

Package ‘BaM’

April 17, 2009

Version 0.96

Date 2009-02-12

Author Jeff Gill <jgill@wustl.edu>

Maintainer Jeff Gill <jgill@wustl.edu>

Title Functions and datasets for books by Jeff Gill.

Description Books is “Bayesian Methods: A Social and Behavioral Sciences Approach, Second Edition published by CRC Press, 2007”

Depends R (>= 1.4.1), bayesm, coda, MASS, stats, mice, survival, foreign,nnet

License GPL

URL jgill.wustl.edu

LazyData yes

Repository CRAN

Date/Publication 2009-02-12 17:25:44

R topics documented:

actuarial	2
afghan.deaths	3
africa	3
bcp	4
biv.exp	4
biv.norm.post	5
cabinet.duration	6
cand.gen	6
child	7
china.wars	7
coal.mining.disasters	8
contracep	8

dmultinorm	9
dp	9
durations.hpd	10
elicspend	10
ethnic.immigration	11
executions	11
experts	11
expo.gibbs	12
expo.metrop	12
fdr	13
hanjack	13
hit.run	14
iq	14
italy.parties	15
marriage.rates	15
metropolis	16
mhplot.walk.MH	16
military	17
nc.sub.dat	17
norm.known.var	18
normal.posterior.summary	18
opic	18
pbc.vote	19
recidivism	20
retail.sales	20
rmultnorm	21
romney	21
sir	21
strikes	24
t.ci	25
terrorism	26
texas	27
walk.G	27
wars	28

Index **29**

actuarial	<i>actuarial</i>
-----------	------------------

Description

Actuarial data.

Usage

data(actuarial)

Source

Scollnik, D. P. M. (2001).

Actuarial Modeling with MCMC and BUGS. *North American Actuarial Journal* 5, 95-124.

afghan.deaths *afghan.deaths*

Description

NATO fatalities in Afghanistan. See page 365

Usage

data(afghan.deaths)

africa *africa*

Description

African Coups Data, pp. 551-552.

Usage

data(africa)

Source

Bratton, M. and Van De Walle, N. (1994). Neopatrimonial Regimes and Political Transitions in Africa. *World Politics* 46, 453-489.

 bcp

bcp

Description

Implementation of bcp function, see pages 362-363.

Usage

`bcp(theta.matrix, y, a, b, g, d)`

Arguments

<code>theta.matrix</code>	theta.matrix
<code>y</code>	Counts of Coal Mining Disasters
<code>a</code>	Alpha Value in the lambda Prior
<code>b</code>	Beta Value in the lambda Prior
<code>g</code>	Gamma Value in the phi Prior
<code>d</code>	Delta Value in the phi Prior

 biv.exp

biv.exp

Description

Simple Metropolis algorithm demonstration using a bivariate exponential target from Chapter 1 (pages 33-37).

Usage

`biv.exp(x, y, L1, L2, L)`

Arguments

<code>x</code>	starting point for the x vector
<code>y</code>	starting point for the y vector
<code>L1</code>	event intensity for the x dimension
<code>L2</code>	event intensity for the y dimension
<code>L</code>	shared event intensity

```
biv.norm.post      biv.norm.post
```

Description

A function to calculate posterior quantities of the bivariate normal. See pages 79-86

Usage

```
biv.norm.post(data.mat, alpha, beta, m, n0=5)
```

Arguments

data.mat	A matrix with two columns of normally distributed data
alpha	Wishart first (scalar) parameter
beta	Wishart second (matrix) parameter
m	prior mean for mu
n0	prior confidence parameter

Examples

```
## Not run:
{
data.n10 <- rmultinorm(10, c(1,3), matrix(c(1.0,0.7,0.7,3.0),2,2))
rep.mat <- NULL; reps <- 1000
for (i in 1:reps)
rep.mat <- rbind(rep.mat, biv.norm.post(data.n10,3, matrix(c(10,5,5,10),2,2),c(2,2)))
round(normal.posterior.summary(rep.mat),3)

rwishart <- function(df, p = nrow(SqrtSigma), SqrtSigma = diag(p)) {
  if((Ident <- missing(SqrtSigma)) && missing(p)) stop("either p or SqrtSigma must be spec
  Z <- matrix(0, p, p)
  diag(Z) <- sqrt(rchisq(p, df:(df-p+1)))
  if(p > 1) {
    pseq <- 1:(p-1)
    Z[rep(p*pseq, pseq) + unlist(lapply(pseq, seq))] <- rnorm(p*(p-1)/2)
  }
  if(Ident) crossprod(Z)
  else crossprod(Z)
}

if(Ident) crossprod(Z)
else crossprod(Z)
if(Ident) crossprod(Z)
else crossprod(Z)
}
## End(Not run)
```

cabinet.duration *cabinet.duration*

Description

Cabinet duration (constitutional inter-election period) for eleven Western European countries from 1945 to 1980..

Usage

cabinet.duration

Format

A data frame with 115 observations on the following 2 variables.

A data frame with 115 observations

References

Browne, E. C., Frenreis, J. P., and Gleiber, D. W. (1986). The Process of Cabinet Dissolution: An Exponential Model of Duration and Stability in Western Democracies. *American Journal of Political Science* 30, 628-650.

cand.gen *cand.gen*

Description

Simple Metropolis algorithm demonstration using a bivariate exponential target from Chapter 1 (pages 33-37).

Usage

cand.gen(max.x, max.y)

Arguments

max.x Maximum Value of X Random Variable

max.y Maximum Value of Y Random Variable

`child`*child*

Description

Child Support Collection Policies. See page 128

Usage`child`**Format**

A data frame with single column.

SCCOLL Change in Child Support collections

ACES Chapters per Population

INSTABIL Policy Instability

AAMBIG Policy Ambiguity

CSTAFF Change in Agency Staffing

ARD State Divorce Rate

ASLACK Organizational Slack

AEXPEND State Level Expenditures

Source

Meier, K.J. and Keisler, L.R. (1996). Public Administration as a Science of the Artificial: A Method for Prescription

Public Administration Review 56, 459-466.

`china.wars`*china.wars*

Description

Modeling code for the example of ancient Chinese wars. See page 125-127.

```
coal.mining.disasters
      coal.mining.disasters
```

Description

British Coal Mining Disasters.

Usage

```
coal.mining.disasters
```

Source

Lynn, R. and Vanhanen, T. (2001). National IQ and Economic Development. *Mankind Quarterly* LXI, 415-437.

Examples

```
## Not run:
{
#data(iq)
  n <- length(iq[,1])
  t.iq <- (iq[,1]-mean(iq[,1]))/(sd(iq[,1])/sqrt(n))
  r.t <- (rt(100000, n-1)*(sd(iq)/sqrt(n))) + mean(iq)
  quantile(r.t, c(0.01, 0.10, 0.25, 0.5, 0.75, 0.90, 0.99))
  r.sigma.sq <- 1/rgamma(100000, shape=(n-2)/2, rate=var(iq[,1])*(n-1)/2)
  quantile(sqrt(r.sigma.sq), c(0.01, 0.10, 0.25, 0.5, 0.75, 0.90, 0.99))
}
## End(Not run)
```

```
contracep      contracep
```

Description

Contraception Data by country. See page 416

Usage

```
data(contracep)
```

Source

Wong, G. Y. and Mason, W. M. (1985). The Hierarchical Logistic Regression Model for Multilevel Analysis. *Journal of the American Statistical Association* 80, 513-524.

dmultinorm	<i>dmultinorm</i>
------------	-------------------

Description

dmultinorm function, see page 393.

Usage

```
dmultinorm(xval, yval, mu.vector, sigma.matrix)
```

Arguments

xval	Vector of X Random Variables
yval	Vector of Y Random Variables
mu.vector	Mean Vector
sigma.matrix	Matrix of Standard Deviations

dp	<i>dp</i>
----	-----------

Description

Death Penalty Data, See Page 189.

Usage

```
data(dp)
```

Source

Norrander, B. (2000). The Multi-Layered Impact of Public Opinion on Capital Punishment Implementation in the American States. *Political Research Quarterly* 53, 771-793.

durations.hpd *durations.hpd*

Description

Simple HPD calculator from Chapter 2 (page 51).

Usage

```
simple.hpd(support, fn.eval, start, stop, target=0.90, tol=0.01)
```

Arguments

support	x-axis values
fn.eval	function values at x-axis points
start	starting point in the vectors
stop	stopping point in the vectors
target	Desired X Level
tol	Tolerance for round-off

Examples

```
## Not run:
{
data(cabinet.duration)
  ruler <- seq(0.45,0.75,length=10000)
  g.vals <- round(dgamma(ruler,shape=sum(N), rate=sum(N*dur)),2)
  start.point <- 1000; stop.point <- length(g.vals)
  simple.hpd(ruler,g.vals,start.point,stop.point)
}
## End(Not run)
```

elicspend *elicspend*

Description

Campaign spending data. See page 164

Usage

```
data(elicspend)
```

ethnic.immigration *ethnic.immigration*

Description

Ethnic Immigration data. see page 280.

Usage

```
data(ethnic.immigration)
```

Source

Peach, C. (1997).

Postwar Migration to Europe: Reflux, Influx, Refuge. *Social Science Quarterly* 78, 269-283.

executions *executions*

Description

Execution data.

Usage

```
data(executions)
```

experts *Campaign fundraisign elicitations*

Description

Fabricated data on campaign fundraising elicitations. See page 164

Usage

```
experts(q1, q2, q3)
```

Arguments

q1 the 0.1 quantile

q2 the 0.5 quantile

q3 the 0.9 quantile

References

None

expo.gibbs	<i>expo.gibbs</i>
------------	-------------------

Description

Simple Gibbs sampler demonstration on conditional exponentials from Chapter 1 (pages 30-33).

Usage

```
expo.gibbs (B, k, m)
```

Arguments

B	an upper bound
k	length of the subchains
m	number of iterations

expo.metrop	<i>expo.metrop</i>
-------------	--------------------

Description

Simple Metropolis algorithm demonstration using a bivariate exponential target from Chapter 1 (pages 33-37).

Usage

```
expo.metrop (m, x, y, L1, L2, L, B)
```

Arguments

m	number of iterations
x	starting point for the x vector
y	starting point for the y vector
L1	event intensity for the x dimension
L2	event intensity for the y dimension
L	shared event intensity
B	upper bound

fdr	<i>fdr</i>
-----	------------

Description

FDR election data. See page 562

Usage

data(fdr)

hanjack	<i>hanjack</i>
---------	----------------

Description

1964 presidential election data. See page 245

Usage

hanjack(N, F, L, W, K, IND, DEM, WR, WD, SD)

Arguments

N	number of cases in the group
F	Observed cell proportion voting for Johnson
L	log-ratio of this proportion, see p. 246
W	collects the inverse of the diagonal of the matrix for the group-weighting from $[N_i P_i (1 - P_i)]$
K	constant
IND	indifference to the election
DEM	stated preference for Democratic party issues
WR	Weak Republican
WD	Weak Democrat
SD	Strong Democrat

References

Hanushek, E. A. and Jackson, J. E. (1977). *Statistical Methods for Social Scientists* San Diego, Academic Press

 hit.run

hit.run

Description

Implementation of hit.run algorithm, p. 377.

Usage

```
hit.run(theta.mat, reps, I.mat)
```

Arguments

theta.mat	theta.mat
reps	reps
I.mat	I.mat

Examples

```
## Not run:
#code to implement graph on p. 378, see page 393.

num.sims <- 10000
Sig.mat <- matrix(c(1.0,0.95,0.95,1.0),2,2)
walks<-rbind(c(-3,-3),matrix(NA,nrow=(num.sims-1),ncol=2))
walks <- hit.run(walks,num.sims,Sig.mat)
z.grid <- outer(seq(-3,3,length=100),seq(-3,3,length=100),
FUN=dmultinorm,c(0,0),Sig.mat)
contour(seq(-3,3,length=100),seq(-3,3,length=100),z.grid,
levels=c(0.05,0.1,0.2))
points(walks[5001:num.sims,],pch=".")

## End(Not run)
```

 iq

iq data frame

Description

IQ data for 80 countries. See pages 93-95

Usage

```
data(iq)
```

Source

Lynn, R. and Vanhanen, T. (2001). National IQ and Economic Development. *Mankind Quarterly* LXI, 415-437.

Examples

```
## Not run:
{
n <- length(iq[,1])
t.iq <- (iq[,1]-mean(iq[,1]))/(sd(iq[,1])/sqrt(n))
r.t <- (rt(100000, n-1)*(sd(iq)/sqrt(n)) + mean(iq)
quantile(r.t,c(0.01,0.10,0.25,0.5,0.75,0.90,0.99))
r.sigma.sq <- 1/rgamma(100000,shape=(n-2)/2, rate=var(iq[,1])*(n-1)/2)
quantile(sqrt(r.sigma.sq), c(0.01,0.10,0.25,0.5,0.75,0.90,0.99))
}
## End(Not run)
```

italy.parties	<i>italy.parties</i>
---------------	----------------------

Description

Italian Parties Data. See page 389

Usage

```
data(italy.parties)
```

marriage.rates	<i>marriage.rates</i>
----------------	-----------------------

Description

Italian Marriage Rates. See page 409

Usage

```
data(marriage.rates)
```

Source

Columbo, B. (1952).

Preliminary Analysis of Recent Demographic Trends in Italy. *Population Index* 18, 265-279.

metropolis	<i>metropolis</i>
------------	-------------------

Description

Implementation of metropolis function, p. 375.

Usage

```
metropolis(theta.matrix, reps, I.mat)
```

Arguments

theta.matrix	theta.matrix
reps	reps
I.mat	I.mat

mhplot.walk.MH	<i>mhplot.walk.MH</i>
----------------	-----------------------

Description

Code used for figure 9.4, see page 392..

Usage

```
## S3 method for class 'MH':  
mhplot.walk ( walk.mat )
```

Arguments

walk.mat	walk.mat
----------	----------

military

military

Description

A function to calculate posterior quantities of the bivariate normal. See pages 79-86

Usage

```
data(military)
```

Source

Faber, J. (1989) *Annual Data on Nine Economic and Military Characteristics of 78 Nations (SIRE NATDAT), 1948-1983*. Ann Arbor: Inter-University Consortium for Political and Social Research and Amsterdam, and Amsterdam, the Netherlands: Europa Institute, Steinmetz Archive

nc.sub.dat

nc.sub.dat

Description

North Carolina county level health data from the 2000 U.S. census and North Carolina public records.

Usage

```
nc.sub.dat
```

Format

Substantiated.Abuse Substantiated.Abuse:within family documented abuse for the county

Percent.Poverty percent within the county living in poverty, U.S. definition

Total.Population Total Population/1000

References

United States Census , North Carolina Division of Public Health, Women's and Children's Health Section in Conjunction with State Center for Health Statistics.

<code>norm.known.var</code>	<i>norm.known.var</i>
-----------------------------	-----------------------

Description

A function to calculate posterior quantities for a normal-normal model with known variance (pages 74-77). It produces the posterior mean, variance, and 95% credible interval for user-specified prior.

Usage

```
n.post1(data.vec, pop.var, prior.mean, prior.var)
```

Arguments

<code>data.vec</code>	a vector of assumed normally distributed data
<code>pop.var</code>	known population variance
<code>prior.mean</code>	mean of specified prior distribution for mu
<code>prior.var</code>	variance of specified prior distribution for mu

<code>normal.posterior.summary</code>	<i>normal posterior summary</i>
---------------------------------------	---------------------------------

Description

A function to calculate posterior quantities of bivariate normals. See pages 79-86.

Usage

```
normal.posterior.summary(reps)
```

Arguments

<code>reps</code>	a matrix where the columns are defined as in the output of <code>biv.norm.post</code> :
-------------------	---

<code>opic</code>	<i>opic</i>
-------------------	-------------

Description

private capital investment data. See Page 390.

Usage

```
data(opic)
```

pbc.vote

pbc.vote

Description

Precinct level data for Palm Beach County, Florida from the 2000 U.S. Presidential election

Usage

pbc.vote

Format

A data frame where each case (row) is one of 516 precincts. The column variables are defined by:

avgage Average age of precinct voters

technology Voting Technology

badballots combined overvotes and undervotes

size Total ballots cast

Republican Republican

npa No party affiliation

white White

bla Black

his Hispanic

int Independent party

new Registered to vote after June 30, 2000

Source

Conell, C. and Cohn, S. (1995). Learning from Other People's Actions: Environmental Variation and Diffusion in French Coal Mining Strikes, 1890-1935 *American Journal of Sociology* LI, *American Journal of Sociology*.

Examples

```
## Not run:
{
  n <- length(strikes)
  r <- 1
  s.y <- sum(strikes)

  p.posterior.1000000 <- rbeta(1000000,n*r,s.y+0.5)
  length(p.posterior.1000000[p.posterior.1000000<0.05])/1000000

  par(mar=c(3,3,3,3))
}
```

```
ruler <- seq(0,1,length=1000)
beta.vals <- dbeta(ruler,n*r,s.y+0.5)
plot(ruler[1:200],beta.vals[1:200],yaxt="n",main="",ylab="",type="l")
mtext(side=2,line=1,"Density")
for (i in 1:length(ruler))
  if (ruler[i] < 0.05)
    segments(ruler[i],0,ruler[i],beta.vals[i])
    segments(0.04,3,0.02,12.2)
    text(0.02,12.8,"0.171")
}
## End(Not run)
```

recidivism	<i>recidivism</i>
------------	-------------------

Description

Recidivism Rates. See page 207

Usage

```
data(recidivism)
```

retail.sales	<i>retail.sales</i>
--------------	---------------------

Description

Retail Sales Data. See page 402

Usage

```
data(retail.sales)
```

`rmultnorm`*rmultnorm*

Description

a function to generate random multivariate Gaussians

Usage

```
rmultnorm(n, mu, vmat, tol=1e-07)
```

Arguments

n

mu

vmat

tol

`romney`*romney*

Description

Analysis of cultural consensus data using binomial likelihood and beta prior.

Usage

```
romney()
```

`sir`*sir*

Description

Implementation of Rubin's Sir, see pages 338-341.

Usage

```
sir(data.mat, theta.vector, theta.mat, M, m, tol=1e-06, ll.func, df=0)
```

Arguments

<code>data.mat</code>	A matrix with two columns of normally distributed data
<code>theta.vector</code>	The initial coefficient estimates
<code>theta.mat</code>	The initial vc matrix
<code>M</code>	The number of draws
<code>m</code>	The desired number of accepted values
<code>tol</code>	The rounding/truncing tolerance
<code>ll.func</code>	loglike function for empirical posterior
<code>df</code>	The df for using the t distribution as the approx distribution

Examples

```

## Not run:

sir <- function(data.mat,theta.vector,theta.mat,M,m,tol=1e-06,ll.func,df=0) {
  importance.ratio <- rep(NA,M)
  rand.draw <- rmultnorm(M,theta.vector,theta.mat,tol = 1e-04)
  if (df > 0)
    rand.draw <- rand.draw/(sqrt(rchisq(M,df)/df))

  empirical.draw.vector <- apply(rand.draw,1,ll.func,data.mat)
  if (sum(is.na(empirical.draw.vector)) == 0) {
    print("SIR: finished generating from posterior density function")
    print(summary(empirical.draw.vector))
  }
  else {
    print(paste("SIR: found",sum(is.na(empirical.draw.vector)),
              "NA(s) in generating from posterior density function, quitting"))
    return()
  }

  if (df == 0) {
    normal.draw.vector <- apply(rand.draw,1,normal.posterior.ll,data.mat)
  }
  else {
    theta.mat <- ((df-2)/(df))*theta.mat
    normal.draw.vector <- apply(rand.draw,1,t.posterior.ll,data.mat,df)
  }
  if (sum(is.na(normal.draw.vector)) == 0) {
    print("SIR: finished generating from approximation distribution")
    print(summary(normal.draw.vector))
  }
  else {
    print(paste("SIR: found",sum(is.na(normal.draw.vector)),
              "NA(s) in generating from approximation distribution, quitting"))
    return()
  }

  importance.ratio <- exp(empirical.draw.vector - normal.draw.vector)

```

```

importance.ratio[is.finite=F] <- 0
importance.ratio <- importance.ratio/max(importance.ratio)
if (sum(is.na(importance.ratio)) == 0) {
  print("SIR: finished calculating importance weights")
  print(summary(importance.ratio))
}
else {
  print(paste("SIR: found",sum(is.na(importance.ratio)),
             "NA(s) in calculating importance weights, quitting"))
  return()
}

accepted.mat <- rand.draw[1:2,]
while(nrow(accepted.mat) < m+2) {
  rand.unif <- runif(length(importance.ratio))
  accepted.loc <- seq(along=importance.ratio)[(rand.unif-tol) <= importance.ratio]
  rejected.loc <- seq(along=importance.ratio)[(rand.unif-tol) > importance.ratio]
  accepted.mat <- rbind(accepted.mat,rand.draw[accepted.loc,])
  rand.draw <- rand.draw[rejected.loc,]
  importance.ratio <- importance.ratio[rejected.loc]
  print(paste("SIR: cycle complete,", (nrow(accepted.mat)-2), "now accepted"))
}
accepted.mat[3:nrow(accepted.mat),]
}

# The following are log likelihood functions that can be plugged into the sir
function above.

logit.posterior.ll <- function(theta.vector,X) {
  Y <- X[,1]
  X[,1] <- rep(1,nrow(X))
  sum( -log(1+exp(-X
          -log(1+exp(X
}

normal.posterior.ll <- function(coef.vector,X) {
  dimnames(coef.vector) <- NULL
  Y <- X[,1]
  X[,1] <- rep(1,nrow(X))
  e <- Y - X
  sigma <- var(e)
  return(-nrow(X)*(1/2)*log(2*pi)
         -nrow(X)*(1/2)*log(sigma)
         -(1/(2*sigma))*(t(Y-X
                           (Y-X
}

t.posterior.ll <- function(coef.vector,X,df) {
  Y <- X[,1]
  X[,1] <- rep(1,nrow(X))
  e <- Y - X
  sigma <- var(e)*(df-2)/(df)
  d <- length(coef.vector)

```

```

    return(log(gamma((df+d)/2)) - log(gamma(df/2))
           - (d/2)*log(df)
           - (d/2)*log(pi) - 0.5*(log(sigma))
           - ((df+d)/2*sigma)*log(1+(1/df)*
                                   (t(Y-X)
                                    (Y-X)
                                   )
           )
}

probit.posterior.ll <- function (theta.vector,X,tol = 1e-05) {
  Y <- X[,1]
  X[,1] <- rep(1,nrow(X))
  Xb <- X
  h <- pnorm(Xb)
  h[h<tol] <- tol
  g <- 1-pnorm(Xb)
  g[g<tol] <- tol
  sum( log(h)*Y + log(g)*(1-Y) )
}

## End(Not run)

```

strikes

strikes

Description

Counts of French coal mining strikes. See page 235-238

Usage

```
strikes
```

Format

A data frame with single column.

Source

Conell, C. and Cohn, S. (1995). Learning from Other People's Actions: Environmental Variation and Diffusion in French Coal Mining Strikes, 1890-1935 *American Journal of Sociology* LI, *American Journal of Sociology*.

Examples

```

## Not run:
{
n <- length(strikes)
r <- 1
s.y <- sum(strikes)
}

```

```

p.posterior.1000000 <- rbeta(1000000,n*r,s.y+0.5)
length(p.posterior.1000000[p.posterior.1000000<0.05])/1000000

par(mar=c(3,3,3,3))
ruler <- seq(0,1,length=1000)
beta.vals <- dbeta(ruler,n*r,s.y+0.5)
plot(ruler[1:200],beta.vals[1:200],yaxt="n",main="",ylab="",type="l")
mtext(side=2,line=1,"Density")
for (i in 1:length(ruler))
  if (ruler[i] < 0.05)
    segments(ruler[i],0,ruler[i],beta.vals[i])
segments(0.04,3,0.02,12.2)
text(0.02,12.8,"0.171")
}
## End(Not run)

```

t.ci

Analysis of Cultural Consensus Data

Description

Analysis of cultural consensus data using binomial likelihood and beta prior.

Usage

```

## S3 method for class 'ci':
t(coefs, cov.mat, level = 0.95, degrees = Inf, quantiles= c(0.025,0.500,0.975)

```

Arguments

coefs	vector of coefficient estimates, usually posterior means
cov.mat	variance-covariance matrix
level	desired coverage level
degrees	degrees of freedom parameter for students-t distribution assumption
quantiles	vector of desired CDF points(quantiles) to return

Examples

```

## Not run:

# Examples on pages 225-226.
# READ IN THE DATA AND USE MULTIPLE IMPUTATION ON MISSING
data(pbc.vote)
X <- cbind(tech, new, turnout, rep, whi)
Y <- badballots
library(nnet); library(mice)

```

```

imp.X <- mice(X)
X <- as.matrix(cbind(rep(1,nrow(X)), complete(imp.X)))

# UNINFORMED PRIOR ANALYSIS
bhat <- solve(t(X)
s2 <- t(Y- X
R <- solve(t(X)
      s2/(nrow(X)-ncol(X)-2)) [1,1]
uninformed.table <- t.ci.table(bhat,R,
      degrees=nrow(X)-ncol(X)) [[2]]
alpha <- (nrow(X)-ncol(X)-1)/2
beta <- 0.5*s2*(nrow(X)-ncol(X))
sort.inv.gamma.sample <- sort(1/rgamma(10000,alpha,beta))
sqrt.sort.inv.gamma.sample <- sqrt(sort.inv.gamma.sample)
uninformed.table <- rbind(uninformed.table,
      c( mean(sqrt.sort.inv.gamma.sample),
        sqrt(var(sqrt.sort.inv.gamma.sample)),
          sqrt.sort.inv.gamma.sample[250],
          sqrt.sort.inv.gamma.sample[5000],
          sqrt.sort.inv.gamma.sample[9750] ))

# CONJUGATE PRIOR ANALYSIS
A <- 3; B <- 9
BBeta <- rep(0,6); Sigma <- diag(c(2,2,2,2,2,2))
tB <- solve(solve(Sigma)
      + t(X)
ts <- 2*B + s2*(nrow(X)-ncol(X)) + (t(BBeta)-t(tB))
      solve(Sigma)
R <- diag(ts/(nrow(X)+A-ncol(X)-2))*
      solve(solve(Sigma)+t(X)
conjugate.table<-t.ci.table(tB,R,
      degrees=nrow(X)+A-ncol(X)-3) [[2]]
sort.inv.gamma.sample <- sort(1/rgamma(10000,alpha,beta))
sqrt.sort.inv.gamma.sample <- sqrt(sort.inv.gamma.sample)
conjugate.table<- rbind(conjugate.table,
      c( mean(sqrt.sort.inv.gamma.sample),
        sqrt(var(sqrt.sort.inv.gamma.sample)),
          sqrt.sort.inv.gamma.sample[250],
          sqrt.sort.inv.gamma.sample[5000],
          sqrt.sort.inv.gamma.sample[9750] ))

## End(Not run)

```

terrorism

terrorism

Description

Terrism Data, See page 187

Usage

```
data(terrorism)
```

References

Falkenrath, R. (2001).

Analytical Models and Policy Prescription: Understanding Recent Innovation in U.S. Counterterrorism. *Studies in Conflict and Terrorism* 24, 159-181.

texas	<i>texas</i>
-------	--------------

Description

Texas Poverty Data. See Page 304.

Usage

```
data(texas)
```

References

The data consist of 1989 county level economic and demographic variables for the 196 nonmetropolitan counties in Texas out of all 2276 nonmetropolitan U.S. counties (“ERS Typology,” <http://www.census.gov/>).

walk.G	<i>walk.G</i>
--------	---------------

Description

Code used for figure 9.2, see page 392.. This example is named plot.walk.G in the text, but was renamed to conform with CRAN standards.

Usage

```
## S3 method for class 'G':
walk(walk.mat, sim.rm, X=1, Y=2)
```

Arguments

walk.mat	walk.mat
sim.rm	sim.rm
X	X
Y	Y

`wars``wars`

Description

wars data

Usage

```
data(wars)
```

Format

A data frame with 115 observations on the following 2 variables.

ONSET Onset Date

TERM Termination date

EXTENT Extent

ETHNIC Ethnicity

DIVERSE Ethnic Diversity

DYADS Allied Dyads

POL.LEV Political Level

COMPLEX Political Complexity

POLAR Polar

BALANCE Capability balance type

TEMPOR temporal context type

DURATION constant

ALLIANCE alliance

SCOPE scope

References

Hanushek, E. A. and Jackson, J. E. (1977). *Statistical Methods for Social Scientists* San Diego, Academic Press.

Index

*Topic **datasets**

- actuarial, 1
- afghan.deaths, 2
- africa, 2
- biv.exp, 3
- cabinet.duration, 5
- cand.gen, 5
- child, 6
- coal.mining.disasters, 7
- contracep, 7
- dp, 8
- durations.hpd, 9
- elicspend, 9
- ethnic.immigration, 10
- executions, 10
- experts, 10
- expo.gibbs, 11
- expo.metrop, 11
- fdr, 12
- hanjack, 12
- iq, 13
- italy.parties, 14
- marriage.rates, 14
- military, 16
- nc.sub.dat, 16
- norm.known.var, 17
- normal.posterior.summary, 17
- opic, 17
- pbc.vote, 18
- recidivism, 19
- retail.sales, 19
- rmultnorm, 20
- romney, 20
- strikes, 23
- t.ci, 24
- terrorism, 25
- texas, 26
- wars, 27

*Topic **file**

- china.wars, 6

*Topic **models**

- bcp, 3
- biv.norm.post, 4
- dmultinorm, 8
- hit.run, 13
- metropolis, 15
- mhplot.walk.MH, 15
- sir, 20
- walk.G, 26

- actuarial, 1
- afghan.deaths, 2
- africa, 2

- bcp, 3
- beta(*china.wars*), 6
- biv.exp, 3
- biv.norm.post, 4

- cabinet.duration, 5
- cand.gen, 5
- child, 6
- china.wars, 6
- coal.mining.disasters, 7
- complete.wars(*china.wars*), 6
- contracep, 7

- da_cwp(*china.wars*), 6
- dmultinorm, 8
- dp, 8
- dur(*biv.norm.post*), 4
- durations.hpd, 9

- elicspend, 9
- ethnic.immigration, 10
- executions, 10
- experts, 10
- expo.gibbs, 11
- expo.metrop, 11

fdr, 12

hanjack, 12

hit.run, 13

imp.wars(*china.wars*), 6

iq, 13

italy.parties, 14

k(*china.wars*), 6

marriage.rates, 14

metropolis, 15

mhplot(*mhplot.walk.MH*), 15

mhplot.walk.MH, 15

military, 16

N(*biv.norm.post*), 4

n(*china.wars*), 6

n.post1(*norm.known.var*), 17

nc.sub.dat, 16

ncol(*china.wars*), 6

norm.known.var, 17

normal.posterior.summary, 17

nu(*china.wars*), 6

num.sims(*china.wars*), 6

Omega(*china.wars*), 6

opic, 17

pbv.vote, 18

recidivism, 19

retail.sales, 19

rmultinorm(*biv.norm.post*), 4

rmultnorm, 20

romney, 20

sigma.sq(*china.wars*), 6

simple.hpd(*durations.hpd*), 9

sir, 20

strikes, 23

t(*t.ci*), 24

t.ci, 24

terrorism, 25

texas, 26

walk(*walk.G*), 26

walk.G, 26

war.samples(*china.wars*), 6

wars, 27

wars.lm(*china.wars*), 6

X(*china.wars*), 6

x(*china.wars*), 6

y(*china.wars*), 6