The likelihood

The probability of each value of y

- What does this mean?

$$y_i \sim N(\mu, \sigma)$$

- We can also write this as:

$$P(y \mid \mu, \sigma)$$

The likelihood of y

- By the product rule:

$$P(\mu, \sigma \mid y) = \frac{P(y \mid \mu, \sigma)P(\mu, \sigma)}{P(y)}$$

- $P(\mu, \sigma) = P(\mu)P(\sigma)$: the prior distribution
- $P(\mu, \sigma \mid y)$: The posterior distribution
- $P(y)$: A constant, the “evidence"

Bayesian definition of model

The posterior distribution as a product of the prior distribution and likelihood