Repaso Estadística

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Tema 1:

· Medias
- Aritmética $\bar{x} = \frac{1}{n}\sum n_i x_i$
- Geométrica $G(x) = \sqrt[n]{\prod x_i^{n_i}}$
- Armónica $H(x) = \frac{n}{\sum \frac{n_i}{x_i}}$
- Cuadrática $Q(x) = \sqrt{\sum f_i x_i^2}$

· Mediana
- → Var. discretas x_i tq $F_{i-1} < \frac{1}{2} \le F_i$
  - $F_i = \frac{1}{2} \Rightarrow Me = \frac{x_{i+1} - x_i}{2}$
  - $F_i > 1/2 \Rightarrow Me = x_i$
- → Continuas I_i tq $F_{i-1} < \frac{1}{2} \le F_i$
  - $F_i = 1/2 \Rightarrow Me = e_i$
  - $F_i > 1/2 \Rightarrow Me = e_{i-1} + \frac{\frac{n}{2} - N_{i-1}}{n_i}(e_i - e_{i-1})$

· Moda
- → Discretas $M_o = x_i$ tq $n_i \ge n_j \ \forall j$
- → Continuas I_i tq $h_i \ge h_j \ \forall j$ ($h_i = \frac{n_i}{a_i}$ ∨ $h_i = \frac{f_i}{a_i}$)

$$M_o = e_{i-1} + \frac{h_i - h_{i-1}}{2h_i - h_{i-1} - h_{i+1}}(e_i - e_{i-1})$$

- Percentil r (P_r)
  - → Discreta x_i tq $F_{i-1} < \frac{r}{100} \le F_i$
    - $F_i = \frac{r}{100} \Rightarrow P_r = (x_{i+1} - x_i)\frac{1}{2}$
    - $F_i > \frac{r}{100} \Rightarrow P_r = x_i$
  - → Continua I_i tq ...
    - $F_i = \frac{r}{100} \Rightarrow P_r = e_i$
    - $F_i > \frac{r}{100} \Rightarrow P_r = e_{i-1} + \frac{\frac{nr}{100} - N_{i-1}}{n_i}(e_i - e_{i-1})$

- Varianza $\sigma_x^2 = \frac{1}{n}\sum n_i (x_i - \bar{x})^2 \Rightarrow$ Desviación típica: $\sigma_x = +\sqrt{\sigma_x^2}$
- Coef. de Pearson $CV(x) = \frac{\sigma_x}{|\bar{x}|}$

Simetría:

Fisher: $\gamma_1 = \frac{\mu_3}{\sigma^3}$: $A_p = \frac{\bar{x} - M_o}{\sigma}$ $A_p^* = \frac{3(\bar{x} - Me)}{\sigma}$

Curtosis lepto, plati o meso

Fisher $\gamma_2 = \frac{\mu_4}{\sigma^4} - 3$ $K = \frac{Q_3 - Q_1}{D_9 - D_1} - 0'263$

Tema 2:

- Indep. estadística
- Indep. funcional
- Covarianza $\sigma_{xy} = \overset{\sum f_{ij} x_i y_j}{m_{11}} - \overset{\bar{x}}{m_{10}}\overset{\bar{y}}{m_{01}} = \sum_i\sum_j f_{ij}(x_i - \bar{x})(y_j - \bar{y})$
- Recta de regresión (Y sobre X) $y = \bar{y} + \frac{\sigma_{xy}}{\sigma_x^2}(x - \bar{x})$
- Parábola: $y = a + bx + cx^2$

$$\begin{cases} a + m_{10}b + m_{20}c = m_{01} \\ m_{10}a + m_{20}b + m_{30}c = m_{11} \\ m_{20}a + m_{30}b + m_{40}c = m_{21} \end{cases}$$

- Coef. de determinación $\eta^2 = \frac{\sigma_{ey}^2}{\sigma_y^2}$ $\sigma_{ey}^2 = \sum f_i(\hat{y}_i - \bar{y})$

En rectas de regresión: $\eta^2 = r^2 = \frac{\sigma_{xy}^2}{\sigma_x^2\sigma_y^2} \Rightarrow r = \frac{\pm\sigma_{xy}}{\sigma_x\sigma_y}$