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ASYMPTOTICS FOR A WEIGHTED LEAST SQUARES ESTIMATOR OF THE DISEASE ONSET DISTRIBUTION FUNCTION FOR A SURVIVAL-SACRIFICE MODEL

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Abstract. In carcinogenicity experiments with animals where the tumor is not palpable it is common to observe only the time of death of the animal, the cause of death (the tumor or another independent cause, as sacrifice) and whether the tumor was present at the time of death. These last two indicator variables are evaluated after an autopsy. A weighted least squares estimator for the distribution function of the disease onset was proposed. Asymptotic properties of that estimator are established here. We demonstrate its strong uniform consistency. A minimax lower bound for the estimation of the disease onset distribution is obtained, as well as the local asymptotic distribution for their estimator.

Key words and phrases: Asymptotics, interval censoring, survival-sacrifice, weighted least squares, disease onset estimation.