Evaluating cancer screening programmes using survival analysis

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Cancer screening programmes aim to identify cancer in the initial stages of cancer growth so that early treatment can be offered. The hypothesis is that early treatment improves the chances of survival for cancer patients**.** Using survival data from observational studies one would like to test this hypothesis empirically, for example by comparing survival curves between cancer cases in the experimental and control group. However, several distinct biases arise when directly comparing survival curves between different subgroups; most known are lead time bias, length time bias and overdiagnosis. Parametric models can be used to reduce some of the biases but are based on assumptions that may be unrealistic and often cannot be validated using available data. Therefore, we aim to develop a non-parametric method that could be used to adequately evaluate the effectiveness of cancer screening programmes. In this presentation, I will briefly discuss major sources of bias and present the ideas for a non-parametric approach that could be used to evaluate the effectiveness of cancer screening programmes.

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