Title: Survival Analysis. Statistical evaluation of diagnosis tests
Responsible of the activity: Mª Carmen Pardo

Lecturers: Rosa Alonso, Alba M. Franco, Mª Carmen Pardo, Teresa Pérez

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Abstract: Survival times are data that measure follow-up time from a defined starting point to the occurrence of a given event, for example the time from the beginning to the end of a remission period or the time from the diagnosis of a disease to death. These data arise in engineering, economy, reliability, public health, biomedicine and other areas. One distinguishing feature of survival analysis is that it incorporates censored, truncated, and length-biased data. Another feature is the existence of time-dependent covariates. The main goals are to estimate the distribution of time-to-event for a group of individuals, to compare time-to-event among two or more groups, and to assess the relationship of covariates to event times. On the other hand, receiver operating characteristic (ROC) curves are widely used for the assessment of diagnostic markers or, more generally, for the depiction and quantification of the discrimination between two distributions of continuous measurements using the classical concepts of sensitivity and specifity. In order to achieve early disease detection it is necessary to incorporate both the time-varying nature of a marker and the clinical onset time of the disease. Furthermore, the use of different ROC summary indices in order to assess the precision of diagnostic markers or to compare new diagnostic markers with old ones is also of interest. There exist fundamental relationships between two-sample test statistics and ROC summary indices.

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