1. Histogram for all variables in a dataset mtcars. Write a program to create histograms for all columns.

The **mtcars** data is used in the following examples.

data(mtcars)

**head**(mtcars)

## mpg cyl disp hp drat wt qsec vs am gear carb

## Mazda RX4 21.0 6 160 110 3.90 2.620 16.46 0 1 4 4

## Mazda RX4 Wag 21.0 6 160 110 3.90 2.875 17.02 0 1 4 4

## Datsun 710 22.8 4 108 93 3.85 2.320 18.61 1 1 4 1

## Hornet 4 Drive 21.4 6 258 110 3.08 3.215 19.44 1 0 3 1

## Hornet Sportabout 18.7 8 360 175 3.15 3.440 17.02 0 0 3 2

## Valiant 18.1 6 225 105 2.76 3.460 20.22 1 0 3 1

# Facet by two variables: vs and am. # Rows are vs and columns are am **ggplot2.histogram**(data=mtcars, xName='mpg', groupName='vs', legendPosition="top", faceting=TRUE, facetingVarNames=c("vs", "am")) #Facet by two variables: reverse the order of the 2 variables #Rows are am and columns are vs **ggplot2.histogram**(data=mtcars, xName='mpg', groupName='vs', legendPosition="top", faceting=TRUE, facetingVarNames=c("am", "vs"))

# Facet with free scales **ggplot2.histogram**(data=mtcars, xName='mpg', groupName='vs', legendPosition="top", faceting=TRUE, facetingVarNames=c("vs", "am"), facetingScales="free")

# Change facet text font. Possible values for the font style: #'plain', 'italic', 'bold', 'bold.italic'. **ggplot2.histogram**(data=mtcars, xName='mpg', groupName='vs', legendPosition="top", faceting=TRUE, facetingVarNames=c("vs", "am"), facetingFont=c(12, 'bold.italic', "red")) # Change the apperance of the rectangle around facet label **ggplot2.histogram**(data=mtcars, xName='mpg', groupName='vs', legendPosition="top", faceting=TRUE, facetingVarNames=c("vs", "am"), facetingRect=list(background="white", lineType="solid", lineColor="black", lineSize=1.5) )

library(purrr)

library(tidyr)

library(ggplot2)

mtcars %>%

keep(is.numeric) %>%

gather() %>%

ggplot(aes(value)) +

facet\_wrap(~ key, scales = "free") +

geom\_histogram()

d <- mtcars

d$vs <- factor(d$vs)

d$am <- factor(d$am)

d %>% str()

#> 'data.frame': 32 obs. of 11 variables:

#> $ mpg : num 21 21 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 ...

#> $ cyl : num 6 6 4 6 8 6 8 4 4 6 ...

#> $ disp: num 160 160 108 258 360 ...

#> $ hp : num 110 110 93 110 175 105 245 62 95 123 ...

#> $ drat: num 3.9 3.9 3.85 3.08 3.15 2.76 3.21 3.69 3.92 3.92 ...

#> $ wt : num 2.62 2.88 2.32 3.21 3.44 ...

#> $ qsec: num 16.5 17 18.6 19.4 17 ...

#> $ vs : Factor w/ 2 levels "0","1": 1 1 2 2 1 2 1 2 2 2 ...

#> $ am : Factor w/ 2 levels "0","1": 2 2 2 1 1 1 1 1 1 1 ...

#> $ gear: num 4 4 4 3 3 3 3 4 4 4 ...

#> $ carb: num 4 4 1 1 2 1 4 2 2 4 ...

library(purrr)

d %>% keep(is.numeric) %>% head()

#> mpg cyl disp hp drat wt qsec gear carb

#> Mazda RX4 21.0 6 160 110 3.90 2.620 16.46 4 4

#> Mazda RX4 Wag 21.0 6 160 110 3.90 2.875 17.02 4 4

#> Datsun 710 22.8 4 108 93 3.85 2.320 18.61 4 1

#> Hornet 4 Drive 21.4 6 258 110 3.08 3.215 19.44 3 1

#> Hornet Sportabout 18.7 8 360 175 3.15 3.440 17.02 3 2

#> Valiant 18.1 6 225 105 2.76 3.460 20.22 3 1

for (col in d) {

# Plot col

}

library(tidyr)

d %>%

keep(is.numeric) %>%

gather() %>%

head()

#> key value

#> 1 mpg 21.0

#> 2 mpg 21.0

#> 3 mpg 22.8

#> 4 mpg 21.4

#> 5 mpg 18.7

#> 6 mpg 18.1

library(ggplot2)

d %>%

keep(is.numeric) %>% # Keep only numeric columns

gather() %>% # Convert to key-value pairs

ggplot(aes(value)) + # Plot the values

facet\_wrap(~ key, scales = "free") + # In separate panels

geom\_density() # as density

1. Check the probability distribution of all variables in mtcars

hist(mtcars$mpg, mtcars$cyl, mtcars$disp, mtcars$hp, mtcars$drat, mtcars$wt, mtcars$qsec, mtcars$gear, mtcars$carb)

1. Write a program to create boxplot for all variables.

boxplot(mpg ~ cyl, cyl ~ disp, disp ~ hp, hp ~ drat, drat ~ wt, wt ~ qsec, qsec ~ gear, gear ~ carb, mtcars)