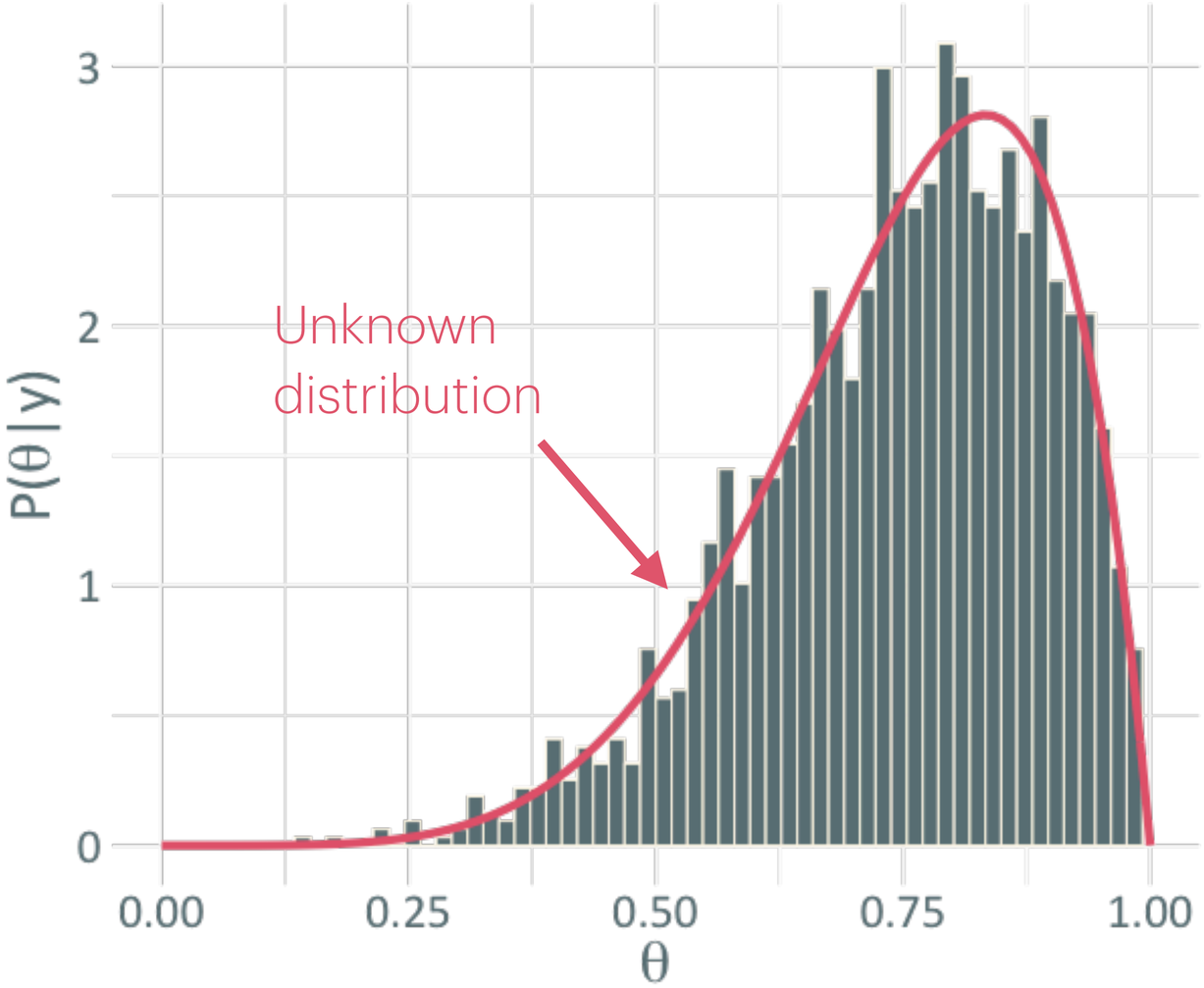
Posterior Approximations

- For a small number of models we can write the posterior distribution directly (really small, don't bother).
- For most models, we use posterior samples to approximate the posterior.

$$\{\theta_1, \cdots, \theta_N\} \sim P(\theta \,|\, y)$$



Posterior derived quantities

- This sample can be used to calculate any quantity of interest:

$$\{\theta_1, \cdots, \theta_N\} \sim P(\theta \mid y)$$

For example, the posterior mean is just:

$$\frac{\theta_1 + \theta_2 + \cdots + \theta_N}{N} \approx \sum_{\theta \in \Omega} \theta P(\theta \mid y)$$