

An Empirical Approach for Deriving Information on Total Duration of Exposure from Information on Historical Exposure

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Exposure duration is an important component in determining long-term dose rates associated with exposure to environmental contaminants. Surveys of exposed populations collect information on individuals' past behaviors, including the durations of a behavior up to the time of the survey. This paper presents an empirical approach for determining the distribution of total durations that is consistent with the distribution past durations obtained from surveys. This approach is appropriate where the rates of beginning and ending a behavior are relatively constant over time. The approach allows the incorporation of information on the distribution of age in a population into the determination of the distribution of durations. The paper also explores the impact of "longevity" bias on survey data. A case study of the application of this approach to two angler populations is also provided. The results of the case study have characteristics similar to the results reported by Israeli and Nelson (*Risk Anal.* **12**, 65-72 (1992)) from their analytical model of residential duration. Specifically, the average period of time for the total duration in the entire population is shorter than the average period of time reported for historical duration in the surveyed individuals.

KEY WORDS: Exposure duration; survey data; longevity bias; angler populations.