setwd("C:/R files BHMRA")

require(mcmcse); require(loo); library(MCMCvis)

library(ggplot2); library(reshape); options(scipen=999)

library(R2OpenBUGS)

attach("DS\_12\_8.Rdata")

model1 <- function() { xi <- (1-2\*q)/(q\*(1-q))

for (i in 1:n){ eta[i] <- b0 + b[1]\*x1[i]+ b[2]\*x2[i]+ b[3]\*x3[i]+ b[4]\*x4[i]

# normal likelihood

LL[i] <- log(L[i])

log(L[i]) <- 0.5\*log(tau[i]/6.283)-0.5\*tau[i]\*pow(ystar[i]-mu[i],2)

w[i] ~ dexp(sigmaq)

mu[i] <- xi\*w[i] + eta[i]

tau[i] <- (q\*(1-q)\*sigmaq)/(2\*w[i])

ystar[i] ~ dnorm(mu[i],tau[i]) %\_% I(A[i],B[i])

A[i] <- -100\*equals(y[i],0)

B[i] <- 100\*equals(y[i],1)

x1[i] <- (DCOST[i]-mean(DCOST[]))/sd(DCOST[])

x2[i] <- (CARS[i]-mean(CARS[]))/sd(CARS[])

x3[i] <- (DOVTT[i]-mean(DOVTT[]))/sd(DOVTT[])

x4[i] <- (DIVTT[i]-mean(DIVTT[]))/sd(DIVTT[])}

#priors for regression

b0 ~ dnorm(0,0.001)

sigmaq <- 1

for (j in 1:P) {b[j] ~ dnorm(0,0.1)}}

**# initial values and estimation**

init1 <- list(b0=4,b=c(1,3,1,0),ystar=rep(0,842),w=rep(1,842))

init2 <- list(b0=3,b=c(0.5,2,1,0),ystar=rep(0,842) ,w=rep(1,842))

inits <- list(init1,init2)

pars <- c("b","b0")

n.iters=10000; n.burnin =5000; n.chains=2

S1 <- bugs(DS\_12\_8,inits,pars,n.iters,model1,n.chains, n.burnin,debug=T,codaPkg = F,bugs.seed=10)

S1$summary

**# Fit**

pars <- c("L","LL")

n <- DS\_12\_8$n

n.iters=5000; n.burnin =4000; n.chains=2

S1.LL <- bugs(DS\_12\_8,inits,pars,n.iters,model1,n.chains, n.burnin,debug=T,

codaPkg=F,bugs.seed=10)

**# largest WAIC components (least well fitted)**

WAIC=waic(S1.LL$sims.list$LL)

waic.pw=WAIC$pointwise[,3]

subj <- seq(1:842)

list.waic <- data.frame(waic.pw,subj)

list.waic=list.waic[order(-list.waic$waic.pw),]

head(list.waic,10)