

# Bayesian Methods

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## Flipping a Coin with my Honest Sister

$$P(M_{0.50}|D_{13}) = \frac{P(\text{ObservedHeads}|\text{bias} = x)P(\text{bias} = x)}{P(\text{ObservedHeads})}$$

**Number of bins:**

101
▼

**Total Flips:**

20

0 40 80 120 160 200

200

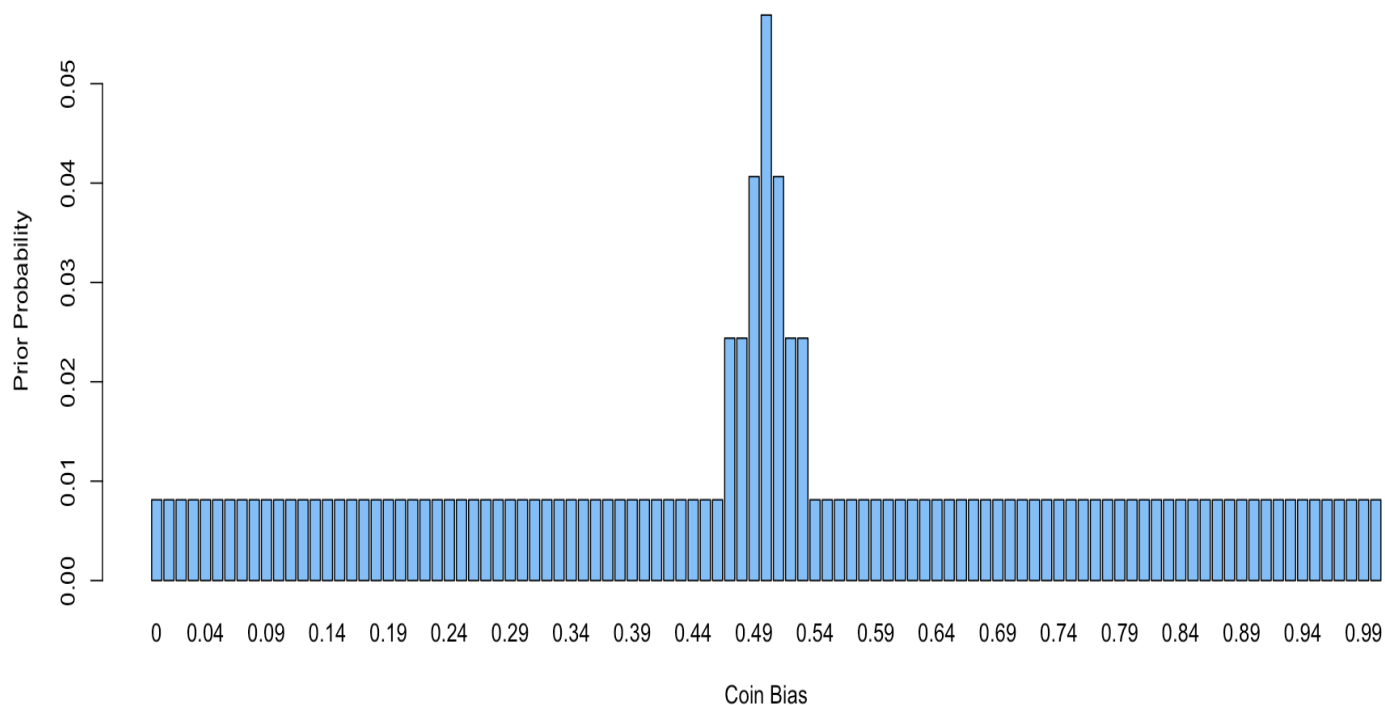
**Heads:**

13

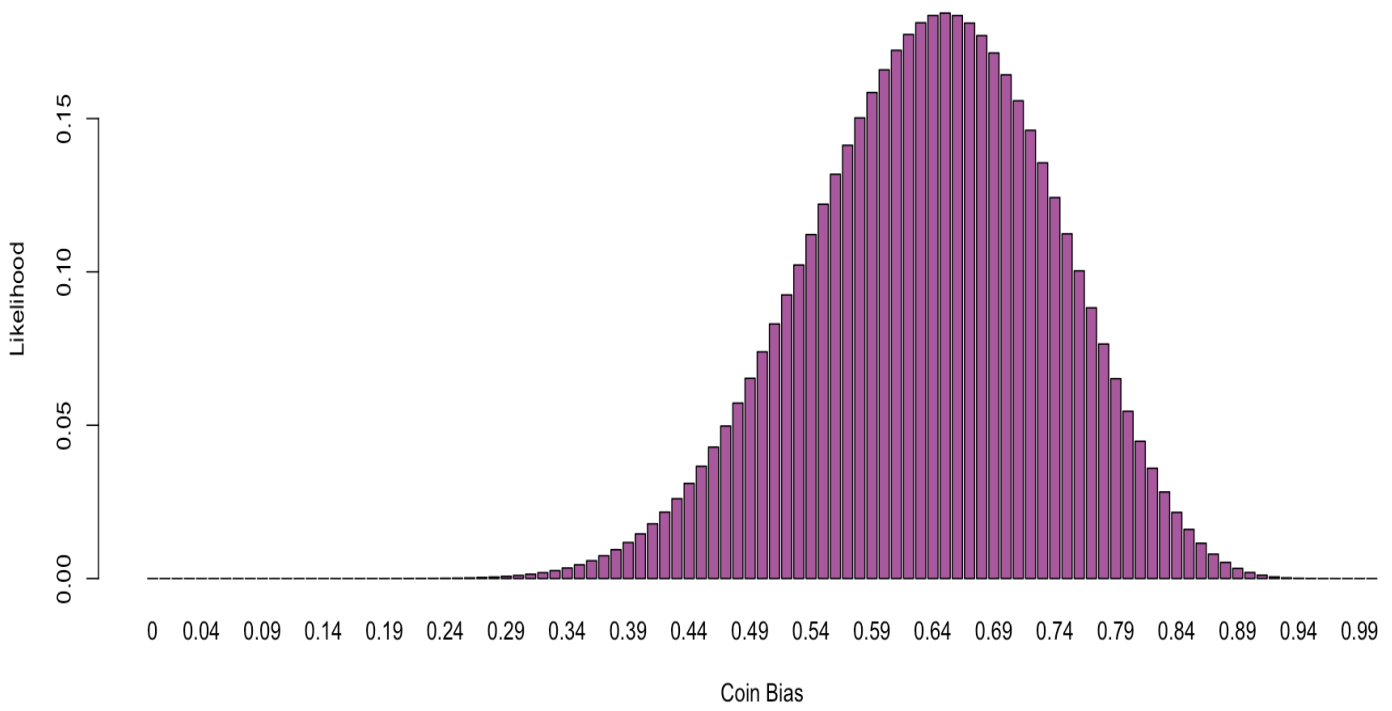
0 40 80 120 160 200

200

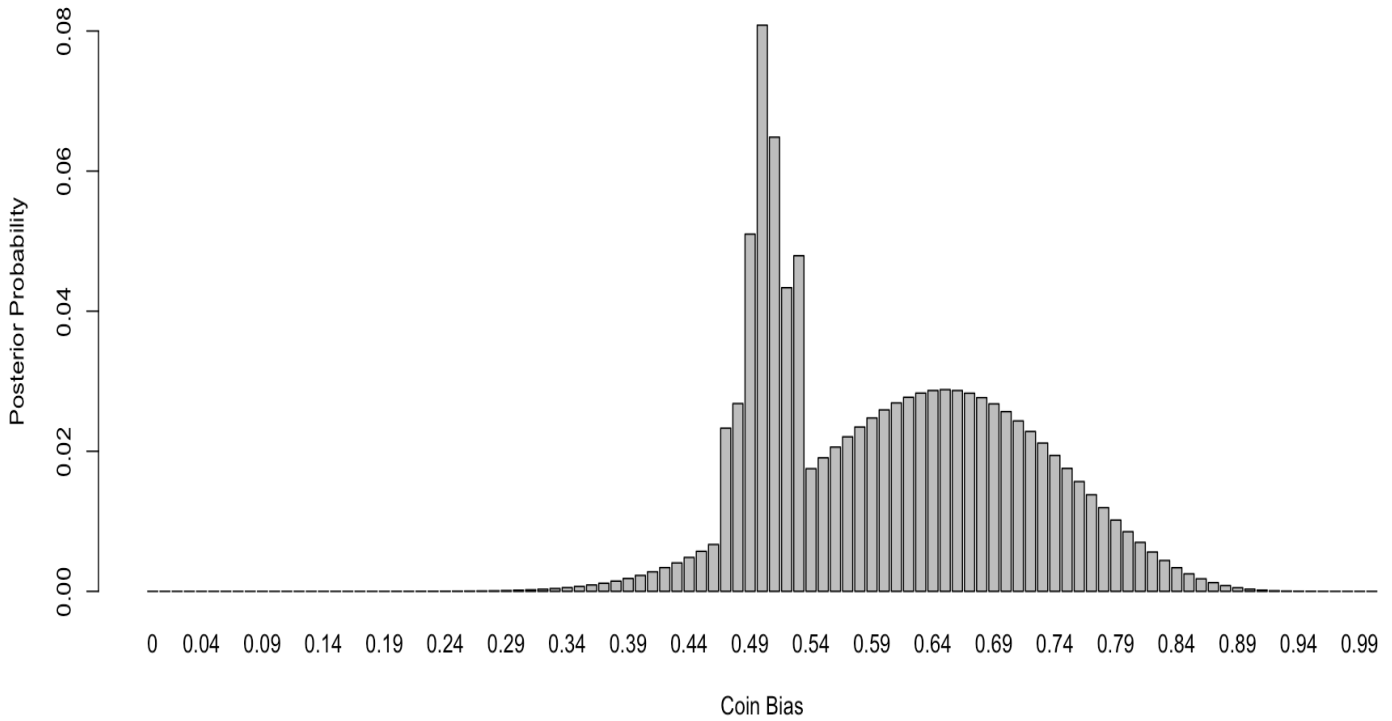
Prior Probability Density: Most Coins are Roughly Fair



Likelihood vs Coin Bias



Posterior Probability Density



Marginal Likelihood (Probability of Selected Heads) = 0.0520505110381159