Bootstrap Sampling

SXX-XXX

2022-11-11

```
library(ggplot2)
```

Body fat percentage of 92 individuals are given below.

```
data <- c(25.3,29.3,37.7,32.8,24.6,26.5,21.2,28.4,24,28.7,37.4,30.7,36.7,28.2,26.4,37.1,
          31.1,43.1,34.1,26.7,30.9,30,22.1,24.4,22.5,24.9,18.2,27.3,25.9,28.3,18.7,22.4,
          23.6,26.8,17.8,27.4,16.8,26.1,20.8,22.7,20.2,20.3,31.9,22.9,25.3,17.3,41,25.8,
          36.6,27.8,39.4,36.4,46.8,40.5,43,39.5,39.4,24.8,35,25.3,42.5,27.8,35.8,39.2,
          38.3,34.1,39.9,32.5,29.9,32,23,28.5,26.4,33.9,29.4,29.4,21,22.4,25.3,20.2,22.5,
          23.4,29.5,21.9,19.2,28.6,23.4,23.2,18.1,31.4,22.9,25.6)
```

1. Draw a histogram of bodyfat data
2. Check the normality of observations
3. Obtain the sampling distribution of average body fat percentage
4. Obtain a estimate for average body fat of an individual using Bootstrap sampling
5. Draw a histogram of bootstrap estimates and sampling distribution of average body fat of an individual
6. Estimate the median body fat percentage of an individual
7. Obtain the 95% confidence interval for median body fat percentage of an individual