BSTA 656
Longitudinal Data Analysis
Fall 2, 2022

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Hours Class – Tuesday and Thursday, 12:00pm-1:30pm, Room TBD

Evaluation Homework: 60%
Take-home final exam: 40%
Late Penalty: 1 letter grade reduction (10 points) per day late.

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-disperson; 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.