

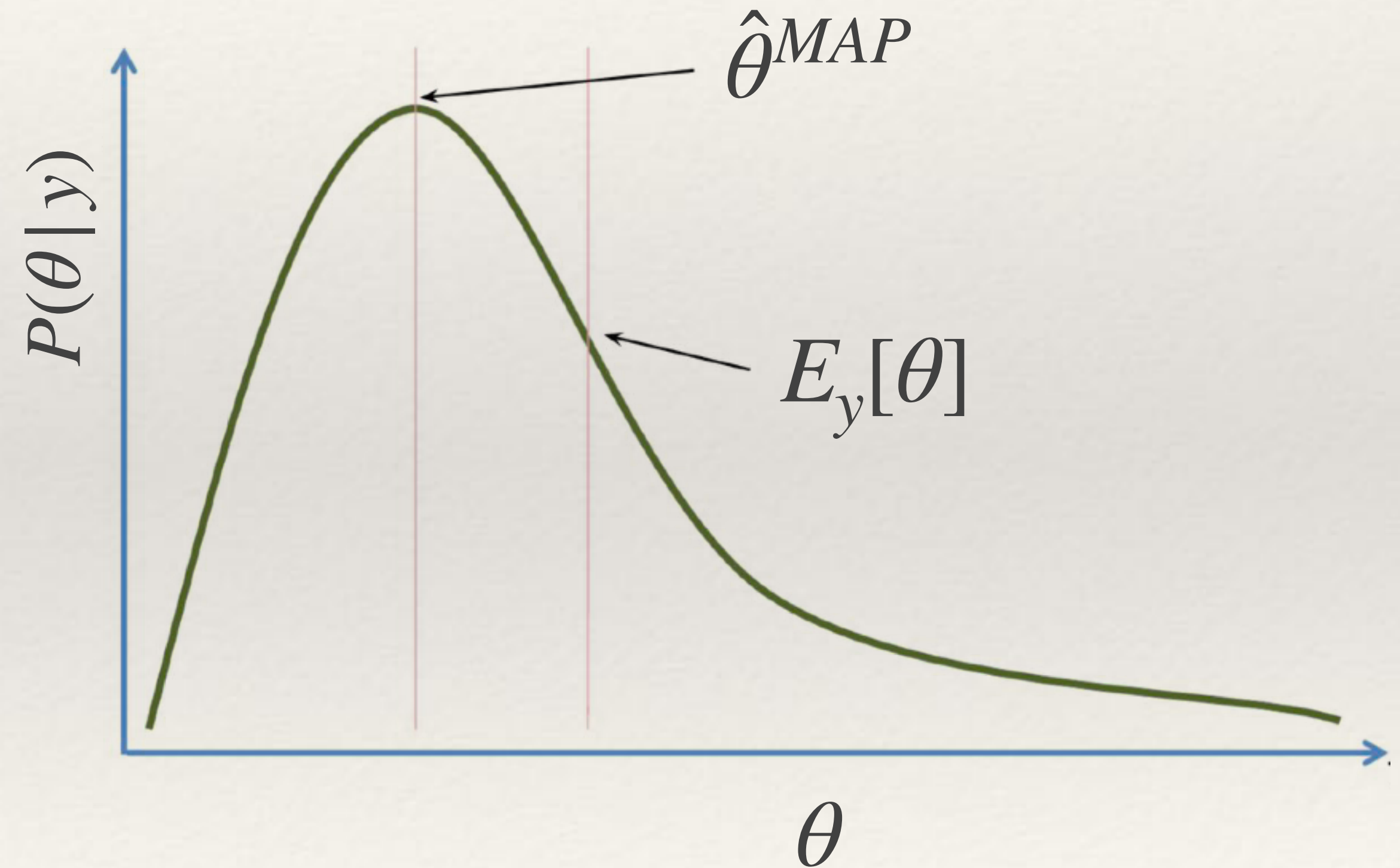
# POSTERIOR ESTIMATORS

- Bayesian equivalent to MLE is the **Maximum A Posteriori (MAP)**:

$$\hat{\theta}^{MAP} = \operatorname{argmax}_{\theta \in \Omega} [P(\theta | y)]$$

- The posterior mean is more common:

$$E_y[\theta] = \sum_{\theta \in \Omega} \theta P(\theta | y)$$



(Posterior median is also used occasionally.)

# 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.

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

