CPO and Marginal Predictive Likelihood (BDM2013 ch 4)

- Conditional predictive ordinate (CPO)
  - Can be computed from WinBUGS output for each observation

$$CPO_i^{-1} = \left\{ \frac{1}{G} \sum_{g=1}^{G} L_i(\boldsymbol{\theta}^g)^{-1} \right\}$$

  - Marginal predictive likelihood is a measure of overall GOF

$$M = \sum_i \log(CPO_i)$$

Results

- Large CPO (close to 1).....good fit
- Small CPO (close to 0) ...poor fit
- Larger M better (more likely) predictive model

- UH Models: (pseudo) marginal log-likelihood (M)
  - ZIP -70.78
  - Ordinary UH -148.48
  - SPC -102.55

CPO maps

- SPC model