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```
library(dslabs)
data("murders")
```

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: ## 1

```
pop = murders$population
sort(pop)
```

```
##  [1]   563626   601723   625741   672591   710231   814180   897934
989415
##  [9]  1052567  1316470  1328361  1360301  1567582  1826341  1852994
2059179
## [17]  2700551  2763885  2853118  2915918  2967297  3046355  3574097
3751351
## [25]  3831074  4339367  4533372  4625364  4779736  5029196  5303925
5686986
## [33]  5773552  5988927  6346105  6392017  6483802  6547629  6724540
8001024
## [41]  8791894  9535483  9883640  9920000 11536504 12702379 12830632
19378102
## [49] 19687653 25145561 37253956
```

```
min(pop)
```

```
## [1] 563626
```

2

```
index<-order(murders$population)
min(index[murders$population])
```

```
## [1] NA
```

3

```
which.min(murders$population)
```

```
## [1] 51
```

4

```
i_min <- which.min(murders$population)
murders$state[i_min]
```

```
## [1] "Wyoming"
```

5

```
ranks <-rank(murders$population)
rank <- ranks
city <- murders$state
my_df <- data.frame(name = city, ranks = ranks)
```

6

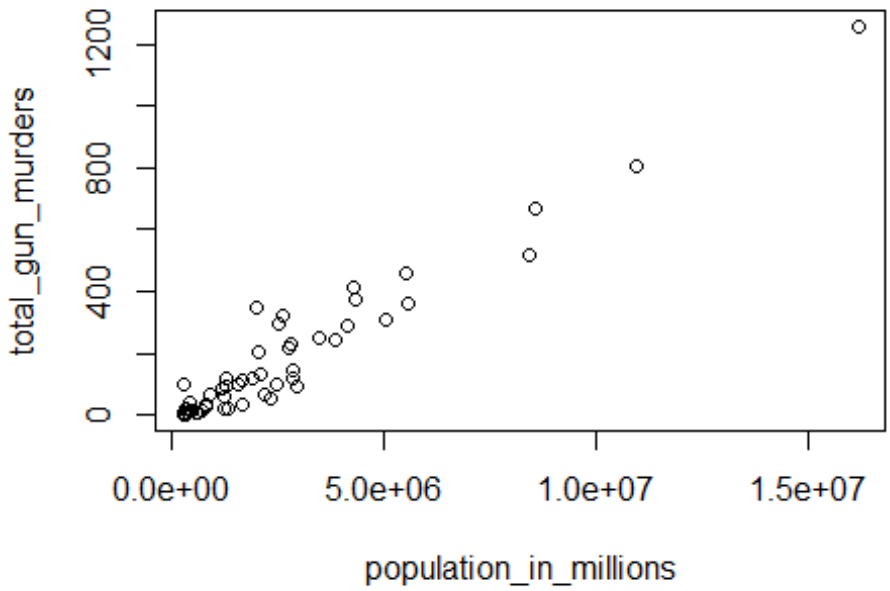
```
ranks <-order(rank(murders$population))
murders$state[ranks]
```

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

```
rank <- ranks
city <- murders$state
my_df <- data.frame(name = city, rank = ranks)
```

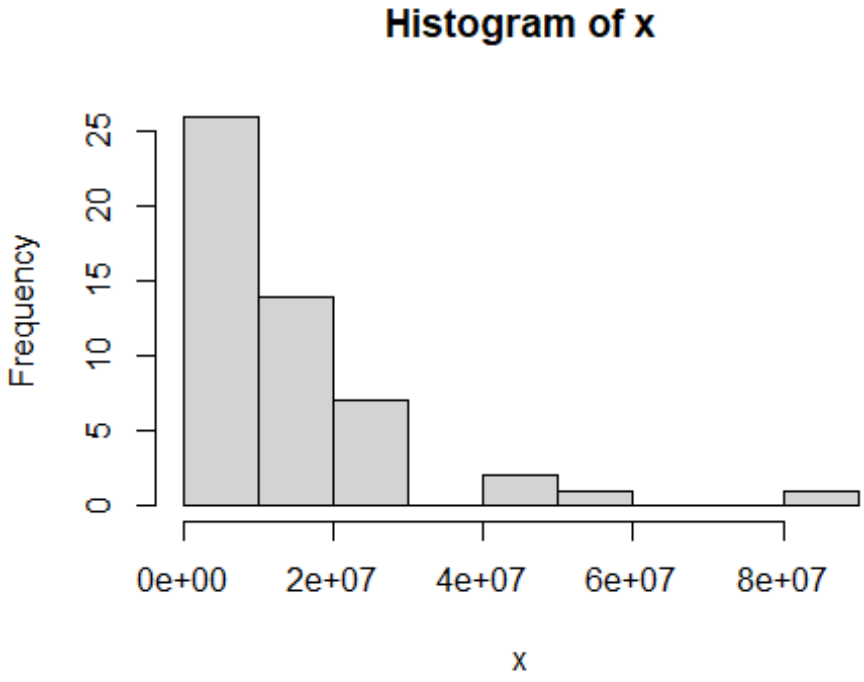
7

```
population_in_millions <- murders$population/log(10)
total_gun_murders <- murders$total
plot(population_in_millions, total_gun_murders)
```



8

```
x <- with(murders, population * log(10))
hist(x)
```



9

```
murders$rate <- with(murders, population * log(10))
boxplot(rate~region, data = murders)
```