

## FORMULARIO - Statistica sociale

### Media aritmetica

$$\bar{x} = \sum_{i=1}^n \frac{x_i}{n} = \frac{x_1 + x_2 + \dots + x_i + \dots + x_n}{n}$$

$$\bar{x} = \sum_{k=1}^K \frac{x_k * \text{numerosità}_k}{n}$$

$$\bar{x} = \sum_{k=1}^K x_k * \text{freq rel}_k$$

$$\bar{x} \approx \sum_{k=1}^K \frac{c_k * \text{numerosità}_k}{n}$$

$$\bar{x} \approx \sum_{k=1}^K c_k * f_k$$

$$\bar{x}_w = \frac{\sum x_i w_i}{\sum w_i} = \frac{x_1 * w_1 + x_2 * w_2 + \dots + x_i * w_i + \dots + x_n * w_n}{w_1 + w_2 + \dots + w_i + \dots + w_n}$$

### Mediana

$$\text{Me} = \begin{cases} \frac{x_{(\frac{n}{2})} + x_{(\frac{n}{2}+1)}}{2} & \text{se } n \text{ pari} \\ x_{(\frac{n+1}{2})} & \text{se } n \text{ dispari} \end{cases}$$

### Varianza, deviazione standard e coefficiente di variazione

$$s^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2 = \frac{1}{n-1} [(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_n - \bar{x})^2]$$

$$s = \sqrt{s^2}$$

$$CV = \frac{s}{\bar{x}} * 100$$

### Campo di variazione e differenza (scarto) interquartile

$$R = x_{max} - x_{min}$$

$$IQR = Q_3 - Q_1$$

$$\text{Baffi: } [Q_1 - 1,5 * IQR; Q_3 + 1,5 * IQR]$$

### Medie condizionate

$$\bar{y}_{X=x_i} = \frac{1}{n_i} \sum_{j=1}^K y_j n_{ij}$$

**Frequenze teoriche di indipendenza**

$$n'_{ij} = \frac{n_i \cdot n_j}{n}$$

**Chi-quadrato e p-value**

$$\chi^2 = \sum_{i=1}^K \sum_{j=1}^H \frac{(n_{ij} - n'_{ij})^2}{n'_{ij}}$$

Valori di riferimento del p-value: 0.1,0.05,0.01