Latihan Modul 3

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## 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.

## import dataset

library(dslabs)  
data('murders')  
murders

## state abb region population total  
## 1 Alabama AL South 4779736 135  
## 2 Alaska AK West 710231 19  
## 3 Arizona AZ West 6392017 232  
## 4 Arkansas AR South 2915918 93  
## 5 California CA West 37253956 1257  
## 6 Colorado CO West 5029196 65  
## 7 Connecticut CT Northeast 3574097 97  
## 8 Delaware DE South 897934 38  
## 9 District of Columbia DC South 601723 99  
## 10 Florida FL South 19687653 669  
## 11 Georgia GA South 9920000 376  
## 12 Hawaii HI West 1360301 7  
## 13 Idaho ID West 1567582 12  
## 14 Illinois IL North Central 12830632 364  
## 15 Indiana IN North Central 6483802 142  
## 16 Iowa IA North Central 3046355 21  
## 17 Kansas KS North Central 2853118 63  
## 18 Kentucky KY South 4339367 116  
## 19 Louisiana LA South 4533372 351  
## 20 Maine ME Northeast 1328361 11  
## 21 Maryland MD South 5773552 293  
## 22 Massachusetts MA Northeast 6547629 118  
## 23 Michigan MI North Central 9883640 413  
## 24 Minnesota MN North Central 5303925 53  
## 25 Mississippi MS South 2967297 120  
## 26 Missouri MO North Central 5988927 321  
## 27 Montana MT West 989415 12  
## 28 Nebraska NE North Central 1826341 32  
## 29 Nevada NV West 2700551 84  
## 30 New Hampshire NH Northeast 1316470 5  
## 31 New Jersey NJ Northeast 8791894 246  
## 32 New Mexico NM West 2059179 67  
## 33 New York NY Northeast 19378102 517  
## 34 North Carolina NC South 9535483 286  
## 35 North Dakota ND North Central 672591 4  
## 36 Ohio OH North Central 11536504 310  
## 37 Oklahoma OK South 3751351 111  
## 38 Oregon OR West 3831074 36  
## 39 Pennsylvania PA Northeast 12702379 457  
## 40 Rhode Island RI Northeast 1052567 16  
## 41 South Carolina SC South 4625364 207  
## 42 South Dakota SD North Central 814180 8  
## 43 Tennessee TN South 6346105 219  
## 44 Texas TX South 25145561 805  
## 45 Utah UT West 2763885 22  
## 46 Vermont VT Northeast 625741 2  
## 47 Virginia VA South 8001024 250  
## 48 Washington WA West 6724540 93  
## 49 West Virginia WV South 1852994 27  
## 50 Wisconsin WI North Central 5686986 97  
## 51 Wyoming WY West 563626 5

#data str

str(murders)

## 'data.frame': 51 obs. of 5 variables:  
## $ state : chr "Alabama" "Alaska" "Arizona" "Arkansas" ...  
## $ abb : chr "AL" "AK" "AZ" "AR" ...  
## $ region : Factor w/ 4 levels "Northeast","South",..: 2 4 4 2 4 4 1 2 2 2 ...  
## $ population: num 4779736 710231 6392017 2915918 37253956 ...  
## $ total : num 135 19 232 93 1257 ...

murders$abb

## [1] "AL" "AK" "AZ" "AR" "CA" "CO" "CT" "DE" "DC" "FL" "GA" "HI" "ID" "IL" "IN"  
## [16] "IA" "KS" "KY" "LA" "ME" "MD" "MA" "MI" "MN" "MS" "MO" "MT" "NE" "NV" "NH"  
## [31] "NJ" "NM" "NY" "NC" "ND" "OH" "OK" "OR" "PA" "RI" "SC" "SD" "TN" "TX" "UT"  
## [46] "VT" "VA" "WA" "WV" "WI" "WY"

a <- murders$abb  
class(a)

## [1] "character"

murders$state

## [1] "Alabama" "Alaska" "Arizona"   
## [4] "Arkansas" "California" "Colorado"   
## [7] "Connecticut" "Delaware" "District of Columbia"  
## [10] "Florida" "Georgia" "Hawaii"   
## [13] "Idaho" "Illinois" "Indiana"   
## [16] "Iowa" "Kansas" "Kentucky"   
## [19] "Louisiana" "Maine" "Maryland"   
## [22] "Massachusetts" "Michigan" "Minnesota"   
## [25] "Mississippi" "Missouri" "Montana"   
## [28] "Nebraska" "Nevada" "New Hampshire"   
## [31] "New Jersey" "New Mexico" "New York"   
## [34] "North Carolina" "North Dakota" "Ohio"   
## [37] "Oklahoma" "Oregon" "Pennsylvania"   
## [40] "Rhode Island" "South Carolina" "South Dakota"   
## [43] "Tennessee" "Texas" "Utah"   
## [46] "Vermont" "Virginia" "Washington"   
## [49] "West Virginia" "Wisconsin" "Wyoming"

b <- murders$state  
class(b)

## [1] "character"

levels(murders$region)

## [1] "Northeast" "South" "North Central" "West"

length(murders$region)

## [1] 51

table(state.region)

## state.region  
## Northeast South North Central West   
## 9 16 12 13