

# HW\_dataVis

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```
library(tidyverse)
library(dplyr)
library(ggplot2)
library(rmarkdown)
head(mpg,10)
```

```
## # A tibble: 10 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~ f      18    29 p      comp~
## 2 audi          a4         1.8  1999   4 manu~ f      21    29 p      comp~
## 3 audi          a4         2    2008   4 manu~ f      20    31 p      comp~
## 4 audi          a4         2    2008   4 auto~ f      21    30 p      comp~
## 5 audi          a4         2.8  1999   6 auto~ f      16    26 p      comp~
## 6 audi          a4         2.8  1999   6 manu~ f      18    26 p      comp~
## 7 audi          a4         3.1  2008   6 auto~ f      18    27 p      comp~
## 8 audi          a4 quattro 1.8  1999   4 manu~ 4      18    26 p      comp~
## 9 audi          a4 quattro 1.8  1999   4 auto~ 4      16    25 p      comp~
## 10 audi         a4 quattro 2    2008   4 manu~ 4      20    28 p      comp~
```

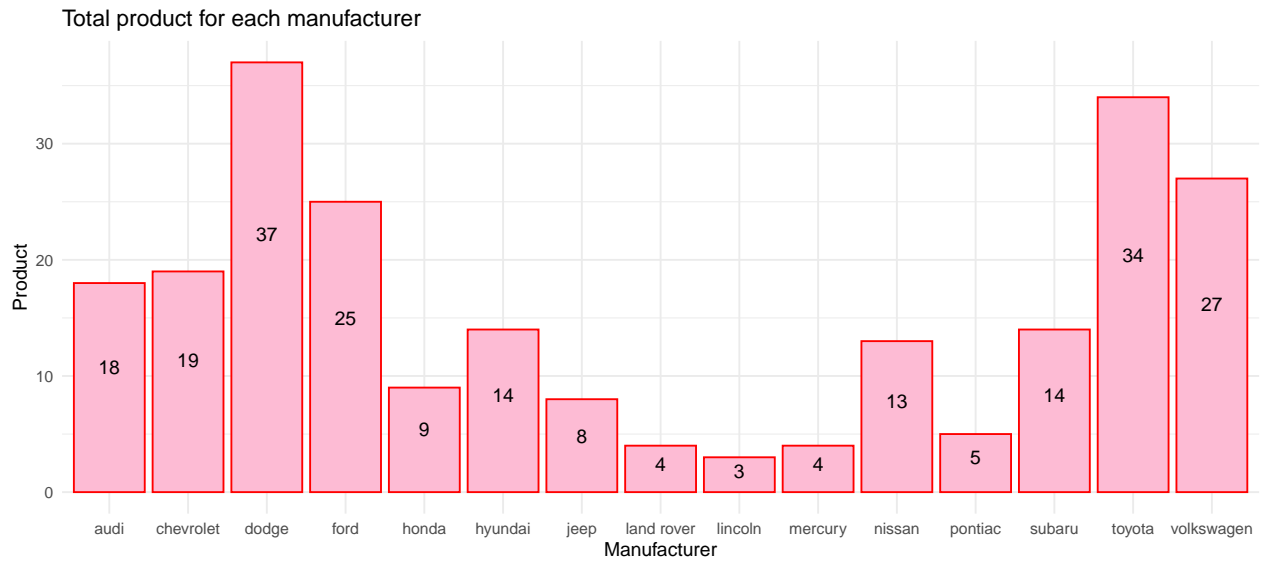
The table above shown the sample of mpg data for 10 row. And the data is including 11 columns(variables).

## Graph no.1

Explore the data to show how many products for each manufacturer have it.

```
mpg1<- mpg%>%
  count(manufacturer)

ggplot(mpg1,aes(manufacturer,n)) +
  geom_col(fill="#fdbbd4",col="Red")+
  theme_minimal() +
  labs(title="Total product for each manufacturer",x = "Manufacturer",y ="Product") +
  geom_text(aes(label = n),position= position_stack(vjust = 0.6),col="black")
```



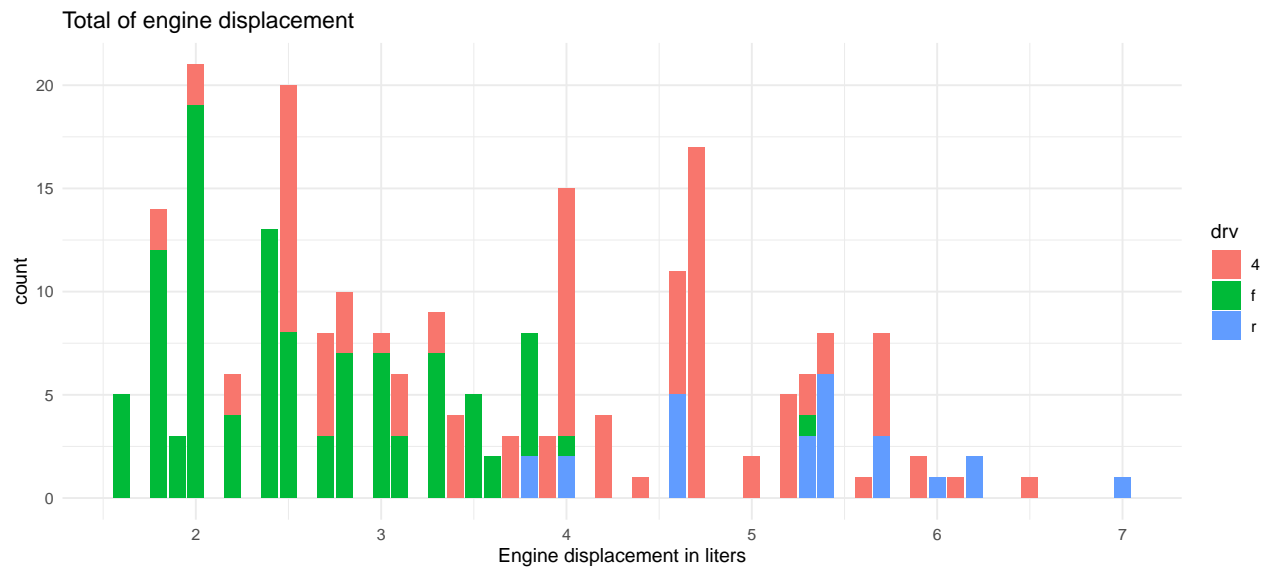
Result :

- 1) The most of product that manufacturer have is Dodge.
- 2) Lincoln is a manufacturer with a minimal variety of products.

## Graph no.2

Explore Engine displacement of “mpg” data.

```
ggplot(mpg, aes(displ, fill=drv)) +
  geom_bar() +
  theme_minimal() +
  labs(title="Total of engine displacement", x = "Engine displacement in liters")
```



After explore the data, we understand that

- 1.) Almost of Engine displacement between 1 - 3.5 liters is Front-wheel drive.
- 2.) Almost of Engine displacement between 3.5 - 5 liters is 4 wheel drive.

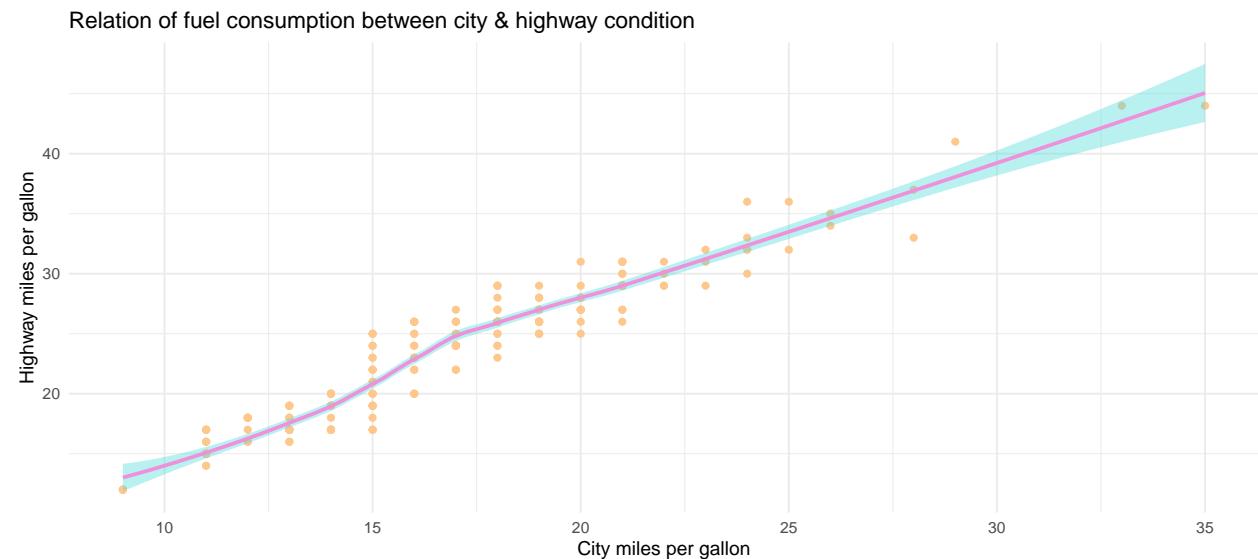
3.) Almost of Engine displacement more than 5 liters upper is Rear-wheel drive.

### Graph no.3

Explore the relation of fuel consumer in city & Highway condition.

```
ggplot(mpg,aes(cty,hwy))+  
  geom_point(color="#fec78c")+  
  geom_smooth(color="#ee91da",fill="#52dcdc")+  
  theme_minimal() +  
  labs(title="Relation of fuel consumption between city & highway condition ",  
        x= "City miles per gallon",  
        y= "Highway miles per gallon")
```

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



After plot graph,we found the correlation between city & highway condition is positive.

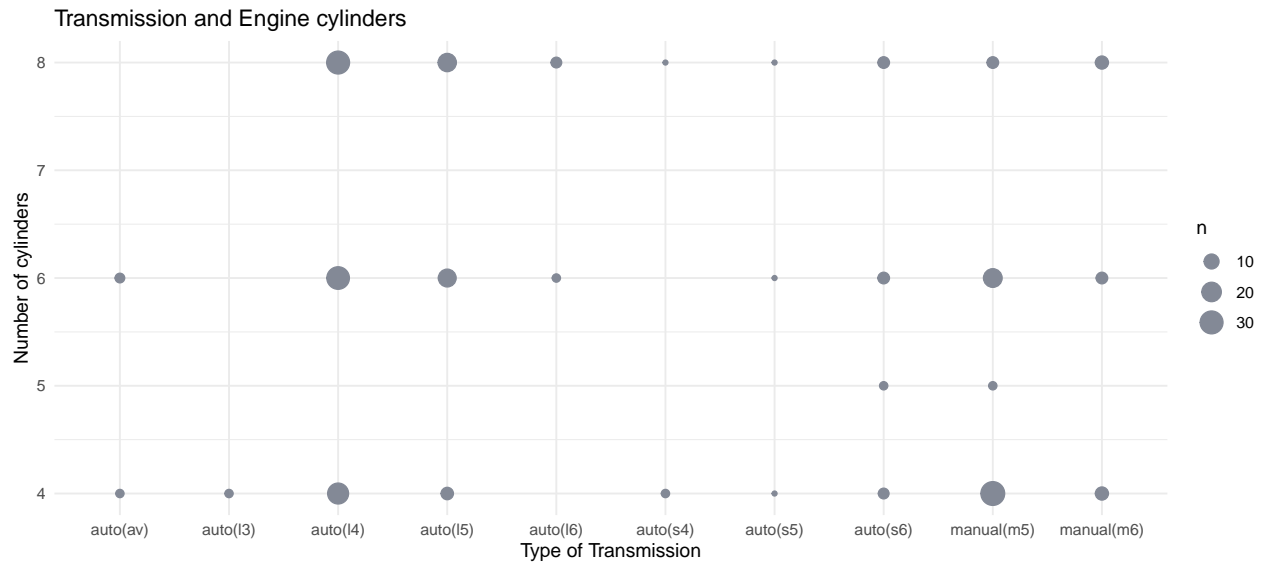
That's mean, if highway condition consume fuel a lot,the city condition will consume a lot too.

this graph is going to tell you the highway condition is consume fuel less than city condition.

### Graph no.4

Explore relation between transmission and engine cylinders.

```
ggplot(mpg,aes(trans,cyl))+  
  geom_count(color="#838996")+  
  theme_minimal()+  
  labs(title="Transmission and Engine cylinders ",  
        x= "Type of Transmission",  
        y= "Number of cylinders")
```



The graph show each transmission type will have how many of engine cylinders.

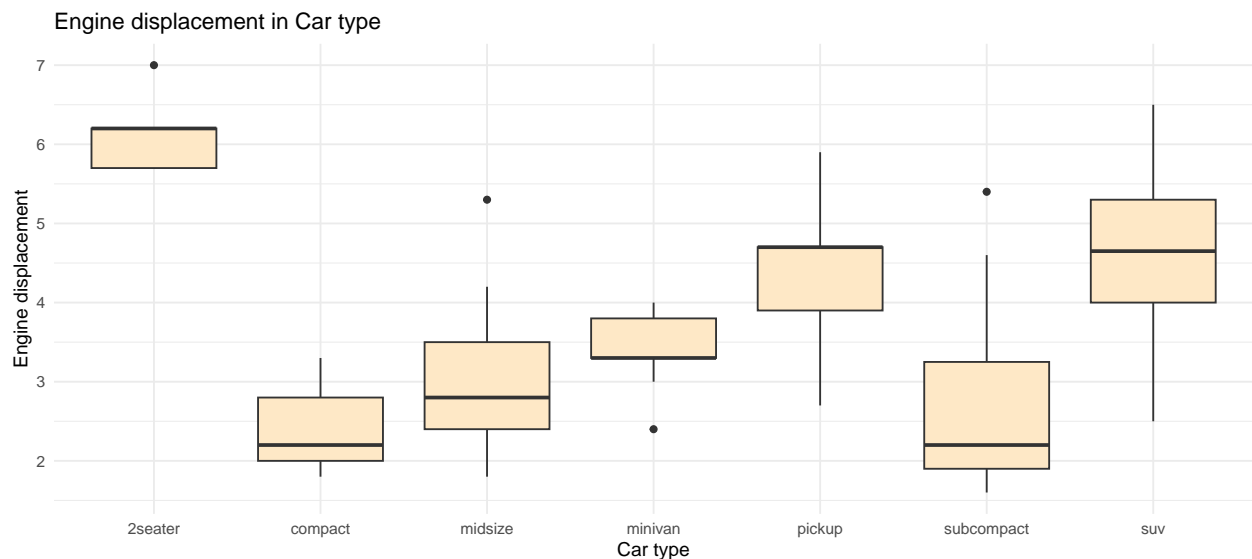
Example: 1.) auto(av) type will have 4 or 6 cylinders only.

2.) Transmission of manual(m5) type is normally designed for 4 cylinders. However, 5,6,8 cylinders are seen.

## Graph no.5

Explore type of car and engine displacement to understand the standard design.

```
ggplot(mpg, aes(class, displ)) +
  geom_boxplot(fill="#fee8c6") +
  theme_minimal() +
  labs(title="Engine displacement in Car type",
       x= "Car type",
       y= "Engine displacement")
```



After plot graph, we understand that each car type is designed by different Engine displacement.

Example, 2seater is normally designed by 6 liters. Compact type is designed less than 3 liters.