Package 'BayesIV'

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Type Package

Title Bayesian Instrumental Variable Model with Latent Factors

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Description A package to fit Bayesian Instrumental Variable model with latent factors and summarize posterior draws of treatment effects.

License GPL (>= 2)

Imports Rcpp (>= 0.12.3), DPpackage, msm

LinkingTo Rcpp

RoxygenNote 5.0.1

LazyData true

R topics documented:

BayesIV-package *Bayesian Instrumental Variable Model with Latent Factors*

Description

A package to fit Bayesian Instrumental Variable model with latent factors and summarize posterior draws of treatment effects.

Details

The DESCRIPTION file: This package was not yet installed at build time.

Index: This package was not yet installed at build time.
~~ An overview of how to use the package, including the most important ~~ ~~ functions ~~

Author(s)

Samrachana Adhikari

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References

~~ Literature or other references for background information ~~

See Also

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

getATE_posterior *getATE_posterior*

Description

getATE_posterior

Usage

```
getATE_posterior(fittedModel, X, niter, burnin = 0, thin = 1)
```

Arguments

fittedModel	: model fits of the class 'BayesIV'
X	: a numeric matrix of covariates (excluding the column with intercept)
niter	: number indicating the size of the MCMC sample
thin	: number to thin the MCMC chain with
burnin:	number indicating burnin of the MCMC chain

Value

a list with posterior draws of Y1hat, Y0hat and ATE

Author(s)

Sam Adhikari

`getATE_posterior_NDPM` *getATE_posterior_NDPM*

Description

getATE_posterior_NDPM

Usage

```
getATE_posterior_NDPM(fittedModel, X, niter, burnin = 0, thin = 1)
```

Arguments

`fittedModel`	: model fits of the class 'BayesIV'
`X`	: a numeric matrix of covariates (excluding the column with intercept)
`niter`	: number indicating the size of the MCMC sample
`thin`	: number to thin the MCMC chain with
`burnin:`	number indicating burnin of the MCMC chain

Value

a list with posterior draws of Y1hat, Y0hat and ATE

Author(s)

Sam Adhikari

`getTT_posterior` *getTT_posterior*

Description

getTT_posterior

Usage

```
getTT_posterior(fittedModel, X, niter, burnin = 0, thin = 1)
```

Arguments

fittedModel	: model fits of the class 'BayesIV'
X	: a numeric matrix of covariates (excluding the column with intercept)
niter	: number indicating the size of the MCMC sample
thin	: number to thin the MCMC chain with
burnin:	number indicating burnin of the MCMC chain

Value

posterior chain of ATT

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getTT_posterior_NDPM
getTT_posterior_NDPM

Description

getTT_posterior_NDPM

Usage

```
getTT_posterior_NDPM(fittedModel, XOc, XTr, Z, niter, burnin = 0, thin = 1)
```

Arguments

fittedModel	: model fits of the class 'BayesIV'
XTr	: a numeric matrix of covariates
niter	: number indicating the size of the MCMC sample
thin	: number to thin the MCMC chain with
X0c	: a numeric matrix of covariates (excluding the column with intercept)
Z:	A vector of instrumental variable
burnin:	number indicating burnin of the MCMC chain

Value

posterior chain of ATT

Author(s)

Sam Adhikari

`getweights_MTE` *getMTE_posterior*

Description

getMTE_posterior

Usage

```
getweights_MTE(fittedModel, u, niter, burnin = 0, thin = 1)
```

Arguments

`fittedModel`	: model fits of the class 'BayesIV'
`niter`	: number indicating the size of the MCMC sample
`thin`	: number to thin the MCMC chain with
`u:`	margin
`burnin:`	number indicating burnin of the MCMC chain

Value

a list with posterior draws of MTE

Author(s)

Sam Adhikari

`Gibbs_Reg` *Gibbs_Reg: Gibbs sampler function to sample slope coefficients in linear regression with normal noise*

Description

Gibbs_Reg: Gibbs sampler function to sample slope coefficients in linear regression with normal noise

Usage

```
Gibbs_Reg(Y, X, sigmasq_prior, sigmasq_prior_alpha, sigmasq, PP)
```

Arguments

`Y`	: dependent variable
`X`	: covariates
`sigmasq_prior`	: variance of normal prior
`sigmasq_prior_alpha`	: variance of the normal prior for `alpha`
`sigmasq`	: variance of `Y`
`PP`	: number of covariates

Value

A draw from the posterior distribution

`mcmcRunDP` *mcmcRunDP: MCMC sampler for IV Analysis with Dirichlet process mixture prior on the latent factors*

Description

mcmcRunDP: MCMC sampler for IV Analysis with Dirichlet process mixture prior on the latent factors

Usage

```
mcmcRunDP(Yobs, Tr, X, Z, niter)
```

Arguments

`Tr`	: Binary numeric vector of treatment indicator.
`X`	: numeric matrix of covariates of dimension n-By-p
`Z`	: numeric vector of instrumental variable of length n
`niter`	: number of MCMC sampler to be run
`Yobs:`	Input numeric vector of observed outcome of length n, can be binary or continuous.

Value

runModel : list of posterior samples for each parameter, acceptance rate and tuning parameter

Author(s)

Sam Adhikari

Examples

```
## Not run: obj = mcmcRunDP(Yobs,Tr,X,Z,niter)
```

`mcmcRun_Normal` *mcmcRun_Normal: MCMC sampler for IV Analysis with Normal prior on the latent factors*

Description

mcmcRun_Normal: MCMC sampler for IV Analysis with Normal prior on the latent factors

Usage

```
mcmcRun_Normal(Yobs, Tr, X, Z, niter)
```

Arguments

`Tr`	: Binary numeric vector of treatment indicator.
`X`	: numeric matrix of covariates of dimension n-By-p
`Z`	: numeric vector of instrumental variable of length n
`niter`	: number of MCMC sampler to be run
`Yobs:`	Input numeric vector of observed outcome of length n, can be binary or continuous.

Value

runModel : list of posterior samples for each parameter

Author(s)

: Sam Adhikari

Examples

```
## Not run: obj = mcmcRun_Normal(Yobs,Tr,X,Z,niter)
```

`mcmcRun_Normal_DPM` *mcmcRun_Normal_DPM: MCMC sampler for IV Analysis with Dirichlet process mixture prior on the latent factors*

Description

mcmcRun_Normal_DPM: MCMC sampler for IV Analysis with Dirichlet process mixture prior on the latent factors

Usage

```
mcmcRun_Normal_DPM(Yobs, Tr, X, Z, niter, priors = NULL, initialVals = NULL)
```

Arguments

Yobs	: Input numeric vector of observed outcome of length n, can be binary or continuous.
Tr	: Binary numeric vector of treatment indicator.
X	: numeric matrix of covariates of dimension n-By-p
Z	: numeric vector of instrumental variable of length n
niter	: number of MCMC sampler to be run
priors:	list to specify the parameters for the prior distribution. If NULL, default specification is used.
initialVals:	list of initial values for each parameter. If NULL, default setting for initialization is used.

Value

runModel : list of posterior samples for each parameter

Author(s)

Sam Adhikari

Examples

```
{
obj = mcmcRun_Normal_DPM(Yobs=Yobs,Tr=D,X=X[,-1],Z=Z,niter=10,priors=NULL,initialVals=NUL
}
```

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plotATEs *plotATEs: Function to plot posterior chain of ATEs*

Description

plotATEs: Function to plot posterior chain of ATEs

Usage

```
plotATEs(xx, pdfname = NULL, int.quantiles, effect_true, effect_obs,
  labels.axis = NULL)
```

`rcpp_hello_world` *Simple function using Rcpp*

Description

Simple function using Rcpp

Usage

```
rcpp_hello_world()
```

Examples

```
## Not run:
rcpp_hello_world()

## End(Not run)
```

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