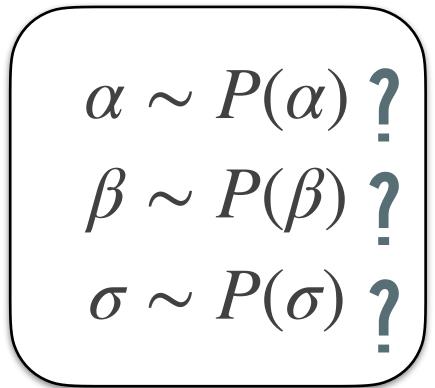




### HOW DO WE CHOOSE THE PRIORS?!



Agnostic choices

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

 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?!

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

- Agnostic choices
  - 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
  - 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

# PRIORS CAN BE USED TO ENCODE SCALE INFORMATION

