
# JSM 2021 Abstract Submission

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## Confirmation of Abstract

## Abstract Number 318892 has been submitted.

**Abstract Information**

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| **Abstract Type:** | Contributed |
| **Sub Type:** | Speed |
| **Sponsor:** | Section on Nonparametric Statistics |
| **Title:** | The Cumulative Hazard Rate Function for Right Censored Length-biased Survival Data |
| **Abstract:** | The extensive application of prospective prevalent cohort studies on disease duration demands for an appropriate methodology that considers the biases involve due to left truncation. Right censored lifetime data are commonly analysed by conditioning on random truncation times, where |

truncation distributions are ignored. However, it is often enough reasons to assume a uniform distribution for truncation times, and the observed survival times are thus length-biased. This property could be used to develop a more informative strategy known as unconditional approach. The cumulative hazard rate function is one of the fundamental quantities that is used in survival analysis. We propose the unconditional nonparametric maximum likelihood estimator (NPMLE) of unbiased cumulative hazard function to study the distribution of lifetime data in the presence of length-bias and informative right censoring. The uniform strong consistency and asymptotic normality of the NPMLE are discussed, which are then used to obtain confidence intervals. The finite-sample properties of the NPMLE are inspected through a simulation study. The procedures are applied to a set of real data on patients with dementia.

**Key words:** Confidence Intervals, Cumulative Hazard Function, Length-biased Sampling, Prevalent Cohort, Right Censoring, Survival Analysis

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**If it is possible for any portion of JSM to be held face-to-face, are you able to present in-person?** Yes

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**Audio-visual:** Audio-Visual Guidelines: If JSM is held in-person in Seattle, each technical session room will be equipped with a complimentary PC-compatible laptop, LCD projector, screen, and lectern with microphone. Presenters will also record a 15-minute presentation for on-demand viewing.

**Authors**

**Name**

Shariati, Ali - Macquarie University ( Presenting )

Doosti, Hassan - Macquarie University

Fakoor, Vahid - Ferdowsi University of Mashhad

**All session participants must confirm their involvement by registering for JSM by**

**June 1, 2021. The registration fee is nonrefundable.**


## American Statistical Association

732 North Washington Street
Alexandria, VA 22314
(703) 684-1221
meetings@amstat.org