

Clase 5.0

Output

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Estadística y Manejo de Datos con R (EMDR) — Virtual

broom



broom

- Convertir resultados estadísticos en tablas exportables.
- `tidy()` construye un df que resume la información contenida en un modelo.
- `augment()` añade columnas originales a los datos modelados, como predicciones.
- `glance()` construye un resumen de una línea del modelo.

broom

```
library(broom)
lmfit <- lm(mpg ~ wt, mtcars)
summary(lmfit)
```

```
##
## Call:
## lm(formula = mpg ~ wt, data = mtcars)
##
## Residuals:
##     Min      1Q  Median      3Q     Max 
## -4.5432 -2.3647 -0.1252  1.4096  6.8727 
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)    
## (Intercept) 37.2851   1.8776  19.858 < 2e-16 ***
## wt          -5.3445    0.5591  -9.559 1.29e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.046 on 30 degrees of freedom
## Multiple R-squared:  0.7528, Adjusted R-squared:  0.7446 
## F-statistic: 91.38 on 1 and 30 DF,  p-value: 1.294e-10
```

broom

```
tidy(lmfit)
```

```
## # A tibble: 2 × 5
##   term      estimate std.error statistic p.value
##   <chr>     <dbl>     <dbl>     <dbl>    <dbl>
## 1 (Intercept) 37.3      1.88     19.9  8.24e-19
## 2 wt        -5.34     0.559    -9.56 1.29e-10
```

broom

```
head(augment(lmfit))
```

```
## # A tibble: 6 × 9
##   .rownames     mpg      wt .fitted .resid .std.resid    .hat .sigma .cooksdi
##   <chr>     <dbl>    <dbl>    <dbl>   <dbl>     <dbl>    <dbl>   <dbl>    <dbl>
## 1 Mazda RX4     21     2.62    23.3 -2.28    -0.766  0.0433   3.07 1.33e-2
## 2 Mazda RX4 Wag  21     2.88    21.9 -0.920   -0.307  0.0352   3.09 1.72e-3
## 3 Datsun 710    22.8    2.32    24.9 -2.09    -0.706  0.0584   3.07 1.54e-2
## 4 Hornet 4 Drive 21.4    3.22    20.1  1.30     0.433  0.0313   3.09 3.02e-3
## 5 Hornet Sportabout 18.7    3.44    18.9 -0.200   -0.0668 0.0329   3.10 7.60e-5
## 6 Valiant       18.1    3.46    18.8 -0.693   -0.231  0.0332   3.10 9.21e-4
```

broom

```
glance(lmfit)
```

```
## # A tibble: 1 × 12
##   r.squared adj.r.squared sigma statistic p.value    df logLik     AIC     BIC
##       <dbl>         <dbl> <dbl>      <dbl>    <dbl> <dbl> <dbl> <dbl>
## 1     0.753        0.745  3.05     91.4 1.29e-10     1 -80.0  166.  170.
## # ... with 3 more variables: deviance <dbl>, df.residual <int>, nobs <int>
```

broom

```
lmfit1 <- lm(mpg ~ wt, mtcars)
lmfit2 <- lm(mpg ~ wt + drat, mtcars)
lmfit3 <- lm(mpg ~ wt + drat + hp, mtcars)

# Resumen eficiente

all_models <- rbind.data.frame(
  tidy(lmfit1) %>% mutate(model = 1),
  tidy(lmfit2) %>% mutate(model = 2),
  tidy(lmfit3) %>% mutate(model = 3))
all_models
```

```
## # A tibble: 9 × 6
##   term      estimate std.error statistic p.value model
##   <chr>     <dbl>     <dbl>     <dbl>    <dbl> <dbl>
## 1 (Intercept) 37.3      1.88     19.9  8.24e-19     1
## 2 wt        -5.34      0.559    -9.56  1.29e-10     1
## 3 (Intercept) 30.3      7.32      4.14  2.74e- 4     2
## 4 wt        -4.78      0.797    -6.00  1.59e- 6     2
## 5 drat       1.44      1.46      0.989 3.31e- 1     2
## 6 (Intercept) 29.4      6.16      4.77  5.13e- 5     3
## 7 wt        -3.23      0.796    -4.05  3.64e- 4     3
## 8 drat       1.62      1.23      1.32  1.99e- 1     3
## 9 hp       -0.0322    0.00892   -3.61  1.18e- 3     3
```

formattable & kableExtra

- Paquetes para crear tablas coloridas y visualmente atractivas.

```
library(formattable)  
library(kableExtra)
```

formattable & kableExtra

- Manejan múltiples formatos numéricos.

```
percent(c(0.1, 0.02, 0.03, 0.12))
```

```
## [1] 10.00% 2.00% 3.00% 12.00%
```

```
accounting(c(1000, 500, 200, -150, 0, 1200))
```

```
## [1] 1,000.00 500.00    200.00   (150.00) 0.00      1,200.00
```

- Otros como comma(), currency(), scientific()

formattable & kableExtra

```
mtcars[1:5, 1:4] %>%
  mutate(
    car = row.names(.),
    mpg = color_tile("white", "orange")(mpg),
    cyl = cell_spec(cyl, angle = (1:5)*60,
                    background = "red", color = "white", align = "center"),
    disp = ifelse(disp > 200,
                  cell_spec(disp, color = "red", bold = T),
                  cell_spec(disp, color = "green", italic = T)),
    hp = color_bar("lightgreen")(hp)) %>%
  select(car, everything()) %>%
  kable(escape = F) %>%
  kable_styling("hover", full_width = F) %>%
  column_spec(5, width = "3cm") %>%
  add_header_above(c(" ", "Hello" = 2, "World" = 2))
```

formattable & kableExtra

		car	Hello	World		
			mpg	cyl	disp	hp
Mazda RX4	Mazda RX4	21.0	6	160	110	
Mazda RX4 Wag	Mazda RX4 Wag	21.0	6	160	110	
Datsun 710	Datsun 710	22.8	4	108	93	
Hornet 4 Drive	Hornet 4 Drive	21.4	6	258	110	
Hornet Sportabout	Hornet Sportabout	18.7	8	360	175	

formattable & kableExtra

```
df<-data.frame(  
  id = 1:10,  
  name = c("Bob", "Ashley", "James", "David", "Jenny", "Hans",  
          "Leo", "John", "Emily", "Lee"),  
  age = c(28, 27, 30, 28, 29, 29, 27, 27, 31, 30),  
  grade = c("C", "A", "A", "C", "B", "B", "B", "A", "C", "C"),  
  test1_score = c(8.9, 9.5, 9.6, 8.9, 9.1, 9.3, 9.3, 9.9, 8.5, 8.6),  
  test2_score = c(9.1, 9.1, 9.2, 9.1, 8.9, 8.5, 9.2, 9.3, 9.1, 8.8),  
  final_score = c(9, 9.3, 9.4, 9, 9, 8.9, 9.25, 9.6, 8.8, 8.7),  
  registered = c(TRUE, FALSE, TRUE, FALSE, TRUE, TRUE, TRUE, FALSE, FALSE, FALSE),  
  stringsAsFactors=FALSE)
```

formattable & kableExtra

formattable & kableExtra

id	name	age	grade	test1_score	test2_score	final_score	registered
1	Bob	28	C	8.9	9.1	9.00(rank:06)	Yes
2	Ashley	27	A	9.5	9.1	9.30(rank:03)	No
3	James	30	A	9.6	9.2	9.40(rank:02)	Yes
4	David	28	C	8.9	9.1	9.00(rank:06)	No
5	Jenny	29	B	9.1	8.9	9.00(rank:06)	Yes
6	Hans	29	B	9.3	8.5	8.90(rank:08)	Yes
7	Leo	27	B	9.3	9.2	9.25(rank:04)	Yes
8	John	27	A	9.9	9.3	9.60(rank:01)	No
9	Emily	31	C	8.5	9.1	8.80(rank:09)	No
10	Lee	30	C	8.6	8.8	8.70(rank:10)	No

Rmarkdown & knitr



Rmarkdown & knitr

- Paquetes para producir documentos y presentaciones que incluyen elementos *seamlessly*.
- El **output** es en forma de html o pdf.
- Puede incluir el código con el formato de R y produce los gráficos *on the fly* (al vuelo).

Rmarkdown & knitr

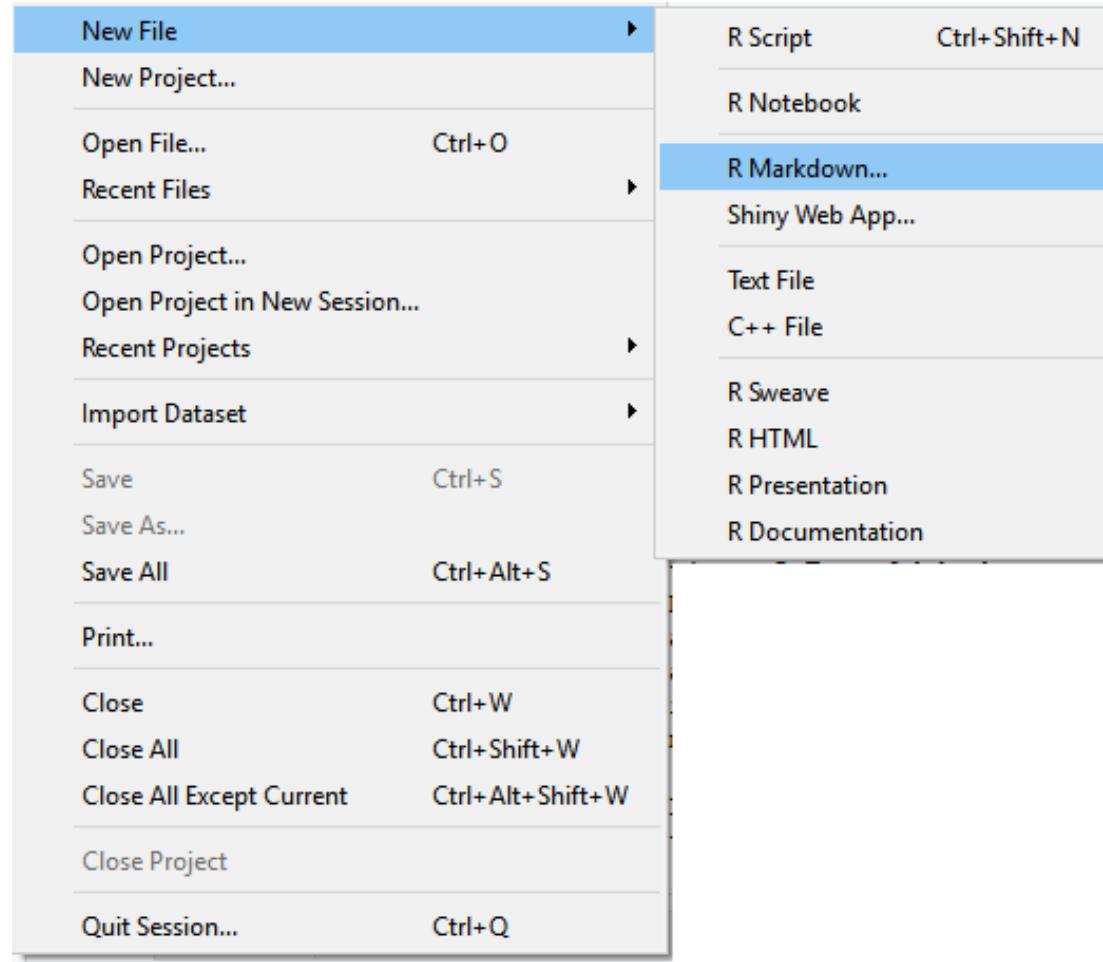


Rmarkdown & knitr

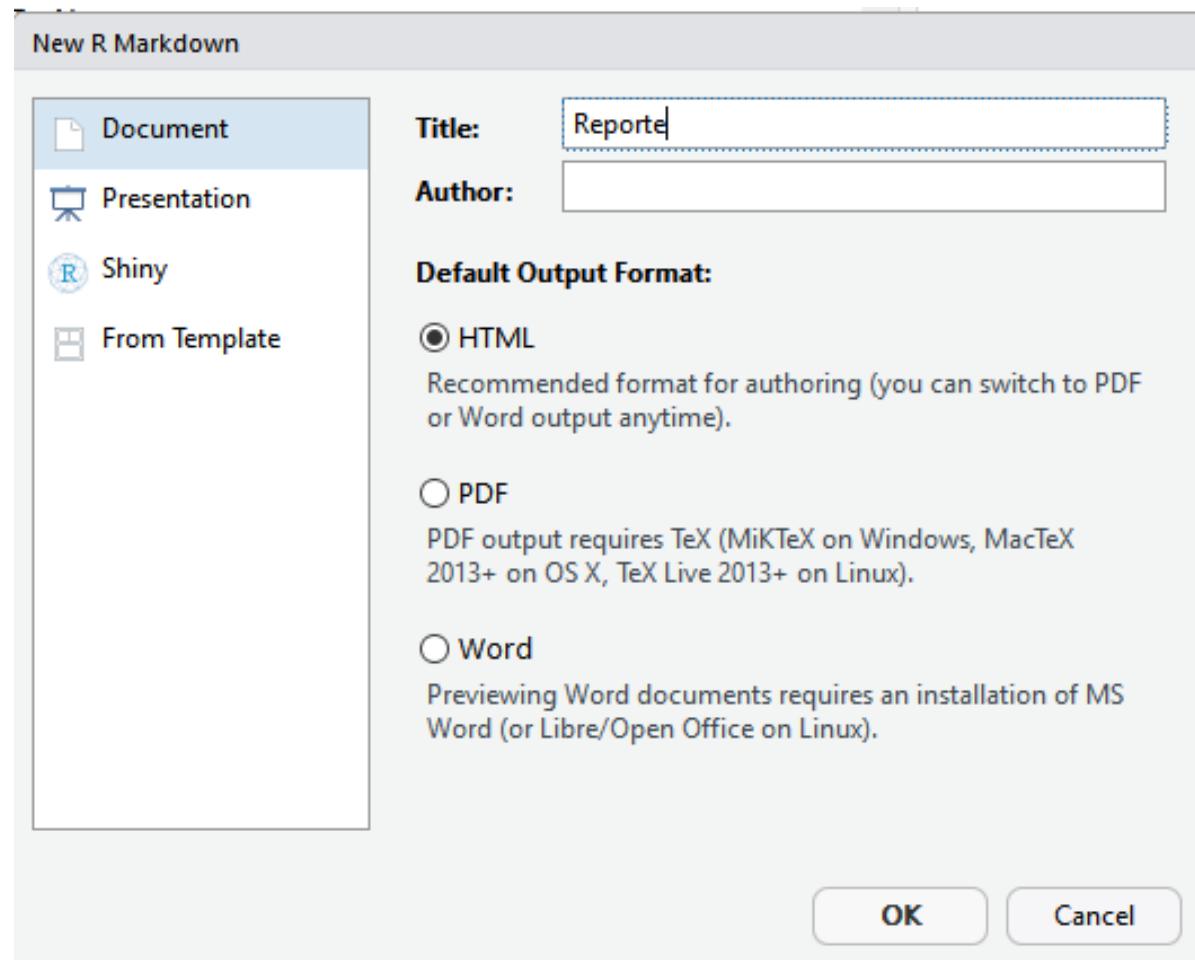


Allison Horst
@allison_horst

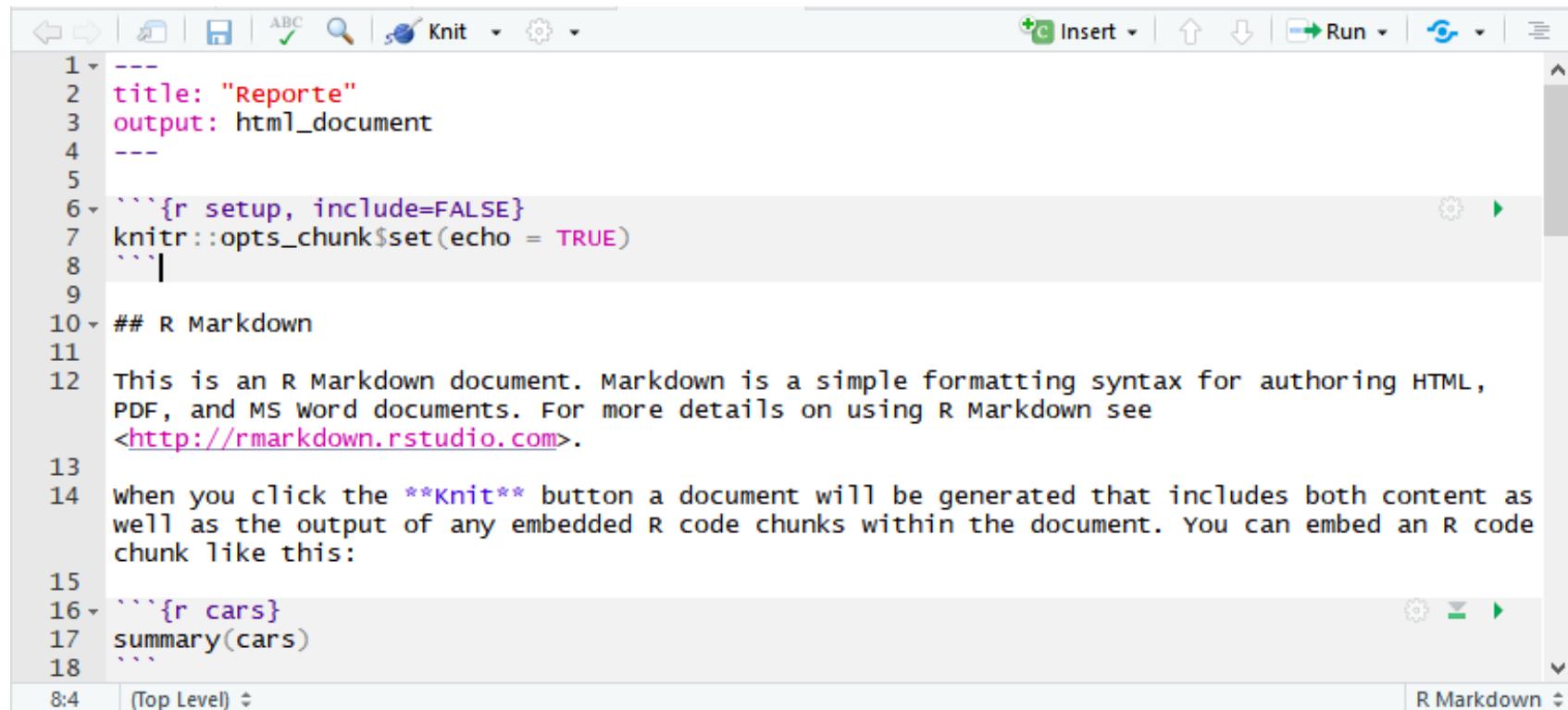
Rmarkdown & knitr



Rmarkdown & knitr



Rmarkdown & knitr

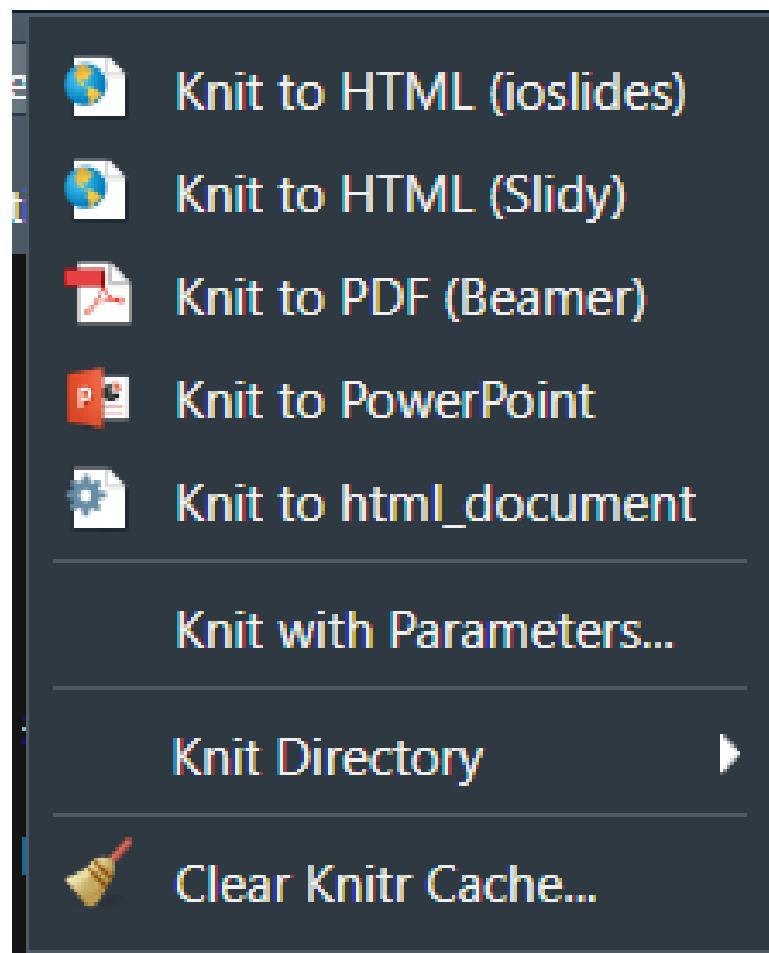


The screenshot shows the RStudio interface with an R Markdown document open. The code editor displays the following content:

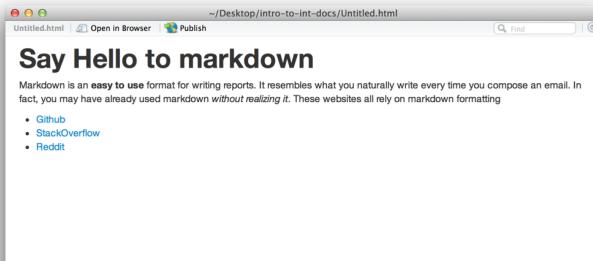
```
1 ---  
2 title: "Reporte"  
3 output: html_document  
4 ---  
5  
6 ```{r setup, include=FALSE}  
7 knitr::opts_chunk$set(echo = TRUE)  
8 ```  
9  
10 ## R Markdown  
11  
12 This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see  
http://rmarkdown.rstudio.com.  
13  
14 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:  
15  
16 ```{r cars}  
17 summary(cars)  
18 ```
```

The status bar at the bottom indicates "8:4 (Top Level)" and "R Markdown". The toolbar above the editor includes icons for back, forward, file, ABC, search, Knit, Insert, Run, and other document operations.

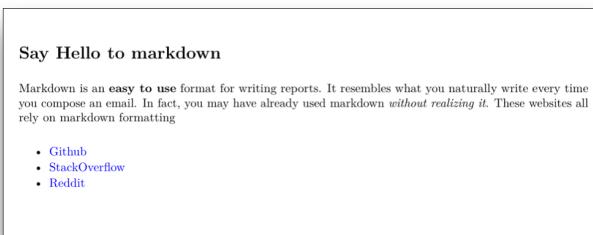
Rmarkdown & knitr



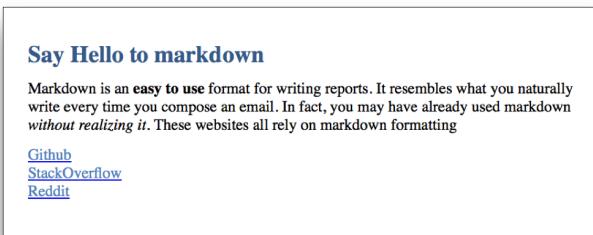
Rmarkdown & knitr



HTML



PDF



MS Word

Texto en Rmarkdown

- Cabezales

H1

H2

H3

H4

H5

H6

Texto en Rmarkdown

- También funciona usar líneas.

=====

Texto en Rmarkdown

- Énfasis

italics o italics produce *italics* or *italics*.

****bold**** o bold produce **bold** or **bold**.

~~Strikethrough~~ produce ~~Strikethrough~~

Texto en Rmarkdown

- Listas
 - 1. First ordered list item
 - 2. Another item
 - * Unordered list can use asterisks
 - Or minuses
 - + Or pluses

Texto en Rmarkdown

- Ligas

[Ir a google](#)

[Ir a google](<https://www.google.com>)

El código genérico es:

[El texto va aquí](<https://www.el-enlace-va-aqui.com>)

Texto en Rmarkdown

- Imágenes

```
</center> ![ alt text ]("image") </center>
```

Texto en Rmarkdown

Fórmulas

- Esto:

$$-\frac{b \pm \sqrt{b^2 - 4ac}}{2a}$$

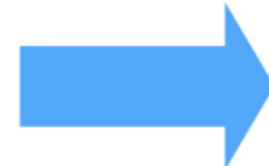
- Imprime esto:

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Code chunks (pedazos de código)

Here's some code

```
```{r}  
dim(iris)
```
```



Here's some code

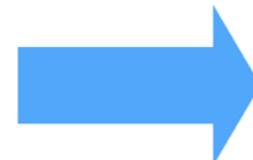
```
dim(iris)
```

```
## [1] 150 5
```

Code chunks (pedazos de código)

Here's some code

```
```{r echo=FALSE}  
dim(iris)
```
```



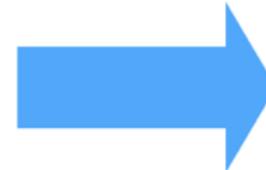
Here's some code

```
## [1] 150 5
```

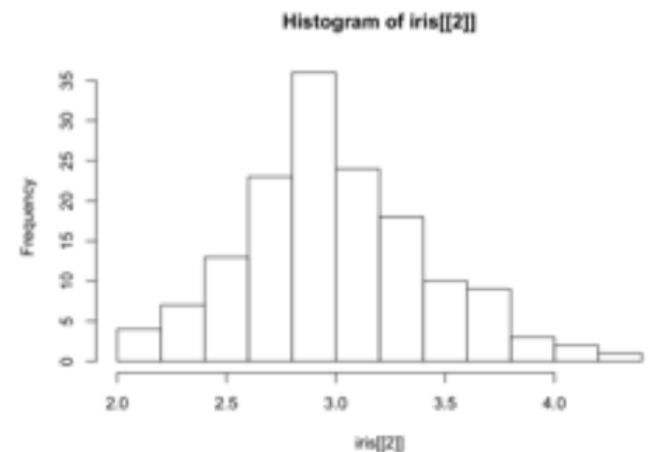
Code chunks (pedazos de código)

Here's a plot

```
```{r echo=FALSE}  
hist(iris[[2]])
```
```



Here's a plot



Code chunks (pedazos de código)

Here's some code

```
```{r eval=FALSE}  
dim(iris)
```
```



Here's some code

```
dim(iris)
```

Shiny

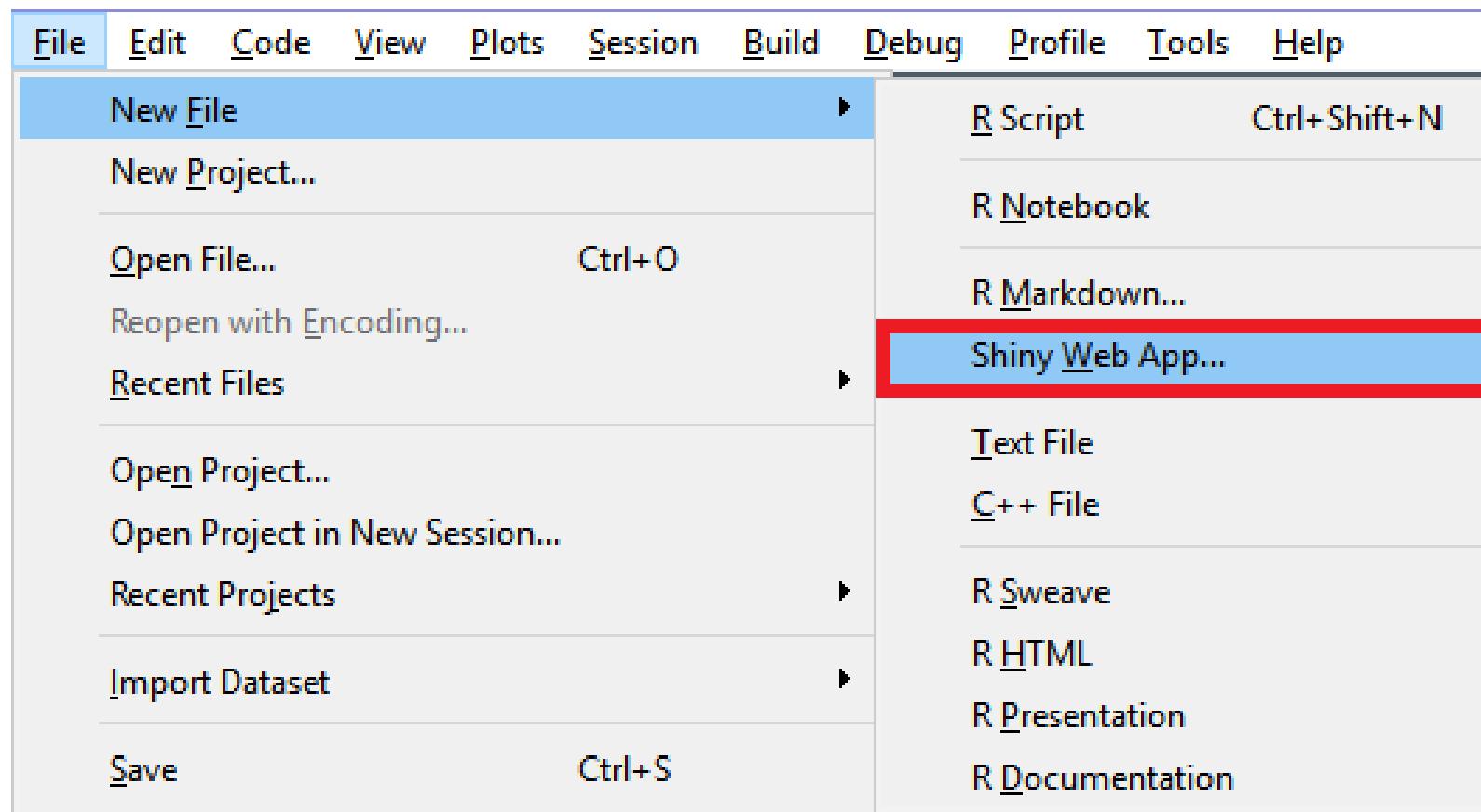


Shiny

Para construir web apps interactivas en R.

```
library(shiny)  
runExample("01_hello")
```

Shiny



Shiny

New Shiny Web Application



Application name:

Application type:

Single File (app.R)
 Multiple File (ui.R/server.R)

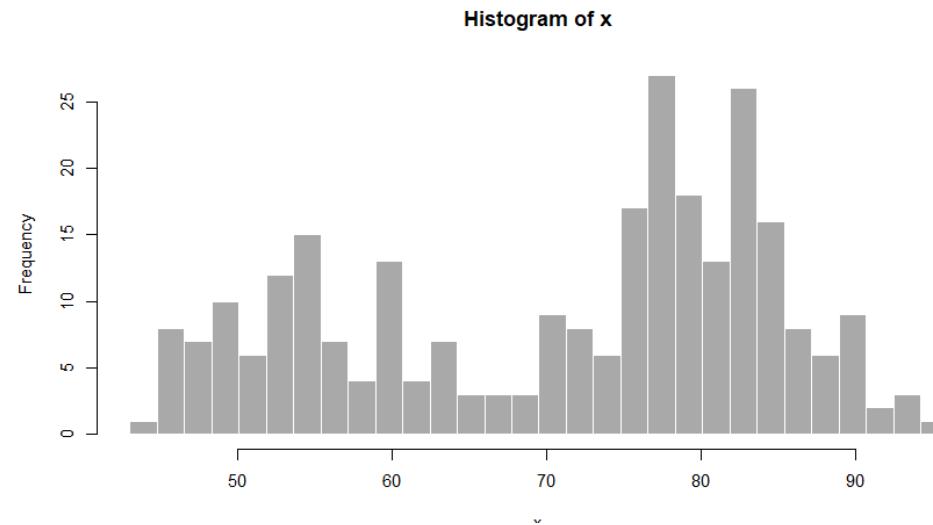
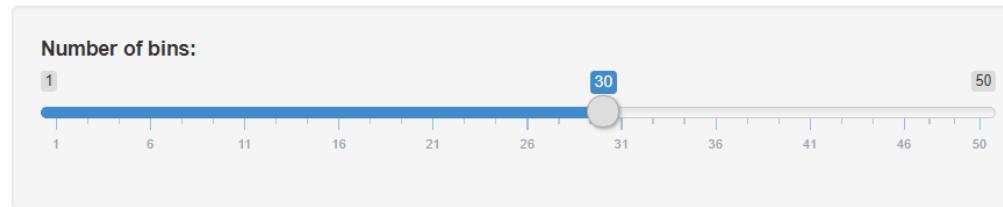
Create within directory:

[? Shiny Web Applications](#)

Shiny

- ¿Cómo generar la siguiente web app?

Old Faithful Geyser Data



Shiny

- ui se encarga de crear la parte interactiva de la aplicación.

```
ui <- fluidPage(  
  
  # Título de la aplicación  
  titlePanel("Old Faithful Geyser Data"),  
  
  # Barra lateral con deslizador para seleccionar el número de compartimientos  
  sidebarLayout(  
    sidebarPanel(  
      sliderInput("bins",  
                  "Number of bins:",  
                  min = 1,  
                  max = 50,  
                  value = 30)  
    ),  
  
    # Muestra un gráfico con la distribución generada  
    mainPanel(  
      plotOutput("distPlot")  
    )  
  )  
)
```

Shiny

- `server` se encarga de crear el servidor y mostrar los resultados.

```
# Define el servidor lógico requerido para dibujar un histograma

server <- function(input, output) {
  output$distPlot <- renderPlot({

    # Genera compartimientos según la entrada input$bins indicada en ui.R
    x      <- faithful[, 2]
    bins <- seq(min(x), max(x), length.out = input$bins + 1)

    # Dibuja el histograma con el número especificado de compartimientos
    hist(x, breaks = bins, col = 'darkgray', border = 'white')
  })
}
```

Shiny

- Se combinan en una función que ejecuta la app.

```
# Corre la aplicación  
shinyApp(ui = ui, server = server)
```

Fin del curso



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