Reproducible Research – practical

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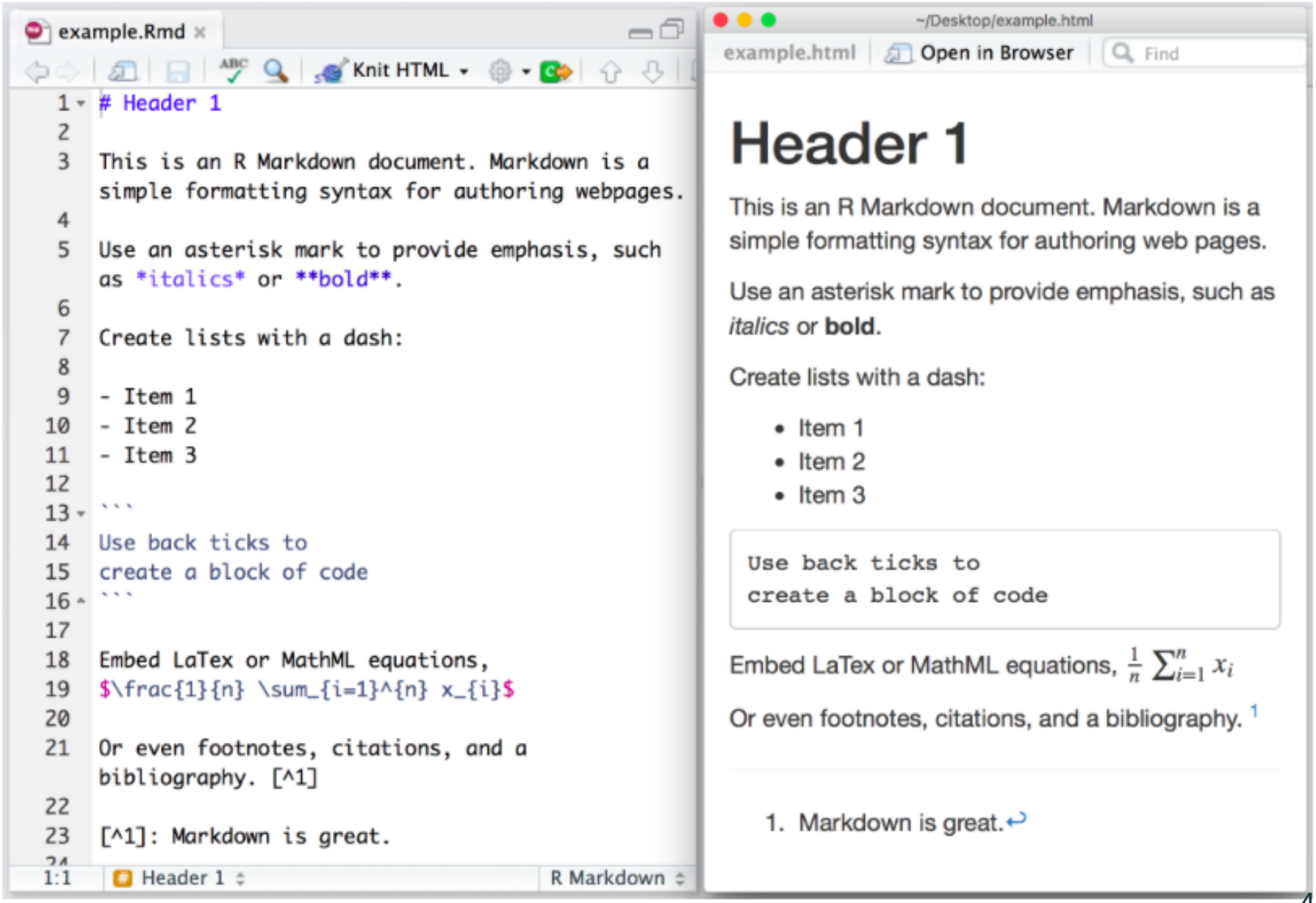
RMarkdown

Markdown

Markdown is a simple formatting language designed to make authoring content easy for everyone. Rather than write in complex markup code (e.g. HTML or LaTex), you write in plain text

Markdown


example.Rmd
Knit HTML
Header 1
This is an R Markdown document. Markdown is a simple formatting syntax for authoring webpages.
Use an asterisk mark to provide emphasis, such as *italics* or **bold**.
Create lists with a dash:
- Item 1
- Item 2
- Item 3
```
Use back ticks to
create a block of code
```
Embed LaTex or MathML equations,
$\frac{1}{n} \sum_{i=1}^{n} x_{i}$
Or even footnotes, citations, and a bibliography. [^1]
[^1]: Markdown is great.
1:1
Header 1
R Markdown
~/Desktop/example.html
example.html
Open in Browser
Find
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RMarkdown elements

- Header
- Text
- Inline `R` code
- Code chunks

Header

- R Markdown documents can contain a metadata section that includes title, author, and date information
- As well as options for customizing output

```yaml
---
title: "Wheat infected by Xanthomonas protein analysis"
author: "University of Insubria - Dept. of Biotechnology and Life Science"
output:
  pdf_document:
    includes:
      in_header: header.tex
    number_sections: yes
    toc: yes
    toc_depth: 4
    fig_caption: true
    fig_width: 10
    fig_height: 8
---
```

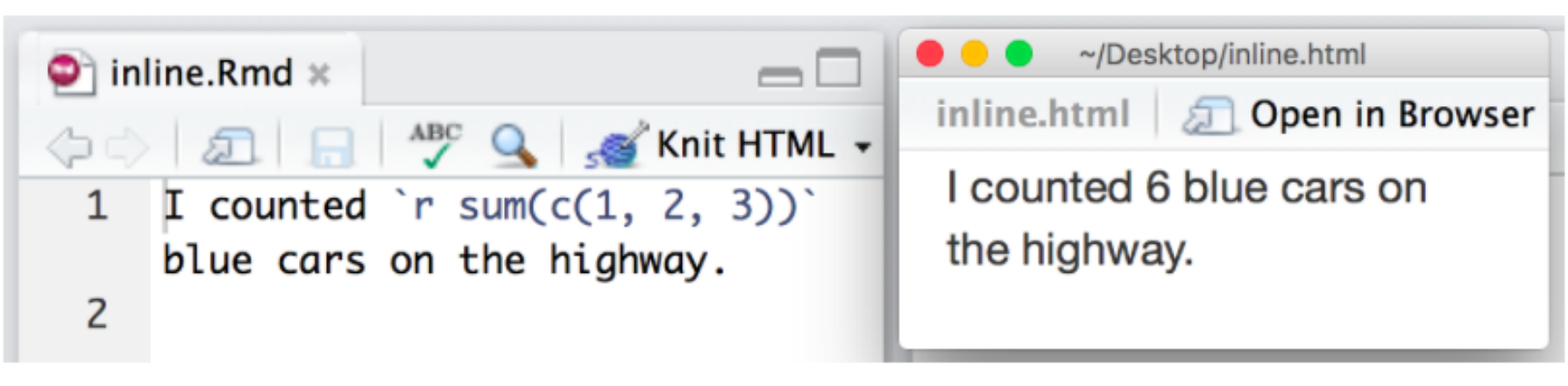
Text

- Text can be added to comment you code
- Text can be added to comment your outputs

```
\section{Root protein analysis}
Analysis of proteins identified in wheat control samples vs wheat samples infected with \tex
The analysis has been conducted n parallel for roots and leaves. Samples have been collected
\textit{Xanthomonas} inoculation. Each replicate is a pool of 2 plants.
```

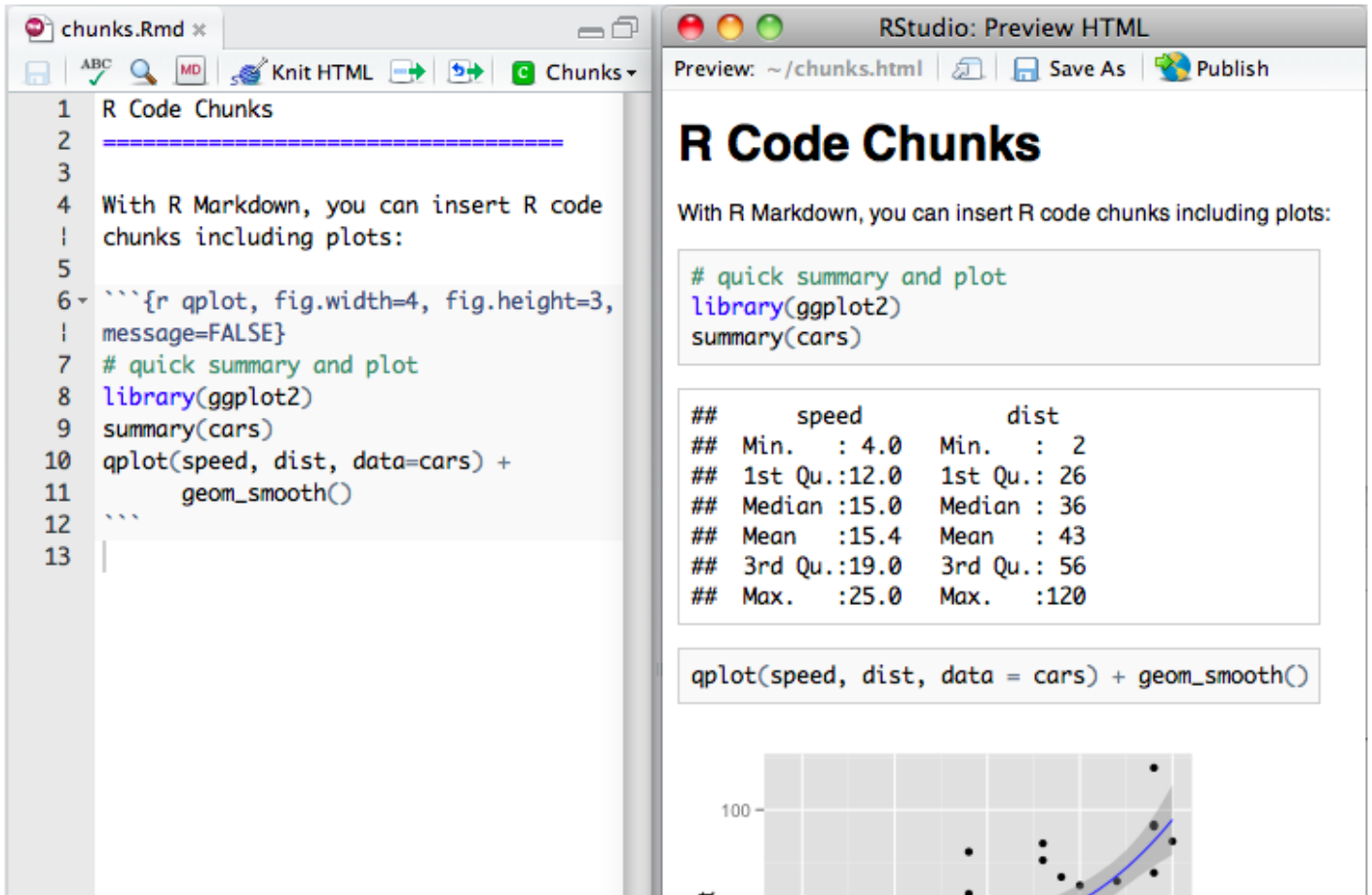
Inline `R` code

- `R` expressions can be evaluated inline
- Enclosing the expression within a single back-tick qualified with r.



R chunck

- R Code Chunks can be embedded with the native Markdown syntax for fenced code regions



R chunck options [few of them]

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- **errors**: option error ('FALSE' will make R stop if an error occurs; 'TRUE' will show the error messages in the output)
- **plots**: option 'fig.keep' ('none' discards all plots; 'all' for all plots including low-level plots; 'high' for high-level plots)

Exercise 1

GOAL: CREATE A DEFAULT MINIMAL DOCUMENT

- Open RStudio

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Exercise 1

GOAL: CREATE A DEFAULT MINIMAL DOCUMENT

- Open RStudio
- Select File > New file > R Markdown
- Create an HTML document

Exercise 1

Untitled1* | Untitled.Rmd

Knit HTML | Run | Chunks

```
---
title: "Untitled"
author: "Marco Chiapello"
date: "11 June 2016"
output: html_document
---

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```{r}
summary(cars)
```

You can also embed plots, for example:

```{r, echo=FALSE}
plot(cars)
```

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.
```

Viewer

Publish

Untitled

Marco Chiapello

11 June 2016

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```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

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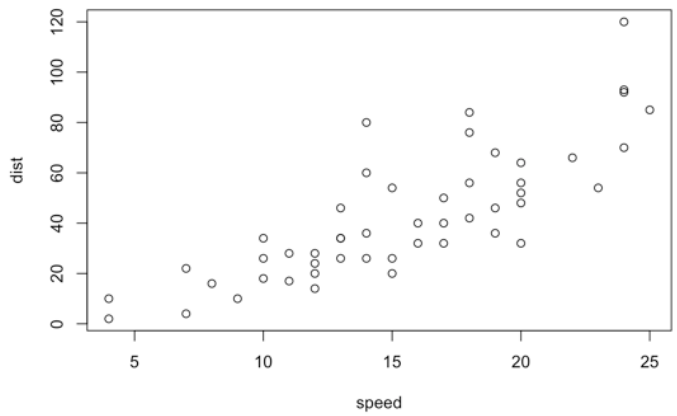

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- Suppress the printing of the `R` results

Exercise 1

GOAL: CREATE A DEFAULT MINIMAL DOCUMENT

- Open RStudio
- Select File > New file > R Markdown
- Create an HTML document
- Suppress the printing of the `R` code
- Suppress the printing of the `R` results
- Suppress the printing of the plot

Exercise 2

GOAL: CREATE A DEFAULT MINIMAL DOCUMENT

- Create a pdf document
- Create a docx document

Exercise 3

GOAL: CREATE A RMARKDOWN DOCUMENT

- Using the dataset4.csv
- Create a document containing analysis, plots and comments