Package 'BayDR'

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Type Package

Title Bayesian model averaging estimate

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Author YL

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Description Bayesian model averaging estimate

License What Licence is it under ?

Depends Rcpp (>= 0.10.2), RcppArmadillo,boot, LaplacesDemon, plyr,mnormt, speedglm

LinkingTo Rcpp,RcppArmadillo

Collate
'AllEst_C.R' 'AllEstAddition_C.R' 'bay.new.R' 'bay.old.R''CausalEst_C.R' 'DatGen_C.R' 'para.est.R' 'RcppExports

Archs i386, x86_64

R topics documented:

BayDR-package *What the package does (short line)*

Description

More about what it does (maybe more than one line) ~~ A concise (1-5 lines) description of the package ~~

Details

Package:	BayDR
Type:	Package
Version:	1.0
Date:	2013-07-14
License:	What license is it under?

~~ An overview of how to use the package, including the most important functions ~~

Author(s)

YL

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References

~~ Literature or other references for background information ~~

See Also

~~ Optional links to other man pages, e.g. ~~ ~~ <pkg> ~~

AllEs_C *Five estimators*

Description

This function gives P snew sold bold bnew

Usage

```
AllEs_C(Y, X, C, k_q, a0, b0, a1, b1, mean, BinMean, con,
  BinCon, addBin, kappa, beta, Mc.error, Nhead)
```

Arguments

Y	binary repsonse vector length of n
X	binary exposure vector same length with Y
C	binary confounder matrix n*r, r the number of counfouders
k_q(1)	prior parameter of the Dirichlet distribution for Pr(C=c)
a0,b0,a1,b1(1)	prior parameter of the saturated old estimate
mean	default (0.01,0.99) con (1,20) the range of the grid for the hyperparameter of the saturated new estimate
BinMean(20),BinCon(20)	n_1 control the number of new-added points
kappa(0.5)	the prior weight when calculating the bayesian esimate
beta	30^2*diag(rep(1,ncol(C)+2)),the prior of the paramatric estimate
Mc.error(0.001)	controls the Mc.error when estimating the parametric estimate
Nhead(10)	t The number of points in the first where new points are attached to
addBin(10)	n_2

Value

a list of five estimates

Examples

```
## Not run:
data(sampleDat)
Y=sample.dataset$Y
X=sample.dataset$X
C=sample.dataset$C
est=AllEs_C(Y,X,C,addBin=10)
est$likelihood # l.old        l.p      l.new


$est
Sold        Snew           P        Bold        Bnew
0.009647389 0.388687875 0.396289809 0.009647389 0.388687875

$likelihood
l.old        l.p      l.new
-699.9814 -1182.9841  -608.2210


## End(Not run)
```

`bay.est.new` *Compute the Snew P and Bnew*

Description

This function computes the new bayesian estimator

Usage

```
bay.est.new(Y, X, C, k_q, mean, BinMean, con, BinCon,
  addBin, kappa, beta, Mc.error, liketype, Dat)
```

Arguments

`Y`	binary repsonse vector length of n
`X`	binary exposure vector same length with Y
`C`	binary confounder matrix n*r, r the number of counfouders
`k_q(1)`	prior parameter of the Dirichlet distribution for Pr(C=c)
`mean(0.01,0.99),con(1,20)`	the range of the grid for the hyperparameter of the saturated new estimate
`BinMean(20),BinCon(20)`	control the number of new-added points
`kappa(0.5)`	the prior weight when calculating the bayesian esimate
`beta`	the prior of the paramatric estimate
`Mc.error(0.001),`	controls the Mc.error when estimating the parametric estimate
`addBin(10)`	n_2

Value

a list of saturated, bayesian estimate and paramatric estimate

See Also

AllEst_C

Examples

```
## Not run:
data(sampleDat)
Y=sample.dataset$Y
X=sample.dataset$X
C=sample.dataset$C
bay.est.new(Y,X,C)

## End(Not run)
```

`bay.est.old` *Compute the Sold P and Bold*

Description

This function computes the old bayesian estimator

Usage

```
bay.est.old(Y, X, C, k_q = 1, prior0, prior1, kappa,
  beta, Mc.error = 0.001, Dat)
```

Arguments

`Y`	response varaible
`X`	exposure
`C`	confounder matrix
`k_q(1)`	prior parameter of the Dirichlet distribution for Pr(C=c)
`prior0(1),prior1(1)`	prior parameter of the saturated old estimate
`kappa(0.5)`	the prior weight when calculating the bayesian esimate
`beta`	the prior of the paramatric estimate
`Mc.error(0.001),`	controls the Mc.error when estimating the parametric estimate

Value

a list of paramatric estimate, bayesian estimate and saturated old estimate

See Also

`Allest_C`

Examples

```
## Not run:
 bay.est.old <- function(Y,X,C,k_q=1,prior0,prior1,kappa,beta,Mc.error=0.001)

## End(Not run)
```

CausalEst *Estimate the true causal effect*

Description

This function estimate the true causal effect

Usage

```
CausalEst(K = 2, r = 6, rho = 0.3, gamma0 = 0.2,
  gamma1 = 1, gamma2 = 1, lambda1 = 1, lambda2 = 0,
  mc.error = 1e-04)
```

Arguments

K	number of block
r	number of confounders in each block
rho	correlation coef
gamma0,gamma1,gamma2	
lambda1,lambda2	
CSample	

Examples

```
## Not run:
CausalEst <- function(K=2,r=6,rho=0.3,gamma0=0.2,gamma1=1,gamma2=1,lambda1=1,lambda2=0,CSample)

## End(Not run)
```

dcom *Decompose the confounder matrix*

Description

This function decomposes the confounder matrix.

Usage

```
dcom(C, X, Y, Dat)
```

Arguments

Y	binary repsonse vector length of n
X	binary exposure vector same length with Y
C	binary confounder matrix n*r, r the number of counfouders
Dat	can be missing if given Y,X,C

Value

a list UqC of the unique levels of C, N..Number, N..Number0, N..Number1

Examples

```
## Not run:
data(sampleDat)
Y=sample.dataset$Y
X=sample.dataset$X
C=sample.dataset$C
dcom(Y,X,C)

## End(Not run)
```

GenDat2 *Simulating the data*

Description

This function simulates the data

Usage

```
GenDat2(n = 1000, K = 2, r = 6, rho = 0.3, gamma0 = 0.2,
  gamma1 = 0, gamma2 = 0, lambda1 = 0, lambda2 = 0)
```

Arguments

n	number of ob
K	number of block
r	number of confounders in each block
rho	correlation coef

Examples

```
## Not run:
 GenDat2 <- function(n=1000,K=2,r=6,rho=0.3,gamma0=0.2,gamma1=0,gamma2=0,
lambda1=0,lambda2=0)

## End(Not run)
```

para.est *Compute the P.*

Description

This function computes paramatrix estimator.

Usage

```
para.est(Y, X, C, beta, k_q = 1, Mc.error = 0.001, Dat)
```

Arguments

Y	response varaible
X	exposure
C	confounder matrix
beta	prior matrix for the paramatric model
Mc.error	default 0.001

Examples

```
## Not run:
para.est <- function(Y,X,C,beta,k_q=1,Mc.error=0.001)

## End(Not run)
```

sample.empty *Sample the empty cells data*

Description

This function generate the empty-cell samples

Usage

```
sample.empty(UqC, N, colnumber)
```

Arguments

UqC

N

Examples

```
## Not run:
sample.empty<- function(UqC,N)

## End(Not run)
```

`sat.est.new` *Compute the Snew*

Description

This function computes the new saturated estimator

Usage

```
sat.est.new(Y, X, C, k_q, mean, BinMean, con, BinCon,
  addBin, Nhead, liketype, Dat)
```

Arguments

`Y`	response varaible
`X`	exposure
`C`	confounder matrix
`mean`	default (0.01,0.99) con (1,20) the range of the grid for the hyperparameter of the saturated new estimate
`BinMean(20),BinCon(20)`	control the number of new-added points
`addBin(10)`	
`kappa`	the prior weight when calculating the bayesian esimate
`beta`	the prior of the paramatric estimate
`liketype`	type of likelihood for saturated model bernoulli or binomial

Value

a list of saturated estimate and its likelihood

See Also

`Allest_C`

Examples

```
## Not run:
data(sampleDat)
Y=sample.dataset$Y
X=sample.dataset$X
C=sample.dataset$C
 sat.est.new <- function(Y,X,C,k_q,mean=c(0.01,0.99),BinMean = 20,
con = c(1,20),BinCon = 20)

## End(Not run)
```

`sat.est.old` *Compute the Sold.*

Description

This function computes the old saturated estimators

Usage

```
sat.est.old(Y, X, C, k_q, prior0, prior1, Dat)
```

Arguments

`Y`	response varaible
`X`	exposure
`C`	confounder matrix
`prior0,prior1`	prior parameter of the saturated old estimate
`kappa`	the prior weight when calculating the bayesian esimate
`beta`	the prior of the paramatric estimate
`Mc.error(0.001),`	controls the Mc.error when estimating the parametric estimate

Value

a list of saturated old estimate and its likelihood

See Also

`Allest_C.R`

Examples

```
## Not run:
AllEstD_C <- function(Y,X,C,k_q=1,prior0=c(1,1),prior1=c(1,1))

## End(Not run)
```

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