Package ‘orsk’

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**Type** Package

**Title** Converting Odds Ratio to Relative Risk in Cohort Studies with Partial Data Information

**Version** 1.0-5

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**Description** Convert odds ratio to relative risk in cohort studies with partial data information (Wang (2013) <doi:10.18637/jss.v055.i05>).

**Imports** BB, BHH2

**Suggests** setRNG

**License** GPL (>= 2)

**LazyLoad** yes

**NeedsCompilation** yes

**Repository** CRAN

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Converting Odds Ratio to Relative Risk in Cohort Studies with Partial Data Information

Usage

orsk(nctr, ntrt, a=NA, al=NA, au=NA, level = 0.95, type="two-sided", method = c("grid","optim"), d=1e-4)
## S3 method for class 'orsk'
plot(x, type=c("RR", "OR"), digits=2, factor=1, amount=NULL, ...)
## S3 method for class 'orsk'
print(x, ...)
## S3 method for class 'orsk'
summary(object, nlist=1:5, ...)

Arguments

ncr  sample size of control group from a published study
ntrt sample size of treatment group from a published study
a  estimated odds ratio from a published study
al lower bound of confidence interval from a published study
au upper bound of confidence interval from a published study
level level of confidence interval with default 95%
method method for converting the odds ratio to the relative risk with default value "grid"
d threshold value (delta in the vignette) to filter out solutions if sum of squares > d. Only used with method="grid"
type type of the objective function with default value "two-sided"; or the type of risk to be plotted. For type="RR", distribution of relative risk among scenarios for which the calculated odds ratio and confidence interval coincide with the published values. For type="OR", distribution of risk of the outcome among scenarios for which the calculated odds ratio and confidence interval coincide with the published values.
x  object of class orsk
object  object of class orsk
nlist maximum number of solutions displayed
digits rounding accuracy for all the numbers given in the published study, with default value 2
factor, amount arguments for scatter plot, see ?jitter function
... additional arguments for print, summary.
Investigators of medical and epidemiological studies are often interested in comparing a risk of a binary outcome between a treatment and control group, or between exposed and unexposed. Such an outcome can be an onset of a disease or a dichotomized length of labor duration.

From a published study, suppose we are given the information on sample size of control group \( n_{ct} \), sample size of treatment group \( n_{tr} \), estimated odds ratio \( a \), and confidence interval \((a_L, a_U)\), how to estimate the relative risk, when the original 2 by 2 contingency table is not directly available? Two methods are proposed to estimate the cells of the contingency table, and to estimate the relative risk.

Value

An object of class `orsk` is returned. The algorithm estimates the number of outcome in control group \( c_{rt} = \text{yes} \), number of outcome free in control group \( c_{rt} = \text{no} \), number of outcome in treatment group \( t_{rt} = \text{yes} \) and number of outcome free in treatment group \( t_{rt} = \text{no} \). Also the results include the corresponding estimated odds ratio with confidence interval, and relative risk and confidence interval, based on the estimated contingency table.

Author(s)

Zhu Wang

References


http://www.jstatsoft.org/v55/i05/.


Examples

```r
## Not run:
res1 <- orsk(nctr=1636, ntrt=2601, a=2.61, aL=2.25, aU=3.03, method="grid")
summary(res1)
res2 <- orsk(nctr=1636, ntrt=2601, a=2.61, aL=2.25, aU=3.03, method="optim")
summary(res2)
res3 <- orsk(nctr=1636, ntrt=2601, a=2.61, aL=2.25, type="lower", method="grid")
summary(res3)
res4 <- orsk(nctr=1636, ntrt=2601, a=2.61, aU=3.03, type="upper", method="grid")
summary(res4)
res5 <- orsk(nctr=1636, ntrt=2601, a=2.61, aL=2.25, type="ci-only", method="grid")
summary(res5)
## End(Not run)
```
**Description**

Estimating the relative risk based on the (adjusted) Odds Ratio from multiple logistic regression or other multiple regression models. The method was based on Zhang and Yu (JAMA, 1998)

**Usage**

zy(risk, oddsratio)

**Arguments**

- **risk**: the risk rate of having a positive outcome in the control or unexposed group
- **oddsratio**: odds ratio estimated from multiple logistic regression or other multiple regression models

**Details**

Primarily for the adjusted odds ratio, the estimated relative risk is given by:

$$\text{odds ratio} / (1 - \text{risk} + \text{risk} \times \text{odds ratio})$$

**Value**

the estimated relative risk

**Author(s)**

Zhu Wang

**References**


**Examples**

zy(risk=0.18, oddsratio=2.25)
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