

# **Exploratory Statistical Data Analysis With R Software (ESDAR)**

**Swayam Prabha**

## **Lecture 14**

### **Subdivided Bar Plots and Pie Diagrams**

**Shalabh**

**Department of Mathematics and Statistics**

**Indian Institute of Technology Kanpur**

Slides can be downloaded from  
<http://home.iitk.ac.in/~shalab/sp>



## **Subdivided or component bar diagram**

**Subdivided or component bar diagram divides the total magnitude of variables into various parts.**

## Subdivided or component bar diagram

### Example

The data on the number of customers visiting 3 shops during 10-11 AM on 4 consecutive days is as follows:

No. of customers	Shop 1	Shop 2	Shop 3
Day 1	2	20	30
Day 2	26	53	40
Day 3	42	15	25
Day 4	30	75	100

```
cust = matrix(nrow=4, ncol=3, data =c(2,20,30,26,53,40,42,15,25,30,75,100), byrow = T)
```

```
> cust
```

```
      [,1] [,2] [,3]
[1,]    2  20  30
[2,]   26  53  40
[3,]   42  15  25
[4,]   30  75 100
```

## Subdivided or component bar diagram

### Usage

```
barplot(variable in matrix format)
```

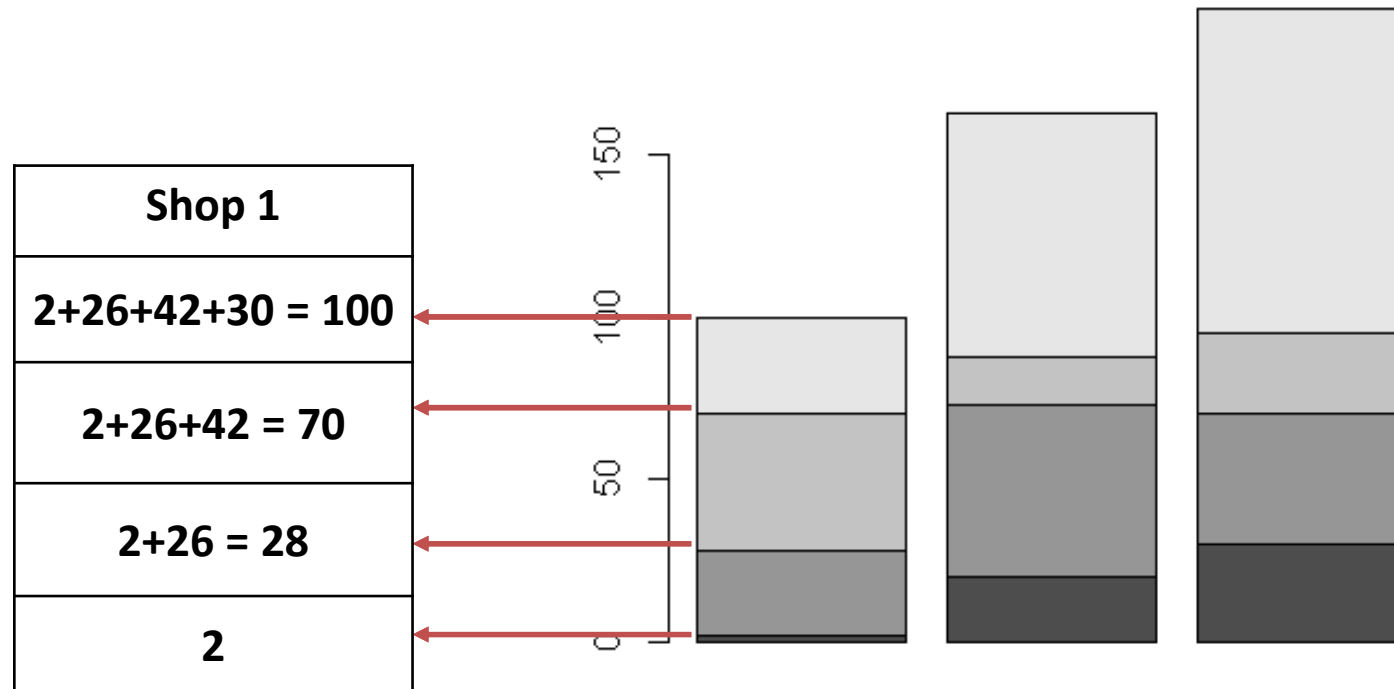
will create a subdivided or component bar diagram with columns of matrix as bars.

Sections inside bars indicate the values in cumulative form.

# Subdivided or component bar diagram

> `barplot(cust)`

No. of customers	Shop 1	Shop 2	Shop 3
Day 1	2	20	30
Day 2	26	53	40
Day 3	42	15	25
Day 4	30	75	100

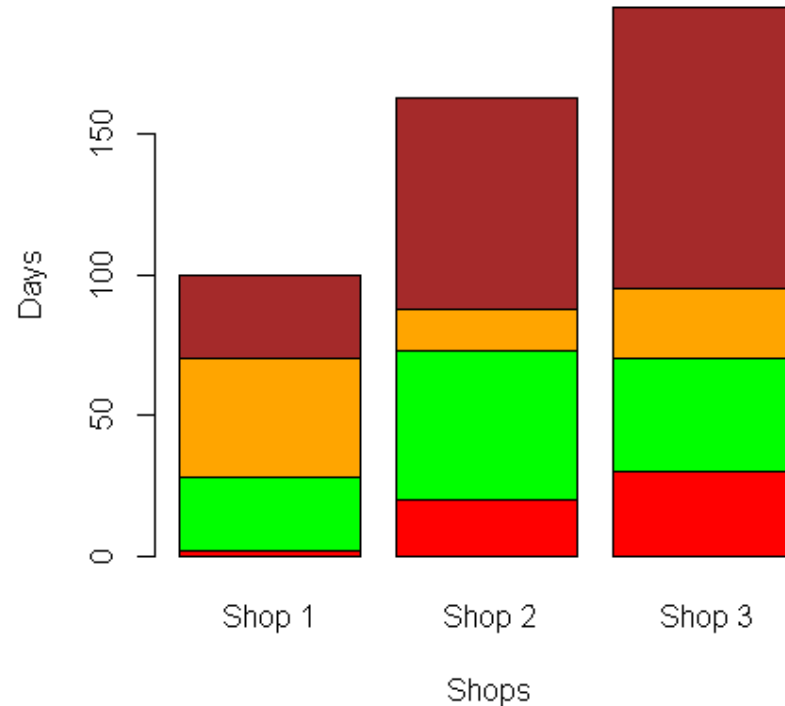


# Subdivided or component bar diagram

Adding labels and colours

```
> barplot(cust, names.arg=c("Shop 1", " Shop  
2", " Shop 3"), xlab = " Shops", ylab = "Days",  
col= c("red","green","orange","brown"))
```

No. of customers	Shop 1	Shop 2	Shop 3
Day 1	2	20	30
Day 2	26	53	40
Day 3	42	15	25
Day 4	30	75	100



## Subdivided or component bar diagram

### Example (Shopwise bars)

The data on the number of customers visiting 3 shops during 10-11 AM on 4 consecutive days is as follows:

No. of customers	Shop 1	Shop 2	Shop 3
Day 1	2	20	30
Day 2	26	53	40
Day 3	42	15	25
Day 4	30	75	100

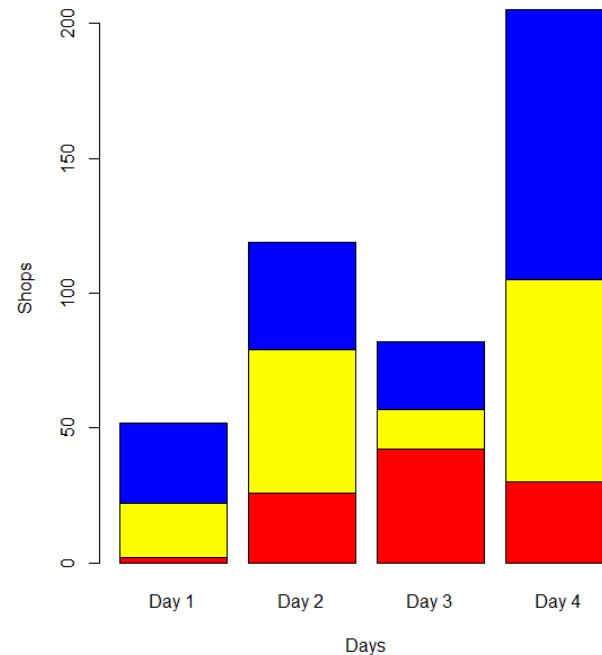
```
cust1=matrix(nrow=3, ncol=4,  
data=c(2,20,30,26,53,40,42,15,25,30,75,100))
```

```
> cust1  
      [,1] [,2] [,3] [,4]  
[1,]    2  26  42  30  
[2,]   20  53  15  75  
[3,]   30  40  25 100
```

# Subdivided or component bar diagram

Adding labels and colours

```
> barplot(cust1, names.arg=c("Day 1", "Day 2",  
"Day 3", "Day 4"), xlab = "Days", ylab =  
"Shops", col=c("red", "yellow", "blue"))
```





## **Pie diagram**

**Pie charts visualize the absolute and relative frequencies.**

**A pie chart is a circle 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  
(relative frequency  $\times$   $360^0$ ).**

## Pie diagram

### Usage

```
pie(x, labels = names(x), ...)
```

```
pie(x, labels, radius, main, col, clockwise)
```

### Details

**x** : Vector containing the numeric values.

**labels** : Gives description to the slices.

**radius** : Indicates the radius of the circle of the pie chart.

(Assume values between -1 and +1).

**main** : Title of the chart.

**col** : Provides colours to the slices.

**clockwise** : Used to indicate if the slices are drawn clockwise

or anti clockwise by using logical **FALSE** or **TRUE**.<sup>10</sup>

## 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
```

R Console

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

```
> quali
```

```
[1] 1 2 1 2 1 1 1 2 1 1
```

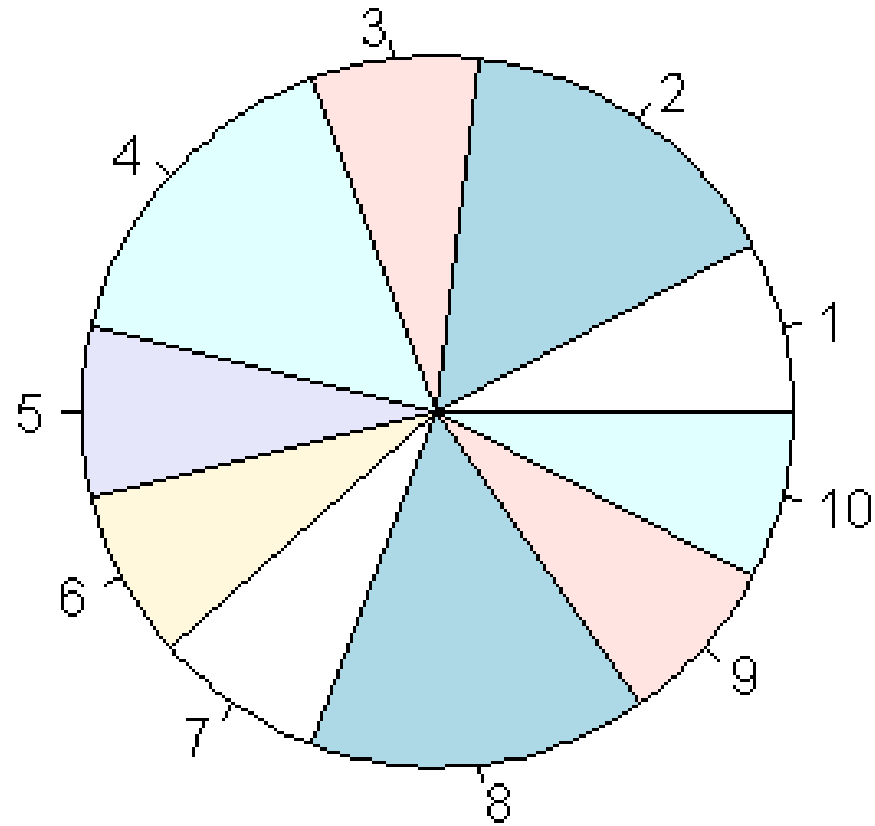
```
> |
```

# Pie diagram

## Example

```
> pie(quali)
```

**Do you want this?**



# Pie diagram

## Example

```
> table(quali)
```

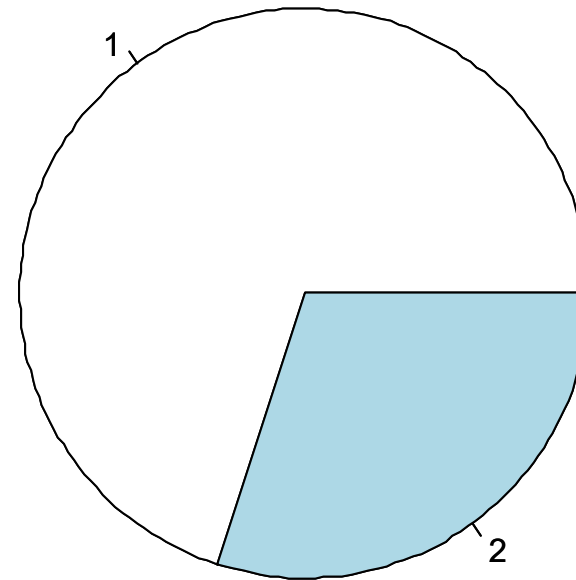
```
quali
```

```
1 2
```

```
7 3
```

```
> pie(table(quali))
```

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

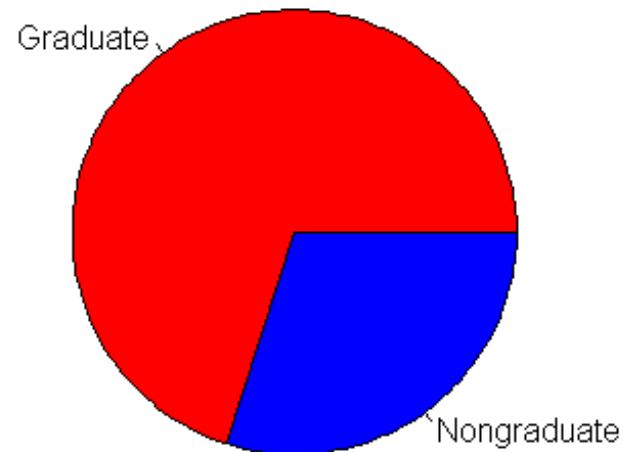


## Pie diagram

**Example :** Adding labels and colours

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

**Persons with Qualification**



## Pie diagram

### Example

There are three salespersons in a shop. They are denoted as 1, 2 and 3. The salespersons who served 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)
```

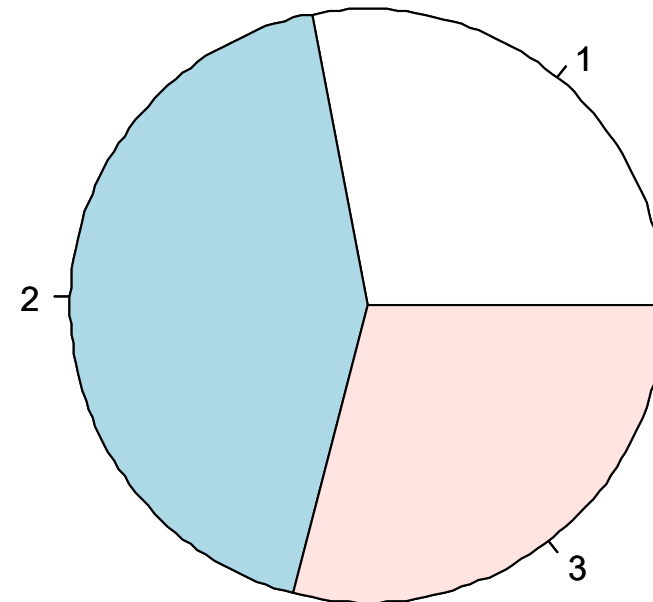
# Pie diagram

## Example

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

```
> pie(table(salesper))
```

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





## Pie diagram

**Example :** Adding labels, headings and colours

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

