World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:18, No:02, 2024

Bivariate Time-to-Event Analysis with Copula-Based Cox Regression

Authors : Duhania O. Mahara, Santi W. Purnami, Aulia N. Fitria, Merissa N. Z. Wirontono, Revina Musfiroh, Shofi Andari, Sagiran Sagiran, Estiana Khoirunnisa, Wahyudi Widada

Abstract : For assessing interventions in numerous disease areas, the use of multiple time-to-event outcomes is common. An individual might experience two different events called bivariate time-to-event data, the events may be correlated because it come from the same subject and also influenced by individual characteristics. The bivariate time-to-event case can be applied by copula-based bivariate Cox survival model, using the Clayton and Frank copulas to analyze the dependence structure of each event and also the covariates effect. By applying this method to modeling the recurrent event infection of hemodialysis insertion on chronic kidney disease (CKD) patients, from the AIC and BIC values we find that the Clayton copula model was the best model with Kendall's Tau is (τ=0,02).

Keywords : bivariate cox, bivariate event, copula function, survival copula
Conference Title : ICBBBB 2024 : International Conference on Biomathematics, Biostatistics, Bioinformatics and Bioengineering
Conference Location : Bangkok, Thailand
Conference Dates : February 01-02, 2024