

Data Visualization with R

R Markdown tutorial

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Installing R and RStudio

Install the latest version of R from the CRAN website:
<https://cran.r-project.org/>

Install the latest version of RStudio from
<https://posit.co/download/rstudio-desktop/>

Open RStudio and Go to File > New File > R Markdown

RStudio interface

The screenshot displays the RStudio IDE interface. The main editor window shows an R Markdown file named 'RMarkdown.Rmd'. The code includes a YAML header with title, author, date, and output format, followed by R setup options and a title comment. The body text describes R Markdown and provides instructions on how to generate a document. The console at the bottom shows the R version and platform information, along with the license and natural language support details.

```
1 ---
2 title: "R Markdown tutorial"
3 author: "Ariane Ducellier"
4 date: "8/29/2023"
5 output: pdf_document
6 ---
7
8 ```{r setup, include=FALSE}
9 knitr::opts_chunk$set(echo = TRUE)
10 ```
11
12 ## R Markdown
13
14 This is an R Markdown document. Markdown is a simple formatting syntax for
15 authoring HTML, PDF, and MS Word documents. For more details on using R Markdown
16 see <http://rmarkdown.rstudio.com>.
17
18 When you click the **Knit** button a document will be generated that includes
19 the contents of this document and the output of the embedded R code chunks in
20 the output file.
21
22 R Markdown tutorial
```

The console output shows:

```
R version 4.2.3 (2023-03-15) -- "Shortstop Beagle"
Copyright (C) 2023 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
```

The Data Input pane on the right shows the 'mtcars' dataset with 32 observations and 11 variables. The description of the 'read.table()' function is also visible.

Data Input

Description

Reads a file in table format and creates a data frame from it, with cases corresponding to lines and variables to fields in the file.

Usage

```
read.table(file, header = FALSE, sep = "", quote = "\"",
  dec = ".", numerals = c("allow.loss", "warn.loss", "no.
  row.names, col.names, as.is = !stringsAsFactors,
  na.strings = "NA", colClasses = NA, nrows = -1,
  skip = 0, check.names = TRUE, fill = !blank.lines.skip,
  strip.white = FALSE, blank.lines.skip = TRUE,
  comment.char = "#").
```

Rmd file structure

YAML header:

```
---  
title: "R Markdown tutorial"  
author: "Ariane Ducellier"  
date: "8/29/2023"  
output: pdf_document  
---
```

R code chunks:

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

Markdown text:

```
## R Markdown
```

```
This is an R Markdown document.
```

Main options for R chunk options

```
““{r chunk_name, options}  
R code  
““
```

- `include = FALSE` - No code and no results printed in the finished file.
- `echo = FALSE` - No code.
- `message = FALSE` - No messages generated by the code.
- `warning = FALSE` - No warnings generated by the code.
- `fig.cap = "..."` - Caption for graphical results.

Basic Markdown syntax

```
_Italic text_  
**Bold text**  
# Header one  
## Header two  
### Header three  
[R Markdown] (https://rmarkdown.rstudio.com)  
![RStudio interface] (RMarkdown.png)  
> "A quote"  
* List item 1  
* List item 2  
1. Ordered list item 1  
2. Ordered list item 2  
Line 1 followed by two spaces  
Line 2
```

Inline code:

```
Here is the result: 'r result'.
```

Printing tables:

```
```{r ktable, results=asis}  
library(knitr)
kable(mtcars[1:5], caption="A knitr table")
```
```

More yaml options

Table of contents:

```
output:  
  pdf_document  
  toc: true
```

Dashboards:

```
output:  
  flexdashboard::flex_dashboard:  
    orientation: columns
```


More on R Markdown

Markdown tutorial: <https://www.markdowntutorial.com/>

R Markdown tutorial:

<https://rmarkdown.rstudio.com/lesson-1.html>

R Markdown guide: <https://bookdown.org/yihui/rmarkdown/>

In RStudio, go to:

- Help > Markdown Quick Reference
- Help > Cheatsheets