Hw-data-viz

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Explore data

```r
library(tidyverse)
library(ggplot2)
## built in data sets : mpg
head(mpg)
```

```
## # A tibble: 6 x 11
##   manufacturer model displ  year   cyl trans      drv     cty   hwy fl    class
##   <chr>        <chr> <dbl> <int> <int> <chr>      <chr> <int> <int> <chr> <chr>
## 1 audi         a4      1.8  1999     4 auto(l5)   f        18    29 p     compa~
## 2 audi         a4      1.8  1999     4 manual(m5) f        21    29 p     compa~
## 3 audi         a4      2    2008     4 manual(m6) f        20    31 p     compa~
## 4 audi         a4      2    2008     4 auto(av)   f        21    30 p     compa~
## 5 audi         a4      2.8  1999     6 auto(l5)   f        16    26 p     compa~
## 6 audi         a4      2.8  1999     6 manual(m5) f        18    26 p     compa~
```

```r
str(mpg)
```

```
## tibble [234 x 11] (S3: tbl_df/tbl/data.frame)
##  $ manufacturer: chr [1:234] "audi" "audi" "audi" "audi" ...
##  $ model       : chr [1:234] "a4" "a4" "a4" "a4" ...
##  $ displ       : num [1:234] 1.8 1.8 2 2 2.8 2.8 3.1 1.8 1.8 2 ...
##  $ year        : int [1:234] 1999 1999 2008 2008 1999 1999 2008 1999 1999 2008 ...
##  $ cyl         : int [1:234] 4 4 4 4 6 6 6 4 4 4 ...
##  $ trans       : chr [1:234] "auto(l5)" "manual(m5)" "manual(m6)" "auto(av)" ...
##  $ drv         : chr [1:234] "f" "f" "f" "f" ...
##  $ cty         : int [1:234] 18 21 20 21 16 18 18 18 16 20 ...
##  $ hwy         : int [1:234] 29 29 31 30 26 26 27 26 25 28 ...
##  $ fl          : chr [1:234] "p" "p" "p" "p" ...
##  $ class       : chr [1:234] "compact" "compact" "compact" "compact" ...
```

```r
ggplot(mpg, aes( y = manufacturer , fill = class )) +
  geom_bar(linewidth = 3, alpha = 0.5)+
  theme_minimal()+
  labs(title="Manufacturer count across Vehicle Classes")
```

Manufacturer count across Vehicle Classes
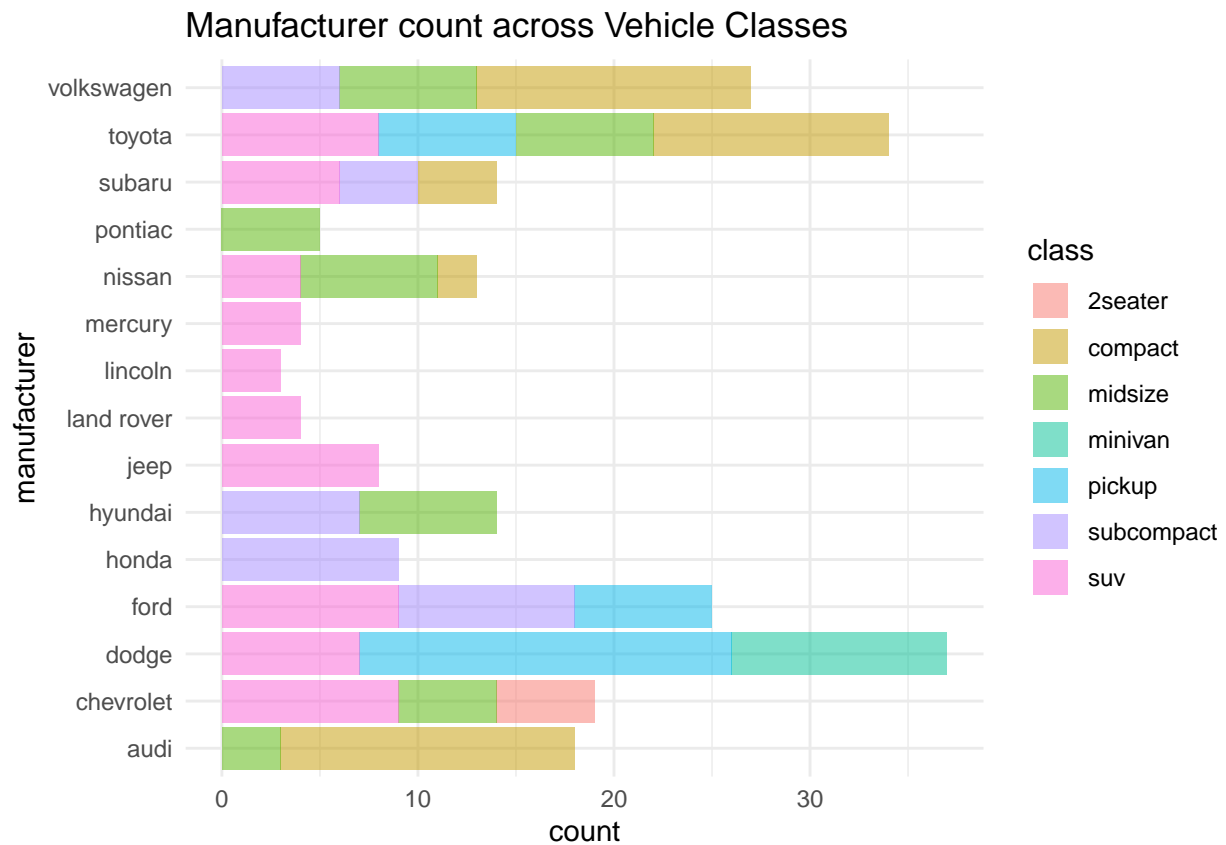

```
ggplot(mpg, aes(cyl, displ))+
  geom_point() +
  geom_smooth(method = "lm", col="red") +
  theme_minimal() +
  labs(title = "Relationship between number of cylinders and engine displacement in liters",
       x= "number of cylinders",
       y=" engine displacement in liters")
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

Relationship between number of cylinders and engine displacement in liters
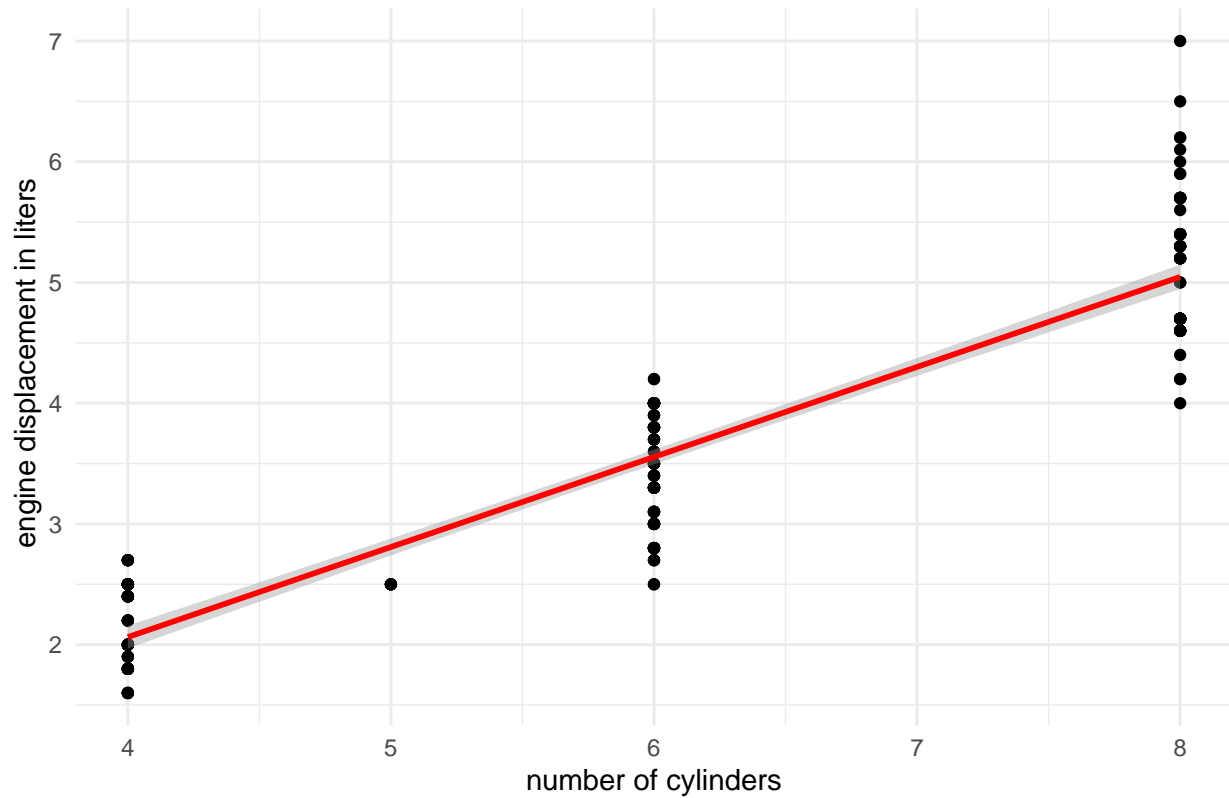


```
ggplot(mpg, aes(cty , hwy))+
  geom_point() +
  geom_smooth(method = "lm", col="red") +
  geom_rug() +
  theme_minimal() +
  labs(title = "Relationship between city mileage and highway mileage",
       x= "city mileage (miles per gallon)",
       y=" highway mileage (miles per gallon)")
```

`geom_smooth()` using formula = 'y ~ x'

Relationship between city mileage and highway mileage
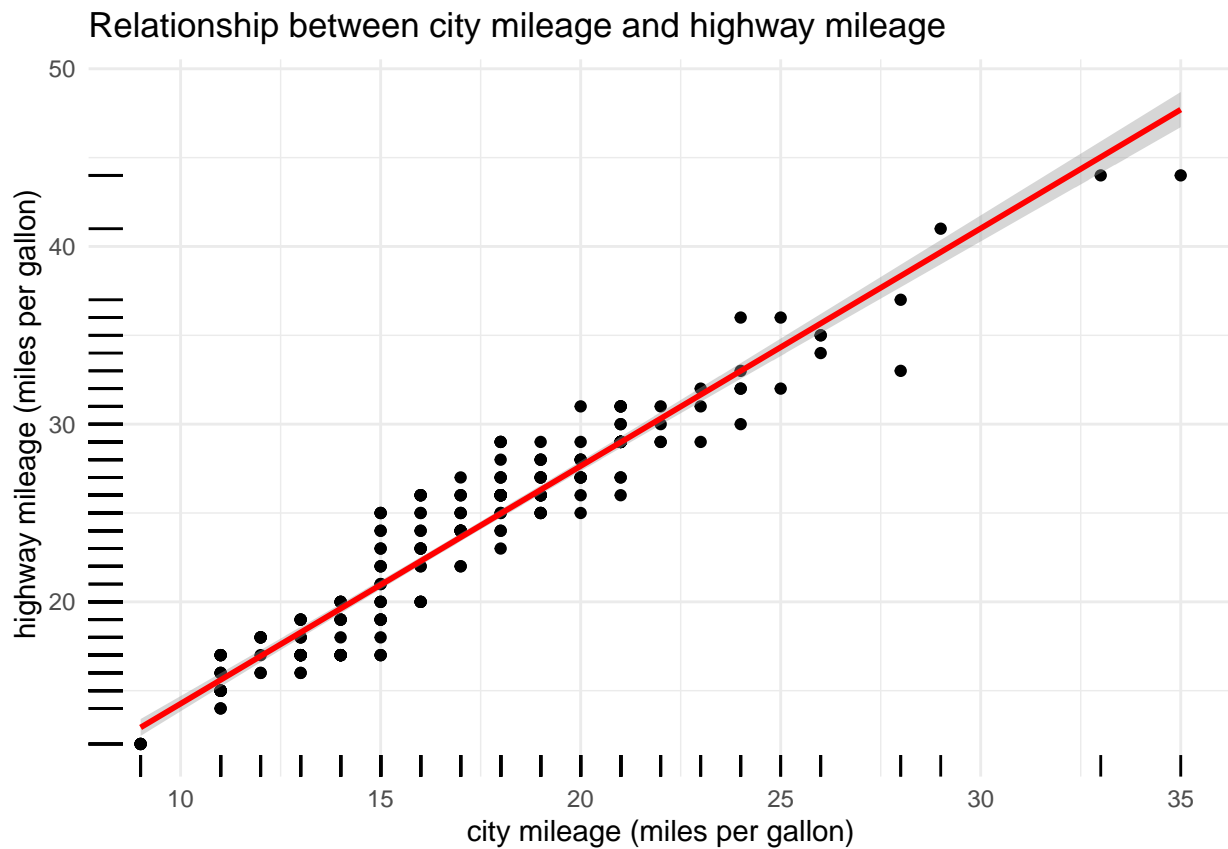

```
ggplot(mpg, aes( y = displ , fill = class )) +
  geom_bar(linewidth = 3, alpha = 0.8)+
  theme_minimal()+
  labs(title="engine displacement in liters  by Vehicle Classes")
```

## engine displacement in liters by Vehicle Classes
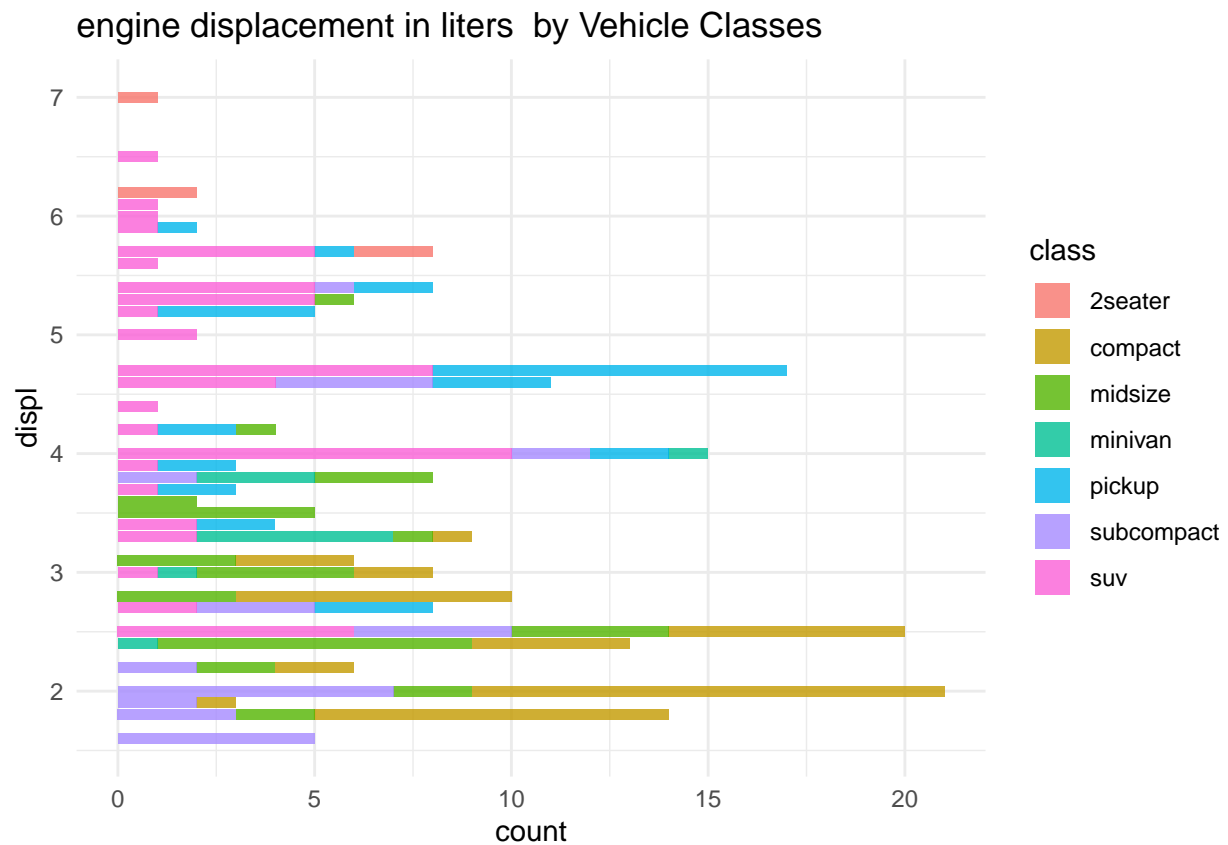

```
ggplot(mpg, aes(x = cty, y =  trans))+
  geom_boxplot(color="red", fill="orange", alpha=0.2) +
  theme_minimal() +
  labs(title = "boxplot city mileage and Type of transmission ",
  x = "city mileage (miles per gallon)",
  y = "Type of transmission")
```

boxplot city mileage and Type of transmission
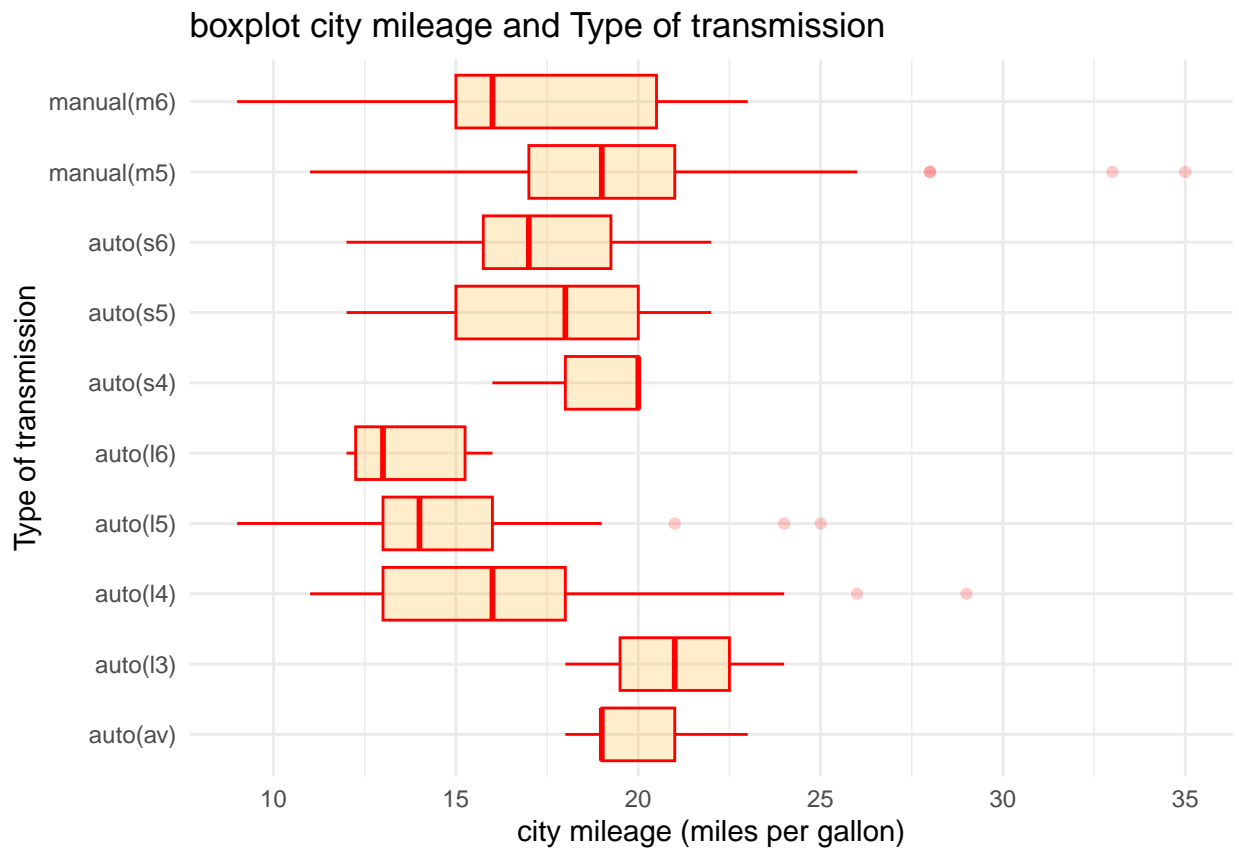

```
ggplot(data = mpg, aes(x = displ, y = hwy, col = class)) +
  geom_point() +
  facet_wrap(~ class, nrow = 3) +
  theme_minimal() +
  labs(title = "Relationship between engine displacement and highway mileage for each class",
       x= "engine displacement in liters",
       y= "highway mileage (miles per gallon)")
```

Relationship between engine displacement and highway mileage for each cl
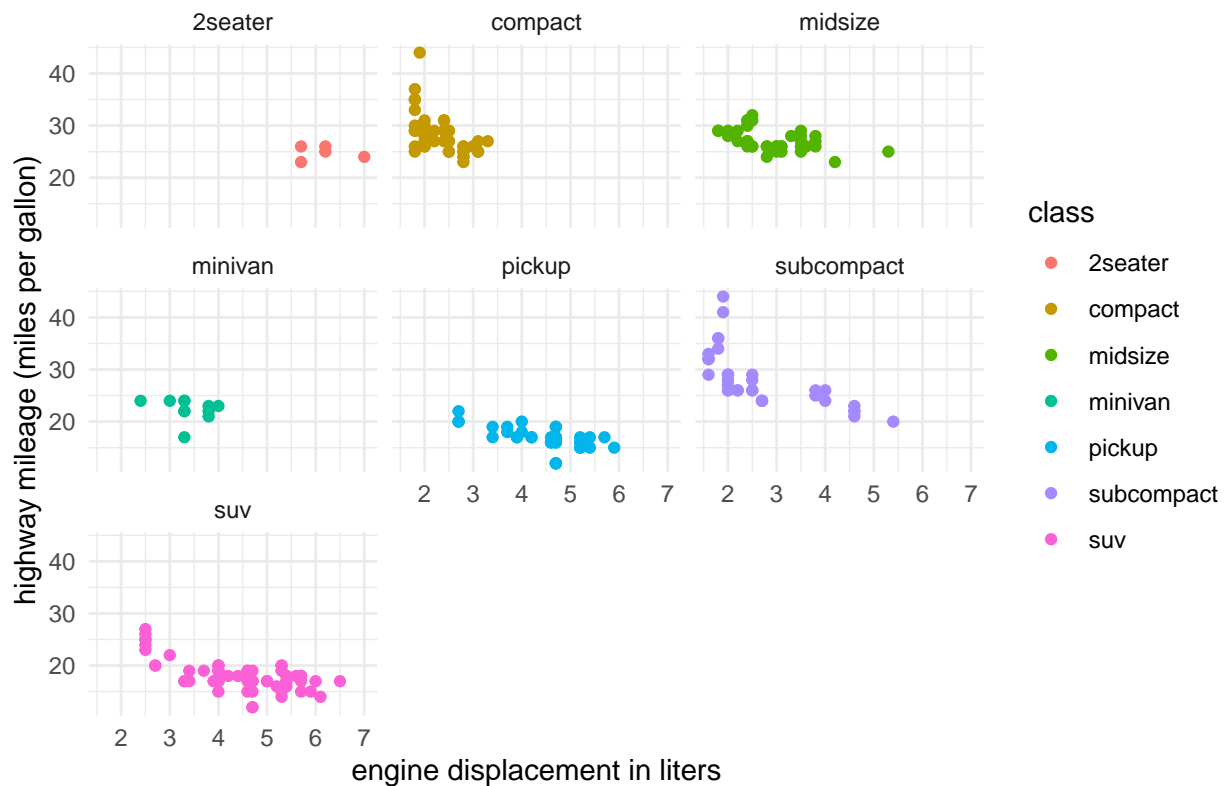

```
##find the most fuel-efficient car (suv class) that has engine displacement >= 5 liters
suv_class_mpg <- mpg %>%
  select(manufacturer,class,cty,model,displ) %>%
  group_by(class=='suv') %>%
  filter(displ >= 5)

ggplot(suv_class_mpg, aes(x = manufacturer,y = cty, col = model))+
  geom_point(size = 5, alpha = 0.9) +
  theme_minimal() +

  labs(title = " The most fuel-efficient car (suv class) ",
       x = " manufacturers",
       y = "city mileage (miles per gallon)" )+
  geom_hline(yintercept= 16, linetype="dashed", color = "red")
```

The most fuel−efficient car (suv class)
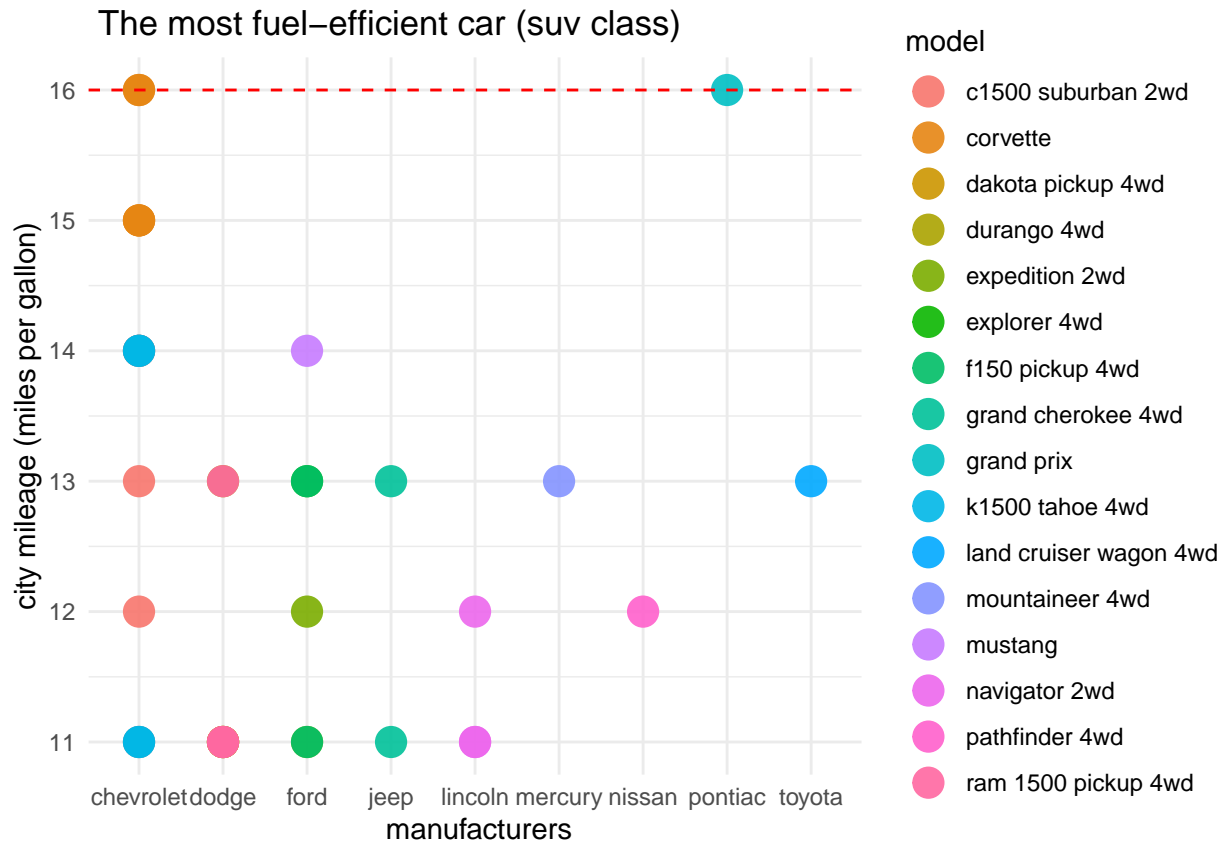
The most fuel-efficient suv car = chevrolet corvette & pontiac grand prix.