

ESEMPIO

5 persone peso: x_1, x_2, x_3, x_4, x_5 Kg
 70, 75, 66, 86, 59 Kg

$$E[X] = \frac{x_1 + x_2 + x_3 + x_4 + x_5}{5} = \frac{1}{5} \sum_{i=1}^5 x_i = \frac{70+75+66+86+59}{5} = \frac{356}{5} = 71.2 \text{ Kg}$$

VALORE
ATTESO

$$E[X^2] = \frac{1}{5} \sum_{i=1}^5 x_i^2 = \frac{1}{5} (4900 + 5625 + 4356 + 7396 + 3481) = 5151.6$$

MOMENTO
SECONDO

$$\text{Var}[X] = \frac{1}{5} \sum_{i=1}^5 (x_i - E[X])^2 = \frac{1}{5} [(70-71.2)^2 + (75-71.2)^2 + \dots + (59-71.2)^2] =$$

SI USA ANCHE

 σ_x^2

$$= \frac{1}{5} [(-1.2)^2 + 3.8^2 + (-5.2)^2 + 14.8^2 + (-12.2)^2] = \frac{1}{5} \cdot 410.8 = 82.16$$

VARIANZA

$$\text{STD}[X] = \sqrt{\text{Var}[X]} = \sqrt{\sigma_x^2} = \sqrt{82.16} = 9.06$$

DEVIAZIONE
STANDARD

$$82.16 \cdot \frac{5}{4}$$

$$E[X^2] - (E[X])^2 = 5151.6 - 71.2^2$$

$$S^2[X] = \hat{\sigma}_x^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - E[X])^2 = \frac{1}{4} 410.8 = 102.7$$

VARIANZA
CAMPIONARIA

$$102.7 \cdot \frac{4}{5}$$