Introduction to multiparameter models - part 2

Data analytics

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Multinomial model for categorical data

- The multinomial sampling distribution is used to describe data for which each observation is one of k possible outcomes. If y is the vector of counts of the number of observations of each outcome, then

$$p(y \,|\, \theta) \propto \prod_{j=1}^{k} \theta_i^{y_j}$$

There is an easily interpretable conjugate prior
Dirichlet distribution

$$p(\theta \mid \alpha) \propto \prod_{j=1}^{k} \theta_i^{\alpha_j - 1}$$

- This is a generalization of Beta distribution and can be interpreted as previous experience

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1988 US Presidental Election