

Estimating Survival Under a Dependent Truncation

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Abstract

We consider truncated bivariate samples (X_i, Y_i) where a data point is observed only if $Y > X$. The data is said to be left truncated if Y is the variable of interest and right truncated otherwise. The standard methods to estimate the marginal distributions of X and Y assume that these random variables are independent. This presentation introduces a statistical model that accounts for a possible dependency between X and Y ; it features a parametric family of Archimedean copulas for the association between X and Y and non parametric marginal distributions for X and Y . The copula parameter is estimated using an estimating equation involving a conditional Kendall's tau; to estimate the marginal distributions the Graphic Copula estimator of Zheng and Klein is adapted to truncated data. A classical example dealing with the estimation of incubation time for AIDS symptoms among patients infected with HIV is discussed.