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

### STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, January 11, 2022
Zoom Meeting: Meeting ID: 845 0989 4694

**Speaker:** **Dr. Hyunkeun Cho**
*Department of Biostatistics, University of Iowa*

**Title:** **Modeling the population mean outcome trajectory in an observational study with a guideline-based intervention**

**Abstract:**

A repeatedly measured outcome for subjects in an observational study allows researchers to monitor how the outcome changes over time. When an intervention that affects the outcome is initiated at different time during the course of the study, it is essential to account for the varying time to intervention (TTI) in modeling changes in the outcome over time. In this paper, we develop a piecewise polynomial regression model with TTI-varying coefficients that describes the population mean outcome over time. The TTI-varying coefficients in the model enable us to capture the population mean outcome trajectory influenced by not only the intervention, but also the varying TTI. When the intervention is initiated following a guideline, the guideline can confound TTI-varying influence of the intervention on the outcome due to sample selection bias. A double-weighted estimation procedure is proposed on the basis of a kernel function and a generalized propensity score. The estimation procedure can effectively correct estimation bias of the TTI-varying coefficients and provide valid statistical inference about the coefficients. We apply our approach to assess changes in the population mean of an inflammation biomarker for HIV-infected adults in Haiti who initiate antiretroviral therapy following the World Health Organization guideline.

**Bio:**
Hyunkeun (Ryan) Cho is an Associate Professor in the Department of Biostatistics at University of Iowa. He received his PhD in Statistics from University of Illinois at Urbana-Champaignin in 2013. Dr. Cho's research interests include Longitudinal data analysis; Causal inference; Precision medicine; Preventive medicine; Risk-predictive modeling; Nonparametric modeling; Quantile regression; Clinical trials.