BSTA 656
Longitudinal Data Analysis
Fall 1, 2019

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Office hour: Monday 3:00pm-4:00pm or by appointment

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Office hour: Tuesdays 2:30pm-3:30pm

Hours Class – Monday and Wednesday, 1:30pm-3:00pm, Blockley 418

Evaluation Homework: 60%
In-class final exam (10/21): 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; Variance/covariance modeling.

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; Small-sample adjustments.

4. **Generalized Linear Mixed Models**
   Relationship between GEEs and GLMMs; Likelihood; Approximate inference (PQL); MLEs; EM; Conditional inference.