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Quantile regression based on counting process approach under semi-competing risks data

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Abstract In this paper, we investigate the quantile regression analysis for semi-competing risks data in which a non-terminal event may be dependently censored by a terminal event. The estimation of quantile regression parameters for the non-terminal event is complicated. We cannot make inference on the non-terminal event without extra assumptions. Thus, we handle this problem by assuming that the joint distribution of the terminal event and the non-terminal event follows a parametric copula model with unspecified marginal distributions. We use the stochastic property of the martingale method to estimate the quantile regression parameters under semi-competing risks data. We also prove the large sample properties of the proposed estimator, and introduce a model diagnostic approach to check model adequacy. From simulation results, it shows that the proposed estimator performs well. For illustration, we apply our proposed approach to analyze a real data.

Keywords Copula model · Dependent censoring · Quantile regression · Semi-competing risks data

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