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Bayesian Regression Models for Estimation of Disease-Specific Net Costs using Aggregate Data

In order to estimate disease specific "net costs" from aggregate level (e.g. sample means and SD per strata) cost data, which are skew and heteroscedastic, we propose and study a Bayesian Gamma regression mixed model that utilizes as stochastic nodes both sample means and inverse coefficients of variation. We investigate its performance and goodness of fit using simulated and real data, and we compare it with two linear models, assuming known and unknown cost variances per stratum. Our results show that, despite its theoretical justification, the benefits of using the Gamma model over the much simpler linear models are questionable.