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QUESTION A study of yellow fever disease (YFD) was conducted. The study was restricted to patients under the age of 40. One purpose was to compare the distribution of cases by age in group A to that of group B.

GROUP A:

GoI	$f_i$	$x_i$	$f_i x_i$	$(x_i - \bar{x})_A$	$(x_i - \bar{x})_A^2$	$f_i (x_i - \bar{x})_A^2$	
1-5	0	3	0	-14.83	219.9289	0	
6-10	7	8	56	-9.83	96.6289	676.4023	
11-15	10	13	130	-4.83	23.3289	233.289	
16-20	2	18	36	0.17	0.0289	0.0578	
21-25	1	23	23	5.17	26.7289	26.7289	
26-30	5	28	140	10.17	103.4289	517.1445	
31-35	4	33	132	15.17	230.1289	920.5156	
$\Sigma$	29		517			2,374.1381	

ia) mean of Group A  $(\bar{x})_A = \frac{\Sigma f_i x_i}{\Sigma f_i}$

$$\Sigma f_i = 517$$

$$29 = 17.83$$

ib) Standard deviation of Group A =  $\sqrt{\text{Variance}_A} = \sqrt{\frac{\Sigma f_i (x_i - \bar{x})_A^2}{\Sigma f_i - 1}}$

$$= \sqrt{\frac{2,374.1381}{28}} = \sqrt{84.791} = 9.21$$

ii) Coefficient of Variation for Group A =  $S.D.A \times 100$

$$= \frac{9.21}{17.83} \times 100 = 51.65\%$$

## FOR GROUP B

C.I	$f_2$	$x$	$f_2 x$	$(x - \bar{x})_B$	$(x - \bar{x})_B^2$	$f_2 (x - \bar{x})_B^2$
1-5	2	3	6	-17.143	293.88	587.760
6-10	4	8	32	-12.143	147.45	589.80
11-15	7	13	91	-7.143	51.02	357.057
16-20	20	18	360	-2.143	4.59	91.850
21-25	16	23	368	2.857	8.16	130.599
26-30	10	28	280	7.857	61.73	617.324
31-35	4	33	132	12.857	165.30	661.210
$\Sigma$	63		1,269			3035.71

i) Mean of Group B  $(\bar{x})_B = \frac{\Sigma f_2 x}{\Sigma f_2}$

$$\Sigma f_2 = 1,269$$

$$63 = 20.143$$

ii) Standard Deviation of Group B =  $\sqrt{\text{Variance of B}} = \sqrt{\frac{\Sigma f_2 (x - \bar{x})_B^2}{\Sigma f_2 - 1}}$

$$= \sqrt{\frac{3,035.71}{63 - 1}} = \sqrt{48.963}$$

$$= \sqrt{48.963}$$

$$= 6.997$$

iii) Coefficient of Variation for Group B =  $S.D_B \times 100$

$$\text{Mean}_B = 6.997 \times 100$$

$$20.143$$

$$= 34.74\%$$

ii) The group which has less variation is Group B.