RMarkdown

Métodos Quantitativos Aplicados à Ciência Política

Frederico Bertholini

09.nov.2020

1 Revendo conteúdos da última aula - gráficos

2 RMarkdown

3 Live Coding

Rode seus pacotes!


```
lapply(c("tidyverse","haven","lubridate",
         "janitor","readxl",
          "stringr", "magrittr","srvyr",
         "survey"),require,character.only=T)
```

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Refazendo um gráfico feio

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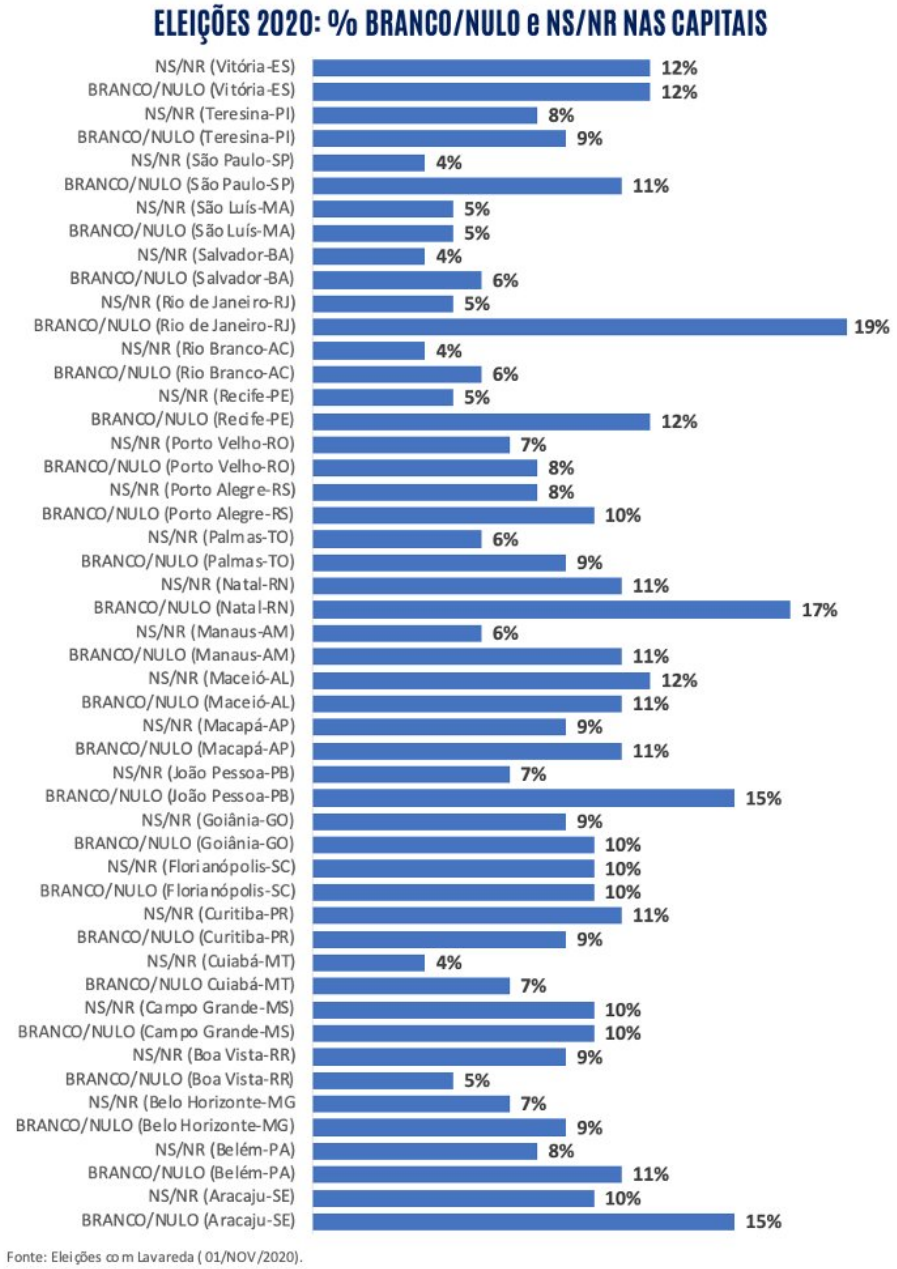

Ficou feio mesmo

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Então bora melhorar

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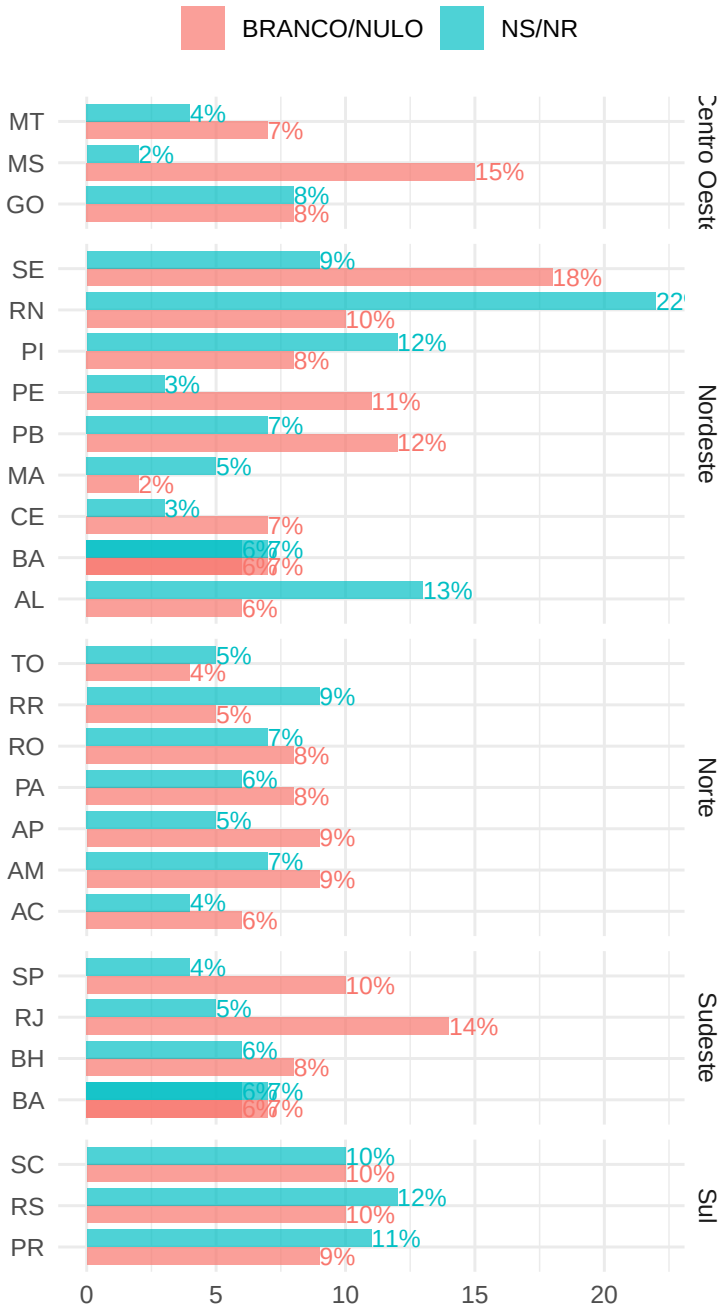
```
source("dados/brincando_graficos.R")
```


BRANCO/NULO
NS/NR
MT
MS
GO
SE
RN
PI
PE
PB
MA
CE
BA
AL
TO
RR
RO
PA
AP
AM
AC
SP
RJ
BH
BA
SC
RS
PR
Centro Oeste
Nordeste
Norte
Sudeste
Sul
0
5
10
15
20

onde estamos?

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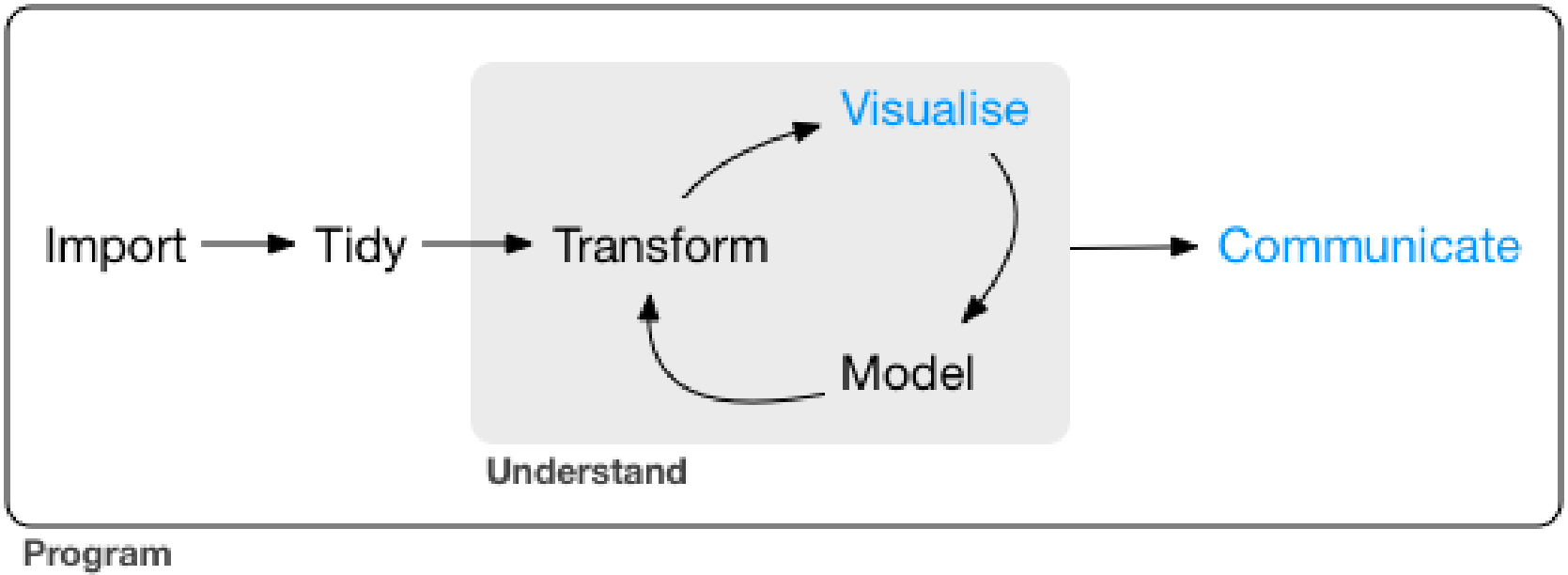

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O que é?

- Comunicar com os tomadores de decisão,

  – que querem se concentrar nas conclusões, não no código por trás da análise.

- Colaborar com outros cientistas de dados,

  – interessados em suas conclusões e como você as alcançou (ou seja, o código).

- um caderno de laboratório moderno,

  – onde você pode anotar não apenas o que fez, mas também o que pretende.

O R Markdown integra vários pacotes R e ferramentas externas. então, use o cheatsheets:

R Markdown Cheat Sheet

R Markdown Reference Guide

RMarkdown

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R Markdown : : CHEAT SHEET

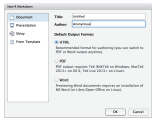
What is R Markdown?

.Rmd files • An R Markdown (.Rmd) file is a record of your research. It contains the code that a scientist needs to reproduce your work along with the narration that a reader needs to understand your work.

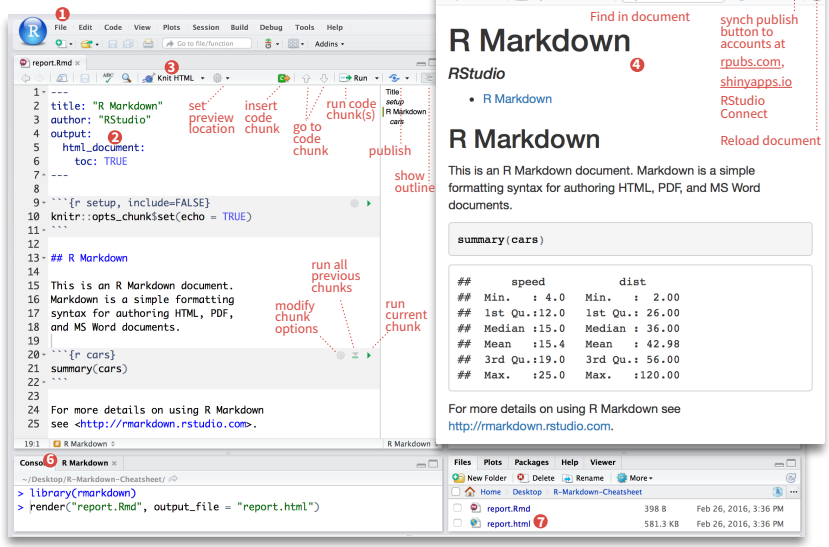
Reproducible Research • At the click of a button, or the type of a command, you can rerun the code in an R Markdown file to reproduce your work and export the results as a finished report.

Dynamic Documents • You can choose to export the finished report in a variety of formats, including html, pdf, MS Word, or RTF documents; html or pdf based slides, Notebooks, and more.

Workflow



1. **Open a new .Rmd file** at File ▶ New File ▶ R Markdown. Use the wizard that opens to pre-populate the file with a template
2. **Write document** by editing template
3. **Knit document to create report**; use knit button or **render()** to knit
4. **Preview Output** in IDE window
5. **Publish** (optional) to web server
6. **Examine build log** in R Markdown console
7. **Use output file** that is saved along side .Rmd



render

Use rmarkdown::**render()** to render/knit at cmd line. Important args:

input - file to render **output_format**	**output_options** - List of render options (as in YAML)	**output_file** **output_dir**	**params** - list of params to use	**envir** - environment to evaluate code chunks in	**encoding** - of input file

.rmd Structure

YAML Header
Optional section of render (e.g. pandoc) options written as key:value pairs (YAML).
At start of file
Between lines of `---`

Text
Narration formatted with markdown, mixed with:

Code Chunks
Chunks of embedded code. Each chunk:
Begins with ```` ```{r} ````
ends with ```` ``` ````
R Markdown will run the code and append the results to the doc.
It will use the location of the .Rmd file as the **working directory**

Parameters

Parameterize your documents to reuse with new inputs (e.g., data, values, etc.)

1. **Add parameters** • Create and set parameters in the header as sub-values of params

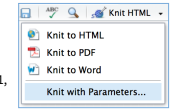
2. **Call parameters** • Call parameter values in code as params$<name>

3. **Set parameters** • Set values wth Knit with parameters or the params argument of render():

render("doc.Rmd", params = list(n = 1, d = as.Date("2015-01-01"))

```
---
params:
  n: 100
  d: !r Sys.Date()
---
```

Today's date is `r params$d`



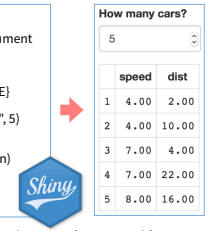
Interactive Documents

Turn your report into an interactive Shiny document in 4 steps
1. Add runtime: shiny to the YAML header.
2. Call Shiny input functions to embed input objects.
3. Call Shiny render functions to embed reactive output.
4. Render w rmarkdown::run or click Run Document in RStudio IDE

```
---
output: html_document
runtime: shiny
---

```{r, echo = FALSE}
numericInput("n",
  "How many cars?", 5)

renderTable({
  head(cars, input$n)
})
```
```



Embed a complete app into your document with shiny::**shinyAppDir()**

Embed code with knitr syntax

INLINE CODE
Insert with **`r <code>`**. Results appear as text without code.
Built with `` `r getRversion()` `` ➡ Built with 3.2.3

CODE CHUNKS
One or more lines surrounded with ```` ```{r} ```` and ```` ``` ````. Place chunk options within curly braces, after **r**. Insert with

```
```{r echo=TRUE}
getRversion()
```
```

➡

```
getRversion()
## [1] '3.2.3'
```

GLOBAL OPTIONS
Set with knitr::**opts_chunk$set()**, e.g.

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

IMPORTANT CHUNK OPTIONS

cache - cache results for future knits (default = FALSE)
cache.path - directory to save cached results in (default = "cache/")
child - file(s) to knit and then include (default = NULL)
collapse - collapse all output into single block (default = FALSE)
comment - prefix for each line of results (default = '##')
dependson - chunk dependencies for caching (default = NULL)
echo - Display code in output document (default = TRUE)
engine - code language used in chunk (default = 'R')
error - Display error messages in doc (TRUE) or stop render when errors occur (FALSE) (default = FALSE)
eval - Run code in chunk (default = TRUE)
fig.align - 'left', 'right', or 'center' (default = 'default')
fig.cap - figure caption as character string (default = NULL)
fig.height, fig.width - Dimensions of plots in inches
highlight - highlight source code (default = TRUE)
include - Include chunk in doc after running (default = TRUE)
message - display code messages in document (default = TRUE)
results (default = 'markup')
'asis' - passthrough results
'hide' - do not display results
'hold' - put all results below all code
tidy - tidy code for display (default = FALSE)
warning - display code warnings in document (default = TRUE)

Options not listed above: R.options, aniopts, autodep, background, cache.comments, cache.lazy, cache.rebuild, cache.vars, dev, dev.args, dpi, engine.opts, engine.path, fig.asp, fig.env, fig.ext, fig.keep, fig.lp, fig.path, fig.pos, fig.process, fig.retina, fig.scap, fig.show, fig.showtext, fig.subcap, interval, out.extra, out.height, out.width, prompt, purl, ref.label, render, size, split, tidy.opts

Publish on RStudio Connect, to share R Markdown documents securely, schedule automatic updates, and interact with parameters in real time.
www.rstudio.com/products/connect/

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R Markdown Reference Guide

Learn more about R Markdown at rmarkdown.rstudio.com
Learn more about Interactive Docs at shiny.rstudio.com/articles

Contents:

1. **Markdown Syntax**
2. Knitr chunk options
3. Pandoc options

Syntax

```
Plain text

End a line with two spaces
to start a new paragraph.

*italics* and _italics_

**bold** and __bold__

superscript^2^

~~strikethrough~~

[link](www.rstudio.com)

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

###### Header 6

endash: --

emdash: ---

ellipsis: ...

inline equation: $A = \pi*r^{2}$

image: ![](path/to/smallorb.png)

horizontal rule (or slide break):

***

> block quote

* unordered list
* item 2
    + sub-item 1
    + sub-item 2

1. ordered list
2. item 2
    + sub-item 1
    + sub-item 2

Table Header  | Second Header
------------- | -------------
Table Cell    | Cell 2
Cell 3        | Cell 4
```

Becomes

Plain text

End a line with two spaces to start a new paragraph.

italics and *italics*

bold and **bold**

superscript^2

~~strikethrough~~

link

Header 1

Header 2

Header 3

Header 4

Header 5

Header 6

endash: –

emdash: —

ellipsis: …

inline equation: $A = \pi * r^2$

image:

horizontal rule (or slide break):

> block quote

- unordered list
- item 2
  - sub-item 1
  - sub-item 2

1. ordered list
2. item 2
   - sub-item 1
   - sub-item 2

Table Header	Second Header
Table Cell	Cell 2
Cell 3	Cell 4

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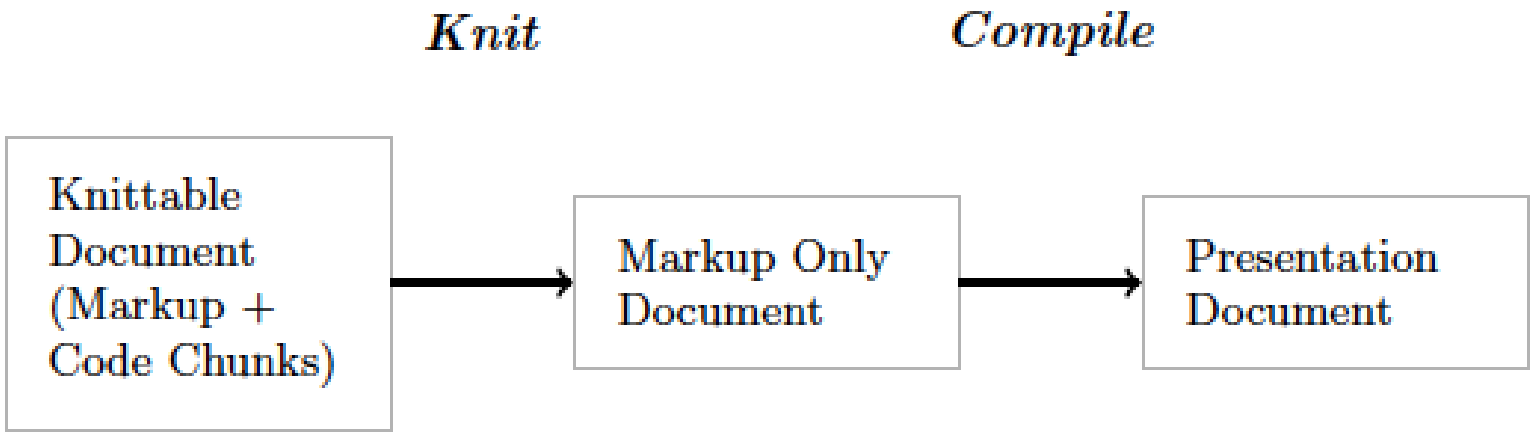
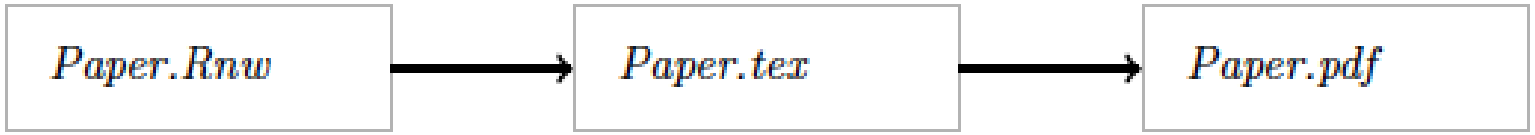
Lógica, instalação e recursos adicionais

- Pandoc e knitr
- LaTeX



knitr LaTeX Example



knitr/R Markdown Markdown Example

O básico

Cabeçalho

– opções e possibilidades

Escrita

Chunks

– opções – nomes

Formatos de saída

Saídas

Documentos estáticos

Documentos Interativos

Dashboards

Apresentações

Livros

Sites

Modelos

Site do RMarkdown

IMPORTANTE!

Galeria para replicação

Documentos

- HTML documents for web publishing.
- PDF documents for printing. Example Code
- Microsoft Word documents for Office workflows.
- Tufte styled documents for handouts.

Documentos Interativos

- Combine R Markdown with htmlwidgets or the shiny package to make interactive documents.
- Add interactive graphics with htmlwidgets, such as the leaflet map widget.
- Embed htmlwidgets such as dygraphs and datatables directly into your reports.
- Shiny components and htmlwidgets will work in any HTML based output, such as a file, slide show or dashboard.

Dashboards

- Use flexdashboard to create dashboards with gauges and value boxes.
- Add interactive graphics to a dashboard with htmlwidgets.
- Organize dashboards around a storyboard.

Apresentações

- Create pdf slides with Beamer.
- Create HTML-based slides with Slidy.
- Create HTML-slides with ioslides.
- Create HTML-based slides with reveal.js.

Livros

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O próprio Cookbook

Sites

R Markdown makes it easy to build webpages straight from .Rmd files.

- The R Markdown website is itself built with R Markdown. Example Code.
- flexdashboard extends R Markdown to make administrative dashboards. Its website is also built from R Markdown. Example Code.
- Bookdown extends R Markdown to make books. Its website is built with R Markdown and CSS styling. Example Code.
- profvis provides profiling tools for R code, as well as a website made with R Markdown. Example Code.

Modelos

- The JSS article template in the rticles package formats an R Markdown document to meet the style guidelines of the Journal of Statistical Software. Example Code
- The rjournal article template in the rticles package formats an R Markdown document to meet the style guidelings of the R Journal. Example Code
- The skeleton template is one of several provided in Bob Rudis' markdowntemplates package. Example Code
- Steve Miller's CV template formats an R Markdown file into a Curriculum Vitae (CV). Example Code

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Paper em pdf

RAP - Usando bibliografia

PDAD

Relatório em html

RMarkdown

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Compras públicas

ANIPES

Slides em html

RMarkdown

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Usando CSS

Apresentação COVID