Package ‘MultinomialCI’

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BugReports http://decsai.ugr.es/~pjvi

LazyData false

Title Simultaneous Confidence Intervals for Multinomial Proportions

According to the Method by Sison and Glaz

Type Package

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Description An implementation of a method for building simultaneous confidence intervals for the probabilities of a multinomial distribution given a set of observations, proposed by Sison and Glaz in their paper:


The method is an R translation of the SAS code implemented by May and Johnson in their paper:


Paper and code available at <DOI:10.18637/jss.v005.i06>.

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R topics documented:

    multinomialCI.
multinomialCI

Description

Simultaneous confidence intervals for multinomial proportions, calculated according to the method of Sison and Graz

Usage

multinomialCI(x, alpha, verbose=FALSE)

Arguments

x A vector of positive integers representing the number of occurrences of each class. The total number of samples equals the sum of such elements.

alpha The significance level for the confidence intervals. Must be a real number in the interval [0, 1]

verbose A boolean flag indicating whether details should be printed to screen during the execution of the method, or not. Nothing will be printed if the function is called only with the first two arguments.

Details

Given a vector of observations with the number of samples falling in each class of a multinomial distribution, builds the simultaneous confidence intervals for the multinomial probabilities according to the method proposed by Sison and Glaz (1995). The R code has been translated from the SAS code written by May and Johnson (2000).

Value

A k x 2 real matrix, with k being the number of classes, which matches the length of the input vector x. Row i of the matrix contains the lower bound (first column) and upper bound (second column) defining the confidence interval for the probability of the i-th class, which corresponds to the i-th position of the input vector.

Author(s)

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References


Examples

# Multinomial distribution with 3 classes, from which 79 samples
# were drawn: 23 of them belong to the first class, 12 to the
# second class and 44 to the third class. Punctual estimations
# of the probabilities from this sample would be 23/79, 12/79
# and 44/79 but we want to build 95% simultaneous confidence intervals
# for the true probabilities

m = multinomialCI(c(23,12,44), 0.05);
print(paste("First class: [", m[1,1], m[1,2], "]");
print(paste("Second class: [", m[2,1], m[2,2], "]");
print(paste("Third class: [", m[3,1], m[3,2], "]");
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