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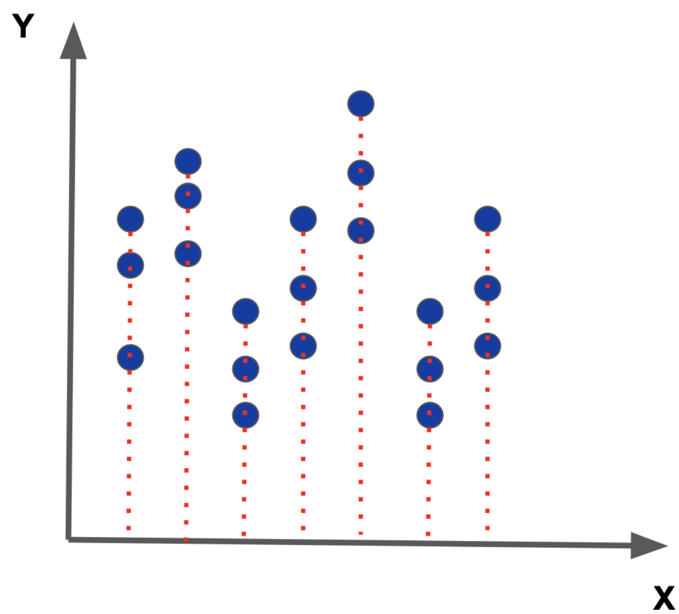
Confidence intervals

Consider we have the random variables $Y_1, Y_2, ..., Y_m$ and we have for each random variables n_1, n_2, n_m observations respectively.



We define the next estimators:

$$\boxed{T_i = \frac{1}{n_i} \cdot \sum_{j=1}^{n_i} Y_i^j \quad \forall i \in \{1, ..., m\}}$$

$$\boxed{S_i = \sqrt{\frac{1}{(n_i - 1)} \cdot \sum_{j=1}^{n_i} (Y_i^j - \mu_i)^2} \quad \forall i \in \{1, ..., m\}}$$

Consider $Y_i \sim D_i(\mu_i, \sigma_i) \quad \forall i \in \{1, ..., m\}$.

Then we have the next confidence intervals:

$$\boxed{T_i + t_{\frac{\alpha}{2}} \cdot \frac{S_i}{\sqrt{n_i}} \leq u_i \leq T_i + t_{1-\frac{\alpha}{2}} \cdot \frac{S_i}{\sqrt{n_i}} \quad \forall i \in \{1, ..., m\}}$$

$$\boxed{T_i + t_{\frac{\alpha}{2}} \cdot S_i \leq Y_i \leq T_i + t_{1-\frac{\alpha}{2}} \cdot S_i \quad \forall i \in \{1, ..., m\}}$$
