

**linearity** - no other curved relationship represents the relationships between each of the predictors and the response variable. Scatterplots and scatterplot matrices are useful for

exploring linearity.

**normality** - the residuals, and therefore the populations from which each of the responses were collected, are normally distributed. Note that in the majority of multiple linear

regression cases, the predictor variables are measured (not specifically set), and therefore the respective populations are also assumed to be normally distributed.

**homogeneity of variance** - the residuals (populations from which each of the responses were collected) are equally varied.

**(multi)collinearity** - a predictor variable must not be correlated to the combination of other predictor variables. Multicollinearity has major detrimental effects on model fitting:

• **instability of the estimated partial regression slopes** (small changes in the data or variable inclusion can cause dramatic changes in parameter estimates).

• **inflated standard errors and confidence intervals of model parameters**, thereby increasing the type II error rate (reducing power) of parameter hypothesis tests.