A method for bivariate survival data with frailty
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Abstract: When analysing survival data one should consider the fact that individuals may be heterogeneous, and dependent on an unobserved random effect, called the frailty. Several models are available to model heterogeneity, the most common being a multiplicative factor on the hazard. A new approach to model bivariate survival data with frailty is presented, based on the ratio of survival times. The major characteristic of this method is not to make assumptions on the frailty distribution, thereby avoiding difficulties with the estimation of the mixture distribution parameters. An example of a bivariate model with Weibull survival times and gamma frailty is given to illustrate the method and for comparison with the traditional approach.

Key Words: Frailty, survival analysis, Weibull distribution