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Zero Modified Models for Modeling Length of Hospital Stay for patients with Ischaemic Heart Disease

Length of stay (LOS) in hospital is often used as an indicator of hospital efficiency and a proxy of resource consumption, which may be characterized as zero-inflated if there is an over-abundance of zeroes, or zero-deflated if there are fewer zeroes than expected under a standard count model. Such data may also have a highly right-skewed distribution for the nonzero values. We developed and compared a series of zero modified models with various configurations of fixed and random effects, as well as allowing analysis of nonlinear effects of time, spatially structured variation and unstructured heterogeneity. Modeling and inference use the fully Bayesian approach via Markov Chain Monte Carlo (MCMC) simulation techniques.