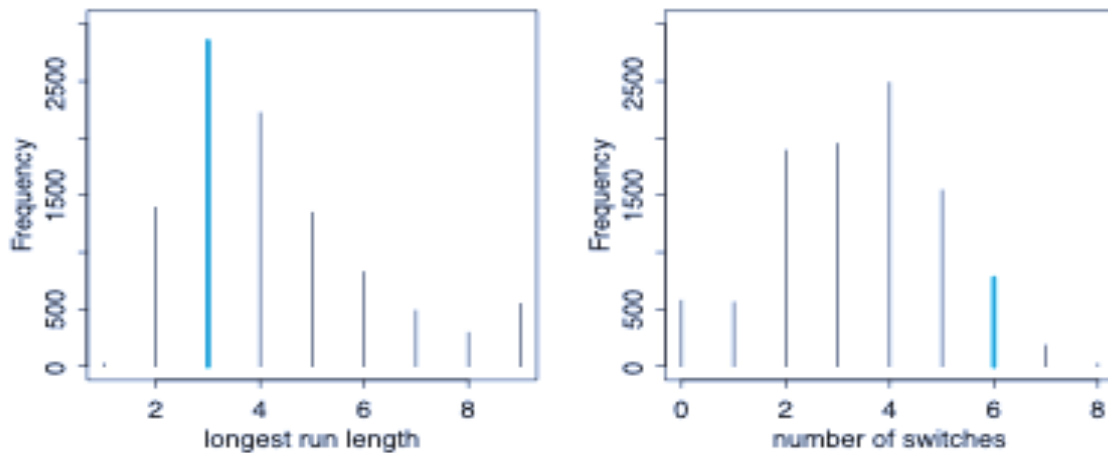


Reproduce the below graphs with python ie simulating the prior.



3M1. Suppose the globe tossing data had turned out to be 8 water in 15 tosses. Construct the posterior distribution, using grid approximation. Use the same flat prior as before.

3M2. Draw 10,000 samples from the grid approximation from above. Then use the samples to calculate the 90% HPDI for p .

3M3. Construct a posterior predictive check for this model and data. This means simulate the distribution samples, averaging over the posterior uncertainty in p . What is the probability of observing 8 water in 15 tosses?

3M4. Using the posterior distribution constructed from the new (8/15) data, now calculate the probability of observing 6 water in 9 tosses.

Extra 2

Suppose you want to estimate the Earth's proportion of water very precisely.

Specifically, you want the 99% percentile interval of the posterior distribution of p to be only 0.05 wide.

This means the distance between the upper and lower bound of the interval should be 0.05. How many times will you have to toss the globe to do this?

-
bution of
n 15 tosses?
of observing

be 0.05.