Package ‘rateratio.test’

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Type Package
Title Exact rate ratio test
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Depends R (>= 2.4.1), stats
Description A function which performs exact rate ratio tests and returns an object of class htest.
License GPL
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Repository CRAN
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  rateratio.test  An Exact Rate Ratio Test Assuming Poisson Counts

Description

  Performs the uniformy most powerful unbiased test on the ratio of rates of two Poisson counts with
  given time (e.g., person-years) at risk for each count.

Usage

  rateratio.test(x, n, RR = 1,
    alternative = c("two.sided", "less", "greater"),
    conf.level = 0.95)
Arguments

- x: a vector of length 2 with counts for the two rates
- n: a vector of length 2 with time at risk in each rate
- RR: the null rate ratio (two.sided) or the rate ratio on boundary between null and alternative
- alternative: a character string specifying the alternative hypothesis, must be one of "'two.sided'" (default), "'greater'" or "'less'". You can specify just the initial letter.
- conf.level: confidence level of the returned confidence interval. Must be a single number between 0 and 1.

Details

The `rateratio.test` tests whether the ratio of the first rate (estimated by x[1]/n[1]) over the second rate (estimated by x[2]/n[2]) is either equal to, less, or greater than RR. Exact confidence intervals come directly from `binom.test`. The two-sided p-value is defined as either 1 or twice the minimum of the one-sided p-values. See Lehmann (1986, p. 152) or vignette("rateratio.test").

For full discussion of the p-value and confidence interval consistency of inferences, see Fay (2010) and exactci package.

Value

An object of class `htest` containing the following components:

- p.value: the p-value of the test
- estimate: a vector with the rate ratio and the two individual rates
- null.value: the null rate ratio (two.sided) or the rate ratio on boundary between null and alternative
- conf.int: confidence interval
- alternative: type of alternative hypothesis
- method: description of method
- data.name: description of data

Note

Much of the error checking code was taken from `prop.test`.

Author(s)

Michael Fay

References


See Also

`prop.test`, `binom.test`

Examples

```r
nen p values and confidence intervals are defined the same way
### so there is consistency in inferences
rateratio.test(c(2,9),c(17877,16660))
### small counts and large time values will give results similar to Fisher's exact test
### since in that case the rate ratio is approximately equal to the odds ratio
### however, for the Fisher's exact test, the two-sided p-value is defined differently from
### the way the confidence intervals are defined and may imply different inferences
### i.e., p-value may say reject OR=1, but confidence interval says not to reject OR=1
fisher.test(matrix(c(2,9,17877-2,16660-9),2,2))
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