

Package ‘attribrisk’

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Type Package

Title Population Attributable Risk

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VignetteBuilder knitr

Suggests knitr,xtable,testthat

Depends survival,boot

LazyData Yes

LazyLoad Yes

Description Estimates population (etiological) attributable risk for unmatched, pair-matched or set-matched case-control designs and returns a list containing the estimated attributable risk, estimates of coefficients, and their standard errors, from the (conditional, If necessary) logistic regression used for estimating the relative risk.

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NeedsCompilation no

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attribrisk	<i>Calculate attributable risk estimates for one or more exposure characteristics.</i>
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Description

Calculate attributable risk estimates for one or more exposure characteristics. The attributable risk, or etiologic fraction, is an estimate of the reduction in an outcome were a risk factor to change.

Usage

```
attribrisk(formula, data, weights, subset, na.action,
  varmethod = c("jackknife", "bootstrap", "none"),
  conf=.95, baseline, k=20, control,
  model = FALSE, x = FALSE, y = FALSE, ...)
```

Arguments

formula	an object of class 'formula'. A symbolic description of the model to be fitted.
data	a data frame used for the formula.
weights	optional weights for the fitting criterion.
subset	an optional vector specifying a subset of observations to be used.
na.action	a missing-data filter function. This is applied to the model.frame after any subset argument has been used. Default is <code>options()\$na.action</code> .
varmethod	A string that specifies the resampling technique used to estimate confidence intervals and standard errors. <ul style="list-style-type: none"> • <code>bootstrap</code>: indicates that the CI and standard error should be estimated using a bootstrap. • <code>jackknife</code>: indicates that the CI and standard error should be estimated using a grouped jackknife. • <code>none</code>: do not estimate standard error or CI.
k	the number of groups to use for the jackknife. The parameter is ignored for bootstrap variance. Setting this to 0 or to a value \geq the sample size will lead to leaving out each observation one at a time, i.e., the ordinary jackknife. Optionally, <code>k</code> can be a vector with one element per observation that directly specifies the grouping of the observation, the jackknife estimate will leave out one group at a time. If the model has strata then they will not be broken, either all or none of the observations in a strata are left out of each jackknife subsample.
conf	The confidence level for confidence intervals
control	a list of optional parameters, see <code>attribrisk.control</code> .
baseline	Must be either <code>NULL</code> or a data frame containing values for the exposure variable(s) of the formula, which specifies the desired baseline value for each individual.

<code>model</code>	a logical value indicating whether model frame should be included as a component of the returned value.
<code>x,y</code>	logical values indicating whether the model matrix and/or response used in the fitting process should be returned.
<code>...</code>	other arguments such as <code>nboot</code> , normally passed to the <code>attribrisk.control</code> routine.

Value

an object of class "attribrisk" with the following components:

attribrisk attributable risk estimate
var variance of the attributable risk
fit results from the underlying coxph or glm fit
boot results of the boot function, optional
boot.ci results of the boot.ci function, optional
call A copy of the call to the function

Details

None.

See Also

[attribrisk.fit](#), [attribrisk.control](#), and [benichou](#)

Examples

```
data(benichou)

# Use the Benichou (1991) data to estimate attributable risk of oesophageal
# cancer due to alcohol greater than or equal to 80g/day
attribrisk(cases ~ expos(alcohol80), data=benichou)
```

`attribrisk.control` *Sets optional parameters for attribrisk.*

Description

Sets optional bootstrap parameters for `attribrisk`.

Usage

```
attribrisk.control(nboot=500, bootci=list(type="perc") )
```

Arguments

nboot	Number of bootstrap samples
bootci	Parameters passed to the boot.ci function.

Value

A list of values that will be passed into boot and boot.ci

See Also

[boot](#), [boot.ci](#)

attribrisk.fit	<i>This function is used internally by attribrisk functions.</i>
----------------	--

Description

This function is used internally by attribrisk functions.

Usage

```
attribrisk.fit(x, y, w, offset, match, xbase,
              fit = FALSE)
```

Arguments

x	is a design matrix of dimension "n * p".
y	is a vector of observations of length "n".
w	optional weights for the fitting criterion.
offset	this can be used to specify an component to be included in the linear predictor during fitting. This should be NULL or a numeric vector of length equal to the number of observations.
match	a vector of length n that indicates which observations are a part of each match; NULL for an unmatched analysis. The values should be integers from 1 to the number of matched sets.
xbase	the x matrix, minus the values used as a baseline for exposure
fit	if TRUE then return the underlying glm or coxph fit object as well as the attributable risk estimate

See Also

[attribrisk](#)

benichou	<i>Data in table 1 in Benichou (1991) from study of esophageal cancer (Tuyns, et al.)</i>
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Description

Data in table 1 in Benichou (1991) from study of esophageal cancer (Tuyns, et al.)

Format

A data frame with 975 subjects and 8 variables.

cases Esophageal cancer indicator (1=case, 0=control).

age Subject age in years.

smoke Quantity of tobacco smoked per day. (0-9g/day, 10-29g/day, or 30+g/day)

alcohol Quantity of alcohol consumed per day (0-39g/day, 40-79g/day, or 80-119g/day)

alcohol80 Quantity of alcohol consumed per day (0-79g or 80+g)

smoke.alc Is set to 'Exposed' if subject was consumed more than 40+g of alcohol and 10+g of tobacco per day.

alcohol40 Quantity of alcohol consumed per day (0-39g or 40+g)

smoke10 Quantity of tobacco consumed per day (0-9g or 10+g)

References

Benichou, J. (1991) Methods of adjustment for estimating the attributable risk in case-control studies: a review *Statistics in Medicine* 10:1753-1773. Tuyns AJ, Pequignot G, Jensen OM. Esophageal cancer in Ille-et-Vilaine in relation to levels of alcohol and tobacco consumption. Risks are multiplying. *Bull Cancer*. 1977;64(1):45-60.

chapter.dat	<i>The data from Whisnant, et al 1996 concerning cerebral infarction, blood pressure, diabetes.</i>
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Description

The data from Whisnant, et al 1996 concerning cerebral infarction, blood pressure, diabetes.

Format

A data frame with 2644 subjects and 5 variables.

- cases Stroke indicator. (1=Stroke, 0=Normal)
- hbp High blood pressure indicator. (1=High Blood Pressure, 0=Normal)
- ihd Ischemic heart disease indicator. (1=Heart Disease, 0=Normal)
- dm Diabetes indicator. (1=Diabetic, 0= Normal)
- match.id Matched case/controls have same ID.

References

Whisnant, J.P., Wiebers, D.O., OFallon, W.M., Sicks, J.D., Frye, R.L., (1996) A population-based model of risk factors for ischemic stroke: Rochester, Minnesota Neurology 47:1420-1428.

`print.attrisk` *Prints a summary of attrisk.*

Description

Print an attrisk (attributable risk) object.

Usage

```
## S3 method for class 'attrisk'  
print(x, ...)
```

Arguments

`x` an object of class "attrisk"
`...` further arguments for the final printing such as `digits`

Details

If there were bootstrap confidence intervals created using multiple methods, e.g., 'percentile', 'BCa', ect, then by default only the first of them is printed. To see all confidence intervals print the `boot.ci` component of the attrisk object.

Value

a copy of the input, with the invisible flag set to prevent printing.

See Also

[attrisk](#)

stroke.dat	<i>Data from Davis PH, et al 1987 Risk factors for ischemic stroke: a prospective study in Rochester, Minnesota.</i>
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Description

Data from Davis PH, et al 1987 Risk factors for ischemic stroke: a prospective study in Rochester, Minnesota.

Usage

```
data(stroke.dat)
```

Format

A data frame with 3388 observations on the following 4 variables.

cases Stroke indicator. (1=Stroke, 0=Normal)

age Years

smoke Current, Former, Never, Uncertain, Unknown, or <NA>

diastolic Diastolic blood pressure

References

Davis, P.H., Dambrosia, J.M., Schoenberg, B.S., et al, (1987) Risk factors for ischemic stroke: a prospective study in Rochester, Minnesota *Annals of Neurology* 22:319-327

summary.attribrisk	<i>Summarizes the attribrisk object.</i>
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Description

This is a method for the function summary for object of the class "attribrisk".

Usage

```
## S3 method for class 'attribrisk'  
summary(object, ...)
```

Arguments

object	A attribrisk output object of class "attribrisk".
...	further arguments passed to or from other methods.

Value

The attribrisk object invisible flag set to prevent printing.

See Also

[attribrisk](#)

whisnant

Summary data from Whisnant, et al 1996 concerning cerebral infarction, blood pressure, diabetes

Description

Summary data from Whisnant, et al 1996 concerning cerebral infarction, blood pressure, diabetes

Usage

```
data(whisnant)
```

Format

A data frame with 4 observations on the following 3 variables.

infarct Stroke indicator. (1=Stroke, 0=Normal)

hbp High blood pressure indicator. (1=High Blood Pressure, 0=Normal)

y The number of patients in the observed categories

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