

Different types of data & what changes needed

1. Discontinuous Data

eg

Marks	10-14	15-19	20-24	25-29
no of student (f)	4	6	10	5

→ indicates not continuous data

Step 1: lower limit of 2nd interval = 15
 upper " 1st " = 14

Step 2: Take difference: $15 - 14 = 1$

Step 3: Divide difference by 2 i.e. $\frac{1}{2} = 0.5$

Step 4: subtract 0.5 in lower limit of each interval
 & add 0.5 in upper limit of each interval

So changed data are

Marks	9.5-14.5	14.5-19.5	19.5-24.5	24.5-29.5
No of stu. (f)	4	6	10	5

21. Type of cumulative frequency (C.f.)

(2)

1. Less than c.f. : It is obtained by adding successively the frequencies of all the previous classes, including the frequency of the class.

2. greater than c.f. : (More than c.f.) :
It is obtained by adding successively the frequencies of all the succeeding classes, including the frequency of the class.

eg: Construct less than & more than C.f. of following data

Income Interval	No of families	Less than C.f	greater than C.f.
0-500	50	50	50+80+40+25+15+10+5 = 250
500-1000	80	50+80=130	80+40+25+15+10+5 = 200
1000-1500	40	130+40=170	120
1500-2000	25	170+25=195	80
2000-2500	25	195+25=220	55
2500-3000	15	220+15=235	30
3000-4000	10	235+10=245	5
4000-5000	5	245+5=250	5

(addition of all succeeding & 50)

eg convert following data into a more than frequency

weekly wage ($<$ in Rs)	No of workers (f)	weekly wage	No of workers (f)	less than C.F.	$>$ C.F.
< 20	41	0 - 20	41	41	201
< 40	92	20 - 40	$92 - 41 = 51$	92	160
< 60	156	40 - 60 156 - 92	$156 - 92 = 64$	156	109
< 80	194	60 - 80	$194 - 156 = 38$	194	45
< 100	201	80 - 100	$201 - 194 = 7$	201	7

eg

Capital ($<$ in Rs)	f	create class Interval	changed frequency f	less than C.F.	greater than C.F.	
< 5	20	0 - 5	20	20	53	$\rightarrow 20 + \text{all subsequent freq}$
< 10	27	5 - 10	$20 - 27 = 7$	27	33	$\rightarrow 7 + 2 + 9 + 10 + 5$
< 15	29	10 - 15	$27 - 29 = 2$	$27 + 2 = 29$	26	$\rightarrow 2 + 9 + 10 + 5$
< 20	38	15 - 20	$29 - 38 = 9$	38	24	$9 + 10 + 5$
< 25	48	20 - 25	$38 - 48 = 10$	48	15	
< 30	53	25 - 30	$48 - 53 = 5$	53	5	

eg

Marks ($>$)	No of Students	create class Interval	changed freq	greater than C.F.	
> 0	60	0 - 10	$60 - 56 = 4$	60	$\rightarrow \text{addition of all } 60 + \text{ succeeding fr}$
> 10	56	10 - 20	$56 - 40 = 16$	56	$\rightarrow 16 + \text{ succeeding all fr}$
> 20	40	20 - 30	$40 - 20 = 20$	40	
> 30	20	30 - 40	$20 - 10 = 10$	20	
> 40	10	40 - 50	$10 - 3 = 7$	10	
> 50	03	50 - 60	3	3	

Important:

(4)

Note one change in formula of median while working with continuous data of the type more than or greater than.

$$\text{Median} = u - \frac{\frac{N}{2} - \text{C.f.}}{f} \times i$$

where u = upper limit of median class

f = frequency of the median class

i = width of the median class

C.f = C.f of the class succeeding of the median class.

Coefficient of variation: (C.V.)

$$\text{C.V.} = \frac{\text{Std. deviation}}{\text{Mean}} \times 100$$

or

$$\text{CV} = \frac{\sigma}{\bar{X}} \times 100$$

series with less cv is known as more consistent.