

Division of Biostatistics, DSI
Medical College of Wisconsin Presents

Bayesian Methodology for Disease Severity Forecasting

By: Jarad Niemi, PhD

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Location: MEB-M2050/2070

Disease severity forecasting provides the US Centers for Disease Control and Prevention with timely predictions, up to a month out, for the number of cases, hospitalizations, and deaths for ongoing disease outbreaks in geographical regions as small as counties. These forecasts were crucial during the COVID-19 pandemic for public health resource allocation and are used annually during the winter influenza season. Disease forecasting hubs aim to bring together forecasts from a wide variety of researchers and combine these forecasts into ensemble forecasts. In this talk, we present advances in Bayesian methodology for collaborative, probabilistic forecasts including construction of nonlinear hierarchical models of disease severity, quantile Gaussian processes for quantile matching, and Bayesian stacking for ensemble construction. These methodological developments provide improved individual, as well as ensemble, forecasts of disease severity.



Jarad Niemi, PhD

Biography: Dr. Niemi is a Professor in the Department of Statistics and the Professor-in-Charge of Data Science at Iowa State University. His research focuses on computational Bayesian methods with applications to agriculture and disease outbreaks. He has won several awards for his collaborations with a variety of scientists and researchers on large interdisciplinary teams.