MEDIDAS DE POSICION

$$\bar{X} = \frac{\sum_{i=1}^{n} x_i n_i}{N}$$

$$Me = L_{i-1} + \frac{N/2 - N_{i-1}}{n_i} \cdot a$$

$$Mo = L_{i-1} + \frac{n_{i+1}}{n_{i+1} + n_{i-1}} \cdot a$$

$$Dn = L_{i-1} + \frac{\frac{N}{10} \cdot n - N_{i-1}}{n_i} \cdot a$$

$$Qn = L_{i-1} + \frac{\frac{N}{4} \cdot n - N_{i-1}}{n_i} \cdot a$$

$$Cn = L_{i-1} + \frac{\frac{N}{100} \cdot n - N_{i-1}}{n_i} \cdot a$$

$$\bar{X}_G = \sqrt[N]{X_1^{n_1} \cdot X_2^{n_2} \cdot X_n^{n_n}}$$

$$\bar{X}_a = \frac{N}{\frac{n_1}{x_1} + \frac{n_2}{x_2} + \frac{n_n}{x_n}} \cdot a$$

$$\bar{X}_c = \sqrt{\frac{\sum_{i=1}^{n} x_i^2 n_i}{N}}$$

MEDIDAS DE DISPERSION

Rango Inter. $= Q_3 - Q_1$

Rango Semi Inter. $= \frac{Q_3 - Q_1}{2}$

$$Dm = \frac{\sum_{i=1}^{n} |X_i - \text{Promedio}|\, n_i}{N}$$

$$S_X^2 = \frac{\sum_{i=1}^{n} X_i^2 n_i}{N} - \bar{X}^2$$

$$S_x = \sqrt{\text{Varianza}}$$

$$C.V. = \frac{S_x}{\bar{X}} \cdot 100$$

$$A_r = \frac{\sum_{i=1}^{n} X_i^r n_i}{N}$$

$$M_r = \frac{\sum_{i=1}^{n} (X_i - \bar{X})^r n_i}{N}$$

Asimetría y Curtosis

Pearson → $AS = \frac{\bar{X} - Mo}{S_x}$

Fisher → $AS = \frac{M_3}{S_x^3}$

Apunt. o curtosis $AP = \frac{M_4}{S_x^4}$

VARIABLES BIDIMENSIONALES

$$S_{xy} = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} X_i Y_j n_{ij}}{N} - \bar{x}\,\bar{y}$$

Independencia si $n_{ij} = \frac{n_{i.} \cdot n_{.j}}{N}$

Coef. regresión $b = \frac{S_{xy}}{S_x^2}$ $\quad b' = \frac{S_{xy}}{S_y^2}$

$b \cdot b' = 1$

Coef. correlación $r = \frac{S_{xy}}{S_x S_y}$ $\quad -1 \leq r \leq 1$

Coef. Determinación $R^2 = r^2$ $\quad 0 \leq R^2 \leq 1$

Rectas regresión y/x $\quad y - \bar{y} = \frac{S_{xy}}{S_x^2}(x - \bar{x})$

x/y $\quad x - \bar{x} = \frac{S_{xy}}{S_y^2}(y - \bar{y})$

Ajuste exponencial $y' = a.x^b$

$a = e^k$

Indice contingencia $C = \frac{x^2/N}{\text{num.}\{h, K\} - 1}$

(h: Filas; K: Columnas)

NUMEROS INDICES

$$L_t^p = \frac{\sum_{i=1}^{n} P_{it} \cdot q_{io}}{\sum_{i=1}^{n} P_{io} \cdot q_{io}}$$

$$L_t^q = \frac{\sum_{i=1}^{n} P_{io} \cdot q_{it}}{\sum_{i=1}^{n} P_{io} \cdot q_{io}}$$

$$P_t^p = \frac{\sum_{i=1}^{n} P_{it} \cdot q_{it}}{\sum_{i=1}^{n} P_{io} \cdot q_{it}}$$

$$P_t^q = \frac{\sum_{i=1}^{n} P_{it} \cdot q_{it}}{\sum_{i=1}^{n} P_{it} \cdot q_{io}}$$

$$F_t^p = \sqrt{L_t^p \cdot P_t^p}$$

$$F_t^q = \sqrt{L_t^q \cdot P_t^q}$$

Deflactor $\Rightarrow \frac{VNt}{\text{Indice precios}}$

$Pi = \frac{\text{Repercusión}}{\text{Variación}}$

Probabilidad

$P(\bar{A}) = 1 - P(A)$

$0 \leq P(A) \leq 1$

$P(B-A) = P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cap B) = P(A) \cdot P(B)$ si son independientes

$P(A/B) = \frac{P(A \cap B)}{P(B)}$

Prob. total $\Rightarrow P(A) = \sum_{i=1}^{n} P(A/A_i) \cdot P(A_i)$

Bayes $\Rightarrow P(A_i/A) = \frac{P(A/A_i) \cdot P(A_i)}{(\text{Prob. Total})}$

Distribución de Variables

Binomial

$P(X=r) = \binom{n}{r} \cdot P^r \cdot q^{n-r}$

$E(X) = n.p.$

$V(X) = n.p.q$

Poisson

$P(X=r) = e^{-\lambda} \cdot \frac{\lambda^r}{r!}$

$E(X) = \lambda = n.p$

$V(X) = \lambda$

Hipergeométrica

$P(X=r) = \frac{\binom{K}{r}\binom{N-K}{n-r}}{\binom{N}{n}}$

$E(x) = n\,\frac{K}{N}$

$V(x) = n\,\frac{K}{N} \cdot \frac{N-K}{N} \cdot \frac{N-n}{N-1}$

Geométrica

$P(X) = q^{r-1} \cdot p$

$E(x) = \frac{1}{p}$

$V(x) = \frac{q}{p^2}$

Binomial negativa

$P(x=r) = \binom{n+r-1}{r} p^n \cdot q^r$

$E(x) = n \cdot \frac{q}{p}$

$V(x) = n \cdot \frac{q}{p^2}$

Uniforme

$U(a,b)$

$E(x) = \frac{a+b}{2}$

$V(x) = \frac{(b-a)^2}{12}$