

R Program to Run RtoWINBUGS – This version reads the data from a text file on disk and Runs the Logit Model

```
#
# Attempt to Run simple Logit Copying Ernesto's Code
#
library(arm)
setwd("C:/calvo")
#
# %%%%%%%%%%%
# Read in data from STATA output
# %%%%%%%%%%%
#
rcx.file <- "c:/calvo/h106_data.txt"
#
# X[,1] = 1 if bush vote >= 50%
# X[,2] = 1 if Gore vote >= 50%
# X[,3] = Bush Percentage in CD
# X[,4] = Gore Percentage in CD
# X[,5] = Black Percentage in CD
# X[,6] = 1 if Southern State (11 states of Confederacy + OK + KY
# X[,7] = Hispanic Percentage in CD
# X[,8] = Median Family Income (in thousands) in CD
# X[,9] = Percent Owner-Occupied Housing
# X[,10] = DW-NOMINATE 1st Dimension
# X[,11] = DW-NOMINATE 2nd Dimension
#
# Standard fields and their widths
#
rcx.fields <-
c("ybush", "ygore", "bushvote", "gorevote", "black", "south", "hispanic", "inc
ome", "owner", "dwnom1n", "dwnom2n")
rcx.fieldWidths <- c(9,11,10,10,11,10,11,11,11,11,11)
#
# Input File
#
TT <-
read.fwf(file=rcx.file,widths=rcx.fieldWidths,as.is=TRUE,col.names=rcx.
fields)
dim(TT)
nrow <- length(TT[,1])
#ncol <- length(TT[1,])
#data = read.dta("hdmg106_2009_fixed.dta")
#attach(data)

V <- cbind(TT[,1],TT[,5],TT[,6],TT[,7],TT[,8],TT[,9],TT[,10],TT[,11])

N = nrow
K = ncol(V)

data.data = list(N=N,K=K,V=V)

data.inits = function() {list(beta=runif(K, -2,2), delta=runif(N, -1,1))}
```

```
data.parameters = c("beta")
```

```
wide.sim = bugs(data.data, data.inits,
data.parameters, "h106_logit_RtoWINBUGS_model.txt", n.chains=4,
n.thin=1, n.burnin=15000, n.iter=40000, debug=T)
```

```
detach(data)
```

WINBUGS MODEL

```
model
{
# X[,1] = 1 if bush vote >= 50%
# X[,2] = 1 if Gore vote >= 50%
# X[,3] = Bush Percentage in CD
# X[,4] = Gore Percentage in CD
# X[,5] = Black Percentage in CD
# X[,6] = 1 if Southern State (11 states of Confederacy + OK + KY
# X[,7] = Hispanic Percentage in CD
# X[,8] = Median Family Income (in thousands) in CD
# X[,9] = Percent Owner-Occupied Housing
# X[,10] = DW-NOMINATE 1st Dimension
# X[,11] = DW-NOMINATE 2nd Dimension
#
# PRIORS
#
#       for (k in 1 : K) { beta[k] ~ dnorm(0,0.001)} # vague priors
#
# LIKELIHOOD
#
#       for (i in 1 : N) # loop over congressional districts
#       {
#
#           V[i,1] ~ dbern(p[i]);
#           logit(p[i]) <- delta[i]
#           delta[i] ~ dnorm(mu[i], 1.0)I(-4, 4)
#           mu[i] <-
beta[1]+V[i,2]*beta[2]+V[i,3]*beta[3]+V[i,4]*beta[4]+V[i,5]*beta[5]+V[i
,6]*beta[6]+V[i,7]*beta[7]+V[i,8]*beta[8]
#
#       Borrowed From Simon Jackman
#
#           llh[i] <- V[i,1]*log(p[i]) + (1-V[i,1])*log(1-p[i]);
#       }
sumllh <- sum(llh[]);
#
}
```

Log File From R2WINBUGS

```

display(log)
check(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/h106_logit_RtoWINBUGS_model.txt)
model is syntactically correct
data(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/data.txt)
data loaded
compile(4)
model compiled
inits(1,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits1.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(2,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits2.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(3,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits3.txt)
chain initialized but other chain(s) contain uninitialized variables
inits(4,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/inits4.txt)
model is initialized
gen.inits()
command #Bugs:gen.inits cannot be executed (is greyed out)
thin.updater(1)
update(15000)
set(beta)
set(deviance)
dic.set()
update(25000)
coda(*,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/coda)
stats(*)

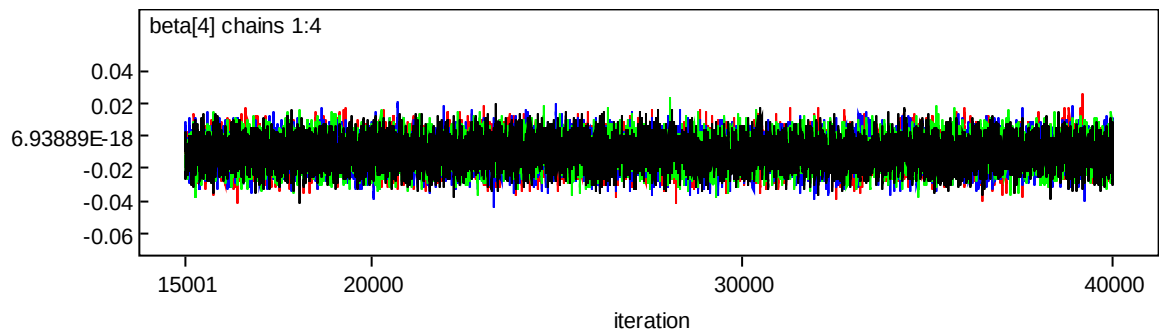
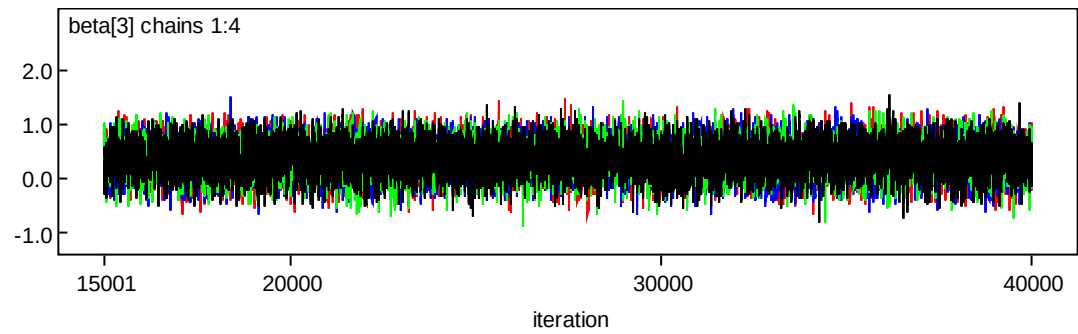
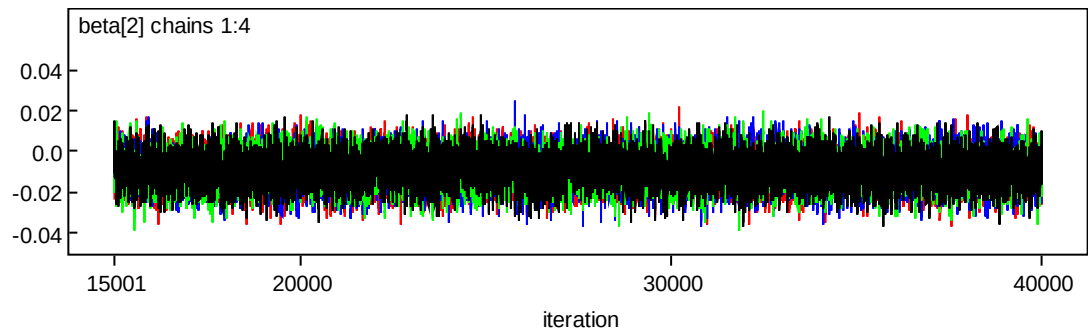
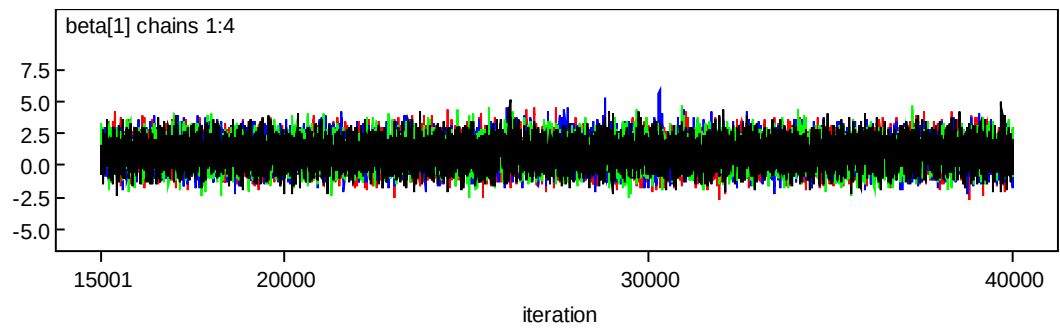
Node statistics
  node      mean      sd      MC error 2.5%      median      97.5%      start      sample
beta[1]    0.9367    0.9276    0.007936 -0.8487    0.9292    2.786    15001    100000
beta[2]   -0.009257  0.007399    6.201E-5 -0.02351 -0.009333 0.005378 15001    100000
beta[3]    0.3518    0.2819    0.002628 -0.2024    0.3525    0.9036    15001    100000
beta[4]   -0.01042    0.007947    7.365E-5 -0.02587 -0.01048    0.005365 15001    100000
beta[5]   -0.03526    0.01565    1.473E-4 -0.06583 -0.03528 -0.004603 15001    100000
beta[6]    0.001688    0.01218    1.024E-4 -0.02245    0.001803 0.02507    15001    100000
beta[7]    3.045     0.2649    0.002463  2.517     3.048     3.556     15001    100000
beta[8]    0.9247     0.2845    0.002645  0.3714     0.9249    1.486     15001    100000
deviance   320.0      12.08     0.04465   296.9     319.7     344.2     15001    100000

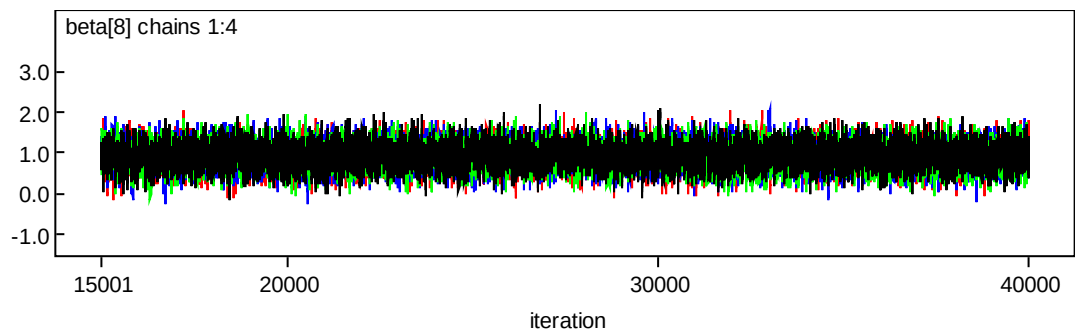
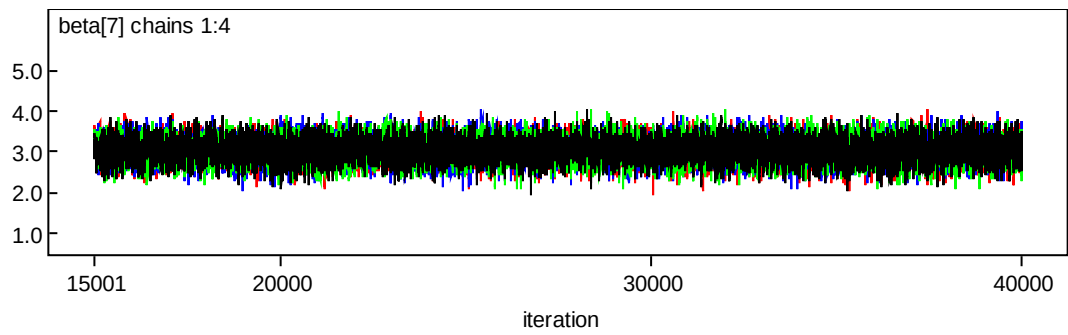
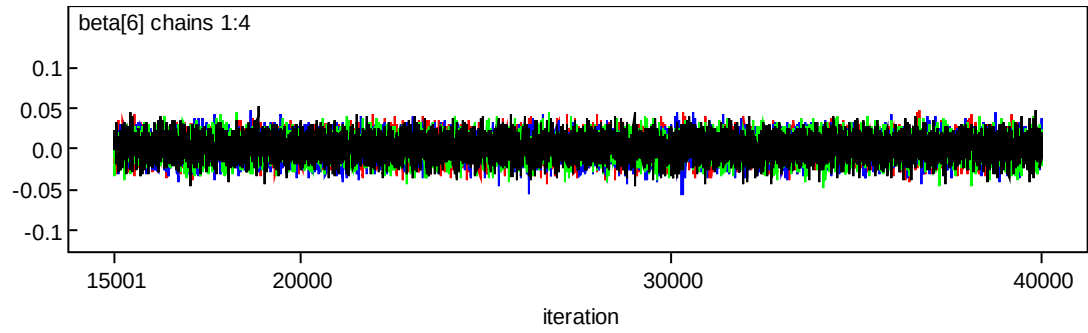
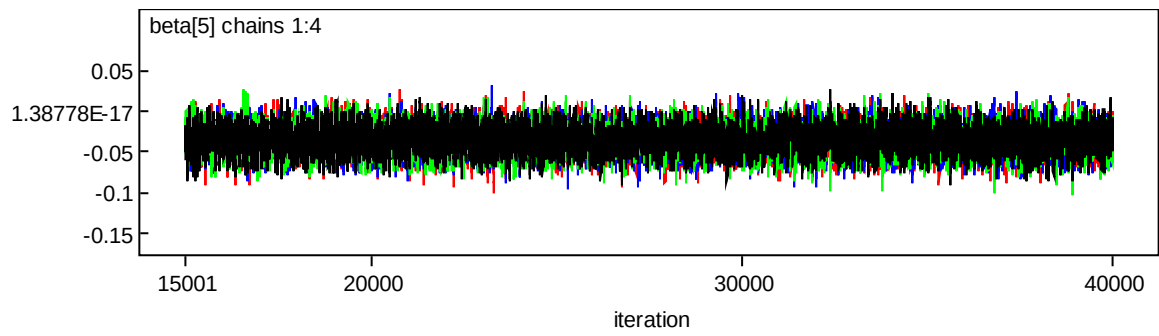
dic.stats()

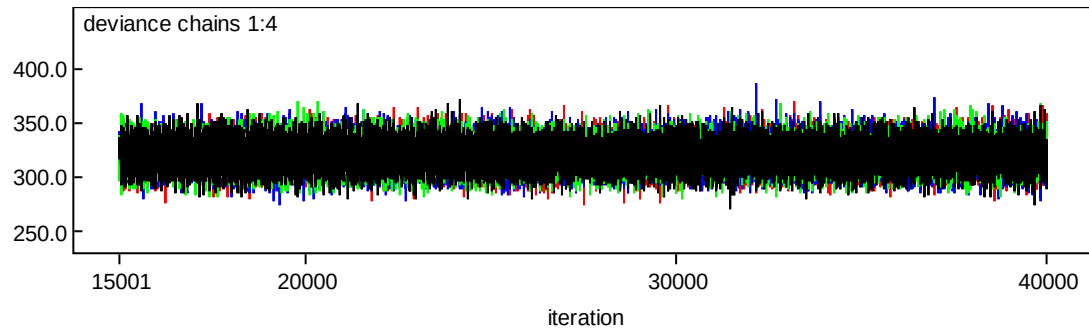
DIC
Dbar = post.mean of -2logL; Dhat = -2LogL at post.mean of stochastic nodes
      Dbar      Dhat      pD      DIC
V      292.979    238.029    54.951    347.930
delta   27.012     23.414     3.597     30.609
total   319.991    261.443    58.548    378.539
history(*,C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/history.odc)

History

```







```
save(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/log.odc)
save(C:/DOCUME~1/ADMINI~1/LOCALS~1/Temp/Rtmpa0jM0L/log.txt)
```

Output Done While WINBUGS is Still Running

Gelman Rubin statistic

