





Posterior derived quantities

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

For example, the posterior mean is just:

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

Other quantities

- Any other functions of the parameters can be estimated from the samples.
- A common use is to calculate contrast between categorical levels, estimating the difference between groups.
- Quantiles, values above a value, confidence intervals...

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Building a model

Out usual regression model

- Given the matched pairs:

$$(x, y) = \{(x_1, y_1), \dots, (x_n, y_n)\}$$

- Define a likelihood:

$$\left. \begin{array}{l} y_i \sim \text{Normal}(\mu_i, \sigma) \\ \mu_i = \alpha + \beta x_i \end{array} \right\} P(y \mid \theta)$$