* FUNCIÓN DE REGRESIÓN POBLACIONAL

$$\boxed{y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + u_i}$$

v.a

- $E(y_i) = E(\overbrace{\beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki}}^{cte} + u_i) =$

$$= E(\beta_1) + E(\beta_2 X_{2i}) + E(\beta_3 X_{3i}) + \dots + E(\beta_k X_{ki}) + \overbrace{E(u_i)}^{0} =$$

$$= \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki}$$

$$\boxed{E(y_i) = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki}}$$

- $Var(y_i) = Var(\beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + u_i) =$

$$= \overbrace{Var(\beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki})}^{0} + Var(u_i) =$$

$$= Var(u_i) = \sigma_u^2$$

$$\boxed{Var(y_i) = Var(u_i) = \sigma_u^2}$$

varianza del modelo

Varianza del término de perturbación

varianza de la regresión

- $y_i - E(y_i) = u_i$

- $E(\underbrace{y_i - E(y_i)}_{u_i}) = E(u_i) = 0$

* FUNCIÓN DE REGRESIÓN MUESTRAL (Estimaciones ó Predicciones)

$$\hat{y}_i = \hat{\beta}_1 + \hat{\beta}_2 x_{2i} + \hat{\beta}_3 x_{3i} + \dots + \hat{\beta}_k x_{ki}$$

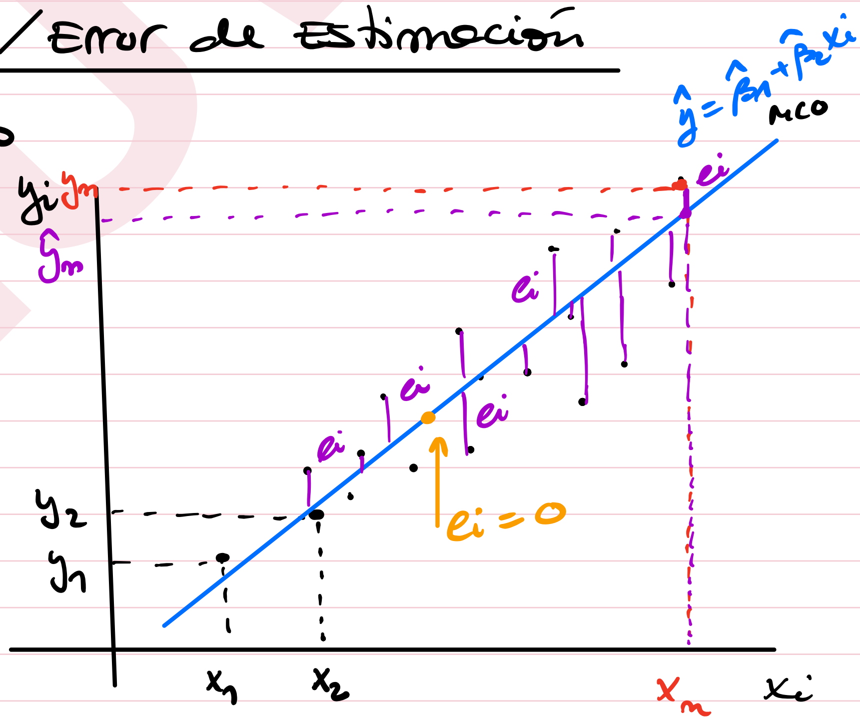
* Error de Predicción / Error de Estimación

Errores del Modelo

RESIDUOS

$$e_i = y_i - \hat{y}_i$$

v.a



NOVA

* Propiedades de los residuos

$$E(e_i) = 0 \leftarrow \overset{MCO}{\sum e_i = 0} \rightarrow \bar{e} = \frac{\sum e_i}{N} = 0$$

$$Var(e_i) = \sigma^2_{e_i} \quad \left\{ \begin{array}{l} Var(e_1) = \sigma^2_{e_1} \\ Var(e_2) = \sigma^2_{e_2} \end{array} \right\} \text{ son distintas}$$

$e_i \sim$ Normal

$$\boxed{e_i \sim N(0, \sigma^2_{e_i})}$$

$$\boxed{e \sim N(0, \sigma^2_u M)}$$

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u_i	$e_i = y_i - \hat{y}_i$
$u_i \sim N(0, \sigma^2_u)$	$e_i \sim N(0, \sigma^2_{e_i})$
$U \sim N(0, \sigma^2_u I_N)$	$e \sim N(0, \sigma^2_u M)$
Var(u) es constante	Var(e) NO es constante

- $\boxed{y_i = \beta_1 + \beta_2 x_{2i} + \dots + \beta_K x_{Ki} + u_i}$
- $\boxed{\hat{y}_i = \hat{\beta}_1 + \hat{\beta}_2 x_{2i} + \dots + \hat{\beta}_K x_{Ki}}$
- $\boxed{y_i = \underbrace{\hat{\beta}_1 + \hat{\beta}_2 x_{2i} + \dots + \hat{\beta}_K x_{Ki}}_{\hat{y}_i} + e_i}$
- $\boxed{y_i = \hat{y}_i + e_i}$
- $\boxed{e_i = y_i - \hat{y}_i}$