AN OLD-NEW FAMILY OF MULTIVARIATE DISTRIBUTIONS FOR LEFT TRUNCATED AND RIGHT CENSORED DATA

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This semi-parametric family of multivariate distributions for lifetime data is particularly adapted to right censored and possibly left truncated data. It generalizes the Cox model in one dimension without resorting to random effects, and does not require new software when used to model left truncated and/or right censored data with covariates. It also generalizes Marshal and Olkin's bivariate exponential distribution. It includes both multidimensional distributions that are either purely discrete or purely continues, and those that contain both discrete and continuous components. The latter may be of interest in modeling lifetime distributions of related components. The main advantage of this family of distributions over Copula-based multivariate distributions is in its multidimensional modeling of the covariance. We present several data sets analyzed using this model comparing the results with those previously obtained using competing models. We also present simulations of data generated from this family as well as data generated from other distributions, but analyzed assuming our model.