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Impact of exposure definition on exposure-outcome associations

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Abstract

Determining the association between a treatment's effect and time exposure is of great importance in regards to having a proper understanding of the effects, both harmful and beneficial, in the population. However, the definition of exposure time during treatment varies depending on how the user defines these periods. To answer the question on the impact of exposure definition, we make use of the Cox proportional hazards model to quantify the difference and accuracies of three common definitions, and in addition, for comparison with a known association, a simulated data set is used. The initial model with the real data set showed that the three definitions showed differing results, while the two Cox models returned equivalent results with emphasis on how the users handled certain parameters, such as the gap between refills. The simulated data further supports this and also shows that given extreme or non-ideal conditions, some of the definitions return wildly differing results or models with no statistical power.

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