Bayesian Statistics and Computing

Lecture 6: Reproducible learning via rmarkdown

Yanfei Kang

2020/02/10 (updated: 2021-03-01)

## Why R markdown?

* Much **easier** *syntax* ~~syntax~~ than LaTex or Html
* Dynamic: easy to update and work with the R codes
* Multiple output formats
* Makes presentation easy
* Keep me (and my group) organized of weekly research progress reports, slides, papers etc.

## Header 1

### Header 2

## Creation of lists

### unordered

* Item 1
* Item 2

### ordered

1. Item 1
2. Item 2
	* item 2a
	* item 2b

## Inline codes

Write inline **R** code using backtick quotes: forecast().

## Equations

* $x+y=z$ for inline equations

$$x^{2}+\sqrt{(y)}=ϵ$$

## Hyperlink

1. [R markdown website](http://rmarkdown.rstudio.com)
2. [R markdown guide](https://bookdown.org/yihui/rmarkdown/)

## R code with errors

x > 1

## Error in eval(expr, envir, enclos): object 'x' not found

## R code chunks with plot

See Hong, Pinson, and Fan (2014).

library(tscompdata)
library(ggplot2)
library(forecast)
autoplot(gefcom2012\_temp$`1`) + ggtitle("Temperature") + xlab("Time")

## Interactive plots

You can use interactive plots for if you output html documents.

## R code chunks with table

knitr::kable(head(iris))

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |

## Plain code block

library(forecast)
library(ggplot2)
autoplot(AirPassengers)

## References

Hong, Tao, Pierre Pinson, and Shu Fan. 2014. “Global Energy Forecasting Competition 2012.” *International Journal of Forecasting* 30 (2): 357–63.