

Hoemwork0

Zixin Ouyang

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Exercise 1

```
library('faraway')
library('tibble')

new=as_tibble(diabetes)

dim(new)

## [1] 403  19

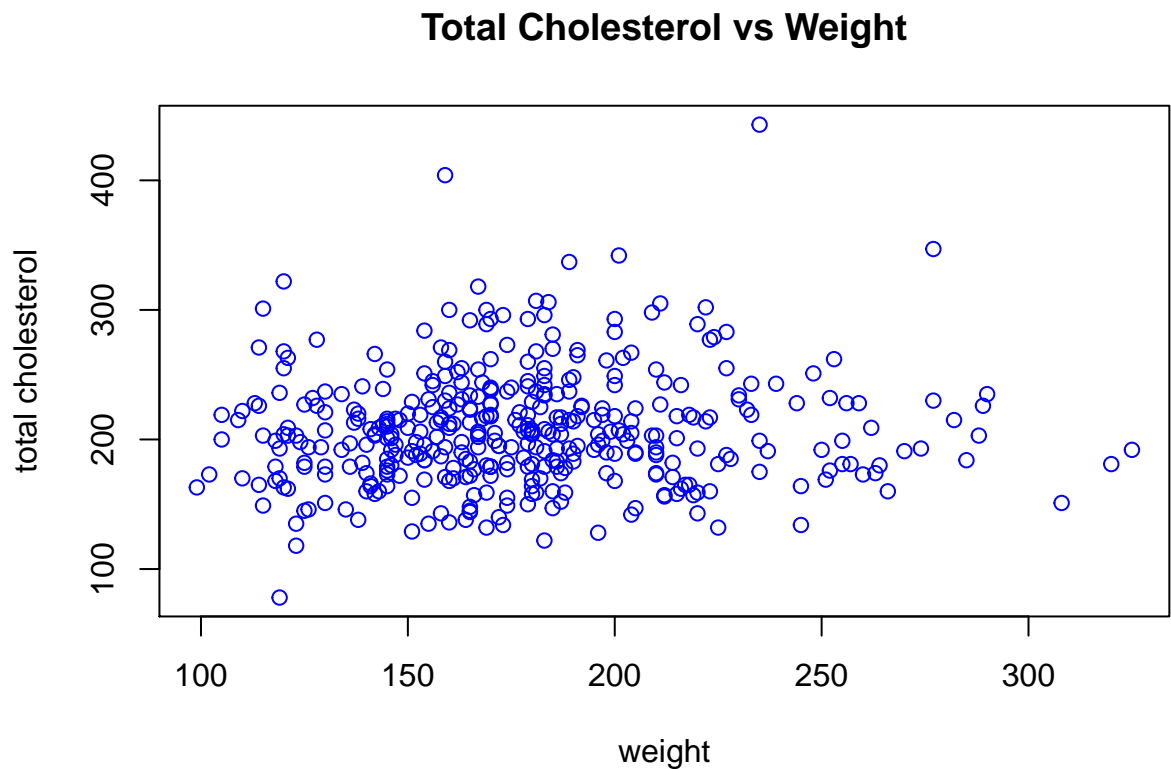
mean(new$hdl,na.rm=TRUE)

## [1] 50.44527

mean(new$hdl[new$gender=='female'])

## [1] 52.11111

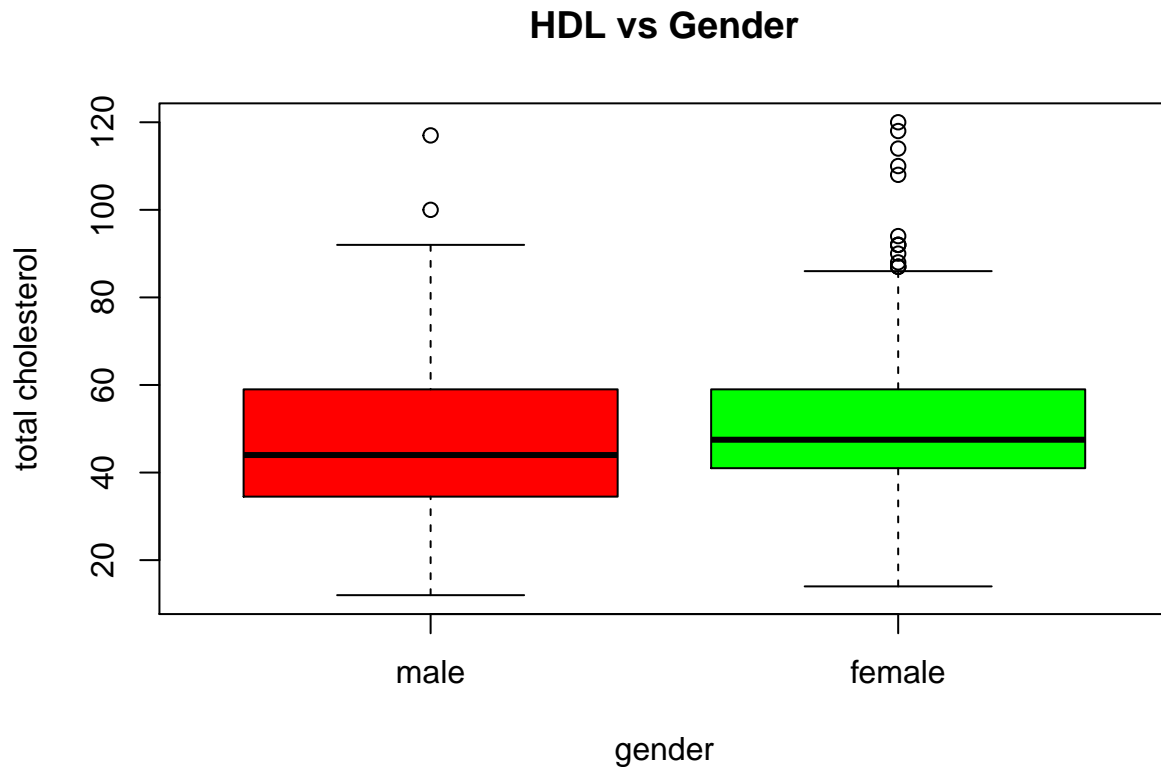
plot(new$weight,new$chol,
      main = "Total Cholesterol vs Weight",
      col='blue',
      xlab='weight',
      ylab='total cholesterol')
```



Aver-

age total cholesterol seems nearly constant for different weights.

```
boxplot(new$hdl~new$gender,  
        col=c('red','green'),  
        main="HDL vs Gender",  
        xlab='gender',  
        ylab='total cholesterol')
```



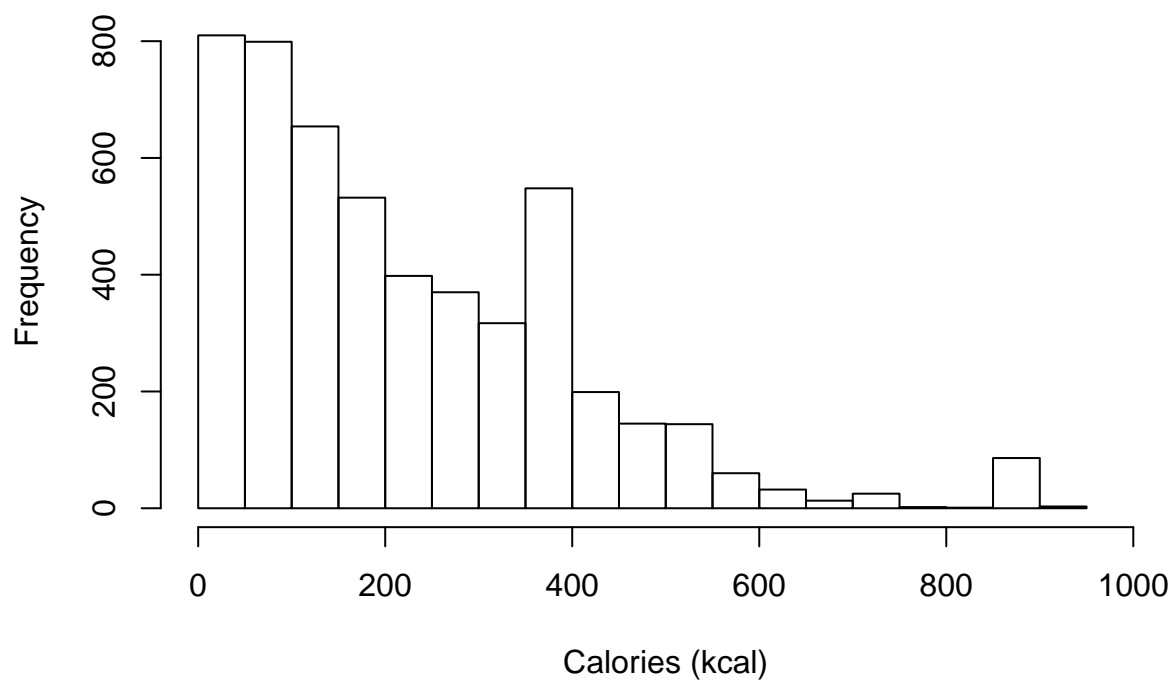
from slightly less variation among females, there seems to be very little difference in HDL level between the genders. Aside

Exercise 2

```
nutrition<-read.csv('/Users/Constance/Downloads/hw00/nutrition.csv')
```

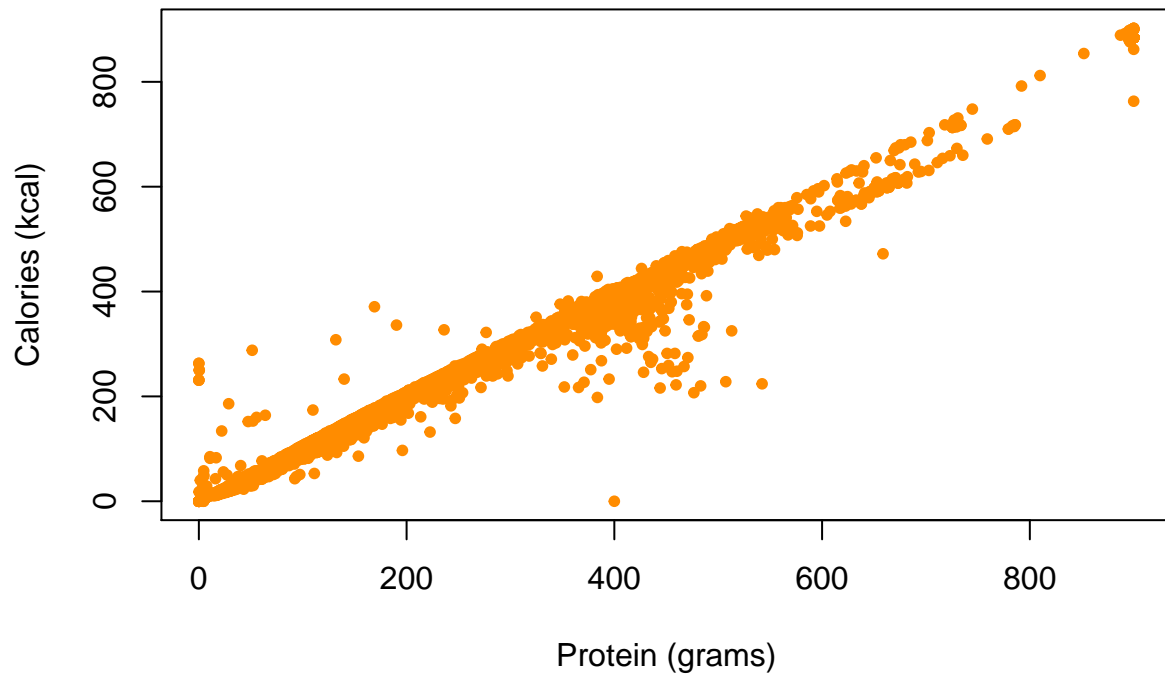
```
hist(nutrition$Calories,  
     xlim=c(0,1000),  
     main = "Histogram of Calories for Various Foods",  
     xlab = "Calories (kcal)")
```

Histogram of Calories for Various Foods



```
plot(4*I(nutrition$Protein)+4*I(nutrition$Carbs)+9*I(nutrition$Fat)+2*I(nutrition$Fiber),  
I(nutrition$Calories),  
xlab = "Protein (grams)",  
ylab = "Calories (kcal)",  
main = "Calories vs Protein",  
pch = 20,  
cex = 1,  
col = "darkorange")
```

Calories vs Protein



Exercise 3

```
a = 1:10
b = 10:1
c = rep(1, times = 10)
d = 2 ^ (1:10)
```

```
sum_of_squares<- function(x){
  return(sum(x^2))
}
```

```
sum_of_squares(x=a)
```

```
## [1] 385
```

```
sum_of_squares(x = c(c, d))
```

```
## [1] 1398110
```

```
rms_diff<- function(x,y){
  s=sum((x-y)^2)
  n=max(length(x),length(y))
  return(sqrt(s/n))
}
```

```
rms_diff(x = a, y = b)
```

```
## [1] 5.744563
```

```
rms_diff(x = d, y = c)
```

```
## [1] 373.3655
```

```
rms_diff(x = d, y = 1)
```

```
## [1] 373.3655
```

```
rms_diff(x = a, y = 0) ^ 2 * length(a)
```

```
## [1] 385
```