Pretty Documents Using
R Markdown and Quarto

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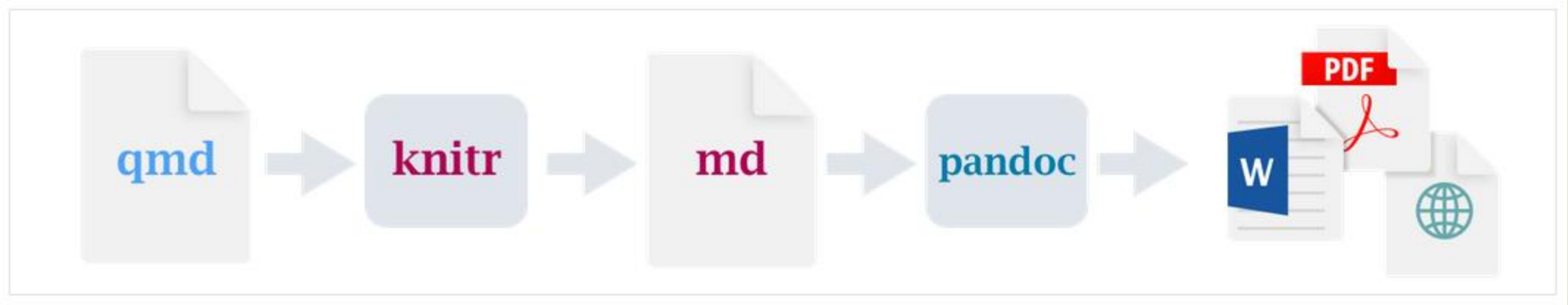
Workshop Agenda

1. Setup
2. R Markdown Overview
3. Graphics
4. Tables
5. Document customization
6. Quarto

RMarkdown & Quarto pipeline



Setup

Requirements:

- R 4.0.1 or later
- RStudio 2022.12.0+353 or later

```
# Install from CRAN
install.packages( c(
 'rmarkdown’,
 'knitr'
))
```

Setup
(optional)

If you want to generate PDF documents, install *tinytex*

TinyTeX is a lightweight, portable, cross-platform LaTeX distribution.

```
# Install tinytex R package from CRAN
install.packages('tinytex')

# Install TinyTeX
tinytex:: install_tinytex()
```

Regular R scripts

- When R script is shared, the output is not included
- Output is generated separately from the input – it takes some effort to find a line in the script that produced the output
- Only simple comments (no formatting)

R Notebooks

- Output is (can be) included with the code
- Output (both text and graphics) is following the input lines of code that produced it
- Advanced formatting
- Can be exported to HTML, PDF, or DOC formats

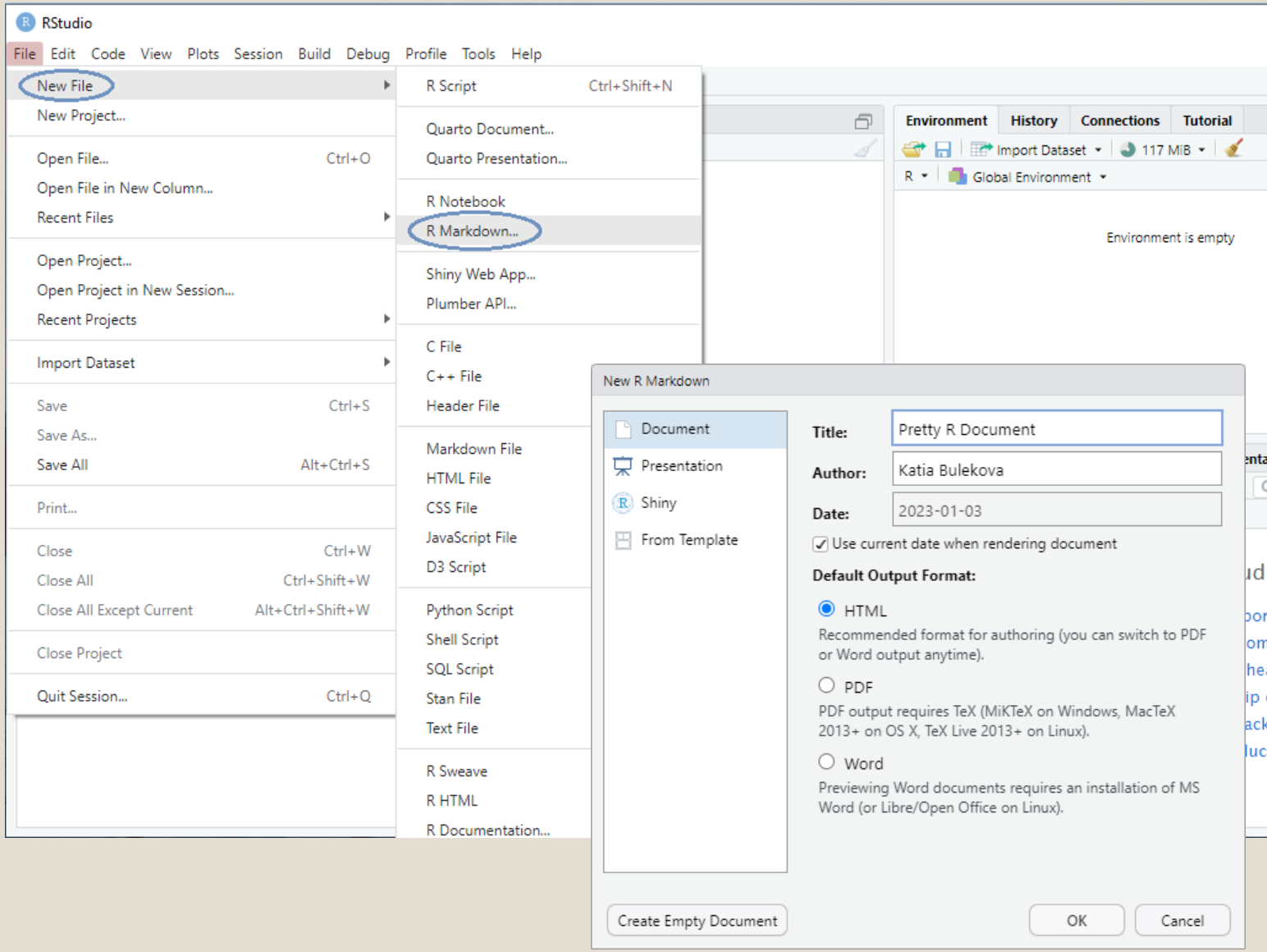
Getting Started

Using *File* menu, select

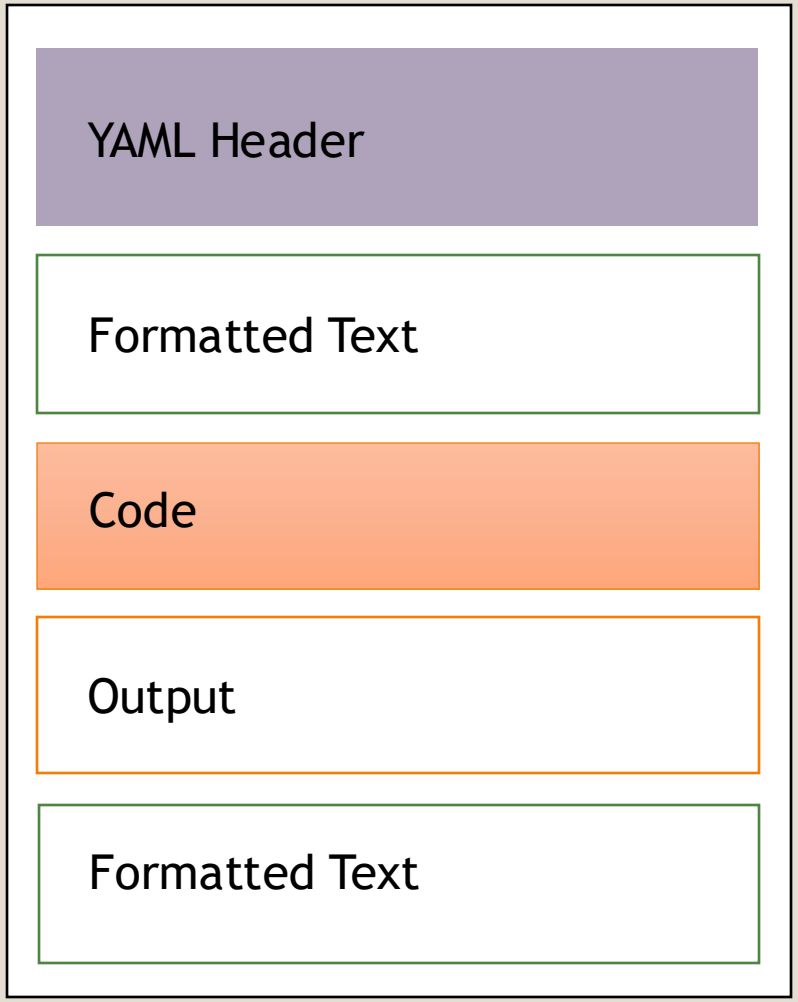
New File -> R Markdown

Fill out *Title*, *Author* and *Date* fields

Check "*Use current date…*" box



R Markdown Document Structure



R Markdown Document Structure

```
---
title: "Pretty R Document"
author: "Katia Bulekova"
date: "`r Sys.Date()`"
output: html_document
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

Introduction

R Markdown generates high quality reports and supports reproducible research.


```{r}
plot(cars, xlab = "Speed (mph)", ylab = "Stopping distance (ft)",
     las = 1)
lines(lowess(cars$speed, cars$dist, f = 2/3, iter = 3), col = "red")
title(main = "cars data")
```

```

YAML Header

Metadata of the document. Controls:

- themes
- fonts
- output
- table of content
- etc.

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R code chunk

R code chunk

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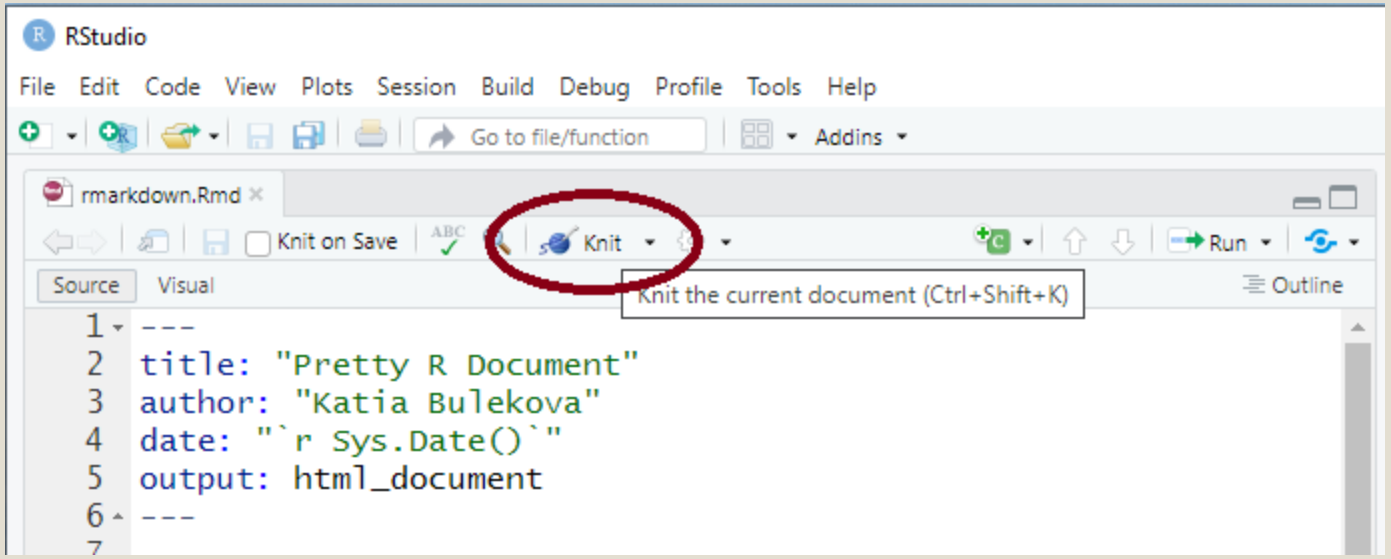
Render Document



Settings:

- Preview in Window
- Preview in Viewer Pane

R Markdown Overview

Cheat sheet and Reference can be found on Posit's website or

rcs.bu.edu/examples/r/examples/RMarkdown/

Syntax	Becomes
`Plain text`	Plain text
`End a line with two spaces` `to start a new paragraph.`	End a line with two spaces to start a new paragraph.
`*italics* and _italics_`	*italics* and *italics*
`**bold** and __bold__`	**bold** and **bold**
`superscript^2^`	superscript^{2}
`~~strikethrough~~`	~~strikethrough~~
`[link](www.rstudio.com)`	link
`# Header 1`	**Header 1**
`## Header 2`	**Header 2**

Practice:

Notebook_1_Rmarkdown.Rmd

YAML Header

YAML: *YAML Ain't Markup Language*

A YAML header contains YAML arguments, such as "title", "author", and "output", demarcated by three dashes (—) on either end.

```
---
title: "RMarkdown Syntax"
author: "Katia Bulekova"
date: "`r Sys.Date()`"
output: html_document
---
```

RMarkdown Syntax

Katia Bulekova

2023-02-01

YAML Header

title: will appear at the head of the document with the largest font size

subtitle: will appear below the title with a smaller font

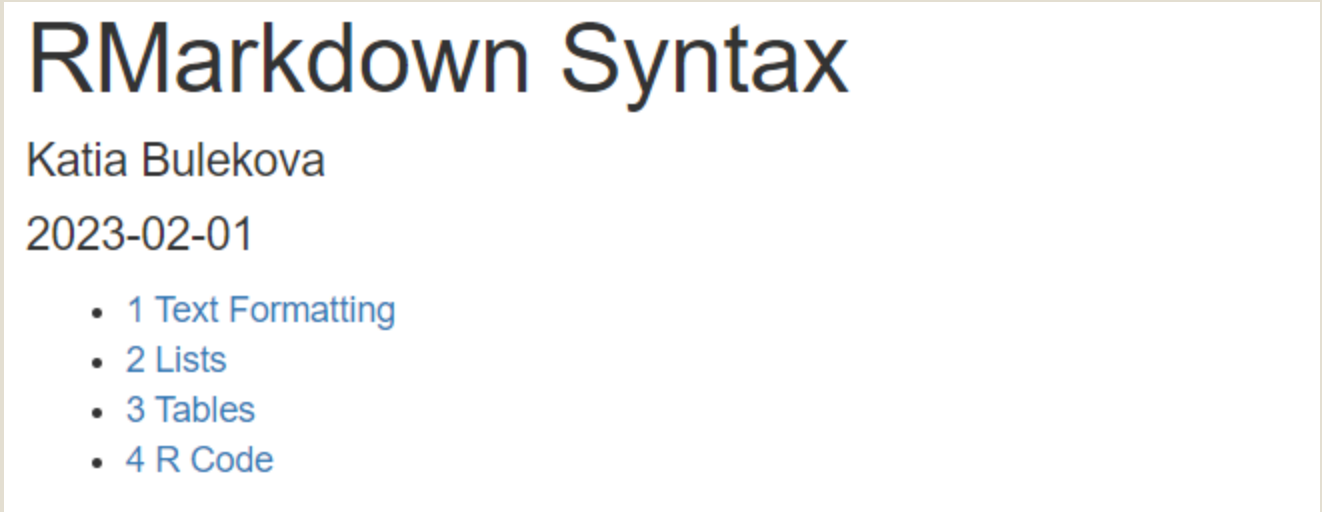
author: any text. It appears below the title (ad subtitle)

date: a plain text or an R function (`"`r Sys.Date()`"`)

YAML Header

toc: Table of Content

```
---
title: "RMarkdown Syntax"
author: "Katia Bulekova"
date: "`r Sys.Date()`"
output:
  html_document:
    toc: true
    number_sections: true
---
```



YAML Header

toc: Table of Content

```
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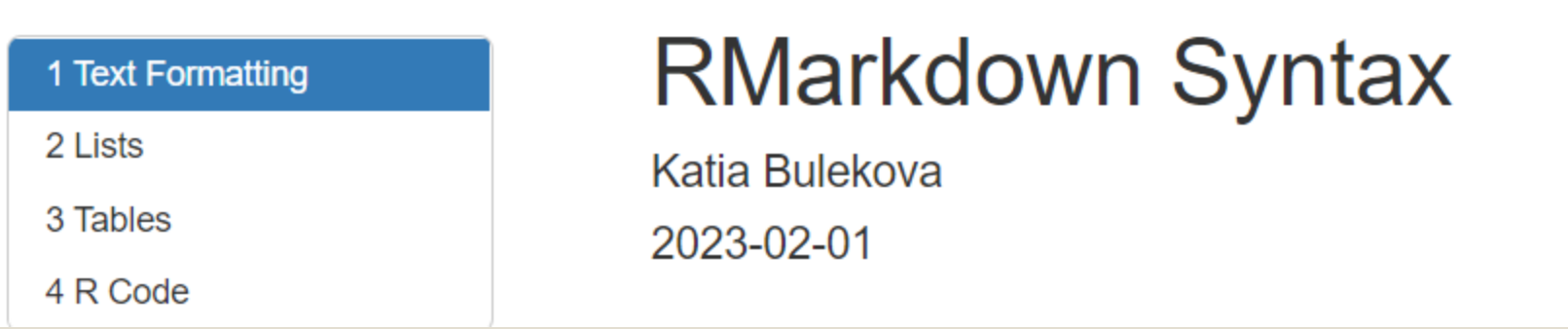
title: "RMarkdown Syntax"
author: "Katia Bulekova"
date: "`r Sys.Date()`"
output:
  html_document:
    toc: true
    number_sections: true
    toc_float: true
---
```



YAML Header

theme: document styling (font, color, etc.)

https://www.datadreaming.org/post/r-markdown-theme-gallery/

code_folding: "show" or "hide" – controls whether code chunks are shown or hidden.

output: html_document

html_notebook

pdf_document

word_document

YAML Header

Comprehensive documentation of YAML field options:

https://cran.r-project.org/web/packages/ymlthis/vignettes/yaml-fieldguide.html

Tables

Notebook_2_Tables_HTML.Rmd

Notebook_3_Tables_PDF.Rmd

Graphics

Notebook_4_Graphics.Rmd

Quarto

https://quarto.org/docs/guide/

Quarto is a multi-language, next generation version of R Markdown from RStudio, with many new new features and capabilities. Like R Markdown, Quarto uses Knitr to execute R code, and is therefore able to render most existing Rmd files without modification.

Notebook_4_Quarto.Rmd

Questions?

Please fill out our evaluation form:

http://scv.bu.edu/survey/tutorial_evaluation.html