4.2: Variations on OLS (Ordinary Least Squares)

Dr. Bean - Stat 5100

If Robust Regression is less sensitive to outliers and influential points, why should we *ever* use ordinary least squares (OLS) regression and worry about outliers and influential points?

In what ways is non-linear regression different from simply adding higher ordered predictors (i.e. X^2 or X^3) in our model?

Why would we want to avoid "making up" or own non-linear model forms for non-linear regression? Why depend so much on the domain theory for the model form?

What are some potential issues with the use of gradient descent to find optimal model coefficients?

The residuals of your OLS regression model show signs of heteroskedasticity. You are able to identify a transformation for Y that fixes the issue. Should you use OLS with the transformed Y or use weighted least squares regression? Please give arguments in favor of both methods.