

$$\pi(\theta | y) = \frac{\pi(y | \theta) \pi(\theta)}{\pi(y)}$$

$\propto$ proportional
as a function of
 θ

$$\propto \pi(y | \theta) \pi(\theta)$$

$$= \binom{m}{y} \theta^y (1-\theta)^{m-y} \frac{1}{B(\alpha, \beta)} \theta^{\alpha-1} (1-\theta)^{\beta-1}$$

$$\propto \theta^y (1-\theta)^{m-y} \theta^{\alpha-1} (1-\theta)^{\beta-1}$$

$$= \theta^{\alpha+y-1} (1-\theta)^{\beta+m-y-1}$$

$$\propto \text{Beta}(\theta; \alpha + y - 1, \beta + m - y)$$