

① $m = \sum_{i=1}^k m_i$ FREQ. ABS.
 ② $f_i = \frac{m_i}{m}$ FREQ. REL.

③ $N_j = \sum_{i=1}^j m_i$ FREQ. ABS. ACUM.
 ④ $N_k = m$

⑤ $F_j = \sum_{i=1}^j f_i$
 ⑥ $F_k = 1$ FREQ. REL. ACUM.

⑦ $\sum f_i = 1$

⑧ Punto de Clase
 $m_i = \frac{L_{i-1} + L_i}{2}$

1] CANT. CLASES

- STURGES $K = 1 + 3.3 \cdot \log(m)$
- $K \approx \sqrt{m}$
- $MID\{K\}$; $2^K > m$

2] RANGO

$R = \max\{x_i\} - \min\{x_i\}$

3] Amplitud $a = \frac{R + 1}{K}$

1] Tendencia Central

• Promedio ($\bar{X}$)

GRANEL: $\bar{X} = \frac{1}{m} \sum_{i=1}^m x_i$

TABULADO: $\bar{X} = \frac{1}{m} \sum_{i=1}^k m_i \cdot x_i = \sum_{i=1}^k f_i \cdot m_i$

• Mediana (M_e)

GRANEL: $M_e(x) = X_{(\frac{m+1}{2})}$, m impar

$0.5 [X_{(\frac{m}{2})} + X_{(\frac{m}{2}+1)}]$, m par

TABULADO: 1] C. med. $\frac{N}{2}$
 2] $M_e(x) = L_{i-1} + \frac{\frac{m}{2} - N_{i-1}}{m_i} \cdot a_i$

• MODA (M_o)

GRANEL: frecuencia

TABULADO:

1] $C_{M_o} \Rightarrow \max\{m_i\}$
 2] $M_o(x) = L_{i_{C_{M_o}}} + \left[\frac{m_{C_{M_o}} - m_{C_{M_o}-1}}{2m_{C_{M_o}} - m_{C_{M_o}-1} - m_{C_{M_o}+1}} \right] \cdot a_{C_{M_o}}$

2] Posición

$Q_1 = P_{25}$

$Q_2 = P_{50} = D_5 = M_e$

$Q_3 = P_{75}$

$Q_4 = P_{100}$

GRANEL

$P_i = X_{(\frac{i(m+1)}{100})}$
 PROMEDIOAR

TABULADO (1° Clase Percentil)

$P_i = L_{i_{P_i}} + \left[\frac{\frac{m \cdot i}{100} - N_{i-1}}{m_{i_{P_i}}} \right] \cdot a_{i_{P_i}}$
 VALOR DE LA VARIABLE

3] Variedad

• Rango (R)

GRANEL: $R = \max\{x_i\} - \min\{x_i\}$

TABULADO: $R = L_{5k} - L_{i-1}$

• Rango INTER CUANTIL (RIQ)

$\rightarrow RIQ = Q_3 - Q_1$

• Desviación Media (DM)

GRANEL: $DM = \frac{1}{m} \sum_{i=1}^m |x_i - \bar{x}|$

TABULADO: $DM = \frac{1}{m} \sum_{i=1}^k m_i |m_i - \bar{x}| = \sum_{i=1}^k f_i |m_i - \bar{x}|$

• Varianza (S^2)

GRANEL: $S^2 = \frac{1}{m-1} \sum_{i=1}^m (x_i - \bar{x})^2 = \frac{1}{m-1} \left(\sum_{i=1}^m x_i^2 - m \bar{x}^2 \right)$

TABULADO: $S^2 = \frac{1}{m} \sum_{i=1}^k m_i (m_i - \bar{x})^2 = \sum_{i=1}^k f_i (m_i - \bar{x})^2 = \left(\sum_{i=1}^k f_i \cdot m_i^2 \right) - \bar{x}^2$

• Desv. STD (S) $S = \sqrt{S^2}$

Coef. Varación Relativa

$CVR = \frac{RIQ}{Q_1 + Q_3}$

• Coef. Varación (C.V)
 (HOMOCEDASTICIDAD)

$C.V = \frac{S}{|\bar{x}|}$

4] FORMA

a) SIMETRIA

PEARSON

$$A_s = \frac{3(\bar{x} - m_e)}{s}$$

FISHER

$$Y_3 = \frac{m_3}{s^3}$$

donde $m_3 = \begin{cases} \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^3 \rightarrow \text{GRAWEL} \\ \sum_{i=1}^k f_i (m_i - \bar{x})^3 \rightarrow \text{TABULAO} \end{cases}$

b) CUNTO SI S $\rightarrow k_2$

$$k_2 = \frac{D_9 - D_1}{1,9 \text{ RIQ}} - 1$$

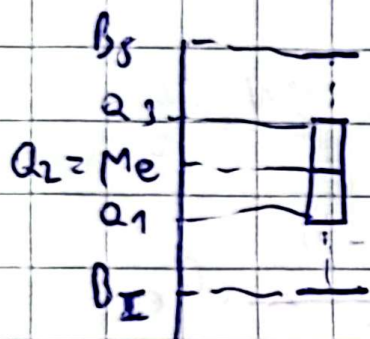
FISHER

$$Y_4 = \frac{m_4}{s^4} - 3$$

donde m_4

$$\begin{cases} \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^4 \rightarrow \text{GRAWEL} \\ \sum_{i=1}^k f_i (m_i - \bar{x})^4 \rightarrow \text{TABULAO} \end{cases}$$

BOX PLOT



$$B_5 = \min\{L_5; \max\{x_i\}\} ; L_5 = Q_3 + 1,5 \text{ RIQ}$$

$\downarrow$ TAB
LSM

$$B_1 = \max\{L_1; \min\{x_i\}\} ; L_1 = Q_1 - 1,5 \text{ RIQ}$$

$\downarrow$ TAB
LI