

## Frequency Distribution :-

When the data is quite lengthy, we generally represent it in the form of frequency distribution. When collecting & summarizing large amount of data, it is helpful to record the data in the form of a frequency table.

Such a table involves listing of all the observed values of a variable which is being studied, & for how many times each value is being observed. The distribution of total no of observation among the various categories is known as frequency distribution.

## 4 Types :-

- i) Quantitative & Qualitative Distribution
- ii) Grouped frequency
- iii) Relative
- iv) Cumulative

### i) Quantitative & Qualitative Distribution.

shows quality	$\left\{ \begin{array}{c c} TT & 750 \\ \hline tt & 250 \end{array} \right.$	shows quantity.
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It denotes both the quantity & quality of data.

Qualitative characters are used & their quantities are expressed in numbers.

### ii) Grouped frequency distribution :-

When the data is very lengthy & the frequency distribution table is very large, then we cast the data into a frequency table by grouping them. This is known as grouped frequency distribution.

It can be done by 2 methods

- i) Exclusive method &
- ii) Inclusive

## Exclusive Method

lower limit	$0-5$	5
	$5-10$	8
	$10-15$	6
		upper limit.

## Inclusive Method

$1-5$	4
$6-10$	3
$11-15$	7

1.) The limits overlap each other. The upper limit of 1 class interval is the lower limit of the next class interval.

We are excluding the upper limit therefore the name.

2.) As compared to inclusive method, it is a better choice as we can include decimal numbers also.

It can be used for continuous data.

1.) In this case there is no overlapping of limits & the upper limit of 1 class is different from the lower limit of the next class. Both upper & lower limit of class interval are included in the same class &  $\therefore$  called inclusive method.

2.) Generally used for whole nos or discrete values & <sup>all</sup> decimals can't be included.

### iii) Relative frequency distribution :-

In this case, frequency of each class is expressed as % terms. Also known as variable frequencies.

Relative " is the class frequency expressed as rate of total frequency.

$$\text{Relative Frequency} = \frac{\text{Class frequency}}{\text{Total}}$$

Relative frequencies are used in % subdivided Bar diagrams & Pie charts. They are also used to compare 2 or more frequency distribution table.

class interval	Frequency (No. of students)	Relative frequency %
10-15	5	$\frac{5}{25} \times 100 = 20\%$
15-20	8	$\frac{8}{25} \times 100 = 32\%$
20-25	9	$\frac{9}{25} \times 100 = 36\%$
25-30	3	$\frac{3}{25} \times 100 = 12\%$
$\Sigma f = 25$		

### iv) Cumulative Frequency Distribution :-

Marks obtained      No. of students.

30 - 40	8
40 - 50	12
50 - 60	20
60 - 70	25
70 - 80	18
80 - 90	17

$$\Sigma f = 100$$

Cumulative frequency of a class is the sum of all the frequencies upto & including that class.

This means cumulative frequency of a particular class is obtained by adding the frequency of that class with all the frequencies of the previous classes.

Cumulative frequencies are of 2 types.

Less than series (Made on Basis of upper limit)		More than series (Made on the Basis of lower limit)	
Marks	Cumulative frequency	Marks	Cumulative frequency
Less than 40	8	More than 30	100
" " 50	20 (8+12)	" " 40	92 (100-8)
" " 60	40 (8+12+20)	" " 50	80 (92-12)
" " 70	65 (40+25)	" " 60	60
" " 80	83 (65+18)	" " 70	55
" " 90	100 (83+17)	" " 80	17