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STA 132 Assignment

Cl	Group A (f ₁)	Group B (f ₂)	x	f ₁ (x)	f ₂ (x)	(x - \bar{x}_1) ²	f ₁ (x - \bar{x}_1) ²	(x - \bar{x}_2) ²	f ₂ (x - \bar{x}_2) ²
1-5	0	2	3	0	6	219.93	0	293.78	587.56
6-10	7	4	8	56	32	96.63	676.41	147.38	589.52
11-15	10	7	13	130	91	23.33	233.30	50.98	356.86
16-20	2	20	18	36	360	0.03	0.06	4.58	91.60
21-25	1	16	23	23	368	26.73	26.73	8.18	130.88
26-30	5	10	28	140	280	103.43	517.15	61.78	617.80
31-35	4	4	33	132	132	230.13	920.52	165.38	661.52
	$\sum f_1$ = 29	$\sum f_2$ = 63		$\sum f_1(x)$ = 517	$\sum f_2(x)$ = 1269		$\sum f_1(x - \bar{x}_1)^2$ = 2374.17		$\sum f_2(x - \bar{x}_2)^2$ = 3035.74

i) For Group A; Mean (\bar{x}_1) = $\frac{\sum f_1(x)}{\sum f_1} = \frac{517}{29} = 17.8276 \approx 17.83$

Standard deviation (σ_1) = $\sqrt{\frac{\sum f_1(x - \bar{x}_1)^2}{\sum f_1 - 1}} = \sqrt{\frac{2374.17}{29 - 1}} = \sqrt{\frac{2374.17}{28}} = \sqrt{84.79} = 9.21$

For Group B; Mean (\bar{x}_2) = $\frac{\sum f_2(x)}{\sum f_2} = \frac{1269}{63} = 20.1429 \approx 20.14$

Standard deviation (σ_2) = $\sqrt{\frac{\sum f_2(x - \bar{x}_2)^2}{\sum f_2 - 1}} = \sqrt{\frac{3035.74}{63 - 1}} = \sqrt{\frac{3035.74}{62}} = \sqrt{48.96} = 6.997 \approx 7.0$

ii) For Group A; Coefficient of Variation = $\frac{\sigma_1}{\bar{x}_1} \times 100 = \frac{9.21}{17.83} \times 100 = 51.65\%$

For Group B; Coefficient of variation = $\frac{\sigma_2}{\bar{x}_2} \times 100 = \frac{7.0}{20.14} \times 100 = 34.76\%$

iii) Group B has less variable distribution