STAT 517 Fall 2024 Class Schedule

Ray Bai

Linear Regression and Generalized Linear Models (GLMs)

- **8/21/24**: syllabus and course overview, review of R
- **8/23/24**: review of simple linear regression, diagnostic plots
- **8/26/24**: review of simple linear regression, multiple linear regression
- **8/28/24**: review of multiple linear regression, model selection
- **8/30/24**: discrete and continuous random variables, idea of maximum likelihood estimation
- **9/2/24**: **Labor Day (no class)**
- **9/4/24**: overview of generalized linear models (GLMs), fitting GLMs in R

Models for Binary Response Variables

- **9/6/24**: simple logistic regression, odds ratio
- **9/9/24**: inference for simple logistic regression
- **9/11/24**: multiple logistic regression, adjusted odds ratio
- **9/13/24**: inference for multiple logistic regression
- **9/16/24**: classification with logistic regression, confusion matrix
- **9/18/24**: sensitivity, specificity, ROC curve
- **9/20/24**: probit and complementary log-log regression

Models for Multicategorical Response Variables

- **9/23/24**: multinomial data, multinomial logistic regression
- **9/25/24**: inference for multinomial logistic regression
- **9/27/24**: **Hurricane Helene (no class)**
- **9/30/24**: multiclass classification with multinomial logistic regression
- **10/2/24**: ordinal data, cumulative link models
- **10/4/24**: continuation ratio model for ordinal data

Models for Count Response Variables

- **10/7/24**: count data, Poisson regression for modeling count data
- **10/9/24**: Poisson regression for modeling rate data
- **10/11/24**: overdispersion in count data, quasi-Poisson regression model
- **10/14/24**: negative binomial regression model
- **10/16/24**: zero-inflated data, zero-inflated Poisson (ZIP) model
- **10/18/24**: **Fall break (no class)**
- **10/21/24**: zero-inflated negative binomial (ZINB) model, summary of GLMs for independent data

Random Effects and Mixed Effects Models

- **10/23/24**: dependent and clustered data, random effects models
- **10/25/24**: random effects models with interaction
- **10/28/24**: mixed effects analysis of variance models
- **10/30/24**: linear mixed effects models with covariates
- **11/1/24**: mixed effects models with multivariate random effects
- **11/4/24**: generalized linear mixed effects models (GLMMs)
- **11/6/24**: mixed effects logistic regression and mixed effects count regression

Nonparametric/Semiparametric Regression and Classification

- **11/8/24**: motivation for nonparametric regression, K-fold cross-validation
- **11/11/24**: kernel estimators for univariate functions
- **11/13/24**: spline estimators for univariate functions
- **11/15/24**: additive models for functions with multiple predictors
- **11/18/24**: generalized additive models for noncontinuous responses
- **11/20/24**: decision tree modeling, regression trees
- **11/22/24**: tree pruning, variable importance in tree models
- **11/25/24**: **Thanksgiving holiday (no class)**
- **11/27/24**: **Thanksgiving holiday (no class)**
- **11/29/24**: **Thanksgiving holiday (no class)**
- **12/2/24**: classification trees
- **12/4/24**: bagging, random forests
- **12/6/24**: partial dependence plots, summary of statistical models