

Foundations of R Software

Lecture 51

Graphics

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Histogram

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Histogram:

Histogram is based on the idea to categorize the data into different groups and plot the bars for each category with height.

Data is continuous.

The area of the bars (= height X width) is proportional to the frequency (or relative frequency).

So the widths of the bars need not necessarily to be the same

Histogram:

`hist(x) # show absolute frequencies`

`hist(x, freq=F) # show relative frequencies`

Histogram:

```
hist(x, main, col, xlab, xlim, ylim)
```

x : Vector containing numeric values used in histogram.

main : Title of the chart.

col : Set colour of the bars.

xlab : Description of x-axis.

xlim : Specifies the range of values on x-axis.

ylim : Specifies the range of values on y-axis.

See `help("hist")` for more details

Histogram:

Example

Height of 50 persons in centimetres are recorded as follow

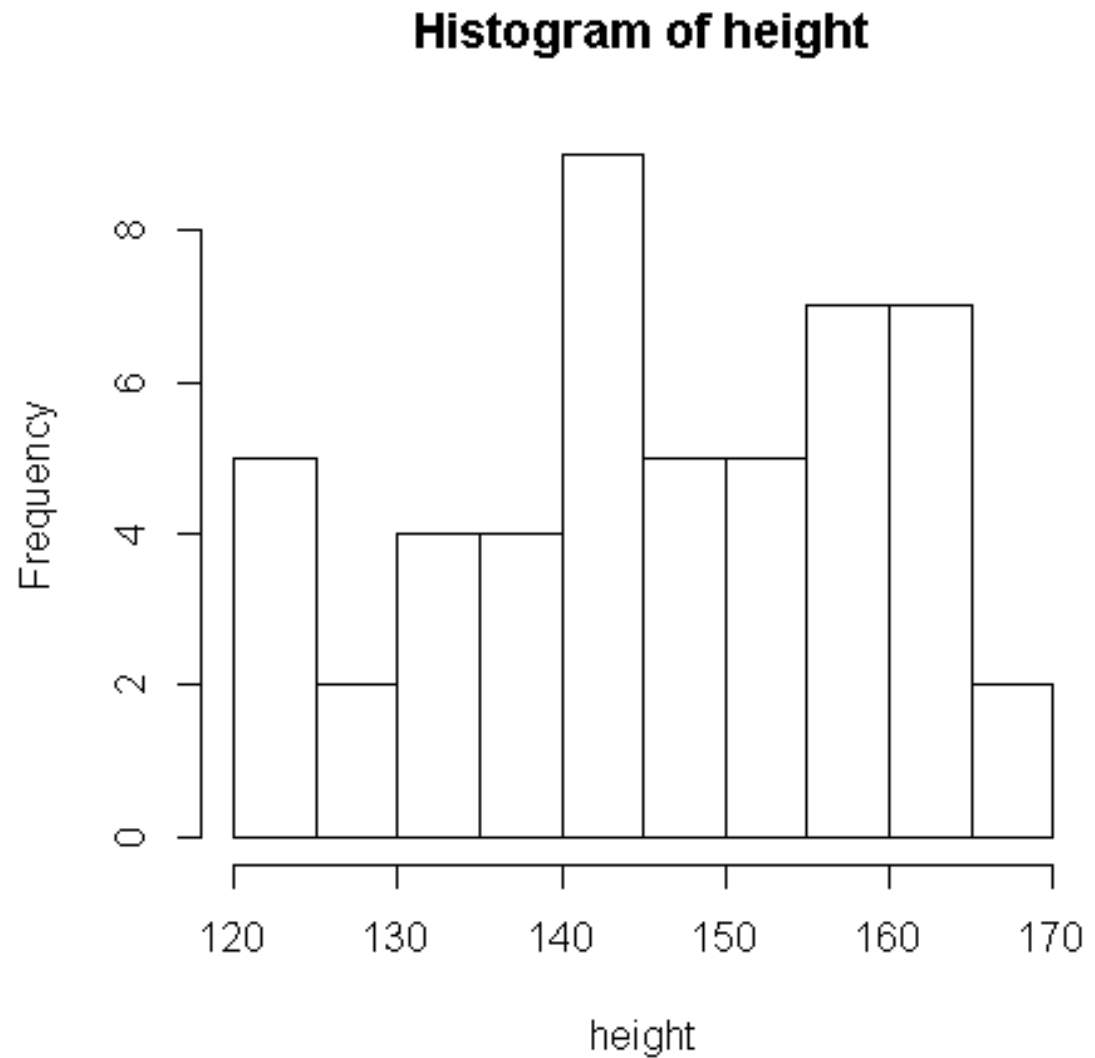
166,125,130,142,147,159,159,147,165,156,149,164,137,166,135,142,
133,136,127,143,165,121,142,148,158,146,154,157,124,125,158,159,
164,143,154,152,141,164,131,152,152,161,143,143,139,131,125,145,
140,163

```
height = c(166, 125, 130, 142, 147, 159, 159, 147,  
165, 156, 149, 164, 137, 166, 135, 142, 133, 136, 127, 143,  
165, 121, 142, 148, 158, 146, 154, 157, 124, 125, 158, 159,  
164, 143, 154, 152, 141, 164, 131, 152, 152, 161, 143, 143,  
139, 131, 125, 145, 140, 163)
```

Histogram:

Example

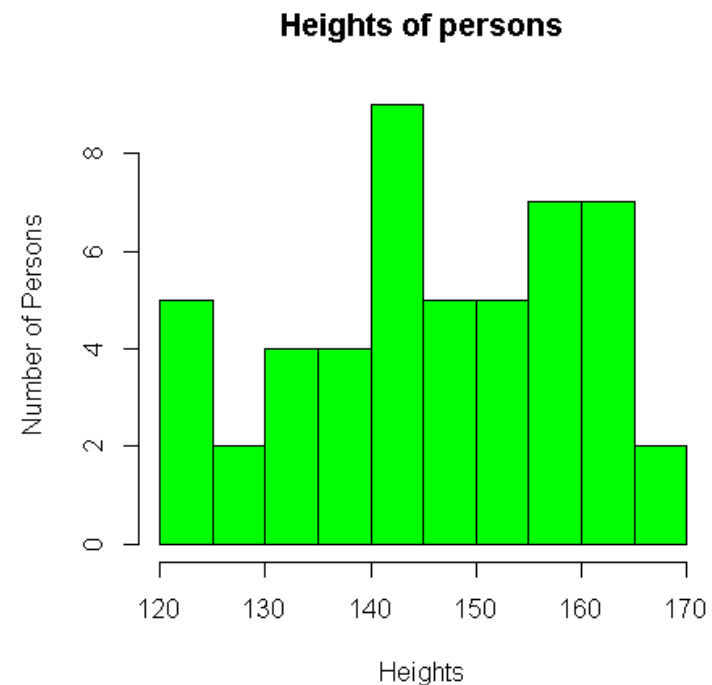
`hist(height)`



Histogram

Example: Adding colour to bars and titles on axis

```
hist(height, main = "Heights of persons", col  
= "green", xlab = "Heights", ylab = "Number  
of Persons")
```

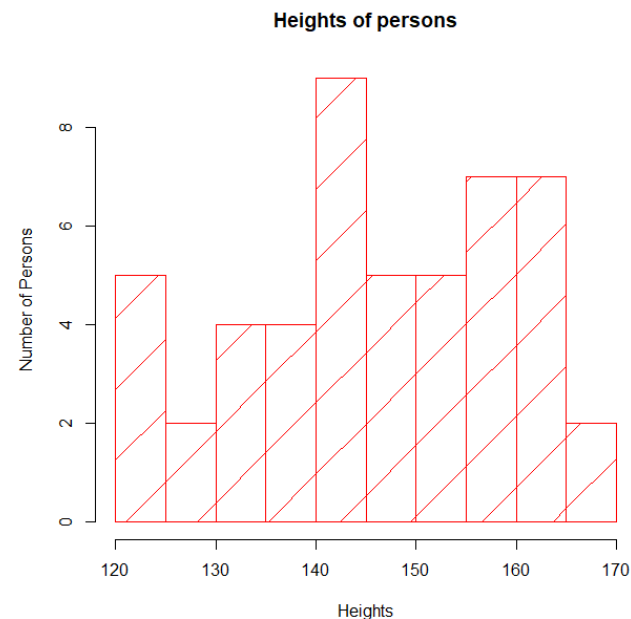


Histogram

Example: Adding density

density : Density of shading lines, in lines per inch. Non-positive values of density also inhibit the drawing of shading lines.

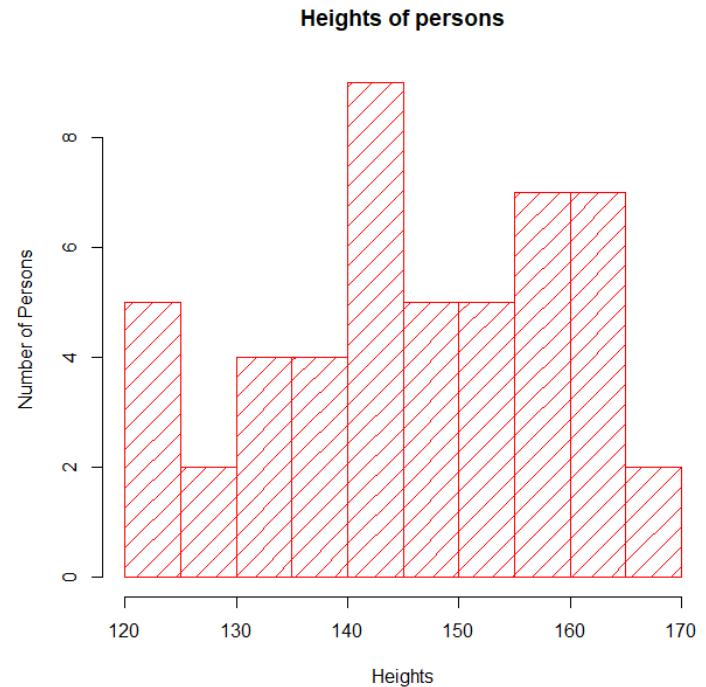
```
hist(height, main = "Heights of persons", col  
= "red", xlab = "Heights", ylab = "Number of  
Persons", density = 2)
```



Histogram

Example: Increasing density

```
hist(height, main = "Heights of persons", col  
= "red", xlab = "Heights", ylab = "Number of  
Persons", density = 8)
```



Histogram

Example: Adding angle

angle : the slope of shading lines, given as an angle in degrees (counter-clockwise).

```
hist(height, main = "Heights of persons", col = "red", xlab = "Heights", ylab = "Number of Persons", density = 8, angle=100)
```

