



# Department of Mathematical Sciences

Fall 2017

## Colloquium Series

October 27, 2017 at 3pm in Bell Hall 143

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### Methods for Analyzing Longitudinal Data that Occur in Health Care and Clinical Studies

Health sciences research and clinical trials often track treatment of intervention effectiveness over time, resulting in repeated or longitudinal observations of patient responses. Statistical analysis of such longitudinal data can be straight-forward when response variables are continuous, as the multivariate normal distribution can be used to model both potential predictors of the change in response and also the correlation between repeated measurements within subjects. However, different approaches are needed when longitudinal studies involve binary or classification endpoints, which can require increased analytic or computational complexity. A novel approach is to view these longitudinal binary endpoints as short discrete time series, which allows likelihood-based estimation yet poses specific challenges. In this talk, I will discuss both likelihood and estimating equation methods for analyzing binary and in general analysis of discrete longitudinal data using copula based likelihoods.

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