

PRACTICAL ASSIGNMENT-5

Aim:- Write R script to make Bar chart(), Pie chart() and Box plot (titanic datasets) on given datasets.

Theory:-

R-Bar charts: A bar chart is a pictorial representation of data that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. In other words, it is the pictorial representation of dataset. These datasets contain the numerical values of dataset variables that represent the length or height.

R uses the function barplot() to create bar charts. Here, both vertical and Horizontal bars can be drawn.

Syntax:

```
barplot(H, xlab, ylab, main, names.arg, col)
```

Parameters:-

• H :- This parameter is a vector or matrix containing numeric values which are used in bar chart.

• xLab :- This parameter is the label for x axis in bar chart.

• ylab :- This parameter is the label for y axis in bar chart.

• main :- This parameter is the title of the bar chart.

• names.arg :- This parameter is a vector of names appearing.

under each bar in bar chart.

(1) :col :- This parameter is used to give colors to the bars in the graph. (for right bar)

Creating a Simple Bar Chart:-

Approach :- In order to create a Bar chart:

1. Take all parameters which are required to make simple bar chart in plot function changing both axis with barplot (A, horiz = TRUE)
2. Now make it horizontal new parameter is added

barplot (A, horiz = TRUE)

Approach :- Title and color in the Bar chart

Label, title and colors are some properties in the bar chart and which can be added to the bar by adding and passing an argument.

Approach :-

1. To add the title in bar chart barplot (A, main = title_name)
2. X-axis and Y-axis can be labelled in bar chart. To add the label in bar chart.
barplot (A, xlab = x_label_name, ylab = y_label_name)
3. To add the color in the bar chart.
barplot (A, col = color_name)

Creating Stacked and Grouped Bar Chart :

The bar chart can be represented in two form group of bars and stacked.

Approach :-

1. Take a vector value & make it matrix M which to be grouped or stacked. Making of matrix can be done by

$M \leftarrow \text{matrix}(\text{c}(\text{values...}), \text{nrow} = \text{no. of rows}, \text{ncol} = \text{no. of columns},$
by row = TRUE)

2. To display the box explicitly we can use the beside parameter
`boxplot(beside = TRUE)`

R-Pie charts:-
A pie chart is a circular statistical graphic, which is divided into slices to illustrate numerical proportions. It depicts a special chart that uses "pie slices", where each sector shows the relative sizes of data. A circular chart cuts in a form of radii into segments describing relative frequencies or magnitude also known as a circle graph.

R programming language uses the function `pie()` to create pie charts. It takes positive numbers as a vector input.

Syntax:- `pie(n, labels, radius, main, col, clockwise)`

Parameters:-

- n :- This parameter is a vector that contains the numeric values which are used in the pie chart.

- labels :- This parameter gives the description to the slices in pie chart.

- radius :- This parameter is used to indicate the radius of the circle of the pie chart (value between -1 and +1)

- main :- This parameter represents title of the piechart.

- clockwise :- This parameter contains the logical values which indicates whether the slices are drawn clockwise or in anticlockwise direction.

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col :- This parameter give colors to the pie in the graph.

Creating a simple pie chart :

To create a simple pie chart:

- By using the above parameters, we can draw a pie chart.
- It can be described by giving simple labels.

Pie chart including the title and colors :

To create color and title pie chart.

- Take all parameters which are required to make pie chart by giving a title to the chart and add labels.
- We can add more features by adding more parameters with more colors to the points.

Slice percentage & chart legend:

To create chart legend and slice percentage, we can plot by doing the below methods.

There are two more properties of the pie chart:

- slice percentage
- chart legend

We can show the chart in the form of percentages as well as add legends.

3D Pie Chart:

Here we are going to create a 3D Piechart using plotrix package & then we will use pie3D() function to plot 3D plot.

R- Boxplots:

A box graph is a chart that is used to display information in the form of distribution by drawing boxplots, for each of them. This distribution of data based on five sets.

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(minimum, first quartile, median, third quartile, maximum).
Boxplots are created in R by using the boxplot () function.

Syntax :- boxplot (n, data . notch, varwidth, names, main)

Parameters :-

- n :- This parameter sets as a vector or a formula.
- data :- This parameter sets the data frame.
- notch :- This parameter is the label for horizontal axis.
- varwidth :- This parameter is a logical value, set as true to draw width of the box proportionate to the sample size.
- main :- This parameter is the title of the chart.
- names :- This parameter are the group labels that will be showed under each boxplot.