Package ‘orsk’

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Type Package

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

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Description Convert odds ratio to relative risk in cohort studies with partial data information.

Imports BB, BHH2

Suggests setRNG

License GPL (>= 2)

LazyLoad yes

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

Description

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

nctr 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.

Details

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 nctr, sample size of treatment group ntrt, estimated odds ratio a, and confidence interval (al, au), 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 \( \text{ctr\_yes} \), number of outcome free in control group \( \text{ctr\_no} \), number of outcome in treatment group \( \text{trt\_yes} \) and number of outcome free in treatment group \( \text{trt\_no} \). 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


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, au=3.03, type="ci-only",
method="grid")
summary(res5)
## End(not run)
```

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**Estimating the Relative Risk Based on the Odds Ratio**

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

```r
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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