Package ‘BlythStillCasellaCI’

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Title Blyth-Still-Casella Exact Binomial Confidence Intervals

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Depends R (>= 3.2.0)

License GPL-3

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blyth.still.casella Blyth-Still-Casella exact binomial confidence intervals

Description

computes the Blyth-Still-Casella exact binomial confidence intervals based on a refining procedure proposed by George Casella (1986).

Usage

blyth.still.casella(n, X = NULL, alpha = 0.05, digits = 2,
  CIs.init = NULL, additional.info = FALSE)
Arguments

- **n**: number of trials
- **X**: number of successes (optional)
- **alpha**: confidence level = 1 - alpha
- **digits**: number of significant digits after the decimal point
- **CIs.init**: initial confidence intervals from which the refinement procedure begins (default starts from Clopper-Pearson confidence intervals)
- **additional.info**: additional information about the types of interval endpoints and their possible range is provided if TRUE (default = FALSE)

Value

If X is specified, the corresponding confidence interval will be returned, otherwise a list of n + 1 confidence intervals will be returned.

If additional.info = FALSE, only a list of confidence interval(s) will be returned. For any coincidental endpoint, midpoint of its range will be displayed.

If additional.info = TRUE, the following lists will be returned:

- **CI**: a list of confidence intervals
- **coinc.index**: indices of coincidental lower endpoints (L.Index) and their corresponding upper endpoints (U.index)
- **endpoint.type**: whether the endpoint is coincidental (C) or non-coincidental (NC)
- **range**: range for each endpoint

Examples

# to obtain 95% CIs for n = 30 and X = 0 to 30
blyth.still.casella(n = 30, alpha = 0.05, digits = 4)

# to obtain 90% CIs, endpoint types, indices of coincidental endpoints (if any),
# and range of each endpoint for n = 30 and X = 23
blyth.still.casella(n = 30, X = 23, alpha = 0.05, digits = 4, additional.info = TRUE)

# use initial confidence intervals defined by the user instead of Clopper-Pearson CIs
# CIs.input needs to be a (n + 1) x 2 matrix with sufficient coverage
CIs.input <- matrix(c(0,1), nrow = 11, ncol = 2, byrow = TRUE) # start with [0,1] intervals
blyth.still.casella(n = 10, alpha = 0.05, digits = 4, CIs.init = CIs.input, additional.info = TRUE)

# use summary function to see the range for each endpoint
output <- blyth.still.casella(n = 5, alpha = 0.1, digits = 4, additional.info = TRUE)
summary(output)
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