

# TugasPertemuan4

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2022-09-30

## TUGAS DI MODUL HALAMAN 47

```
# 1
library(formatR)

library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.2 --
## v ggplot2 3.3.6      v purrr  0.3.4
## v tibble  3.1.8      v dplyr  1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.2      v forcats 0.5.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
```

```
library(dplyr)
library(dslabs)
data(murders)
murders %>%
  mutate(rate = total/population * 1e+05)
```

|       | state                | abb | region        | population | total | rate       |
|-------|----------------------|-----|---------------|------------|-------|------------|
| ## 1  | Alabama              | AL  | South         | 4779736    | 135   | 2.8244238  |
| ## 2  | Alaska               | AK  | West          | 710231     | 19    | 2.6751860  |
| ## 3  | Arizona              | AZ  | West          | 6392017    | 232   | 3.6295273  |
| ## 4  | Arkansas             | AR  | South         | 2915918    | 93    | 3.1893901  |
| ## 5  | California           | CA  | West          | 37253956   | 1257  | 3.3741383  |
| ## 6  | Colorado             | CO  | West          | 5029196    | 65    | 1.2924531  |
| ## 7  | Connecticut          | CT  | Northeast     | 3574097    | 97    | 2.7139722  |
| ## 8  | Delaware             | DE  | South         | 897934     | 38    | 4.2319369  |
| ## 9  | District of Columbia | DC  | South         | 601723     | 99    | 16.4527532 |
| ## 10 | Florida              | FL  | South         | 19687653   | 669   | 3.3980688  |
| ## 11 | Georgia              | GA  | South         | 9920000    | 376   | 3.7903226  |
| ## 12 | Hawaii               | HI  | West          | 1360301    | 7     | 0.5145920  |
| ## 13 | Idaho                | ID  | West          | 1567582    | 12    | 0.7655102  |
| ## 14 | Illinois             | IL  | North Central | 12830632   | 364   | 2.8369608  |
| ## 15 | Indiana              | IN  | North Central | 6483802    | 142   | 2.1900730  |
| ## 16 | Iowa                 | IA  | North Central | 3046355    | 21    | 0.6893484  |

|       |                |    |               |          |     |           |
|-------|----------------|----|---------------|----------|-----|-----------|
| ## 17 | Kansas         | KS | North Central | 2853118  | 63  | 2.2081106 |
| ## 18 | Kentucky       | KY | South         | 4339367  | 116 | 2.6732010 |
| ## 19 | Louisiana      | LA | South         | 4533372  | 351 | 7.7425810 |
| ## 20 | Maine          | ME | Northeast     | 1328361  | 11  | 0.8280881 |
| ## 21 | Maryland       | MD | South         | 5773552  | 293 | 5.0748655 |
| ## 22 | Massachusetts  | MA | Northeast     | 6547629  | 118 | 1.8021791 |
| ## 23 | Michigan       | MI | North Central | 9883640  | 413 | 4.1786225 |
| ## 24 | Minnesota      | MN | North Central | 5303925  | 53  | 0.9992600 |
| ## 25 | Mississippi    | MS | South         | 2967297  | 120 | 4.0440846 |
| ## 26 | Missouri       | MO | North Central | 5988927  | 321 | 5.3598917 |
| ## 27 | Montana        | MT | West          | 989415   | 12  | 1.2128379 |
| ## 28 | Nebraska       | NE | North Central | 1826341  | 32  | 1.7521372 |
| ## 29 | Nevada         | NV | West          | 2700551  | 84  | 3.1104763 |
| ## 30 | New Hampshire  | NH | Northeast     | 1316470  | 5   | 0.3798036 |
| ## 31 | New Jersey     | NJ | Northeast     | 8791894  | 246 | 2.7980319 |
| ## 32 | New Mexico     | NM | West          | 2059179  | 67  | 3.2537239 |
| ## 33 | New York       | NY | Northeast     | 19378102 | 517 | 2.6679599 |
| ## 34 | North Carolina | NC | South         | 9535483  | 286 | 2.9993237 |
| ## 35 | North Dakota   | ND | North Central | 672591   | 4   | 0.5947151 |
| ## 36 | Ohio           | OH | North Central | 11536504 | 310 | 2.6871225 |
| ## 37 | Oklahoma       | OK | South         | 3751351  | 111 | 2.9589340 |
| ## 38 | Oregon         | OR | West          | 3831074  | 36  | 0.9396843 |
| ## 39 | Pennsylvania   | PA | Northeast     | 12702379 | 457 | 3.5977513 |
| ## 40 | Rhode Island   | RI | Northeast     | 1052567  | 16  | 1.5200933 |
| ## 41 | South Carolina | SC | South         | 4625364  | 207 | 4.4753235 |
| ## 42 | South Dakota   | SD | North Central | 814180   | 8   | 0.9825837 |
| ## 43 | Tennessee      | TN | South         | 6346105  | 219 | 3.4509357 |
| ## 44 | Texas          | TX | South         | 25145561 | 805 | 3.2013603 |
| ## 45 | Utah           | UT | West          | 2763885  | 22  | 0.7959810 |
| ## 46 | Vermont        | VT | Northeast     | 625741   | 2   | 0.3196211 |
| ## 47 | Virginia       | VA | South         | 8001024  | 250 | 3.1246001 |
| ## 48 | Washington     | WA | West          | 6724540  | 93  | 1.3829942 |
| ## 49 | West Virginia  | WV | South         | 1852994  | 27  | 1.4571013 |
| ## 50 | Wisconsin      | WI | North Central | 5686986  | 97  | 1.7056487 |
| ## 51 | Wyoming        | WY | West          | 563626   | 5   | 0.8871131 |

```
# 2
library(formatR)
library(tidyverse)
library(dplyr)
library(dslabs)
data(murders)
murders %>%
  arrange(desc(total)) %>%
  mutate(rank = rank(desc(total)))
```

| ##   | state        | abb | region        | population | total | rank |
|------|--------------|-----|---------------|------------|-------|------|
| ## 1 | California   | CA  | West          | 37253956   | 1257  | 1.0  |
| ## 2 | Texas        | TX  | South         | 25145561   | 805   | 2.0  |
| ## 3 | Florida      | FL  | South         | 19687653   | 669   | 3.0  |
| ## 4 | New York     | NY  | Northeast     | 19378102   | 517   | 4.0  |
| ## 5 | Pennsylvania | PA  | Northeast     | 12702379   | 457   | 5.0  |
| ## 6 | Michigan     | MI  | North Central | 9883640    | 413   | 6.0  |
| ## 7 | Georgia      | GA  | South         | 9920000    | 376   | 7.0  |

|       |                      |    |               |          |     |      |
|-------|----------------------|----|---------------|----------|-----|------|
| ## 8  | Illinois             | IL | North Central | 12830632 | 364 | 8.0  |
| ## 9  | Louisiana            | LA | South         | 4533372  | 351 | 9.0  |
| ## 10 | Missouri             | MO | North Central | 5988927  | 321 | 10.0 |
| ## 11 | Ohio                 | OH | North Central | 11536504 | 310 | 11.0 |
| ## 12 | Maryland             | MD | South         | 5773552  | 293 | 12.0 |
| ## 13 | North Carolina       | NC | South         | 9535483  | 286 | 13.0 |
| ## 14 | Virginia             | VA | South         | 8001024  | 250 | 14.0 |
| ## 15 | New Jersey           | NJ | Northeast     | 8791894  | 246 | 15.0 |
| ## 16 | Arizona              | AZ | West          | 6392017  | 232 | 16.0 |
| ## 17 | Tennessee            | TN | South         | 6346105  | 219 | 17.0 |
| ## 18 | South Carolina       | SC | South         | 4625364  | 207 | 18.0 |
| ## 19 | Indiana              | IN | North Central | 6483802  | 142 | 19.0 |
| ## 20 | Alabama              | AL | South         | 4779736  | 135 | 20.0 |
| ## 21 | Mississippi          | MS | South         | 2967297  | 120 | 21.0 |
| ## 22 | Massachusetts        | MA | Northeast     | 6547629  | 118 | 22.0 |
| ## 23 | Kentucky             | KY | South         | 4339367  | 116 | 23.0 |
| ## 24 | Oklahoma             | OK | South         | 3751351  | 111 | 24.0 |
| ## 25 | District of Columbia | DC | South         | 601723   | 99  | 25.0 |
| ## 26 | Connecticut          | CT | Northeast     | 3574097  | 97  | 26.5 |
| ## 27 | Wisconsin            | WI | North Central | 5686986  | 97  | 26.5 |
| ## 28 | Arkansas             | AR | South         | 2915918  | 93  | 28.5 |
| ## 29 | Washington           | WA | West          | 6724540  | 93  | 28.5 |
| ## 30 | Nevada               | NV | West          | 2700551  | 84  | 30.0 |
| ## 31 | New Mexico           | NM | West          | 2059179  | 67  | 31.0 |
| ## 32 | Colorado             | CO | West          | 5029196  | 65  | 32.0 |
| ## 33 | Kansas               | KS | North Central | 2853118  | 63  | 33.0 |
| ## 34 | Minnesota            | MN | North Central | 5303925  | 53  | 34.0 |
| ## 35 | Delaware             | DE | South         | 897934   | 38  | 35.0 |
| ## 36 | Oregon               | OR | West          | 3831074  | 36  | 36.0 |
| ## 37 | Nebraska             | NE | North Central | 1826341  | 32  | 37.0 |
| ## 38 | West Virginia        | WV | South         | 1852994  | 27  | 38.0 |
| ## 39 | Utah                 | UT | West          | 2763885  | 22  | 39.0 |
| ## 40 | Iowa                 | IA | North Central | 3046355  | 21  | 40.0 |
| ## 41 | Alaska               | AK | West          | 710231   | 19  | 41.0 |
| ## 42 | Rhode Island         | RI | Northeast     | 1052567  | 16  | 42.0 |
| ## 43 | Idaho                | ID | West          | 1567582  | 12  | 43.5 |
| ## 44 | Montana              | MT | West          | 989415   | 12  | 43.5 |
| ## 45 | Maine                | ME | Northeast     | 1328361  | 11  | 45.0 |
| ## 46 | South Dakota         | SD | North Central | 814180   | 8   | 46.0 |
| ## 47 | Hawaii               | HI | West          | 1360301  | 7   | 47.0 |
| ## 48 | New Hampshire        | NH | Northeast     | 1316470  | 5   | 48.5 |
| ## 49 | Wyoming              | WY | West          | 563626   | 5   | 48.5 |
| ## 50 | North Dakota         | ND | North Central | 672591   | 4   | 50.0 |
| ## 51 | Vermont              | VT | Northeast     | 625741   | 2   | 51.0 |

```
# 3
library(formatR)
library(tidyverse)
library(dplyr)
library(dslabs)
data(murders)
murders %>%
  select(state, abb)
```

| ##    | state                | abb |
|-------|----------------------|-----|
| ## 1  | Alabama              | AL  |
| ## 2  | Alaska               | AK  |
| ## 3  | Arizona              | AZ  |
| ## 4  | Arkansas             | AR  |
| ## 5  | California           | CA  |
| ## 6  | Colorado             | CO  |
| ## 7  | Connecticut          | CT  |
| ## 8  | Delaware             | DE  |
| ## 9  | District of Columbia | DC  |
| ## 10 | Florida              | FL  |
| ## 11 | Georgia              | GA  |
| ## 12 | Hawaii               | HI  |
| ## 13 | Idaho                | ID  |
| ## 14 | Illinois             | IL  |
| ## 15 | Indiana              | IN  |
| ## 16 | Iowa                 | IA  |
| ## 17 | Kansas               | KS  |
| ## 18 | Kentucky             | KY  |
| ## 19 | Louisiana            | LA  |
| ## 20 | Maine                | ME  |
| ## 21 | Maryland             | MD  |
| ## 22 | Massachusetts        | MA  |
| ## 23 | Michigan             | MI  |
| ## 24 | Minnesota            | MN  |
| ## 25 | Mississippi          | MS  |
| ## 26 | Missouri             | MO  |
| ## 27 | Montana              | MT  |
| ## 28 | Nebraska             | NE  |
| ## 29 | Nevada               | NV  |
| ## 30 | New Hampshire        | NH  |
| ## 31 | New Jersey           | NJ  |
| ## 32 | New Mexico           | NM  |
| ## 33 | New York             | NY  |
| ## 34 | North Carolina       | NC  |
| ## 35 | North Dakota         | ND  |
| ## 36 | Ohio                 | OH  |
| ## 37 | Oklahoma             | OK  |
| ## 38 | Oregon               | OR  |
| ## 39 | Pennsylvania         | PA  |
| ## 40 | Rhode Island         | RI  |
| ## 41 | South Carolina       | SC  |
| ## 42 | South Dakota         | SD  |
| ## 43 | Tennessee            | TN  |
| ## 44 | Texas                | TX  |
| ## 45 | Utah                 | UT  |
| ## 46 | Vermont              | VT  |
| ## 47 | Virginia             | VA  |
| ## 48 | Washington           | WA  |
| ## 49 | West Virginia        | WV  |
| ## 50 | Wisconsin            | WI  |
| ## 51 | Wyoming              | WY  |

```
# 4 Apakah ada cara yang lebih singkat tanpa
# mengetahui/memfilter dengan membaca rate-nya terlebih
# dahulu?
```

```
library(formatR)
library(tidyverse)
library(dplyr)
library(dslabs)
data(murders)
murders %>%
  mutate(rate = total/population * 1e+05) %>%
  filter(rate >= 4.4)
```

```
##           state abb      region population total      rate
## 1 District of Columbia DC      South      601723      99 16.452753
## 2      Louisiana LA      South     4533372     351  7.742581
## 3      Maryland MD      South     5773552     293  5.074866
## 4      Missouri MO North Central     5988927     321  5.359892
## 5    South Carolina SC      South     4625364     207  4.475323
```

```
# 5
```

```
library(formatR)
library(tidyverse)
library(dplyr)
library(dslabs)
data(murders)
murders %>%
  mutate(rate = total/population * 1e+05, rank = rank(desc(rate))) %>%
  filter(rate < 1) %>%
  filter(region == "Northeast" | region == "West") %>%
  select(state, rate, rank) %>%
  arrange(rate) %>%
  mutate(rank = rank(rate))
```

```
##           state      rate rank
## 1      Vermont 0.3196211      1
## 2 New Hampshire 0.3798036      2
## 3      Hawaii 0.5145920      3
## 4      Idaho 0.7655102      4
## 5      Utah 0.7959810      5
## 6      Maine 0.8280881      6
## 7      Wyoming 0.8871131      7
## 8      Oregon 0.9396843      8
```

```
# 6
```

```
library(formatR)
library(tidyverse)
library(dplyr)
library(dslabs)
data(murders)
my_states <- murders %>%
  mutate(rate = total/population * 1e+05) %>%
  filter(rate < 1) %>%
```

```
filter(region == "Northeast" | region == "Eastwest") %>%  
  select(state, region, rate) %>%  
  arrange(rate)  
my_states
```

```
##           state    region      rate  
## 1      Vermont Northeast 0.3196211  
## 2 New Hampshire Northeast 0.3798036  
## 3         Maine Northeast 0.8280881
```