Descriptive Statistics With R Software

Graphics and Plots

::

3D Pie Diagram and Histogram

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3 Dimensional Pie diagram

3 Dimensional (3D) Pie charts visualize the absolute and relative frequencies.

A 3D pie chart is a circular slab partitioned into segments where each of the segments represents a category.

The size of each segment depends upon the relative frequency.

The size of each segment is determined by the angle (frequency X 360^0).

3 dimensional Pie diagram

Usage

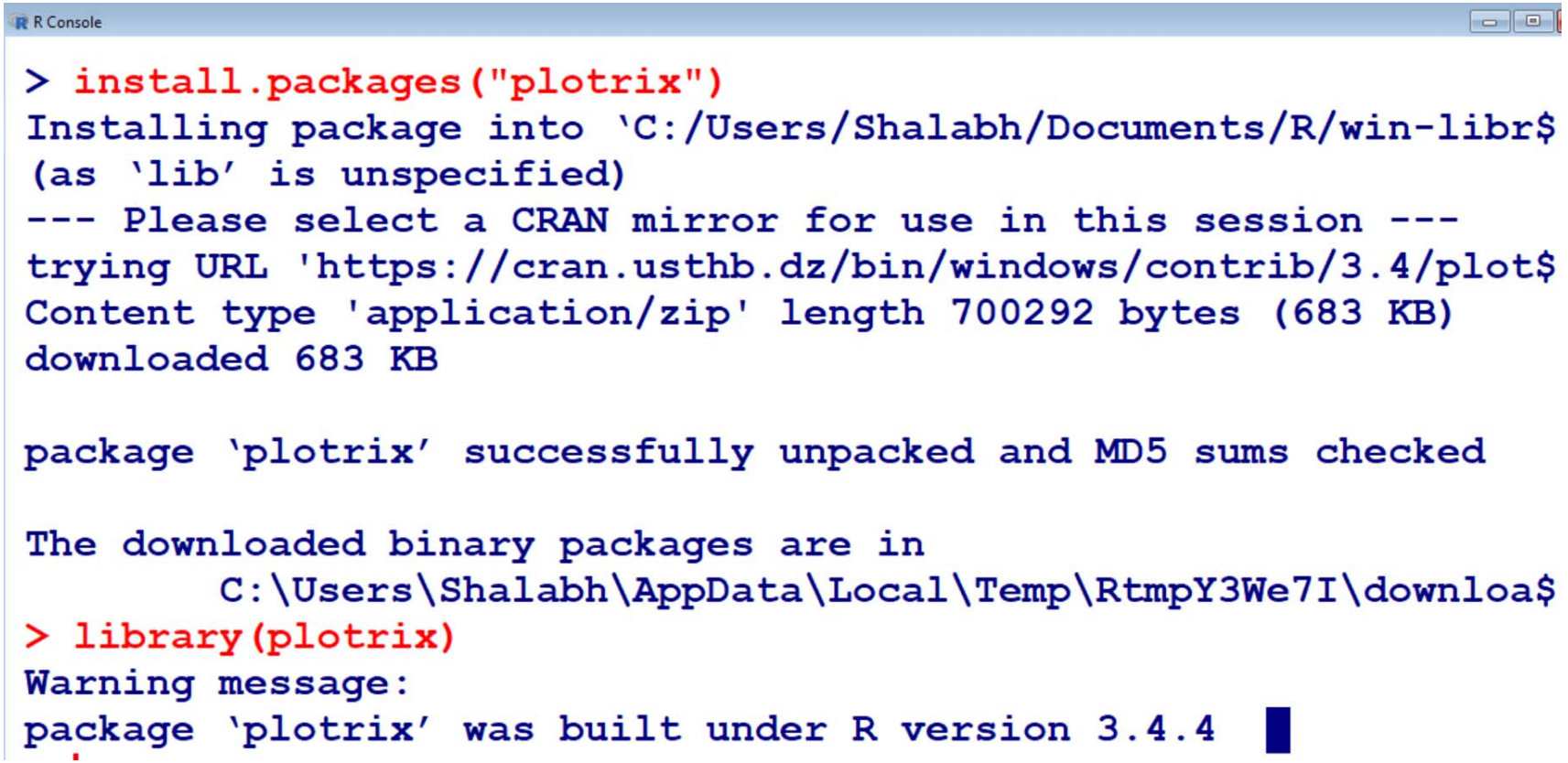
```
pie3d(x, labels = names(x), …)
```

Need the `plotrix` **library. So we need to install the package using the commands.**

```
install.packages("plotrix")
```

```
library(plotrix)
```

3 dimensional Pie diagram



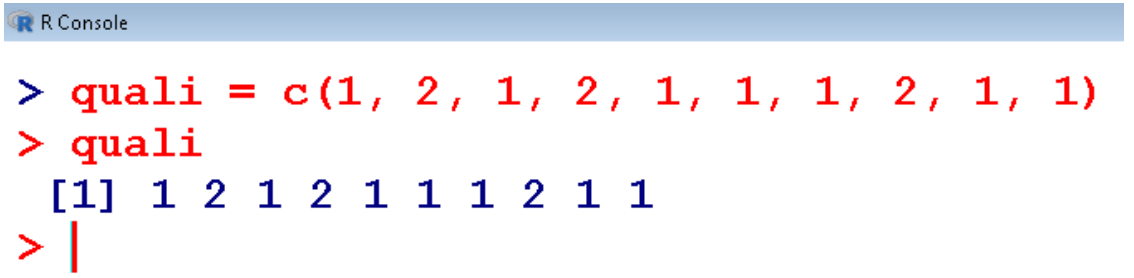
3 dimensional Pie diagram

Example :

Code of qualification of 10 persons by using, say 1 for graduate (G) and 2 for non-graduate (N).

G,	N,	G,	N,	G,	G,	G,	N,	G,	G
1,	2,	1,	2,	1,	1,	1,	2,	1,	1

```
> quali = c(1, 2, 1, 2, 1, 1, 1, 2, 1, 1)
> quali
 [1] 1 2 1 2 1 1 1 2 1 1
```



3 dimensional Pie diagram

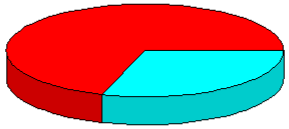
Example :

```
> quali = c(1, 2, 1, 2, 1, 1, 1, 2, 1, 1)
```

R Console

```
> quali = c(1, 2, 1, 2, 1, 1, 1, 2, 1, 1)
> table(quali)
quali
1 2
7 3
```

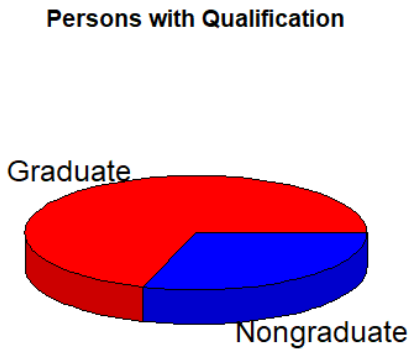
```
> pie3D(table(quali))
```



3 dimensional Pie diagram

Example : Adding labels and colours

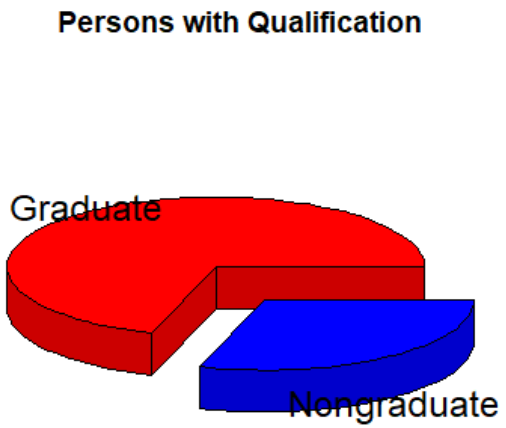
```
> pie3D(table(quali), labels = c("Graduate",
"Nongraduate"), main = "Persons with
Qualification", col=c("red", "blue"))
```



3 dimensional Pie diagram

Example : Use of explode

```
> pie3D(table(quali), explode = 0.2, labels =
c("Graduate", "Nongraduate"), main = "Persons
with Qualification", col=c("red", "blue"))
```



Pie diagram

Example

There are three salespersons in a shop. They are denoted as 1, 2 and 3. Which of the salesperson serves which of the first 100 customers is recorded as follows:

1,1,2,1,2,3,2,2,3,3,3,1,2,3,2,2,3,1,1,3,3,1,2,1,3,3,3,2,2,2,2,1,2,2,1,1,

1,3,2,2,1,2,3,2,2,1,2,3,3,2,1,2,2,3,1,1,2,1,2,3,2,3,2,2,3,1,2,3,3,3,2,1,

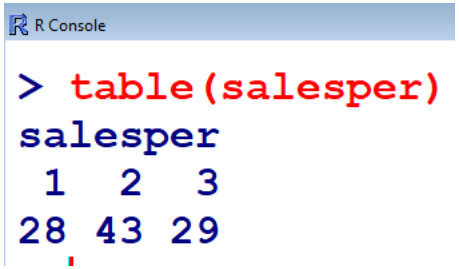
1,1,2,1,1,2,1,2,3,3,1,2,3,3,2,1,2,3,2,1,3,2,2,2,2,3,2,2

```
salesper = c(1,1,2,1,2,3,2,2,3,3,3,1,2,3,2,2,3,
1,1,3,3,1,2,1,3,3,3,2,2,2,2,1,2,2,1,1,1,3,2,2,
1,2,3,2,2,1,2,3,3,2,1,2,2,3,1,1,2,1,2,3,2,3,2,
2,3,1,2,3,3,3,2,1,1,1,2,1,1,2,1,2,3,3,1,2,3,3,
2,1,2,3,2,1,3,2,2,2,2,3,2,2)
```

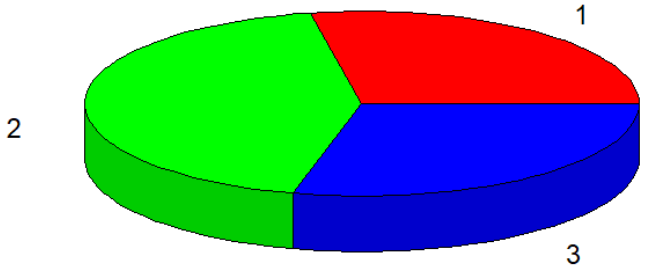
3 dimensional Pie diagram

Example :

```
> table(salesper)
salesper
 1  2  3
28 43 29
```



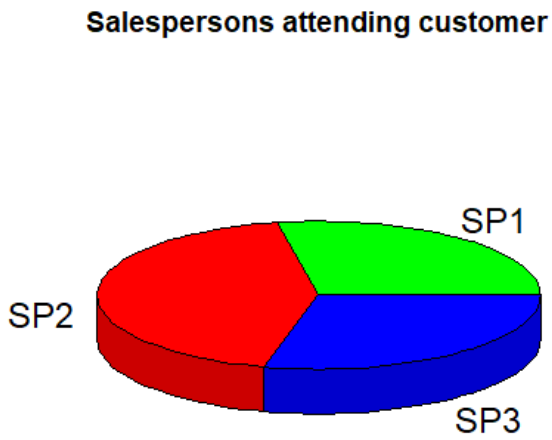

```
> pie3D(table(salesper))
```



3 dimensional Pie diagram

Example : Adding labels and colours

```
> pie3D(table(salesper), labels = c("SP1",
"SP2", "SP3"), main = "Salespersons attending
customer", col=c("green", "red", "blue"))
```



3 dimensional Pie diagram

Example : Use of explode

```
> pie3D(table(salesper), explode = 0.3,
labels = c("SP1", "SP2", "SP3"), main =
"Salespersons attending customer",
col=c("green", "red", "blue"))
```

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

Frequency distribution

Class	Frequency	Relative frequency
$a_0 - a_1$	f_1	f_1/n
$a_1 - a_2$	f_2	f_2/n
…	…	…
$a_{k-2} - a_{k-1}$	f_{k-1}	f_{k-1}/n
$a_{k-1} - a_k$	f_k	f_k/n

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 centimeters 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,

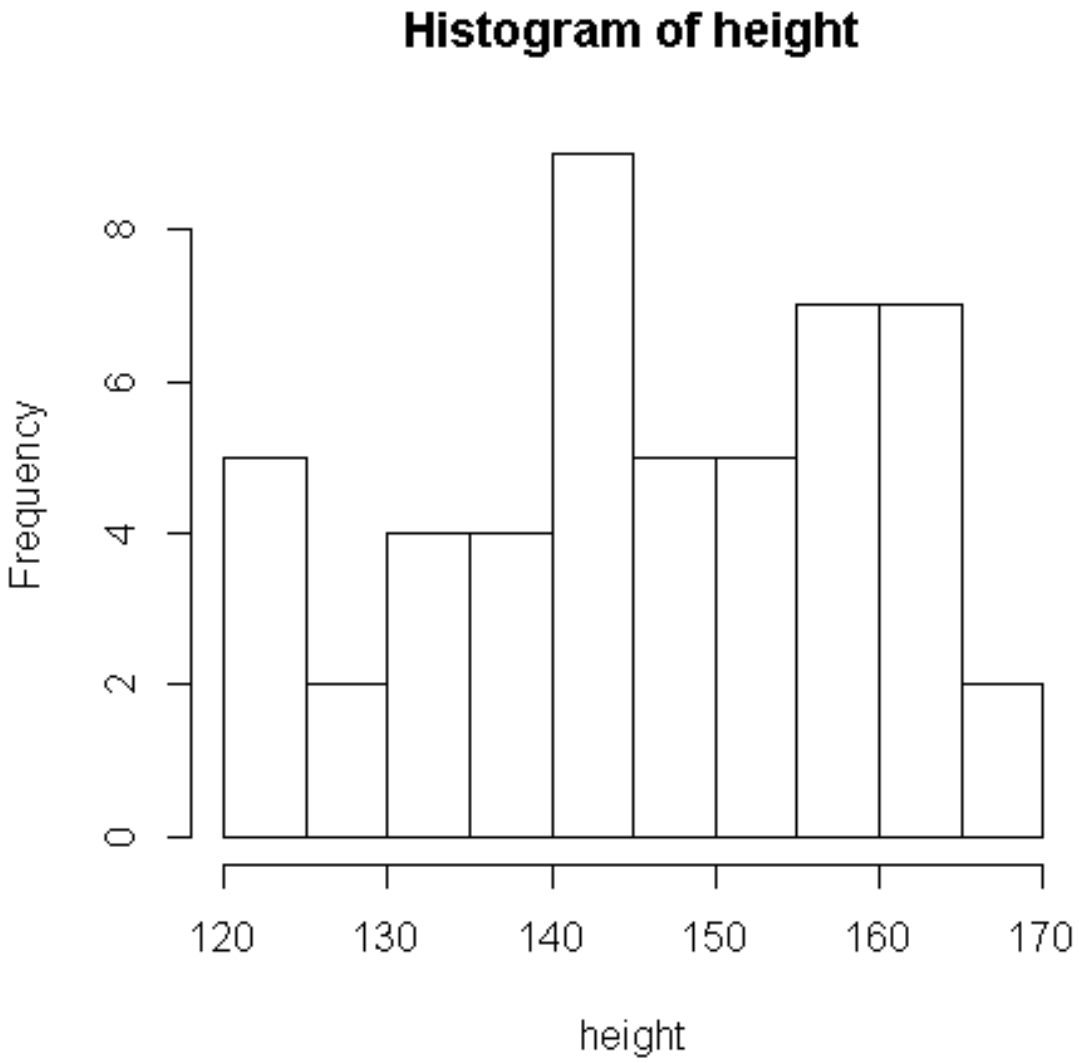
140,163

```
> 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 labelling

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