

HOW DO WE CLOSE THE PRIORS?!

$$\alpha \sim P(\alpha) \text{ ?}$$

$$\beta \sim P(\beta) \text{ ?}$$

$$\sigma \sim P(\sigma) \text{ ?}$$

• Agnostic choices

• Laplace and the Principle of indifference

• "Uninformative" priors

• Maximizing entropy priors

- priors that encode the least amount of information given constraints

Jeffreys priors

• invariant under change of coordinates

Hard constraints

- restricted domains (e.g. variance must be positive)

Good prior choices

- Use domain expertise!
- Knowledge of scale (height by weight example)
- Experimental design (more in the hierarchical models class)
- Using simulations to understand the implications of priors

HOW DO WE CHOOSE THE PRIORS?!

$$\alpha \sim P(\alpha) ?$$
$$\beta \sim P(\beta) ?$$
$$\sigma \sim P(\sigma) ?$$

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 - Laplace and the Principle of indifference
 - "Uninformative" priors
- Maximum entropy priors
 - priors that encode the least amount of information given constraints
- Jeffreys priors
 - invariant under a change of coordinates
- Hard constraints
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PRIORS CAN BE USED TO ENCODE SCALE INFORMATION

