Reporting using Rmarkdown

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# Basic illustrations

## R Markdown

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

## 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.

## Including a table

A caption

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species |
| --- | --- | --- | --- | --- |
| 5.1 | 3.5 | 1.4 | 0.2 | setosa |
| 4.9 | 3.0 | 1.4 | 0.2 | setosa |
| 4.7 | 3.2 | 1.3 | 0.2 | setosa |
| 4.6 | 3.1 | 1.5 | 0.2 | setosa |
| 5.0 | 3.6 | 1.4 | 0.2 | setosa |

## Inline r code

The average yield is 99.9265119.

# Markdown basics (level 1 header)

## level 2 header

### level 3 header

See the source rmd file:

* list item 1
* list item 2
* list item 3
* *italics*
* **bold**
* code (do not put r right after the first tick mark)
* inline math: I hate math. What does this even mean?
* math:
* link: [Markdown basics](https://rmarkdown.rstudio.com/lesson-8.html)
* citationL: The best resource to learn how to use Rmarkdown is [@xie2018r].

# Chunk options

## echo and eval

**R code and results**

## 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

**R code suppressed**

## 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

**Only R code (R code was not evaluated)**

**Both R codes and results not shown**

## messages and warnings

### both messages and warnings

## ── Attaching packages ─────────────────────────────────────── tidyverse 1.3.0 ──

## ✓ ggplot2 3.3.5 ✓ purrr 0.3.4  
## ✓ tibble 3.1.6 ✓ dplyr 1.0.6  
## ✓ tidyr 1.1.3 ✓ stringr 1.4.0  
## ✓ readr 1.4.0 ✓ forcats 0.5.0

## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

### messages suppressed

### both messages and warnings suppressed

## results

No results are shown.

But, this shows the above code was evaluated and object a was created.

## [1] 0.444483482 0.062472855 0.077768333 0.930268973 0.365581122 0.114917004  
## [7] 0.983733708 0.524548709 0.932074996 0.388664957 0.558528792 0.224435016  
## [13] 0.197930444 0.417871405 0.936843045 0.405053863 0.883109613 0.982482653  
## [19] 0.927962222 0.498146464 0.194568749 0.867993104 0.230272491 0.283039927  
## [25] 0.981538130 0.731425144 0.905656730 0.822152217 0.735208977 0.025855141  
## [31] 0.829649539 0.022762434 0.967197945 0.453150668 0.727232003 0.786814005  
## [37] 0.727727229 0.105244885 0.530078276 0.405646659 0.524806039 0.729329092  
## [43] 0.476031388 0.252186853 0.902911231 0.991880188 0.641630840 0.782567506  
## [49] 0.013645623 0.009798017 0.005783356 0.084509258 0.264733955 0.647832603  
## [55] 0.372589496 0.581596022 0.383430784 0.448193535 0.025708569 0.540686590  
## [61] 0.998827019 0.740728276 0.348460689 0.283427026 0.900000833 0.738642666  
## [67] 0.529976410 0.019351888 0.784199592 0.208127957 0.674872134 0.183327945  
## [73] 0.375347263 0.629675111 0.187028343 0.598523679 0.058353395 0.348949510  
## [79] 0.615602100 0.739553710 0.103400841 0.766783668 0.320451559 0.382736212  
## [85] 0.242585235 0.930699402 0.230555929 0.179916677 0.740137449 0.767002471  
## [91] 0.198831700 0.452633504 0.401442621 0.219284166 0.771927743 0.678418900  
## [97] 0.146629411 0.089510555 0.528482346 0.940243538

## include = FALSE

No results are shown.

But, this shows the above code was evaluated and object a was created.

## [1] 0.66130957 0.63680970 0.84378519 0.61493979 0.47920004 0.60893494  
## [7] 0.54765827 0.12186129 0.43792198 0.12680773 0.75870604 0.91688859  
## [13] 0.35418138 0.82872415 0.26351363 0.23175431 0.79036996 0.17018850  
## [19] 0.31118961 0.60432787 0.83862485 0.57270129 0.34086519 0.14964905  
## [25] 0.16382400 0.15368150 0.63038880 0.58096367 0.02948389 0.85096685  
## [31] 0.70944714 0.92708228 0.95706614 0.52569803 0.23186091 0.72575230  
## [37] 0.58871025 0.62145098 0.79751434 0.63520676 0.09964157 0.73891379  
## [43] 0.41396102 0.62751164 0.27140737 0.66758670 0.55202951 0.34089260  
## [49] 0.86884352 0.79252042 0.54147475 0.27612332 0.71349200 0.28185746  
## [55] 0.59920238 0.06985527 0.97392497 0.16726015 0.41515207 0.29023901  
## [61] 0.81854697 0.54933329 0.52417185 0.72648700 0.89119242 0.73283888  
## [67] 0.94179030 0.68699323 0.33689652 0.29162905 0.35505974 0.78854471  
## [73] 0.78074443 0.34638351 0.99729435 0.94306921 0.32400093 0.31885151  
## [79] 0.45094012 0.40458215 0.10684279 0.83641538 0.89394854 0.32086358  
## [85] 0.55547881 0.94821363 0.39274938 0.69946922 0.79775636 0.06487385  
## [91] 0.13718645 0.38519264 0.15347337 0.25689501 0.94313642 0.38794107  
## [97] 0.02989153 0.06458581 0.99817671 0.13032593

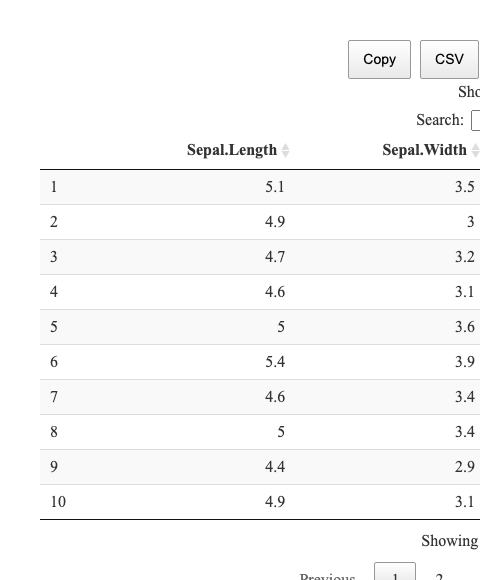
# Caching

## [1] 1.500091

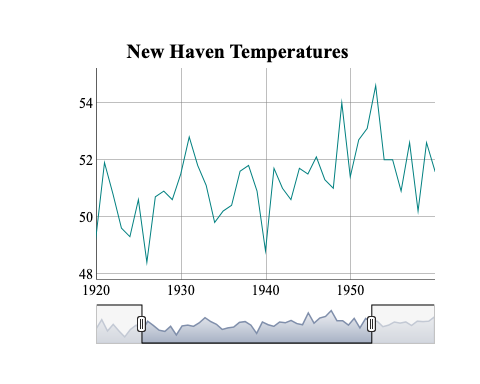
## [1] 1.500091

# Interactive features: htmlwidgets

## interactive data table



## Interactive time-series data



## Interactive ggplot2 figures

##   
## Attaching package: 'plotly'

## The following object is masked from 'package:ggplot2':  
##   
## last\_plot

## The following object is masked from 'package:stats':  
##   
## filter

## The following object is masked from 'package:graphics':  
##   
## layout

