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*Modeling the Uncertainty of Susceptible and Non-susceptible Multiple Outcomes*

Many diseases progress with multiple outcomes after the onset of the disease. With some potential factors, patients may or may not be susceptible to the event of interest. The objectives of the study are: (1) to identify and measure the effect of risk factors on the distribution of event time and the odds of susceptibility; (2) to model and predict the disease progression. We propose a mixed effect model nested within a mixture model to account for the susceptible and non-susceptible uncertainty and the correlations among the events. Simulation studies are conducted to assess the performance of our method.