

Modello Misura

$$X_i = \mu + \sigma^2 Z_i$$

↑
variabili
casuali
componarie

PARAMETRI

$$i = 1, 2, \dots, n$$

Le X_i sono normali con
densità di probabilità

$$f(x) = \frac{1}{\sqrt{2\pi\sigma}} \exp\left\{-\frac{1}{2} \left(\frac{x-\mu}{\sigma}\right)^2\right\}$$

$$M_n = \frac{\sum_{i=1}^n X_i}{n}$$

$$E(M_n) = \mu \quad \text{Var}(M_n) = \frac{\sigma^2}{n}$$

↑↑
completezza

↑↑
consistenza

$$S_n^2 = \frac{\sum (X_i - M_n)^2}{n-1}$$

$$E(S_n^2) = \sigma^2$$

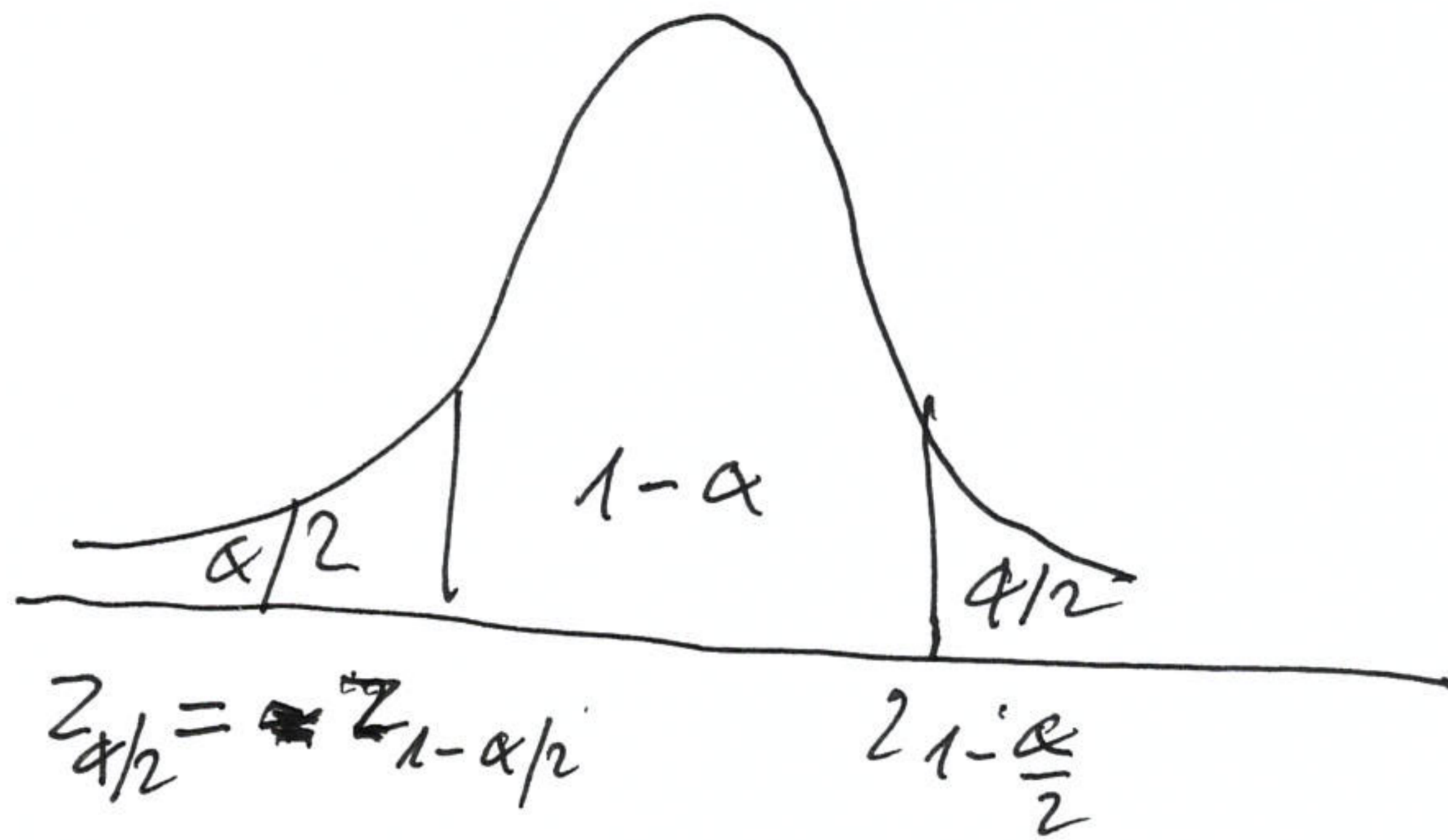
$$V_n^2 = \frac{\sum (X_i - \mu)^2}{n}$$

$$E(V_n^2) = \sigma^2 - \frac{\sigma^2}{n} = \sigma^2 \frac{n-1}{n}$$

↑↑
DISTORSIONE

$$\frac{M_n - \mu}{\sigma} \sqrt{n}$$

normale
standard



$$P\left(-z_{1-\alpha/2} \leq \frac{M_n - \mu}{\sigma} \sqrt{n} \leq z_{1-\alpha/2}\right) = 1 - \alpha$$

$$P\left(-\frac{\sigma}{\sqrt{n}} z_{1-\alpha/2} \leq M_n - \mu \leq \frac{\sigma}{\sqrt{n}} z_{1-\alpha/2}\right) = 1 - \alpha$$

$$P\left(M_n - \frac{\sigma}{\sqrt{n}} z_{1-\alpha/2} \leq \mu \leq M_n + \frac{\sigma}{\sqrt{n}} z_{1-\alpha/2}\right)$$

$$= 1 - \alpha$$

Intervalle
Confidenz
LC = 1 - \alpha

$$M_n \pm \frac{\sigma}{\sqrt{n}} z_{1-\alpha/2}$$

Amplitude Intervall

$$d = 2 \frac{\sigma}{\sqrt{n}} Z_{(1-\alpha/2)}$$

Ricerca dati d^* e $1-\alpha^*$ numerosità campionarie

$$d^* = 2 \frac{\sigma}{\sqrt{n}} Z_{(1-\alpha^*/2)}$$

↑↑
speciato
intervallo

↑↑
affidabilità

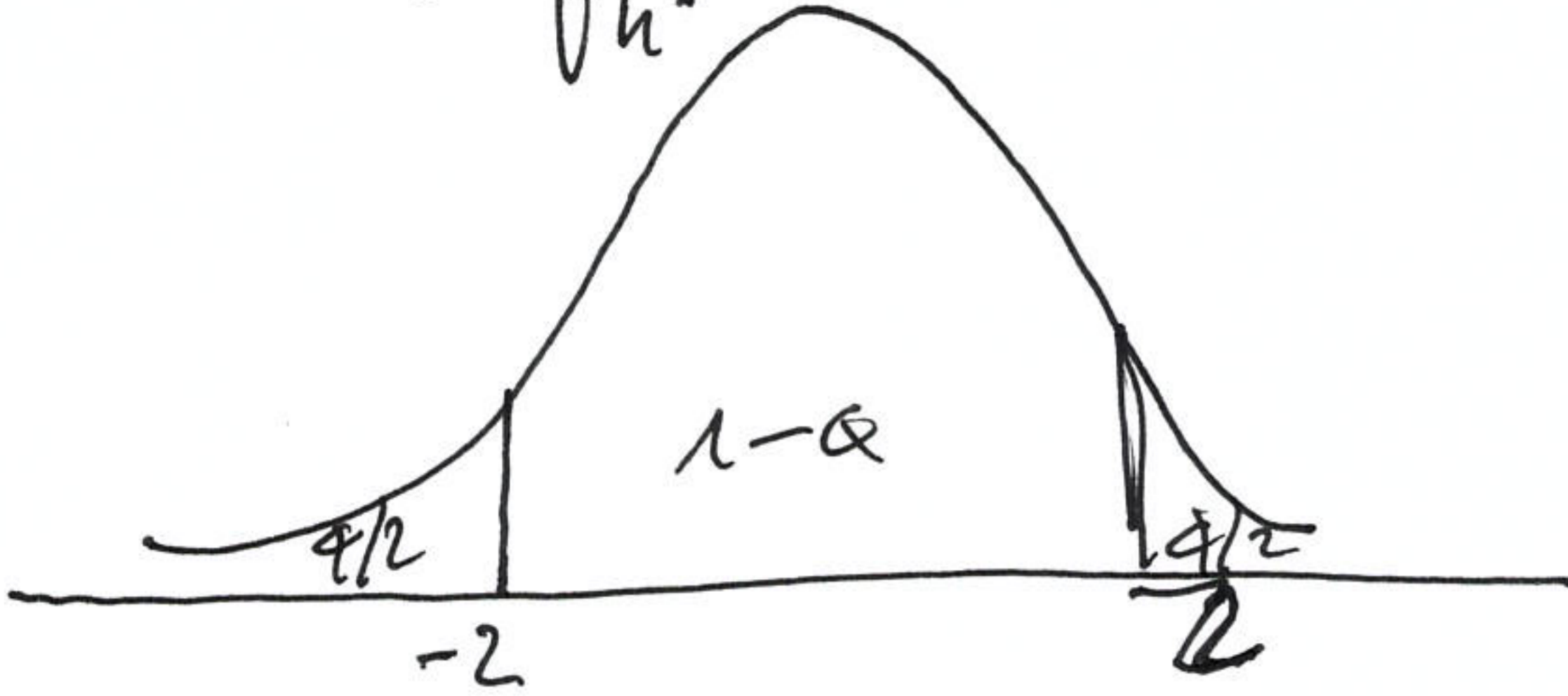
$$n = \left(\frac{2 \frac{\sigma}{\sqrt{n}} Z_{(1-\alpha^*/2)}}{d^*} \right)^2$$

Ricerca dati d^* e n^* livello confidenza

$$d^* = z^* \frac{\sigma}{\sqrt{h^*}} \quad z^*$$

$$z^* = \frac{d^*}{z^* \frac{\sigma}{\sqrt{h^*}}} = \frac{d^* \sqrt{h^*}}{2\sigma}$$

devo trovare
 $1-\alpha$ corrispondente
 z^*



$$\Phi(z^*) = 1 - \frac{\alpha}{2}$$

$$\frac{\alpha}{2} = 1 - \Phi(z^*)$$

$$\alpha = 2(1 - \Phi(z^*))$$

$$1 - \alpha = 2\Phi(z^*) - 1$$

The limit probability functions of the model with additive EMRS effect are more connected to the idea of tendency toward the middle or the extreme of the rating scale than the ones obtained in the case of a multiplicative EMRS effect. For the multiplicative model the limit distribution in the case of extreme response style is not very appealing and quite strangely the limit distribution in the case of tendency toward the middle has a support that depends on the thresholds.