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Bayesian Unanchored Additive Models for Component Network Meta-Analysis

Component Network Meta-Analysis (CNMA) models are an extension of standard Network Meta-Analysis models which account for the use of complex treatments in the network. This paper contributes to several statistical aspects of CNMA. First, by introducing a unified notation, we establish that currently available methods differ in the way additivity is assumed, an important distinction that has been overlooked so far. In particular, one model uses a more restrictive form of additivity than the other which we term anchored and unanchored additivity, respectively. We show that anchored additivity can easily be misspecified. Second, given that Bayesian models are often preferred by practitioners, we develop two unanchored Bayesian CNMA models. An extensive simulation study confirms the favorable performance of the novel models. This is the first simulation study to compare the statistical properties of CNMA models in the literature. Finally, the use of our novel models is demonstrated on a real dataset, and the results of CNMA models on the dataset are compared.