

# Assignment\_2

April 1, 2023

## 0.1 Assignment 2

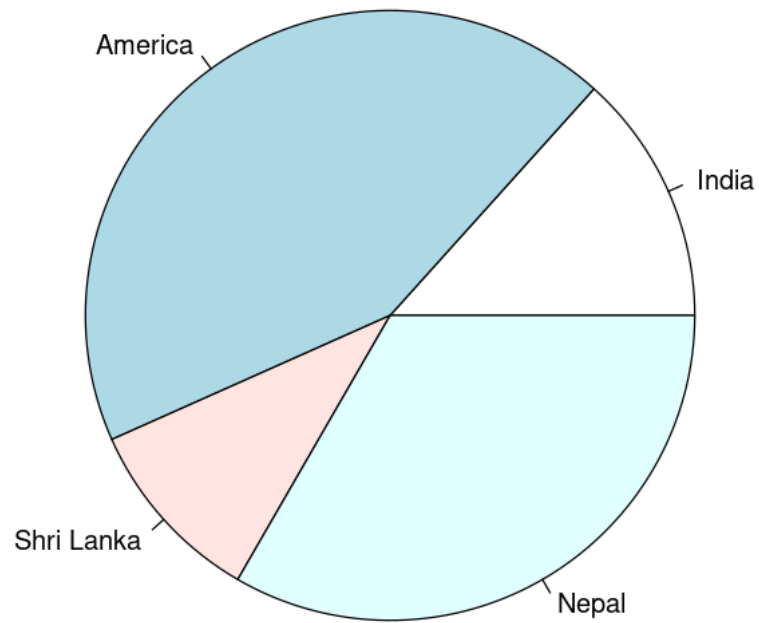
### 0.1.1 GRAPHICS AND VISUALIZATION using R

| Name           | USN        | Class             |
|----------------|------------|-------------------|
| Ajay Nagaraj M | 2SD19CS008 | 8TH Sem CSE B Div |

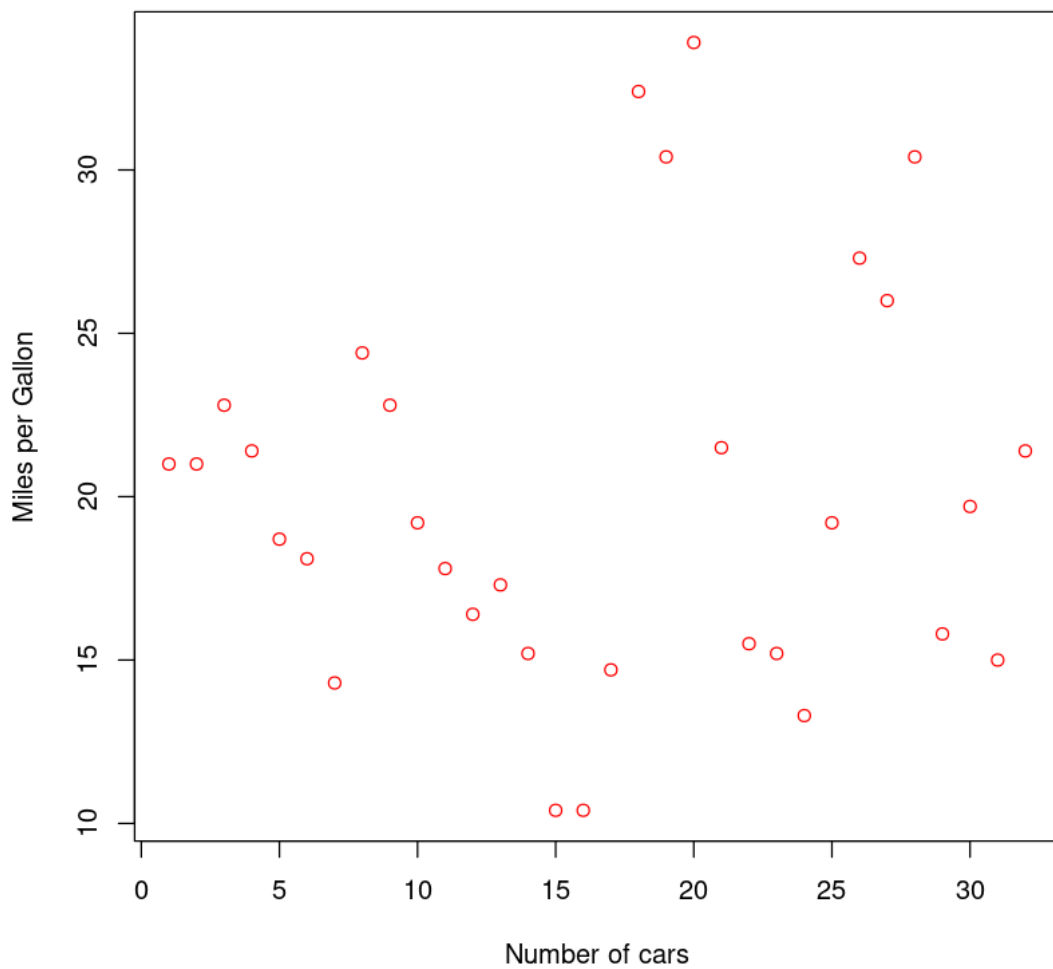
```
[ ]: # To load graphics package
library("graphics")
# To load datasets package
library("datasets")
# To load mtcars dataset
data(mtcars)
# To analyze the structure of the dataset
head(mtcars)
```

|                      |                   | mpg   | cyl   | disp  | hp    | drat  | wt    | qsec  | vs    |
|----------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      |                   | <dbl> | <dbl> | <dbl> | <dbl> | <dbl> | <dbl> | <dbl> | <dbl> |
| A data.frame: 6 × 11 | Mazda RX4         | 21.0  | 6     | 160   | 110   | 3.90  | 2.620 | 16.46 | 0     |
|                      | Mazda RX4 Wag     | 21.0  | 6     | 160   | 110   | 3.90  | 2.875 | 17.02 | 0     |
|                      | Datsun 710        | 22.8  | 4     | 108   | 93    | 3.85  | 2.320 | 18.61 | 1     |
|                      | Hornet 4 Drive    | 21.4  | 6     | 258   | 110   | 3.08  | 3.215 | 19.44 | 1     |
|                      | Hornet Sportabout | 18.7  | 8     | 360   | 175   | 3.15  | 3.440 | 17.02 | 0     |
|                      | Valiant           | 18.1  | 6     | 225   | 105   | 2.76  | 3.460 | 20.22 | 1     |

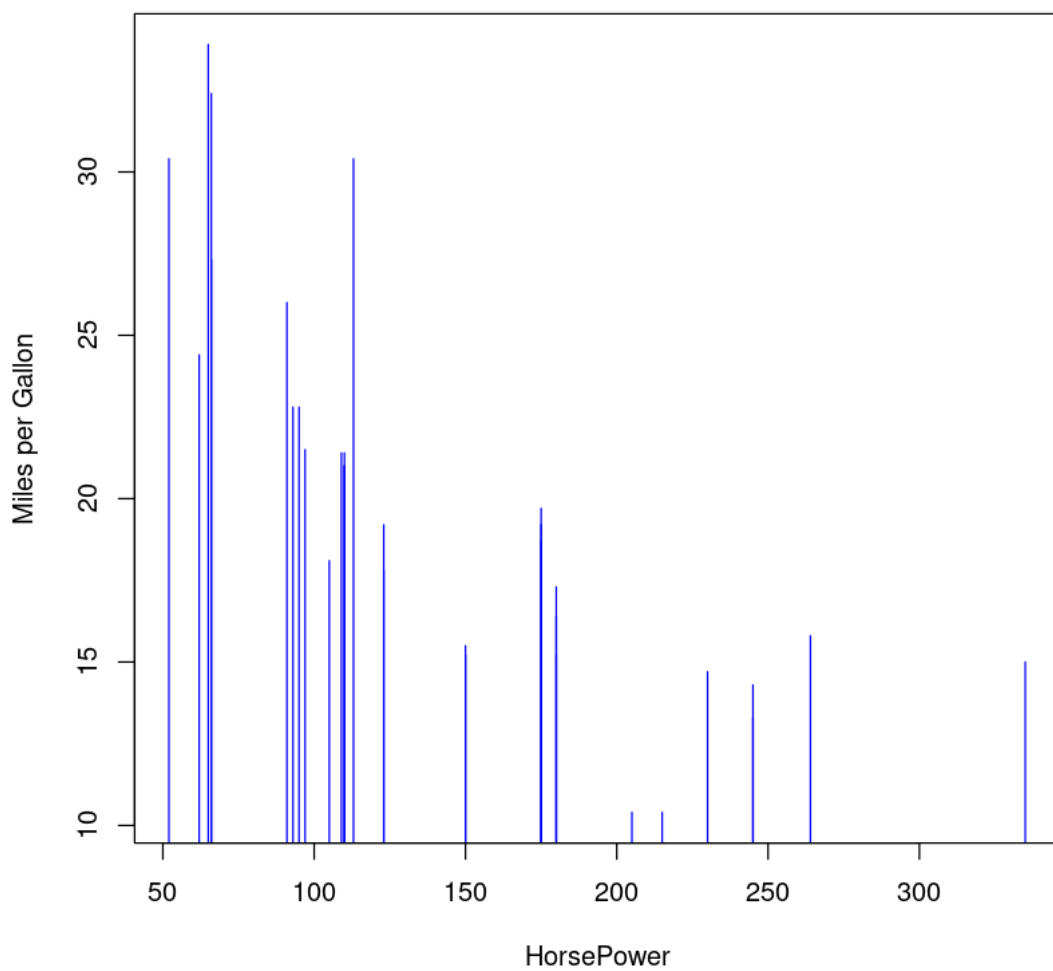
```
[ ]: # Pie Chart using R
# Creating data for the graph.
x <- c(20, 65, 15, 50)
labels <- c("India", "America", "Shri Lanka", "Nepal")
pie(x, labels)
```



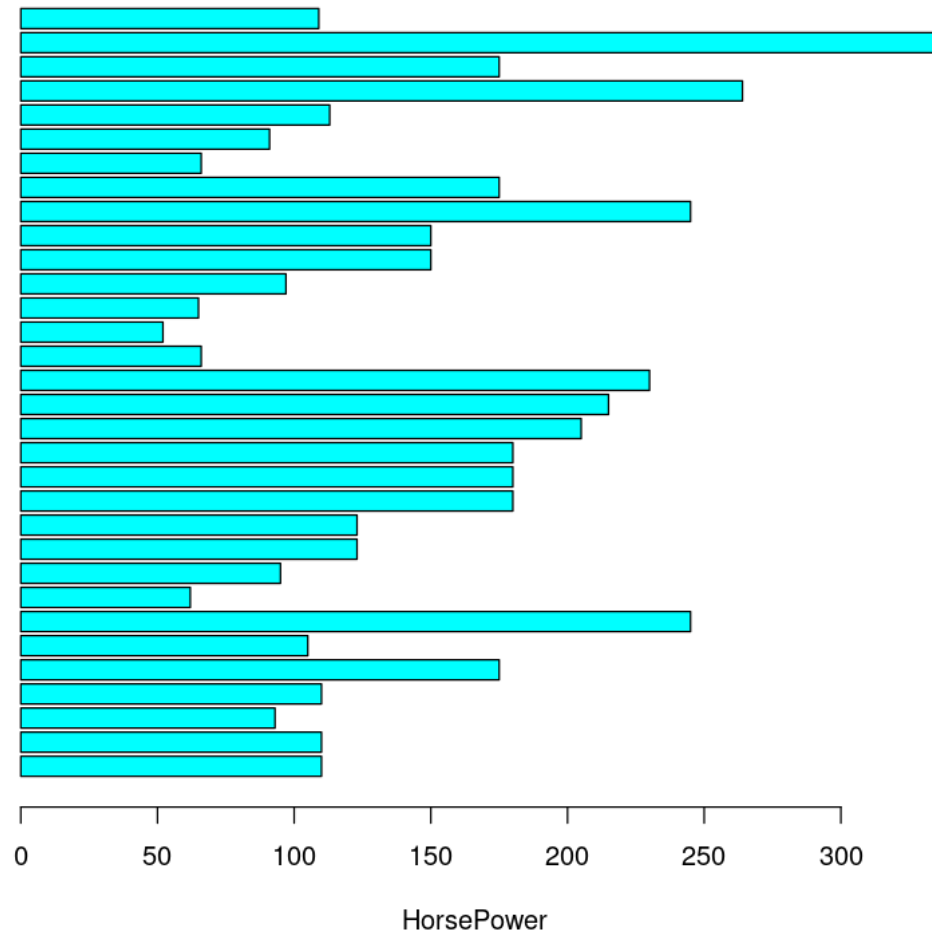
```
[ ]: #To plot mpg(Miles per Gallon) vs Number of cars
plot(mtcars$mpg, xlab = "Number of cars", ylab = "Miles per Gallon", col = "red")
```

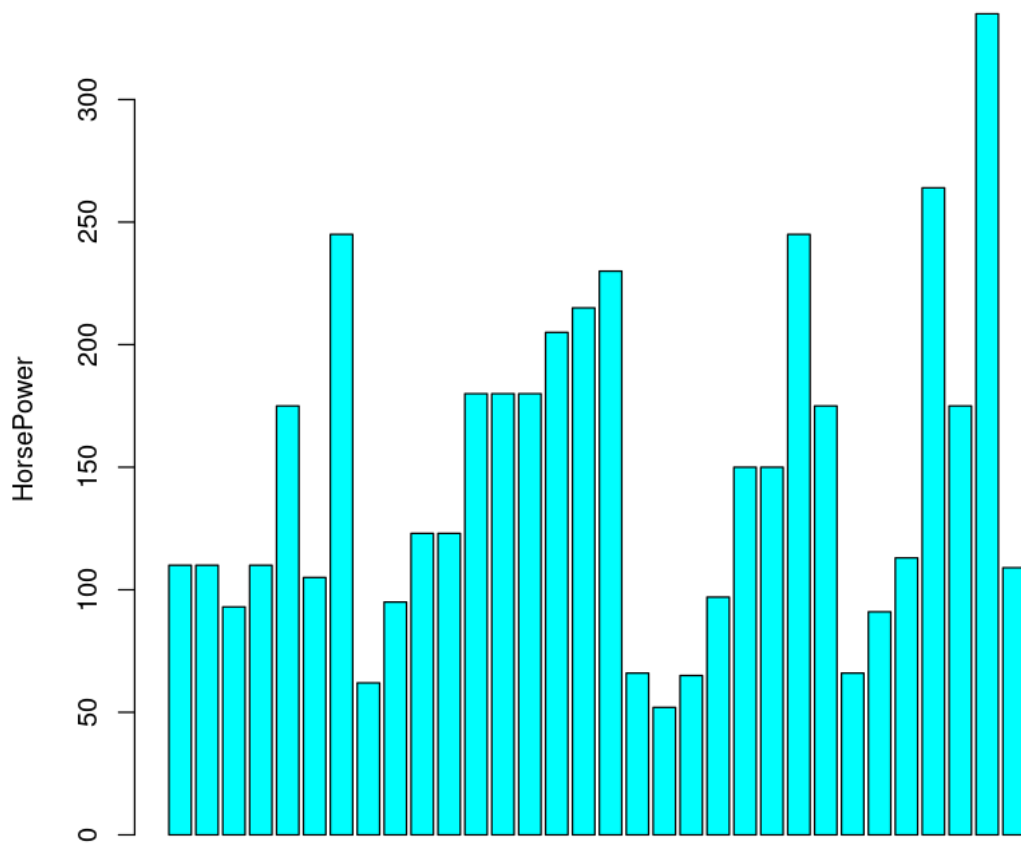


```
[ ]: # To find relation between hp (Horse Power) and mpg (Miles per Gallon)
plot(mtcars$hp,mtcars$mpg, xlab = "HorsePower", ylab = "Miles per Gallon", type="h", col = "blue")
```

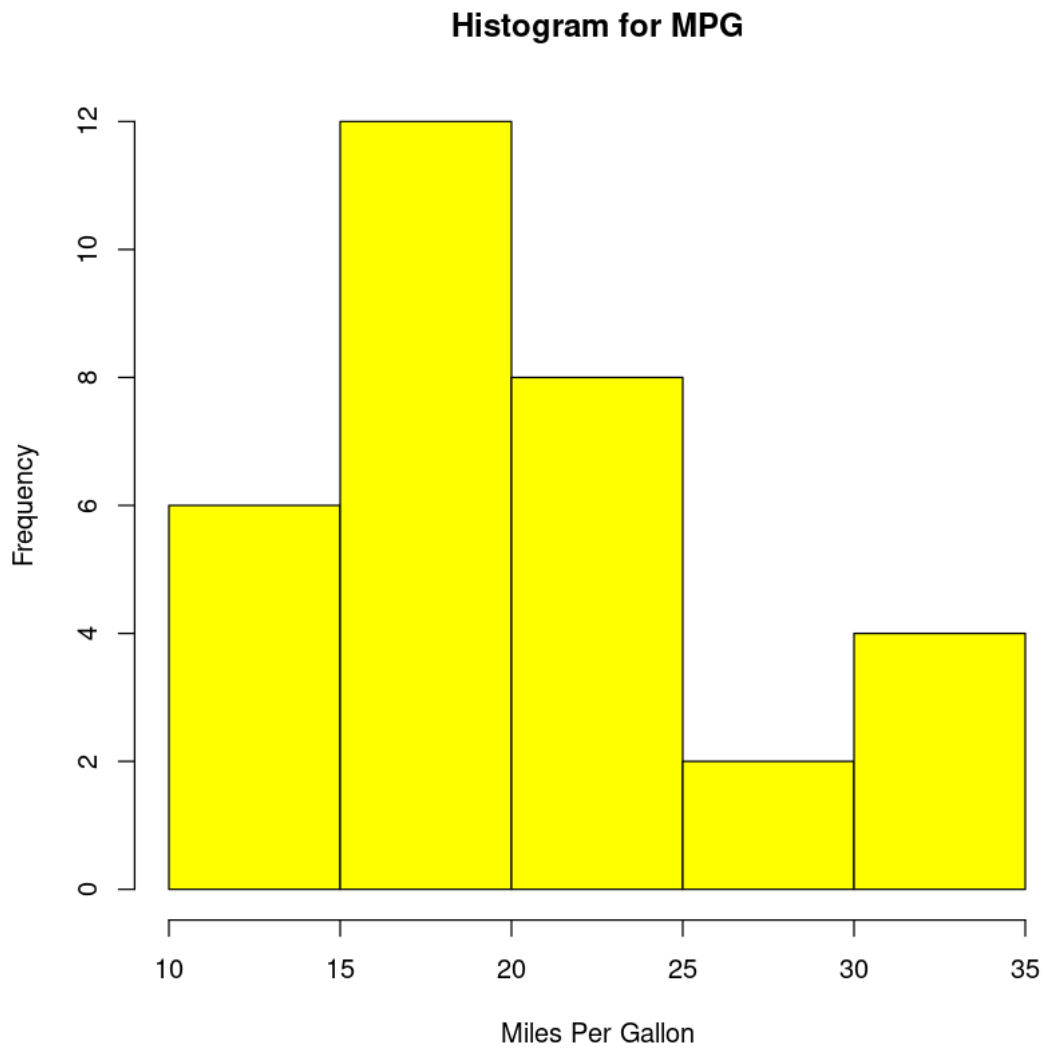


```
[ ]: # Barplot of hp
#Horizontal
barplot(mtcars$hp, xlab = "HorsePower", col = "cyan", horiz = TRUE)
#Vertical
barplot(mtcars$hp, ylab = "HorsePower", col = "cyan", horiz = FALSE)
```

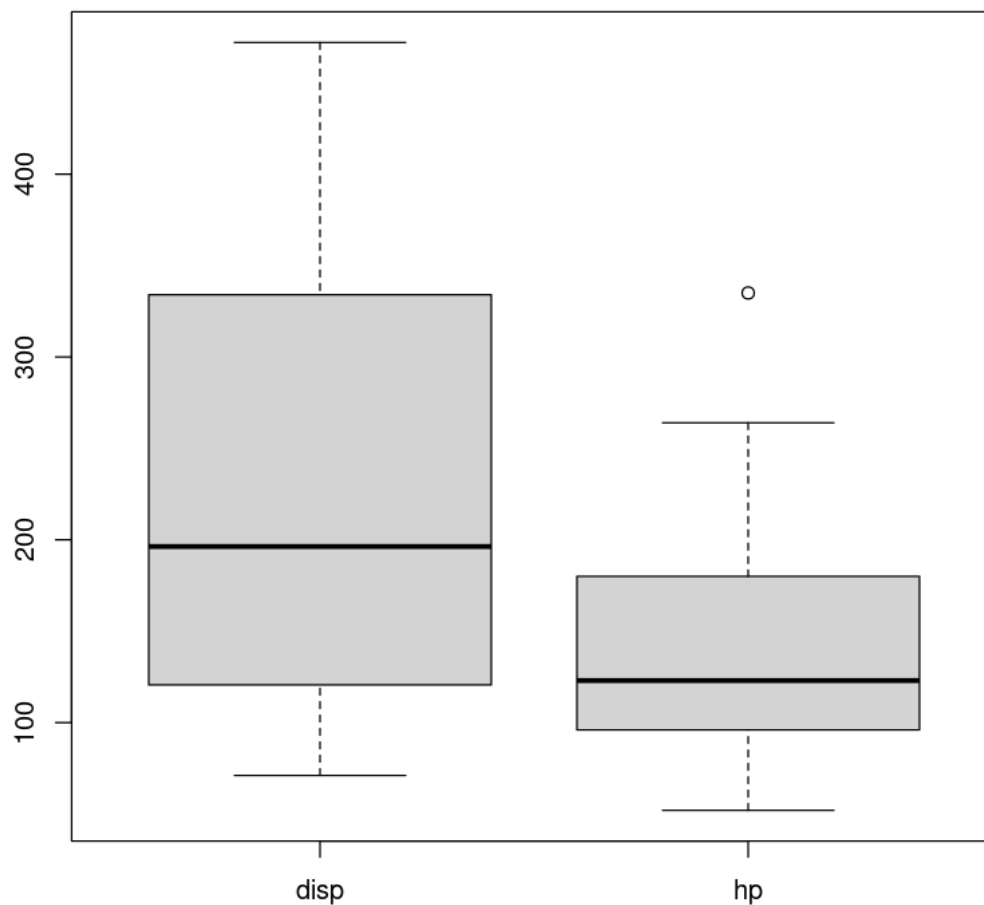




```
[ ]: #To find histogram for mpg (Miles per Gallon)
hist(mtcars$mpg,xlab = "Miles Per Gallon", main = "Histogram for MPG", col = "yellow")
```

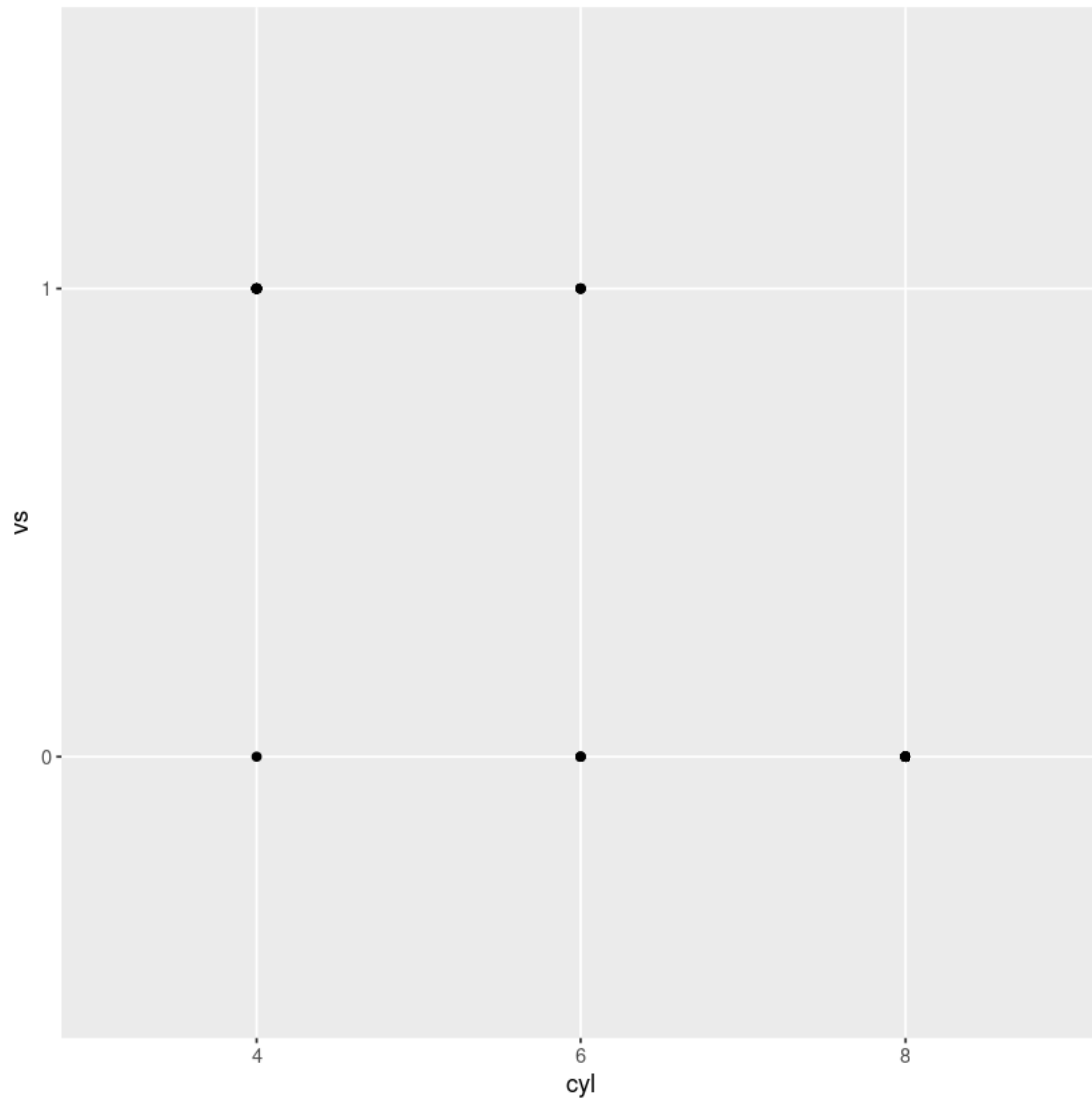


```
[ ]: #To draw boxplots for disp (Displacement) and hp (Horse Power)  
boxplot(mtcars[,3:4])
```

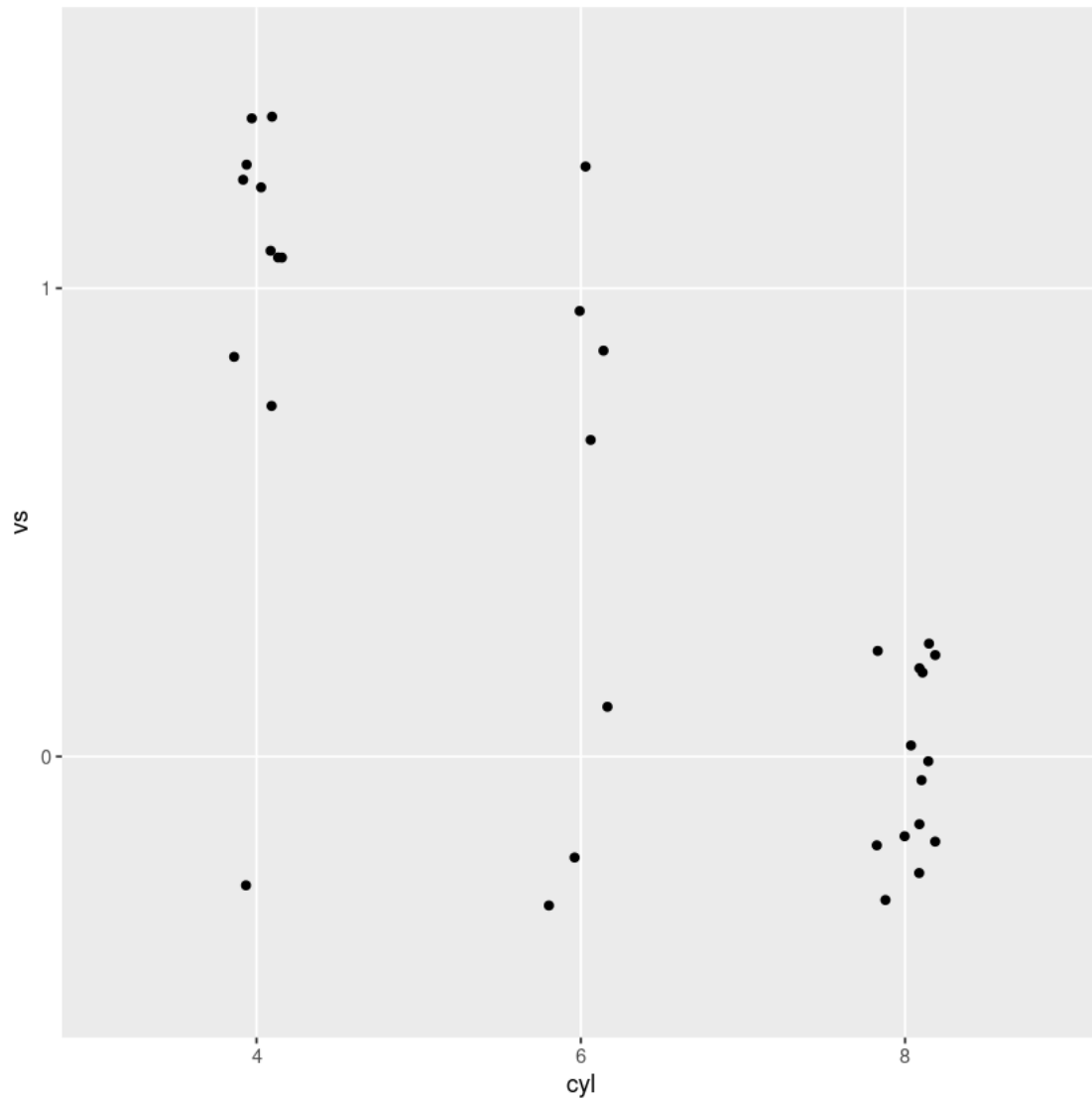


```
[ ]: # Using GGLOT2 Library
library(ggplot2)
#Since the following columns have discrete(categorical) set of values, So we
  ↳ can convert them to factors for optimal plotting
mtcars$am <- as.factor(mtcars$am)
mtcars$cyl <- as.factor(mtcars$cyl)
mtcars$vs <- as.factor(mtcars$vs)
mtcars$gear <- as.factor(mtcars$gear)
ggplot(mtcars, aes(x= cyl , y= vs)) + geom_point()
```

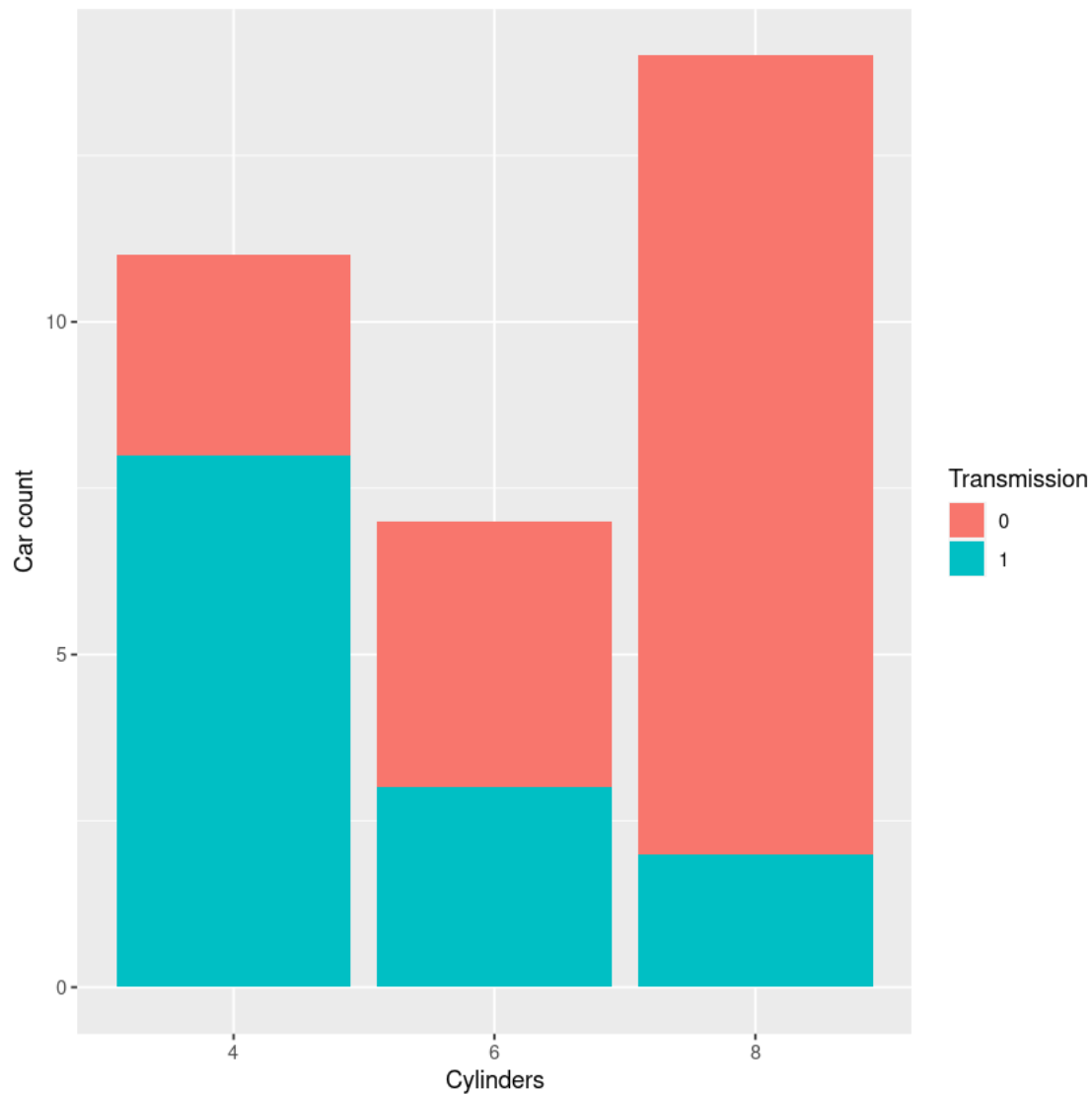




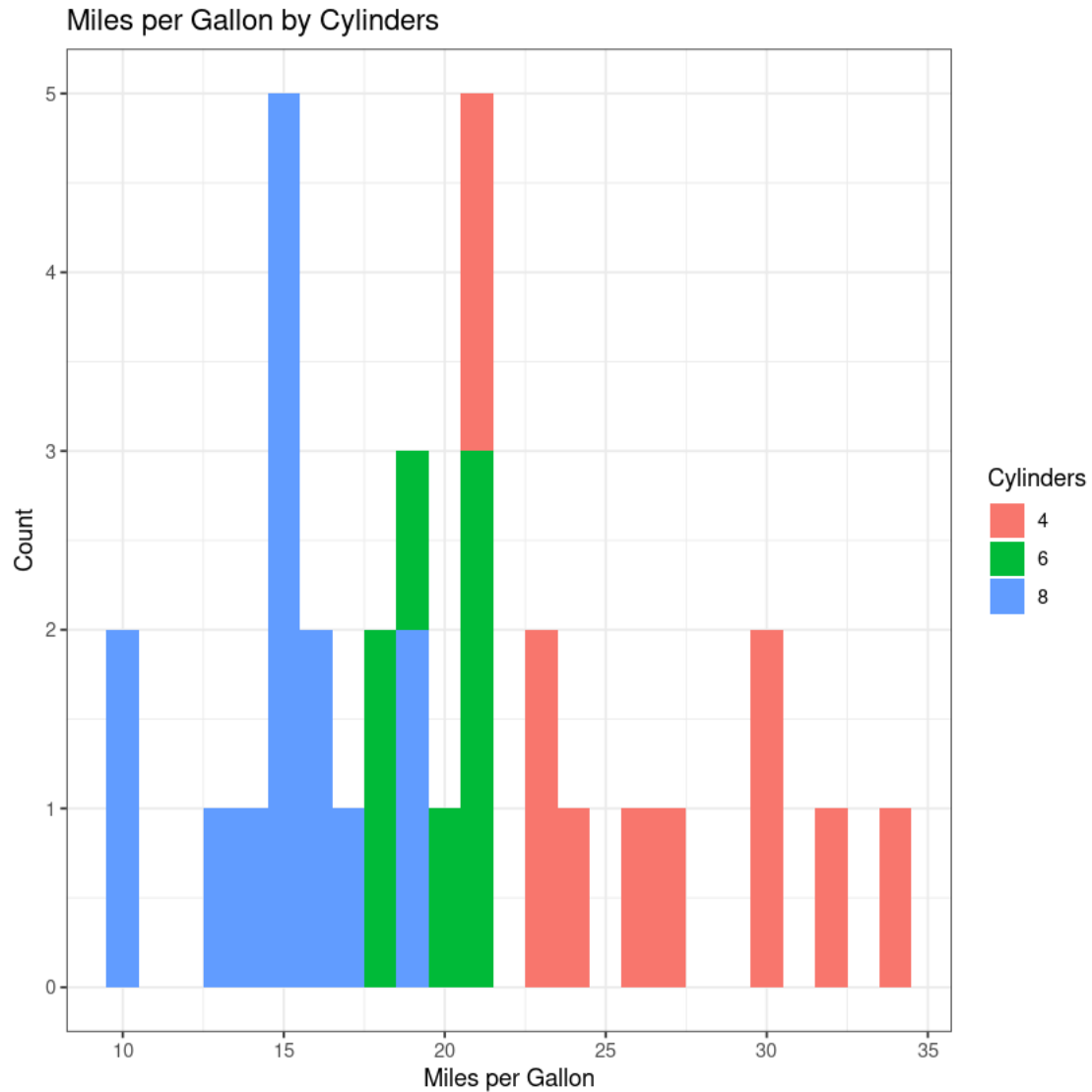
```
[ ]: # Adding certain amount of noise to avoid the overlapping  
ggplot(mtcars, aes(x= cyl , y= vs)) + geom_jitter(width = 0.1)
```



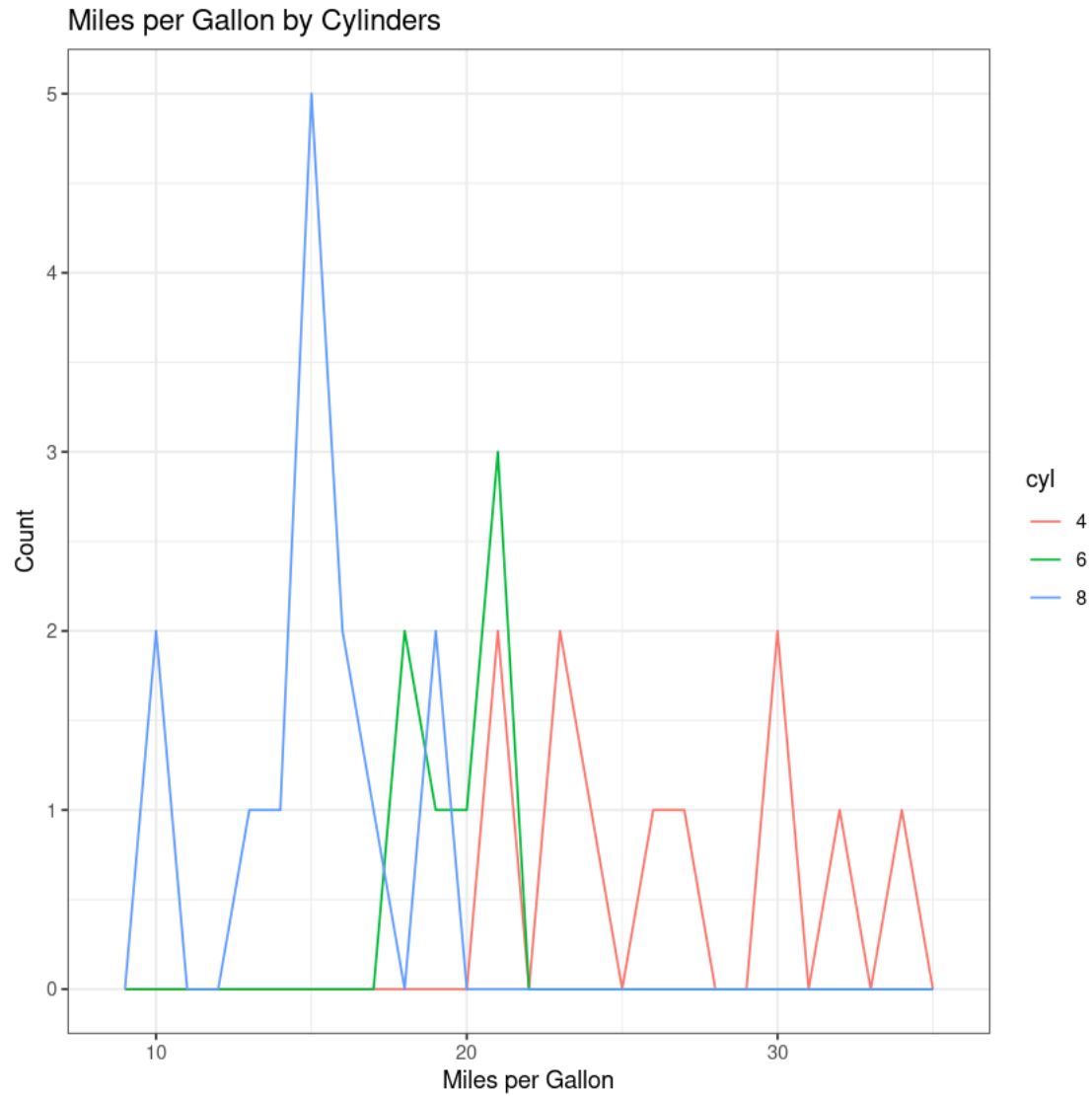
```
[ ]: #To draw a bar plot of cyl(Number of Cylinders) according to the Transmission,
      ↪type using geom_bar() and fill()
ggplot(mtcars, aes(x = cyl, fill = am)) +
  geom_bar() +
  labs(x = "Cylinders", y = "Car count", fill = "Transmission")
```



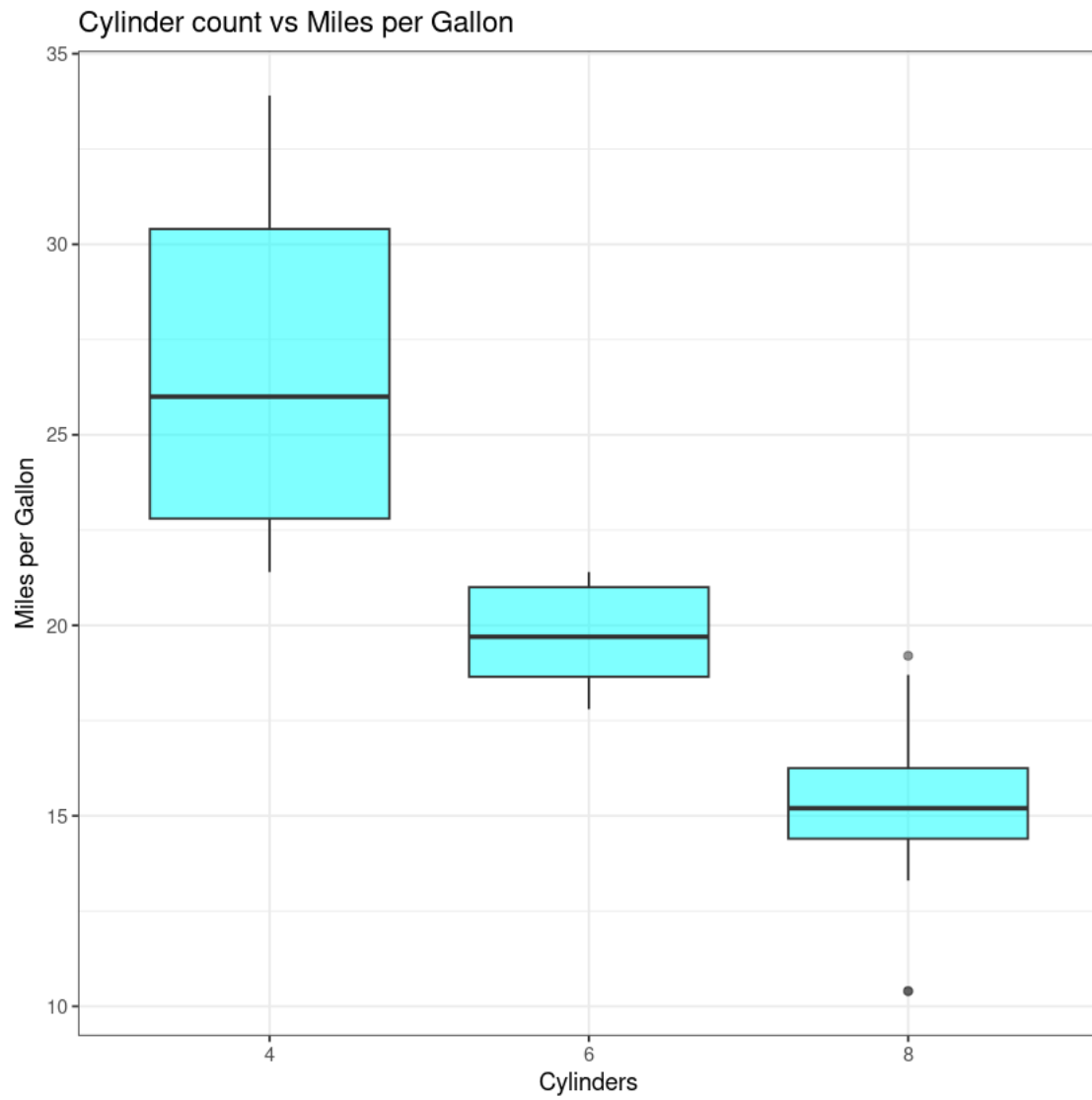
```
[ ]: #To plot a histogram for mpg (Miles per Gallon), according to cyl (Number of
      ↪Cylinders), we use the geom_histogram() functiong
ggplot(mtcars, aes(mpg,fill = cyl)) +
geom_histogram(binwidth = 1)+
theme_bw()+
labs(title = "Miles per Gallon by Cylinders",x = "Miles per Gallon",y =
"Count",fill = "Cylinders")
```



```
[ ]: #To overcome overlapping, we can use the frequency polygon, as follows:
ggplot(mtcars, aes(mpg, color = cyl)) + geom_freqpoly(binwidth = 1)+
theme_bw()+
labs(title = "Miles per Gallon by Cylinders",x = "Miles per Gallon",y = "Count",fill = "Cylinders")
```



```
[ ]: #To draw a Box plot
ggplot(mtcars, aes(x = cyl,y = mpg)) +
geom_boxplot(fill = "cyan", alpha = 0.5) +
theme_bw() +
labs(title = "Cylinder count vs Miles per Gallon",x = "Cylinders",
y = "Miles per Gallon")
```



[ ]: