HW8

Mikołaj Roguski

30 01 2022

Analiza zbioru 3 - housecsv

link do danych: https://www.kaggle.com/mohamedbakrey/housecsv

Załadowanie bibliotek oraz danch

```
library(dplyr);
library(visdat);
library(ggplot2);
library(tidyverse);
library(corrplot);

data <- read.csv("houses.csv");
```

Informacje o danych

Wymiary

```
dim(data)
```

```
## [1] 1000   18
```

Źródłowe dane są ramką o 18 kolumnach i 1000 wierszach.

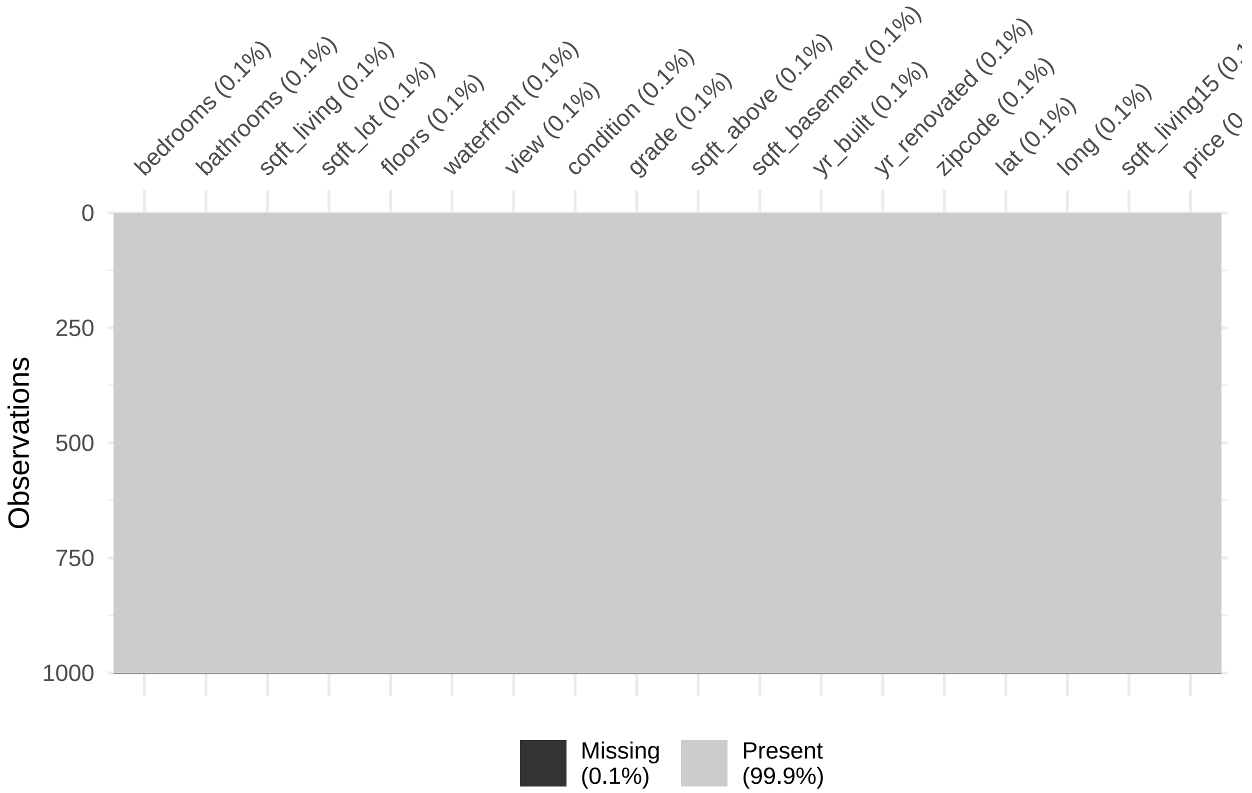
Nazwy kolumn

```
colnames(data)
```

```
##  [1] "bedrooms"      "bathrooms"     "sqft_living"   "sqft_lot"
##  [5] "floors"        "waterfront"    "view"          "condition"
##  [9] "grade"         "sqft_above"    "sqft_basement" "yr_built"
## [13] "yr_renovated"  "zipcode"       "lat"           "long"
## [17] "sqft_living15" "price"
```

Brakujące dane

```
vis_miss(data)
```



Wygląd danych

```
head(data)
```

```
##   bedrooms bathrooms sqft_living sqft_lot floors waterfront view condition
## 1        3      1.00        1180     5650      1          0    0         3
## 2        3      2.25        2570     7242      2          0    0         3
## 3        2      1.00         770    10000      1          0    0         3
## 4        4      3.00        1960     5000      1          0    0         5
## 5        3      2.00        1680     8080      1          0    0         3
## 6        4      4.50        5420   101930      1          0    0         3
##   grade sqft_above sqft_basement yr_built yr_renovated zipcode     lat     long
## 1     7       1180             0     1955            0   98178 47.5112 -122.257
## 2     7       2170           400     1951         1991   98125 47.7210 -122.319
## 3     6        770             0     1933            0   98028 47.7379 -122.233
## 4     7       1050           910     1965            0   98136 47.5208 -122.393
## 5     8       1680             0     1987            0   98074 47.6168 -122.045
## 6    11       3890          1530     2001            0   98053 47.6561 -122.005
##   sqft_living15  price
## 1          1340  22.19
## 2          1690  53.80
## 3          2720  18.00
## 4          1360  60.40
## 5          1800  51.00
## 6          4760 123.00
```

```
tail(data)
```

```
##      bedrooms bathrooms sqft_living sqft_lot floors waterfront view condition
## 995         2      1.00         740     6460    1.0          0    0         3
## 996         4      2.50        1860     6325    2.0          0    0         4
## 997         2      2.75        1590    20917    1.5          0    0         3
## 998         2      1.00         850     2340    1.0          0    0         3
## 999         2      1.00        1030     4188    1.0          0    0         3
## 1000       NA        NA          NA       NA     NA         NA   NA        NA
##      grade sqft_above sqft_basement yr_built yr_renovated zipcode     lat
## 995      6        740             0     1953            0   98146 47.5077
## 996      7       1860             0     1991            0   98038 47.3492
## 997      5       1590             0     1920            0   98001 47.2786
## 998      7        850             0     1922            0   98105 47.6707
## 999      8       1030             0     1981            0   98038 47.3738
## 1000    NA         NA            NA       NA           NA      NA      NA
##          long sqft_living15  price
## 995  -122.344          1170 17.850
## 996  -122.030          1860 29.100
## 997  -122.250          1310 19.995
## 998  -122.328          1300 55.350
## 999  -122.057          1450 18.995
## 1000       NA            NA     NA
```

Widzimy, że brakuje tylko ostatniego wiersza danych.

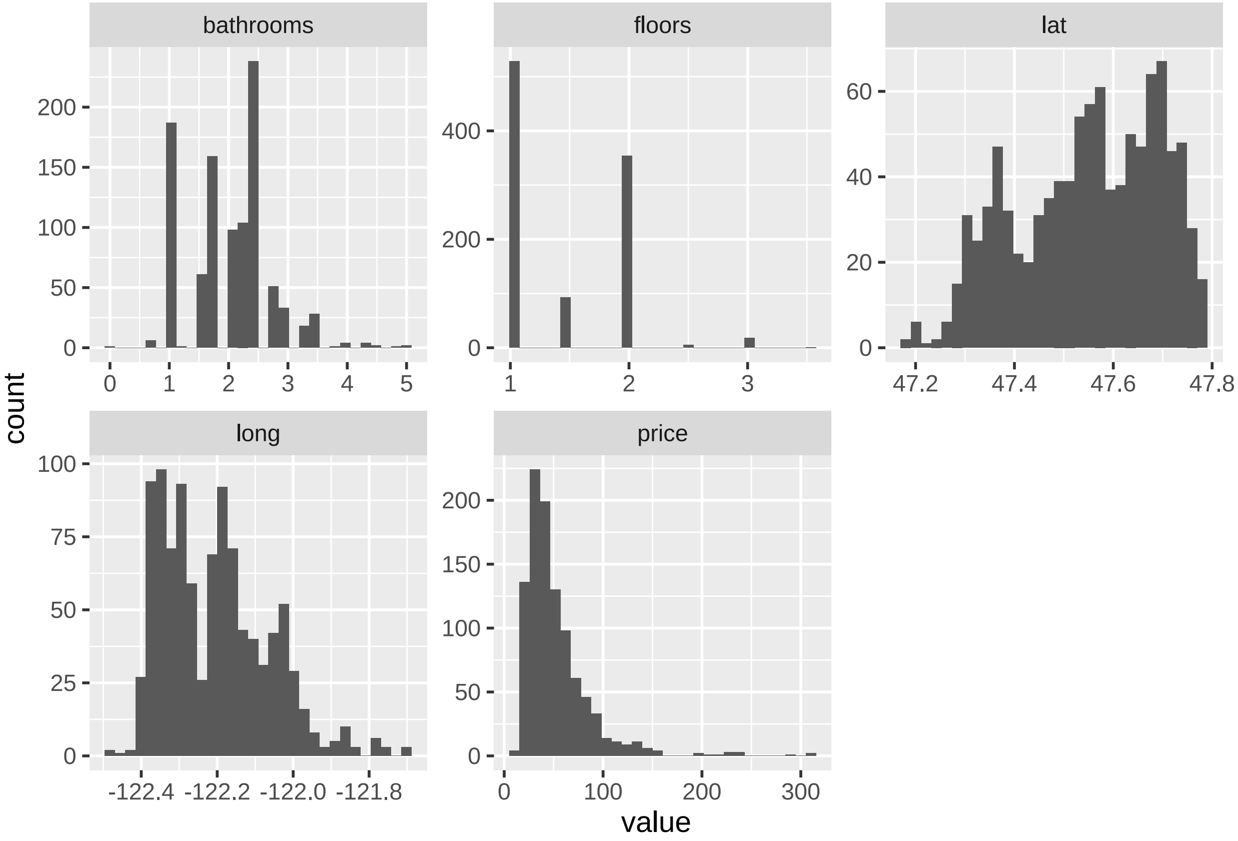
Typy zmiennych

```
sapply(data, class)
```

```
##      bedrooms     bathrooms   sqft_living      sqft_lot        floors 
##     "integer"     "numeric"     "integer"     "integer"     "numeric" 
##    waterfront          view     condition         grade    sqft_above 
##     "integer"     "integer"     "integer"     "integer"     "integer" 
## sqft_basement      yr_built  yr_renovated       zipcode           lat 
##     "integer"     "integer"     "integer"     "integer"     "numeric" 
##          long sqft_living15         price 
##     "numeric"     "integer"     "numeric"
```

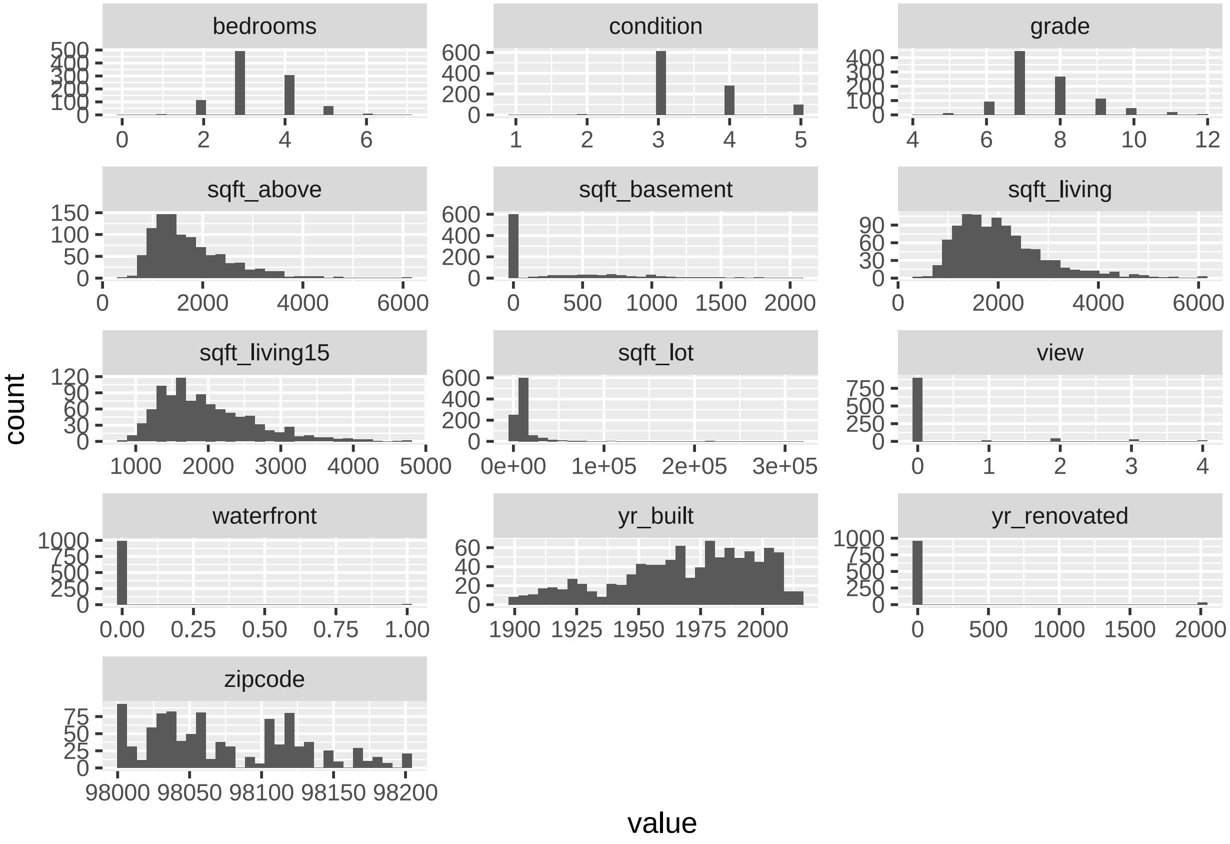
Rozkłady zmiennych typu double

```
data %>%
    select_if(is.double) %>%
    gather() %>%
    ggplot(aes(value)) +
    geom_histogram() +
    facet_wrap(~key,scales = "free")
```



Rozkłady zmiennych typu integer

```
data %>%
    select_if(is.integer) %>%
    gather() %>%
    ggplot(aes(value)) +
    geom_histogram() +
    facet_wrap(~key,scales = "free",ncol = 3,shrink = FALSE)
```



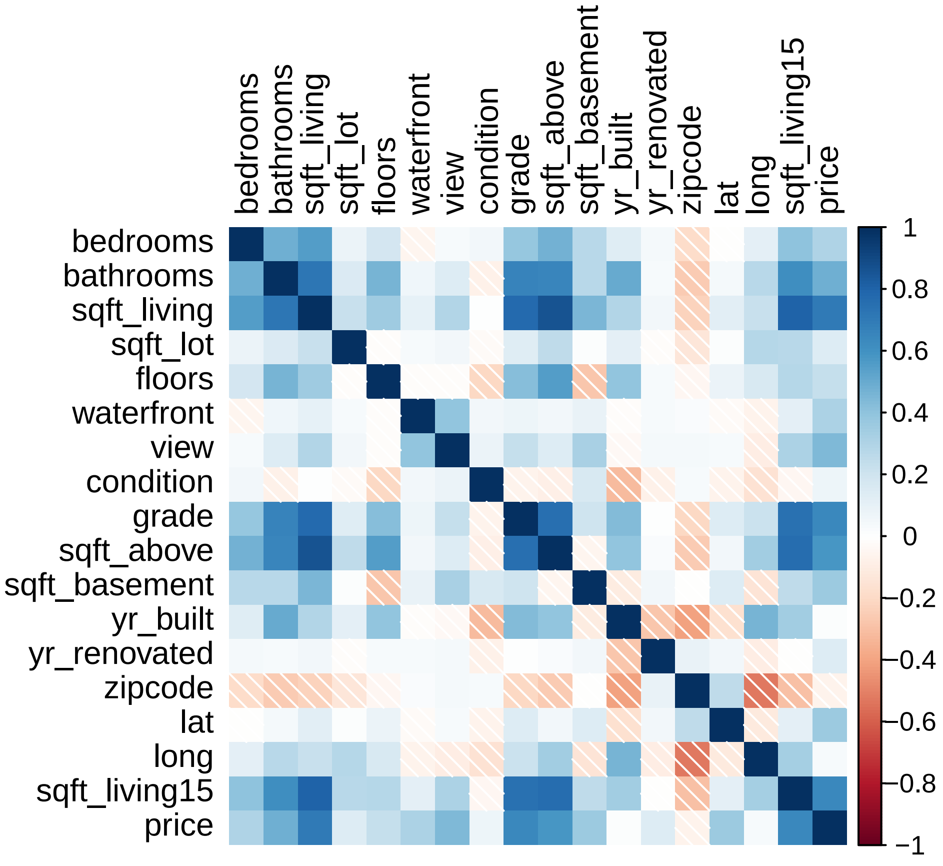
Opisy column

```
sapply(data, summary)
```

```
##         bedrooms bathrooms sqft_living  sqft_lot   floors  waterfront      view
## Min.    0.000000  0.000000     380.000    649.00 1.000000 0.000000000 0.0000000
## 1st Qu. 3.000000  1.500000    1405.000   5419.00 1.000000 0.000000000 0.0000000
## Median  3.000000  2.000000    1900.000   8040.00 1.000000 0.000000000 0.0000000
## Mean    3.349349  2.045796    2051.397  14707.24 1.446947 0.008008008 0.2372372
## 3rd Qu. 4.000000  2.500000    2475.000  11508.50 2.000000 0.000000000 0.0000000
## Max.    7.000000  5.000000    6070.000 315374.00 3.500000 1.000000000 4.0000000
## NA's    1.000000  1.000000       1.000      1.00 1.000000 1.000000000 1.0000000
##         condition     grade sqft_above sqft_basement yr_built yr_renovated
## Min.     1.000000  4.000000    380.000        0.0000  1900.00      0.00000
## 1st Qu.  3.000000  7.000000   1190.000        0.0000  1952.00      0.00000
## Median   3.000000  7.000000   1540.000        0.0000  1974.00      0.00000
## Mean     3.464464  7.605606   1750.233      301.1642  1969.03     81.83083
## 3rd Qu.  4.000000  8.000000   2135.000      580.0000  1992.00      0.00000
## Max.     5.000000 12.000000   6070.000     2060.0000  2015.00   2014.00000
## NA's     1.000000  1.000000      1.000        1.0000     1.00      1.00000
##          zipcode      lat      long sqft_living15     price
## Min.    98001.00 47.17750 -122.4900       830.000   8.00000
## 1st Qu. 98032.00 47.44300 -122.3225      1490.000  30.98000
## Median  98058.00 47.56360 -122.2180      1850.000  43.50000
## Mean    98074.44 47.54972 -122.2074      1986.814  52.07145
## 3rd Qu. 98116.00 47.67340 -122.1180      2360.000  63.44625
## Max.    98199.00 47.77760 -121.7090      4760.000 308.00000
## NA's        1.00  1.00000    1.0000         1.000   1.00000
```

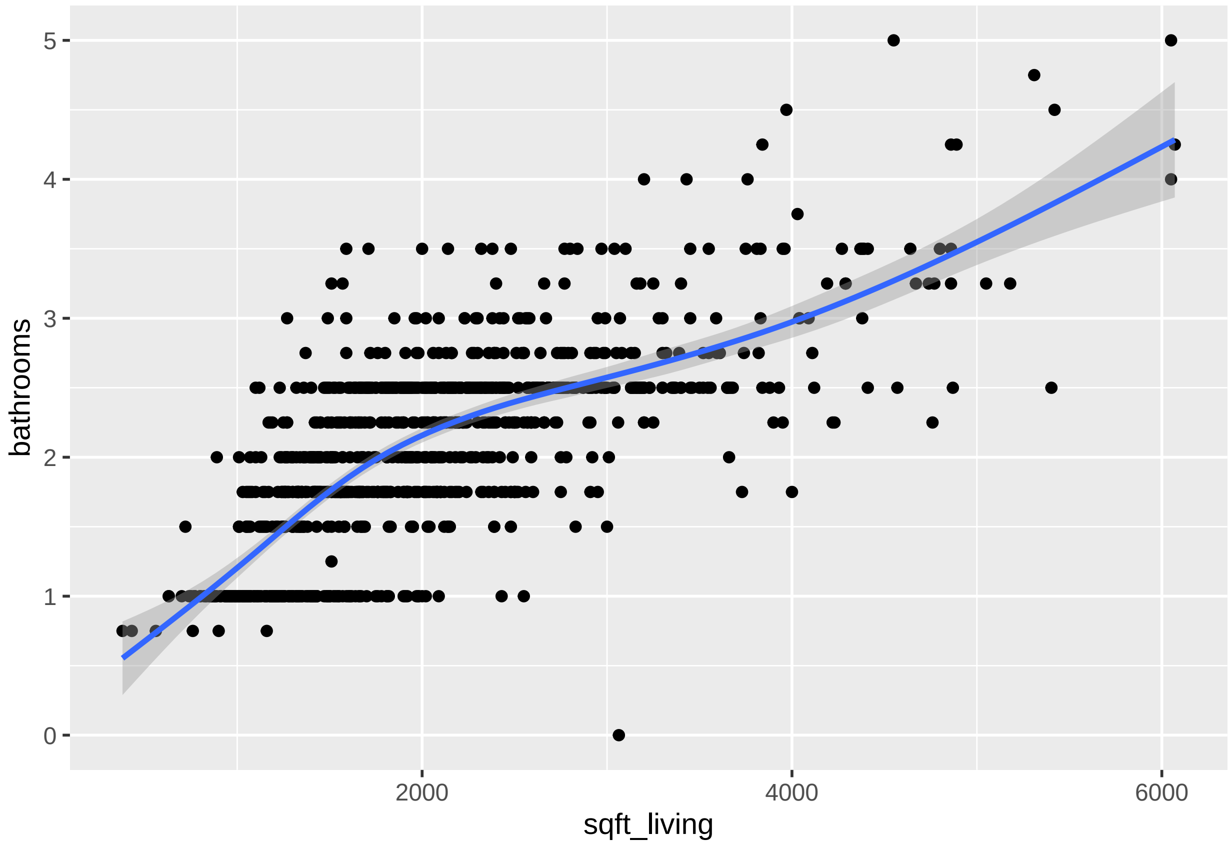
Związki między zmiennymi

```
corrplot(cor(data, use = "complete.obs"),
         method = "shade",
         type = "full",
         diag = TRUE,
         tl.col = "black",
         bg = "white",
         title = "",
         col = NULL)
```



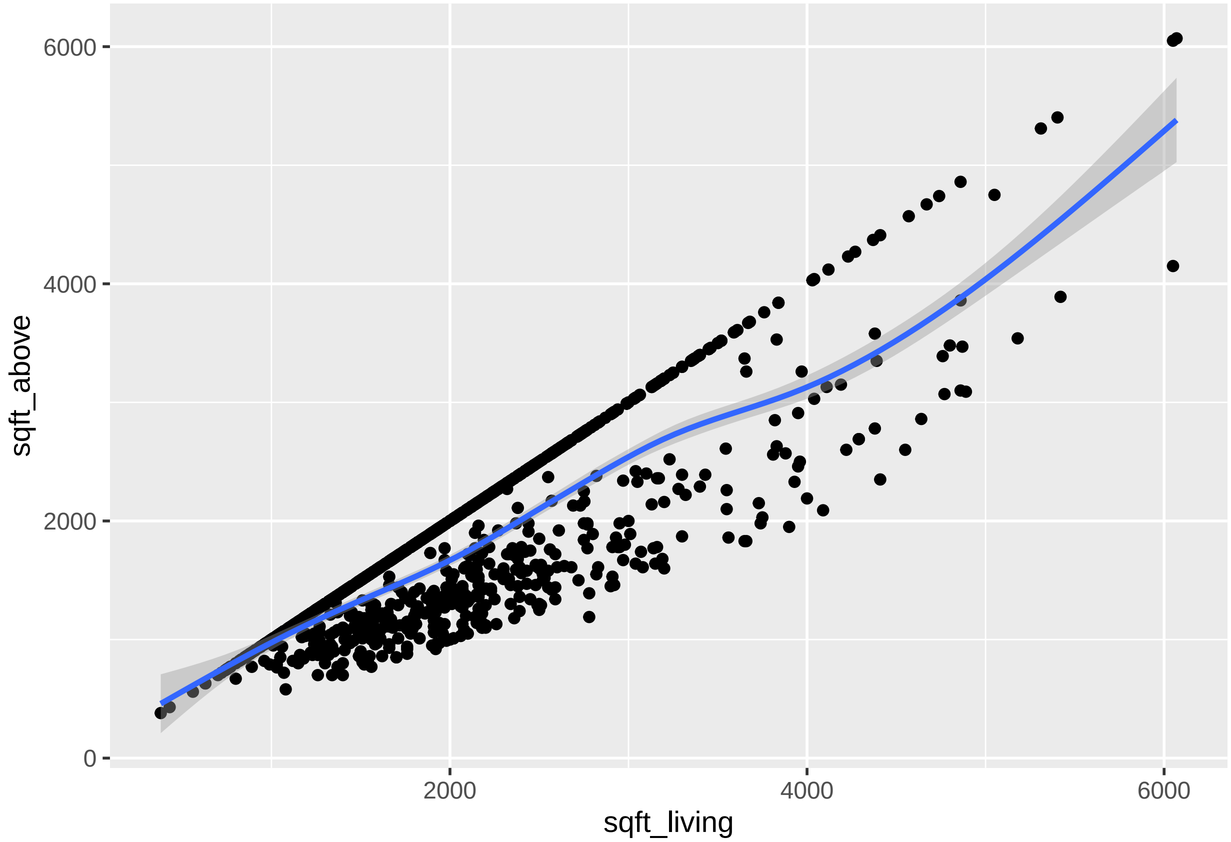
związek między bathrooms a sqrft_living

```
data %>% ggplot(aes(x = sqft_living,y=bathrooms))+
    geom_point()+
    geom_smooth()
```



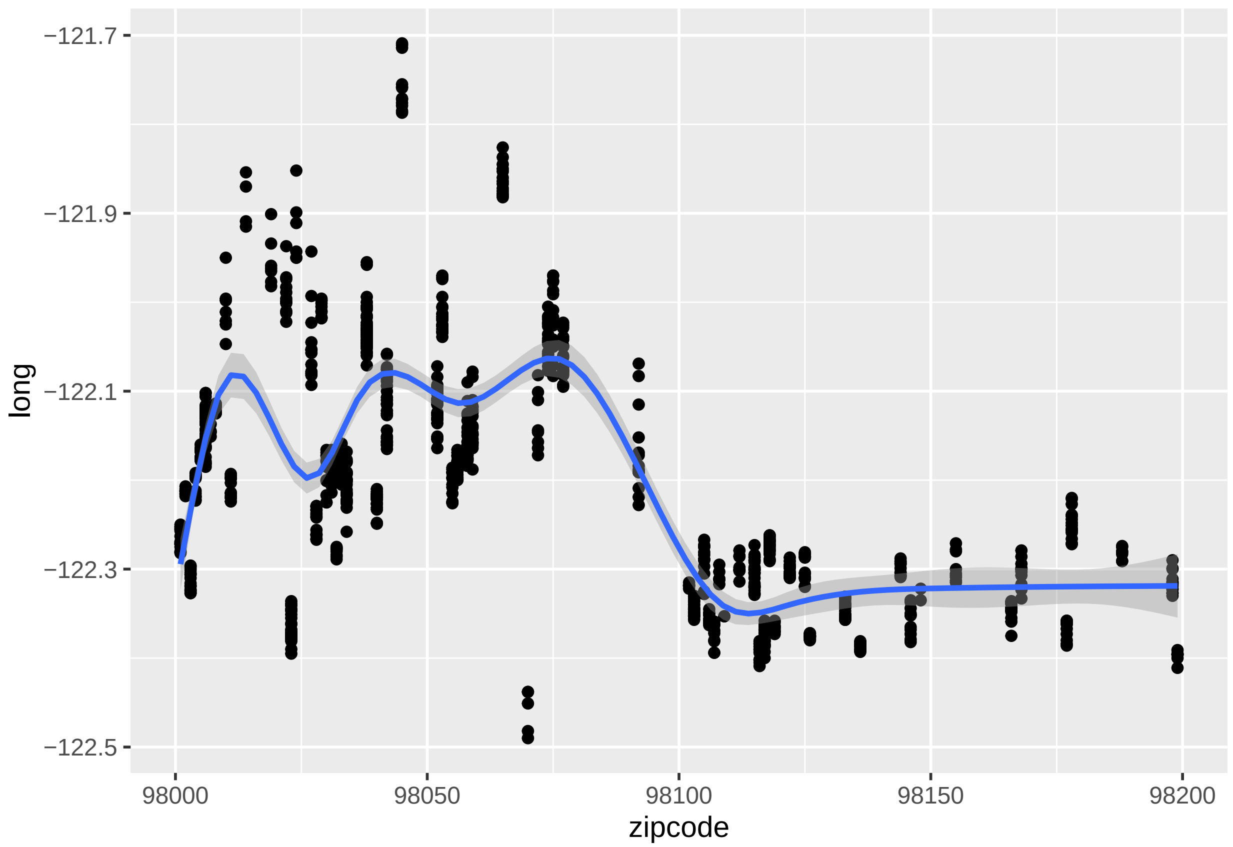
sqft__living i sqft__above

```
data %>% ggplot(aes(x = sqft_living,y=sqft_above))+
    geom_point()+
    geom_smooth()
```



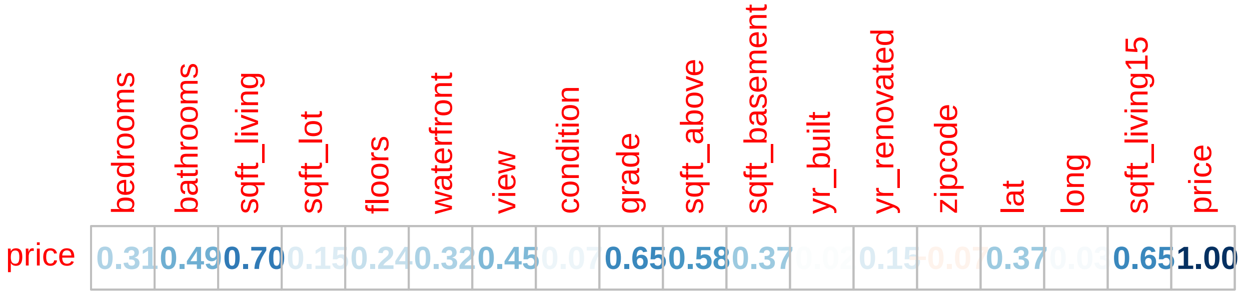
zipcode i long

```
data %>% ggplot(aes(x = zipcode,y=long))+
    geom_point()+
    geom_smooth()
```



korelacja z price

```
corrplot(cor(data,use="complete.obs")[18,1:18,drop = FALSE],
         cl.pos = "n", method = "number")
```


bedrooms
bathrooms
sqft_living
sqft_lot
floors
waterfront
view
condition
grade
sqft_above
sqft_basement
yr_built
yr_renovated
zipcode
lat
long
sqft_living15
price
price
0.31
0.49
0.70
0.15
0.24
0.32
0.45
0.07
0.65
0.58
0.37
0.02
0.15
-0.07
0.37
0.03
0.65
1.00