DATA SAMPLE: $(x_1, \dots, x_n)$

MODEL: $(X_1, \dots, X_n) = (X, \dots, X)$, $X \sim N(\mu, \sigma^2)$ (μ: ?, σ^2: ?)

$(1-\alpha)\cdot 100\,\%$ **CI:** **1) 2-sided:** **(L, U)**

95 %

$$P(L \le \mu \le U) = 1-\alpha$$

$$\vdots$$

$$L = \hat{\mu}_{MLE} - q_{1-\frac{\alpha}{2}} \cdot \frac{\sigma^2}{n}$$

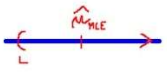
$$U = \hat{\mu}_{MLE} + q_{1-\frac{\alpha}{2}} \cdot \frac{\sigma^2}{n}$$

2) LEFT: **(L, ∞)**

$$P(L \le \mu) = 1-\alpha$$

$$\vdots$$

$$L = \hat{\mu}_{MLE} - q_{1-\alpha} \cdot \frac{\sigma^2}{n}$$



3) RIGHT: **$(-\infty, U)$**

$$P(\mu \le U) = 1-\alpha$$

$$\vdots$$

$$U = \hat{\mu}_{MLE} + q_{1-\alpha} \cdot \frac{\sigma^2}{n}$$

$q_{1-\frac{\alpha}{2}}$ | $q_{1-\alpha}$ **are the QUANTILES of:**

NORMAL distribution (σ^2 **is known**)

STUDENT t-distribution (**is not**)

(with n - 1 degrees of freedom)