



## Jong H. Jeong, PhD

Professor and Interim Chair  
Department of Biostatistics  
University of Pittsburgh

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**12:00-1:00 pm**

**Via Zoom**

## Nonparametric and Semiparametric Inference on Quantile Inactivity Time

**Abstract:** In time-to-event data analysis, statistical inference could be made based on the cumulative information up to a fixed time point via the summary measures such as the hazard function, survival probability, quantile survival, or restricted mean survival. The inference could also be made based on the residual information beyond a fixed time point through the residual life function. Balmert and Jeong (2016) adopted the concept of inactivity time to introduce the lost lifespan for censored time-to-event data. In this talk, presented are nonparametric and semiparametric inferences on lost lifespan. For the semiparametric inference, the quantile of the distribution of lost lifespan on a log-scale is modeled as linear in a vector of covariates. An estimating equation is proposed to estimate the quantile lost lifespan, adjusting for confounding factors, under the framework of the weighted quantile regression. For computational efficiency, a perturbation method is used to estimate the standard errors of the estimators and hence construct confidence intervals. Asymptotic properties of the estimators are also derived. Simulation results show that the bias of the regression parameter estimates and type I error probabilities and powers of the associated test statistics behave reasonably well for the finite samples. The proposed method is illustrated with a real dataset from a phase III clinical trial on breast cancer. An extension to a competing risks setting will be briefly discussed.



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and Public Health**

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