Applied Markdown for Researchers

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February 2025

Markdown

Markdown

- Markdown is a *lightweight markup language*
  - Means that, unlike LaTeXor html it is not a programming language
  - Overall, known for its simplicity and readability, both in its raw form and rendered form
- Markdown is widely used in coding-related applications, such as:
  - GitHub
  - Jupyter Notebooks/Google Colab
  - R Markdown/Quarto
  - Stack Overflow
  - Slack
  - Notion/Obsidian
  - Reddit!

Markdown Syntax

- We've already talked about some basic Markdown syntax:
  - Headers use `#`
  - Lists use `-` or `1.`
  - Emphasis uses `*` or `_`
  - Links use `[text](url)`
- There are many more elements in Markdown, such as:
  - Images
  - Tables
  - Blockquotes
  - Code blocks
  - Footnotes
  - And more!
- You can consult the Markdown Guide for more information
  - Also the Coding for Economists markdown guide

Markdown flavours

- Markdown has “flavours” or “dialects” that add extra functionality
  - GitHub Flavored Markdown (GFM)
  - CommonMark
  - Pandoc Markdown
  - Markdown Extra
  - And more!
- These flavours add extra functionality, such as:
  - Tables
  - Footnotes
  - Strikethrough
  - Task lists
  - And more!
- The most common is GFM
  - See the GitHub Markdown Cheatsheet for more info
- Variations are very small, today we’re using Pandoc Markdown
  - See the Quarto documentation here

Compilation of Markdown

- In RMarkdown and Quarto, Markdown text is compiled through Pandoc
  - Pandoc is a universal document converter
- We do not need to understand much about the internal workings of Pandoc
- But know that Markdown can be used and compiled without any major software
  - Use VS Code (with the Markdown Preview Enhanced and Markdown All in One extensions)
  - Online, you may use Dillinger

Tables in Markdown

- Tables in Markdown are created using pipes | and hyphens -
  - The first row is the header row
  - The second row is the separator row
  - The rest of the rows are the data rows
- Example:

```
| Header 1 | Header 2 | Header 3 |
|----------|----------|----------|
| Data 1   | Data 2   | Data 3   |
| Data 4   | Data 5   | Data 6   |
```

- Renders as:

Header 1	Header 2	Header 3
Data 1	Data 2	Data 3
Data 4	Data 5	Data 6

Tables in Markdown

- While less clunky than LaTeX tables, they may be less flexible, depending on the “‘python
- This is since the focus is on readibility and simplicity
- However, when trying to make complex tables, no one expects anyone to manually write them in Markdown
- Use Markdown tables generator or similar tools to generate tables
- We will later discuss how to export tables from statistical software to Markdown

Code: inline and blocks

- As mentioned before, since Markdown is heavily oriented to software documentation, a big thing about it is how we write code within it
- Inline code is written using backticks `
- Code blocks are written using triple backticks ```
- Example:

```
This is an inline code: `print("Hello, world!")`
```

Code: inline and blocks

- This is a code block:

```
print("Hello, world!")
```

- Code blocks should include the name of the language for syntax highlighting. Eg. ```` ```r ```` for R code or ```` ```python ```` for Python code
  - Unfortunately Stata is not supported by default.

Divs and spans in Markdown

- Divs and spans are used to apply CSS styles to Markdown elements
- Divs are something coming from HTML, and are used to apply styles to blocks of text
- We will typically not need this unless you're deep in the weeds of web development
    - Typically academic documents can be styled with LaTeX
- However, a div in Quarto is often useful for defining images and table environments
    - Same idea as in LaTeX

Divs in Markdown

- Example of a div in Quarto:

```
::: {.myclass}

This is a div

:::
```

Divs in Markdown

- For a table in Quarto, which includes a caption:

```
::: {#tbl-panel layout-ncol=2}
| Col1 | Col2 | Col3 |
|------|------|------|
| A    | B    | C    |
| E    | F    | G    |
| A    | G    | G    |

: First Table {#tbl-first}

| Col1 | Col2 | Col3 |
|------|------|------|
| A    | B    | C    |
| E    | F    | G    |
| A    | G    | G    |
```

LaTeX in Markdown

LaTeX in Markdown

- While the most basic of Markdown may not support LaTeX, using it in VS Code or RMarkdown is very easy
- You can simply write LaTeX code within Markdown
- For example, to write an equation in Markdown:

```
This is an equation: $y = \beta_0 + \beta_1 x$
```

- This renders as:

This is an equation: $y = \beta_0 + \beta_1 x$

LaTeX in Markdown

- We typically will not be able to use LaTeX packages in Markdown
- This is because Markdown is not a programming language, and does not have the same functionality as LaTeX
- Unless we're in Quarto and outputting to PDF, we will not be able to use LaTeX packages
- In the latter case, we can use LaTeX packages in the YAML header

```yaml
output:
  pdf_document:
    includes:
      in_header: header.tex
```