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Confidence Intervals in Relative Survival Analysis

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Abstract

Relative survival analysis measures the survival of individuals subject to a specific disease, relative to the expected survival of these individuals had they not been subjects to the disease. Variance of relative survival estimates is commonly calculated based on an assumption of negligible variance in the expected survival estimates, i.e. uncertainty in the population mortality rates is ignored. In this thesis we examine the impact of including this uncertainty for three estimators of relative survival. From bootstrap simulations we find that the confidence interval width for the 10 year Pohar Perme estimate increases with 16 % after including population mortality uncertainty. For age standardized Ederer II and Flexible Parametric Models, the changes in confidence interval width were found to be small. The uncertainty of population mortality is related to the size of the population, and we also investigate the impact of decreasing the original 5 million population to a size of 2.5 and 0.5 million. The results indicate that confidence interval widths for the smaller population sizes does not differ much compared to the original one.

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