SCRIPT MOD6S4A: POSTERIOR PREDICTION LABOR DATA APPLICATION

INSTRUCTOR: KLAUS MOELTNER

LOAD WAGE REGRESSION RESULTS

```
R> load("c:/Klaus/AAEC5126/R/data/normindepLabor.rda")
```

Explanatory variables:

```
% Contents of X (columns)
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%1        constant term
%2        WA = Wife's age
%3        WA^2
%4        KL6 = Number of children less than 6 years old in household
%5        K618 = Number of children between ages 6 and 18 in household
%6        HW = Husband's wage, in 1975 dollars (1000)
%7        AX = Actual years of wife's previous labor market experience
%8        WE = Wife's educational attainment, in years
```

CHOOSE REGRESSOR SETTINGS

```
R> x1<-as.matrix(c(1, 32, 32^2, 2, 0, 6,  6, 16))
R> x2<-as.matrix(c(1, 49, 49^2, 0, 2, 8, 12, 16))
R> x3<-as.matrix(c(1, 55, 55^2, 0, 0, 10, 18, 16))
```

DRAW FROM POSTERIOR PREDICTIVE DENSITIES

```
R> r2<-ncol(betamat)
R> m1<-t(betamat) %*% x1    #3000 by 1 mean vector
R> m2<-t(betamat) %*% x2    #3000 by 1 mean vector
R> m3<-t(betamat) %*% x3    #3000 by 1 mean vector
R> #
R> yp1mat<-rnorm(r2,m1,sqrt(sig2mat))  #wage in log form
R> yp2mat<-rnorm(r2,m2,sqrt(sig2mat))
R> yp3mat<-rnorm(r2,m3,sqrt(sig2mat))
R> #
R> exp1mat<-exp(yp1mat)   #wage in $$$
R> exp2mat<-exp(yp2mat)
R> exp3mat<-exp(yp3mat)
```

Table 1. Posterior predictive results for log(earnings)

Type	PPD mean	PPD std	PPD median
1	7.118	1.149	7.141
2	8.087	1.140	8.064
3	8.158	1.115	8.170

Table 2. Posterior predictive results for earnings (dollars)

Type	PPD mean	PPD std	PPD median
1	2387.297	4065.382	1262.967
2	6258.701	10614.865	3179.075
3	6583.196	10971.146	3531.796

Comparative plot

```
R> yp1dens<-density(yp1mat,kernel="epanechnikov",n=1000)
R> yp2dens<-density(yp2mat,kernel="epanechnikov",n=1000)
R> yp3dens<-density(yp3mat,kernel="epanechnikov",n=1000)
R> #
R> exp1dens<-density(exp1mat,kernel="epanechnikov",n=1000)
R> exp2dens<-density(exp2mat,kernel="epanechnikov",n=1000)
R> exp3dens<-density(exp3mat,kernel="epanechnikov",n=1000)

R> proc.time()-tic
   user  system elapsed
   0.70    0.13    1.94
```
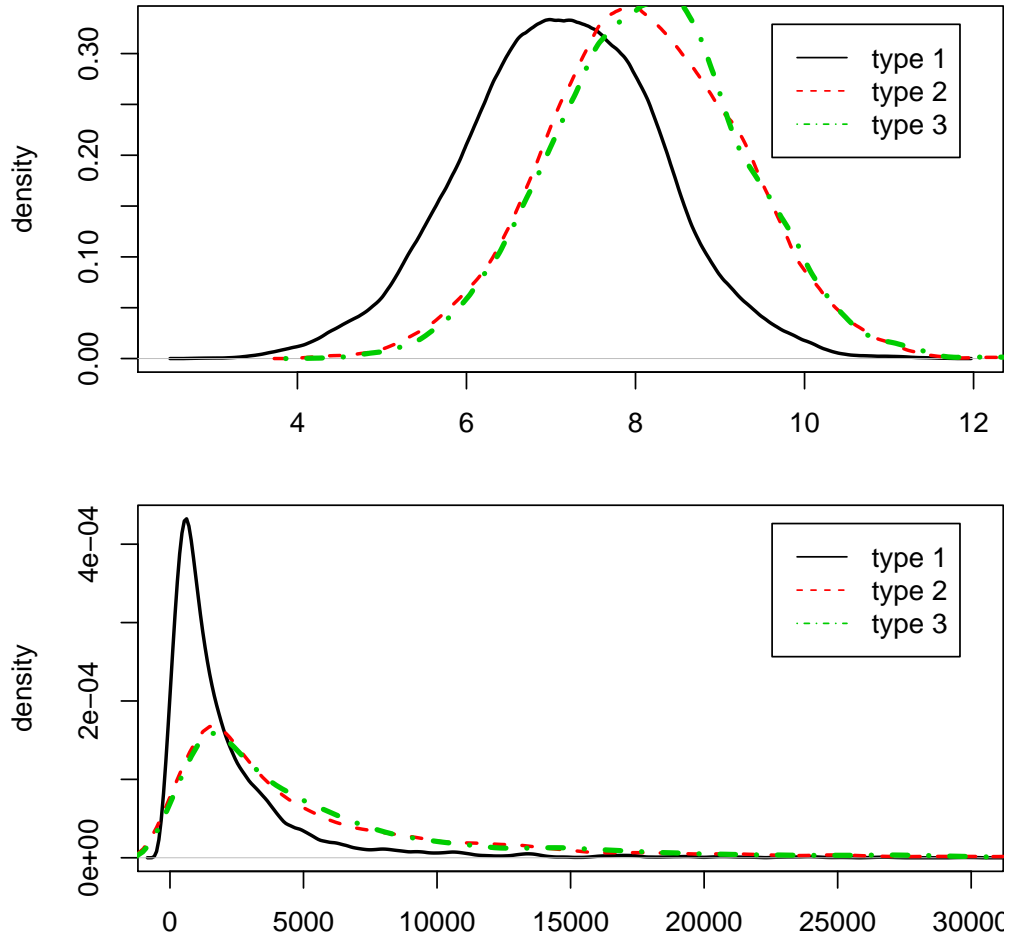
FIGURE 1. Posterior Predicitve Plots for Annual Earnings