

## **An application of the Cox-Aalen model in a record-linkage study of a population-based breast cancer cohort**

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A deterministic record-linkage between patients with breast cancer, from Turin cancer registry data, diagnosed from 1997 through 1999, aged 40-79, and their respective hospital discharge records was performed. Out of this initial cohort, 1857 cases (88%) were linked to the discharge abstract database. The linkage provides a valuable source of information on comorbidities, cancer treatments and hospital characteristics.

The aim of the study is to carry out a survival analysis on patients surgically treated, standardized for typical prognostic factors such as tumor size, nodal status, distant metastasis and other factors gained by record linking. In this context, more flexible regression tools than Cox model which is routinely used for analyzing survival data in clinical and epidemiological settings are needed. We present the estimates based on the multiplicative-additive Cox-Aalen model and compare the results with those based on the classical Cox model. Moreover, the potential impact of the record-linkage bias on the effect of covariates in both survival models is empirically assessed by a simulation study.