



EMPIRICAL LIKELIHOOD BASED INFERENCE FOR FUNCTIONAL MEANS WITH APPLICATION TO WEARABLE DEVICE DATA

IAN MCKEAGUE

MARCH 16 3.30 PM (ET)

IN-PERSON SEMINAR

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Abstract

This talk discusses a nonparametric inference framework for occupation time curves derived from wearable device data. Such curves provide the total time a subject maintains activity above a given level as a function of that level. Taking advantage of the monotonicity and smoothness properties of these curves, we develop a likelihood ratio approach to construct confidence bands and functional-ANOVA type tests to compare mean occupation time curves between groups of subjects. A simulation study shows that the proposed procedures outperform competing functional data approaches. Applications to wearable device data from an



NHANES study and an ongoing study of an experimental gene therapy for mitochondrial DNA depletion syndrome will be discussed. Based on joint work with Hsin-Wen Chang (Academia Sinica).

Bio: Dr. McKeague's research interests include post-selection inference, empirical likelihood, orderrestricted inference, non-standard asymptotics, statistical methods in physical oceanography, functional data analysis, inference for stochastic processes, survival analysis, competing risks models for HIV/AIDS data, Markov chain Monte Carlo and Bayesian methods, efficient estimation for semiparametric models, missing data, counting processes and spatial point processes. He is a fellow of the Institute of Mathematical Statistics and a fellow of the American Statistical Association. He has served as an associate editor of the Annals of Statistics for seven years, the Journal of the American Statistical Association for 11 years, and is currently serving on the editorial boards of the Journal of the American Statistical Association, Statistical Science, Statistical Inference for Stochastic Processes, and the International Journal of Biostatistics. He is also serving as Editor of the Journal of the American Statistical Association (2020-2023).