

# Cumulative/dynamic ROC curve estimation

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Receiver operating-characteristic (ROC) curve is a popular graphical method frequently used in order to study the diagnostic capacity of continuous (bio)markers. When the considered outcome is a time-dependent variable, the direct generalization is known as cumulative/dynamic ROC curve. For a fixed point of time,  $t$ , one subject is allocated into the positive group if the event happens before  $t$  and into the negative group if the event is not happened at  $t$ . The presence of censored subject, which can not be directly assigned into a group, is the main handicap of this approach. The proposed cumulative/dynamic ROC curve estimator assigns a probability to belong to the negative (positive) group to the subjects censored previously to  $t$ . The performance of the resulting estimator is studied from Monte Carlo simulations. Some real-world applications are reported. Results suggest that the new estimators provide a good approximation to the real cumulative/dynamic ROC curve. © 2016 Informa UK Limited, trading as Taylor & Francis Group.

censored data

Cox regression model

Cumulative/dynamic ROC curve

sensitivity

specificity