

SCRIPT MOD6S4B: POSTERIOR PREDICTIVE P-VALUE  
LABOR DATA APPLICATION

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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
```

PPP COMPUTATION

```
R> k<-ncol(X)
R> n<-length(y)
R> r2<-ncol(betamat)
R> sky<-matrix(0,1,r2) #will collect PPD of skewness using actual data
R> skystar<-matrix(0,1,r2) #will collect PPD of skewness using simulated data
R> # Call for a progress bar to monitor progress of Gibbs Sampler
R> pb<-winProgressBar(title="progress bar", min=0,max=r2,width= 400)
R> #
R> for (r in 1:r2) {
  #
  setWinProgressBar(pb,r,title=paste(round((r/r2)*100,0),"% done"))
  #
  br<-betamat[,r]
  sig2r<-sig2mat[r]
  #compute sk using actual data:
  sky[r]<-sqrt(n)*sum((y-X %*% br)^3)/(sum((y - X %*% br)^2)^(3/2))
  # draw simulated data:
  ystar<-rnorm(n,X %*% br,sqrt(sig2r))
  #this generates r2 draws of yi, each corresponding to its respective xi
  #compute sk for simulated data
  skystar[r]=sqrt(n)*sum((ystar-X %*% br)^3)/(sum((ystar- X %*% br)^2)^(3/2))
}
R> close (pb) #close progress bar
```

## COMPUTE PPP

```
R> f<-skystar[skystar<mean(sky)] #find number of draws of skystar that fall below
R> # E[skly]
R> int<-length(f)/r2 #proportion of sky_star's that are smaller than E(sk_y)
R> PPP<-min(int,1-int) #In case "int" > 0.5, we use 1- int as the PPP
The PPP for skewness is 0.
```

## COMPARATIVE PLOTS

```
R> diffdens<-density(skystar-sky,kernel="epanechnikov",n=1000)
R> skystardens<-density(skystar,kernel="epanechnikov",n=1000)
```

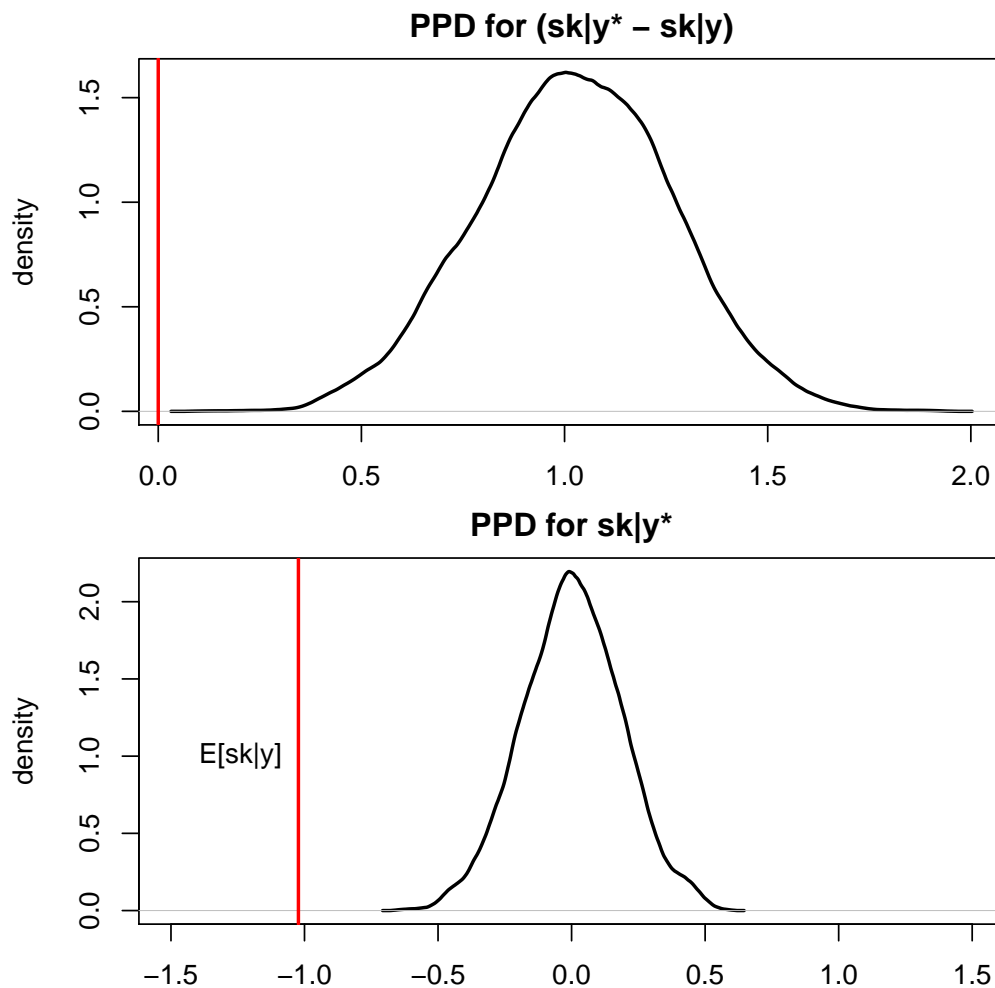


FIGURE 1. Posterior Predictive Plots

```
R> proc.time()-tic
  user  system elapsed
 1.49   0.64   3.37
```