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ECO 602: Analysis of Environmental Data
Week 9 Reading Questions
Due 11/6/2022

Q1 (1 pt.): Briefly (1 - 2 short paragraphs) describe at least two tradeoffs between the customized ML methods and the canned methods.

Bolker identifies two main trade offs between Maximum Likelihood analyses and Least Squares analyses. First, Bolker mentions that using special-case procedures rather than canned methods can offer faster computational speed and greater stability as they use special case optimization algorithms. Using this method allows us to avoid having to choose starting parameters. Despite this benefit of using customized ML methods, researchers might prefer to use standard methods as reviewers will view them as conventional and tried and true. Using customized ML methods might result in distrust or confusion among readers and reviewers. For these reasons, there are many tradeoffs to ponder when choosing between customized and more standard methods.

Q2 (1 pt.): Briefly (1 - 2 sentences) describe each of the four key assumptions of the general linear modeling approach.

The four key assumptions of the general linear modeling approach are that observed values are independent, normally distributed, homoscedastic, and that covariates are measured without error.

Q3 (1 pt.): Explain how the normality assumption can be met in a general linear model, even if the response variable is not normally-distributed. (1 - 2 paragraphs)

The normality assumption can be met in a general linear model even if the response variable is not normally-distributed as long as the following is true: if sampling were repeated many times under the same environmental conditions, the observations will be normally distributed for each value of the predictor variable. This is because the normality assumption implies that errors are normally distributed.