

Badejo Satriadat Djunkansola
 Mechanical Engineering

19/FNG06/012

STA 132

| Class Interval | \bar{x} Mid point | f Group A | $x - \bar{x}$ | $(x - \bar{x})^2$ | $f(x - \bar{x})^2$ | $f \cdot x$ |
|----------------|------------------------|--------------|---------------|-------------------|--------------------|-------------|
| 1 - 5 | 3 | 0 | -14.8 | 219.04 | 0 | 0 |
| 6 - 10 | 8 | 7 | -9.8 | 96.04 | 672.28 | 56 |
| 11 - 15 | 13 | 10 | -4.8 | 23.04 | 230.4 | 130 |
| 16 - 20 | 18 | 2 | 0.2 | 0.04 | 0.08 | 36 |
| 21 - 25 | 23 | 1 | 5.2 | 27.04 | 27.04 | 23 |
| 26 - 30 | 28 | 5 | 10.2 | 104.04 | 520.2 | 140 |
| 31 - 35 | 33 | 4 | 15.2 | 231.04 | 924.16 | 132 |
| | | 29 | | | 2374.16 | 517 |

$$\bar{x} (\text{mean}) = \frac{\sum f \cdot x}{\sum f} = \frac{517}{29} = 17.8$$

$$\text{Variance} = \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{2374.16}{29} = 81.87$$

$$\begin{aligned} \text{S.D} &= \sqrt{\text{Variance}} \\ &= \sqrt{81.87} \\ &= 9.05 \end{aligned}$$

$$\begin{aligned} \text{C.V} &= \frac{\text{S.D}}{\bar{x}} \times 100 \\ &= \frac{9.05}{17.8} \times 100 \\ &= 50.8\% \end{aligned}$$

| Class Interval | x mid point | f group B | fx | $x - \bar{x}$ | $(x - \bar{x})^2$ | $f(x - \bar{x})^2$ |
|----------------|------------------|----------------|------|---------------|-------------------|--------------------|
| 1-5 | 3 | 2 | 6 | -17.14 | 293.78 | 587.56 |
| 6-10 | 8 | 4 | 32 | -12.14 | 147.38 | 589.52 |
| 11-15 | 13 | 7 | 91 | -7.14 | 50.98 | 356.86 |
| 16-20 | 18 | 20 | 360 | -2.14 | 4.58 | 91.6 |
| 21-25 | 23 | 16 | 368 | 2.86 | 8.18 | 130.88 |
| 26-30 | 28 | 10 | 280 | 7.86 | 61.78 | 617.8 |
| 31-35 | 33 | 4 | 132 | 12.86 | 165.38 | 661.52 |
| | | 63 | | | | 3035.74 |

$$\bar{x} (\text{mean}) = \frac{\sum fx}{\sum f} = \frac{1269}{63} = 20.14$$

$$\text{Variance} = \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{3035.74}{63} = 48.19$$

$$\begin{aligned} \text{S.D} &= \sqrt{\text{variance}} \\ &= \sqrt{48.19} \\ &= 6.94 \end{aligned}$$

$$\begin{aligned} \text{C.V} &= \frac{\text{S.D}}{\bar{x}} \times 100 \\ &= \frac{6.94}{20.14} \times 100 \\ &= 34.5\% \end{aligned}$$

∴ Group B has less variable distribution.