

BSTA 656
Longitudinal Data Analysis
Fall 2, 2020

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Virtual office hours: Wednesdays 4:00pm-5:00pm or by appointment

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Hours Class – Monday and Wednesday, 1:30pm-3:00pm, Zoom via canvas

Evaluation Homework: 60%
Take-home final exam: 40%

Recommended Texts Diggle, Heagerty, Liang and Zeger (2002). Analysis of Longitudinal Data, Oxford University Press.

Topics

- 1. Linear Mixed Models for Correlated Data**
LMM; MLEs; Fixed effects; Random effects; BLUPs;
EM; Restricted MLEs (REMLs); Variance components;
- 2. Generalized Linear Models and Quasi-likelihood**
Exponential family; Mean-variance relationship; Link functions; MLEs; Weighted least squares; Hypothesis testing; Over-dispersion; Estimating equations; Quasi-likelihood Functions.
- 3. Generalized Estimating Equations**
GEE; Robust covariance estimation; Hypothesis Testing in GEE;
- 4. Generalized Linear Mixed Models**
Relationship between GEEs and GLMMs; Likelihood; Approximate inference (PQL); MLEs; EM; Conditional inference.