STAT 517 Fall 2022 Class Schedule

Ray Bai

Linear Regression and Generalized Linear Models (GLMs)

- **8/19/22**: syllabus and course overview, review of R
- **8/22/22**: review of simple linear regression, diagnostic plots
- **8/24/22**: review of simple linear regression, multiple linear regression
- **8/26/22**: review of multiple linear regression, model selection
- **8/29/22**: discrete and continuous random variables, idea of maximum likelihood estimation
- **8/31/22**: overview of generalized linear models (GLMs), fitting GLMs in R

Models for Binary Response Variables

- **9/2/22**: simple logistic regression, odds ratio
- **9/5/22**: **Labor Day (no class)**
- **9/7/22**: inference for simple logistic regression
- **9/9/22**: multiple logistic regression, adjusted odds ratio
- **9/12/22**: inference for multiple logistic regression
- **9/14/22**: classification with logistic regression, confusion matrix
- **9/16/22**: sensitivity, specificity, ROC curve
- **9/19/22**: probit and complementary log-log regression

Models for Multinomial Responses

- **9/21/22**: multinomial data, multinomial logistic regression
- **9/23/22**: inference for multinomial logistic regression
- **9/26/22**: multiclass classification with multinomial logistic regression
- **9/28/22**: ordinal data, cumulative link models
- **9/30/22**: **NO CLASS** (Hurricane Ian)
- **10/3/22**: continuation ratio model for ordinal data

Models for Count Response Variables

- **10/5/22**: count data, Poisson regression for modeling count data
- **10/7/22**: Poisson regression for modeling rate data
- **10/10/22**: overdispersion in count data, quasi-Poisson regression model
- **10/12/22**: negative binomial regression model
- **10/14/22**: **Fall break (no class)**
- **10/17/22**: zero-inflated data, zero-inflated Poisson (ZIP) model
- **10/19/22**: zero-inflated negative binomial (ZINB) model, summary of GLMs for independent data

Random Effects and Mixed Effects Models

- **10/21/22**: dependent and clustered data, random effects models
- **10/24/22**: random effects models with interaction
- **10/26/22**: mixed effects analysis of variance models
- **10/28/22**: linear mixed effects models with covariates
- **10/31/22**: mixed effects models with multivariate random effects
- **11/2/22**: generalized linear mixed effects models (GLMMs)
- **11/4/22**: mixed effects logistic regression and mixed effects count regression

Nonparametric/Semiparametric Regression and Classification

- **11/7/22**: motivation for nonparametrics, K-fold cross-validation
- **11/9/22**: kernel estimators for univariate functions
- **11/11/22**: spline estimators for univariate functions
- **11/14/22**: additive models for functions with multiple predictors
- **11/16/22**: generalized additive models for noncontinuous responses
- **11/18/22**: decision tree modeling, regression trees
- **11/21/22**: tree pruning, variable importance in tree models
- **11/23/22**: **Thanksgiving holiday (no class)**
- **11/25/22**: **Thanksgiving holiday (no class)**
- **11/28/22**: classification trees
- **11/30/22**: bagging, random forests
- **12/2/22**: random forest variable importance measures, partial dependence plots