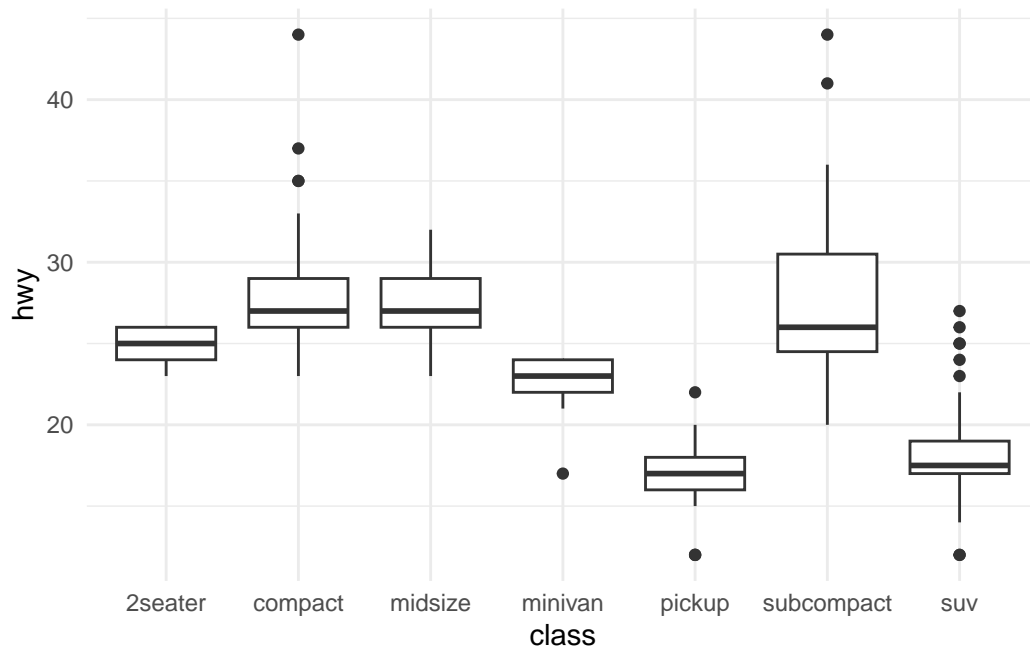
```
ggplot(mtcars, aes(wt, mpg)) +  
  geom_point()
```



4.3 4.3 Themes and Aesthetics

Use `theme_minimal()`, `theme_classic()` and control colors, sizes, and fonts.

```
ggplot(mpg, aes(class, hwy)) +  
  geom_boxplot() +  
  theme_minimal()
```



4.4 4.4 Exporting Figures

Save your plot with:

```
ggsave("my-plot.png", width = 6, height = 4, dpi = 300)
```

5 Reporting and Output Formats

Quarto supports multiple output formats with consistent source content. This chapter explains how to control the report format and export behavior.

5.1 5.1 Rendering to HTML

The default output format is HTML:

```
format:
  html:
    toc: true
    number-sections: true
```

Render the report:

```
quarto render
```

Or preview:

```
quarto preview
```

5.2 5.2 Rendering to PDF

You can also output to PDF using LaTeX:

```
format:
  pdf:
    documentclass: article
    toc: true
```

Ensure LaTeX is installed. Use TinyTeX via `tinytex::install_tinytex()` in R.

5.3 5.3 Rendering to Word or Markdown

```
format:  
  docx: default
```

Useful for collaborators who use Microsoft Word.

5.4 5.4 Multi-format Output

You can specify multiple formats in one YAML:

```
format:  
  html: default  
  pdf: default  
  docx: default
```

Use the dropdown in the top right corner of each page (HTML only).

5.5 5.5 Controlling Code Display

Use chunk options like:

```
summary(df)
```

To hide code, suppress warnings, or customize output.

5.6 5.6 Styling Reports

Link a custom stylesheet in `_quarto.yml`:

```
format:  
  html:  
    css: styles.css
```

Part III

Advanced Topics

6 Interactive Content in Quarto

Quarto supports various forms of interactive content to enrich your document and engage your audience.

6.1 6.1 Using htmlwidgets

You can embed interactive widgets from R directly:

```
library(plotly)
plot_ly(data = iris, x = ~Sepal.Length, y = ~Petal.Length, color = ~Species, type = 'scatter
```

Other useful widgets:

- `DT::datatable()`
- `leaflet::leaflet()`

These are rendered as interactive HTML widgets in the output.

6.2 6.2 Embedding Shiny Apps

You can embed Shiny apps inside a Quarto document:

```
selectInput("var", "Variable", choices = names(mtcars))
renderPlot({
  hist(mtcars[[input$var]])
})
```

Requires runtime: `shiny` in the YAML header.

6.3 6.3 Observable JS Blocks

Use Observable blocks to embed JavaScript-powered interactivity:

```
Plot.plot({
  marks: [
    Plot.dotY([1, 2, 4, 8, 16])
  ]
})
```

Quarto automatically includes Observable runtime when needed.

6.4 6.4 Code Folding and Reveal

Enable collapsible code blocks:

```
format:
  html:
    code-fold: true
```

Use `revealjs` format for slideshow-like interaction:

```
format:
  html:
    code-fold: true
```

6.5 6.5 User Input + Reactive Output (Shiny)

Use input/output bindings to create small tools or exploratory panels.

```
sliderInput("bins", "Number of Bins", min = 1, max = 50, value = 30)
renderPlot({
  hist(faithful$waiting, breaks = input$bins)
})
```

7 Extending Quarto

Quarto is designed to be extensible. This chapter introduces how to install, use, and create extensions such as themes, filters, and shortcodes.

7.1 7.1 What is a Quarto Extension?

An extension is a reusable bundle that can include:

- Themes (CSS, SCSS)
- Lua filters
- Shortcodes
- Project templates

They can be published to GitHub and installed via `quarto add`.

7.2 7.2 Installing Extensions

To install an extension:

```
quarto add quarto-ext/fontawesome
```

This will download the extension and add it to your project's `_extensions/` folder.

Other examples:

```
quarto add quarto-ext/clean
quarto add quarto-ext/authoring
```

List installed extensions:

```
quarto list
```

7.3 7.3 Using Extensions

Example: using the Font Awesome icon extension:

This is a book icon

Themes:

```
format:
  html:
    theme: [cosmo, clean]
```

7.4 7.4 Creating Your Own Extension

You can create a new extension skeleton with:

```
quarto create extension my-ext --type=filter
```

Quarto supports extension types:

- `format` (custom format template)
- `filter` (Lua filter logic)
- `shortcode` (templating)
- `theme` (CSS)

For full reference: <https://quarto.org/docs/extensions/>

7.5 7.5 Building a Quarto Template

If you'd like to turn Evanbook into a reusable template:

```
quarto use template evanbio/evanbook
```

Or share a structure via GitHub with a `template.qmd`, `_quarto.yml`, and `README.md`.

8 Deployment and Publishing

Once your Quarto book is complete, you can publish it as a website for others to read and reuse.

8.1 8.1 Rendering the Site

Build your book locally with:

```
quarto render
```

The output will be saved in the `output-dir`, typically `_book/`.

Preview locally:

```
quarto preview
```

8.2 8.2 Publishing to GitHub Pages

8.2.1 Step 1: Push your book to GitHub

Make sure your `_book/` folder is **not ignored** if you're pushing directly.

```
git add .  
git commit -m "deploy: render book"  
git push origin main
```

8.2.2 Step 2: Deploy via gh-pages branch

You can use the official GitHub Actions:

```
quarto publish gh-pages
```

Automatically creates and deploys to the `gh-pages` branch.

8.3 Publishing via Netlify

8.3.1 Step 1: Link GitHub repo in Netlify

8.3.2 Step 2: Set build command

```
quarto render
```

Step 3: Set publish directory:

```
_book
```

Push to GitHub → Netlify auto-builds → auto-publishes.

8.4 Publishing via Vercel (Optional)

- Upload static `_book/` to `/public`
- Or use Vercel CLI

Note: Vercel is better for dynamic content (like APIs); Netlify is preferred for books.

Part IV

Appendices

9 Reproducibility and Project Organization

Ensuring reproducibility is a cornerstone of good scientific and analytical practice.

9.1 A1.1 Organizing Your Project

- Use a consistent folder structure: `data/`, `scripts/`, `output/`, `figures/`
 - Track raw vs. processed data separately
 - Always include a `README.md`
-

9.2 A1.2 Managing Dependencies

9.2.1 R:

Use `{renv}` to lock your R environment:

```
install.packages("renv")  
renv::init()
```

9.2.2 Python:

Use `virtualenv`, `venv`, or `conda` for isolation.

9.3 A1.3 Quarto Tips

- Use `freeze: auto` in `_quarto.yml` to cache outputs
- Always set `execute: chunk-level control`
- Consider storing all outputs in `/output/` and images in `/figures/`

10 Using Git and GitHub

Version control is essential for collaborative work and tracking progress.

10.1 A2.1 Basic Git Workflow

```
git init
git add .
git commit -m "Initial commit"
git push origin main
```

10.2 A2.2 Recommended .gitignore

```
_book/
*.html
.Rhistory
.Rproj.user/
.DS_Store
```

10.3 A2.3 GitHub Integration

- Create repo at <https://github.com>
- Use quarto publish gh-pages to deploy
- Use README.md + LICENSE + description for open projects

10.4 A2.4 Git in RStudio

- Use built-in Git tab
- Or install usethis:

```
usethis::use_git()  
usethis::use_github()
```

References