An Interval that with High Probability Will Contain A Specific Proportion of All Population Measurements

Assumptions

1. The data are $Y_1, Y_2, \ldots, Y_n$ where $Y_j = \mu + \epsilon_j$.
2. The ϵ_j are from a $N(0, \sigma^2)$ population.

Formulas

The appropriate interval is called a **tolerance interval**. A tolerance interval is an interval that with probability L contains at least a proportion γ of all population measurements is given by the formula $\overline{Y} \pm KS$, where $\overline{Y}$ and S are the sample mean and standard deviation, and K is a mathematically derived constant depending on n, L and γ, that may be obtained from an appropriate table (You may view the table by clicking here).

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