Writing Reproducible Reports and Articles with Quarto

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Data-Driven Social Science

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DATA-DRIVEN SOCIAL SCIENCE
PRINCETON UNIVERSITY

Today's Plan

- What is Quarto?
- Including Text, Tables, and Figures
- Including Code
- Quarto Extensions
- Academic Websites
- Resources

What is Quarto?

- Publishing system based on Pandoc
  - ‣ Input a markdown document, render to anything supported by Pandoc
    - – HTML, PDF, Word, Beamer, GFM, MediaWiki, etc.
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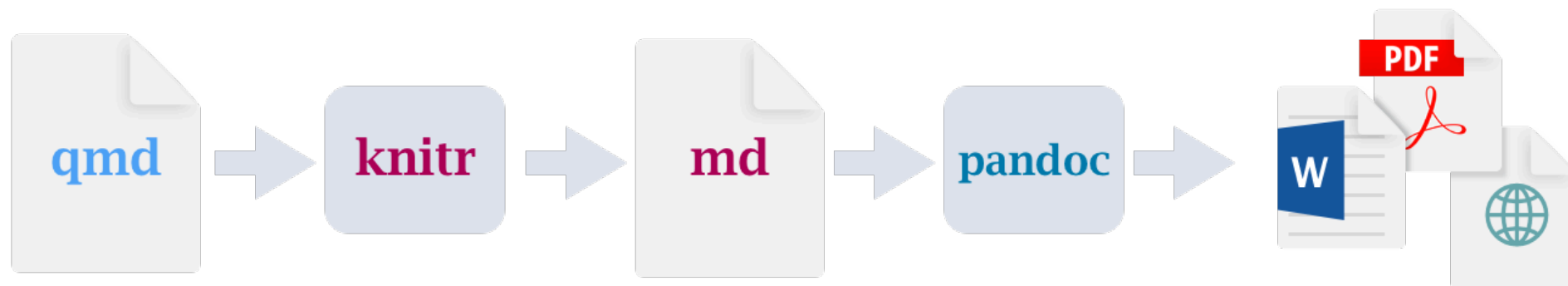- Reproducible system to combine code and text together

Figure from https://quarto.org/docs/faq/rmarkdown.html

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1. YAML header
   1. Specify title, authors, and frontmatter
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1. YAML header
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    3. Style the document (e.g., pick fonts `mainfont: Libre Franklin`)
2. Body
    1. Contains text
    2. Include LaTeX equations `$x^2$` becomes x^2
    3. Write code chunks in R, Python, Julia, Observable, etc.
    4. Include raw chunks with format-specific code (e.g., HTML or Typst blocks)

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- Write in Markdown instead of LaTeX (or Typst or HTML ...)
- Markdown formats work well with version control

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- All other formats supported by Pandoc (e.g., Wiki, Markdown, JATS, InDesign, ePub)

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- Social sciences: Annual Reviews, APSR, BJPS, PA, PSRM, Perspectives, APA, and more

Including Text, Tables, and Figures

Writing 101 in Quarto

Quarto builds on Pandoc's flavor of Markdown

- Code blocks are fenced with backticks `code` becomes code
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- Reference citations with `[@citation]` for parenthetical or `@citation` for prose

Bibliographies

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- Can be styled with CSL for all formats
- Additional customization available for LaTeX: natbib, biber, biblatex
- Can also use Pandoc's implementation of CiteProc
  - ‣ Similar to the citation system in Word

Including figures

Basic figures can be included with `![]()` syntax:

```
![Caption](DDSS-stacked_PU_shield_black.png)
```
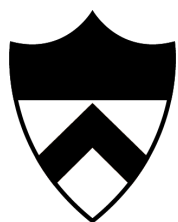

Figure 1: Caption

```
::: {#fig-subfig layout-ncol=2}

![A](DDSS-stacked_PU_shield_black.png)

![B](DDSS-stacked_PU_shield_black.png)

More Captions

:::
```


(a) A

(b) B

Figure 1: More Captions

Making a table

Tables use "pipe" syntax:

```
| University |  Color  |
|:----------|--------:|
| Princeton | #E98338 |
| Harvard   | #A51C30 |
| Cornell   | #B31B1B |
| Brown     | #ED1C24 |

: Red and orange university colors {#tbl-colors}
```

University	Color
Princeton	#E98338
Harvard	#A51C30
Cornell	#B31B1B
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Red and orange university colors

Raw Content

Raw content (e.g. HTML in a webpage) can be included with a special block:

```
```{=typst}
#set text(fill: blue)
Some example text.
```
```

Some example text.

Including Code

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- Other languages: Any language with a Jupyter kernel (e.g., Stata)
  - I have heard that this works surprisingly well!
- Other languages: Custom support via knitr for select languages (e.g., `rust` via `rextendr`)

Control code chunk behavior with options:

- `#| echo: false` - Hide code, show output only
-
-
-
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- `#| warning: false` / `message: false` - Suppress R warnings/messages
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- `#| fig-width: 8` / `#| fig-height: 6` - Control figure dimensions
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- `#| label: fig-myplot` - Add cross-reference labels
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- `#| label: fig-myplot` - Add cross-reference labels
- `#| cache: true` - Cache expensive computations

Quarto Extensions

Extend Quarto's functionality with extensions:

- Formats: Custom output formats (e.g., journal templates, custom PDFs)
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Install with: `quarto add username/extension-name`

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- Shortcodes: Reusable content snippets (`{{< video ... >}}`, `{{< include ... >}}`)
- Revealjs plugins: Enhanced slide presentations

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Centralized brand configurations

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Centralized brand configurations

Define once, apply everywhere:

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- Typography (fonts, sizes)
- Logos and images
- Apply across HTML, PDFs, slides, websites

Example: christopherkenny/princeton-brand.yml

```yaml
meta:
  name:
    full: Princeton University
    short: Princeton
  link:
    home: https://www.princeton.edu/
    twitter: https://x.com/Princeton
    linkedin: https://www.linkedin.com/school/princeton-university/
    facebook: https://www.facebook.com/PrincetonU/
  founded: 1746

color:
  palette:
    princeton-orange: "#e98338"
```

```
    deep-blue: "#092264"

typography:
  fonts:
    - family: "Princeton Monticello Display"
      source: file
      files:
        - path: https://drive.google.com/file/d/19HUJ52fQbbQtvuUKUV5h0hJtaf6
NJIUQ
          weight: regular

logo:
  images:
    primary:
      path: assets/PU_mark.png
```

Workflow for academic writing:

1. Start with a preprint template: `quarto use template christopherkenny/ctk-article`
2.
3.
4.
5.
6.
7.
8.

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6. Submit generated PDF (+ source files)
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5. Render to PDF: `quarto render manuscript.qmd`
6. Submit generated PDF (+ source files)
7. Get desk rejected
8. Reformat by importing next template `quarto add template christopherkenny/nature`

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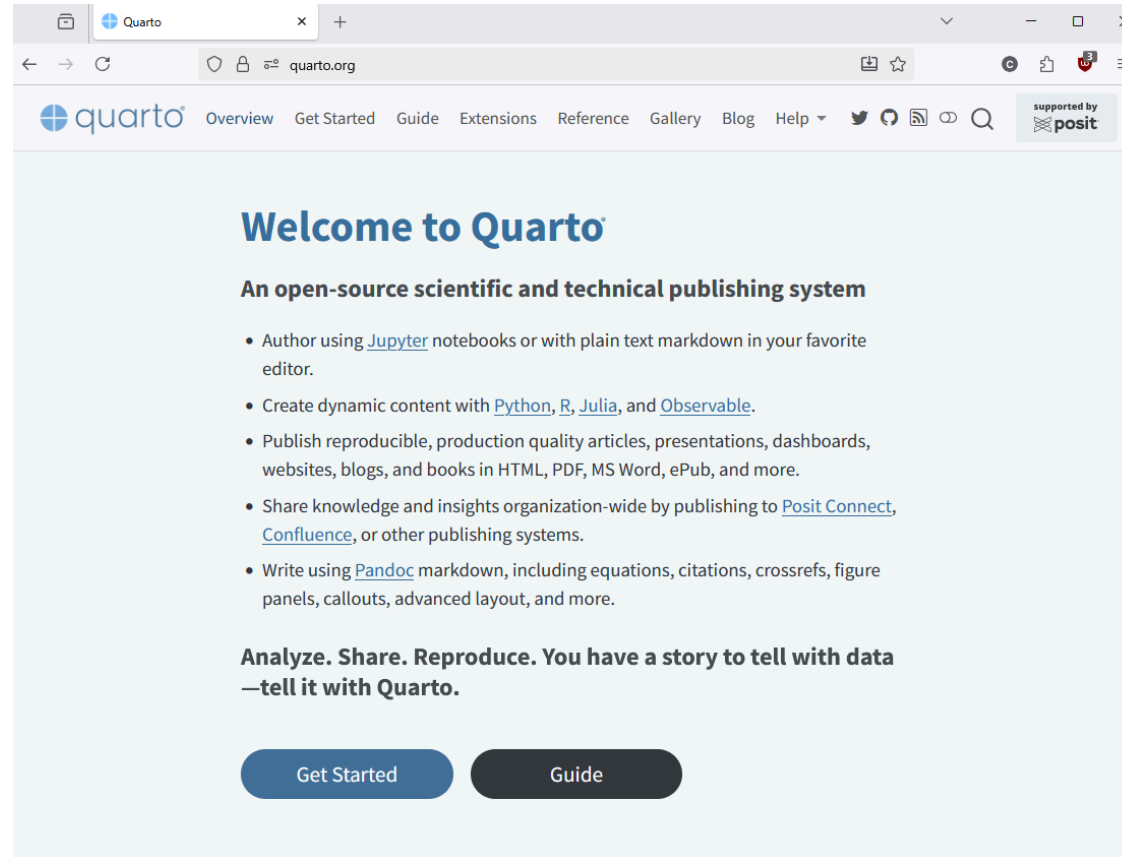 - Each subfile = a partial
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- Complex formats (e.g., HTML, LaTeX, revealjs) break out more pieces
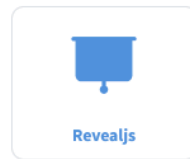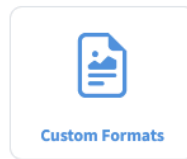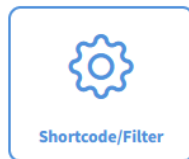
Academic Websites

Resources

Quarto Extensions

Extensions are a powerful way to modify and extend the behavior of Quarto. Below is a listing of available extensions (please let us know if you have an extension you'd like to see added to the list).

See the articles on Creating Extensions to learn how to develop your own extensions.

Shortcode/Filter	Journal Articles	Custom Formats	Revealjs

awesome quarto®

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Using Typst + Polylux via `christopherkenny/projector`

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Using Typst + Polylux via `christopherkenny/projector`

Source available:

https://github.com/christopherkenny/quarto-workshop-fall2025/blob/main/
quarto-workshop-fall2025.qmd