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Disease Source Classification Using Multivariate Spatial Poisson Mixture Models

Enteric disease data obtained from the Canadian Institute for Health Information provides motivation to extend mixture literature to label disease based on infection source. Mixtures are used to classify data as foodborne or waterborne. Two spatial models are presented and compared to the standard CAR spatial model described by Besag et al., 1991. The models account for spatially indexed disease by applying independent or dependent conditionally autoregressive spatial priors in the log linear term of each of the mixture components. All models are compared via simulation, with application to Alberta Gastrointestinal disease data (1992-1998).