Package ‘PropCIs’

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Description Computes two-sample confidence intervals for single, paired and independent proportions.
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PropCIs-package .................................................. 2
acceptbin ......................................................... 3
add4ci .......................................................... 4
addz2ci .......................................................... 5
blakerci .......................................................... 5
diffci.bayes .................................................... 6
diffci.bayes.hpd ............................................... 7
diffpropci.mp ................................................... 8
diffpropci.Wald.mp ............................................ 9
diffscoreci ...................................................... 10
exactci .......................................................... 11
limit .............................................................. 11
midPci .......................................................... 12
PropCIs-package

Confidence intervals for single, paired and independent proportions

Description

Computes confidence intervals for single proportions as well as for differences in dependent and independent proportions, the odds-ratio and the relative risk in a 2x2 table. Intervals are available for independent samples and matched pairs. The functions are partly written by assistants of Alan Agresti, see website http://www.stat.ufl.edu/~aa/cda/cda.html.

Details

<table>
<thead>
<tr>
<th>Package:</th>
<th>PropCIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Package</td>
</tr>
<tr>
<td>Version:</td>
<td>0.3-0</td>
</tr>
<tr>
<td>Date:</td>
<td>2018-02-22</td>
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<tr>
<td>License:</td>
<td>GPL=2</td>
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<td>LazyLoad:</td>
<td>yes</td>
</tr>
</tbody>
</table>

Author(s)

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References


acceptbin

Description
computes the Blaker acceptability of \( p \) when \( x \) is observed and \( X \) is bin(n, p)
add4ci

Agresti-Coull add-4 CI for a binomial proportion

Description

Agresti-Coull add-4 CI for a binomial proportion, based on adding 2 successes and 2 failures before computing the Wald CI. The CI is truncated, when it overshoots the boundary.

Usage

add4ci(x, n, conf.level)

Arguments

- **x**: number of successes
- **n**: number of trials
- **conf.level**: confidence coefficient

Value

A list with class "htest" containing the following components:

- **conf.int**: The confidence interval for the proportion
- **estimate**: The estimator for the proportion

References


Examples

add4ci(x = 15, n = 112, conf.level = 0.95)
Description

Agresti-Coull CI for a binomial proportion based on adding $z^2/2$ successes and $z^2/2$ failures before computing the Wald CI. The CI is truncated, when it overshoots the boundary.

Usage

```r
addz2ci(x, n, conf.level)
```

Arguments

- `x` number of successes
- `n` number of trials
- `conf.level` confidence coefficient

Value

A list with class "htest" containing the following components:

- `conf.int` The confidence intervall for the proportion
- `estimate` The estimator for the proportion

References


Examples

```r
addz2ci(x = 15, n = 112, conf.level = 0.95)
```

---

blakerci

*Blaker's exact CI for a binomial proportion*

Description

Blaker's exact CI for a binomial proportion

Usage

```r
blakerci(x, n, conf.level, tolerance=1e-05)
```
Arguments

x Number of successes
n Total sample size
cnf.level Confidence level
tolerance default tolerance

Value

A list with class "htest" containing the following components:

conf.int The confidence intervall for the proportion

References


diffci.bayes Bayesian confidence interval for different of independent proportions

Description

Approximate Bayesian confidence interval for different of proportions using simulation method

Usage

diffci.bayes(x1,n1,x2,n2,a,b,c,d,conf.level, nsim)

Arguments

x1 Binomial variate group 1
n1 Sample size group 1
x2 Binomial variate group 2
n2 Sample size group 2
a beta prior for x1
b beta prior for x2
c beta prior for n1
d beta prior for n2
cnf.level confidence level
nsim number of simulations with default 10M

Value

Confidence interval with given confidence level.
Bayesian HPD confidence interval for different of independent proportions

Description

Approximate Bayesian HPD confidence interval for different of proportions using independent priors

Usage

diffci.bayes.hpd(x1,n1,x2,n2,a,b,c,d,conf.level)

Arguments

- x1: Binomial variate group 1
- n1: Sample size group 1
- x2: Binomial variate group 2
- n2: Sample size group 2
- a: beta prior for x1
- b: beta prior for x2
- c: beta prior for n1
- d: beta prior for n2
- conf.level: confidence level

Value

Confidence interval with given confidence level.

References

diffpropci.mp

Adjusted Wald interval for a difference of proportions with matched pairs

Description

Adjusted Wald interval for a difference of proportions with matched pairs. This is the interval called Wald+2 in Agresti and Min (2005). Adds 0.5 to each cell before constructing the Wald CI

Usage

diffpropci.mp(b, c, n, conf.level)

Arguments

b  off-diag count

b  off-diag count

n  sample size

conf.level  confidence coefficient $1 - \alpha$

Details

The interval is truncated, when it overshoots the boundary

Value

A list with class "htest" containing the following components:

conf.int  a confidence interval for the difference in proportions.

estimate  estimated difference in proportions

References


Examples

diffpropci.mp(b = 40, c = 20, n = 160, conf.level = 0.95)
diffpropci.Wald.mp

Wald interval for a difference of proportions with matched pairs

Description

Wald interval for a difference of proportions with matched pairs.

Usage

diffpropci.Wald.mp(b, c, n, conf.level)

Arguments

b
off-diag count

c
off-diag count

n
sample size

conf.level
confidence coefficient

Details

The interval is truncated, when it overshoots the boundary

Value

A list with class "htest" containing the following components:

conf.int a confidence interval for the difference in proportions.

estimate estimated difference in proportions c-b/n

References


Examples

diffpropci.Wald.mp(b = 3, c = 9, n = 32, conf.level = 0.95)
Description

Score interval for difference of proportions and independent samples (p1 - p2)

Usage

diffscoreci(x1, n1, x2, n2, conf.level)

Arguments

x1  success counts in sample 1
n1  sample size in sample 1
x2  success counts in sample 2
n2  sample size in sample 2
conf.level  confidence coefficient

Value

A list with class "htest" containing the following components:

conf.int  a confidence interval for the difference in proportions.

References


**Description**

Clopper-Pearson exact CI

**Usage**

`exactci(x, n, conf.level)`

**Arguments**

- `x` Number of successes
- `n` Total sample size
- `conf.level` Confidence level

**Value**

A list with class "\texttt{htest}" containing the following components:

- `conf.int` a confidence interval for the proportion

**References**

Clopper, C. and Pearson, E.S. (1934) The use of confidence or fiducial limits illustrated in the case of the binomial. *Biometrika* 26, 404–413.

---

**Description**

internal function of orscoreci
midPci

mid-P confidence interval adaptation of the Clopper-Pearson interval

Description

mid-P confidence interval adaptation of the Clopper-Pearson interval

Usage

midPci(x, n, conf.level)

Arguments

x
number of successes

n
number of trials

conf.level
confidence coefficient

Value

A list with class "htest" containing the following components:

conf.int
a confidence interval for the difference in proportions.

References


Examples

midPci(x = 15, n = 112, conf.level = 0.95)

oddsratioci.mp

Adapted binomial score confidence interval for the subject-specific odds ratio with matched pairs

Description

Adapted binomial score confidence interval for the subject-specific odds ratio with matched pairs. This uses the Wilson score CI for a binomial parameter with the off-diagonal counts.

Usage

oddsratioci.mp(b, c, conf.level)
Arguments
   b   off-diagonal count
   c   off-diagonal count
   conf.level confidence coefficient

Value
   A list with class "htest" containing the following components:
   conf.int a confidence interval for the difference in proportions.

References

Examples
   oddsratio.ci.mp(b = 40, c = 20, conf.level = 0.95)

orci.bayes

Bayesian tail confidence interval for an odds ratio

Description
   Approximate Bayesian tail confidence interval for an odds ratio using simulation method

Usage
   orci.bayes(x1,n1,x2,n2,a,b,c,d,conf.level, nsim)

Arguments
   x1   Binomial variate group 1
   n1   Sample size group 1
   x2   Binomial variate group 2
   n2   Sample size group 2
   a   beta prior for x1
   b   beta prior for x2
   c   beta prior for n1
   d   beta prior for n2
   conf.level confidence level
   nsim number of simulations with default 10M
Value
Confidence interval for an odds ratio with given confidence level.

References

orscoreci

Score confidence interval for an odds ratio in a 2x2 table \[\frac{p_1(1-p_1)}{p_2(1-p_2)}\]

Description
Score confidence interval for an odds ratio in a 2x2 table \[\frac{p_1(1-p_1)}{p_2(1-p_2)}\]

Usage
orscoreci(x1, n1, x2, n2, conf.level)

Arguments
- x1: number of successes in sample 1
- n1: sample size in sample 1
- x2: number of successes in sample 2
- n2: sample size in sample 2
- conf.level: confidence coefficient \(1 - \alpha\)

Value
A list with class "htest" containing the following components:
- conf.int: a confidence interval for the difference in proportions.

References
Description

score confidence interval for the relative risk in a 2x2 table

Usage

riskscoreci(x1, n1, x2, n2, conf.level)

Arguments

x1 number of successes in sample 1
n1 sample size in sample 1
x2 number of successes in sample 2
n2 sample size in sample 2
conf.level confidence coefficient $1 - \alpha$

Value

A list with class "htest" containing the following components:

conf.int a confidence interval for the difference in proportions.

References


**rrci.bayes**  
*Bayesian tail confidence interval for the relative risk*

**Description**

Approximate Bayesian tail confidence interval for the relative risk using simulation method.

**Usage**

```
rrci.bayes(x1,n1,x2,n2,a,b,c,d,conf.level, nsim)
```

**Arguments**

- `x1`: Binomial variate group 1
- `n1`: Sample size group 1
- `x2`: Binomial variate group 2
- `n2`: Sample size group 2
- `a`: beta prior for `x1`
- `b`: beta prior for `x2`
- `c`: beta prior for `n1`
- `d`: beta prior for `n2`
- `conf.level`: confidence level
- `nsim`: number of simulations with default 10M

**Value**

Confidence interval for the relative risk with given confidence level.

**References**


**scoreci**  
*Wilson’s confidence interval for a single proportion*

**Description**

Wilson’s confidence interval for a single proportion. Score CI based on inverting the asymptotic normal test using the null standard error.

**Usage**

```
scoreci(x, n, conf.level)
```
Arguments

x Number of successes
n Total sample size
conf.level Confidence level

Value

A list with class "htest" containing the following components:

conf.int a confidence interval for the difference in proportions.

References


scoreci.mp

Tango’s score confidence interval for a difference of proportions with matched pairs

Description

Tango’s score confidence interval for a difference of proportions with matched pairs

Usage

scoreci.mp(b, c, n, conf.level)

Arguments

b off-diagonal count
c off-diagonal count
n sample size
conf.level confidence coefficient

Value

A list with class "htest" containing the following components:

conf.int a confidence interval for the difference in proportions.

References


Examples

scoreci.mp(b = 40, c = 20, n = 160, conf.level = 0.95)

wald2ci

Wald interval with the possibility to adjust according to Agresti, Caffo (2000) for difference in proportions and independent samples.

Description

Wald interval with the possibility to adjust according to Agresti, Caffo (2000) for difference in proportions and independent samples. The Agresti-Caffo interval adds 1 to x1 and x2 and adds 2 to n1 and n2.

Usage

wald2ci(x1, n1, x2, n2, conf.level, adjust)

Arguments

x1 success counts in sample 1
n1 sample size in sample 1
x2 success counts in sample 2
n2 sample size in sample 2
conf.level confidence coefficient
adjust option to adjust the Wald interval to the Agresti-Caffo interval for better performance

Details

If adjust=AC is chosen, the standard Wald interval is modified to the Agresti-Caffo adjusted CI (American Statistician, 2000)

Value

A list with class "htest" containing the following components:

cnf.int a confidence interval for the difference in proportions.
estimate estimated difference in proportions

References

**Description**

internal function of diffscoreci
Index

*h test
  add4ci, 4
  addz2ci, 5
  blakerci, 5
  diffci.bayes, 6
  diffci.bayes.hpd, 7
  diffpropci.mp, 8
  diffpropci.Wald.mp, 9
  diffscoreci, 10
  exactci, 11
  midPci, 12
  oddsratioi.mp, 12
  orci.bayes, 13
  orscoreci, 14
  PropCIs-package, 2
  riskscoreci, 15
  rrci.bayes, 16
  scoreci, 16
  scoreci.mp, 17
  wald2ci, 18
  orscoreci, 14
  PropCIs-package, 2
  riskscoreci, 15
  rrci.bayes, 16
  scoreci, 16
  scoreci.mp, 17
  wald2ci, 18
  z2stat, 19

acceptbin, 3
add4ci, 4
addz2ci, 5
blakerci, 5

diffci.bayes, 6
diffci.bayes.hpd, 7
diffpropci.mp, 8
diffpropci.Wald.mp, 9
diffscoreci, 10

exactci, 11

limit, 11

midPci, 12

oddsratioi.mp, 12
orci.bayes, 13