

Package ‘efflog’

July 16, 2015

Title The Causal Effects for a Causal Loglinear Model

Description Fitting a causal loglinear model and calculating the causal effects for a causal loglinear model with the multiplicative interaction or without the multiplicative interaction, obtaining the natural direct, indirect and the total effect. It calculates also the cell effect, which is a new interaction effect.

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 efflog-package

The Causal Effects for a Causal Loglinear Model

Description

Calculate the Causal Effects for a causal loglinear model with the multiplicative interaction or without the multiplicative interaction

Details

Package: efflog
 Type: Package
 Version: 1.0
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 License: GPL (>=2)

Author(s)

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References

Gheno Gloria (2015), The causal analysis in the loglinear model

 cell_effect_mult_or

Cell effect for loglinear models with the multiplicative interaction

Description

This function calculates the cell effect using the odds ratio for a loglinear model with the multiplicative interaction and under dummy code parametrization

Usage

```
cell_effect_mult_or(x, y, z, w, q)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
q	it is the parameter $\mu^{X=1,Z=1,Y=1}$

Value

cell_effect_mult_or returns the cell effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
cell_effect_mult_or(0.6,0.8,0.5,2,0.6)
```

cell_effect_or	<i>Cell effect for loglinear models without the multiplicative interaction</i>
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Description

This function calculates the cell effect using the odds ratio for a loglinear model without the multiplicative interaction and under dummy code parametrization

Usage

```
cell_effect_or(x, y, z, w)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$

Value

cell_effect_or returns the cell effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
cell_effect_or(0.6,0.8,0.5,2)
```

Cloglin

Fitting a causal log-linear model without the multiplicative interaction

Description

Cloglin is used to fit causal log-linear models under dummy code parametrization

Usage

```
Cloglin(table)
```

Arguments

table it is a table containing the frequency distribution of the variables

Value

Cloglin returns the estimated causal parameters of the additive form, their standard errors and their p-values which test the null hypothesis H_0 : parameter=0.

Author(s)

Gloria Gheno

References

Gheno Gloria (2015), The causal analysis in the loglinear model

Examples

```
tableXYZY<-data.frame(expand.grid(
  X=factor(c("0","1"),levels=c("0","1")),
  Z=factor(c("0","1"),levels=c("0","1")),
  Y=factor(c("0","1"),levels=c("0","1"))),
  count=c(57,47,21,39,31,40,20,95))
Cloglin(tableXYZY)
```

Cloglin_mult	<i>Fitting a causal log-linear model with the multiplicative interaction</i>
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Description

Cloglin_mult is used to fit causal log-linear models and under dummy code parametrization

Usage

```
Cloglin_mult(table)
```

Arguments

table it is a table containing the frequency distribution of the variables

Value

Cloglin_mult returns the estimated causal parameters of the additive form, their standard errors and their p-values which test the null hypothesis $H_0: \text{parameter}=0$.

Author(s)

Gloria Gheno

References

Gheno Gloria (2015), The causal analysis in the loglinear model

Examples

```
tableXYZ<-data.frame(expand.grid(
  X=factor(c("0", "1"),levels=c("0", "1")),
  Z=factor(c("0", "1"),levels=c("0", "1")),
  Y=factor(c("0", "1"),levels=c("0", "1"))),
  count=c(57,47,21,39,31,40,20,95))
Cloglin_mult(tableXYZ)
```

exp_par

Fitting causal log-linear models without the multiplicative interaction

Description

exp_par calculates the causal parameters for a causal log-linear model under dummy code parametrization

Usage

```
exp_par(table)
```

Arguments

table it is a table containing the frequency distribution of the variables

Value

exp_par returns the estimated causal parameters of the multiplicative form

Author(s)

Gloria Gheno

References

Gheno Gloria (2015), The causal analysis in the loglinear model

Examples

```
tableXYZ<-data.frame(expand.grid(
  X=factor(c("0", "1"),levels=c("0", "1")),
  Z=factor(c("0", "1"),levels=c("0", "1")),
  Y=factor(c("0", "1"),levels=c("0", "1"))),
  count=c(57, 47, 21, 39, 31, 40, 20, 95))
exp_par(tableXYZ)
```

exp_par_mult	<i>Fitting causal log-linear model</i>
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Description

exp_par_mult calculates the causal parameters for a causal log-linear model with the multiplicative interaction

Usage

```
exp_par_mult(table)
```

Arguments

table it is a table containing the frequency distribution of the variables

Value

exp_par_mult returns the estimated causal parameters of the multiplicative form

Author(s)

Gloria Gheno

References

Gheno Gloria (2015), The causal analysis in the loglinear model

Examples

```
tableXYZY<-data.frame(expand.grid(
  X=factor(c("0", "1"),levels=c("0", "1")),
  Z=factor(c("0", "1"),levels=c("0", "1")),
  Y=factor(c("0", "1"),levels=c("0", "1"))),
  count=c(57, 47, 21, 39, 31, 40, 20, 95))
exp_par_mult(tableXYZY)
```

indirect_effect_or *Indirect effect for loglinear models both with the multiplicative interaction and without it*

Description

This function calculates the indirect effect using the odds ratio for any loglinear model and under dummy code parametrization

Usage

```
indirect_effect_or(x, y, z, w, t)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
t	it is the parameter $\mu_c^{X=1,Z=1}$

Value

indirect_effect_or returns the indirect effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
indirect_effect_or(0.6,0.8,0.5,2,0.7)
```

ndirect_effect_mult_or

Natural direct effect for loglinear models with the multiplicative interaction

Description

This function calculates the natural direct effect using the odds ratio for a loglinear model with the multiplicative interaction and under dummy code parametrization

Usage

```
ndirect_effect_mult_or(x, y, z, w, t, q)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
t	it is the parameter $\mu_c^{X=1,Z=1}$
q	it is the parameter $\mu^{X=1,Z=1,Y=1}$

Value

ndirect_effect_mult_or returns the natural direct effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
ndirect_effect_mult_or(0.6,0.8,0.5,2,0.7,0.6)
```

ndirect_effect_or	<i>Natural direct effect for loglinear models without the multiplicative interaction</i>
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Description

This function calculates the natural direct effect using the odds ratio for a loglinear model without the multiplicative interaction and under dummy code parametrization

Usage

```
ndirect_effect_or(x, y, z, w, t)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
t	it is the parameter $\mu_c^{X=1,Z=1}$

Value

ndirect_effect_or returns the natural direct effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
#> ndirect_effect_or(0.6,0.8,0.5,2,0.7)
#[1] 0.8039409
```

total_effect_mult_or *Total effect for loglinear models with the multiplicative interaction*

Description

This function calculates the total effect using the odds ratio for a loglinear model with the multiplicative interaction and under dummy code parametrization

Usage

```
total_effect_mult_or(x, y, z, w, t, q)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
t	it is the parameter $\mu_c^{X=1,Z=1}$
q	it is the parameter $\mu^{X=1,Z=1,Y=1}$

Value

total_effect_mult_or returns the total effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
total_effect_mult_or(0.6,0.8,0.5,2,0.7,0.6)
```

total_effect_or	<i>Total effect for loglinear models without the multiplicative interaction</i>
-----------------	---

Description

This function calculates the total effect using the odds ratio for a loglinear model without the multiplicative interaction and under dummy code parametrization

Usage

```
total_effect_or(x, y, z, w, t)
```

Arguments

x	it is the parameter $\mu^{Y=1}$
y	it is the parameter $\mu^{X=1,Y=1}$
z	it is the parameter $\mu^{Z=1,Y=1}$
w	it is the parameter $\mu_c^{Z=1}$
t	it is the parameter $\mu_c^{X=1,Z=1}$

Value

total_effect_or returns the total effect

Author(s)

Gloria Gheno

References

Gheno Gloria (2015),The causal analysis in the loglinear model

Examples

```
total_effect_or(0.6,0.8,0.5,2,0.7)
```

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