Bar plot

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#Bar Plot ##where the data falls into discrete categories ##then we use bar plots

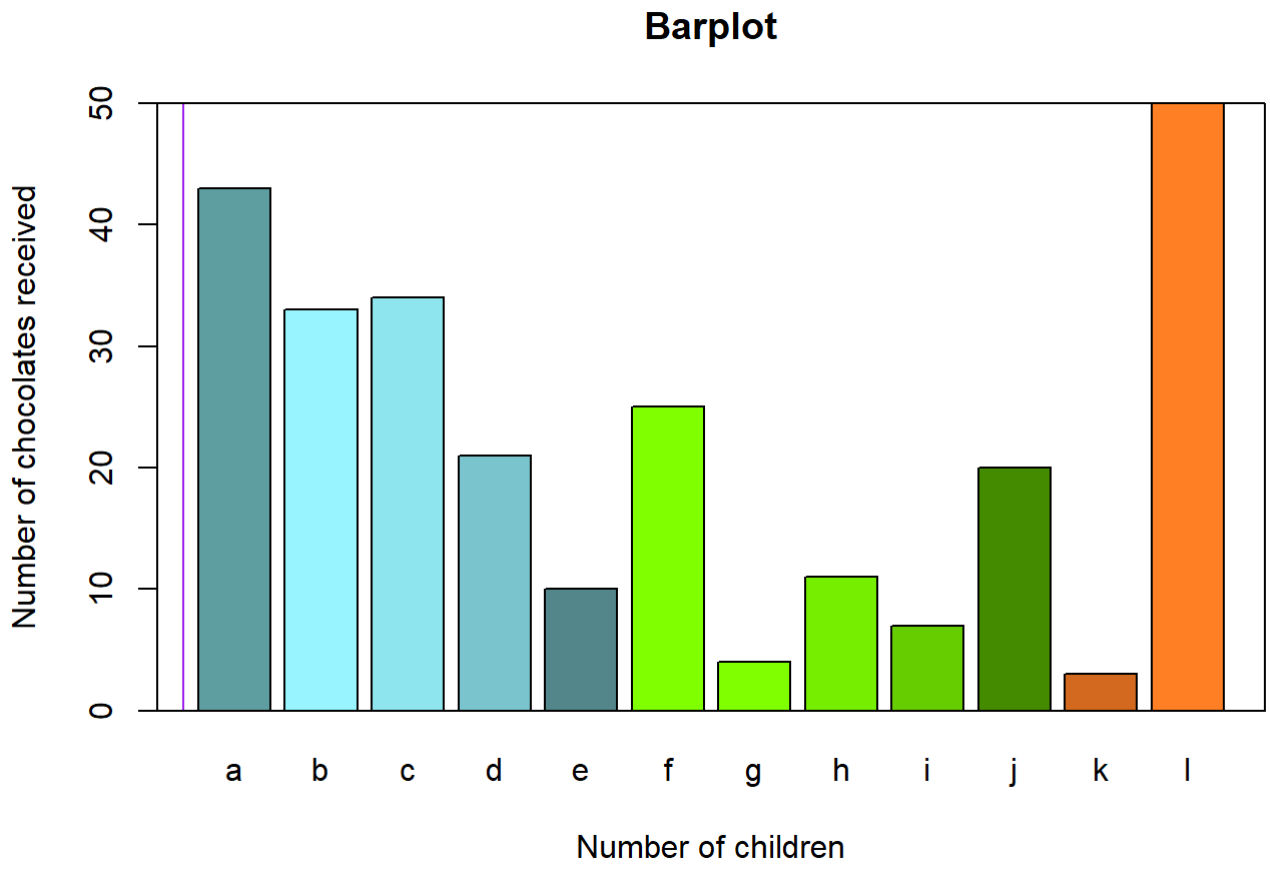
##Additional Arguments ##-ylim,xlim,main ##-names,ylab,xlab ##-col

##Single category bar plot

```
rain=round(runif(12,1,50));rain
```

```
##  [1] 43 33 34 21 10 25  4 11  7 20  3 50
```

```
barplot(rain,main="Barplot",xlab="Number of children",ylab="Number of chocolates received",yl
im=c(0,50),col=colours()[42:53],names=letters[1:12])
abline(h=0,v=0,col="purple")
box()
```



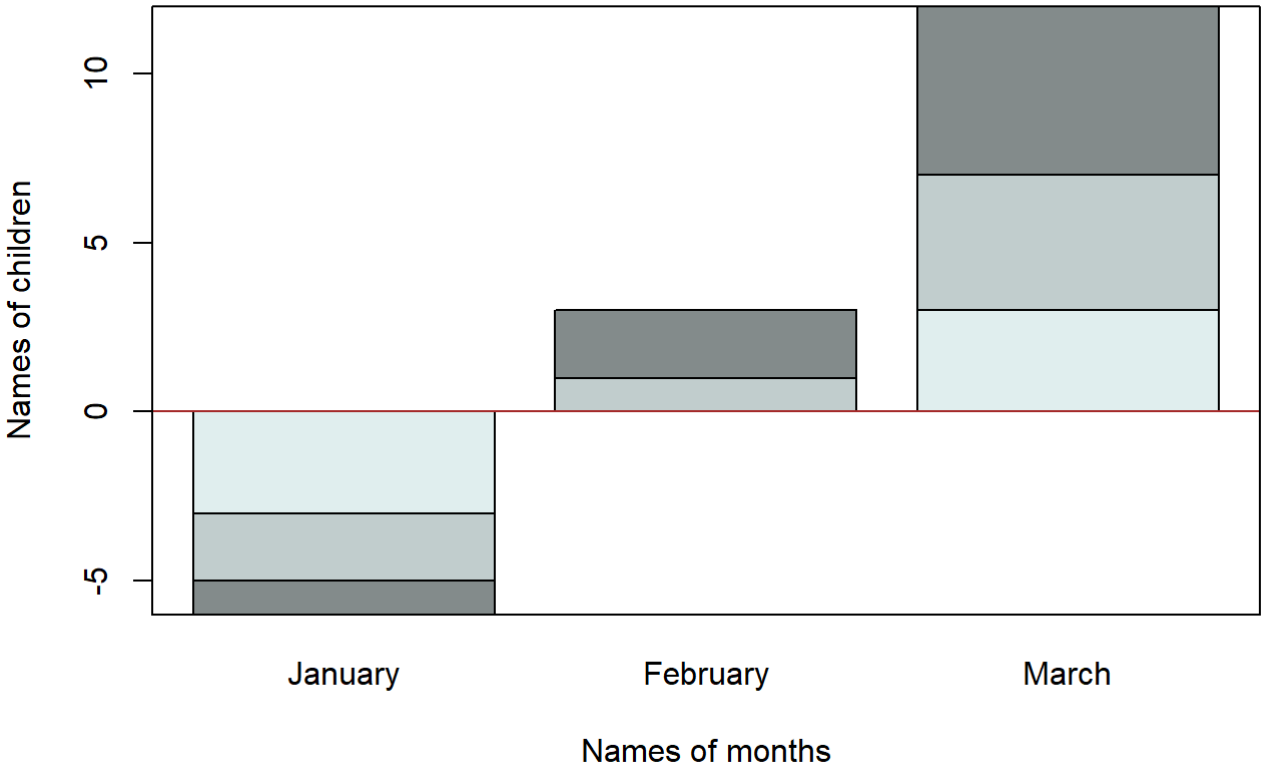
##Multiple category bar plot if our data has multiple row categories, then also we can use bar plots. in multiple categories, we have two cases - Stacked Bar Plot -Grouped Bar plot

###Stacked bar plot

```
a=seq(-3,5, length=9)
m1=matrix(a,3,3, dimnames = list(c("hannie","vinnie","cannie"),month.name[1:3]));m1
```

```
##        January February March
## hannie      -3        0     3
## vinnie      -2        1     4
## cannie      -1        2     5
```

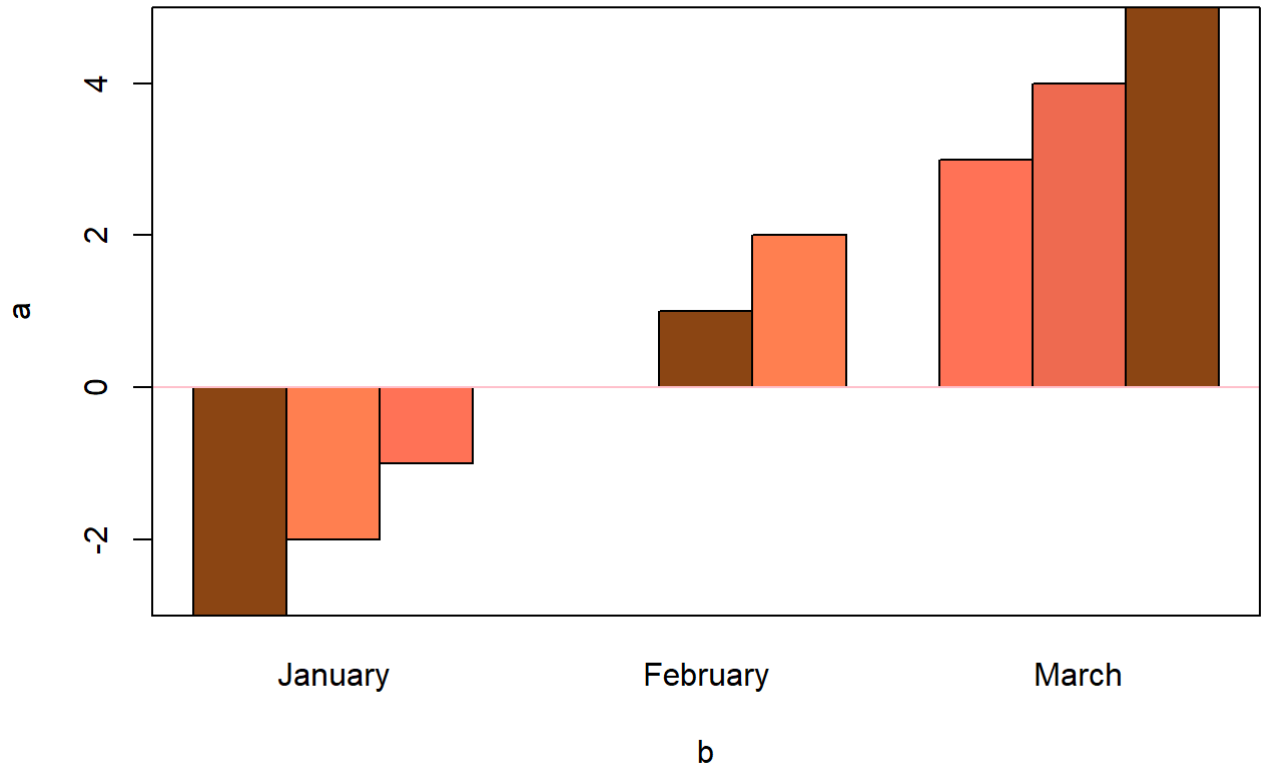
```
barplot(m1, col=colours()[15:18],ylab="Names of children",xlab="Names of months")
abline(h=0,v=0,col="brown")
box()
```




```
#grouped bar chart (add beside=T)
#Legend=T to see which bar is related to which row
b=seq(-2,4, length=9)
m1=matrix(a,3,3, dimnames = list(c("hannie","vinnie","cannie"),month.name[1:3]));m1
```

```
##        January February March
## hannie      -3        0     3
## vinnie      -2        1     4
## cannie      -1        2     5
```

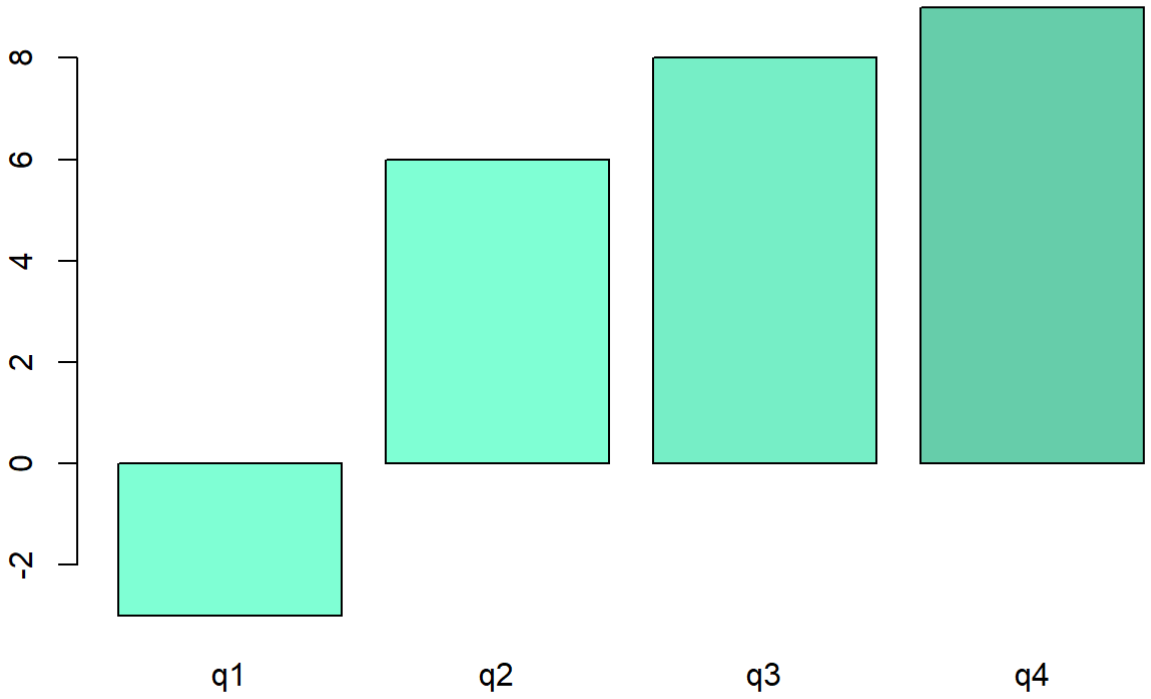
```
barplot(m1, col=colours()[56:59],ylab="a",xlab="b",beside=T)
abline(h=0,v=0,col="pink")
box()
```




```
a=c(-3,6,8,9)
names(a)=c("q1","q2","q3","q4")
a
```

```
## q1 q2 q3 q4
## -3  6  8  9
```

```
barplot(a,col=colours()[08:12])
```




```
iris
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 1            5.1         3.5          1.4         0.2     setosa
## 2            4.9         3.0          1.4         0.2     setosa
## 3            4.7         3.2          1.3         0.2     setosa
## 4            4.6         3.1          1.5         0.2     setosa
## 5            5.0         3.6          1.4         0.2     setosa
## 6            5.4         3.9          1.7         0.4     setosa
## 7            4.6         3.4          1.4         0.3     setosa
## 8            5.0         3.4          1.5         0.2     setosa
## 9            4.4         2.9          1.4         0.2     setosa
## 10           4.9         3.1          1.5         0.1     setosa
## 11           5.4         3.7          1.5         0.2     setosa
## 12           4.8         3.4          1.6         0.2     setosa
## 13           4.8         3.0          1.4         0.1     setosa
## 14           4.3         3.0          1.1         0.1     setosa
## 15           5.8         4.0          1.2         0.2     setosa
## 16           5.7         4.4          1.5         0.4     setosa
## 17           5.4         3.9          1.3         0.4     setosa
## 18           5.1         3.5          1.4         0.3     setosa
## 19           5.7         3.8          1.7         0.3     setosa
## 20           5.1         3.8          1.5         0.3     setosa
## 21           5.4         3.4          1.7         0.2     setosa
## 22           5.1         3.7          1.5         0.4     setosa
## 23           4.6         3.6          1.0         0.2     setosa
## 24           5.1         3.3          1.7         0.5     setosa
## 25           4.8         3.4          1.9         0.2     setosa
## 26           5.0         3.0          1.6         0.2     setosa
## 27           5.0         3.4          1.6         0.4     setosa
## 28           5.2         3.5          1.5         0.2     setosa
## 29           5.2         3.4          1.4         0.2     setosa
## 30           4.7         3.2          1.6         0.2     setosa
## 31           4.8         3.1          1.6         0.2     setosa
## 32           5.4         3.4          1.5         0.4     setosa
## 33           5.2         4.1          1.5         0.1     setosa
## 34           5.5         4.2          1.4         0.2     setosa
## 35           4.9         3.1          1.5         0.2     setosa
## 36           5.0         3.2          1.2         0.2     setosa
## 37           5.5         3.5          1.3         0.2     setosa
## 38           4.9         3.6          1.4         0.1     setosa
## 39           4.4         3.0          1.3         0.2     setosa
## 40           5.1         3.4          1.5         0.2     setosa
## 41           5.0         3.5          1.3         0.3     setosa
## 42           4.5         2.3          1.3         0.3     setosa
## 43           4.4         3.2          1.3         0.2     setosa
## 44           5.0         3.5          1.6         0.6     setosa
## 45           5.1         3.8          1.9         0.4     setosa
## 46           4.8         3.0          1.4         0.3     setosa
## 47           5.1         3.8          1.6         0.2     setosa
## 48           4.6         3.2          1.4         0.2     setosa
## 49           5.3         3.7          1.5         0.2     setosa
## 50           5.0         3.3          1.4         0.2     setosa
## 51           7.0         3.2          4.7         1.4 versicolor
## 52           6.4         3.2          4.5         1.5 versicolor
## 53           6.9         3.1          4.9         1.5 versicolor
## 54           5.5         2.3          4.0         1.3 versicolor
```

```
## 55          6.5         2.8          4.6         1.5 versicolor
## 56          5.7         2.8          4.5         1.3 versicolor
## 57          6.3         3.3          4.7         1.6 versicolor
## 58          4.9         2.4          3.3         1.0 versicolor
## 59          6.6         2.9          4.6         1.3 versicolor
## 60          5.2         2.7          3.9         1.4 versicolor
## 61          5.0         2.0          3.5         1.0 versicolor
## 62          5.9         3.0          4.2         1.5 versicolor
## 63          6.0         2.2          4.0         1.0 versicolor
## 64          6.1         2.9          4.7         1.4 versicolor
## 65          5.6         2.9          3.6         1.3 versicolor
## 66          6.7         3.1          4.4         1.4 versicolor
## 67          5.6         3.0          4.5         1.5 versicolor
## 68          5.8         2.7          4.1         1.0 versicolor
## 69          6.2         2.2          4.5         1.5 versicolor
## 70          5.6         2.5          3.9         1.1 versicolor
## 71          5.9         3.2          4.8         1.8 versicolor
## 72          6.1         2.8          4.0         1.3 versicolor
## 73          6.3         2.5          4.9         1.5 versicolor
## 74          6.1         2.8          4.7         1.2 versicolor
## 75          6.4         2.9          4.3         1.3 versicolor
## 76          6.6         3.0          4.4         1.4 versicolor
## 77          6.8         2.8          4.8         1.4 versicolor
## 78          6.7         3.0          5.0         1.7 versicolor
## 79          6.0         2.9          4.5         1.5 versicolor
## 80          5.7         2.6          3.5         1.0 versicolor
## 81          5.5         2.4          3.8         1.1 versicolor
## 82          5.5         2.4          3.7         1.0 versicolor
## 83          5.8         2.7          3.9         1.2 versicolor
## 84          6.0         2.7          5.1         1.6 versicolor
## 85          5.4         3.0          4.5         1.5 versicolor
## 86          6.0         3.4          4.5         1.6 versicolor
## 87          6.7         3.1          4.7         1.5 versicolor
## 88          6.3         2.3          4.4         1.3 versicolor
## 89          5.6         3.0          4.1         1.3 versicolor
## 90          5.5         2.5          4.0         1.3 versicolor
## 91          5.5         2.6          4.4         1.2 versicolor
## 92          6.1         3.0          4.6         1.4 versicolor
## 93          5.8         2.6          4.0         1.2 versicolor
## 94          5.0         2.3          3.3         1.0 versicolor
## 95          5.6         2.7          4.2         1.3 versicolor
## 96          5.7         3.0          4.2         1.2 versicolor
## 97          5.7         2.9          4.2         1.3 versicolor
## 98          6.2         2.9          4.3         1.3 versicolor
## 99          5.1         2.5          3.0         1.1 versicolor
## 100         5.7         2.8          4.1         1.3 versicolor
## 101         6.3         3.3          6.0         2.5  virginica
## 102         5.8         2.7          5.1         1.9  virginica
## 103         7.1         3.0          5.9         2.1  virginica
## 104         6.3         2.9          5.6         1.8  virginica
## 105         6.5         3.0          5.8         2.2  virginica
## 106         7.6         3.0          6.6         2.1  virginica
## 107         4.9         2.5          4.5         1.7  virginica
## 108         7.3         2.9          6.3         1.8  virginica
## 109         6.7         2.5          5.8         1.8  virginica
## 110         7.2         3.6          6.1         2.5  virginica
```

```
## 111          6.5         3.2          5.1         2.0  virginica
## 112          6.4         2.7          5.3         1.9  virginica
## 113          6.8         3.0          5.5         2.1  virginica
## 114          5.7         2.5          5.0         2.0  virginica
## 115          5.8         2.8          5.1         2.4  virginica
## 116          6.4         3.2          5.3         2.3  virginica
## 117          6.5         3.0          5.5         1.8  virginica
## 118          7.7         3.8          6.7         2.2  virginica
## 119          7.7         2.6          6.9         2.3  virginica
## 120          6.0         2.2          5.0         1.5  virginica
## 121          6.9         3.2          5.7         2.3  virginica
## 122          5.6         2.8          4.9         2.0  virginica
## 123          7.7         2.8          6.7         2.0  virginica
## 124          6.3         2.7          4.9         1.8  virginica
## 125          6.7         3.3          5.7         2.1  virginica
## 126          7.2         3.2          6.0         1.8  virginica
## 127          6.2         2.8          4.8         1.8  virginica
## 128          6.1         3.0          4.9         1.8  virginica
## 129          6.4         2.8          5.6         2.1  virginica
## 130          7.2         3.0          5.8         1.6  virginica
## 131          7.4         2.8          6.1         1.9  virginica
## 132          7.9         3.8          6.4         2.0  virginica
## 133          6.4         2.8          5.6         2.2  virginica
## 134          6.3         2.8          5.1         1.5  virginica
## 135          6.1         2.6          5.6         1.4  virginica
## 136          7.7         3.0          6.1         2.3  virginica
## 137          6.3         3.4          5.6         2.4  virginica
## 138          6.4         3.1          5.5         1.8  virginica
## 139          6.0         3.0          4.8         1.8  virginica
## 140          6.9         3.1          5.4         2.1  virginica
## 141          6.7         3.1          5.6         2.4  virginica
## 142          6.9         3.1          5.1         2.3  virginica
## 143          5.8         2.7          5.1         1.9  virginica
## 144          6.8         3.2          5.9         2.3  virginica
## 145          6.7         3.3          5.7         2.5  virginica
## 146          6.7         3.0          5.2         2.3  virginica
## 147          6.3         2.5          5.0         1.9  virginica
## 148          6.5         3.0          5.2         2.0  virginica
## 149          6.2         3.4          5.4         2.3  virginica
## 150          5.9         3.0          5.1         1.8  virginica
```

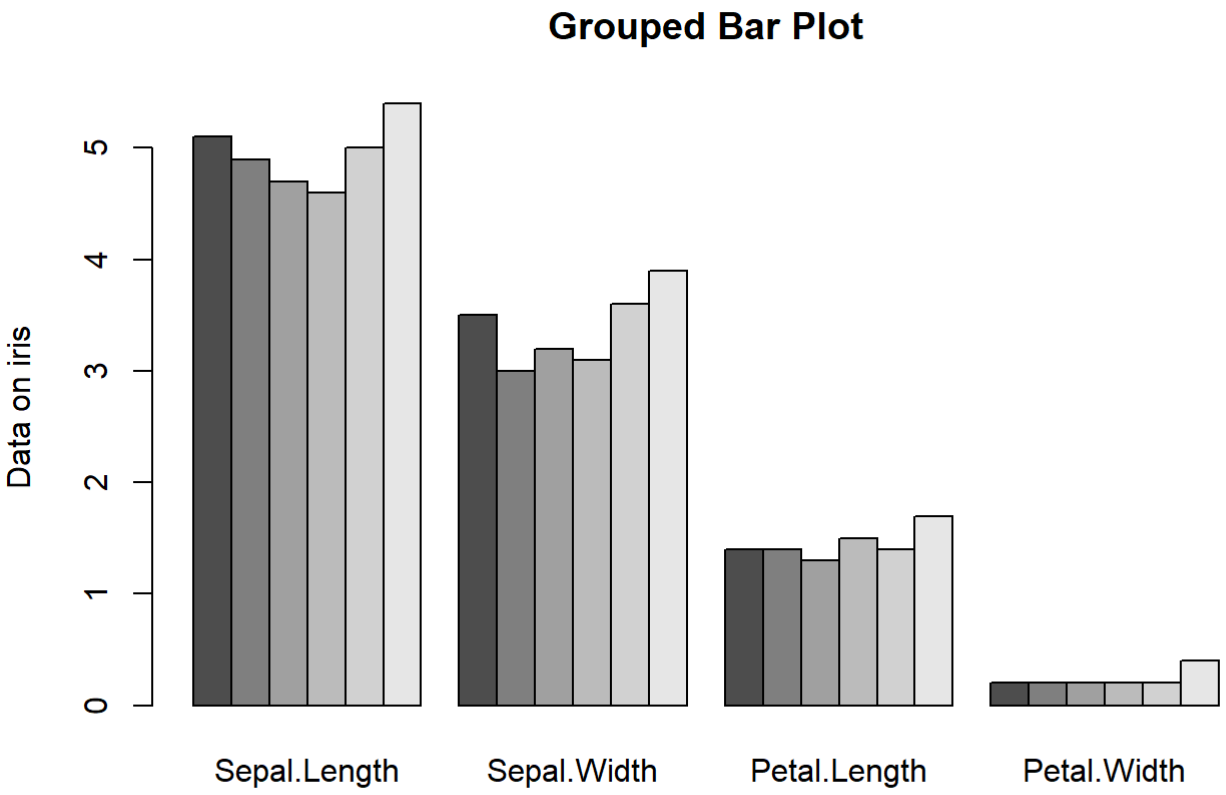
```
class(iris)
```

```
## [1] "data.frame"
```

```
a1=iris[1:4]
#grouped bar plot
a=head(as.matrix(a1));a
```

```
##      Sepal.Length Sepal.Width Petal.Length Petal.Width
## [1,]          5.1         3.5          1.4         0.2
## [2,]          4.9         3.0          1.4         0.2
## [3,]          4.7         3.2          1.3         0.2
## [4,]          4.6         3.1          1.5         0.2
## [5,]          5.0         3.6          1.4         0.2
## [6,]          5.4         3.9          1.7         0.4
```

```
barplot(a,beside=T,main="Grouped Bar Plot",ylab="Data on iris")
```



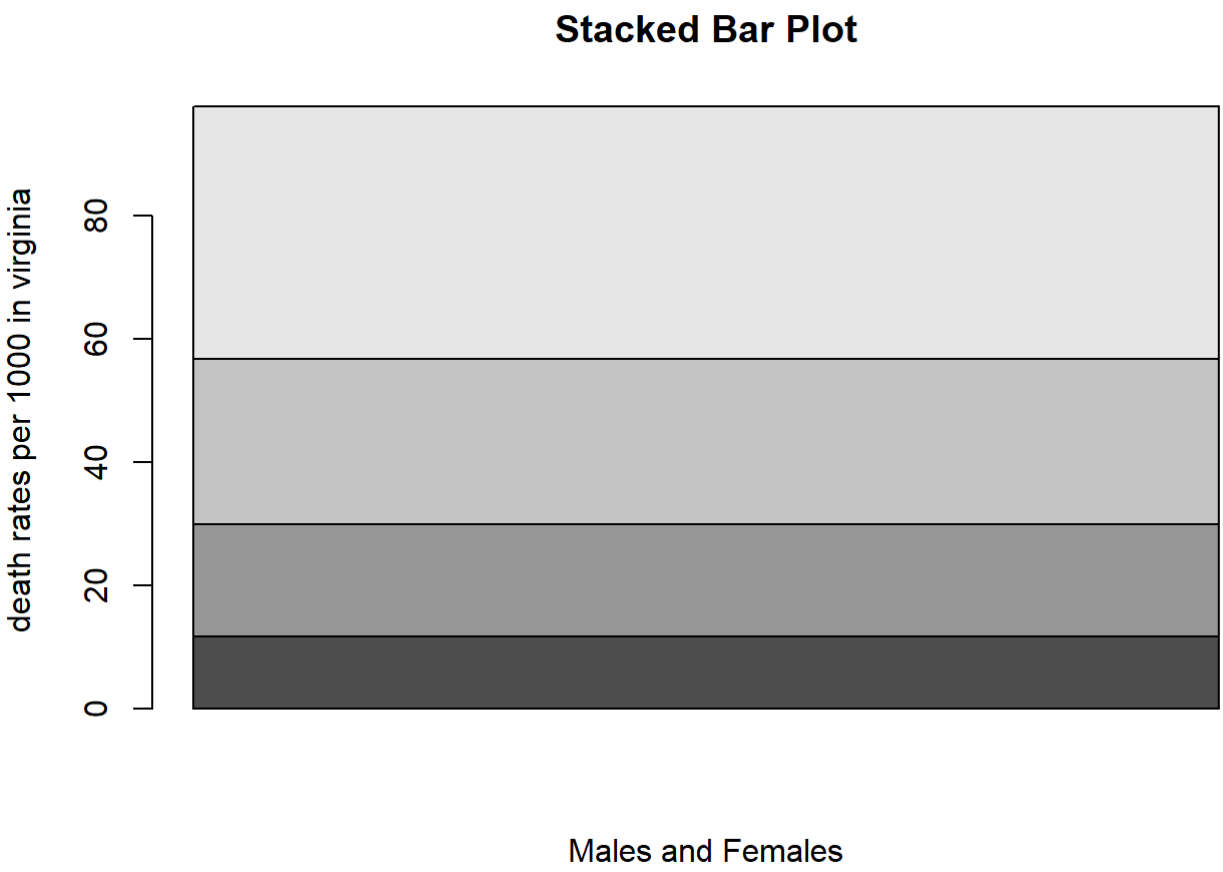

```
#stacked bar plot
VADeaths
```

```
##       Rural Male Rural Female Urban Male Urban Female
## 50-54       11.7          8.7       15.4          8.4
## 55-59       18.1         11.7       24.3         13.6
## 60-64       26.9         20.3       37.0         19.3
## 65-69       41.0         30.9       54.6         35.1
## 70-74       66.0         54.3       71.1         50.0
```

```
a2=VADeaths[1:4]
b=head(as.matrix(a2));b
```

```
##      [,1]
## [1,] 11.7
## [2,] 18.1
## [3,] 26.9
## [4,] 41.0
```

```
barplot(b,beside=F,main="Stacked Bar Plot",ylab="death rates per 1000 in virginia",xlab="Male
s and Females")
```




```
VADeaths
```

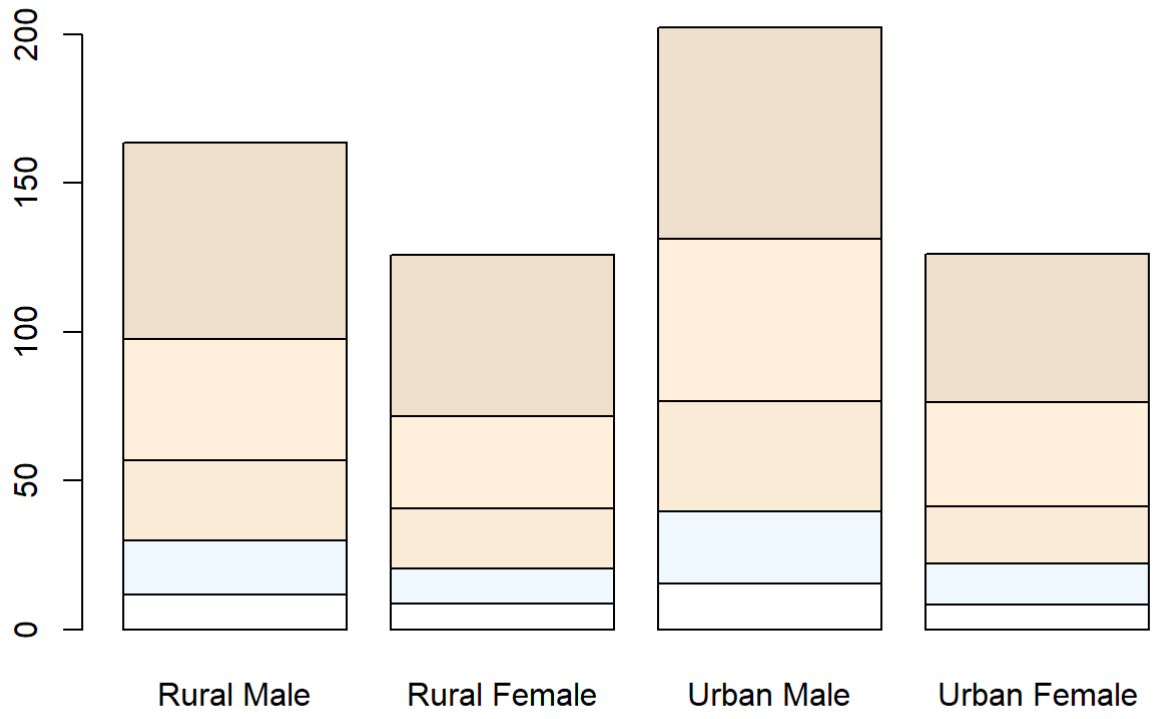
```
##       Rural Male Rural Female Urban Male Urban Female
## 50-54       11.7          8.7       15.4          8.4
## 55-59       18.1         11.7       24.3         13.6
## 60-64       26.9         20.3       37.0         19.3
## 65-69       41.0         30.9       54.6         35.1
## 70-74       66.0         54.3       71.1         50.0
```

```
a3=VADeaths[2:5]
b1=head(as.matrix(a3));b1
```

```
##      [,1]
## [1,] 18.1
## [2,] 26.9
## [3,] 41.0
## [4,] 66.0
```

```
barplot(b1,beside=T,main="Grouped Bar Plot",ylab="death rates per 1000 in virginia",xlab="Mal
es and Females")
```


```
barplot(VADeaths,col=colours()[1:20])
```



#cleveland dotchart (alternative of pie chart) ##dotchart for a data frame

```
VADeaths
```

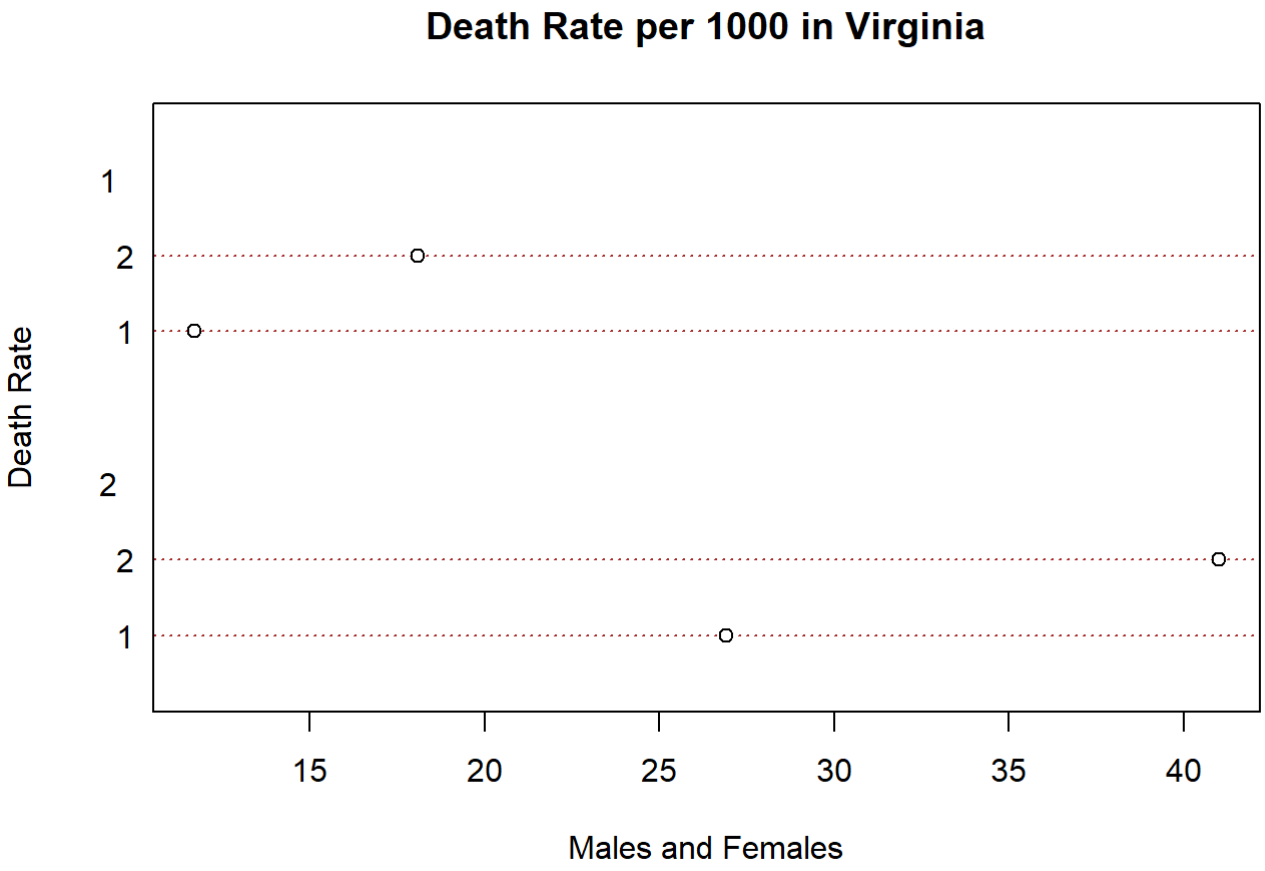
```
##       Rural Male Rural Female Urban Male Urban Female
## 50-54       11.7          8.7       15.4          8.4
## 55-59       18.1         11.7       24.3         13.6
## 60-64       26.9         20.3       37.0         19.3
## 65-69       41.0         30.9       54.6         35.1
## 70-74       66.0         54.3       71.1         50.0
```

```
a1=VADeaths
m1=matrix(a1,2,2);m1
```

```
## Warning in matrix(a1, 2, 2): data length differs from size of matrix: [20 != 2
## x 2]
```

```
##      [,1] [,2]
## [1,] 11.7 26.9
## [2,] 18.1 41.0
```

```
dotchart(m1, lcolor = "brown",
         main = "Death Rate per 1000 in Virginia", xlab = "Males and Females", ylab = "Death
Rate")
```




```
HairEyeColor
```

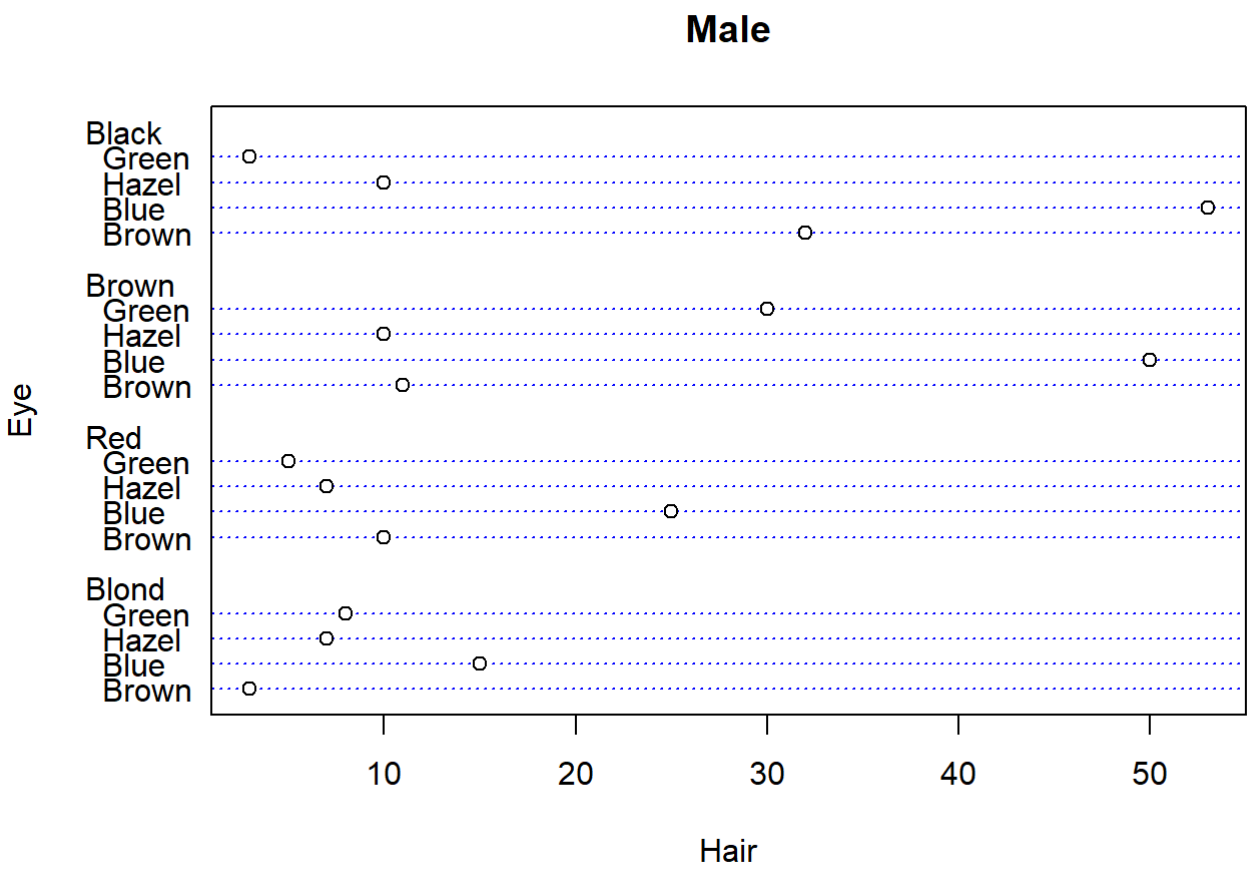
```
## , , Sex = Male
##
##        Eye
## Hair    Brown Blue Hazel Green
##   Black    32   11    10     3
##   Brown    53   50    25    15
##   Red      10   10     7     7
##   Blond     3   30     5     8
##
## , , Sex = Female
##
##        Eye
## Hair    Brown Blue Hazel Green
##   Black    36    9     5     2
##   Brown    66   34    29    14
##   Red      16    7     7     7
##   Blond     4   64     5     8
```

```
a1=c(32,53,10,3,11,50,10,30,10,25,7,5,3,15,7,8)
m1=matrix(a1,4,4)

colnames(m1)=c("Black","Brown","Red","Blond")
rownames(m1)=c("Brown","Blue","Hazel","Green")
m1
```

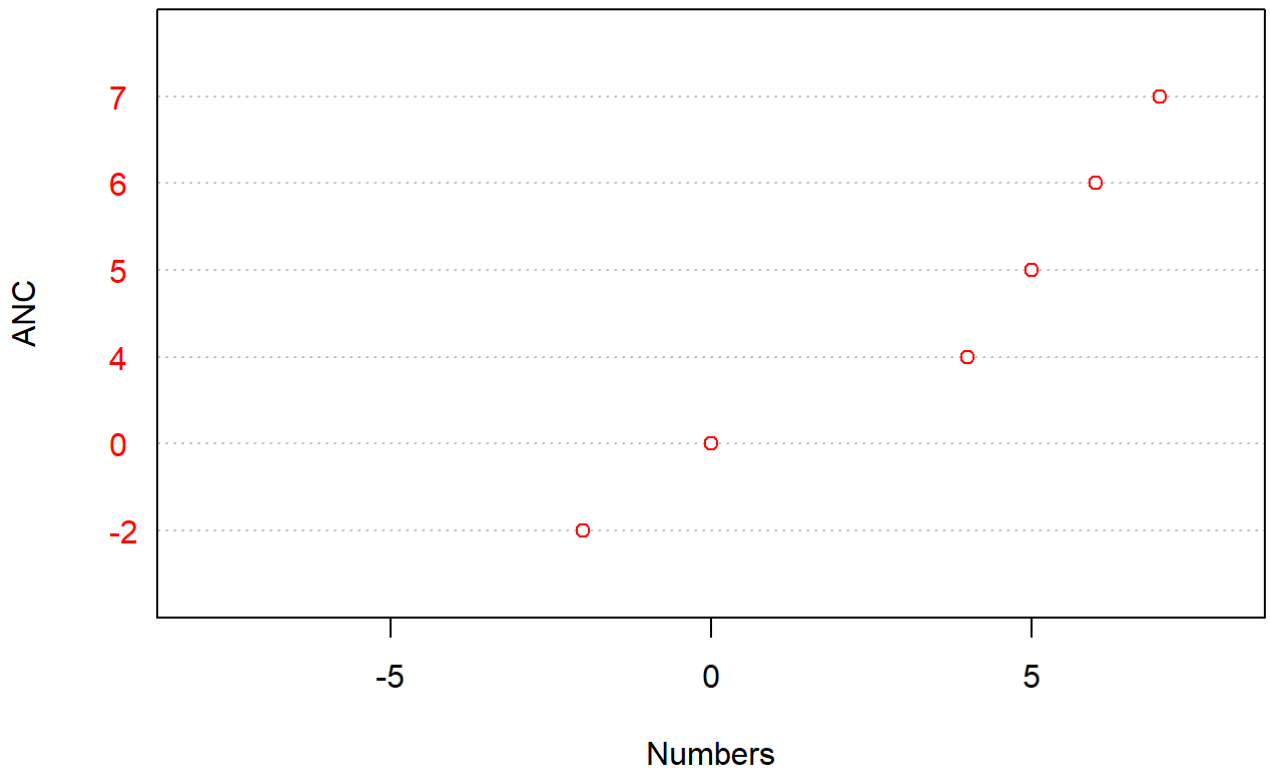
```
##       Black Brown Red Blond
## Brown    32    11  10     3
## Blue     53    50  25    15
## Hazel    10    10   7     7
## Green     3    30   5     8
```

```
dotchart(m1, lcolor = "blue",
         main = "Male", xlab = "Hair", ylab = "Eye")
```



##dotchart for a vector

```
a1=c(-2,0,4,5,6,7)
dotchart(a1,main="DotChart",xlim=c(-8,8),ylim=c(-8,8),labels=a1,
         col="red",xlab="Numbers",ylab="ANC")
```



##dotchart for a matrix ###Additional Arguments

```
m1=matrix(1:16,4);m1
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    5    9   13
## [2,]    2    6   10   14
## [3,]    3    7   11   15
## [4,]    4    8   12   16
```

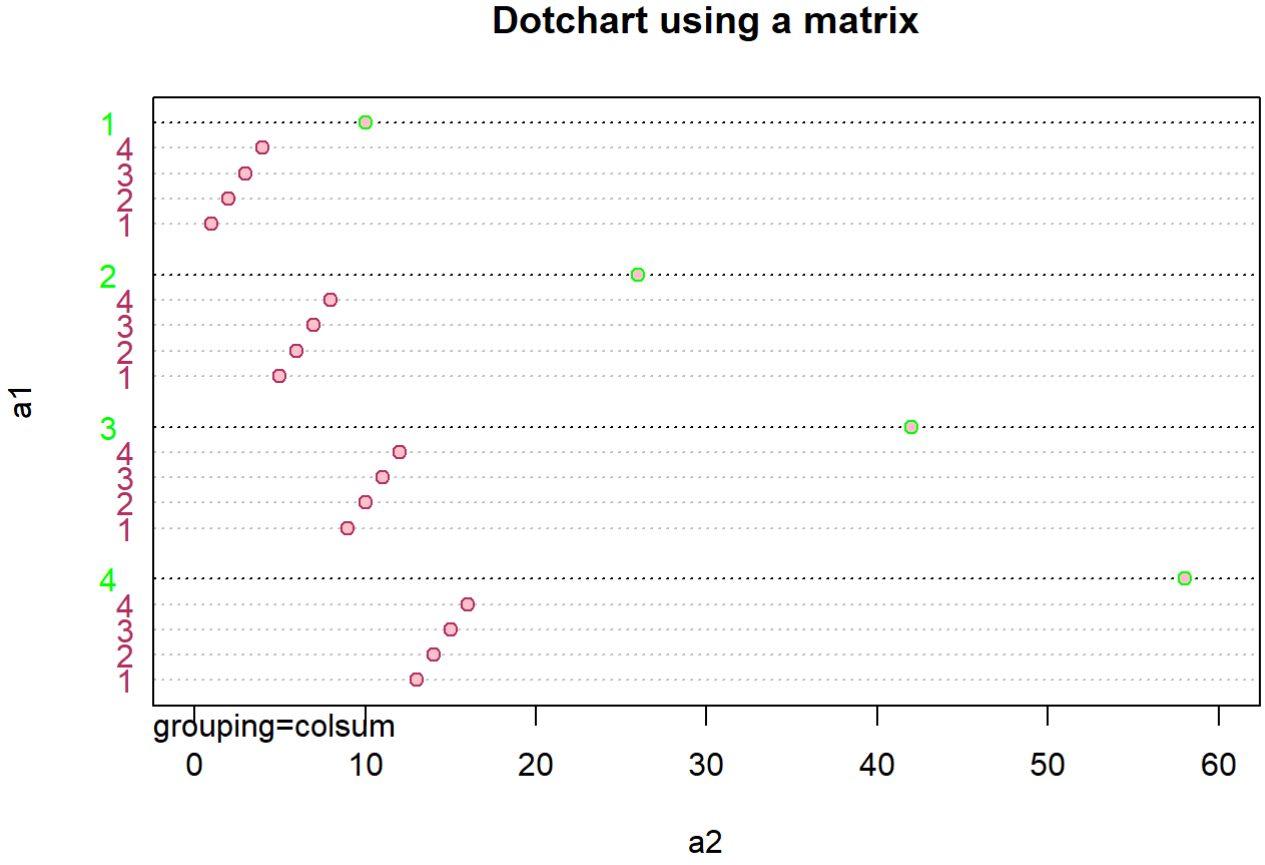
```
colSums(m1)
```

```
## [1] 10 26 42 58
```

```
colMeans(m1)
```

```
## [1]  2.5  6.5 10.5 14.5
```

```
dotchart(m1,col="maroon",ylab="a1",xlab="a2",main="Dotchart using a matrix",ylim=c(-4,4),xlim
=c(0,60),bg="pink",gcolor="green",
         gdata=colSums(m1))
mtext(("grouping=colsum"),adj=0,side=1)
```


Dotchart using a matrix
a1
1
4
3
2
1
2
4
3
2
1
3
4
3
2
1
4
4
3
2
1
grouping=colsum
0
10
20
30
40
50
60
a2