STAT 517 Fall 2022 Class Schedule

Ray Bai

* This schedule is *tentative* and may be subject to change.

Review of Linear Regression Models

- **8/19/22**: syllabus and course overview, review of R
- **8/22/22**: simple linear regression, diagnostic plots
- **8/24/22**: simple linear regression, multiple linear regression
- **8/26/22**: multiple linear regression, model selection

Models for Binary Response Variables

- **8/29/22**: discrete and continuous random variables, idea of maximum likelihood estimation
- **8/31/22**: generalized linear models (GLMs), fitting GLMs in R
- **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**: continuation ratio model for ordinal data

Models for Count Response Variables and Contingency Tables

- **10/3/22**: count data, Poisson regression for modeling count data
- **10/5/22**: Poisson regression for modeling rate data
- **10/7/22**: log-linear models for contingency tables, independence model
- **10/10/22**: saturated model for contingency tables
- **10/12/22**: overdispersion, quasi-Poisson regression models
- **10/14/22**: **Fall break (no class)**
- **10/17/22**: negative binomial regression, zero-inflated models

Random Effects and Mixed Effects Models

- **10/19/22**: review of fixed effects analysis of variance (ANOVA) models
- **10/21/22**: random effects models
- **10/24/22**: random effects models with interaction
- **10/26/22**: repeated measures, longitudinal data, mixed effects models for continuous responses
- **10/28/22**: mixed effects models for continuous responses
- **10/31/22**: generalized linear mixed effects models (GLMMs) for non-normal responses

Nonparametric/Semiparametric Regression and Classification

- **11/2/22**: motivation for nonparametrics, comparing models based on predictive accuracy
- **11/4/22**: kernel regression
- **11/7/22**: regression splines
- **11/9/22**: additive models
- **11/11/22**: generalized additive models
- **11/14/22**: decision tree modeling
- **11/16/22**: regression trees
- **11/18/22**: classification trees
- **11/21/22**: random forests
- **11/23/22**: **Thanksgiving holiday (no class)**
- **11/25/22**: **Thanksgiving holiday (no class)**
- **11/28/22**: gradient boosting
- **11/30/22**: k-nearest neighbor regression
- **12/2/22**: k-nearest neighbor classification