

# ggplot2

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## Example 1

```
data(mtcars)
str(mtcars)

## '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 : num 0 0 1 1 0 1 0 1 1 1 ...
## $ am : num 1 1 1 0 0 0 0 0 0 0 ...
## $ gear: num 4 4 4 3 3 3 3 4 4 4 ...
## $ carb: num 4 4 1 1 2 1 4 2 2 4 ...

summary(mtcars)

##      mpg          cyl          disp          hp
## Min.   :10.40   Min.   :4.000   Min.   :71.1   Min.   :52.0
## 1st Qu.:15.43  1st Qu.:4.000   1st Qu.:120.8  1st Qu.:96.5
## Median :19.20  Median :6.000   Median :196.3  Median :123.0
## Mean   :20.09  Mean   :6.188   Mean   :230.7  Mean   :146.7
## 3rd Qu.:22.80  3rd Qu.:8.000   3rd Qu.:326.0  3rd Qu.:180.0
## Max.   :33.90  Max.   :8.000   Max.   :472.0  Max.   :335.0
##      drat          wt          qsec          vs
## Min.   :2.760   Min.   :1.513   Min.   :14.50  Min.   :0.0000
## 1st Qu.:3.080   1st Qu.:2.581   1st Qu.:16.89  1st Qu.:0.0000
## Median :3.695   Median :3.325   Median :17.71  Median :0.0000
## Mean   :3.597   Mean   :3.217   Mean   :17.85  Mean   :0.4375
## 3rd Qu.:3.920   3rd Qu.:3.610   3rd Qu.:18.90  3rd Qu.:1.0000
## Max.   :4.930   Max.   :5.424   Max.   :22.90  Max.   :1.0000
##      am          gear          carb
## Min.   :0.0000  Min.   :3.000   Min.   :1.000
## 1st Qu.:0.0000  1st Qu.:3.000   1st Qu.:2.000
## Median :0.0000  Median :4.000   Median :2.000
## Mean   :0.4062  Mean   :3.688   Mean   :2.812
## 3rd Qu.:1.0000  3rd Qu.:4.000   3rd Qu.:4.000
## Max.   :1.0000  Max.   :5.000   Max.   :8.000
```

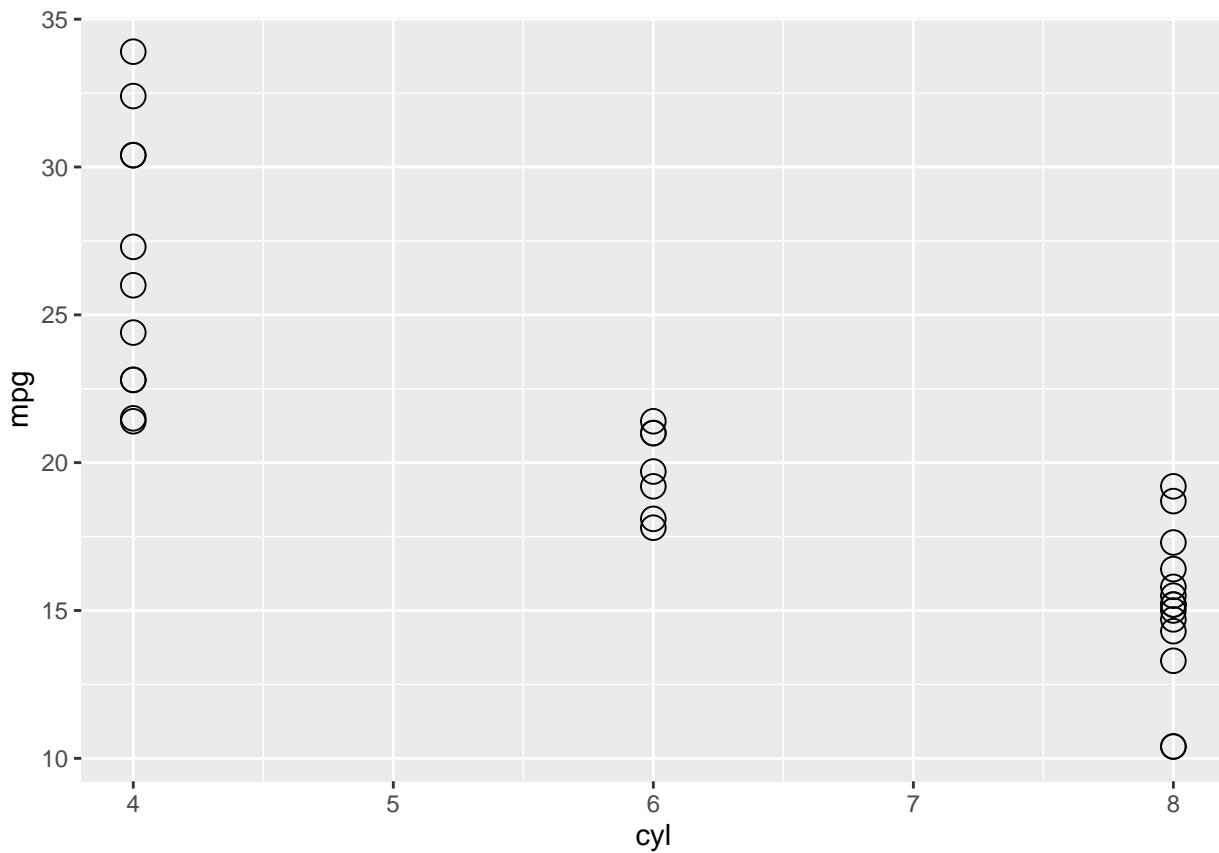
```

library(ggplot2)

## Warning: pakiet 'ggplot2' został zbudowany w wersji R 4.3.2

#a)
ggplot(data=mtcars, aes(x=cyl, y=mpg)) +
  geom_point(shape=1, size=4)

```



```

#b)
ggplot(data=mtcars, aes(x=wt, y=mpg, color = disp, size=disp)) +
  geom_point(alpha=0.8) +
  geom_smooth()

```

```

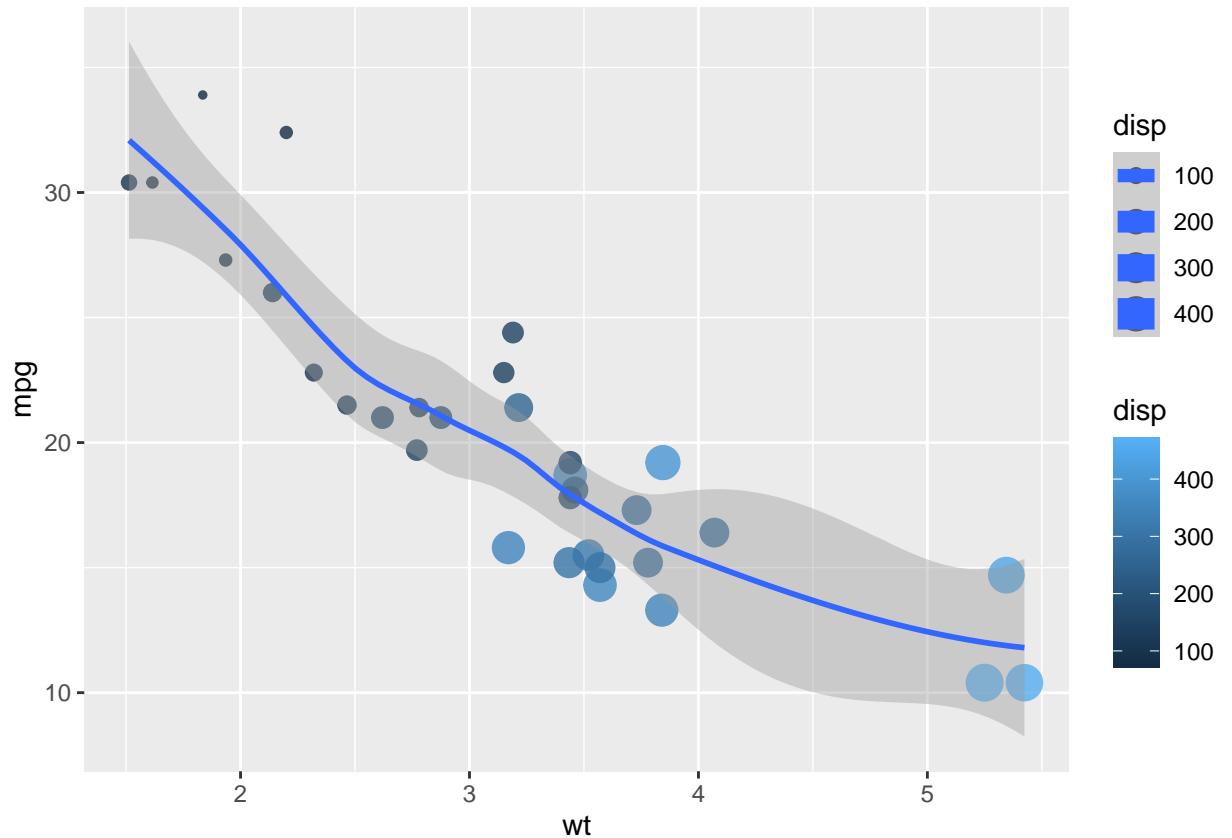
## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use 'linewidth' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.

## 'geom_smooth()' using method = 'loess' and formula = 'y ~ x'

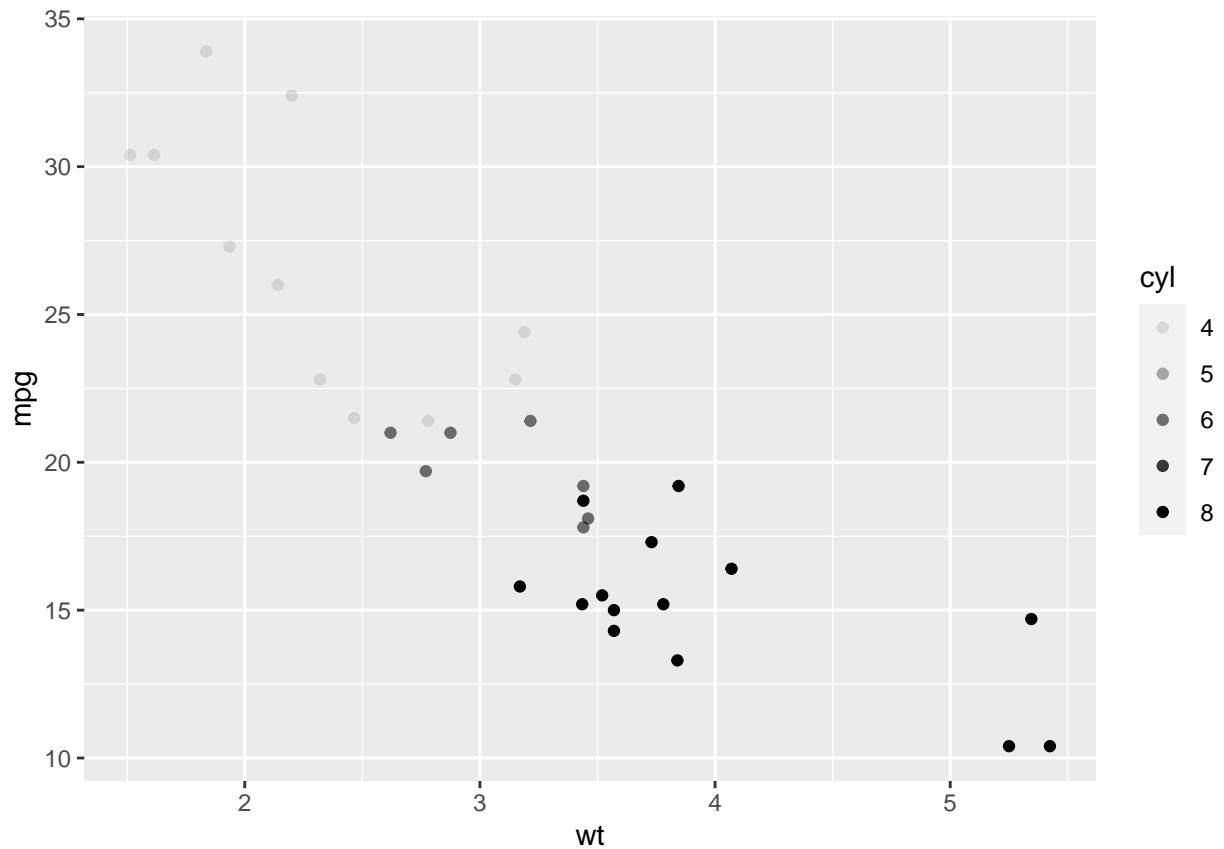
## Warning: The following aesthetics were dropped during statistical transformation:
## colour, size

```

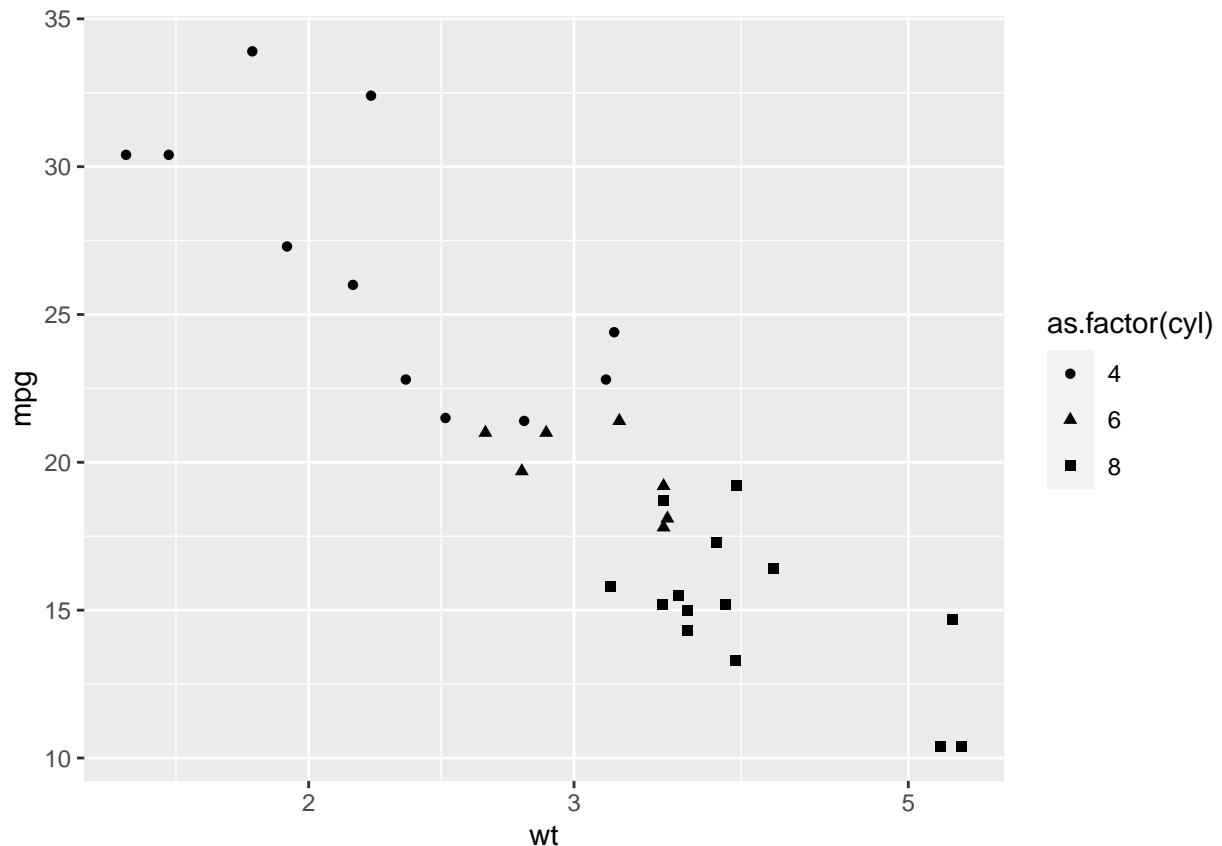
```
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a 'group' aesthetic or to convert a numerical
##   variable into a factor?
```



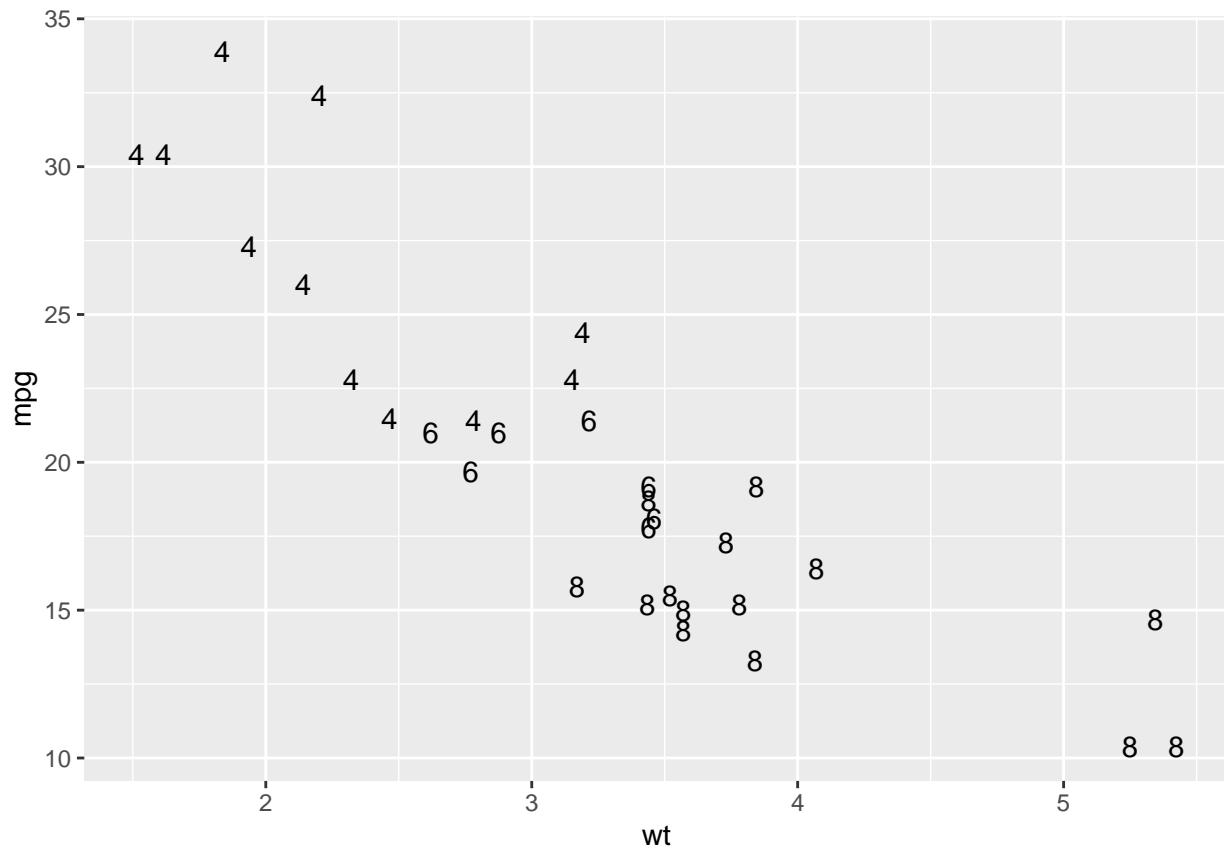
```
#c)
pl<-ggplot(mtcars, aes(wt, mpg))
pl+geom_point(aes(alpha=cyl))
```



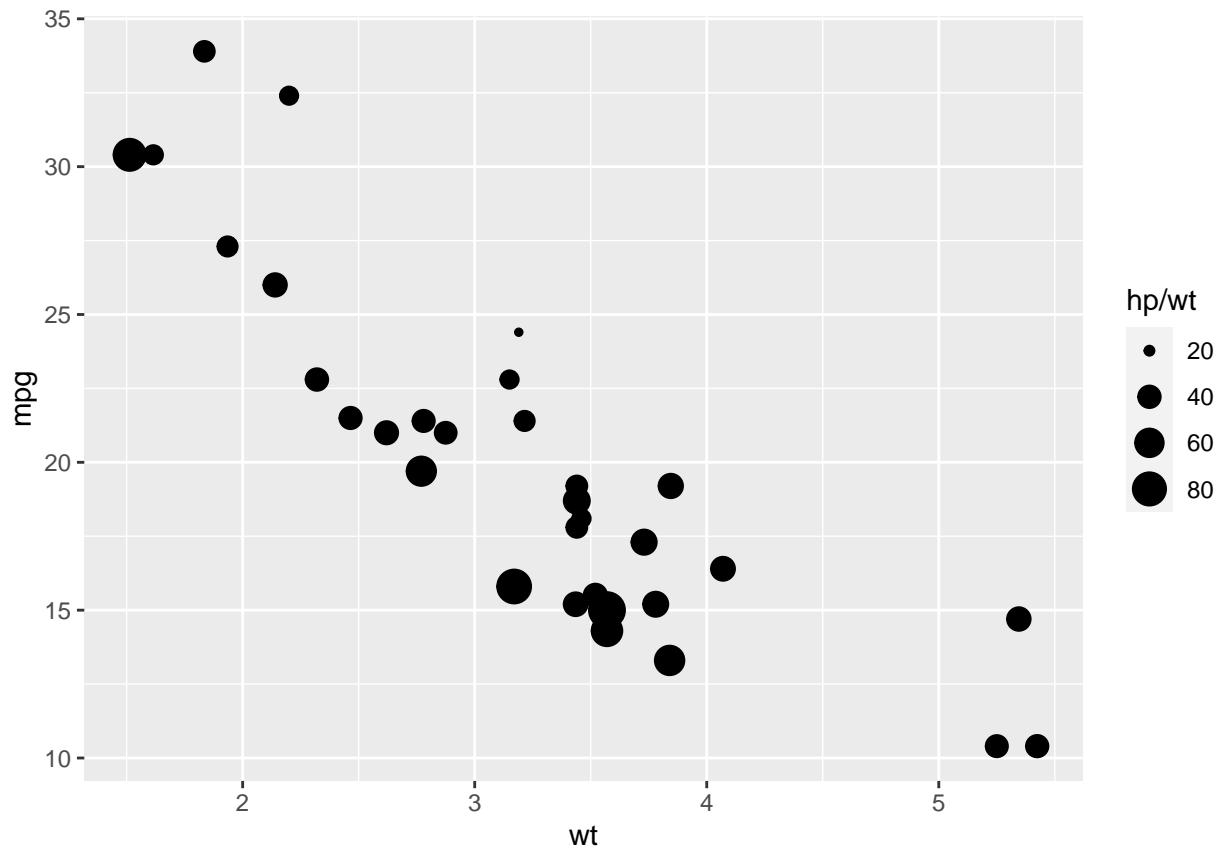
```
pl+geom_point(aes(shape=as.factor(cyl)))+  
  scale_x_log10()
```



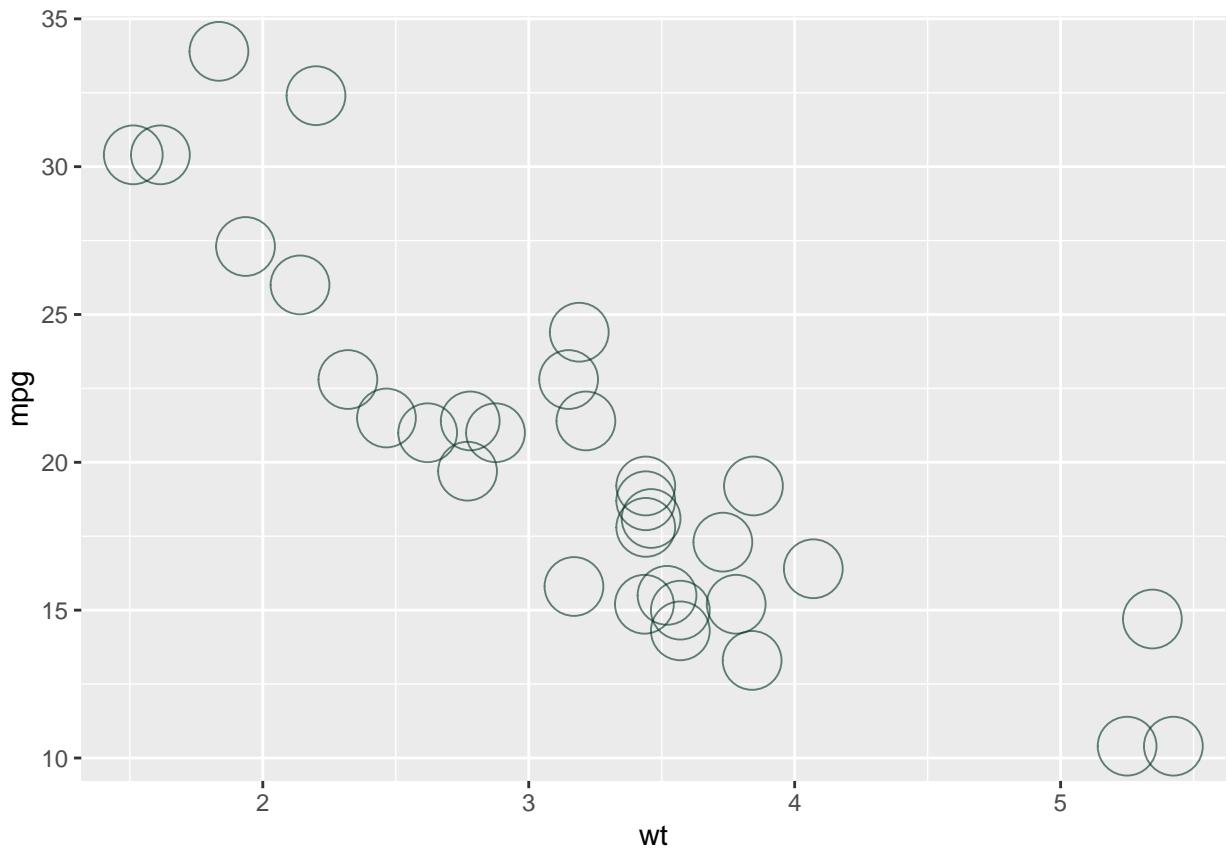
```
pl+geom_text(aes(label=cyl))
```



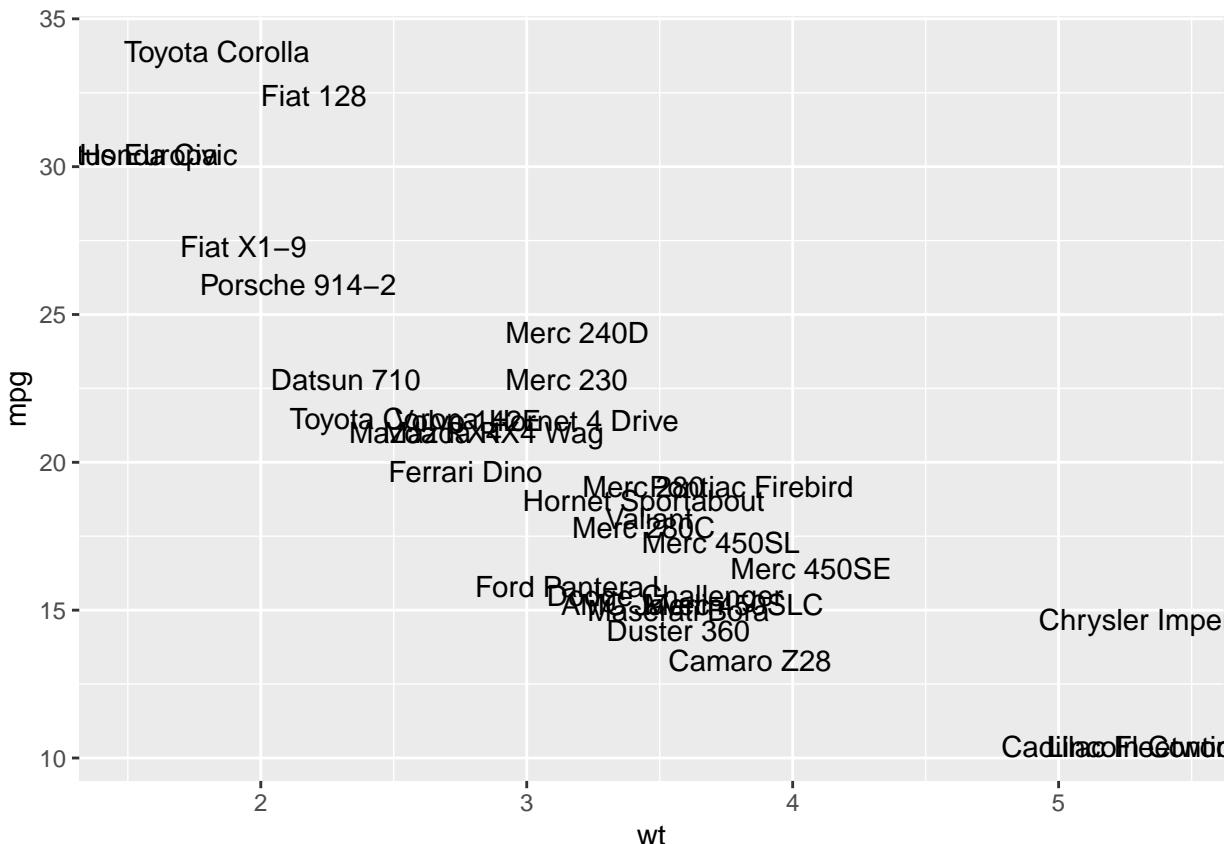
```
pl+geom_point(aes(size= hp/wt))
```



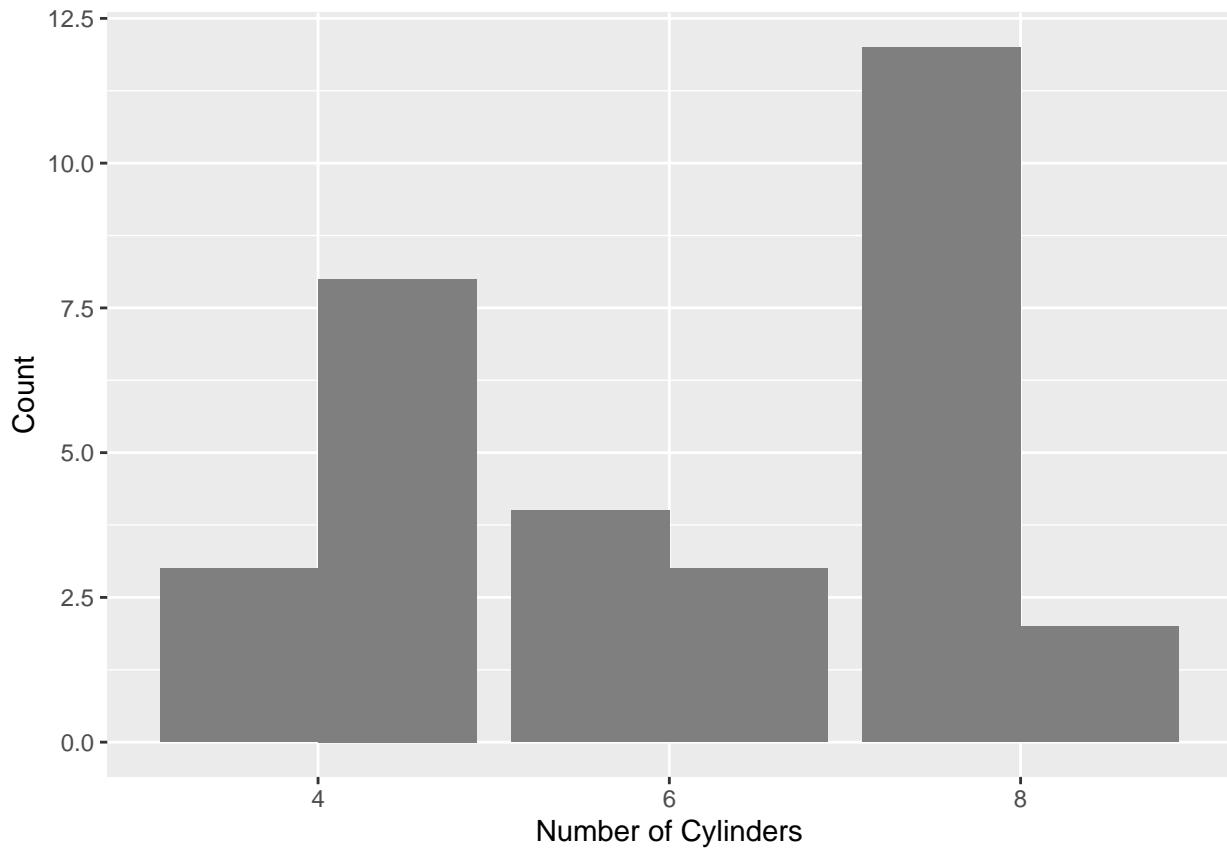
```
dgreen<-"#013220"  
pl+geom_point(color=dgreen, alpha=0.6, size=10, shape=1)
```



```
pl + geom_text(label=rownames(mtcars))
```



```
#d)
m_colors <- c(automatic = "#378AB1", manual = "#E2111C")
ggplot(mtcars, aes(as.factor(cyl), fill = as.factor(am))) +
  geom_bar(position="dodge") +
  labs(x = "Number of Cylinders", y = "Count")+
  scale_fill_manual("Type", values = m_colors)
```



### Task 1

```

library('ggplot2')
library('tidyverse')

## Warning: pakiet 'tidyverse' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'tidyr' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'readr' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'purrr' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'dplyr' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'forcats' został zbudowany w wersji R 4.3.2

## Warning: pakiet 'lubridate' został zbudowany w wersji R 4.3.2

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4      v readr     2.1.4
## v forcats   1.0.0      v stringr   1.5.0

```

```

## v lubridate 1.9.3      v tibble     3.2.1
## v purrr      1.0.2      v tidyverse  1.3.0
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

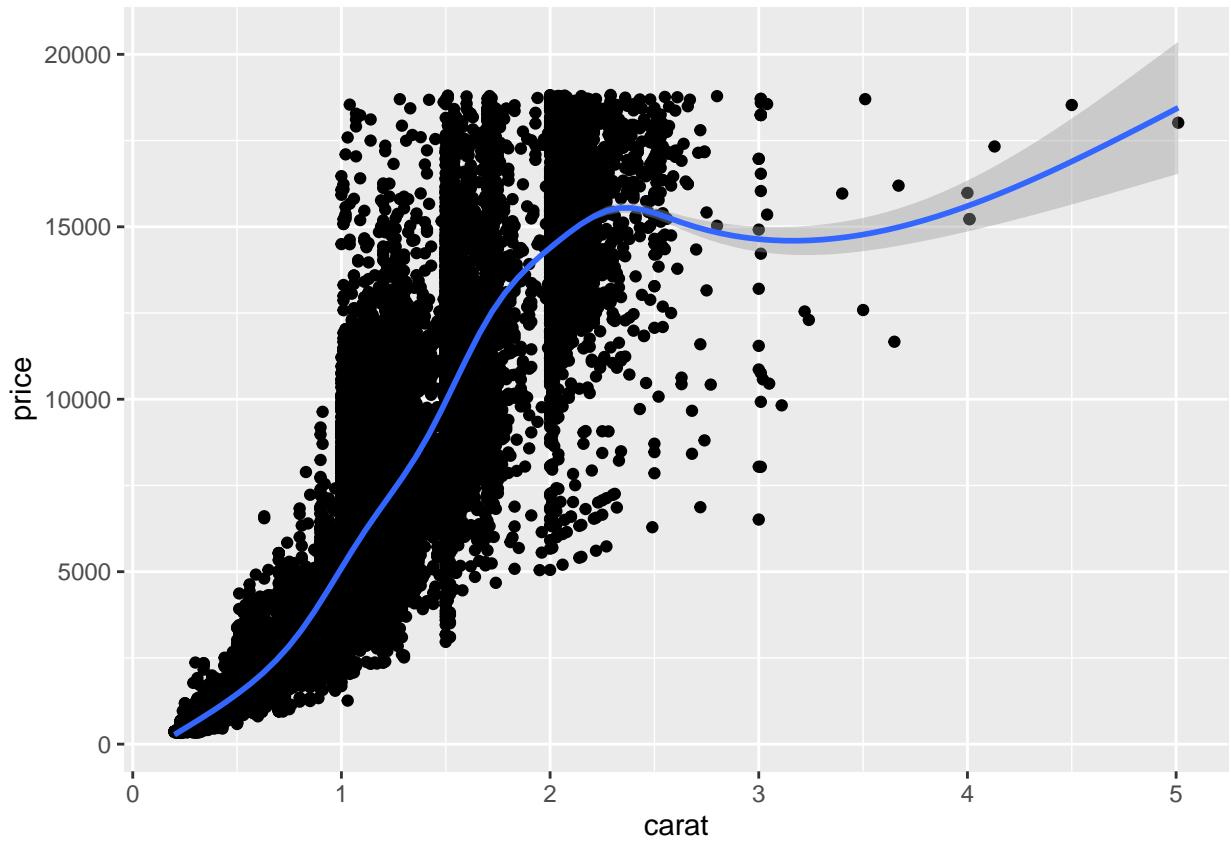
library('ggthemes')

## Warning: pakiet 'ggthemes' został zbudowany w wersji R 4.3.2

ggplot(diamonds, aes(x = carat, y = price)) +geom_point() +geom_smooth()

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

```

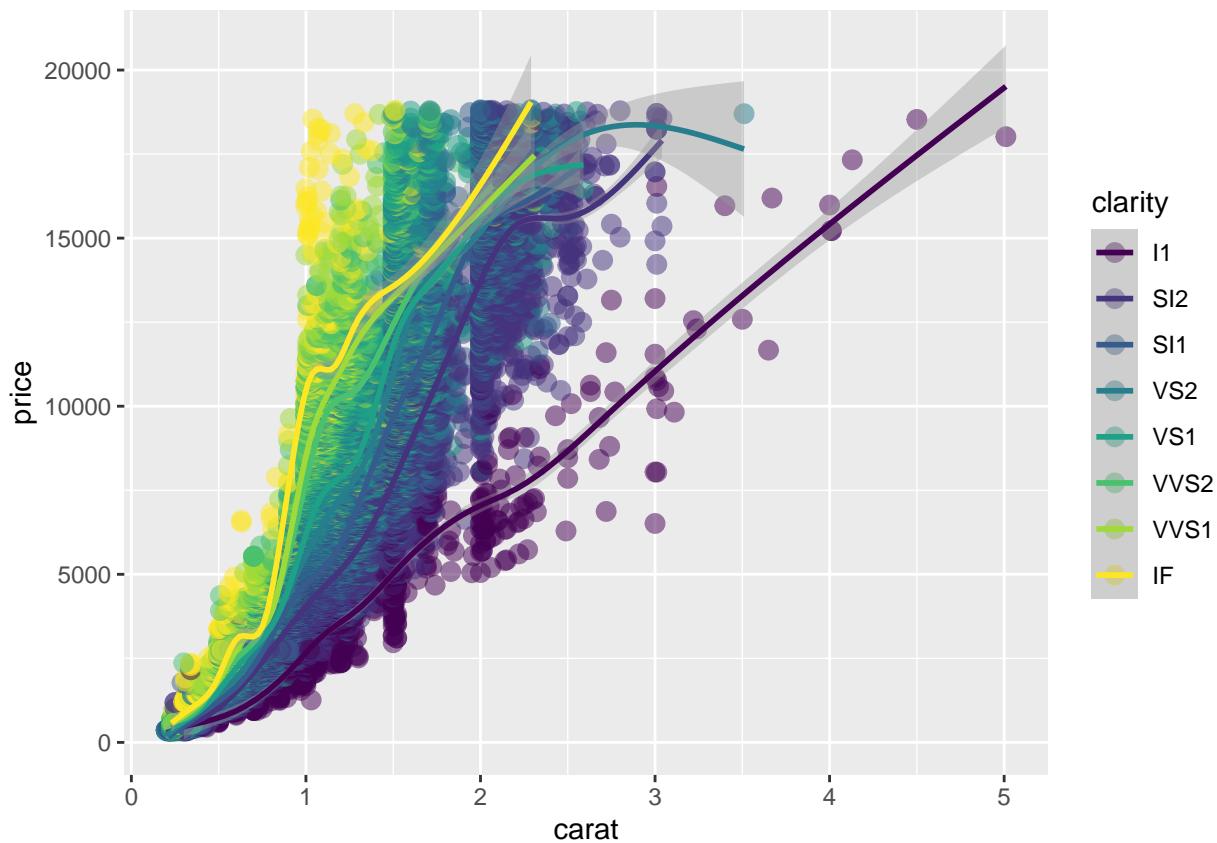


```

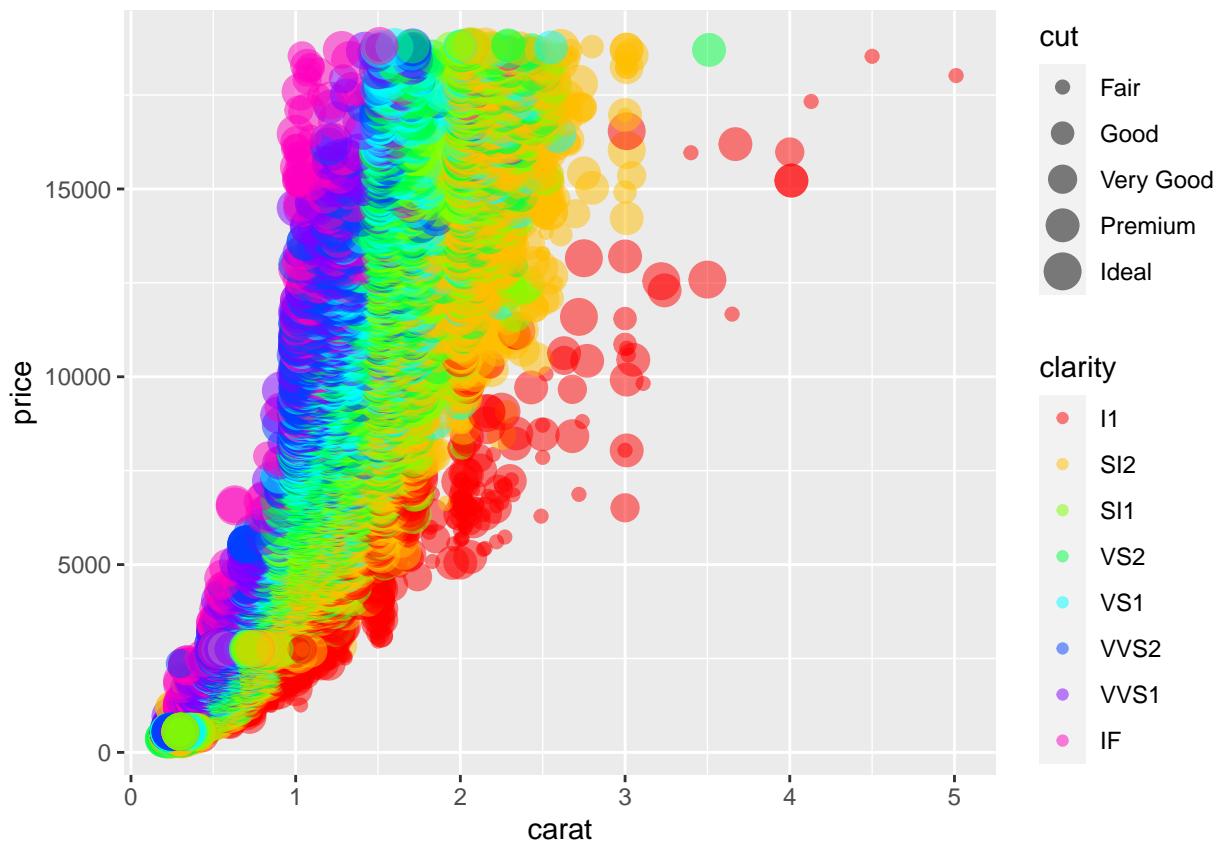
ggplot(diamonds, aes(x = carat, y = price, color = clarity)) +
  geom_point( alpha = 0.5, size = 3) +
  geom_smooth()

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

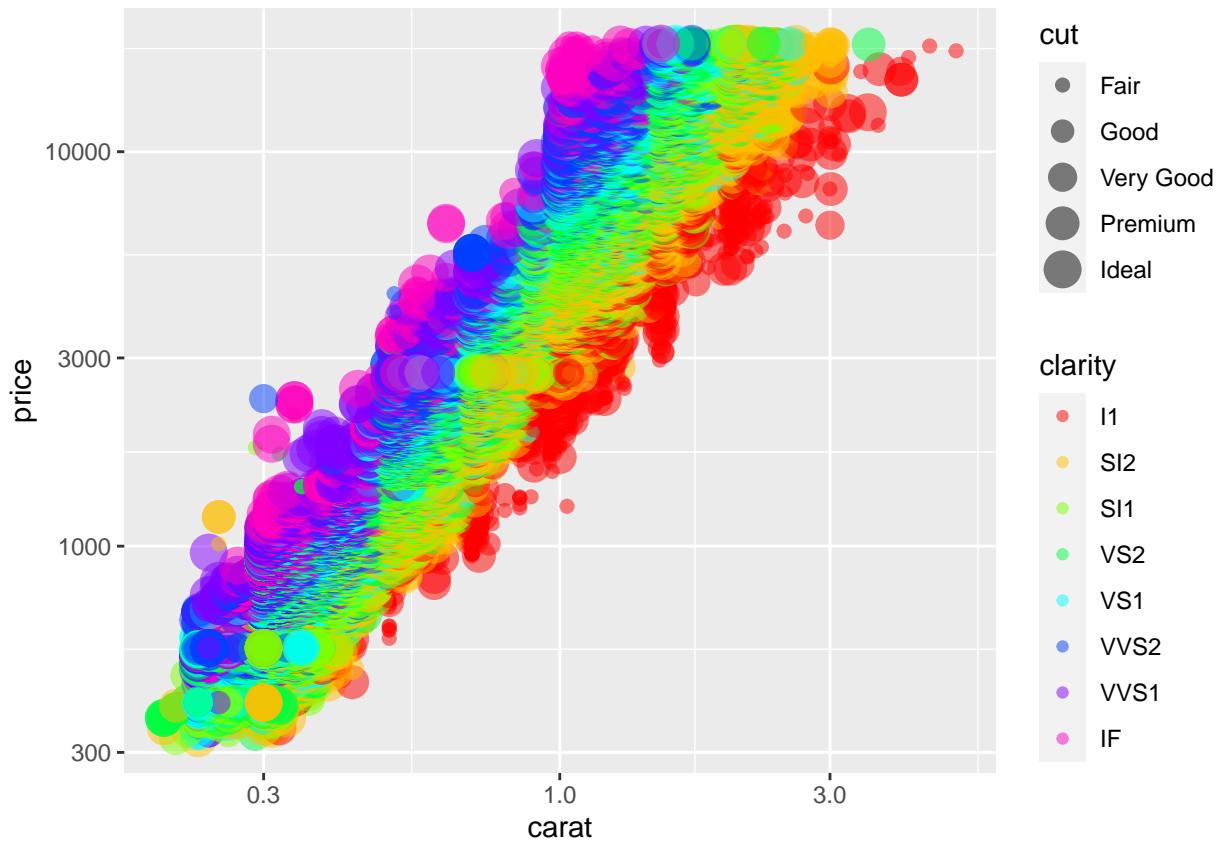
```



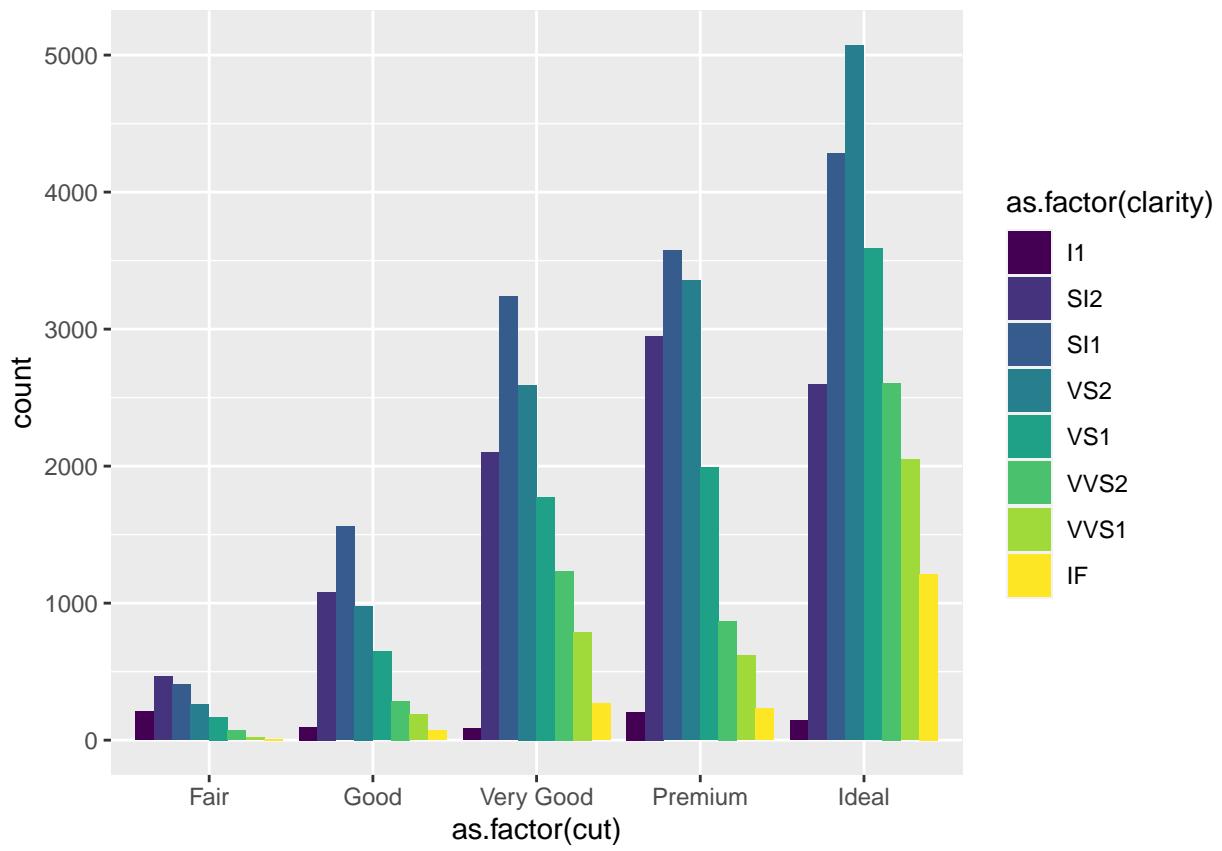
```
ggplot(diamonds, aes(x = carat, y = price, color = clarity, size = cut)) +  
  geom_point( alpha = 0.5 ) +  
  scale_colour_manual(values = rainbow(8))
```



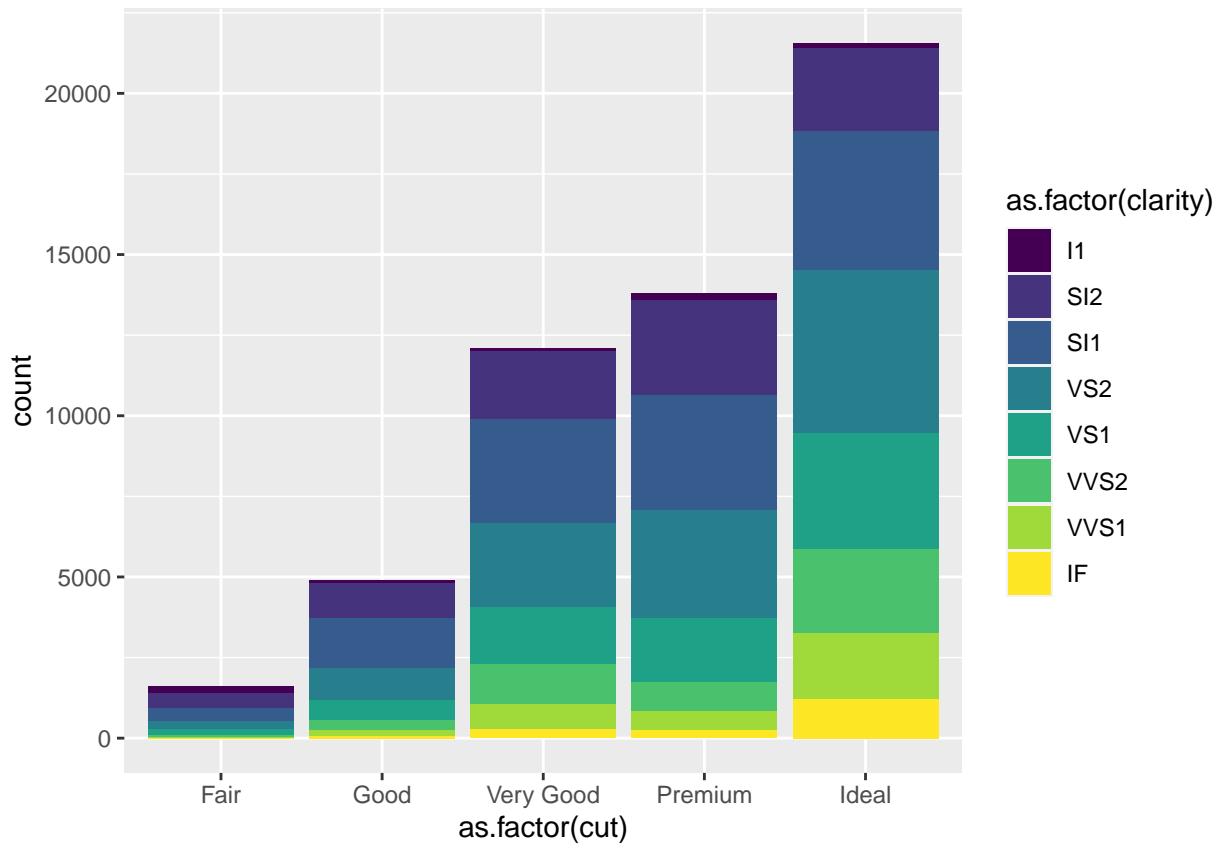
```
ggplot(diamonds, aes(x = carat, y = price, color = clarity, size = cut)) +
  geom_point( alpha = 0.5 ) +
  scale_colour_manual(values = rainbow(8)) +
  scale_x_log10() +
  scale_y_log10()
```



```
ggplot(diamonds, aes(as.factor(cut), fill = as.factor(clarity))) +  
  geom_bar(position="dodge")
```

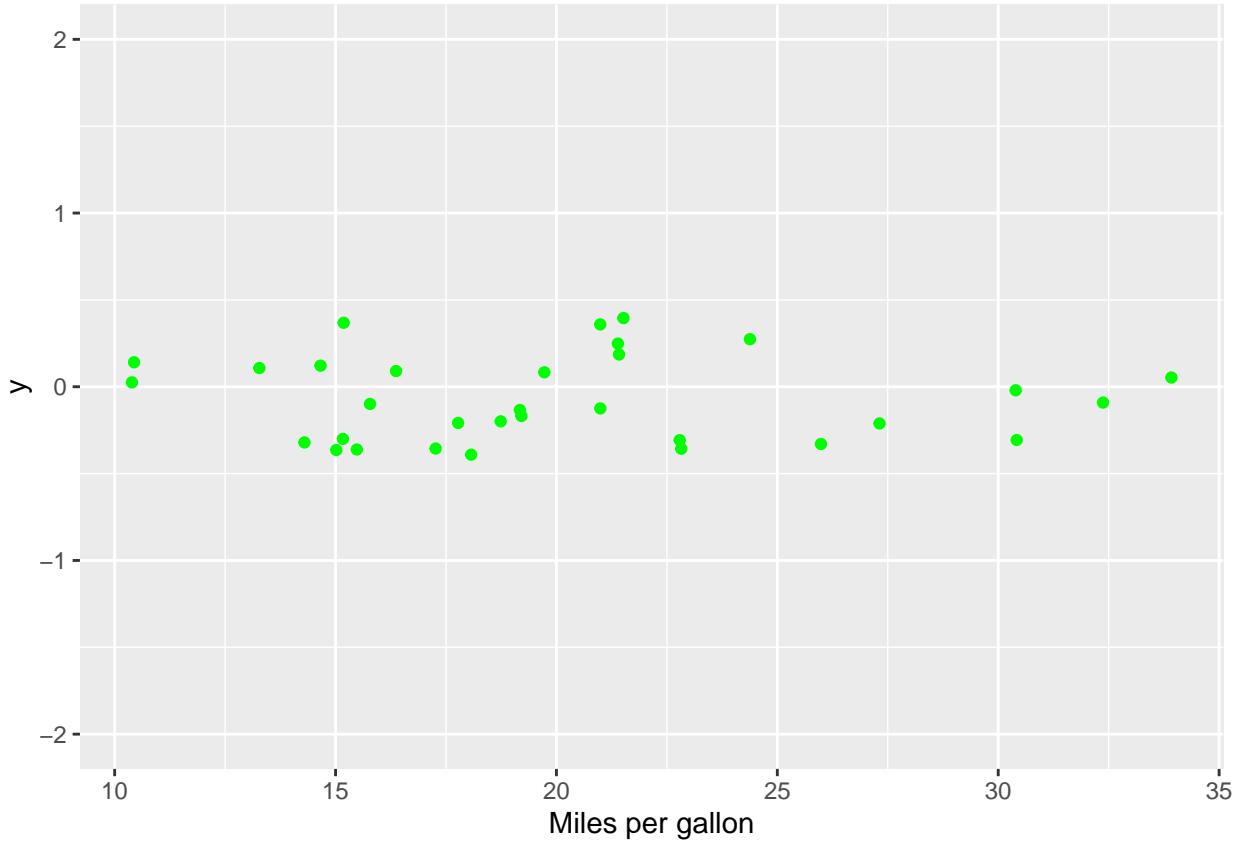


```
ggplot(diamonds, aes(as.factor(cut), fill = as.factor(clarity))) +
  geom_bar()
```



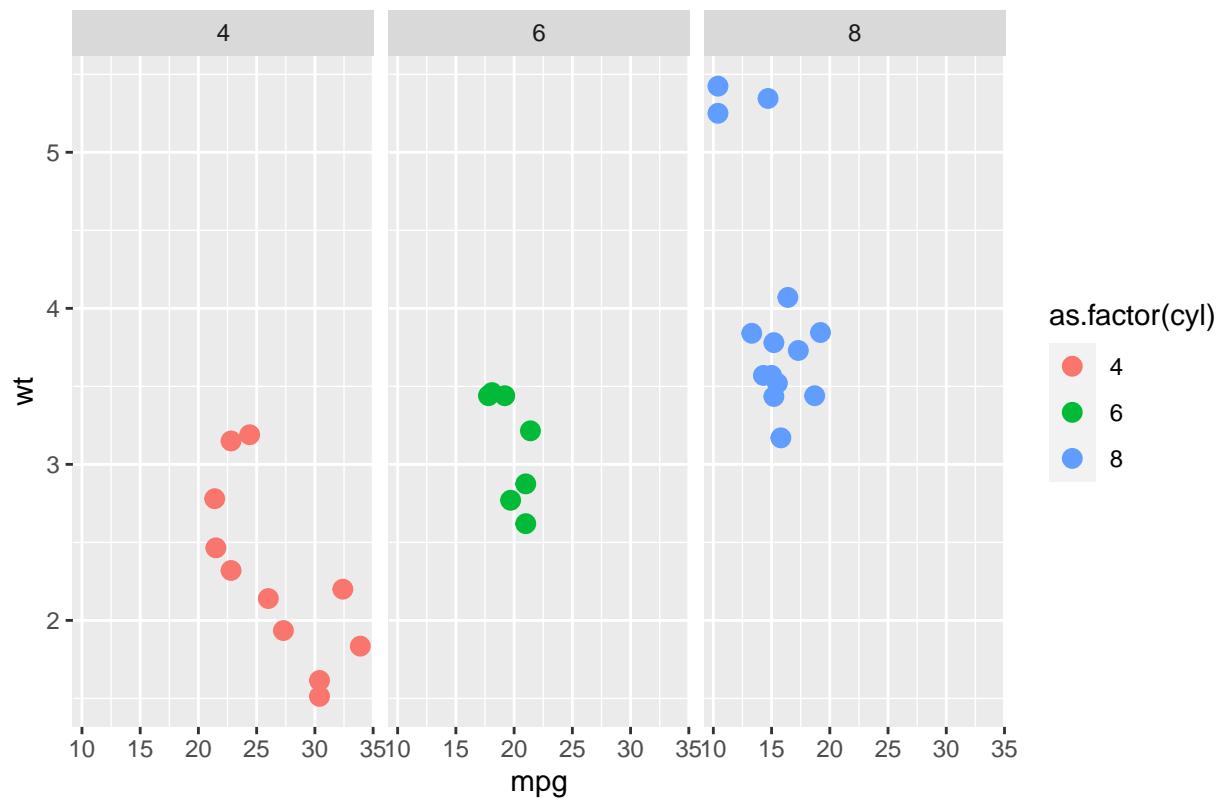
## Example 2

```
#a)
ggplot(mtcars, aes(mpg, 0)) +
  geom_jitter(color="green") +
  ylim(-2,2) +
  xlab("Miles per gallon")
```

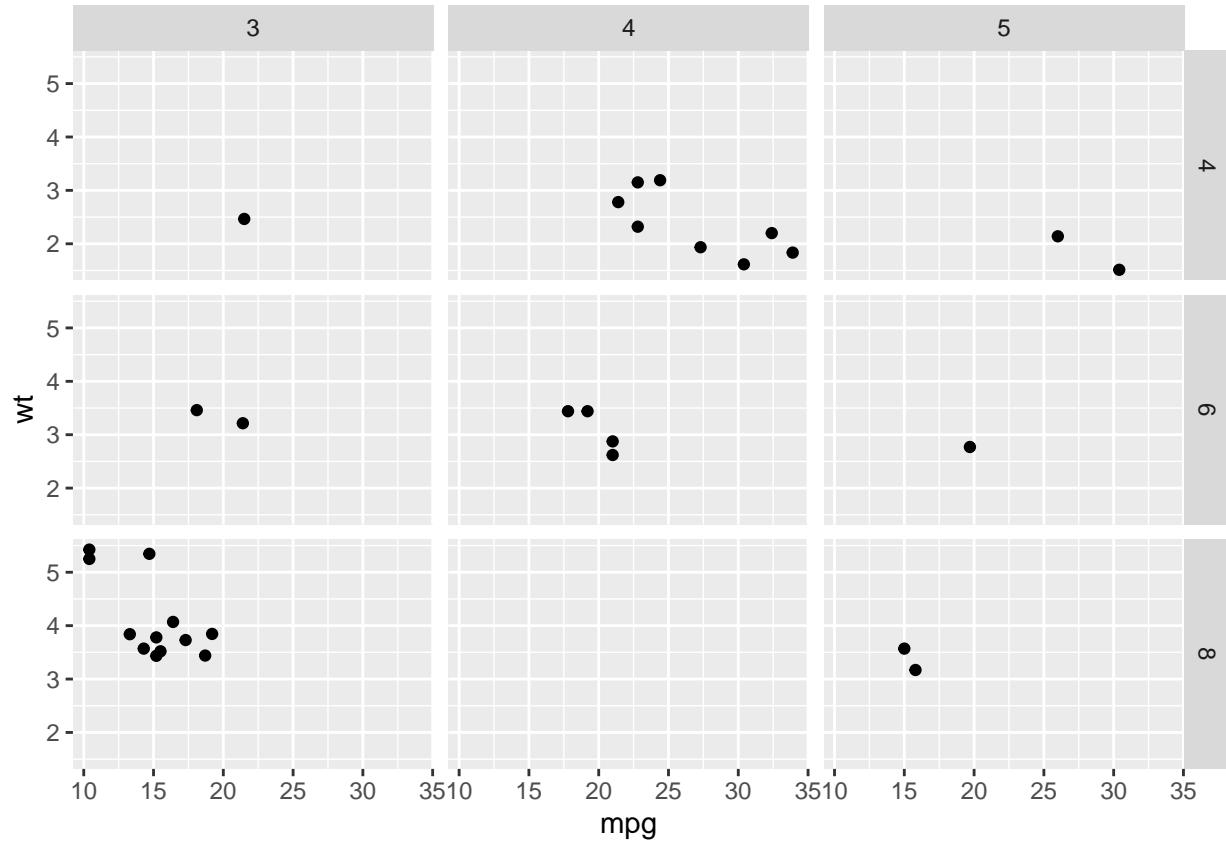


```
#b)
ggplot( mtcars , aes(x=mpg, y=wt, color=as.factor(cyl) )) +
  geom_point(size=3) +
  facet_wrap(~cyl) +
  ggtitle("Mtcars plot")
```

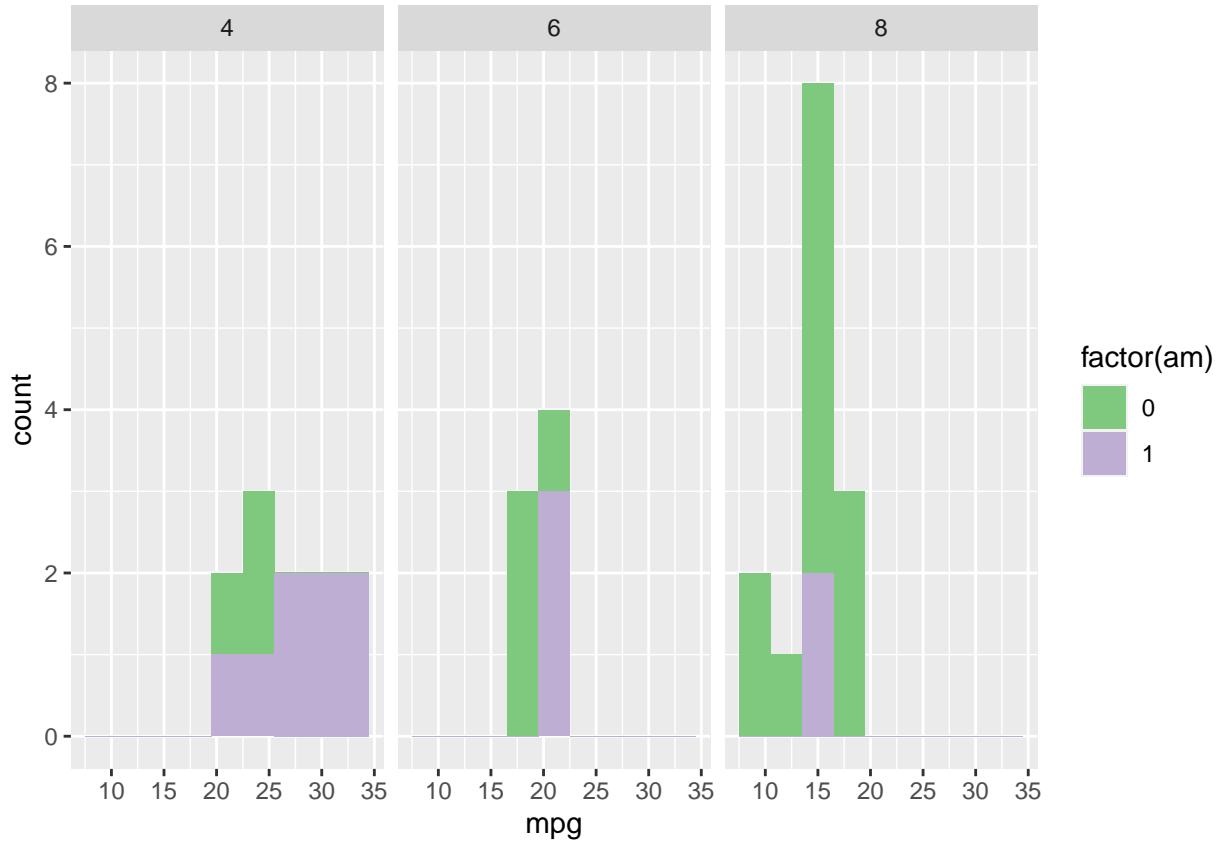
## Mtcars plot



```
#c)
ggplot( mtcars , aes(x=mpg, y=wt ) ) +
  geom_point() +
  facet_grid( cyl ~ gear)
```



```
#d)
ggplot(mtcars, aes(x=mpg, fill=factor(am))) +
  geom_histogram(binwidth=3) +
  facet_wrap(~ cyl) +
  scale_fill_brewer(type = 'qual')
```

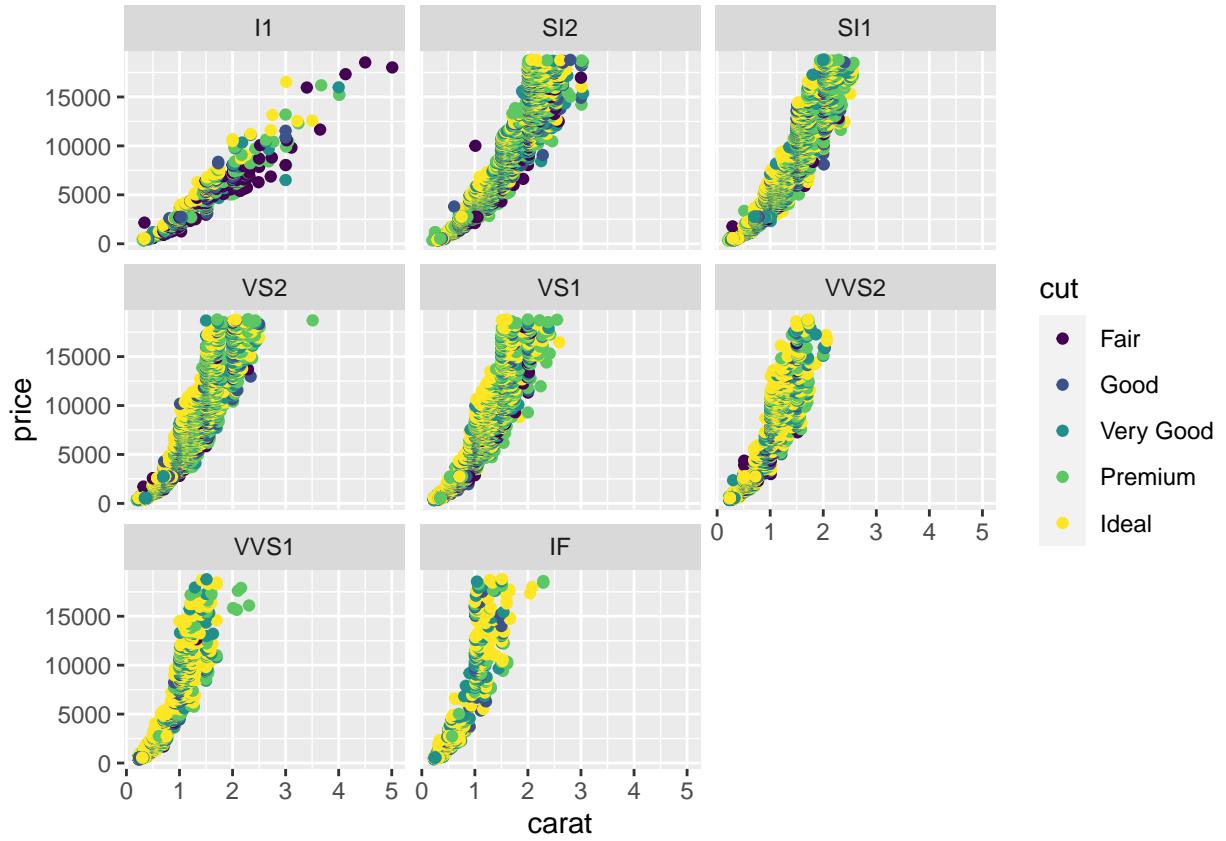


```
#e)
p = ggplot(mtcars, aes(x=mpg, fill=factor(am))) + geom_histogram(binwidth=5)
ggsave(filename="auta.png", p)
```

```
## Saving 6.5 x 4.5 in image
```

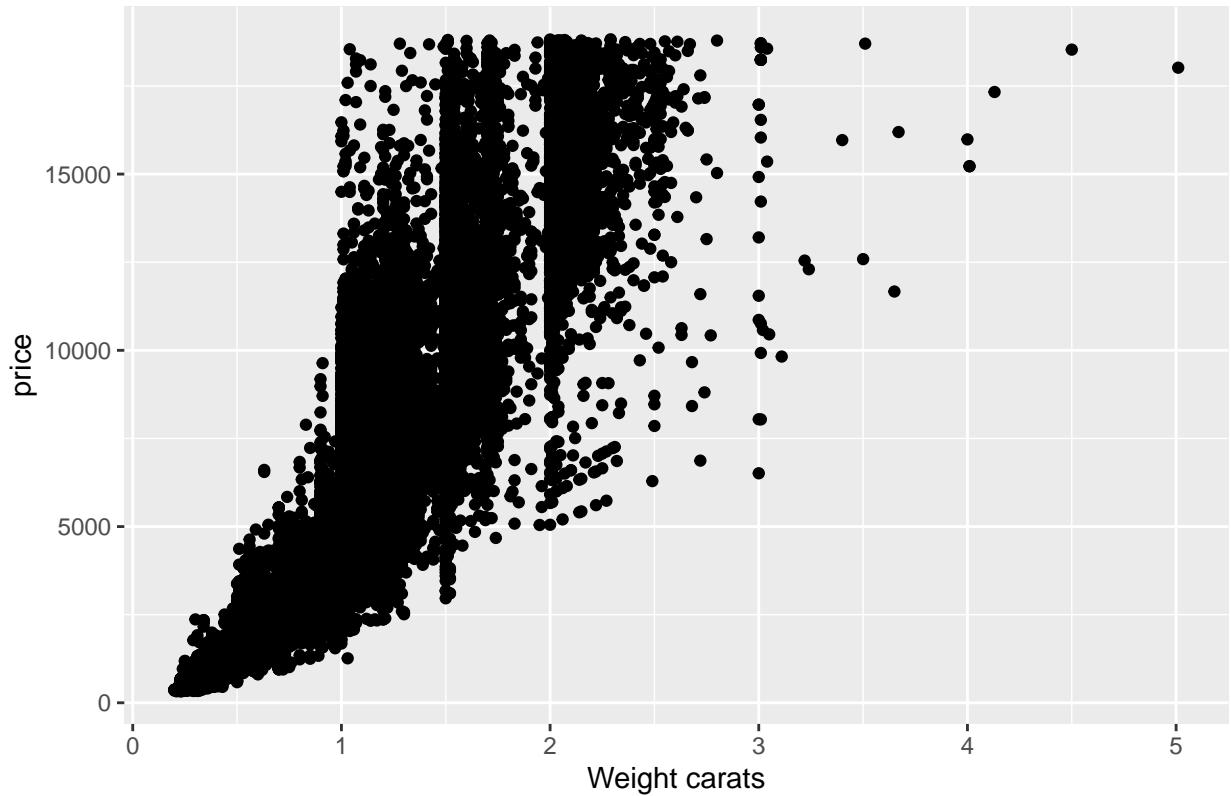
## Task 2

```
ggplot(diamonds, aes(x = carat, y = price, color = cut)) +
  geom_point() +
  facet_wrap(~clarity)
```

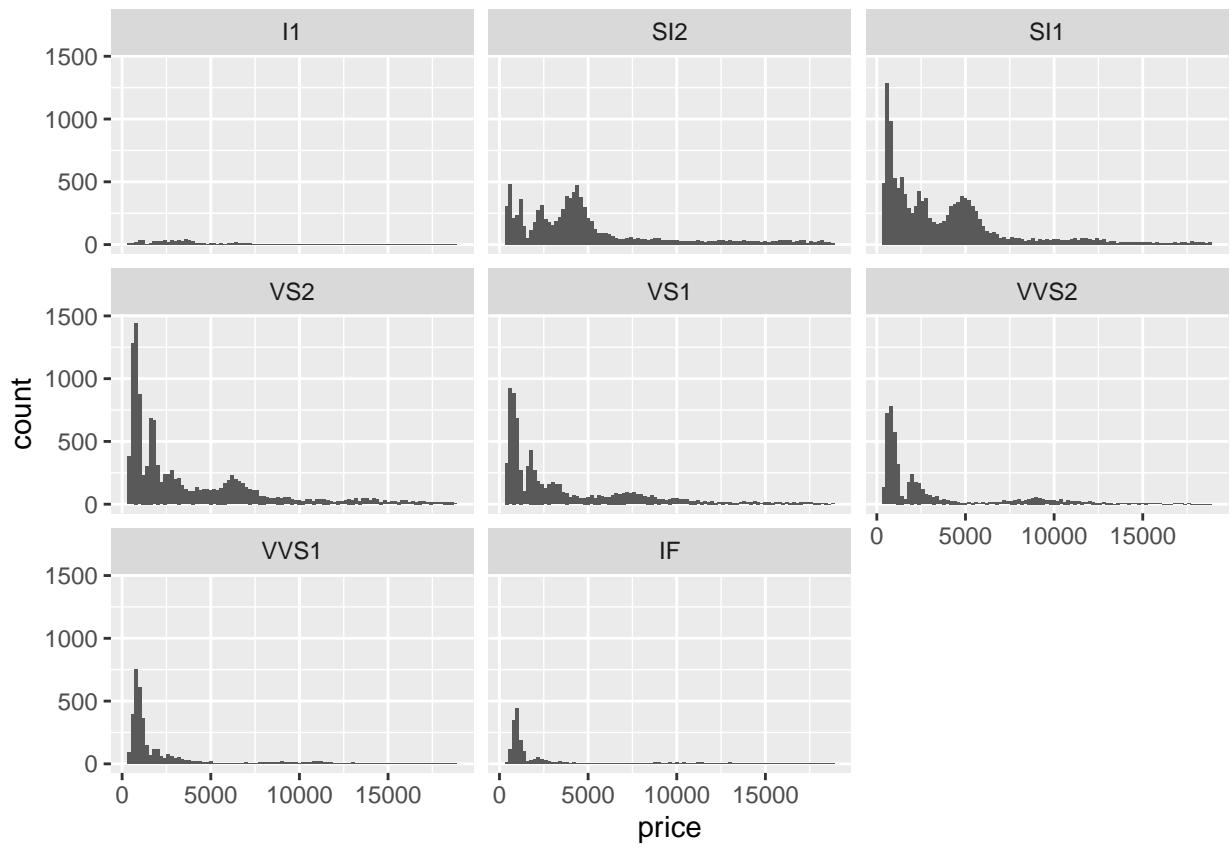


```
ggplot(diamonds, aes(x= carat, y = price)) +
  geom_point() +
  ggtitle("Diamonds scatterplot") +
  xlab("Weight carats")
```

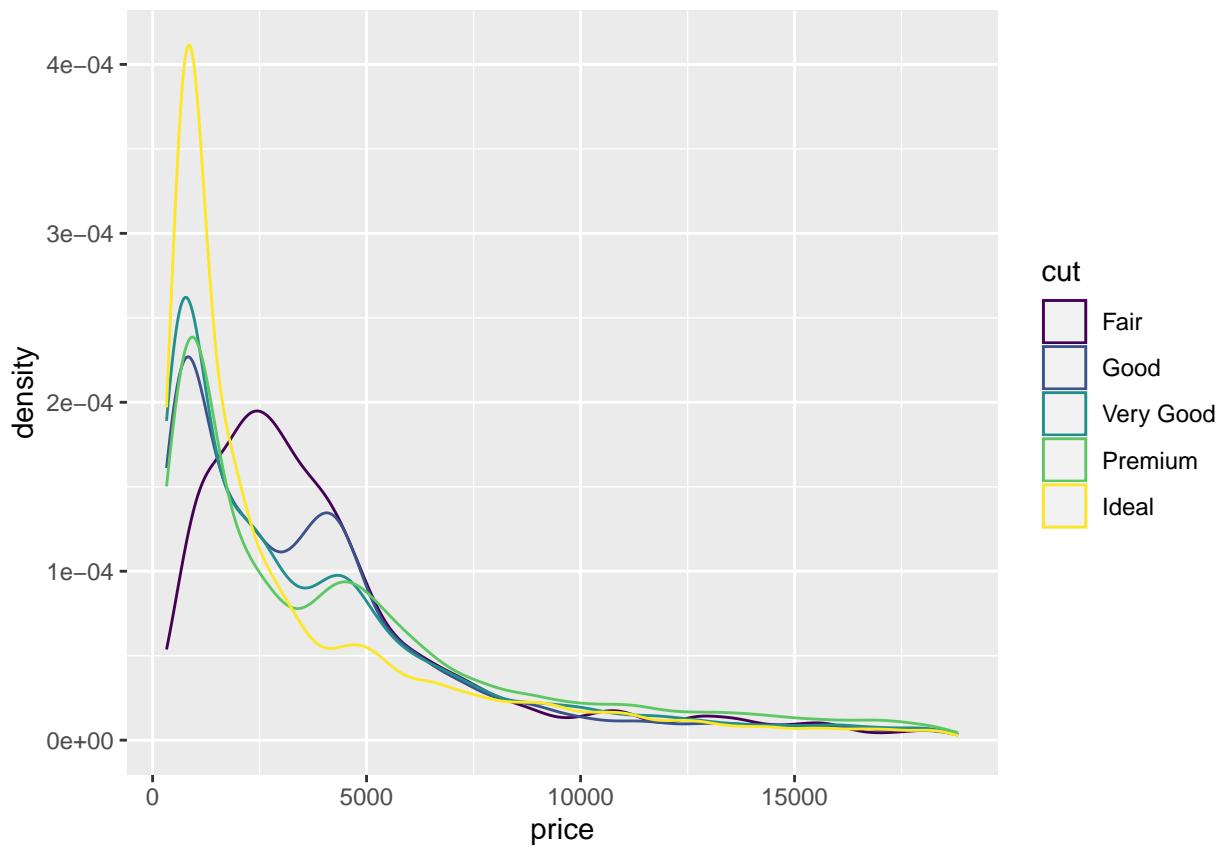
Diamonds scatterplot



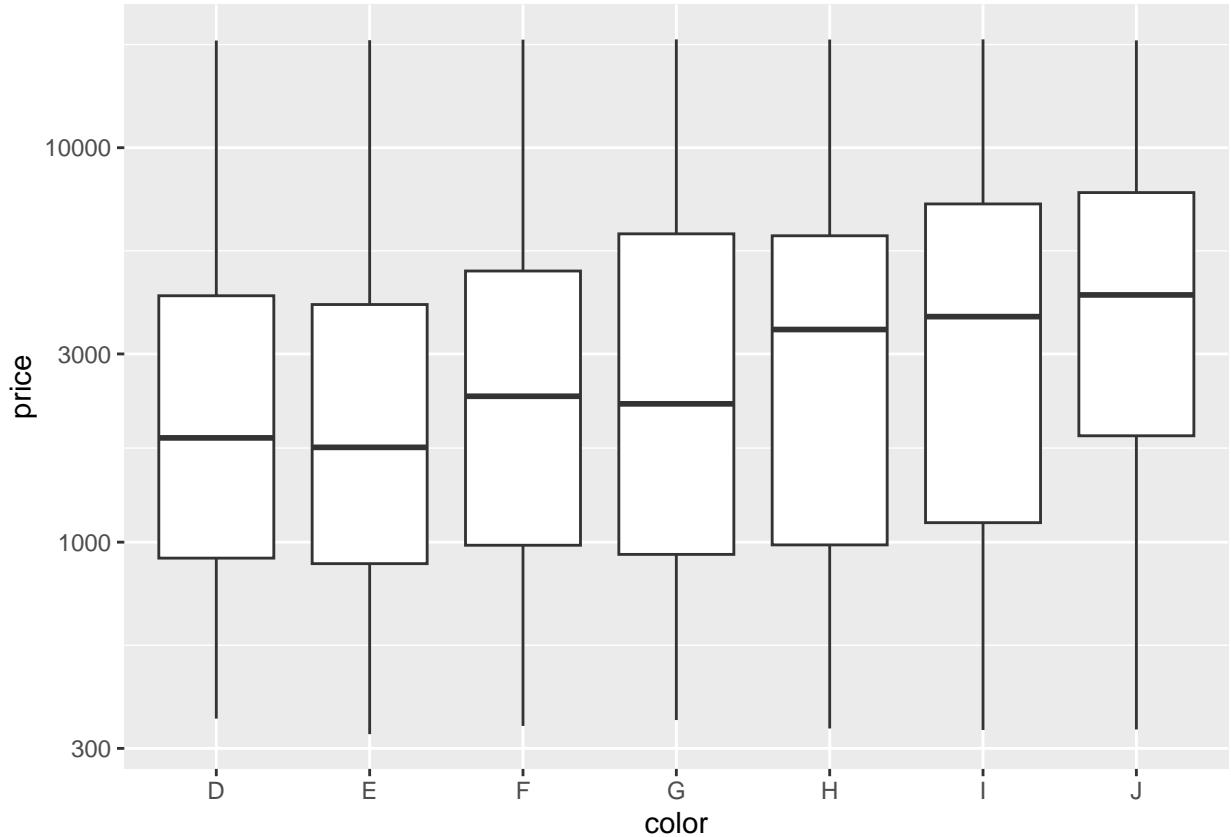
```
ggplot(diamonds, aes(x=price))+
  geom_histogram(binwidth = 200)+
  facet_wrap(~clarity)
```



```
ggplot(diamonds, aes(x=price, color = cut)) +  
  geom_density()
```



```
ggplot(diamonds, aes(x=color, y =price)) +  
  geom_boxplot() +  
  scale_y_log10()
```



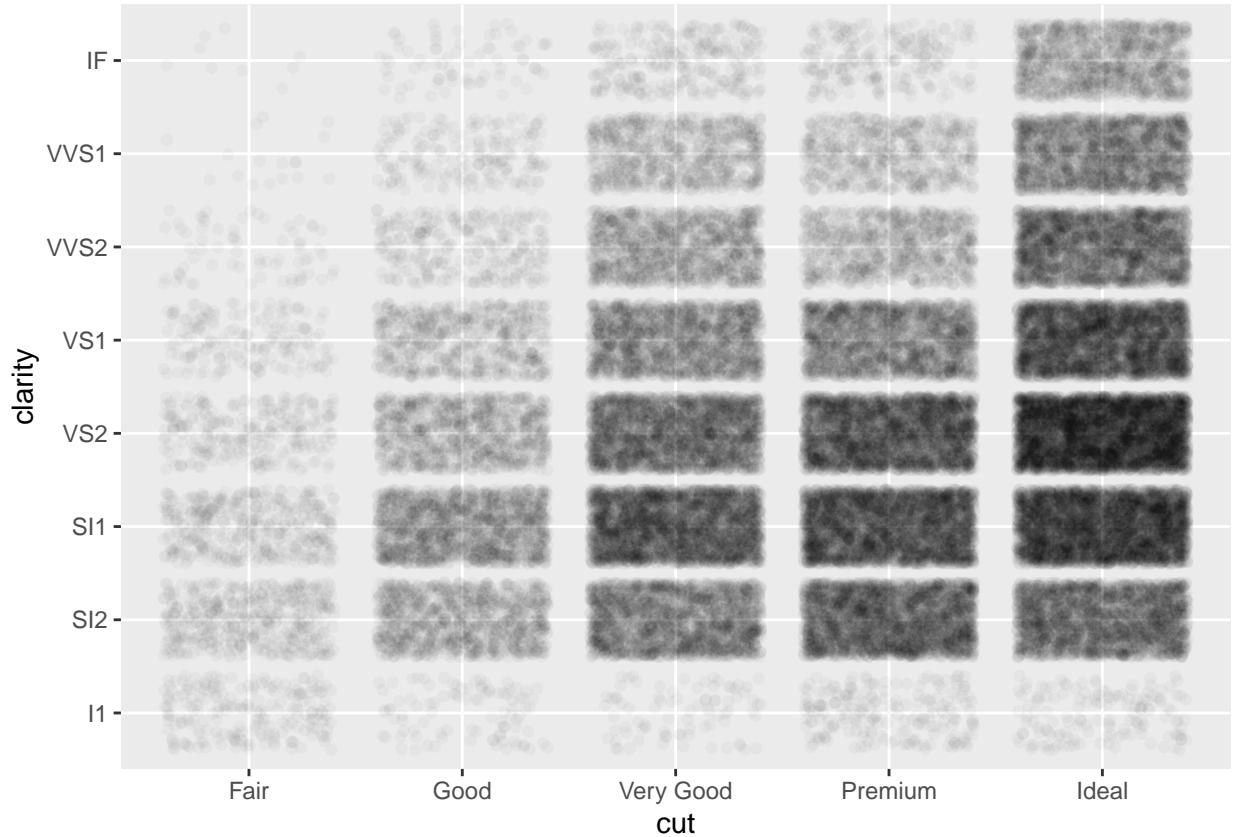
```
m_plot <- ggplot(diamonds, aes(x=carat, y=price))+
  geom_point()
ggsave(filename="mp_plot.png", m_plot)
```

```
## Saving 6.5 x 4.5 in image
```

```
ggsave(filename="mp_plot.jpeg", m_plot)
```

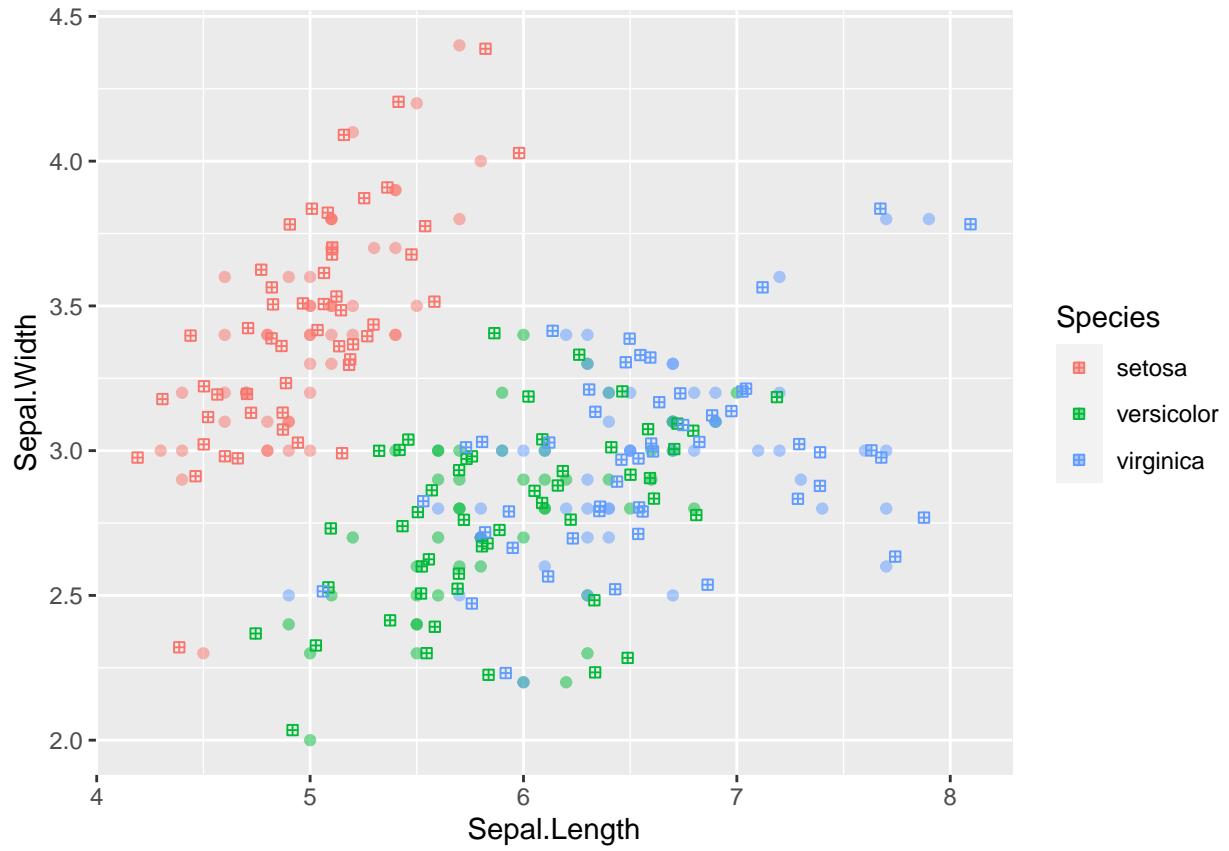
```
## Saving 6.5 x 4.5 in image
```

```
ggplot(diamonds, aes(x=cut, y = clarity))+
  geom_jitter(alpha= 0.03)
```



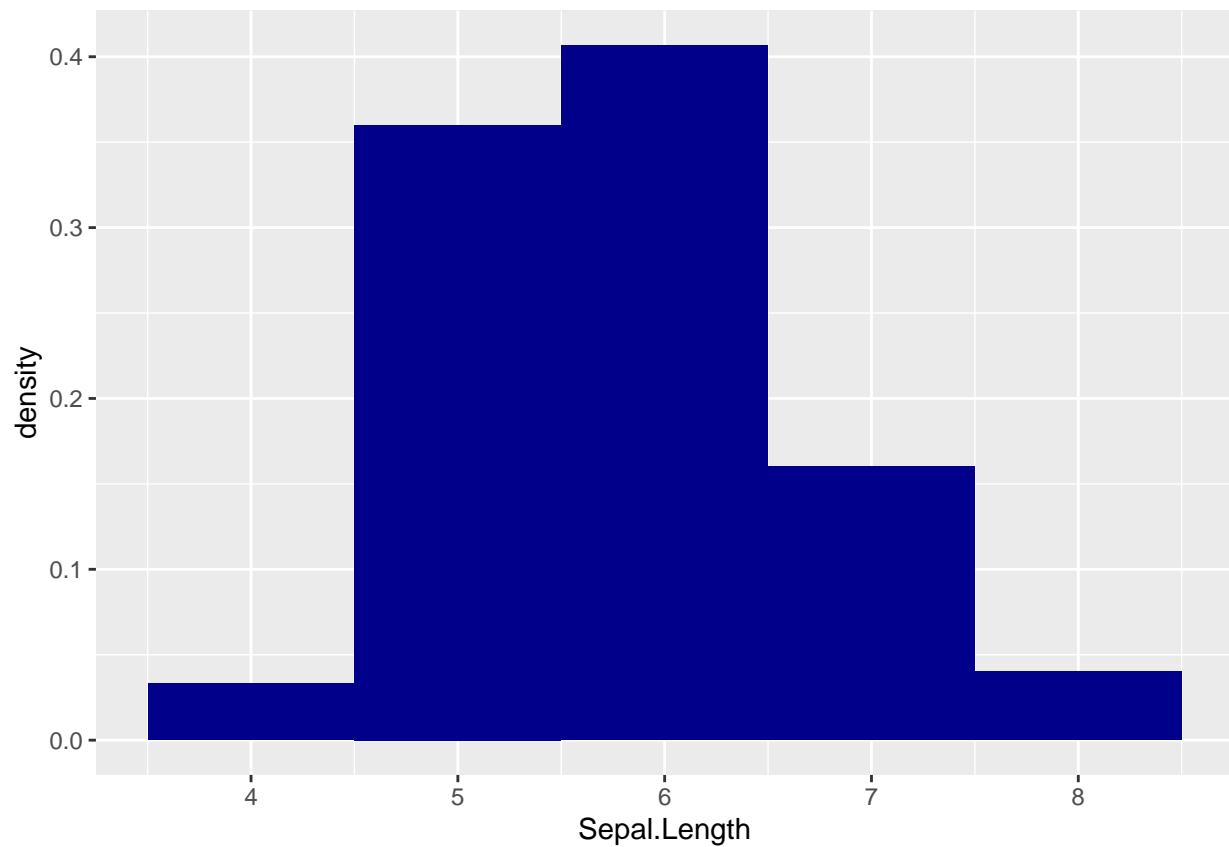
### Task 3

```
ggplot(iris, aes(x=Sepal.Length, y=Sepal.Width, color = Species)) +  
  geom_point(alpha = 0.5) +  
  geom_jitter(width = 0.2, shape = 12 )
```



```
ggplot(iris, aes(x=Sepal.Length, ..density..)) +
  geom_histogram(binwidth = 1, fill = 'darkblue')
```

```
## Warning: The dot-dot notation ('..density..') was deprecated in ggplot2 3.4.0.
## i Please use 'after_stat(density)' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.
```



```
ggplot(iris, aes(x=Sepal.Width, fill=Species)) +
  geom_histogram(binwidth = 0.5, position = "identity", alpha = 0.2)
```

