Module_12

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Analysis of Professor Salaries

```
library(carData)
library(ggplot2)
library(lattice)

head(Salaries,10)
```

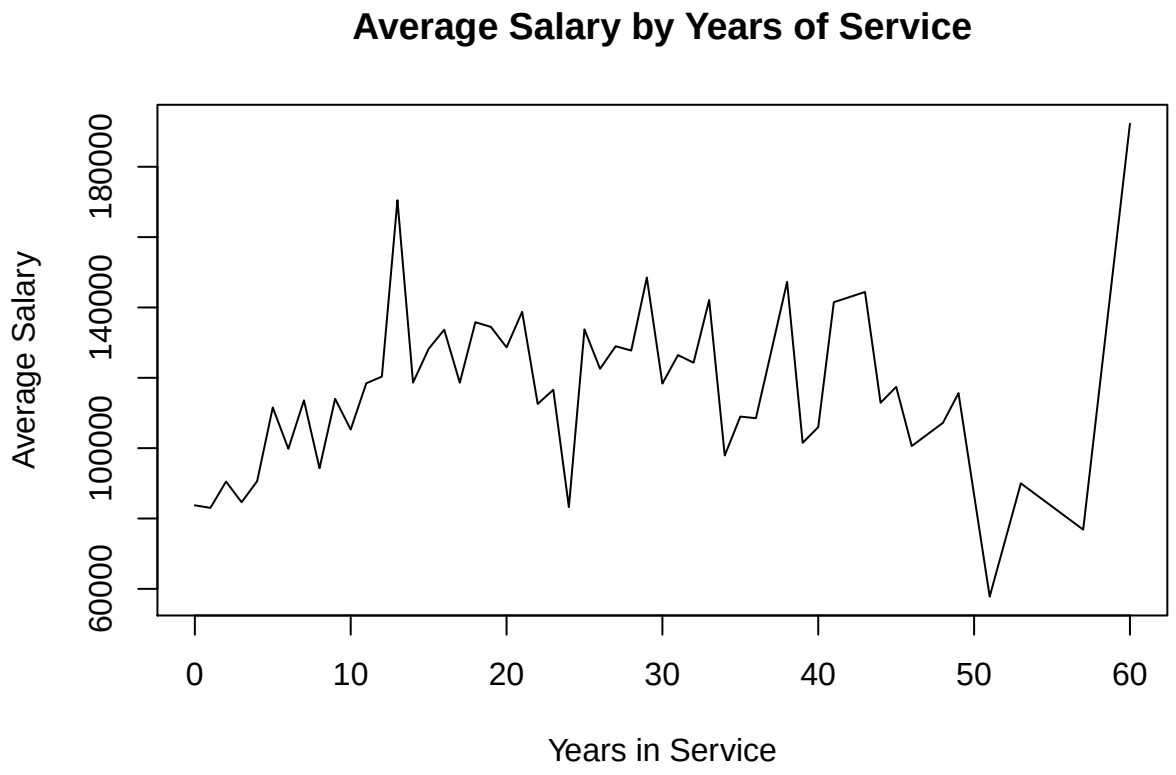
```
##         rank discipline yrs.since.phd yrs.service    sex salary
## 1       Prof          B            19          18   Male 139750
## 2       Prof          B            20          16   Male 173200
## 3   AsstProf          B             4           3   Male  79750
## 4       Prof          B            45          39   Male 115000
## 5       Prof          B            40          41   Male 141500
## 6  AssocProf          B             6           6   Male  97000
## 7       Prof          B            30          23   Male 175000
## 8       Prof          B            45          45   Male 147765
## 9       Prof          B            21          20   Male 119250
## 10      Prof          B            18          18 Female 129000
```

Average Salary

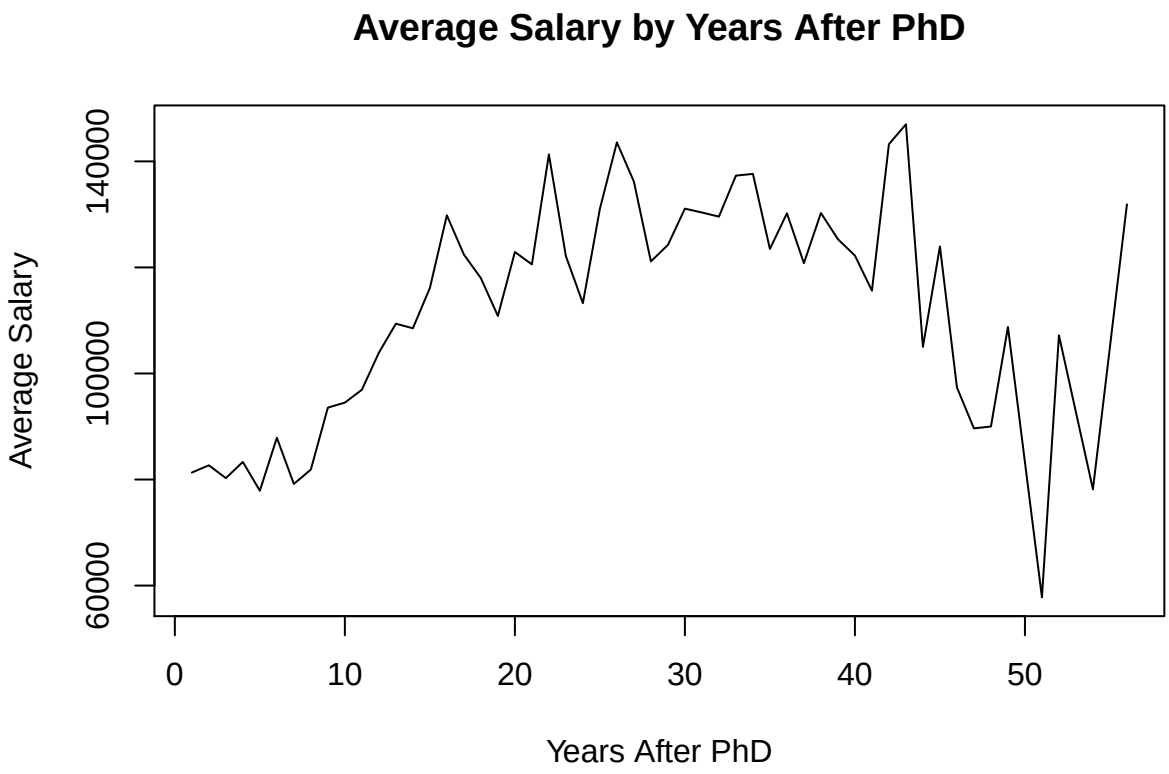
```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
sal_mean_yrs <- by(Salaries$salary,Salaries$yrs.service,mean)
sal_mean_yrs <- as.matrix(sal_mean_yrs)

yrs_ser <- sort(Salaries$yrs.service[!duplicated(Salaries$yrs.service)])



sal_mean_phd <- by(Salaries$salary,Salaries$yrs.since.phd,mean)
sal_mean_phd <- as.matrix(sal_mean_phd)

yrs_phd <- sort(Salaries$yrs.since.phd[!duplicated(Salaries$yrs.since.phd)])

plot(yrs_ser, sal_mean_yrs,'l',xlab='Years in Service',ylab='Average Salary',main='Average Salary by Yea
```

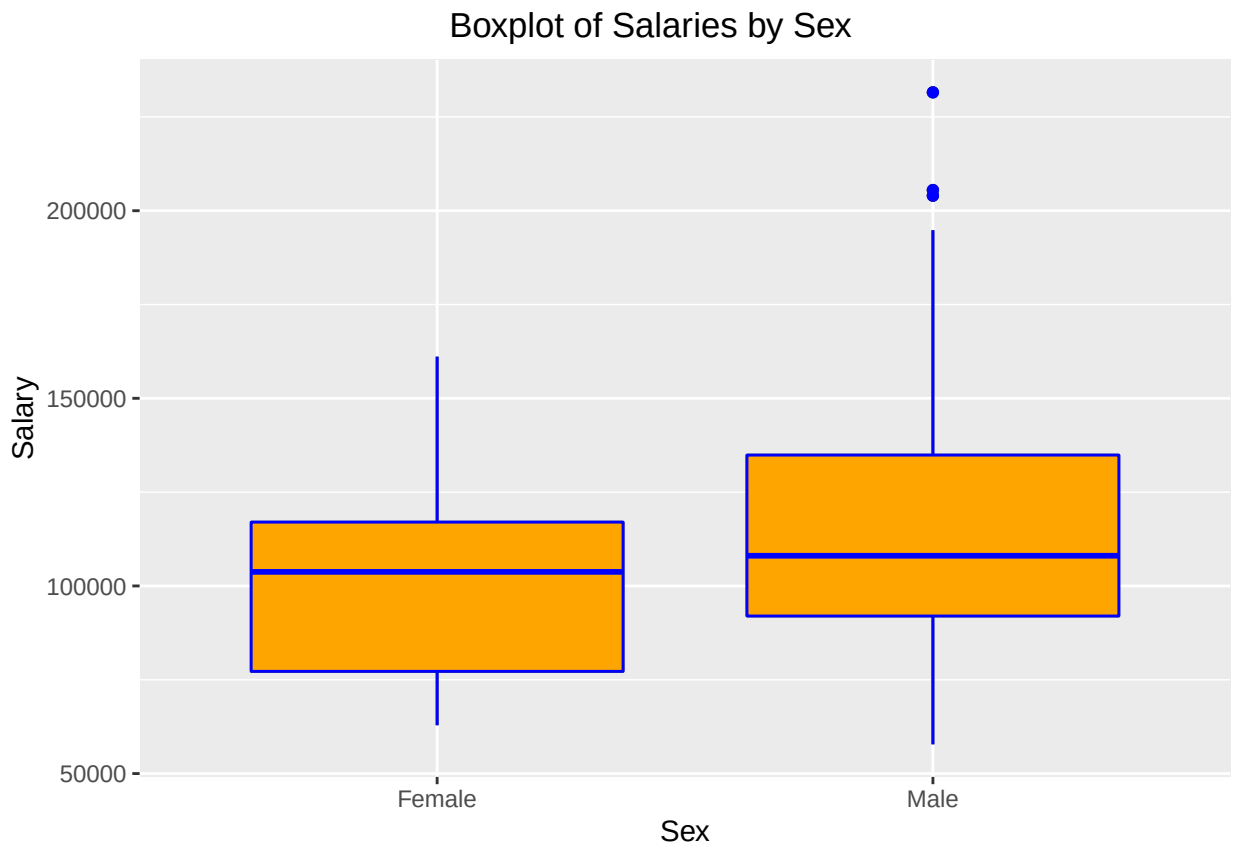



```r
plot(yrs_phd, sal_mean_phd,'l',xlab='Years After PhD',ylab='Average Salary',main='Average Salary by Yea
```

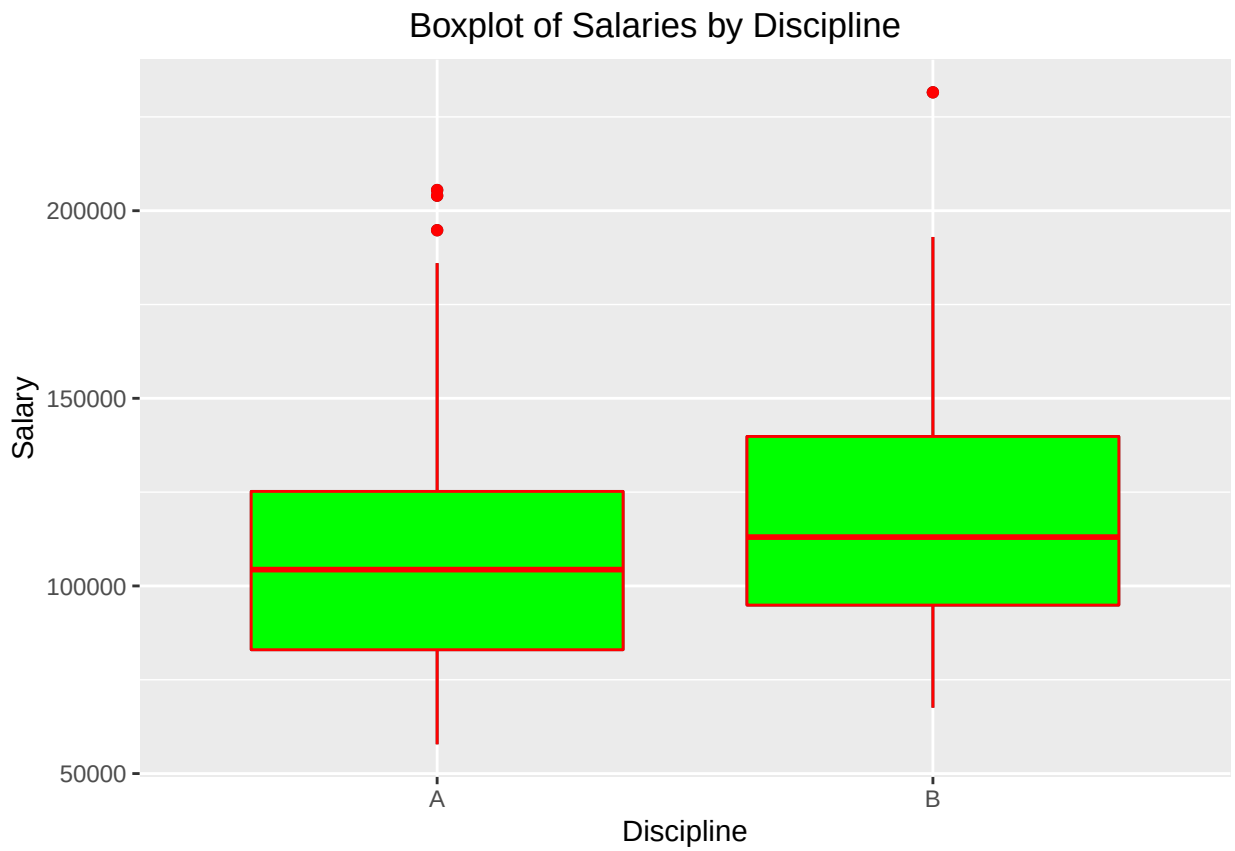


Salary Boxplots

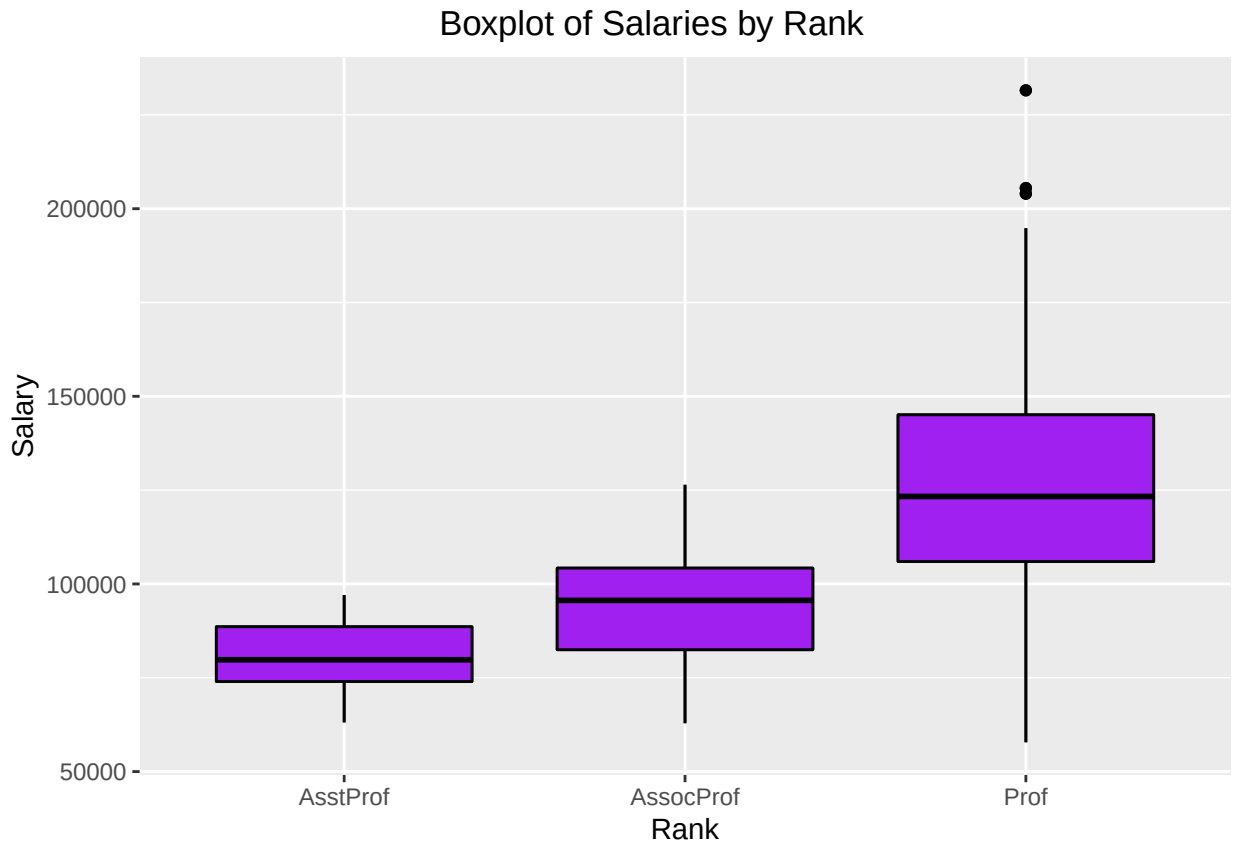
```
box1 <- ggplot(Salaries, aes(x = sex, y = salary)) +
        geom_boxplot() + ggtitle("Boxplot of Salaries by Sex") + theme(plot.title = element_text(hjust =
        scale_y_continuous(name = "Salary") + geom_boxplot(fill = 'orange', colour = 'blue')

box2 <- ggplot(Salaries, aes(x = discipline, y = salary)) +
        geom_boxplot() + ggtitle("Boxplot of Salaries by Discipline") + theme(plot.title = element_text
        scale_y_continuous(name = "Salary") + geom_boxplot(fill = 'green', colour = 'red')

box3 <- ggplot(Salaries, aes(x = rank, y = salary)) +
        geom_boxplot() + ggtitle("Boxplot of Salaries by Rank") + theme(plot.title = element_text(hjust
        scale_y_continuous(name = "Salary") + geom_boxplot(fill = 'purple', colour = 'black')

box1
```


Boxplot of Salaries by Sex
Salary
200000
150000
100000
50000
Female
Male
Sex

```
box2
```


Boxplot of Salaries by Discipline
Salary
200000
150000
100000
50000
A
B
Discipline

```
box3
```

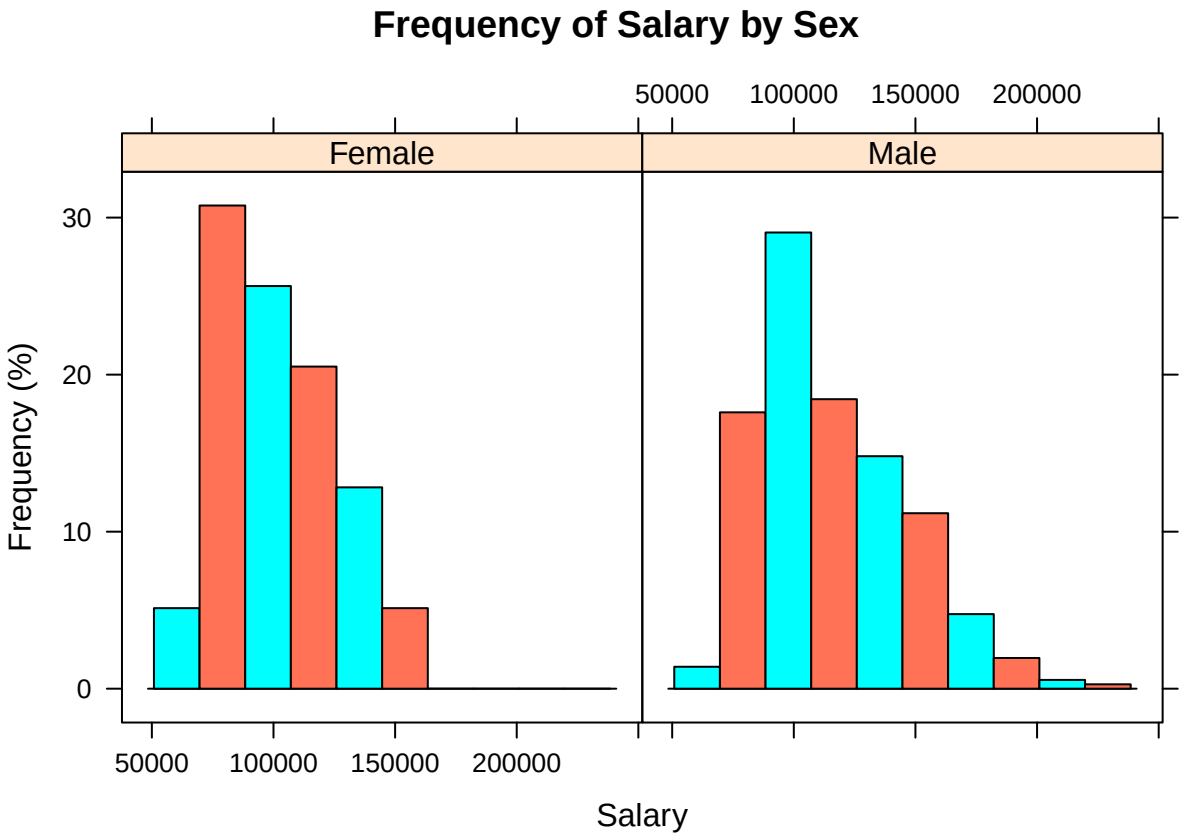


Salary Frequencies

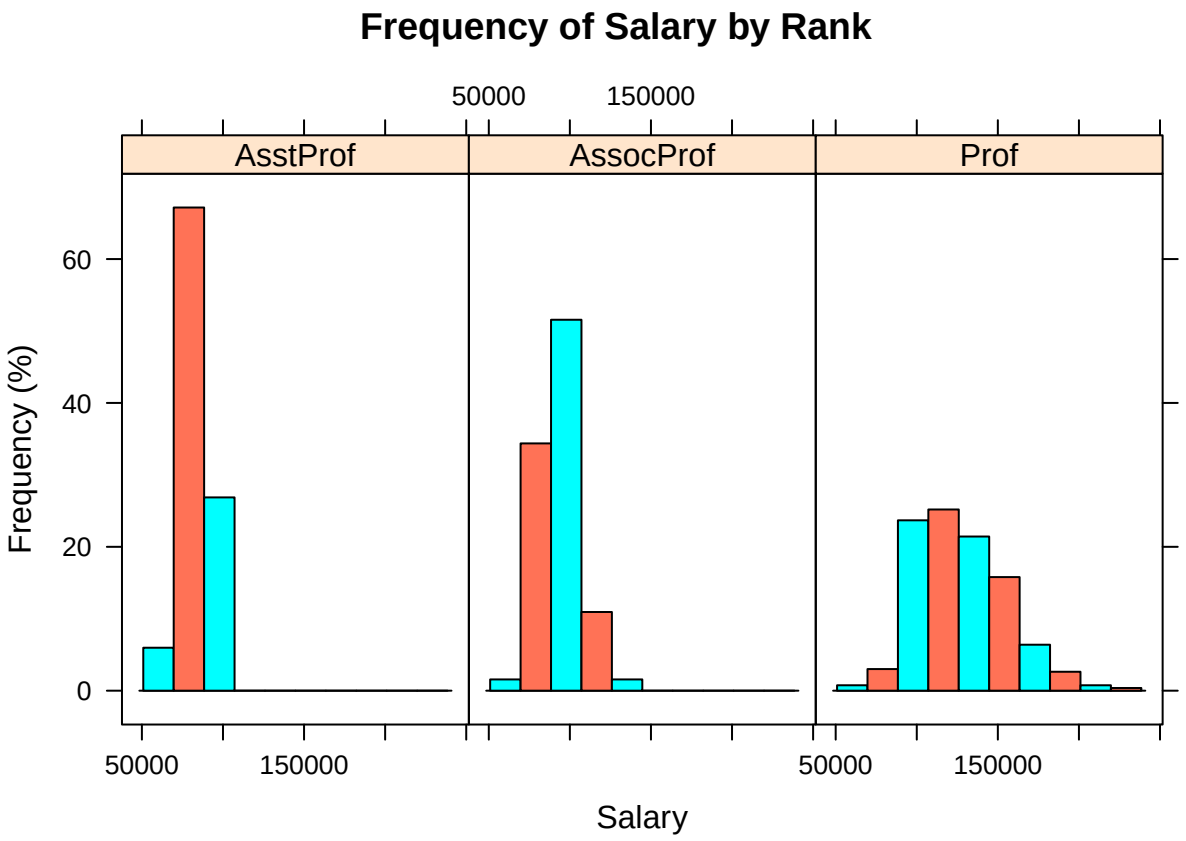
```
his1 <- histogram(~Salaries$salary|Salaries$discipline, Salaries, xlab = "Salary", ylab="Frequency (%)"

his2 <- histogram(~Salaries$salary|Salaries$sex, Salaries, xlab = "Salary", ylab="Frequency (%)",main='

his3 <- histogram(~Salaries$salary|Salaries$rank, Salaries, xlab = "Salary", ylab="Frequency (%)",main=


his1
```


Frequency of Salary by Discipline
50000
100000
150000
200000
A
B
30
20
10
0
Frequency (%)
50000
100000
150000
200000
Salary

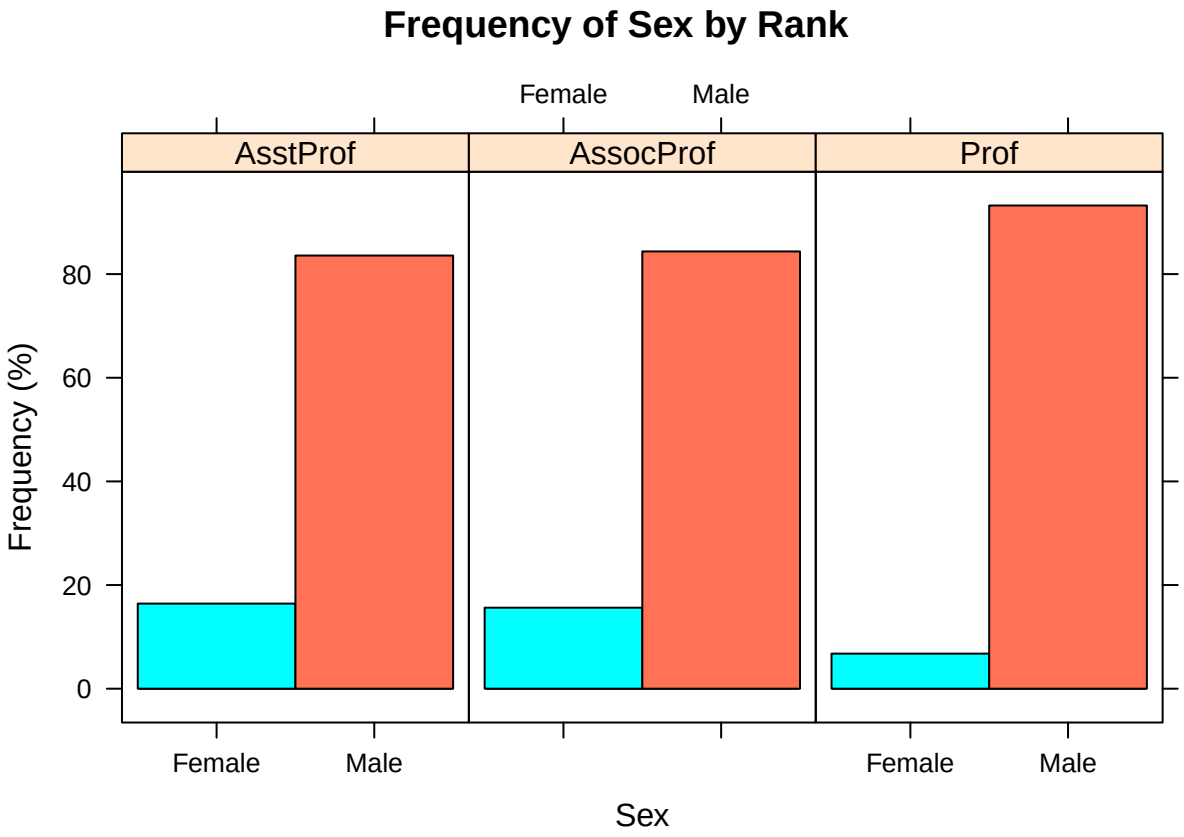
```
his2
```


Frequency of Salary by Sex
Female
Male
50000
100000
150000
200000
Frequency (%)
0
10
20
30
Salary

```
his3
```




```
his4 <- histogram(~Salaries$sex|Salaries$rank, Salaries, xlab = "Sex", ylab="Frequency (%)",main='Frequ


his4
```


Frequency of Sex by Rank
Female
Male
AsstProf
AssocProf
Prof
Frequency (%)
0
20
40
60
80
Female
Male
Female
Male
Sex