

Order Statistics

Idea: Consider a collection of independent, continuous random variables X_1, X_2, \dots, X_n . Always assume that the X_j 's have the same kind of distribution, when talking about order statistics. Then $X_{(1)}$ denotes the 1st order statistic, which just means the smallest of X_1, \dots, X_n

$X_{(2)}$ denotes the 2nd order statistic, i.e. 2nd smallest of X_1, \dots, X_n

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$X_{(n-1)}$ denotes the second largest of X_1, \dots, X_n called the (n-1)st order statistic

$X_{(n)}$ denotes the nth order statistic, which is the largest, i.e. the max, of X_1, \dots, X_n

In general, $X_{(j)}$ is the jth smallest of X_1, \dots, X_n called the jth order statistic.