

NWOKORIA PASCAL CHENIAWADI

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19/ENG051045

STA 132

Mechatronics Engineering

CL	Group A	Group B	x	f _A x	f _B x	x - x̄ _A	x - x̄ _B	f _A (x - x̄ _A) ²	f _B (x - x̄ _B) ²	(x - x̄ _A) ²	(x - x̄ _B) ²	f _A (x - x̄ _A) ²	f _B (x - x̄ _B) ²
1-5	0	2	3	0	6	14.83	17.14	0	34.28	219.93	293.78	0	587.56
6-10	7	4	8	56	32	9.83	12.14	68.81	48.56	96.63	147.38	676.41	589.52
11-15	10	7	13	130	91	4.83	7.14	48.30	49.98	23.33	50.98	233.3	356.86
16-20	2	20	18	36	360	0.17	2.14	0.34	42.80	0.029	4.58	0.058	91.6
21-25	1	16	23	23	368	5.17	2.86	5.17	45.76	26.73	8.18	26.73	130.88
26-30	5	10	28	140	280	10.17	7.86	50.85	78.60	103.43	61.78	517.15	617.8
31-35	4	4	33	132	132	15.17	12.86	60.68	51.44	230.13	165.38	920.52	661.52
	29	63	126	517	1269	60.17	62.14	234.19	351.42	700.21	732.06	2374.168	3035.74

$\sum f_A(x - \bar{x}_A)^2 = 2374.168$

Calculate

Mean (\bar{x}_A) = $\frac{\sum f_A x}{\sum f_A} = \frac{517}{29} = 17.83$

(\bar{x}_B) = $\frac{\sum f_B x}{\sum f_B} = \frac{1269}{63} = 20.14$

Standard Deviation = $\sqrt{\text{Variance}}$

$\sqrt{s^2_A} = \frac{\sum f_A (x - \bar{x}_A)^2}{\sum f_A} = \frac{2374.168}{29} = 81.87$

$\sqrt{s^2_B} = \frac{\sum f_B (x - \bar{x}_B)^2}{\sum f_B} = \frac{3035.74}{63} = 48.17$

$S.D_A = \sqrt{81.87}$
 $= 9.05$

$S.D_B = \sqrt{48.17}$
 $= 6.94$

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MECHATRONICS ENGINEERING

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ii) The Coefficient of Variation

$$CV \text{ of Group A} = \frac{S.D}{\text{Mean}} \times 100\%$$

$$CV \text{ of A} = \frac{17.05}{33.4} \times 100\%$$

$$= 50.76\%$$

$$CV \text{ of A} = 50.76\%$$

$$CV \text{ of Group B} = \frac{S.D}{\text{Mean}} \times 100\%$$

$$= \frac{11.4}{33.1} \times 100\%$$

$$= 34.46\%$$

$$CV \text{ of B} = 34.46\%$$

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iii) Group B has the less variable distribution.