

R

*2019-09-03*



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# Chapter 1

## Lecture

- : 1213 ( 13:00~16:00)
- :
- : 042-860-4372, haseong@kribb.re.kr ( 1143)
- site: <https://greendaygh.github.io/Rstat2019/>

### 1.1 Goal

- . R

### 1.2 References

- Using R for Introductory Statistics by John Verzani
  - Free version of 1st Edition
    - \* <https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf>
    - \* <http://cbb.sjtu.edu.cn/~mywu/bi217/usingR.pdf>
  - Second edition
    - \* <https://www.crcpress.com/Using-R-for-Introductory-Statistics-Second-Edition/Verzani/p/book/9781466590731>
- R for Data Science (<https://r4ds.had.co.nz>, <https://github.com/hadley>)
- <https://resources.rstudio.com/>
- ( , )

### 1.3 Evaluation

- 50% / 50% / 80 S, 80 U

### 1.4 Schedule

- 1 - R basics / introduction of data

- 2 - Univariate data – Summary statistics ( , , )
- 3 - Bivariate data – Correlation / Independence ( , , )
- 4 - Multivariate data – R data structure ( , R , R )
- 5 - Populations – Families of distributions
- 6 - Sampling – Distribution and CLT ,
- 7 - Statistical inference
- 8 - Confidence intervals
- 9 - Significance test - parameteric ( )
- 10 - Significance test – non parametric ( )
- 11 - Goodness of fit - parametric ( )
- 12 - Goodness of fit – non parametric ( )
- 13 - Linear regression – basics & simple LR
- 14 - Multiple linear regression
- 15 - Analysis of variance
- 16 - Logistic / Non-linear regression /
- 9/25 ( )

## 1.5 References

- R <https://www.r-project.org/>
- Rstudio <https://www.rstudio.com/>
- Packages for biologists <https://www.bioconductor.org/>
- R ( , , , )
- <https://cran.r-project.org/doc/manuals/r-release/R-intro.html>
- <https://cran.r-project.org/doc/manuals/r-release/R-data.html>
- <https://cran.r-project.org/doc/manuals/r-release/R-admin.html>
- R ebooks
- <https://bookdown.org/>

## Chapter 2

# Introductin

### 2.1 What is R / Rstudio



- R is a programming language that runs computations (<https://www.r-project.org/>) - RStudio is an integrated development environment (IDE) that provides an interface for the programming (<https://www.rstudio.com/>)

### 2.2 R / Rstudio installation

-





## Chapter 3

# introduction of data

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter `??`. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter `??`.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
par(mar = c(4, 4, .1, .1))
plot(pressure, type = 'b', pch = 19)
```

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 3.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 3.1.

```
knitr::kable(
  head(iris, 20), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2019) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

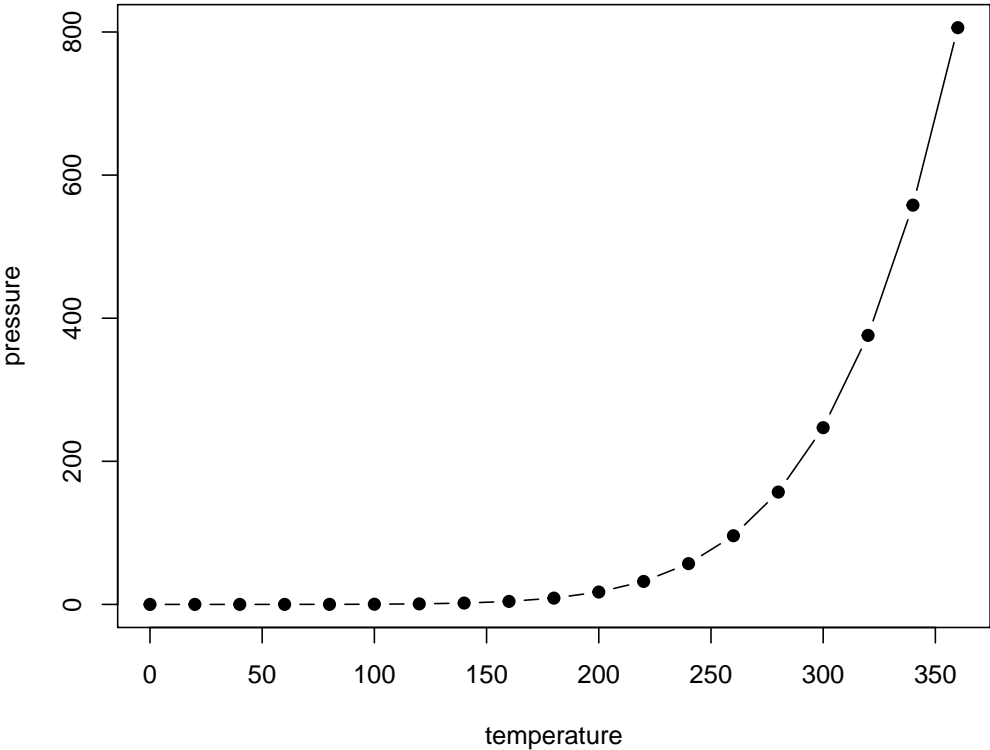


Figure 3.1: Here is a nice figure!

Table 3.1: Here is a nice table!				
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
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa

# Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2019). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.13.