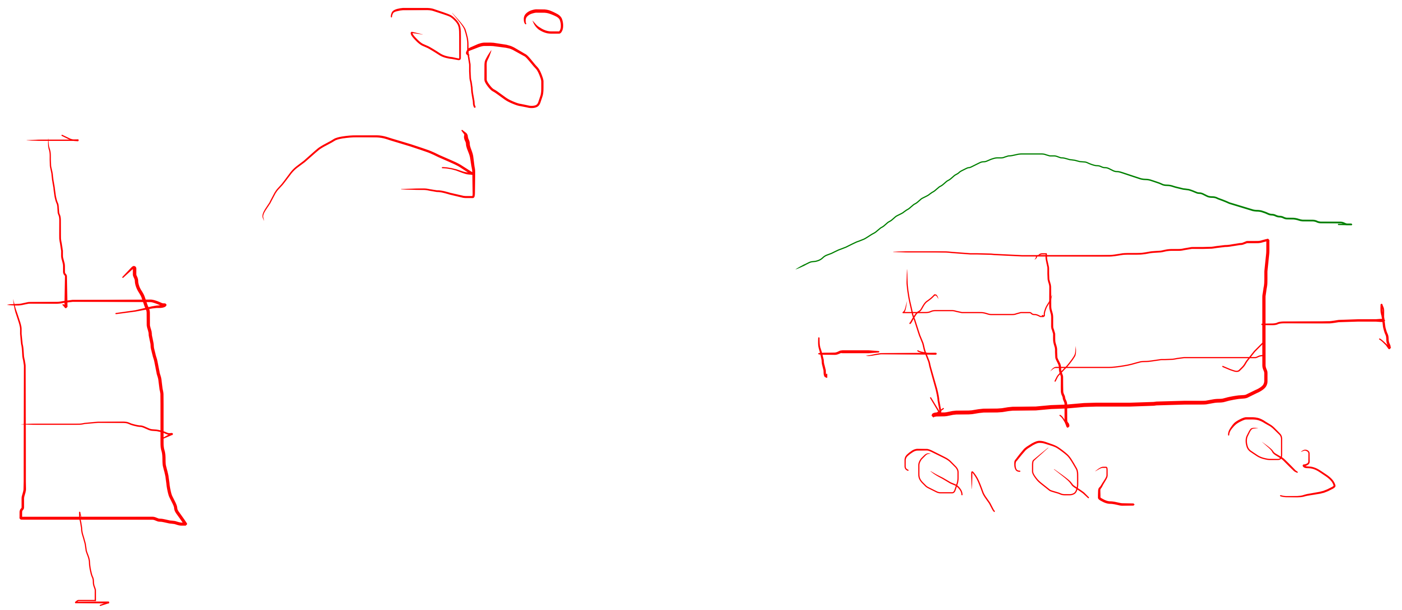
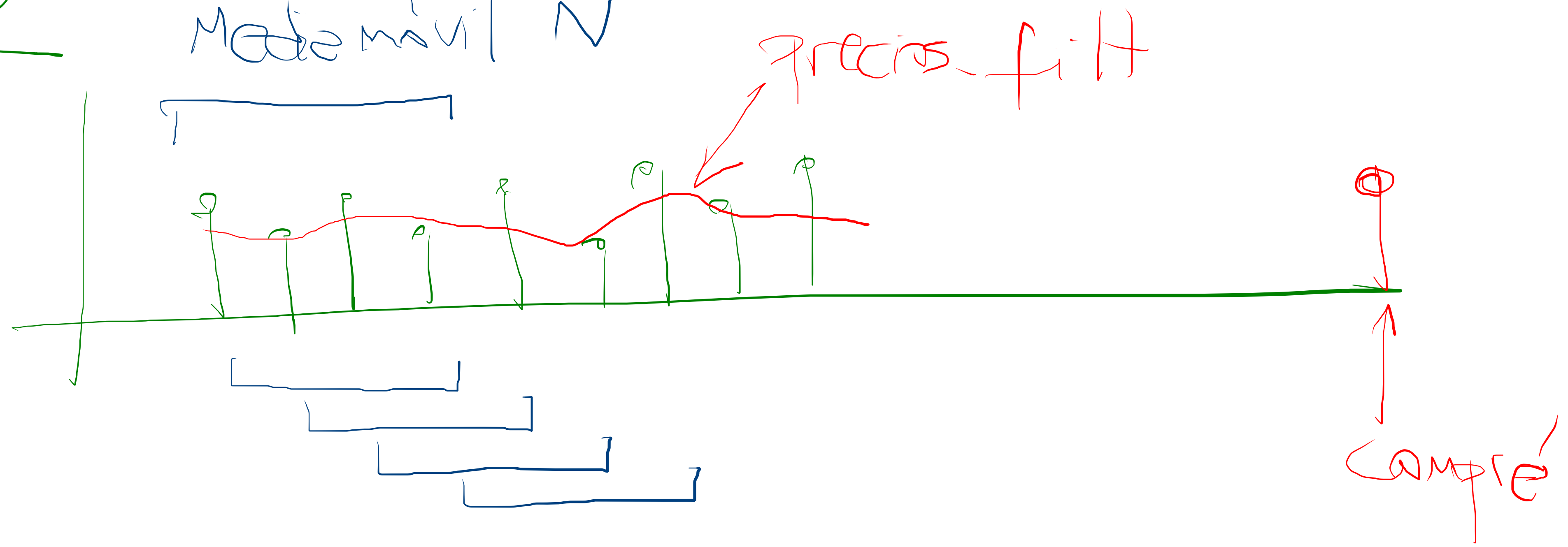
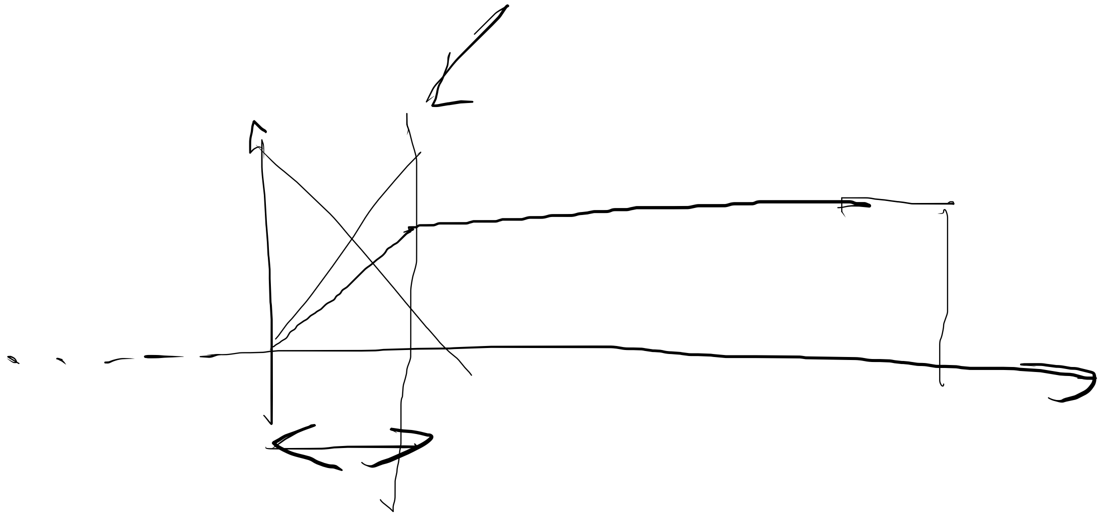
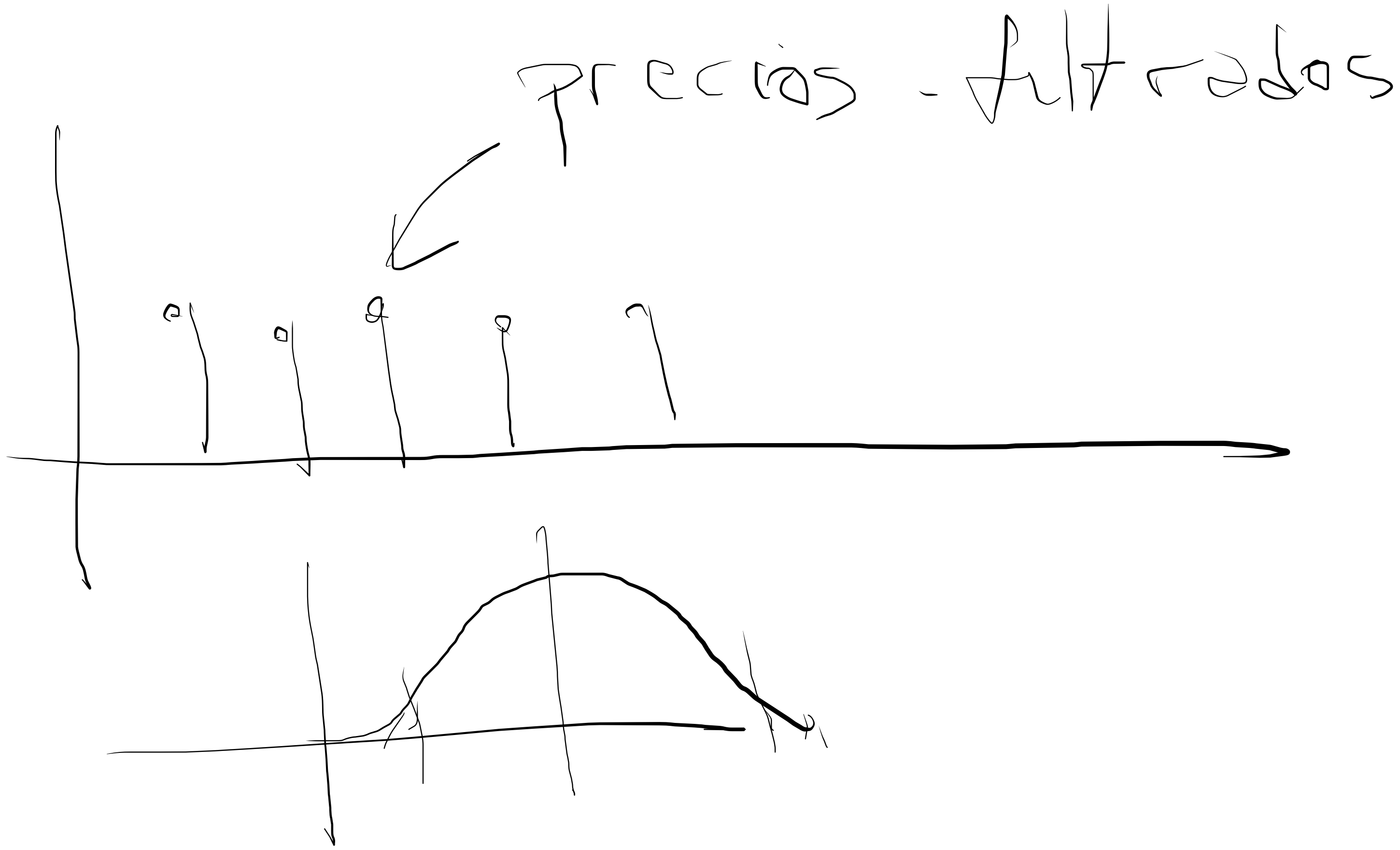

90°
Q1
Q2
Q3

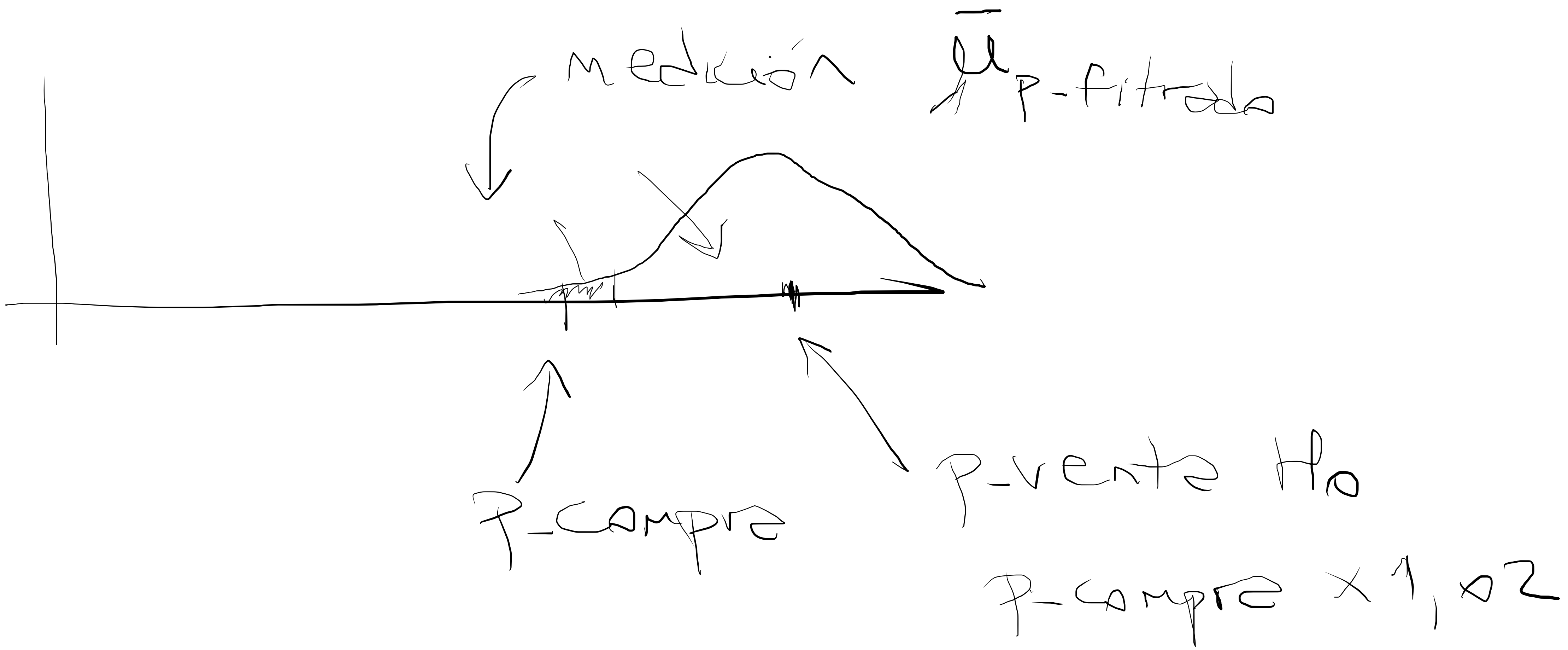
Ej 3

Media móvil N





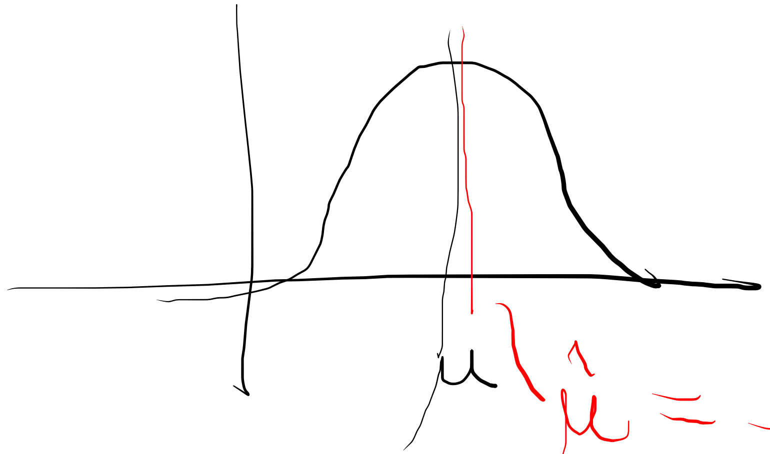




t-Student → $\hat{\sigma}$

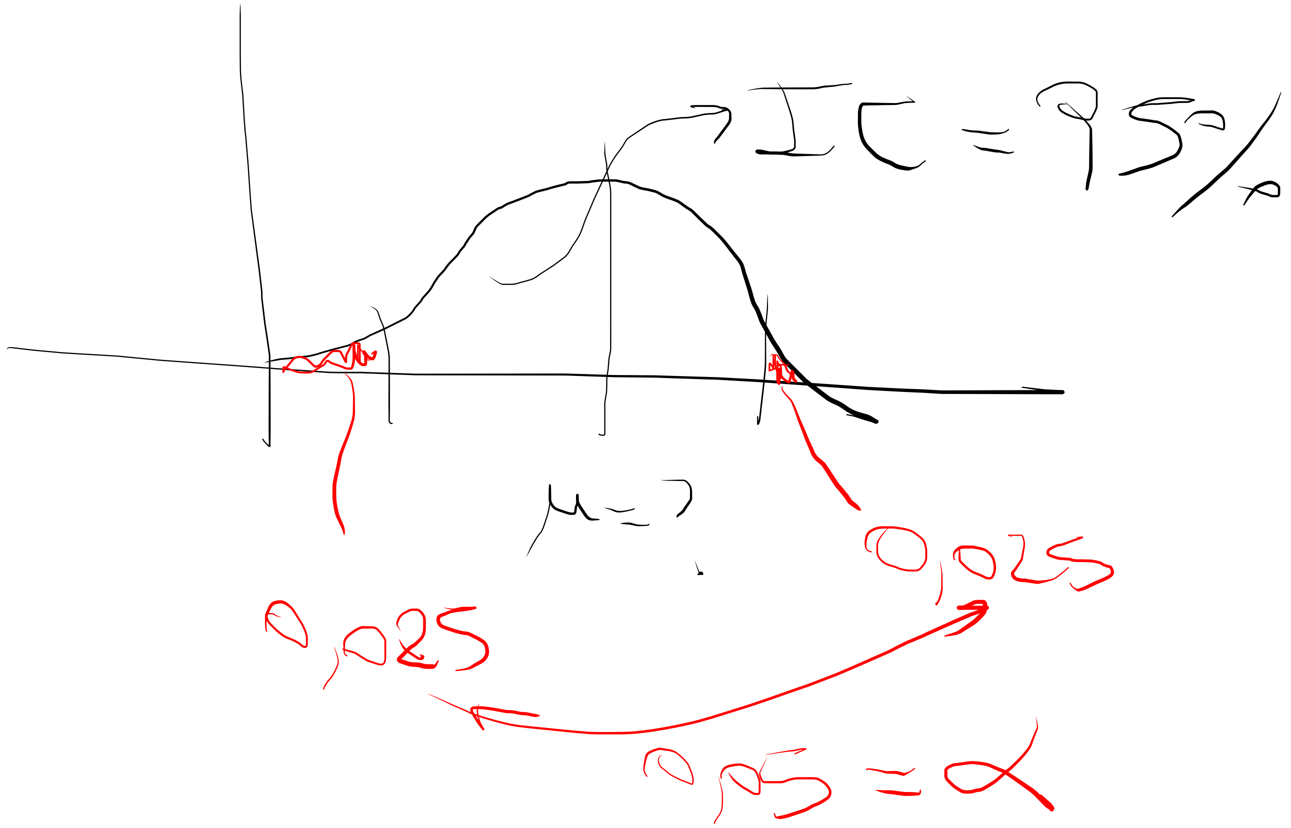
θ = parámetro a estimar → no lo conocemos

La estimación depende de los datos



$$\hat{\mu} = \frac{1}{N} \sum_i x_i$$

I.C. = no puede depender del parámetro a estimar



$$IC_\mu : \mu \in \left[\hat{\mu} - 1{,}96\frac{\sigma}{\sqrt{N}}, \hat{\mu} + 1{,}96\frac{\sigma}{\sqrt{N}}\right]$$

$$IC : (IC_{min}, +\infty)$$

α

p-value $< \alpha$ → rechazo

Test de Independencia

c

r	Homb.	Mujer
Arg	1,7	1,6
Bra	1,75	1,65

País origen

género

Si supiéramos el país de origen, Podríamos saber algo las alturas de los géneros.

Ho: Columnas y filas son independientes

x, y indep. $\longrightarrow P(x|y) = P(x)$

$$\Downarrow$$

$$E[x|y] = E[x]$$

$P(x,y) = P(x)\,P(y) \leftarrow$ independientes.

x_j

x_i $\quad x_{ij}$

$$\boxed{\pi_i \, \pi_j = \pi_{ij}}$$

$$E[x_{ij}] = n\pi_{ij}$$

teórica $\qquad$? $\qquad$ medido

$$\underbrace{E[x_{ij}]}_{n\pi_{ij}} \; \neq \; x_{ij}$$

$=$

Género

X_{11} $\quad$ X_{12}

datos

País origen

	10	20	30 ← Σ
	15	18	33
	25	38	

X_{21} $\quad$ X_{22}

$$n = 10+20+15+18 = 63 \leftarrow \text{grand total}$$

$$X_{11\,\text{teórica}} = \underbrace{\underbrace{\frac{30}{63}}_{\pi_i} \times \underbrace{\frac{25}{63}}_{\pi_j}}_{\pi_{ij}} \times 63 \leftarrow \text{Esperanza} \;\; = 11{,}9$$

n_i $\quad$ n_j $\quad$ n

$\pi_{ij} \times n$

matriz teórica

	c		
r	11,9		

$$\hat{\mu} \sim N\left(\mu, \frac{\sigma^2}{N}\right)$$

$$\underbrace{(N-1)}\overbrace{\sum (x_i - \hat{\mu})^2}^{\sum s^2} \rightarrow \frac{\sum \sigma^2}{\cancel{N-1}}$$

$$\frac{\sigma^2}{N}$$

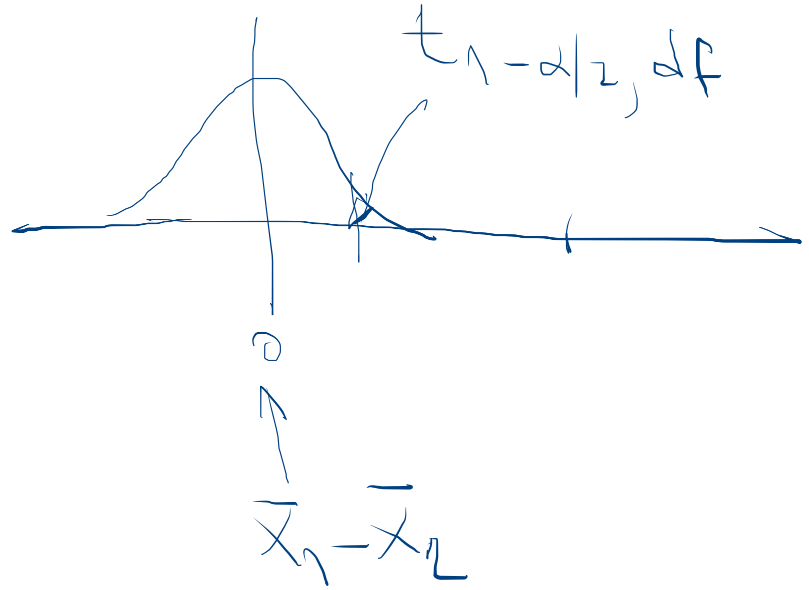
$S^2 \rightarrow$ var. combinada

$$\underbrace{\frac{\sigma^2}{N_1} + \frac{\sigma^2}{N_2}}_{\mathrm{var}(x_1, x_2)}$$

$$\left.\begin{array}{l} x_1 \rightarrow m_1 \\ x_2 \rightarrow m_2 \end{array}\right\} m_1 + m_2$$

$$\frac{}{m_1 - 1 + m_2 - 1}$$

$$\frac{\overbrace{\hat{\mu}-\mu}^{\text{dif. de medias}}}{\underbrace{\sigma}_{\text{estimada}}/\sqrt{N}} \longrightarrow t \text{ de Student}$$



$$\underbrace{n_1-1+n_2-1+\dots+n_k-1}_{k \text{ grupos}} = \left(\sum_{i=1}^{k} n_i\right)-k$$

dato

valor esperado teórico en caso de independencia

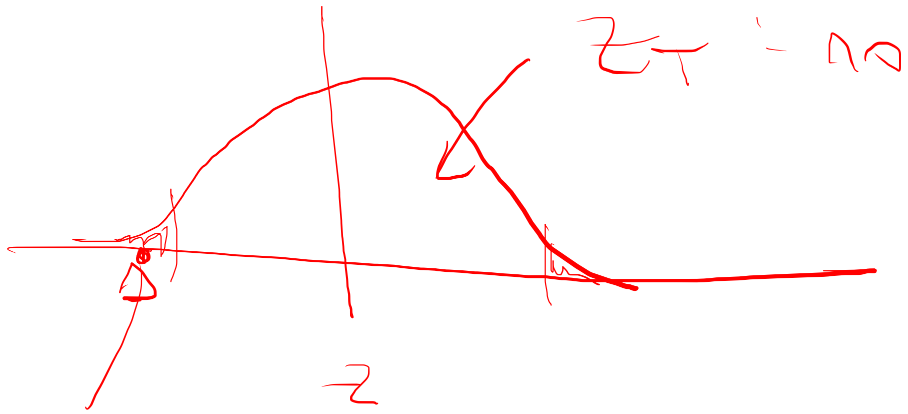
$$\chi^2_{(r-1)\times(c-1)} = \sum_{i,j} \frac{(n_{ij} - \hat{E}_{ij})^2}{\hat{E}_{ij}}$$

v.a.

esperanza

$$\frac{(\text{v.a.} - \text{esperanza})^2}{\text{esperanza}}$$

Z_T : no rechazo.



$Z_T \rightarrow$ rechazo H_0