Rmarkdown and coding skills

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RMarkdown

RStudio Snippets

Tidyverse style

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QMD and Questions

RMarkdown

RMarkdown http://rmarkdown.rstudio.com.

- R Markdown documents are fully reproducible.
- Use a productive notebook interface to weave together narrative text and code to produce elegantly formatted output.
- Use multiple languages including R, Python, and SQL.
- Support output formats including HTML, PDF, MS Word, Beamer, books, dashboards, shiny applications, scientific articles, websites, and more.

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YAML

There are three basic components of an R Markdown document:
the metadata, text, and code.

- The syntax for the metadata is YAML
- Also called the YAML metadata or the YAML frontmatter
- Do not forget to indent the sub-fields of a top field properly
- Here is the YAML for this beamer slides

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YAML

```
---
title: "Rmarkdown and coding skills"
author: "Randy (Xin) Jin"
date: "2024-08-20"
institute: Biostatistic and Bioinformatice Department
output:
  beamer_presentation:
    toc: true
    keep_tex: yes
    slide_level: 2
    latex_engine: xelatex
    theme: CUDenver
---
```

Text

Inline LaTeX equations can be written in a pair of dollar signs using the LaTeX syntax, e.g., `$f(k) = {n \choose k} p^{k}(1-p)^{n-k}$`

And in real file, it look like this $f(k) = \binom{n}{k} p^k (1-p)^{n-k}$

The math expressions of the display style can be written in a pair of double dollar signs, e.g., `$$f(k) = {n \choose k} p^{k}(1-p)^{n-k}$$`,

And the output looks like this

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k}$$

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Text

For example type the matrix or array

```
$$
\Theta =
\begin{pmatrix}
  \alpha & \beta\\
  \gamma & \delta
\end{pmatrix}
$$
```

$$
\Theta =
\begin{pmatrix}
\alpha & \beta\\
\gamma & \delta
\end{pmatrix}
$$

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Code

The syntax for text (also known as prose or narratives) is Markdown

- A code chunk starts with three backticks
- An inline R code expression
- Remember to use the cheat sheet https://www.rstudio.com/resources/cheatsheets/ and Help Reference

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Render/Knitr

The usual way to compile an R Markdown document is to click the Knit button

The corresponding keyboard shortcut is Ctrl + Shift + K (Cmd + Shift + K on macOS).

Under the hood, RStudio calls the function **rmarkdown::render()** to render the document in a new R session.

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Templates and shortcuts

Let's see the templates and shortcuts in Rstudio ...

RStudio Snippets

Snippets

Code snippets are text macros that are used for quickly inserting common snippets of code

If you select the snippet from the completion list, it will be inserted along with several text placeholders which you can fill in by typing and then pressing Tab to advance to the next placeholder.

- By default, the completion list will show up automatically and activated via the Tab key.
- If you have typed the character, then you can press Shift+Tab.

Note that for Markdown snippets within R Markdown documents too

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Customizing Snippets

You can edit the built-in snippet definitions and even add snippets of your own via the Edit Snippets button in Global Options -> Code

For example, try to type `matrix` and press Shift+Tab in Latex

Or try to type `title` in the Rmarkdown and press Shift+Tab

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Saving and Sharing Snippets

Once you've customized snippets for a given language, they are
written into the `~/.R/snippets`directory.

For example, the customized versions of `R` and `C/C++` snippets are
written to:

```
~/.R/snippets/r.snippets
~/.R/snippets/c_cpp.snippets
```

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Tidyverse style

Tidyverse https://style.tidyverse.org/index.html

Good coding style is like correct punctuation: you can manage
without it, butitsuremakesthingseasiertoread.

It was derived from Google's original R Style Guide - but Google's
current guide is derived from the tidyverse style guide.

- Files and Syntax
- Functions
- Pipes
- ggplot2
- packages

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The Addins

The Addins

Addins are supper powerful tools to make your life easier.

Addins provide a mechanism for executing R functions
interactively from within the RStudio IDE—either through
keyboard shortcuts, or through the Addins menu.

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Some Addins

1. `styler` allows you to interactively restyle selected text, files, or entire projects. It includes an RStudio add-in, the easiest way to re-style existing code.
2. `openai` for automatic spelling, code commenting and code creation. For automatic spelling, code commenting and code creation
3. `colourpicker` Especially for `colourpicker::colourWidget()`
4. `ymlthis` makes it easy to write YAML front matter for R Markdown and related documents.
5. `ViewPipeSteps` allows to print or view the output of your pipe chain after each step.

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QMD and Questions

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QMD and Questions

Quarto is a multi-language, next-generation version of R Markdown

- Removes the bookdown pkg as a dependency in my scientific writing, it has simpler and universal cross-referencing
- Multi-language and multi-engine: Python, R, and JavaScript via integration with Jupyter, Knitr, and Observable.
- Global chunk options set in YAML, rather than a separate setup chunk
- Easier to show verbatim chunks, good for writing tutorials and guides

...

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