

**Indiana University-Purdue University
Indianapolis**
Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, October 11, 2022

Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: Qi Zheng

Department of Bioinformatics & Biostatistics, University of Louisville

Title: Inference for high dimensional censored quantile Regression

Abstract:

With the availability of high dimensional genetic biomarkers, it is of interest to identify heterogeneous effects of these predictors on patients' survival, along with proper statistical inference. Censored quantile regression has emerged as a powerful tool for detecting heterogeneous effects of covariates on survival outcomes. However, to our knowledge, few works are available to draw inference on the effects of high dimensional predictors for censored quantile regression. We propose a novel fused procedure to draw inference on all predictors within the framework of "global" censored quantile regression, where the quantile level is over an interval, instead of several discrete values. The proposed estimator combines a sequence of low dimensional model fitting based on multi-sample splitting and variable selection. We show that, under some regularity conditions, the estimator is consistent and asymptotically follows a Gaussian process indexed by the quantile level. Simulation studies indicate that our procedure properly quantifies the uncertainty of effect estimates in high-dimensional settings. We apply our method to analyze the heterogeneous effects of SNPs residing in the lung cancer pathways on patients' survival, using the Boston Lung Cancer Survivor Cohort, a cancer epidemiology study investigating the molecular mechanism of lung cancer.

Bio:

Dr. Qi Zheng is an Associate Professor in the Department of Bioinformatics & Biostatistics at University of Louisville. He got his PhD in Statistics from Clemson University in 2013. Dr. Zheng's research interests focus on High dimensional data; Penalization; Screening methods; Quantile regression; Varying effects models; Survival analysis; Estimating equations; Semiparametric and nonparametric modeling; Time series; Group testing; Functional data analysis.