Package ‘MIDN’

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Type Package

Title Nearly Exact Sample Size Calculation for Exact Powerful Nonrandomized Tests for Differences Between Binomial Proportions

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Description Implementation of the mid-n algorithms presented in

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**fisher_boschloo_midN**

**Description**


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**References**


**Examples**

```r
result1 <- fisher_boschloo_midn(0.025, 0.001, 0.95, 0.8, 0.8, 2, 1)
POWEX <- result1[5]
result1  # shows values of vector result1
POWEX    # shows value of POWEX

result2 <- McNem_Score_midn(0.025, 0.001, 0.585, 0.315, 0.9)
POWEX <- result2[3]
result2  # shows values of vector result2
POWEX    # shows value of POWEX
```

**Description**

The function computes the exact sample sizes required in the randomized UMPU test and its conservative nonrandomized version for attaining prespecified power. In a final step, the mean of both quantities is output as an nearly exact value required in the Fisher-Boschloo test, a powerful nonrandomized version of the exact Fisher-type test.
Usage

fisher_boschloo_midN(alpha, SW, p1, p2, POWO, mton_a, mton_b)

Arguments

- alpha: target significance level
- SW: step width for increasing p2 in the search for the size of a given critical region in the sample space of (X,Y)
- p1: true value of the responder rate for Population 1
- p2: true value of the responder rate for Population 2
- POWO: power to be obtained against the alternative (p1,p2)
- mton_a: desired ratio of sample sizes: numerator
- mton_b: desired ratio of sample sizes: denominator

Value

- mstart: initial value of 1st sample size
- nstart: initial value of 2nd sample size
- Mex: size of Sample 1 for randomized UMPU test
- Nex: size of Sample 2 for randomized UMPU test
- POWEX: power of randomized UMPU test attained with m=Mex,n=Nex
- Mnr: size of Sample 1 for conservative nonrandomized Fisher-type test
- Nnr: size of Sample 2 for conservative nonrandomized Fisher-type test
- POWNR: power of conservative nonrandomized Fisher-type test attained with m=Mnr,n=Nnr
- midN_m: nearly exact size of Sample 1 for Boschloo-Fisher test
- midN_n: nearly exact size of Sample 1 for Boschloo-Fisher test

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References


Examples

```r
result1 <- fisher_boschloo_midN(0.025, 0.0001, 0.95, 0.8, 0.8, 2, 1)
POWEX <- result1[5]
result1 # shows values of vector result1
POWEX # shows value of POWEX
```
McNem_Score_midn

Nearly exact sample size calculation for the level-corrected score test for differences between binomial proportions estimated from paired data

Description

Again, the function computes the exact sample sizes required in the randomized UMPU test and its conservative nonrandomized counterpart for attaining prespecified power. However, in contrast to the parallel group setting, the midpoint of the interval between these two numbers shall now used as an nearly exact value of the number of pairs to be observed in the asymptotic test based on the score-statistic corrected for possible exceedances of the nominal significance level.

Usage

McNem_Score_midn(alpha, SW, ppl, pmi, POWO)

Arguments

alpha  target significance level, 1-sided
SW  width of search grid for determining the size of a given critical region in the sample space of N+ [= number of pairs with (Xi,Yi) = (1,0)] and N0 [= number of tied pairs]
ppl  true value of Pr[(X,Y) = (1,0)]
pmi  true value of Pr[(X,Y) = (0,1)]
POWO  power to be attained in the level-corrected score test against the alternative (ppl,pmi)

Value

nstart  initial value for the iteration algorithm
Nex  sample size required in the exact randomized McNemar test
POWEX  power of the exact randomized McNemar test performed with Nex pairs
Nnr  sample size required in the conservative nonrandomized McNemar test
POWNR  power of the nonrandomized McNemar test performed with Nnr pairs
mid_n  midpoint of the interval [Nex,Nnr], rounded to the next integer

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References

Examples

result2 <- McNem_Score_midn(0.025, 0.0001, 0.585, 0.315, 0.9)
POWEX <- result2[3]
result2  # shows values of vector result2
POWEX    # shows value of POWEX
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