Variance Estimates

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Cooley2011: Marginal likelihood

Composite Likelihood without adjustment

$$\pi_c(\theta \mid y) \dot{\sim} \mathrm{N}\left\{\theta_0, n^{-1} H\left(\theta_0\right)^{-1}\right\}$$

Composite likelihood with magnitude adjustment

$$\pi_{\text{magn}}(\theta \mid y) \dot{\sim} \mathrm{N}\left\{\theta_0,(n p)^{-1} \operatorname{tr}\left\{H\left(\theta_0\right)^{-1} J\left(\theta_0\right)\right\} H\left(\theta_0\right)^{-1}\right\}$$

where p is the number of eigen vectors choosing from the product result of $H\left(\theta_0\right)^{-1} J\left(\theta_0\right)$

Composite likelihood with curvature adjustment

$$\pi_{\text{curv}}\left(\theta \mid y\right) \dot{\sim} \mathrm{N}\left\{\theta_0, n^{-1} H\left(\theta_0\right)^{-1} J\left(\theta_0\right) H\left(\theta_0\right)^{-1}\right\}$$

where

$$H\left(\theta_0\right)=-\mathbb{E}\left[\nabla^2 \ell_c\left(\theta_0 ; Y\right)\right] \text{ and } J\left(\theta_0\right)=\operatorname{Var}\left[\nabla \ell_c\left(\theta_0 ; Y\right)\right]$$

Lazar2003Biometrika: empirical likelihood

No variance is estimated. Instead, the coverage probability and length (with standard errors) are calculated for the empirical likelihood CI in the simulation part.

Pauli2011Stat: Pairwise Likelihood

$$I_{c_0}^{-1}=I_0^{-1}+I_c\left(\hat{\theta}_{PL}\right)^{-1} \rightarrow I_c\left(\hat{\theta}_{PL}\right)^{-1}$$

$$\hat{\theta}_{c_0}=I_{c_0}\left(I_0^{-1} \theta_0+I_c\left(\hat{\theta}_{PL}\right)^{-1} \hat{\theta}_{PL}\right) \rightarrow \hat{\theta}_{PL}$$

$$\pi_{CL_c}(\theta \mid y) \dot{\sim} N\left(\hat{\theta}_{PL}, I_{c_0}^{-1}\right)$$

where $I(\theta)=E\left(-\nabla \ell_{p*}(\theta ; Y)\right)$

Graziani2020PlosOne__BayesianMultivariateNMA

2.5%, median and 97.5% are reported from the highest posterior density (HPD) credibility intervals

Lu2006JASA__bayesian__NMA

The paper provides the standard deviation in the application part without specifying the calculation details. The values could be calculated from the mcmc samples.