library(jagsUI)

library(loo)

setwd("C:/R files BHMRA")

attach("DS\_10\_4.Rdata")

# model 1

cat(" model {for (i in 1:N) { LL[i] <- sum(LLchoice[i,])

for (j in 1:J) { LLchoice[i,j] <- y[i,j]\*log(pi[i,j]);

pi[i,j] <- ph[i,j] / sum(ph[i,])

log(ph[i,j]) <- beta0[j] + gam[1]\*feature[i,j]+ gam[2]\*price[i,j]}

y[i,1:J] ~ dmulti(pi[i,1:J] , 1 )}

# priors

beta0[J] <- 0; for (j in 1:JM) {beta0[j] ~ dnorm(0,0.001)}

for (j in 1:2) {gam[j] ~ dnorm(0,0.001)}}

", file="brand.jag")

# initial values and estimation

INI <- list(list(beta0=c(4,4,4,NA),gam=c(0.5,-30)),

list(beta0=c(3,3,3,NA),gam=c(0,-35)))

pars=c("gam","beta0","LL")

R1 = autojags(DS\_10\_4, inits=INI, pars,model.file="brand.jag",2,iter.increment=2500, n.burnin=500, Rhat.limit=1.1, max.iter=10000, seed=1234,codaOnly=c("LL"))

R1$summary

loo(as.matrix(R1$sims.list$LL))

# model 2

cat(" model {for (i in 1:n) {b[i,J] <- 0;

b[i,1:JM] ~ dmnorm(B[],invD[1:JM,1:JM])}

for (i in 1:N) {LL[i] <- sum(LLchoice[i,])

for (j in 1:J) { LLchoice[i,j] <- y[i,j]\*log(pi[i,j]);

pi[i,j] <- ph[i,j] / sum(ph[i,])

log(ph[i,j]) <- b[hh[i],j] + gam[1]\*feature[i,j]+ gam[2]\*price[i,j]}

y[i,1:J] ~ dmulti(pi[i,1:J] , 1 )}

# priors

for (j in 1:2) {gam[j] ~ dnorm(0,0.001)}

invD[1:JM,1:JM] ~ dwish(S[,],JM)

D[1:JM,1:JM] <- inverse(invD[,])

for (j in 1:JM) {B[j] ~ dnorm(0,0.001)

for (k in 1:JM) {S[j,k] <- equals(j,k)

R[j,k] <- D[j,k]/sqrt(D[j,j]\*D[k,k])}}}

", file="brandrand.jag")

# initial values and estimation

INI <- list(list(B=c(4,4,4),gam=c(0.5,-30),invD=10\*diag(3)),

list(B=c(3,3,3),gam=c(0,-35) ,invD=20\*diag(3)))

pars=c("gam","R","LL")

R2 = autojags(DS\_10\_4, inits=INI, pars,model.file="brandrand.jag",2,iter.increment=2500, n.burnin=500, Rhat.limit=1.1, max.iter=10000, seed=1234,codaOnly=c("LL"))

R2$summary

loo(as.matrix(R2$sims.list$LL))