homework week01

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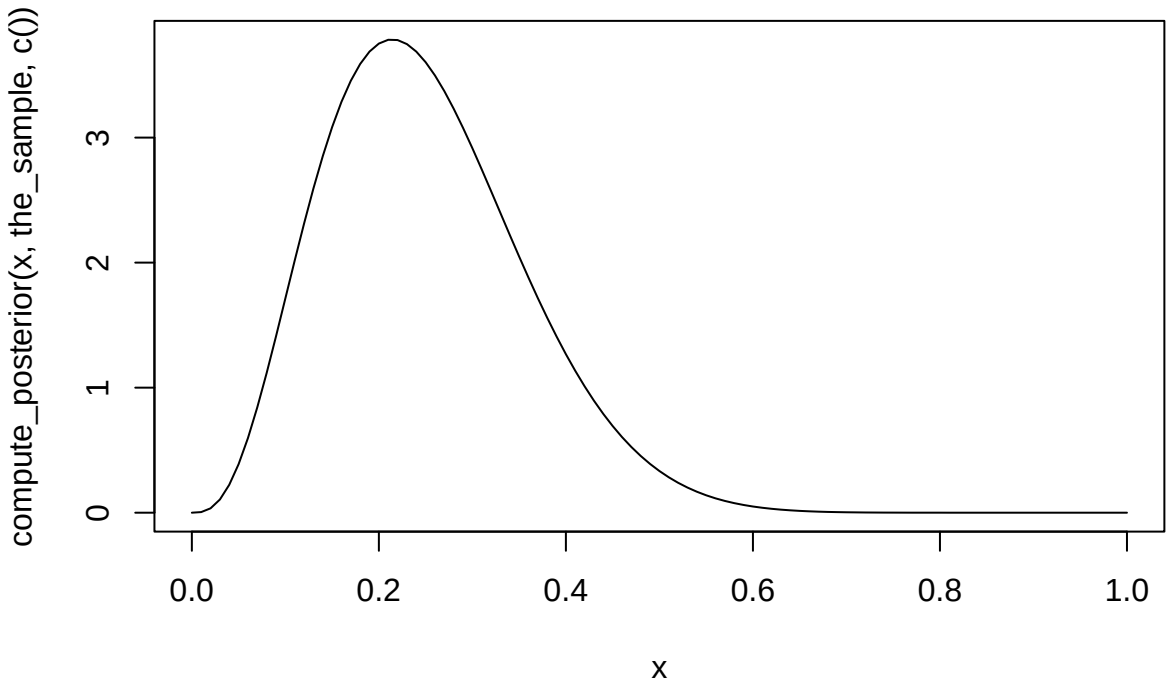
Homework, Week1

1. Suppose the globe tossing data had turned out to be 3 water and 11 land. Construct the posterior distribution.

```
n_water = 3
n_land = 11

the_sample = rep(c("W", "L"), c(n_water, n_land))

compute_posterior <- function( p , the_sample , the_prior ) {
W <- sum(the_sample=="W")
L <- sum(the_sample=="L")
W_prior <- sum(the_prior=="W")
L_prior <- sum(the_prior=="L")
dbeta(p,W+W_prior+1,L+L_prior+1)
}
curve( compute_posterior(x,the_sample,c()) , from=0 , to=1 )
```

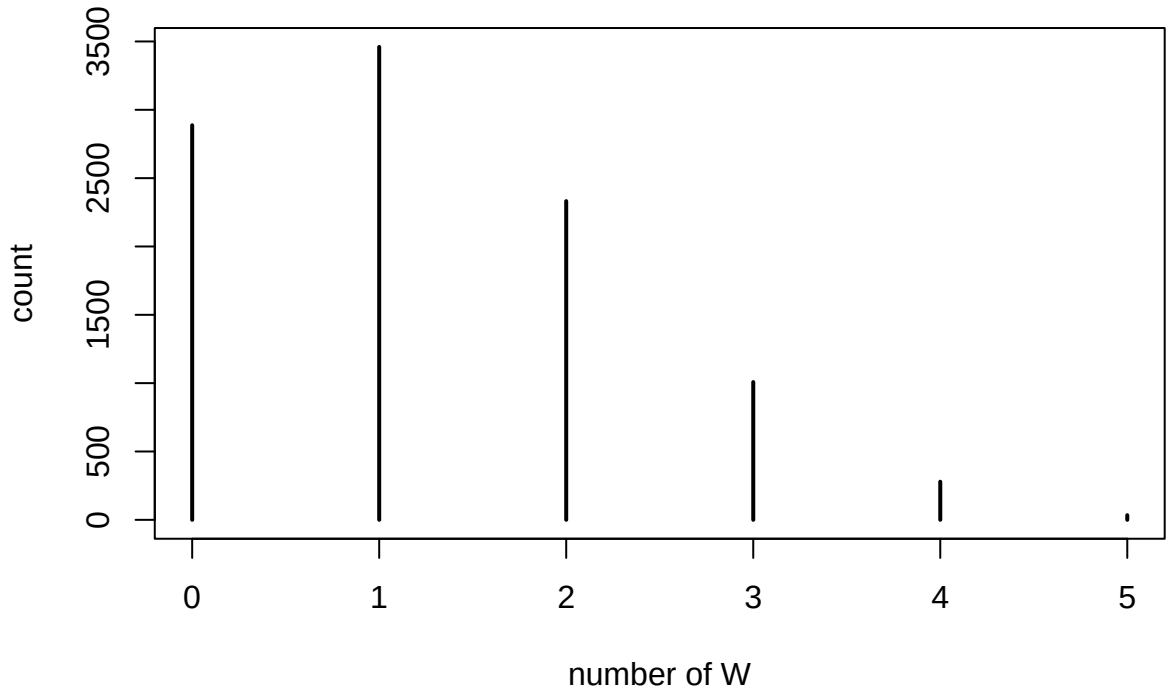


2. Using the posterior distribution from 1, compute the posterior predictive distribution for the next 5 tosses of the same globe.

```
n_tosses = 5

sim_globe <- function(p_water=.5, N=10) {
  sample(c("W", "L"), size=N, prob=c(p_water, 1-p_water), replace=TRUE)
}


# simulate posterior predictive distribution
post_samples <- rbeta(1e4,n_water+1, n_land+1)
pred_post <- sapply( post_samples , function(p) sum(sim_globe(p,5)=="W") )
tab_post <- table(pred_post)
plot( tab_post , xlim=c(0,n_tosses) , xlab="number of W" , ylab="count" )
```



Given the posterior distribution we could say that in the next 5 tosses, we would see 1 sample of water.