

Fitting multistate cure models via an extended-long-format data approach

A seminar by Marta Fiocco

Leiden University

Thursday 13 Nov 2025 | 14:30-15:30

Room BENVENUTI

Department of Statistical Sciences

A multistate cure model is a statistical framework used to analyze and represent the transitions that individuals undergo between different states over time, taking into account the possibility of being cured by initial treatment. This model is particularly useful in pediatric oncology where a proportion of the patient population achieves cure through treatment and therefore they will never experience some events.

Our study develops a generalized algorithm based on the extended long data format, an extension of long data format where a transition can be split up to two rows each with a weight assigned reflecting the posterior probability of its cure status. The multistate cure model is fit on top of the current framework of multistate model and mixture cure model. The proposed algorithm makes use of the Expectation-Maximization (EM) algorithm and weighted likelihood representation such that it is easy to implement with standard package. As an example, the proposed algorithm is applied on data from the European Society for Blood and Marrow Transplantation (EBMT). Standard errors of the estimated parameters are obtained via a non-parametric bootstrap procedure, while the method involving the calculation of the second-derivative matrix of the observed log-likelihood is also presented.



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

