Statistical Methods - Assignment 3

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Theoretical exercises

4.1

```
// todo
```

4.2

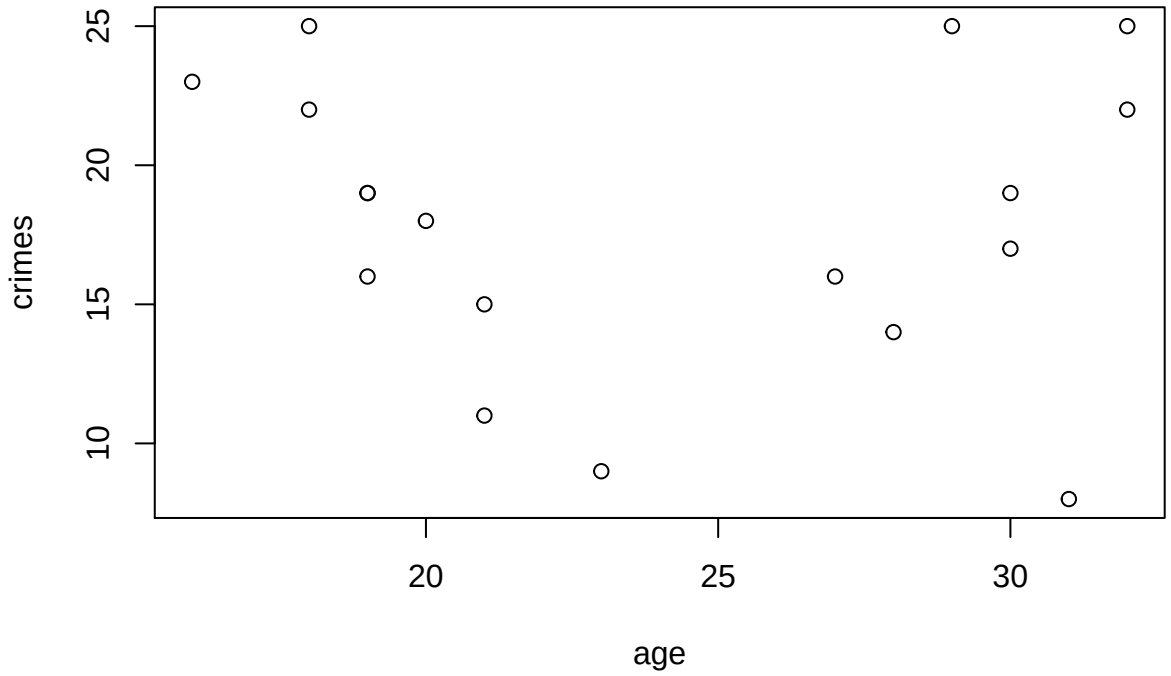
```
// todo
```

R-Exercises

4.3

a)

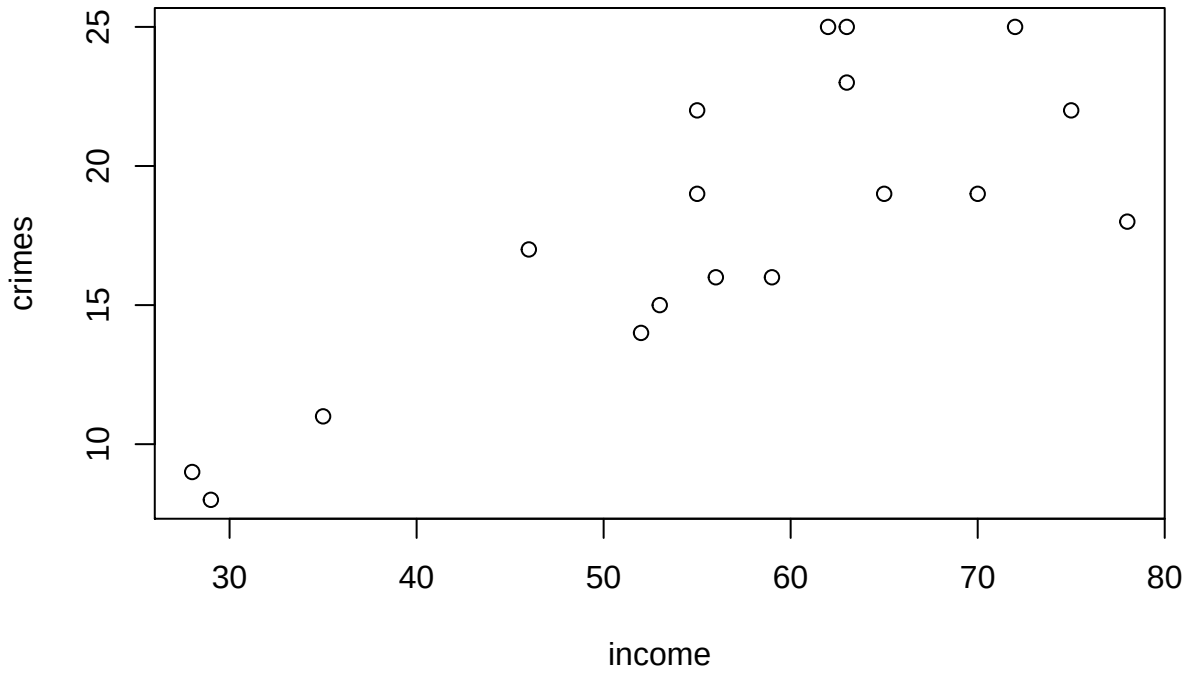
```
##  [1] 16 18 18 19 19 19 20 21 21 23 27 28 29 30 30 31 32 32
##  [1] 23 25 22 16 19 19 18 11 15  9 16 14 25 17 19  8 22 25
```




```
## [1] "Correlation: ( age , crimes ) -0.0709530096415513"
## [1] "Linear correlation seems unlikely"
```

b)

```
##  [1] 63 72 75 59 65 70 78 35 53 28 56 52 63 46 55 29 55 62
##  [1] 23 25 22 16 19 19 18 11 15  9 16 14 25 17 19  8 22 25
```




```
## [1] "Correlation: ( income , crimes ) 0.791557270082001"
## [1] "Linear correlation seems plausible"
```

c)

d)

e)

4.4

a)

b)

4.5

a)

b)

c)

Appendix

4.3.a

```
dat=matrix(as.numeric(as.matrix(read.table("crimemale.txt"))[2:19,]),ncol=3)
age=dat[,1]
income=dat[,2]
crimes=dat[,3]

investigate_linear_correlation <- function(v1,v2,xlab,ylab){
  print(v1)
  print(v2)
  plot(v1,v2,xlab=xlab,ylab=ylab)
  corr=cor(v1,v2)
  print(paste("Correlation: (",xlab,",",ylab,")",corr))
  corr=abs(corr)

  # TODO adjust these thresholds based on statistical standards (if they exist)

  if (corr<0.7) w ="unlikely"
  else if (corr<0.8) w = "plausible"
  else w="likely"
  print(paste("Linear correlation seems",w))
}

investigate_linear_correlation(age,crimes,"age","crimes")
```

4.3.b

```
investigate_linear_correlation(income,crimes,"income","crimes")
```

4.3.c

4.3.d

4.3.e

4.4.a

4.4.b

4.5.a

4.5.b

4.5.c