Modernamente Técnicos

Módulo TyHM

Año 2024

Abstract

0.1 Costos Operativos del Sistema

Servidor	PC	Impresora
$100000	$500000	$58000
$1000000	$547065	$150000
$856000	$958200	$40000

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`.

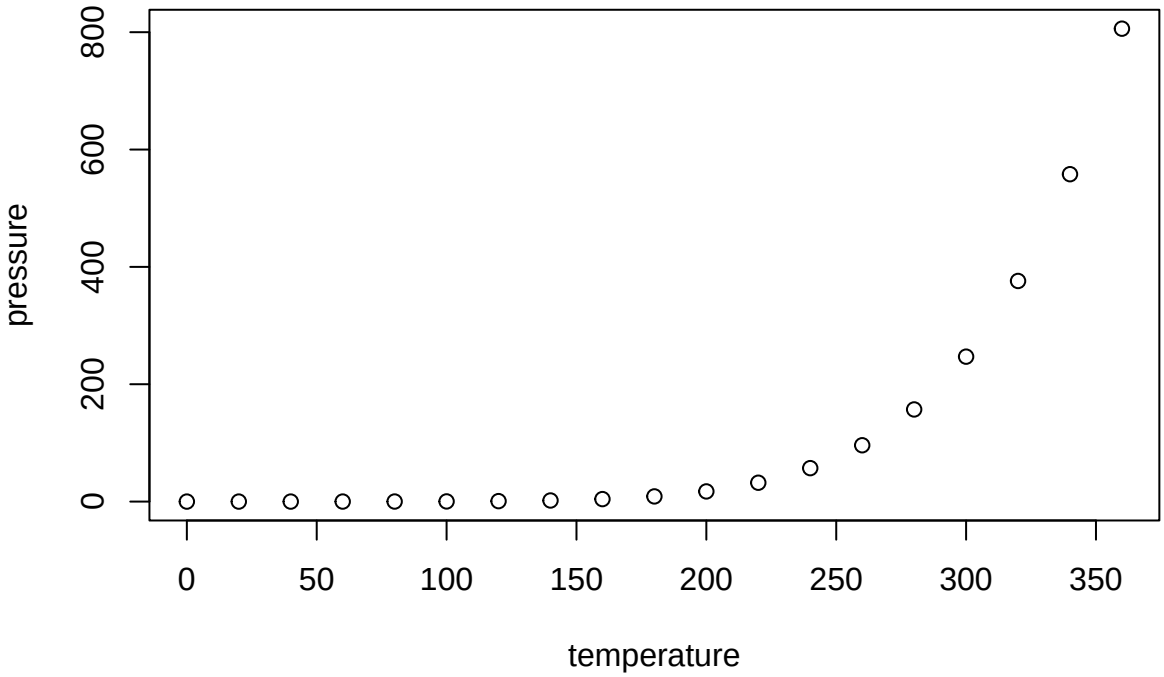
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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
```

0.2 Including Plots

You can also embed plots, for example:



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

1 Introduction

Here goes an introduction text

2 Headings: first level

You can use directly LaTeX command or Markdown text.

LaTeX command can be used to reference other section. See Section 2. However, you can also use **bookdown** extensions mechanism for this.

2.1 Headings: second level

You can use equation in blocks

$$\xi_{ij}(t) = P(x_t = i, x_{t+1} = j|y, v, w; \theta) = \frac{\alpha_i(t) a_{ij}^{w_t} \beta_j(t+1) b_j^{v_{t+1}}(y_{t+1})}{\sum_{i=1}^{N} \sum_{j=1}^{N} \alpha_i(t) a_{ij}^{w_t} \beta_j(t+1) b_j^{v_{t+1}}(y_{t+1})}$$

But also inline i.e $z = x + y$

2.1.1 Headings: third level

Another paragraph.

3 Examples of citations, figures, tables, references

You can insert references. Here is some text [@kour2014real; @kour2014fast] and see @hadash2018estimate.

The documentation for `natbib` may be found at

You can use custom blocks with LaTeX support from **rmarkdown** to create environment.

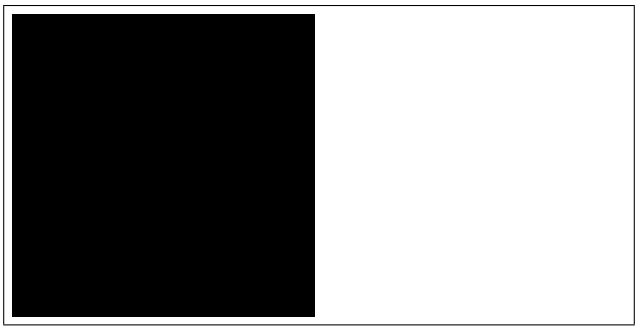


Figure 1: Sample figure caption.

http://mirrors.ctan.org/macros/latex/contrib/natbib/natnotes.pdf%7D

Of note is the command `\citet`, which produces citations appropriate for use in inline text.

You can insert LaTeX environment directly too.

```
\citet{hasselmo} investigated\dots
```

produces

> Hasselmo, et al. (1995) investigated…

https://www.ctan.org/pkg/booktabs

3.1 Figures

You can insert figure using LaTeX directly.

See Figure 1. Here is how you add footnotes. [^Sample of the first footnote.]

But you can also do that using R.

```
plot(mtcars$mpg)
```

You can use **bookdown** to allow references for Tables and Figures.

3.2 Tables

Below we can see how to use tables.

$$\mu = x_m^2$$

3.3 Vector Secuencias

```
start_time <- Sys.time()
A <- 0
for (i in 1:50000) { A[i] <- (i*2)}
tail (A)
```

```
## [1]  99990  99992  99994  99996  99998 100000
```

```
end_time <- Sys.time()
end_time - start_time
```

```
## Time difference of 0.1050999 secs
```

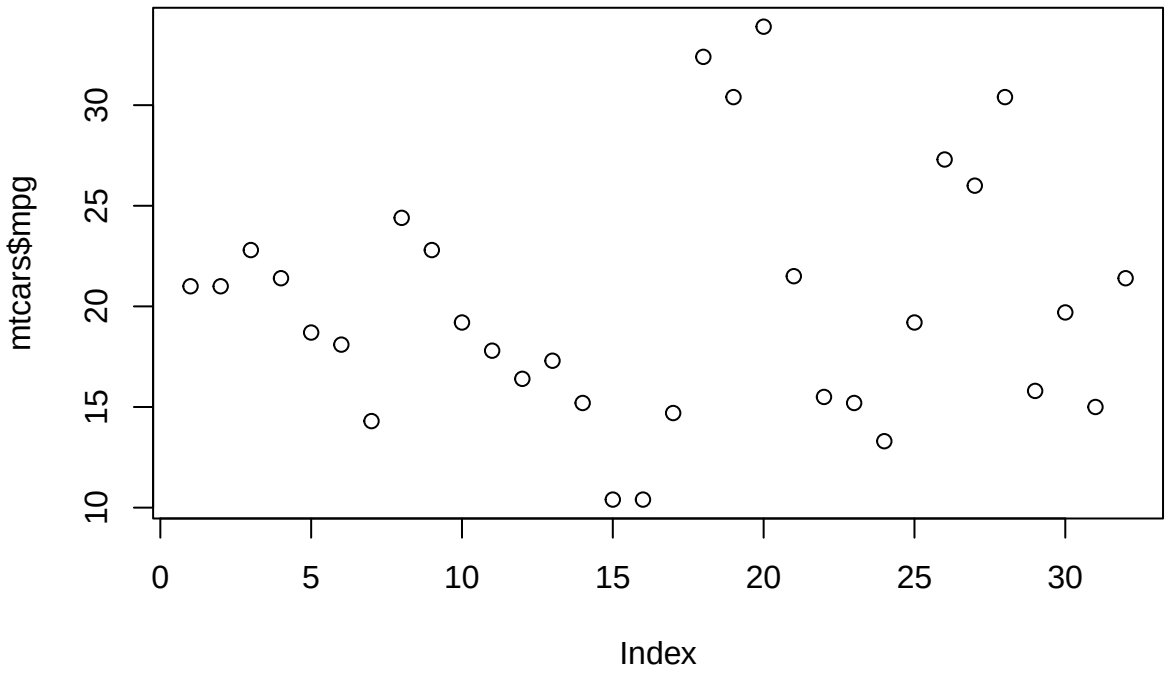


Figure 2: Another sample figure

```
start_time <- Sys.time()
A <- seq(from = 2, by = 2, length.out = 50000)
tail(A)
```

```
## [1]  99990  99992  99994  99996  99998 100000
```

```
end_time <- Sys.time()
end_time - start_time
```

```
## Time difference of 0.002223253 secs
```

3.4 Fibonacci

$$f_o = 0$$

$$f_1 = 1$$

$$f_{n+1} = f_n + f_{n-1}$$

```
fibonacci <- c(0, 1)
while (tail(fibonacci, 1) <= 1000000) {
  next_term <- tail(fibonacci, 1) + tail(fibonacci, 2)
  fibonacci <- c(fibonacci, next_term)
}
fibonacci <- fibonacci[-length(fibonacci)]  # Retirer le dernier terme excédant 100000
print(fibonacci)
```

```
##  [1]       0       1       1       2       3       4       7       8      15
## [10]      16      31      32      63      64     127     128     255     256
## [19]     511     512    1023    1024    2047    2048    4095    4096    8191
## [28]    8192   16383   16384   32767   32768   65535   65536  131071  131072
## [37]  262143  262144  524287  524288 1048575
```

Table 2: Sample table title

	Part	
Name	Description	Size (μm)
Dendrite	Input terminal	~100
Axon	Output terminal	~10
Soma	Cell body	up to 10^6

3.5 Orden de un vector por método burbuja

```
library(microbenchmark)
set.seed(123) # Fija la semilla para reproducibilidad
sample_data <- sample(1:100, 10)

bubble_sort <- function(x) {
  n <- length(x)
  for (i in 1:(n - 1)) {
    for (j in 1:(n - i)) {
      if (x[j] > x[j + 1]) {
        temp <- x[j]
        x[j] <- x[j + 1]
        x[j + 1] <- temp
      }
    }
  }
  return(x)
}

results <- microbenchmark(
  bubble_sort(sample_data),  # Método de la burbuja
  sort(sample_data),         # Método sort de R
  times = 10                 # Número de repeticiones
)

# Muestra los resultados
print(results)
```

```
## Unit: microseconds
##                       expr   min     lq     mean median    uq      max neval
##  bubble_sort(sample_data) 10.36 11.110 741.3812 12.155 12.61 7306.122    10
##         sort(sample_data) 25.15 26.831  42.7863 28.100 32.30  160.351    10
```

See awesome Table~2 which is written directly in LaTeX in source Rmd file.

You can also use R code for that.

```
knitr::kable(head(mtcars), caption = "Head of mtcars table")
```

Table 3: Head of mtcars table

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225	105	2.76	3.460	20.22	1	0	3	1

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb

3.6 Lists

- Item 1
- Item 2
- Item 3
  Código html w3

```
<html>
<head>
Titulo
</head>
<h1> Titulo </h1>
</head>
</head>
```

Tal como señala Rodriguez: [rodriguez2020aplicacion] .