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SÉMINAIRE

On bias of measures of explained variation in survival anlysis

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Papers evaluating measures of explained variation, or similar indices, invariably use independence from censoring as the most important criterion. And they invariably end up suggesting that some measures meet this criterion, and some don't, leading to a conclusion that the first are better than the second. As a consequence, users are offered measures that cannot be used with time-dependant covariates and effects, not to mention extensions to repeated events or multi state models. We explain in this paper that the above mentioned criterion is of no use in studying such measures, since it simply favours those that make an implicit assumption of a model being valid everywhere. Measures not making such an assumption are disqualified, even though they are better in every other respect. We show that if these, allegedly inferior, measures are allowed to make the same assumption, they are easily corrected to satisfy the `independent-from-censoring' criterion. Even better, it is enough to make such an assumption only for the times greater than the last observed failure time $tau$. Which, in contrast with the `preferred' measures, makes it possible to use all the modelling flexibility up-to tau, and assume whatever one wants after tau. As a consequence, we claim that measures being proffered as better in the existing reviews, are exactly those that are inferior