**Estimation of Survival Times of breast cancer patients through Penalized Cox Model**

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**Abstract**

Survival data are of main interest in different fields. There are two outcomes in these types of data: event outcome and event times. The traditional Cox model is usually applied in these analyses. Nevertheless, the real data is often more complicated than considered. This needs a more advanced techniques along with variable selection properties. Penalized Cox Models are simultaneous variable selection and parameter estimation methods with the Lasso, Ridge and Elastic net penalties. The purpose of this study is to implement the Penalized Cox Model in the prediction of event times among breast cancer patients. The methods are applied to a well-known METABRIC dataset. The models were evaluated through the concordance index.

***Key words****: Lasso, Ridge, Elastic Net regularization, METABRIC dataset, Time-to-event data analysis*