**Advanced Statistical Methods using R**

1. **Descriptive Statistics: (lungdata)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **lungcap** | **age** | **height** | **smoke** | **gender** | **caesarean** |
| 6.475 | 6 | 62.1 | no | male | no |
| 10.125 | 18 | 74.7 | yes | female | no |
| 9.55 | 16 | 69.7 | no | female | yes |
| 11.125 | 14 | 71 | no | male | no |
| 4.8 | 5 | 56.9 | no | male | no |
| 6.225 | 11 | 58.7 | no | female | no |
| 4.95 | 8 | 63.3 | no | male | yes |
| 5.667 | 12 | 53.6 | no | male | no |
| 14.145 | 14 | 67.4 | yes | female | no |
| 13.234 | 10 | 56.5 | yes | female | no |
| 13.25 | 6 | 72.5 | no | female | yes |
| 12.95 | 8 | 71 | no | female | yes |
| 13.56 | 15 | 65.4 | yes | male | yes |
| 23.22 | 19 | 54.9 | no | male | no |
| 14.234 | 15 | 56.7 | no | male | no |
| 12.7 | 24 | 56.8 | yes | male | no |
| 13.921 | 23 | 78.8 | no | male | yes |
| 13.342 | 12 | 67.7 | no | female | yes |
| 9.467 | 34 | 45.9 | yes | feamle | no |
| 8.567 | 5 | 50.9 | yes | female | yes |

> attach(lungdata)

> names(lungdata)

[1] "lungcap" "age" "height" "smoke" "gender" "caesarean"

> #ask for summeries for the lungdata

> summary(lungdata)

> > summary(lungcap)

> help(mean)

> ?mean

> table(smoke)

> table(smoke)/20(no of observations)

> table(smoke,gender)

> mean(lungcap)

> median(lungcap)

> var(lungcap)

> sd(lungcap)

> sqrt(var(lungcap))

> sd(lungcap)^2

> min(lungcap)

> max(lungcap)

> range(lungcap)

> quantile(lungcap,probs=0.90)

> quantile(lungcap,probs=c(0.20,0.40,0.90,1))

> sum(lungcap)

> sum(lungcap)/20

> cor(lungcap,age)

> cor(lungcap,age,method="pearson")

> cor(lungcap,age,method="spearman")

> var(lungcap,age)

**Skewness and Kurtosis**

**# packages to be installed (moments,normtest and goftest)**

> library(moments)

>Skweness(lungcap)

>kurtosis(lungcap)

> library(normtest)

>**Shapiro.test(lungcap)**

**>ad.test(lungcap)**

**>Lillie.test(lungcap)**

> install.packages("goftest")

**Normality Test**

> qqnorm(lungcap)

> qqline(lungcap,col=2,lwd=3)