Stan and Gompertz

Sean C Anderson
Sept. 2017

probability of

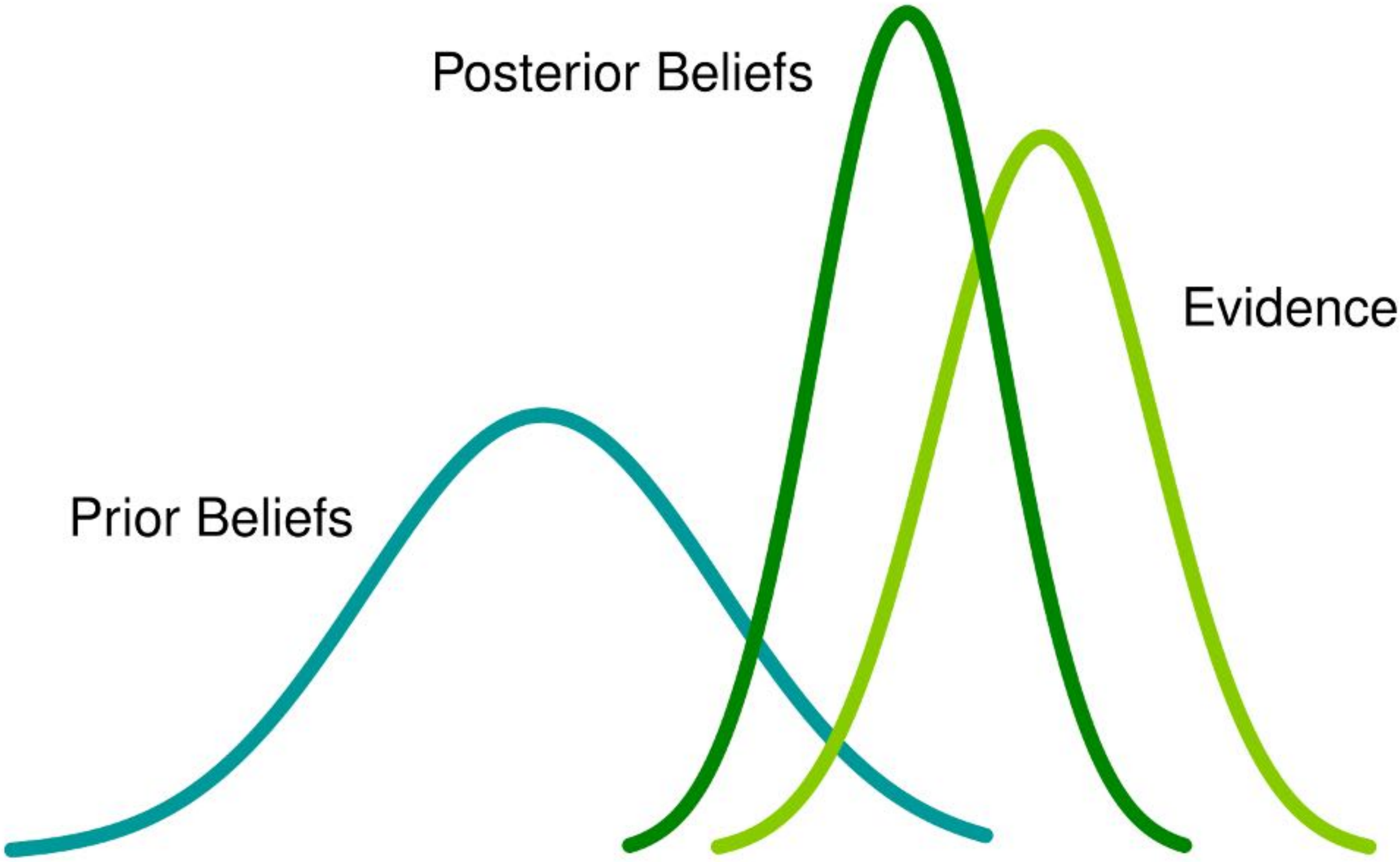
the parameters

given

the data

$$p(\theta \mid \text{data}) \propto p(\text{data} \mid \theta)\, p(\theta)$$

the "posterior" | the "likelihood" | the "prior"



https://www.analyticsvidhya.com/blog/2016/06/bayesian-statistics-beginners-simple-english/

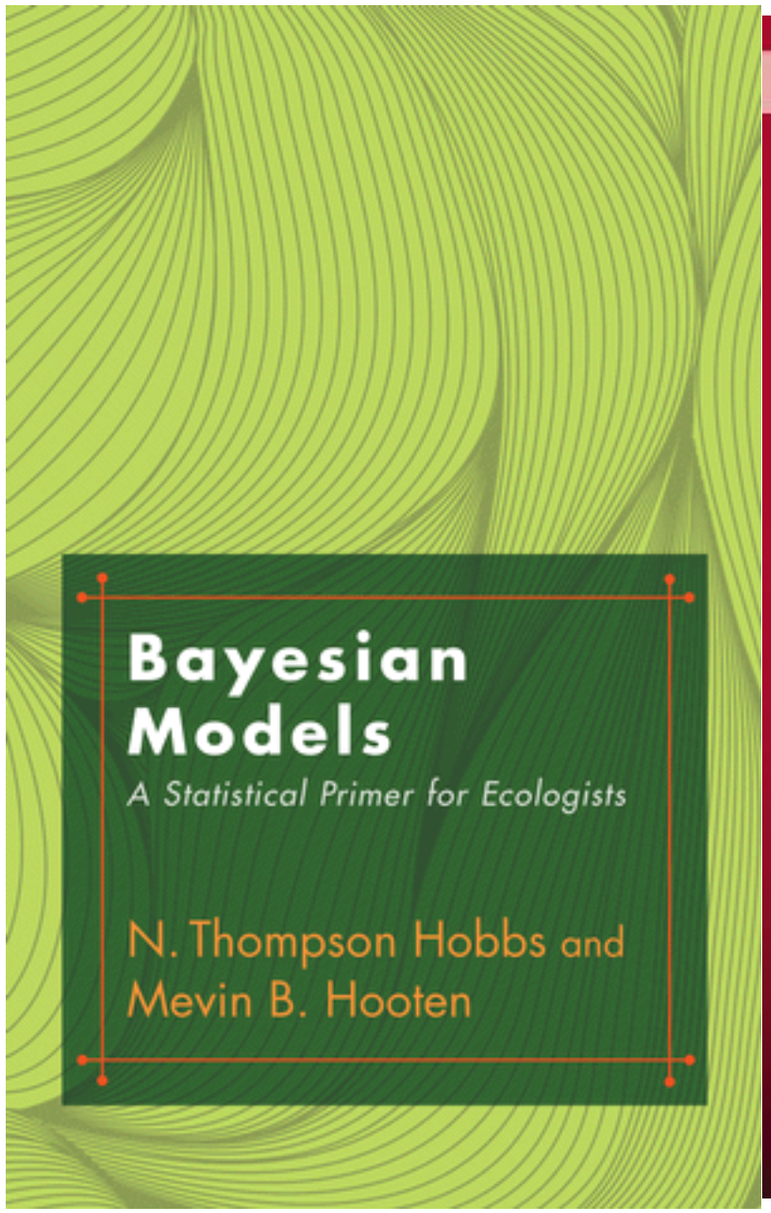
Stan

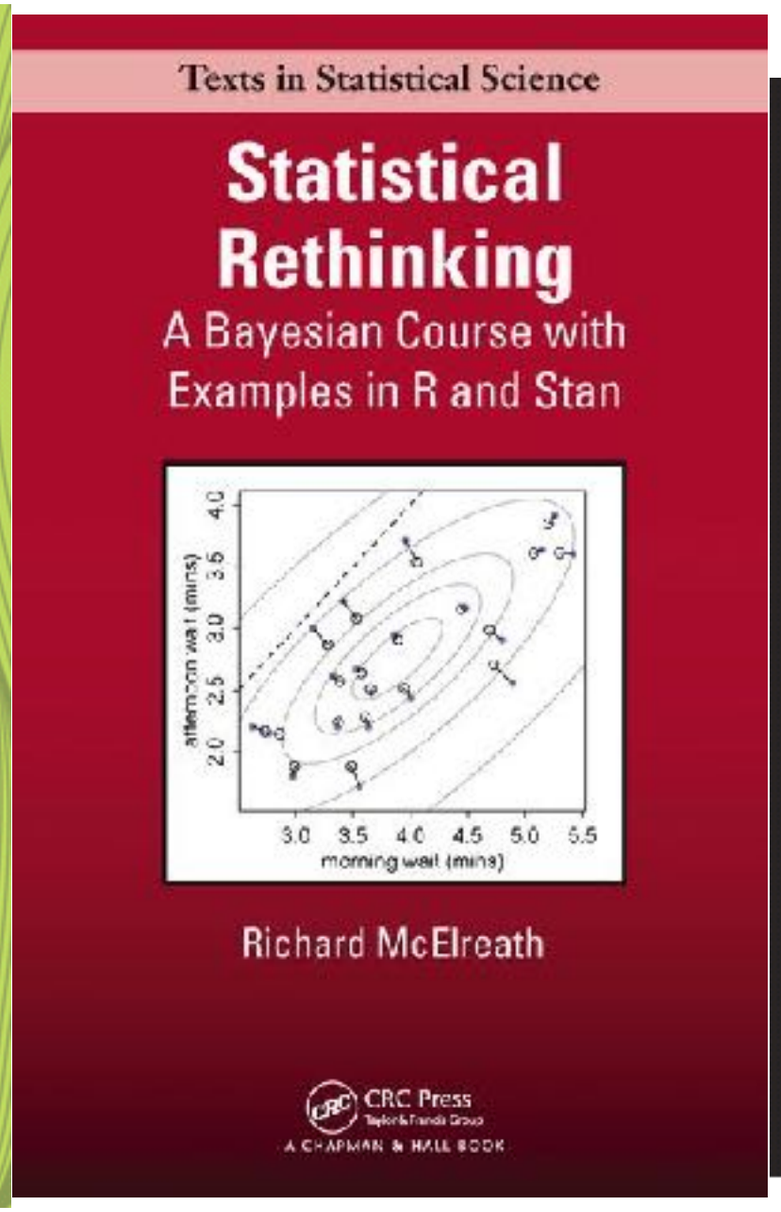
NUTS

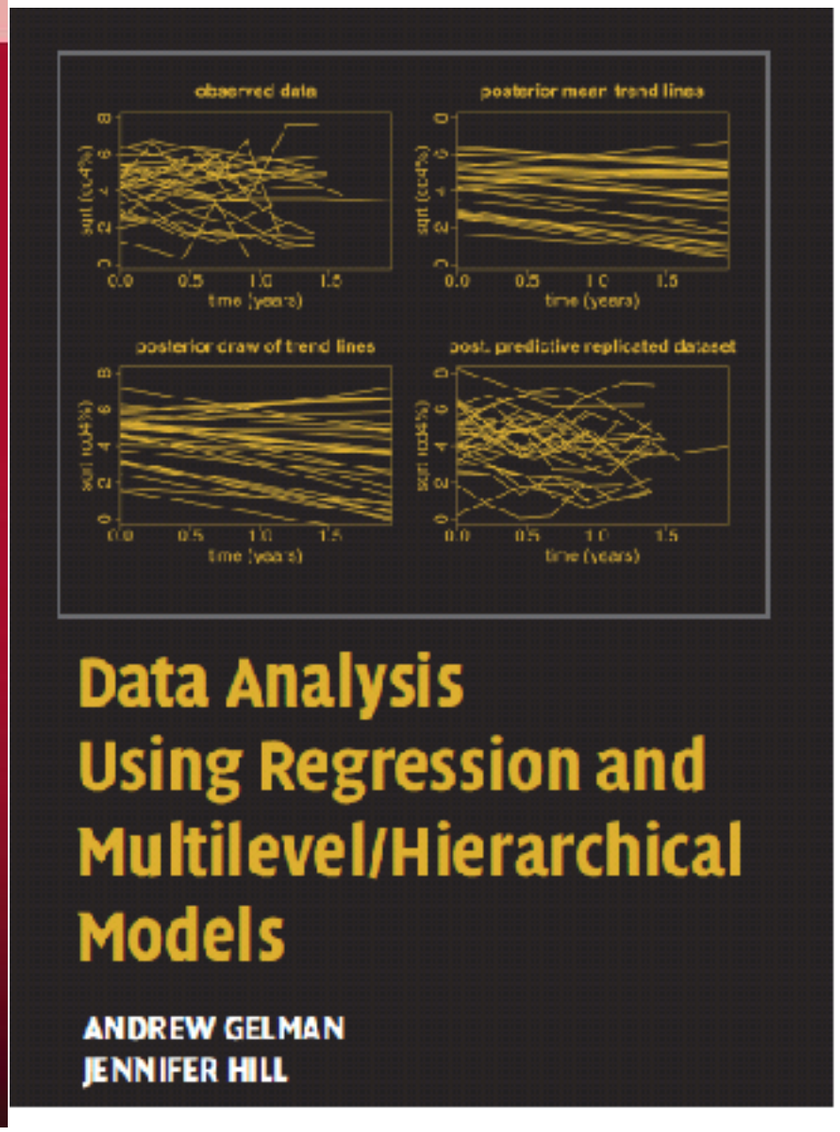
HMC

MCMC


Stanislaw Ulam


Bayesian
Models
A Statistical Primer for Ecologists
N. Thompson Hobbs and
Mevin B. Hooten


Texts in Statistical Science
Statistical
Rethinking
A Bayesian Course with
Examples in R and Stan
afternoon wait (mins)
morning wait (mins)
Richard McElreath
CRC Press
A CHAPMAN & HALL BOOK


observed data
posterior mean trend lines
posterior draw of trend lines
post. predictive replicated dataset
time (years)
Data Analysis
Using Regression and
Multilevel/Hierarchical
Models
ANDREW GELMAN
JENNIFER HILL

Gompertz model

x_t represents the log abundance

$$x_t = \lambda + bx_{t-1} + \epsilon_t,$$

$$\epsilon_t \sim \text{Student } t(\nu,0,\sigma).$$