A multivariate cure mixture survival model
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We suggest a cure-mixture model to analyze bivariate time-to-event data, as motivated by the paper of Chatterjee and Shih (2001, Biometrics 57, 779 - 786), but with a simpler estimation procedure and the correlated gamma-frailty model instead of the shared gamma-frailty model. This approach allows us to deal with left truncated and right censored lifetime data and accounts for heterogeneity as well as for an insusceptible (cure) fraction in the study population. We perform a simulation study to evaluate the properties of the estimates in the proposed model and apply it to breast cancer incidence data for 5,857 Swedish female monozygotic and dizygotic twin pairs from the so-called old cohort of the Swedish Twin Registry. This model is used to estimate the size of the susceptible fraction and the correlation between the frailties of the twin partners. Possible extensions, advantages and limitations of the proposed method are discussed.